

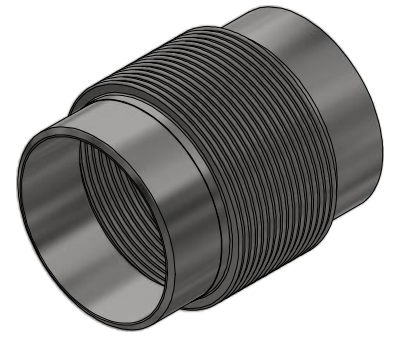
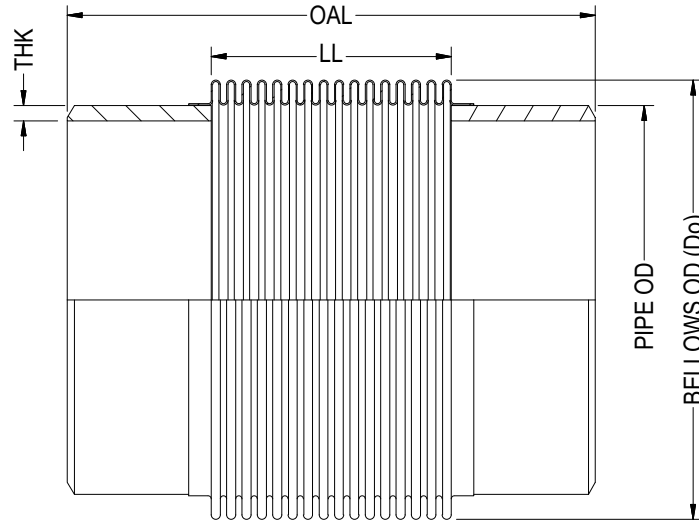


SINGLE EXPANSION JOINT DATA SHEETS



www.bellows-systems.com

TYPE SU-00




ISOMETRIC VIEW

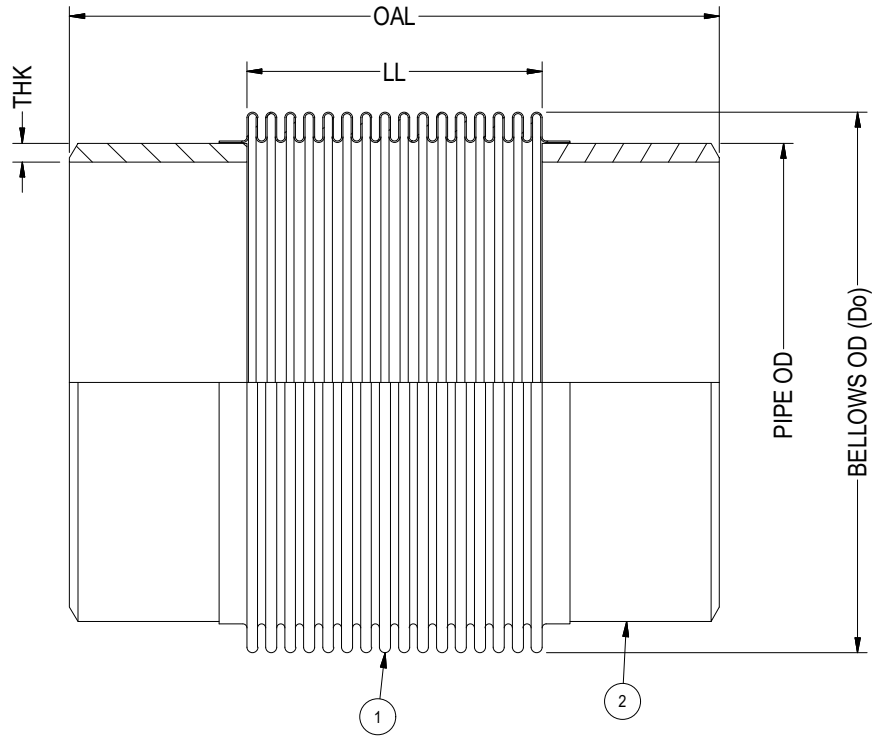
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 0.75 | 1.27 | 1.33 | 6.00 |
| 1 | 1.75 | 2.00 | 8.00 |
| 1-1/2 | 2.50 | 2.00 | 8.00 |
| 2 | 3.10 | 2.00 | 8.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 8.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 8.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 8.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 15.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 9.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 10.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 14.00 |
| 12 | 14.30 | 13.50 | 20.00 |
| 14 | 16.30 | 1.25 | 7.00 |
| 14 | 16.00 | 4.50 | 10.00 |
| 14 | 15.75 | 13.00 | 19.00 |
| 16 | 17.75 | 8.00 | 14.00 |
| 16 | 17.75 | 13.50 | 20.00 |
| 18 | 20.20 | 4.00 | 10.00 |
| 18 | 20.20 | 10.00 | 16.00 |
| 18 | 20.20 | 13.00 | 19.00 |
| 20 | 22.00 | 4.00 | 10.00 |
| 20 | 22.25 | 4.50 | 10.00 |
| 20 | 21.91 | 9.00 | 15.00 |
| 20 | 21.75 | 13.50 | 20.00 |
| 24 | 25.90 | 4.50 | 10.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 19.00 |
| 24 | 25.75 | 20.00 | 26.00 |

NOTES:

1. PIPE WELD END WALL THICKNESS IS BASED ON STD./SCH, ALTERNATIVE SIZES AVAILABLE ON REQUEST.
2. OAL IS BASED ON STD. 3" PIPE WELD NECK LENGTH. FOR OTHER OPTIONAL LENGTHS PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
3. PIPE END MATERIAL: ASTM A106 B. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
4. BELLOW MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEELS, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATION PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|-----------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems CAGE CODE: 22727 | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-00 W/ PIPE ENDS (BWE) | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: | 130-CAT-0000 |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED TABLE | 09/15/2023 | UG | | | | |
| D | UPDATED TABLE & NOTES | 09/08/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 12/16/2022 | SCALE: AS SHOWN |
| | | | | | | SHEET#: 1 OF 2 | REV. F |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MAT'L'S: | NO. OF CYCLES: | | | | |
| | ①, BELLOWS: | | | | |
| | ②, PIPE ENDS: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FLOW LINER (SEE TYPE-20).
2. EXTERNAL COVER.

| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |
|------|-----------------------|------------|-----|-------|-------|
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | |
| E | UPDATED TABLE | 09/15/2023 | UG | | |
| D | UPDATED TABLE & NOTES | 09/08/2023 | UG | | |

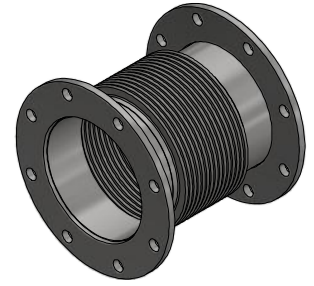
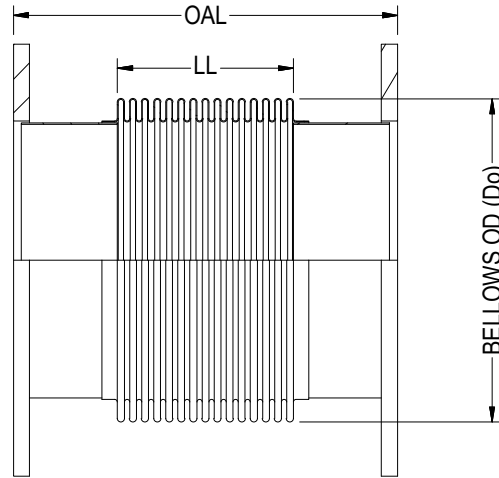


**Bellows
Systems**

BELLOWS SYSTEMS, INC.
Houston, TX
www.bellows-systems.com

SINGLE EXPANSION JOINT
TYPE SU-00 SPECIFICATION SHEET

TYPE SU-01



ISOMETRIC VIEW

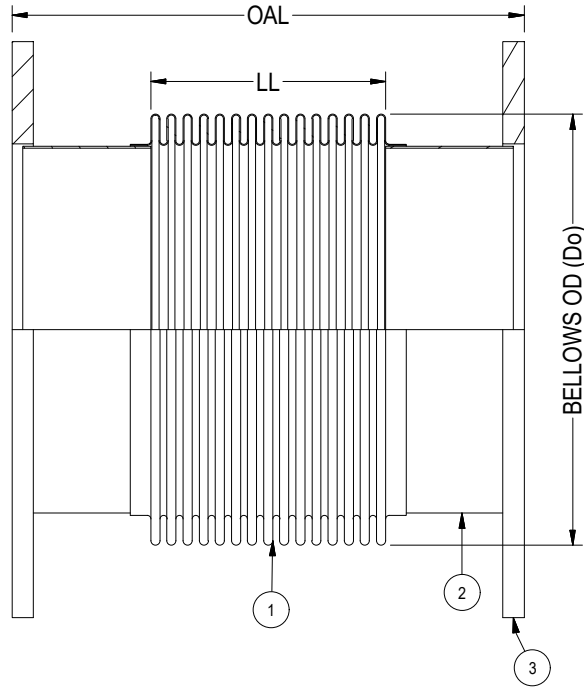
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-01 W/ 150# LW PLT FLG | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| D | UPDATED NOTES | 09/11/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 01/13/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0001 | SHEET#: 1 OF 2 REV. E |



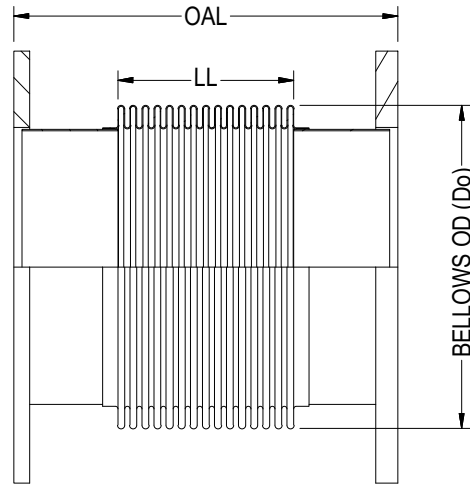
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FLOW LINER (SEE TYPE-21).
2. FIXED & FLOATING FLANGE (SEE TYPE-31).
3. CONTROL RODS (SEE TYPE-41).
4. EXTERNAL COVER.

| | | | | | | | | | |
|--|-------------|------------------------|--------------------|------------------|-----------------|---|------------------------------|----------------|--------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-01 SPECIFICATION SHEET | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | DRAWING NUMBER: 130-CAT-0001 | SHEET#: 2 OF 2 | REV. E |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 01/13/2023 | SCALE: AS SHOWN | | | | |

TYPE SU-02



ISOMETRIC VIEW

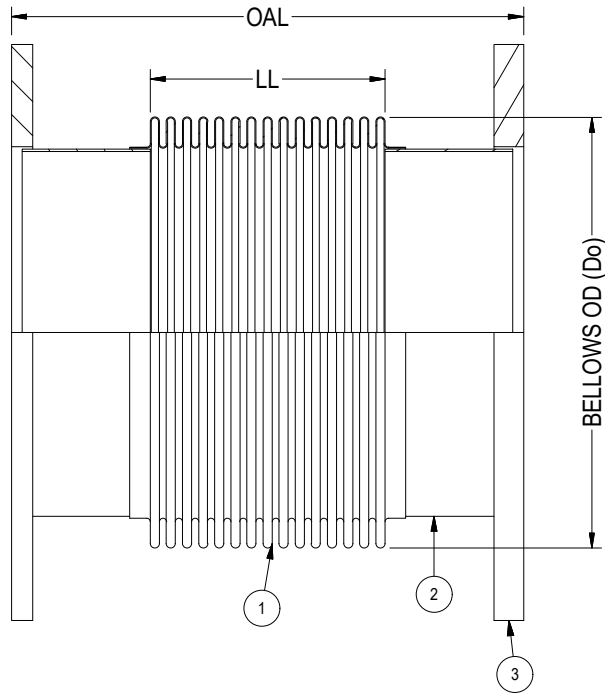
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# PLT.(ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|---|----------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-02 W/ 150# LW PLT & 150# PLT FLG | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| D | UPDATED NOTES | 09/11/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: 130-CAT-0002 | SHEET#: 1 OF 2 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | DRAWN BY: U GULATI | |
| | | | | DATE: 02/23/2023 | | SCALE: AS SHOWN | |
| | | | | | | REV. E | |



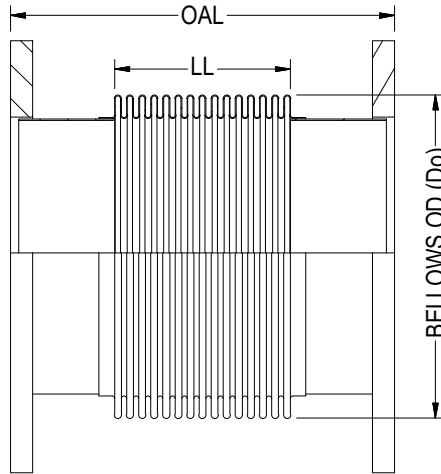
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FLOW LINER (SEE TYPE-22).
2. FIXED & FLOATING FLANGE (SEE TYPE-32).
3. CONTROL RODS (SEE TYPE-42).
4. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|--------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-02 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING BY: | |
| D | UPDATED NOTES | 09/11/2023 | UG | | | DATE: 02/23/2023 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0002 | SHEET#: 2 OF 2 |
| | | | | | | REV. E | |

TYPE SU-03



ISOMETRIC VIEW

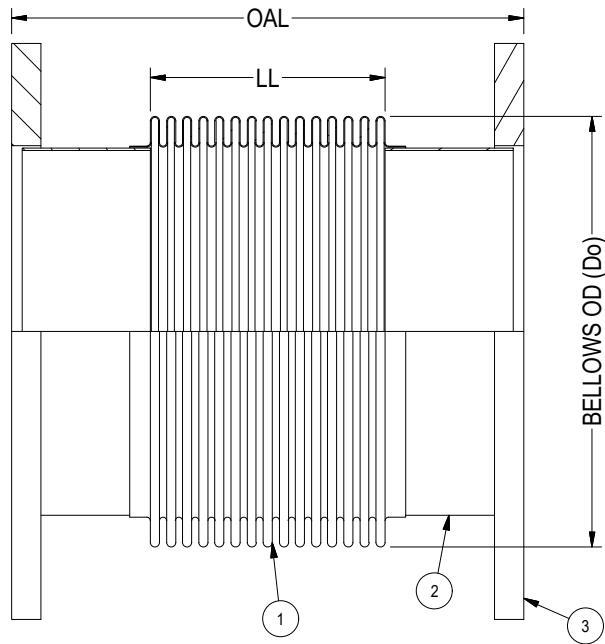
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT, AWWA C207, CLASS D (ANSI B16.5 BOLT PATTERN).
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|---|--------------|
| | | | |  Bellows Systems CAGE CODE: 22727 | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-03 W/ 150# PLT FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: | 130-CAT-0003 |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING NUMBER: | 130-CAT-0003 |
| D | UPDATED NOTES | 09/11/2023 | UG | | | SHEET#: | 1 OF 2 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | DRAWN BY: U GULATI | |
| | | | | DATE: 02/23/2023 | | SCALE: AS SHOWN | |
| | | | | | | REV. E | |



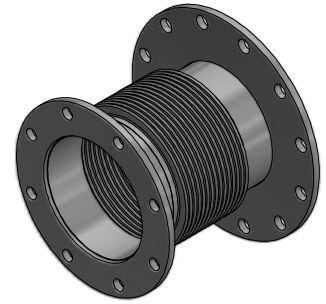
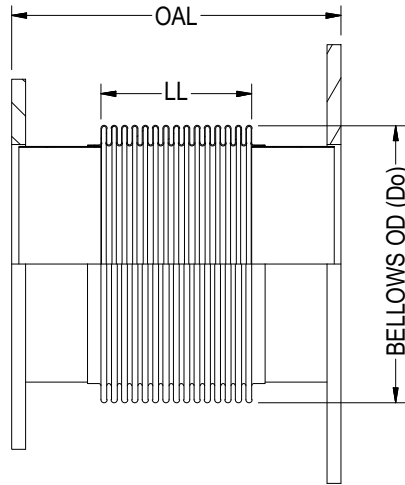
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATLS.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FLOW LINER (SEE TYPE-23).
2. FIXED & FLOATING FLANGE (SEE TYPE-33).
2. CONTROL RODS (SEE TYPE-43).
3. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|-----------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-03 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED PART NO. | 11/8/2023 | UG | | | DRAWING BY: | |
| D | UPDATED NOTES | 09/11/2023 | UG | | | DATE: | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI |
| | | | | | | SCALE: AS SHOWN | DATE: 02/23/2023 |
| | | | | | | DRAWING NUMBER: 130-CAT-0003 | SCALE: AS SHOWN |
| | | | | | | SHEET#: 2 OF 2 | REV. E |

TYPE SU-04



ISOMETRIC VIEW

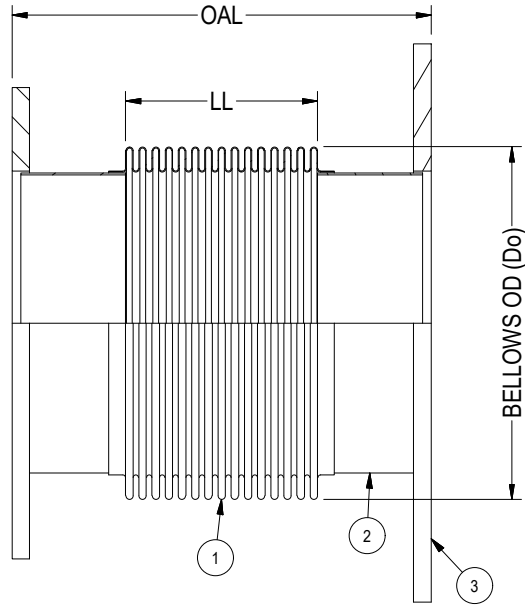
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# REDUCER-1/2" THK.(ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|------------|---|--------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-04 W/ 150# LW PLT & 150# RED FLG | |
| E | UPDATED PART NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | DRAWING NUMBER: | 130-CAT-0004 |
| D | UPDATED NOTES | 09/11/2023 | UG | DRAWN BY: | U GULATI | SCALE: | AS SHOWN |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: | 130-CAT-0004 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: | 8.5" x 11" | DATE: | 02/23/2023 |
| | | | | DRAWN BY: | U GULATI | SCALE: | AS SHOWN |
| | | | | DATE: | 02/23/2023 | DRAWING NUMBER: | 130-CAT-0004 |
| | | | | SHEET #: | 1 OF 2 | REV.: | E |



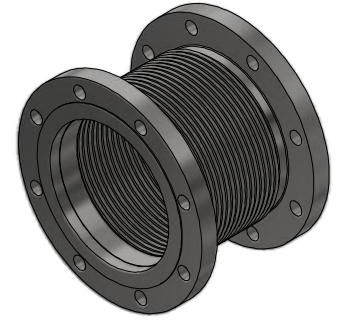
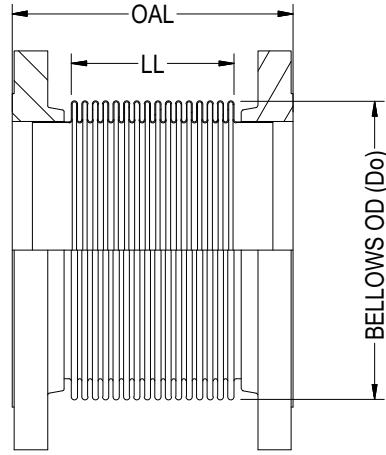
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | REDUCER SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FLOW LINER (SEE TYPE-24).
2. FIXED & FLOATING FLANGE (SEE TYPE-34).
3. CONTROL RODS (SEE TYPE-44).
4. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|--------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-04 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED PART NO. | 11/8/2023 | UG | | | DRAWING BY: U GULATI | |
| D | UPDATED NOTES | 09/11/2023 | UG | | | DATE: 02/23/2023 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0004 | SHEET#: 2 OF 2 |
| | | | | | | REV. E | |

TYPE SU-05



ISOMETRIC VIEW

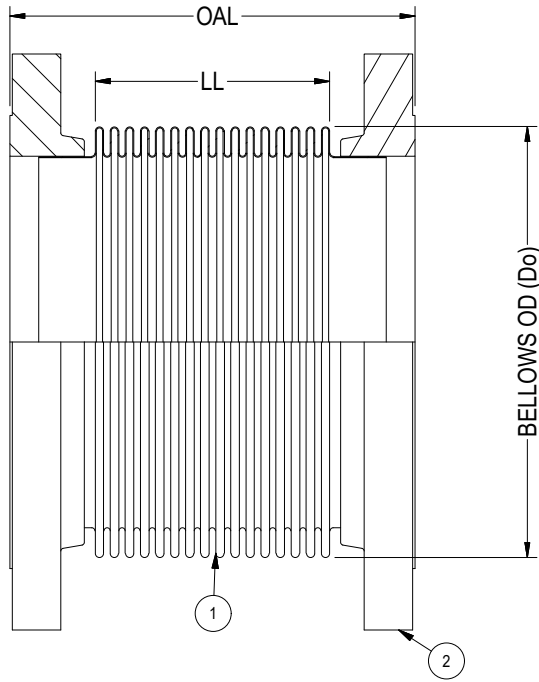
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 2.00 | 2.30 | 4.00 |
| 1 | 2.30 | 4.17 | 6.00 |
| 1 | 2.70 | 5.97 | 8.00 |
| 1.25 | 2.80 | 3.83 | 6.00 |
| 1.25 | 3.00 | 5.75 | 8.00 |
| 1.5 | 3.00 | 3.72 | 6.00 |
| 1.5 | 3.20 | 5.63 | 8.00 |
| 2 | 3.50 | 3.52 | 6.00 |
| 2 | 3.62 | 5.42 | 8.00 |
| 2.5 | 3.70 | 3.52 | 6.00 |
| 2.5 | 3.90 | 5.27 | 8.00 |
| 3 | 4.30 | 3.37 | 6.00 |
| 3 | 4.55 | 5.17 | 8.00 |
| 3.5 | 4.90 | 3.16 | 6.00 |
| 3.5 | 5.10 | 4.15 | 7.00 |
| 4 | 5.60 | 2.97 | 6.00 |
| 4 | 6.40 | 8.62 | 12.00 |
| 4 | 7.30 | 20.08 | 24.00 |
| 5 | 6.60 | 2.82 | 6.00 |
| 5 | 7.30 | 8.39 | 12.00 |
| 5 | 7.80 | 20.10 | 24.00 |
| 6 | 7.60 | 2.65 | 6.00 |
| 6 | 7.90 | 8.34 | 12.00 |
| 6 | 8.80 | 19.88 | 24.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 2.27 | 6.00 |
| 8 | 10.40 | 7.92 | 12.00 |
| 8 | 11.00 | 19.41 | 24.00 |
| 10 | 12.40 | 7.69 | 12.00 |
| 10 | 13.00 | 19.16 | 24.00 |
| 12 | 14.80 | 7.03 | 12.00 |
| 12 | 15.00 | 18.69 | 24.00 |
| 14 | 16.30 | 6.79 | 12.00 |
| 14 | 16.70 | 18.34 | 24.00 |
| 16 | 18.30 | 2.54 | 8.00 |
| 16 | 18.40 | 6.92 | 12.50 |
| 16 | 18.50 | 18.11 | 24.00 |
| 18 | 19.70 | 2.43 | 8.00 |
| 18 | 20.45 | 11.96 | 18.00 |
| 18 | 20.90 | 17.75 | 24.00 |
| 20 | 21.70 | 2.05 | 8.00 |
| 20 | 22.20 | 11.78 | 18.00 |
| 20 | 22.70 | 17.54 | 24.00 |
| 22 | 24.20 | 5.46 | 12.00 |
| 22 | 24.50 | 11.25 | 18.00 |
| 22 | 24.70 | 17.06 | 24.00 |
| 24 | 26.10 | 5.27 | 12.00 |
| 24 | 26.60 | 11.03 | 18.00 |
| 24 | 26.80 | 16.83 | 24.00 |

NOTES:

1. FLANGES ARE OF 150# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY (STD), 2 PLY OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-05 W/ 150# RFSO FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED PART NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/11/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 02/23/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0005 | SHEET#: 1 OF 2 REV. E |



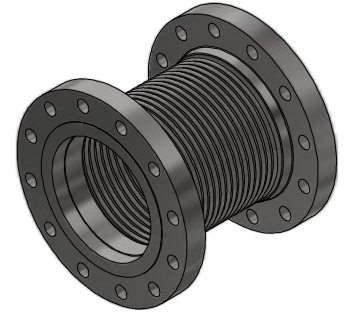
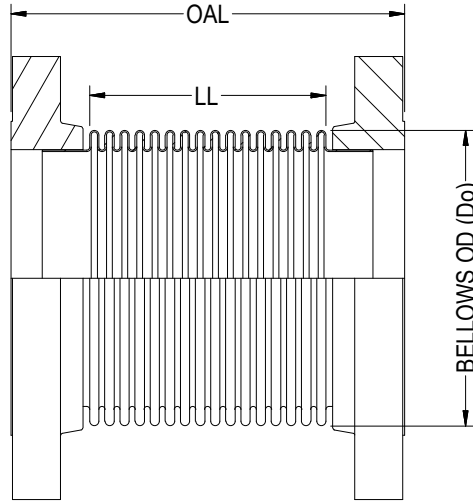
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV 1/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED & FLOATING FLANGE (SEE TYPE-15)
2. FLOW LINER (SEE TYPE-25).
3. CONTROL RODS (SEE TYPE-45).
4. EXTERNAL COVER.

| | | | | | | | | | | | | |
|---|------------------|------------|-----|-------|-------|---|-------------|------------|----------|-----------------|---------|------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | | | | | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-05 SPECIFICATION SHEET | | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | DRAWING BY: | DATE: | SCALE: | DRAWING NUMBER: | SHEET#: | REV. |
| E | UPDATED PART NO. | 11/8/2023 | UG | | | | U GULATI | 02/23/2023 | AS SHOWN | 130-CAT-0005 | 2 OF 2 | E |
| D | UPDATED NOTES | 09/11/2023 | UG | | | | | | | | | |
| <small>THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI).</small> | | | | | | SHEET SIZE: 8.5" x 11" | | | | | | |

TYPE SU-06



ISOMETRIC VIEW

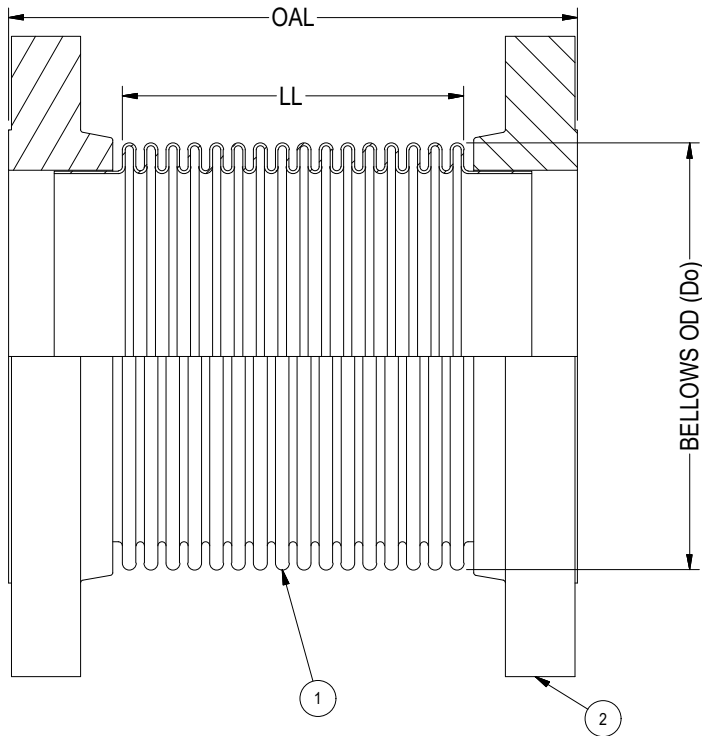
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.63 | 3.75 | 6.00 |
| 1 | 1.60 | 5.76 | 8.00 |
| 1.25 | 2.05 | 3.73 | 6.00 |
| 1.25 | 2.00 | 5.73 | 8.00 |
| 1.5 | 2.30 | 3.46 | 6.00 |
| 1.5 | 2.30 | 5.43 | 8.00 |
| 2 | 2.95 | 3.19 | 6.00 |
| 2 | 2.89 | 5.23 | 8.00 |
| 2.5 | 3.50 | 2.84 | 6.00 |
| 2.5 | 3.50 | 4.84 | 8.00 |
| 3 | 4.13 | 4.43 | 6.00 |
| 3 | 4.30 | 2.49 | 8.00 |
| 3.5 | 4.90 | 2.29 | 6.00 |
| 3.5 | 4.88 | 4.25 | 8.00 |
| 4 | 5.50 | 2.02 | 6.00 |
| 4 | 5.50 | 8.04 | 12.00 |
| 4 | 5.50 | 19.94 | 24.00 |
| 5 | 6.50 | 7.80 | 12.00 |
| 5 | 6.50 | 19.74 | 24.00 |
| 6 | 7.60 | 7.67 | 12.00 |
| 6 | 7.60 | 19.62 | 24.00 |
| 8 | 10.00 | 2.66 | 8.00 |
| 8 | 10.00 | 6.94 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 18.66 | 24.00 |
| 10 | 11.90 | 2.45 | 8.00 |
| 10 | 12.00 | 6.57 | 12.00 |
| 10 | 12.00 | 18.45 | 24.00 |
| 12 | 13.90 | 2.02 | 8.00 |
| 12 | 13.90 | 6.10 | 12.00 |
| 12 | 14.25 | 17.89 | 24.00 |
| 14 | 15.50 | 5.78 | 12.00 |
| 14 | 15.50 | 17.67 | 24.00 |
| 16 | 17.50 | 11.19 | 18.00 |
| 16 | 17.50 | 17.23 | 24.00 |
| 18 | 19.50 | 4.77 | 12.00 |
| 18 | 19.25 | 10.80 | 18.00 |
| 18 | 19.50 | 16.77 | 24.00 |
| 20 | 21.50 | 4.35 | 12.00 |
| 20 | 21.65 | 10.28 | 18.00 |
| 20 | 21.65 | 16.28 | 24.00 |
| 22 | 23.80 | 3.96 | 12.00 |
| 22 | 23.70 | 9.42 | 18.00 |
| 22 | 23.70 | 14.94 | 24.00 |
| 24 | 25.90 | 3.45 | 12.00 |
| 24 | 25.60 | 9.32 | 18.00 |
| 24 | 25.65 | 15.33 | 24.00 |

NOTES:

1. FLANGES ARE OF 300# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|---------------------------|-----------------------|--|--------------------|--|-------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-06 W/ 300# RFSO FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED PART NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/11/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/13/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0006 | SHEET#: 1 OF 2 |
| | | | | | | | REV. E |



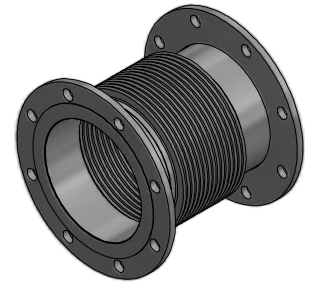
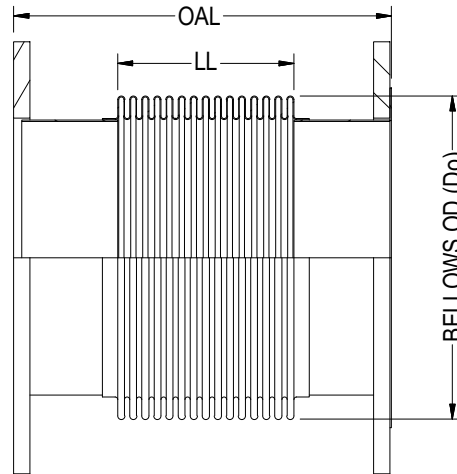
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MATLS.: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED & FLOATING FLANGE (SEE TYPE-16)
2. FLOW LINER (SEE TYPE-26).
3. CONTROL RODS (SEE TYPE-46).
4. EXTERNAL COVER.

| | | | | | | | | | |
|--|-------------|------------------------|--------------------|------------------|-----------------|---|------------------------------|----------------|--------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-06 SPECIFICATION SHEET | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | DRAWING NUMBER: 130-CAT-0006 | SHEET#: 2 OF 2 | REV. E |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/13/2023 | SCALE: AS SHOWN | | | | |

TYPE SU-11



ISOMETRIC VIEW

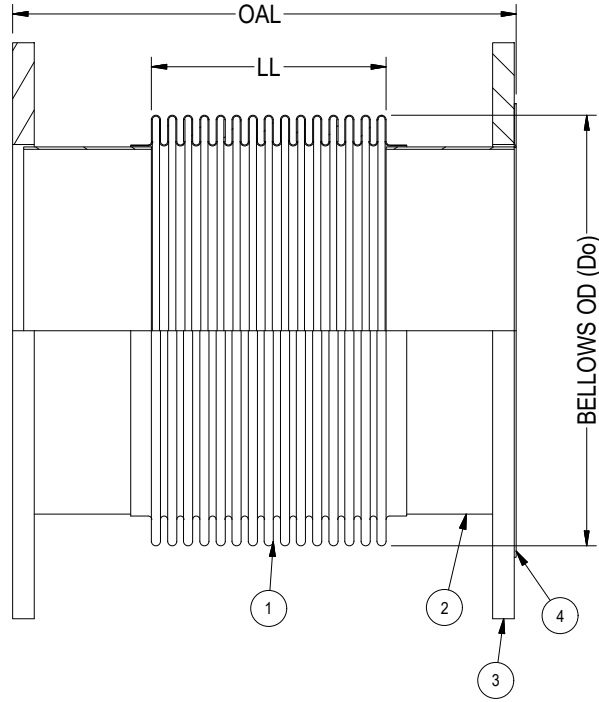
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# PLT-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-11 W/ 150# LW PLT & 150# LW FIXED & FLOATING FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/01/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0011 | SHEET#: 1 OF 2 REV. E |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATLS.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED FLANGE (SEE TYPE-01).
2. FLOW LINER (SEE TYPE-21).
3. CONTROL RODS (SEE TYPE-41).
4. EXTERNAL COVER.

| | | | | | |
|------|------------------|------------|-----|-------|-------|
| | | | | | |
| | | | | | |
| E | UPDATED PART NO. | 11/8/2023 | UG | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |



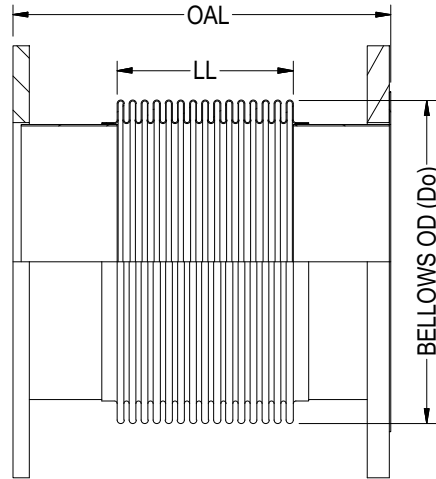
Bellows Systems

CAGE CODE: 22727

BELLOWS SYSTEMS, INC.
Houston, TX
www.bellows-systems.com

SINGLE EXPANSION JOINT
TYPE SU-11 SPECIFICATION SHEET

TYPE SU-12



ISOMETRIC VIEW

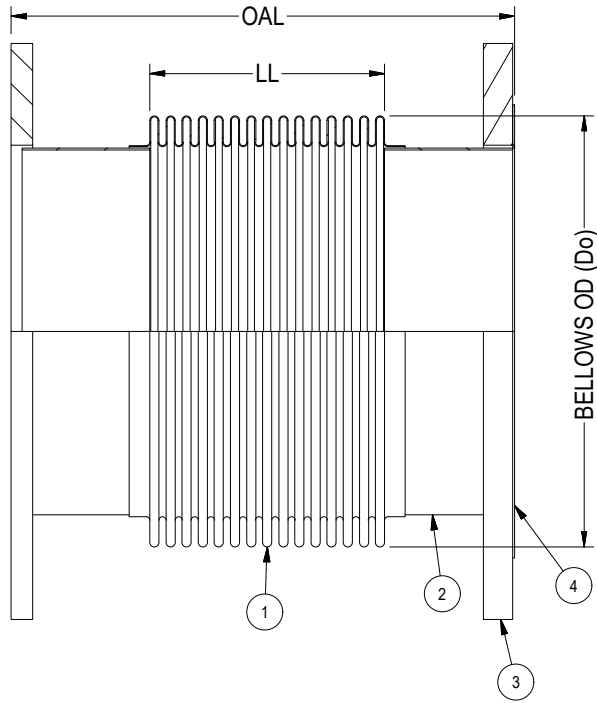
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-12 W/ 150# LW PLT & 150# PLT FIXED & FLOATING FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/01/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0012 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED FLANGE (SEE TYPE-02).
2. FLOW LINER (SEE TYPE-22).
3. CONTROL RODS (SEE TYPE-42).
4. EXTERNAL COVER.

| | | | | | |
|------|------------------|------------|-----|-------|-------|
| | | | | | |
| | | | | | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |



**Bellows
Systems**

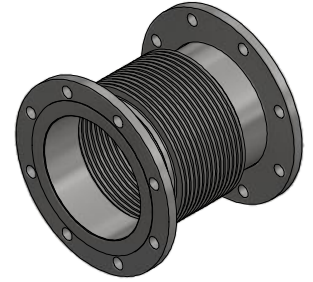
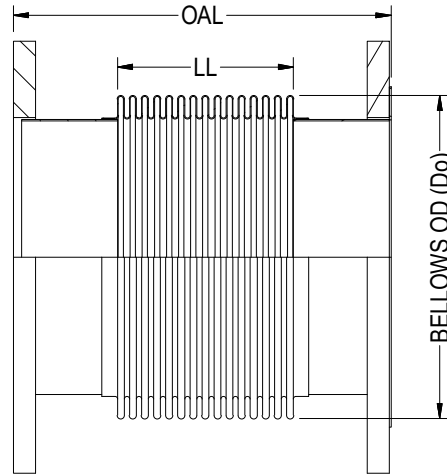
BELLOWS SYSTEMS, INC.
Houston, TX
www.bellows-systems.com

SINGLE EXPANSION JOINT
TYPE SU-12 SPECIFICATION SHEET

CAGE CODE: 22727

| | | | | | | | |
|--|---------------------------|-----------------------|---------------------|--------------------|---------------------------------|-------------------|-----------|
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|--|---------------------------|-----------------------|---------------------|--------------------|---------------------------------|-------------------|-----------|

TYPE SU-13



ISOMETRIC VIEW

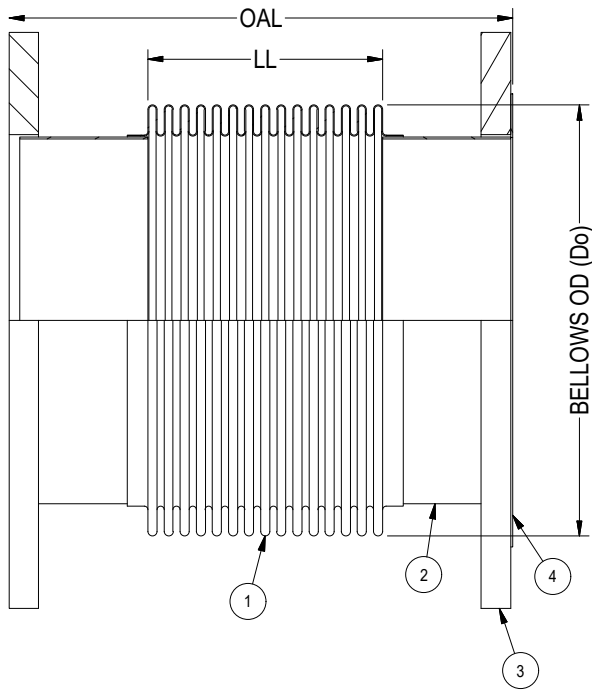
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-13 W/ 150# PLT FIXED & FLOATING FLG | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/01/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0013 | SHEET#: 1 OF 2 REV. E |



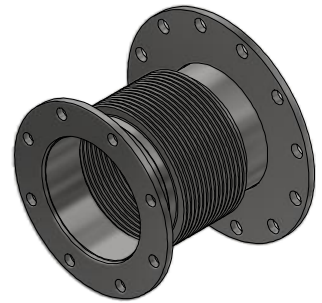
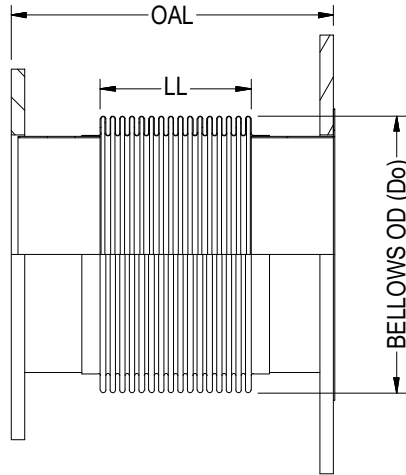
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED FLANGE (SEE TYPE-03).
2. FLOW LINER (SEE TYPE-23).
3. CONTROL RODS (SEE TYPE-43).
4. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|--------------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-13 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING BY: U GULATI | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | DATE: 03/01/2023 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0013 | SHEET#: 2 OF 2 REV. E |

TYPE SU-14



ISOMETRIC VIEW

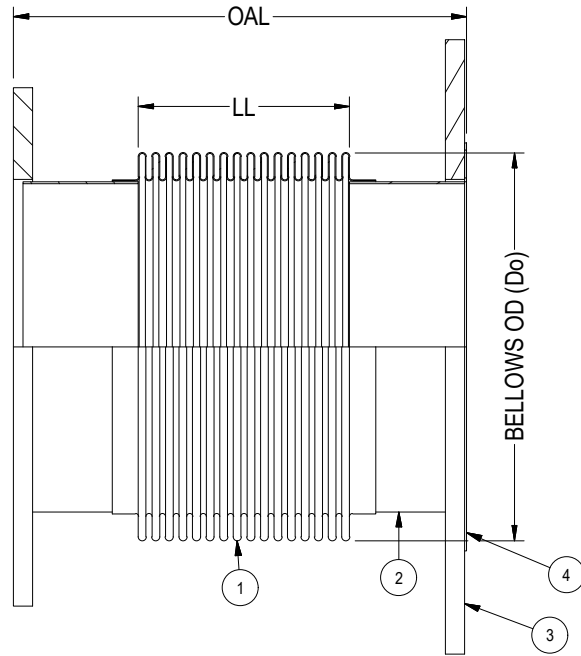
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT-1/2" THK & 150# RED -1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-14 W/ 150# LW PLT & 150# RED FIXED & FLOATING FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/01/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0014 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



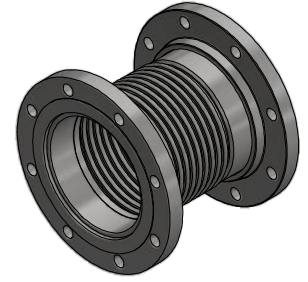
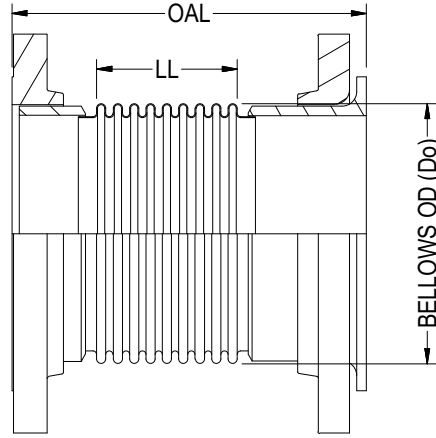
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | REDUCER SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED FLANGE (SEE TYPE-04).
2. FLOW LINER (SEE TYPE-24).
3. CONTROL RODS (SEE TYPE-44).
4. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|--------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-14 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING BY: U GULATI | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | DATE: 03/01/2023 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 13-CAT-0014 | SHEET#: 2 OF 2 |
| | | | | | | REV. E | |

TYPE SU-15



ISOMETRIC VIEW

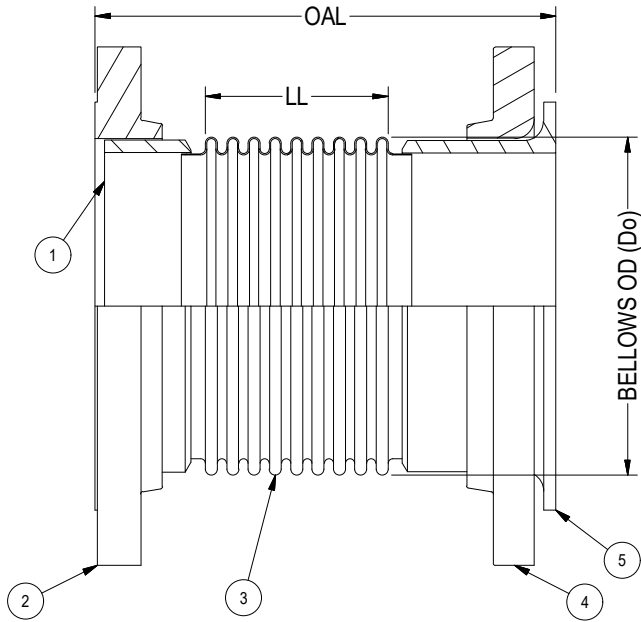
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.60 | 1.86 | 6.00 |
| 1.25 | 1.80 | 1.80 | 6.00 |
| 2 | 2.40 | 7.04 | 12.00 |
| 2 | 2.40 | 11.06 | 16.00 |
| 2 | 2.45 | 15.03 | 20.00 |
| 2.5 | 3.00 | 1.95 | 7.00 |
| 2.5 | 3.00 | 6.89 | 12.00 |
| 2.5 | 3.00 | 10.88 | 16.00 |
| 2.5 | 3.00 | 14.88 | 20.00 |
| 3 | 3.80 | 1.84 | 7.00 |
| 3 | 3.80 | 6.80 | 12.00 |
| 3 | 3.80 | 10.79 | 16.00 |
| 3 | 3.50 | 14.87 | 20.00 |
| 3.5 | 4.30 | 1.35 | 7.00 |
| 3.5 | 4.30 | 6.26 | 12.00 |
| 3.5 | 4.30 | 10.25 | 16.00 |
| 3.5 | 4.20 | 14.21 | 20.00 |
| 4 | 4.50 | 1.29 | 7.00 |
| 4 | 4.70 | 6.25 | 12.00 |
| 4 | 4.70 | 10.14 | 16.00 |
| 4 | 4.70 | 14.17 | 20.00 |
| 5 | 5.70 | 1.18 | 7.00 |
| 5 | 6.00 | 6.08 | 12.00 |
| 5 | 5.90 | 10.04 | 16.00 |
| 5 | 6.00 | 13.98 | 20.00 |
| 6 | 6.90 | 5.44 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 6 | 6.90 | 9.42 | 16.00 |
| 6 | 6.80 | 13.38 | 20.00 |
| 8 | 8.80 | 4.75 | 12.00 |
| 8 | 8.80 | 8.74 | 16.00 |
| 8 | 8.80 | 12.74 | 20.00 |
| 10 | 10.90 | 3.62 | 12.00 |
| 10 | 10.90 | 7.57 | 16.00 |
| 10 | 10.90 | 11.53 | 20.00 |
| 12 | 12.80 | 2.43 | 12.00 |
| 12 | 12.80 | 6.37 | 16.00 |
| 12 | 12.80 | 10.33 | 20.00 |
| 14 | 14.30 | 2.38 | 12.00 |
| 14 | 14.30 | 6.27 | 16.00 |
| 14 | 14.30 | 10.26 | 20.00 |
| 16 | 16.20 | 2.06 | 12.00 |
| 16 | 16.20 | 6.06 | 16.00 |
| 16 | 16.20 | 10.03 | 20.00 |
| 18 | 18.20 | 1.89 | 12.00 |
| 18 | 18.20 | 5.79 | 16.00 |
| 18 | 18.20 | 9.84 | 20.00 |
| 20 | 20.30 | 1.72 | 12.00 |
| 20 | 20.30 | 5.70 | 16.00 |
| 20 | 20.30 | 9.66 | 20.00 |
| 24 | 24.30 | 1.35 | 12.00 |
| 24 | 24.30 | 5.36 | 16.00 |
| 24 | 24.30 | 9.34 | 20.00 |

NOTES:

1. FLANGES ARE OF 150# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. PIPE WELD END WALL THICKNESS IS BASED ON STD./SCH. ALTERNATIVE SIZES AVAILABLE ON REQUEST.
4. PIPE END MATERIAL: ASTM A106 B. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
5. LAP JOINT STUB END MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
6. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
7. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
8. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
9. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
10. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|---|----------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-15 W/ 150# RFSO FIXED & FLOATING FLG | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | DRAWING NUMBER: 130-CAT-0015 | SHEET#: 1 OF 2 |
| E | UPDATED NOTES | 09/12/2023 | UG | U GULATI | | DATE: 03/01/2023 | REV. F |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | SCALE: AS SHOWN | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | | |



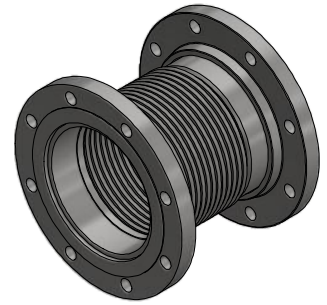
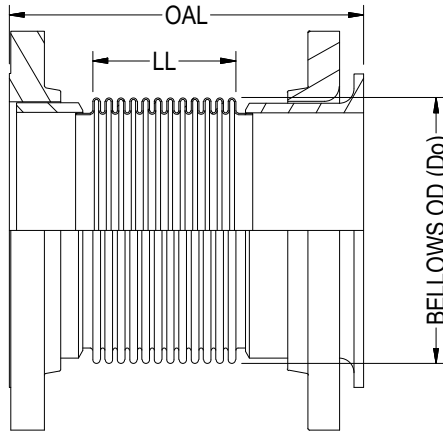
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S: | ① PIPE END: | | | | |
| | ② FLANGE: | | | | |
| | ③ BELLOWS: | | | | |
| | ④ LAP JOINT FLANGE: | | | | |
| | ⑤ STUB END: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED FLANGE (SEE TYPE-05).
2. FLOW LINER (SEE TYPE-25).
3. CONTROL RODS (SEE TYPE-45).
4. EXTERNAL COVER.

| | | | | | | | | |
|--|------------------|---------------------------|-----------------------|---------------------|--------------------|---|-------------------|-----------|
|  | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | |
| CAGE CODE: 22727 | | | | | | SINGLE EXPANSION JOINT TYPE SU-15 SPECIFICATION SHEET | | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/01/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0015 | SHEET#: 2 OF 2 | REV. F |

TYPE SU-16



ISOMETRIC VIEW

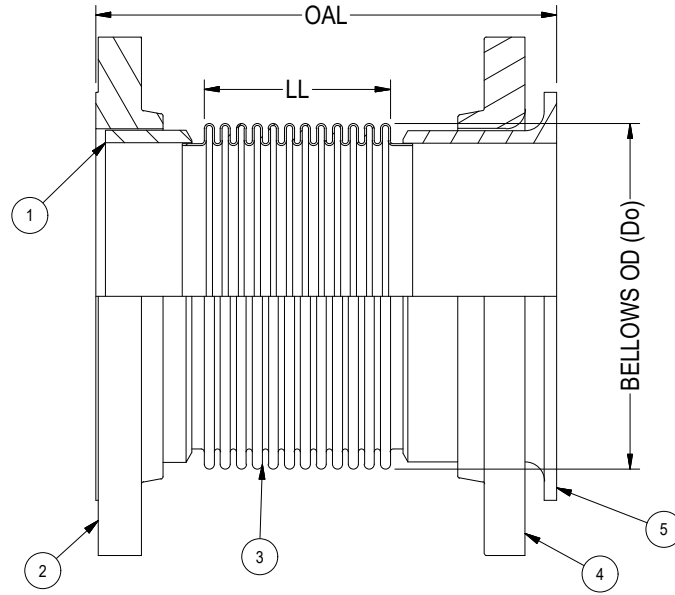
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.50 | 1.83 | 6.00 |
| 1.25 | 1.80 | 1.80 | 6.00 |
| 2 | 2.50 | 7.05 | 12.00 |
| 2 | 2.47 | 11.08 | 16.00 |
| 2 | 2.40 | 15.11 | 20.00 |
| 2.5 | 3.00 | 1.88 | 7.00 |
| 2.5 | 3.00 | 6.92 | 12.00 |
| 2.5 | 3.00 | 10.89 | 16.00 |
| 2.5 | 3.00 | 14.90 | 20.00 |
| 3 | 3.80 | 1.75 | 7.00 |
| 3 | 3.75 | 6.85 | 12.00 |
| 3 | 3.75 | 10.76 | 16.00 |
| 3 | 3.75 | 14.78 | 20.00 |
| 3.5 | 4.40 | 1.29 | 7.00 |
| 3.5 | 4.40 | 6.23 | 12.00 |
| 3.5 | 4.40 | 10.17 | 16.00 |
| 3.5 | 4.40 | 14.13 | 20.00 |
| 4 | 4.95 | 1.24 | 7.00 |
| 4 | 4.95 | 6.19 | 12.00 |
| 4 | 4.95 | 10.12 | 16.00 |
| 4 | 4.80 | 14.17 | 20.00 |
| 5 | 5.80 | 1.13 | 7.00 |
| 5 | 5.80 | 6.12 | 12.00 |
| 5 | 5.80 | 10.07 | 16.00 |
| 5 | 5.80 | 14.04 | 20.00 |
| 6 | 7.00 | 5.44 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 6 | 7.00 | 9.48 | 16.00 |
| 6 | 7.00 | 13.34 | 20.00 |
| 8 | 9.00 | 4.84 | 12.00 |
| 8 | 9.00 | 8.78 | 16.00 |
| 8 | 9.00 | 12.73 | 20.00 |
| 10 | 11.00 | 3.65 | 12.00 |
| 10 | 11.00 | 7.63 | 16.00 |
| 10 | 11.00 | 11.57 | 20.00 |
| 12 | 13.00 | 2.36 | 12.00 |
| 12 | 13.00 | 6.34 | 16.00 |
| 12 | 13.00 | 10.33 | 20.00 |
| 14 | 14.13 | 2.26 | 12.00 |
| 14 | 14.13 | 6.28 | 16.00 |
| 14 | 14.13 | 10.28 | 20.00 |
| 16 | 16.50 | 1.95 | 12.00 |
| 16 | 16.50 | 6.01 | 16.00 |
| 16 | 16.50 | 10.04 | 20.00 |
| 18 | 18.50 | 1.79 | 12.00 |
| 18 | 18.50 | 5.84 | 16.00 |
| 18 | 18.50 | 9.86 | 20.00 |
| 20 | 20.50 | 1.63 | 12.00 |
| 20 | 20.50 | 5.65 | 16.00 |
| 20 | 20.50 | 9.67 | 20.00 |
| 24 | 24.50 | 1.33 | 12.00 |
| 24 | 24.60 | 5.30 | 16.00 |
| 24 | 24.80 | 9.31 | 20.00 |

NOTES:

1. FLANGES ARE OF 300# RF50. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. PIPE WELD END WALL THICKNESS IS BASED ON STD./SCH. ALTERNATIVE SIZES AVAILABLE ON REQUEST.
4. PIPE END MATERIAL: ASTM A106 B. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
5. LAP JOINT STUB END MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
6. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
7. BELLOW MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
8. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
9. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
10. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-16 W/ 300# RF50, FIXED & FLOATING FLG | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: | 130-CAT-0016 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/13/2023 | SCALE: AS SHOWN |
| | | | | | | SHEET#: 1 OF 2 | REV. F |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S.: | ① PIPE END: | | | | |
| | ② FLANGE: | | | | |
| | ③ BELLOWS: | | | | |
| | ④ LAP JOINT FLANGE: | | | | |
| | ⑤ STUB END: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FIXED FLANGE (SEE TYPE-06).
2. FLOW LINER (SEE TYPE-26).
3. CONTROL RODS (SEE TYPE-46).
4. EXTERNAL COVER.

| | | | | | |
|------|------------------|------------|-----|-------|-------|
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | |



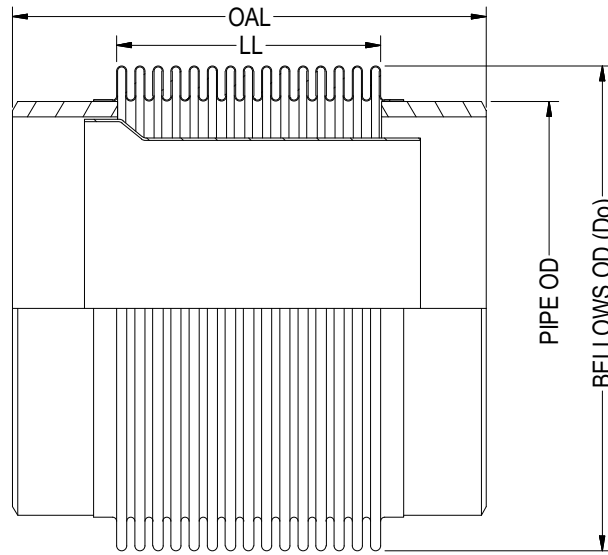
Bellows Systems

CAGE CODE: 22727

BELLOWS SYSTEMS, INC.
Houston, TX
www.bellows-systems.com

SINGLE EXPANSION JOINT
TYPE SU-16 SPECIFICATION SHEET

TYPE SU-20



ISOMETRIC VIEW

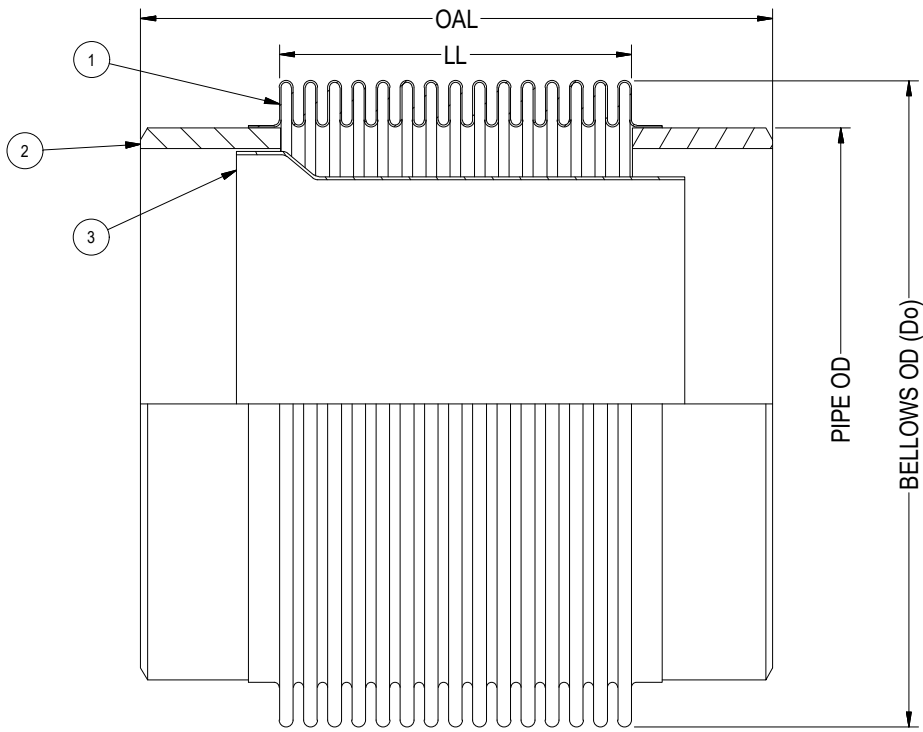
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 0.75 | 1.27 | 1.33 | 6.00 |
| 1 | 1.75 | 2.00 | 8.00 |
| 1-1/2 | 2.50 | 2.00 | 8.00 |
| 2 | 3.10 | 2.00 | 8.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 8.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 8.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 8.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 15.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 9.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 10.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 14.00 |
| 12 | 14.30 | 13.50 | 20.00 |
| 14 | 16.30 | 1.25 | 7.00 |
| 14 | 16.00 | 4.50 | 10.00 |
| 14 | 15.75 | 13.00 | 19.00 |
| 16 | 17.75 | 8.00 | 14.00 |
| 16 | 17.75 | 13.50 | 20.00 |
| 18 | 20.20 | 4.00 | 10.00 |
| 18 | 20.20 | 10.00 | 16.00 |
| 18 | 20.20 | 13.00 | 19.00 |
| 20 | 22.00 | 4.00 | 10.00 |
| 20 | 22.25 | 4.50 | 10.00 |
| 20 | 21.91 | 9.00 | 15.00 |
| 20 | 21.75 | 13.50 | 20.00 |
| 24 | 25.90 | 4.50 | 10.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 19.00 |
| 24 | 25.75 | 20.00 | 26.00 |

NOTES:

1. PIPE WELD END WALL THICKNESS IS BASED ON STD./SCH, ALTERNATIVE SIZES AVAILABLE ON REQUEST.
2. OAL IS BASED ON STD. 3" PIPE WELD NECK LENGTH. FOR OTHER OPTIONAL LENGTHS PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
3. PIPE END MATERIAL: ASTM A106 B. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
4. BELLOW MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEELS, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATION PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|-----------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-20 W/ PIPE ENDS & LINER | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED TABLE | 09/15/2023 | UG | | | | |
| D | UPDATED TABLE & NOTES | 09/11/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 01/13/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0020 | SHEET#: 1 OF 2 REV. F |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL S.: | ① BELLOWS: | | | | |
| | ② PIPE ENDS: | | | | |
| | ③ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

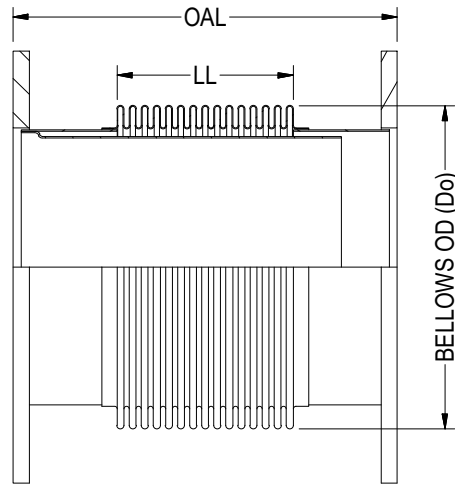
OPTIONAL FEATURES:

- WITHOUT FLOW LINER (SEE TYPE-00).
- EXTERNAL COVER.

| | | | | | | | |
|--|-----------------------|------------|-----|-------|-------|---|------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| CAGE CODE: 22727 | | | | | | SINGLE EXPANSION JOINT TYPE SU-20 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: | 130-CAT-0020 |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED TABLE | 09/15/2023 | UG | | | | |
| D | UPDATED TABLE & NOTES | 09/11/2023 | UG | | | | |
| SHEET SIZE: 8.5" x 11" | | | | | | DRAWN BY: U GULATI | DATE: 01/13/2023 |
| SCALE: AS SHOWN | | | | | | SHEET#: 2 OF 2 | REV. F |

THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI).

TYPE SU-21



ISOMETRIC VIEW

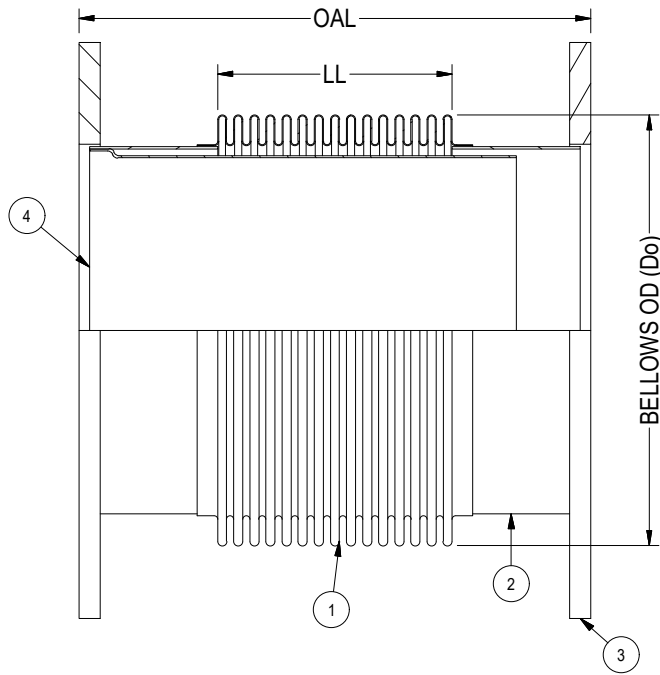
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|--|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-21 W/ LINER & 150# LW PLT FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/01/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0021 | SHEET#: 1 OF 2 REV. E |



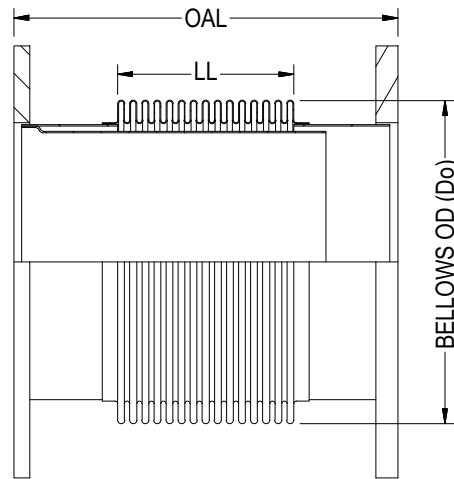
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ①. BELLOWS: | | | | |
| | ②. WELD NECK: | | | | |
| | ③. FLANGE: | | | | |
| | ④. LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-01).
2. FIXED & FLOATING FLANGE (SEE TYPE-31).
3. CONTROL RODS (SEE TYPE-41).
4. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|-----------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-21 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING NUMBER: 130-CAT-0021 | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | SCALE: AS SHOWN | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI |
| | | | | | | DATE: 03/01/2023 | REV. #: 2 OF 2 |
| | | | | | | REV. #: E | |

TYPE-22



ISOMETRIC VIEW

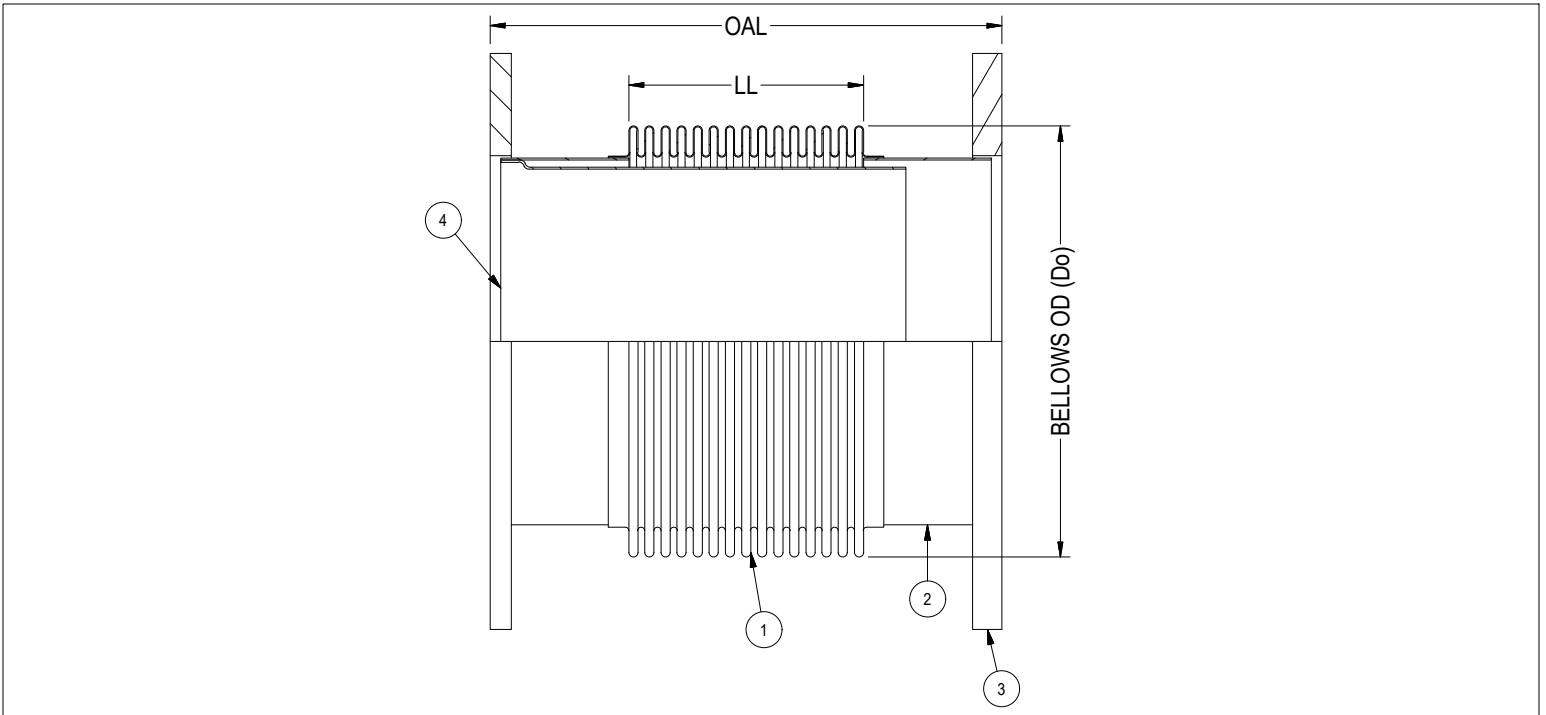
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|---------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE-22 W/ LINER, 150# LW PLT & 150# PLT FLG | |
| D | UPDATED NOTES | 09/12/2023 | UG | CAGE CODE: 22727 | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/01/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0022 | SHEET#: 1 OF 2 |
| | | | | | | REV. D | |



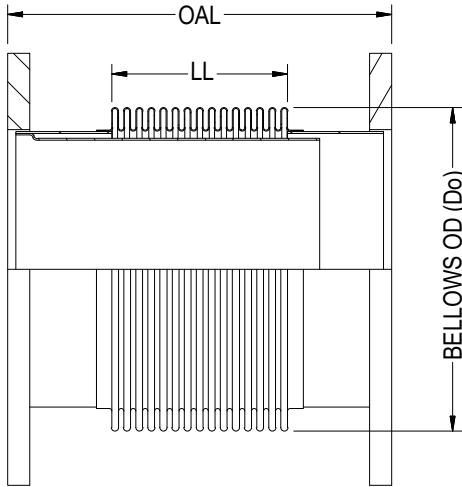
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MATL'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

- WITHOUT FLOW LINER (SEE TYPE-02).
- FIXED & FLOATING FLANGE (SEE TYPE-32).
- CONTROL RODS (SEE TYPE-42).
- EXTERNAL COVER.

| | | | | | | | |
|--|---------------|------------|-----|---------------------------|---------------------|---|-------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE-22 SPECIFICATION SHEET | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | CAGE CODE: 22727 | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWN BY: | SCALE: |
| | | | | | | U GULATI | AS SHOWN |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DATE: 03/01/2023 | DRAWING NUMBER: 130-CAT-0022 | SHEET#: 2 OF 2 |
| | | | | | | REV.: | D |

TYPE SU-23



ISOMETRIC VIEW

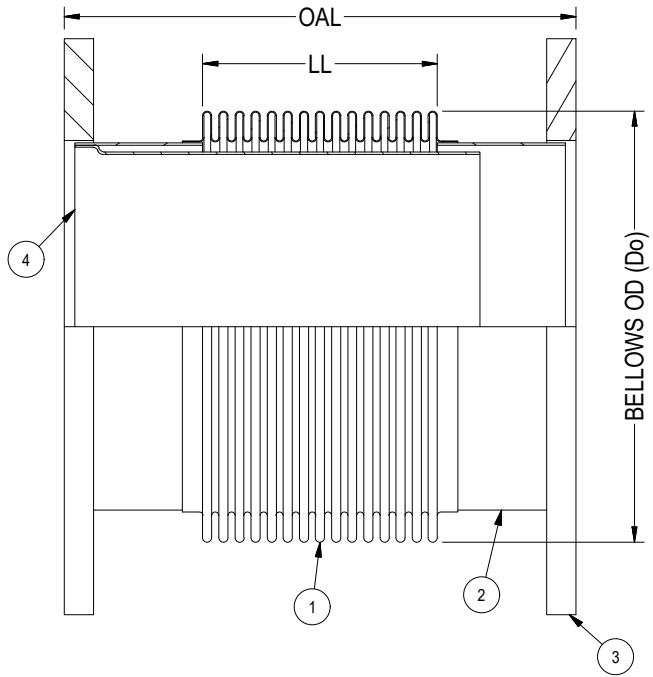
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-23 W/ LINER & 150# PLT FLG | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0023 | SHEET#: 1 OF 2 REV. E |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

- WITHOUT FLOW LINER (SEE TYPE-03).
- CONTROL RODS (SEE TYPE-43).
- EXTERNAL COVER.

| | | | | | |
|------|------------------|------------|-----|-------|-------|
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | |

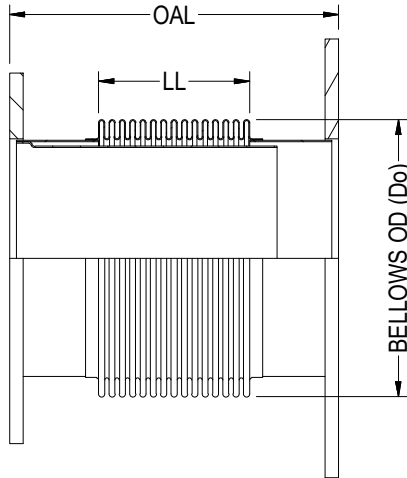


**Bellows
Systems**

BELLOWS SYSTEMS, INC.
Houston, TX
www.bellows-systems.com

SINGLE EXPANSION JOINT
TYPE SU-23 SPECIFICATION SHEET

TYPE SU-24



ISOMETRIC VIEW

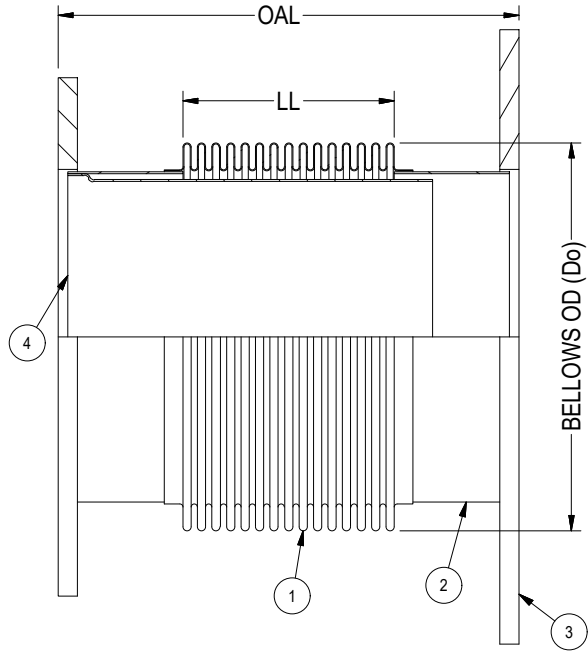
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# RED-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|--|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-24 W/ LINER, 150# LW PLT & 150# RED FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0024 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



| | | 1 | 2 | 3 | 4 |
|------------------------------|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | REDUCER SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LINER: | | | | |

DESIGN CODES/STANDARDS:

(EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3)

APPLICATION NOTES:

QUANTITY:

OPTIONAL FEATURES:

- WITHOUT FLOW LINER (SEE TYPE-04).
- CONTROL RODS (SEE TYPE-44).
- EXTERNAL COVER.

| | | | | | |
|------|------------------|------------|-----|-------|-------|
| | | | | | |
| | | | | | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |



Bellows Systems

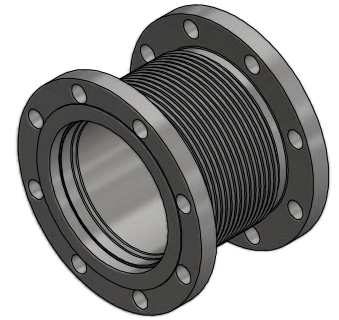
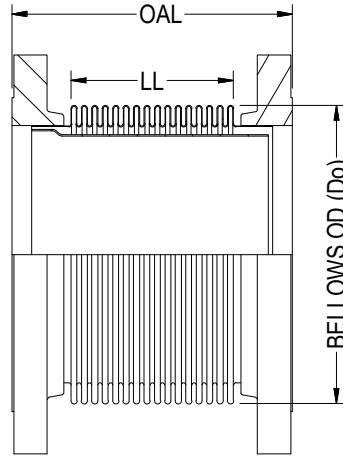
BELLOWS SYSTEMS, INC.
Houston, TX
www.bellows-systems.com

SINGLE EXPANSION JOINT
TYPE SU-24 SPECIFICATION SHEET

CAGE CODE: 22727

| | | | | | | | |
|--|---------------------------|-----------------------|---------------------|--------------------|---------------------------------|-------------------|-----------|
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0024 | SHEET#: 2 OF 2 | REV. E |
|--|---------------------------|-----------------------|---------------------|--------------------|---------------------------------|-------------------|-----------|

TYPE SU-25



ISOMETRIC VIEW

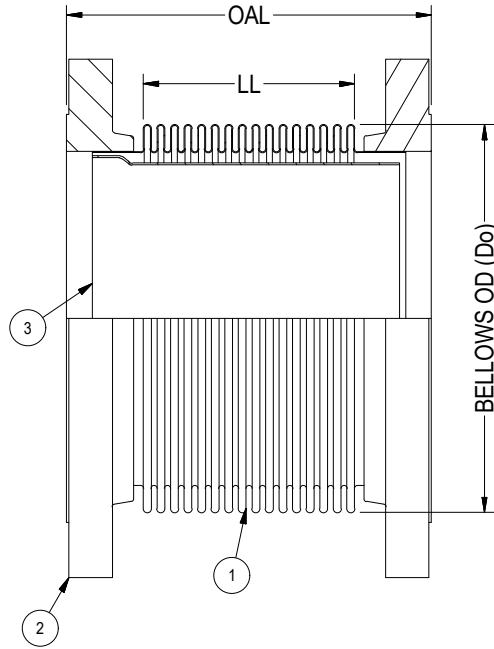
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 2.00 | 2.30 | 4.00 |
| 1 | 2.30 | 4.17 | 6.00 |
| 1 | 2.70 | 5.97 | 8.00 |
| 1.25 | 2.80 | 3.83 | 6.00 |
| 1.25 | 3.00 | 5.75 | 8.00 |
| 1.5 | 3.00 | 3.72 | 6.00 |
| 1.5 | 3.20 | 5.63 | 8.00 |
| 2 | 3.50 | 3.52 | 6.00 |
| 2 | 3.62 | 5.42 | 8.00 |
| 2.5 | 3.70 | 3.52 | 6.00 |
| 2.5 | 3.90 | 5.27 | 8.00 |
| 3 | 4.30 | 3.37 | 6.00 |
| 3 | 4.55 | 5.17 | 8.00 |
| 3.5 | 4.90 | 3.16 | 6.00 |
| 3.5 | 5.10 | 4.15 | 7.00 |
| 4 | 5.60 | 2.97 | 6.00 |
| 4 | 6.40 | 8.62 | 12.00 |
| 4 | 7.30 | 20.08 | 24.00 |
| 5 | 6.60 | 2.82 | 6.00 |
| 5 | 7.30 | 8.39 | 12.00 |
| 5 | 7.80 | 20.10 | 24.00 |
| 6 | 7.60 | 2.65 | 6.00 |
| 6 | 7.90 | 8.34 | 12.00 |
| 6 | 8.80 | 19.88 | 24.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 2.27 | 6.00 |
| 8 | 10.40 | 7.92 | 12.00 |
| 8 | 11.00 | 19.41 | 24.00 |
| 10 | 12.40 | 7.69 | 12.00 |
| 10 | 13.00 | 19.16 | 24.00 |
| 12 | 14.80 | 7.03 | 12.00 |
| 12 | 15.00 | 18.69 | 24.00 |
| 14 | 16.30 | 6.79 | 12.00 |
| 14 | 16.70 | 18.34 | 24.00 |
| 16 | 18.30 | 2.54 | 8.00 |
| 16 | 18.40 | 6.92 | 12.50 |
| 16 | 18.50 | 18.11 | 24.00 |
| 18 | 19.70 | 2.43 | 8.00 |
| 18 | 20.45 | 11.96 | 18.00 |
| 18 | 20.90 | 17.75 | 24.00 |
| 20 | 21.70 | 2.05 | 8.00 |
| 20 | 22.20 | 11.78 | 18.00 |
| 20 | 22.70 | 17.54 | 24.00 |
| 22 | 24.20 | 5.46 | 12.00 |
| 22 | 24.50 | 11.25 | 18.00 |
| 22 | 24.70 | 17.06 | 24.00 |
| 24 | 26.10 | 5.27 | 12.00 |
| 24 | 26.60 | 11.03 | 18.00 |
| 24 | 26.80 | 16.83 | 24.00 |

NOTES:

1. FLANGES ARE OF 150# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY (STD), 2 PLY OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|---------------------------|-----------------------|--|--------------------|--|-------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-25 W/ LINER & 150# RFSO FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0025 | SHEET#: 1 OF 2 |
| | | | | | | | REV. E |

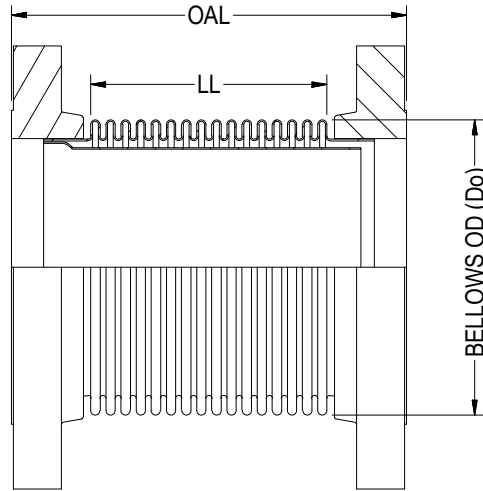


| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATLS.: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| | ③ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

- OPTIONAL FEATURES:**
- WITHOUT FLOW LINER (SEE TYPE-05).
 - CONTROL RODS (SEE TYPE-45).
 - EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|-----------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-25 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING NUMBER: 130-CAT-0025 | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | SHEET#: 2 OF 2 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI |
| | | | | | | DATE: 03/02/2023 | SCALE: AS SHOWN |
| | | | | | | REV. E | |

TYPE SU-26



ISOMETRIC VIEW

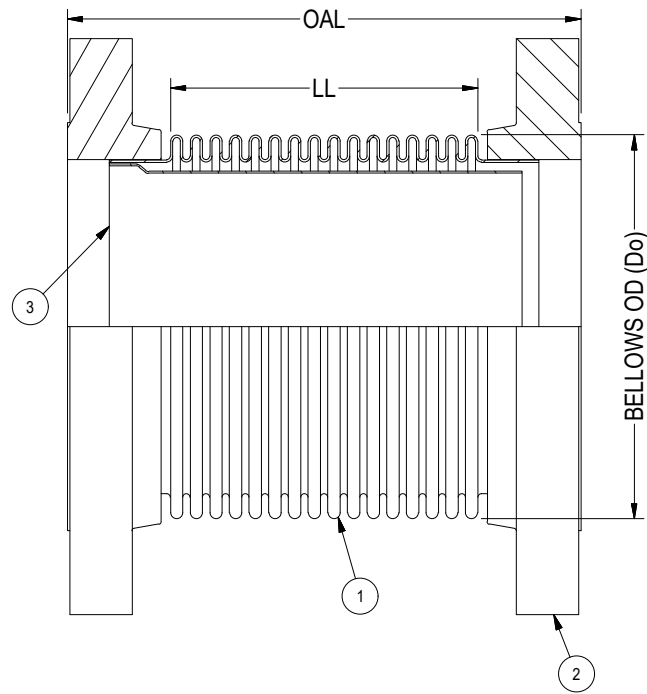
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.63 | 3.75 | 6.00 |
| 1 | 1.60 | 5.76 | 8.00 |
| 1.25 | 2.05 | 3.73 | 6.00 |
| 1.25 | 2.00 | 5.73 | 8.00 |
| 1.5 | 2.30 | 3.46 | 6.00 |
| 1.5 | 2.30 | 5.43 | 8.00 |
| 2 | 2.95 | 3.19 | 6.00 |
| 2 | 2.89 | 5.23 | 8.00 |
| 2.5 | 3.50 | 2.84 | 6.00 |
| 2.5 | 3.50 | 4.84 | 8.00 |
| 3 | 4.13 | 4.43 | 6.00 |
| 3 | 4.30 | 2.49 | 8.00 |
| 3.5 | 4.90 | 2.29 | 6.00 |
| 3.5 | 4.88 | 4.25 | 8.00 |
| 4 | 5.50 | 2.02 | 6.00 |
| 4 | 5.50 | 8.04 | 12.00 |
| 4 | 5.50 | 19.94 | 24.00 |
| 5 | 6.50 | 7.80 | 12.00 |
| 5 | 6.50 | 19.74 | 24.00 |
| 6 | 7.60 | 7.67 | 12.00 |
| 6 | 7.60 | 19.62 | 24.00 |
| 8 | 10.00 | 2.66 | 8.00 |
| 8 | 10.00 | 6.94 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 18.66 | 24.00 |
| 10 | 11.90 | 2.45 | 8.00 |
| 10 | 12.00 | 6.57 | 12.00 |
| 10 | 12.00 | 18.45 | 24.00 |
| 12 | 13.90 | 2.02 | 8.00 |
| 12 | 13.90 | 6.10 | 12.00 |
| 12 | 14.25 | 17.89 | 24.00 |
| 14 | 15.50 | 5.78 | 12.00 |
| 14 | 15.50 | 17.67 | 24.00 |
| 16 | 17.50 | 11.19 | 18.00 |
| 16 | 17.50 | 17.23 | 24.00 |
| 18 | 19.50 | 4.77 | 12.00 |
| 18 | 19.25 | 10.80 | 18.00 |
| 18 | 19.50 | 16.77 | 24.00 |
| 20 | 21.50 | 4.35 | 12.00 |
| 20 | 21.65 | 10.28 | 18.00 |
| 20 | 21.65 | 16.28 | 24.00 |
| 22 | 23.80 | 3.96 | 12.00 |
| 22 | 23.70 | 9.42 | 18.00 |
| 22 | 23.70 | 14.94 | 24.00 |
| 24 | 25.90 | 3.45 | 12.00 |
| 24 | 25.60 | 9.32 | 18.00 |
| 24 | 25.65 | 15.33 | 24.00 |

NOTES:

1. FLANGES ARE OF 300# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|---------------------------|-----------------------|--|--------------------|--|-------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-26 W/ LINER & 300# RFSO FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/13/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0026 | SHEET#: 1 OF 2 |
| | | | | | | | REV. E |



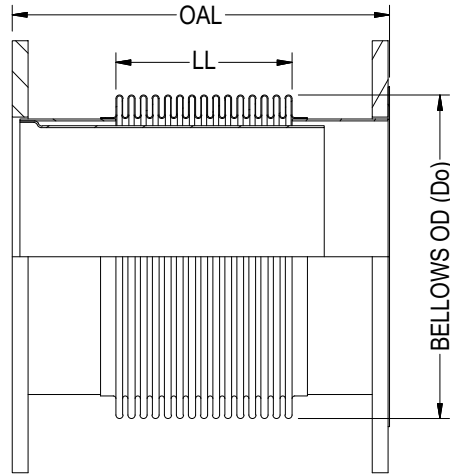
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MATL'S.: | NO. OF CYCLES: | | | | |
| | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| | ③ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-06).
2. CONTROL RODS (SEE TYPE-46).
3. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|--------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-26 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING BY: U GULATI | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | DATE: 03/13/2023 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0026 | SHEET#: 2 OF 2 |
| | | | | | | REV. E | |

TYPE SU-31



ISOMETRIC VIEW

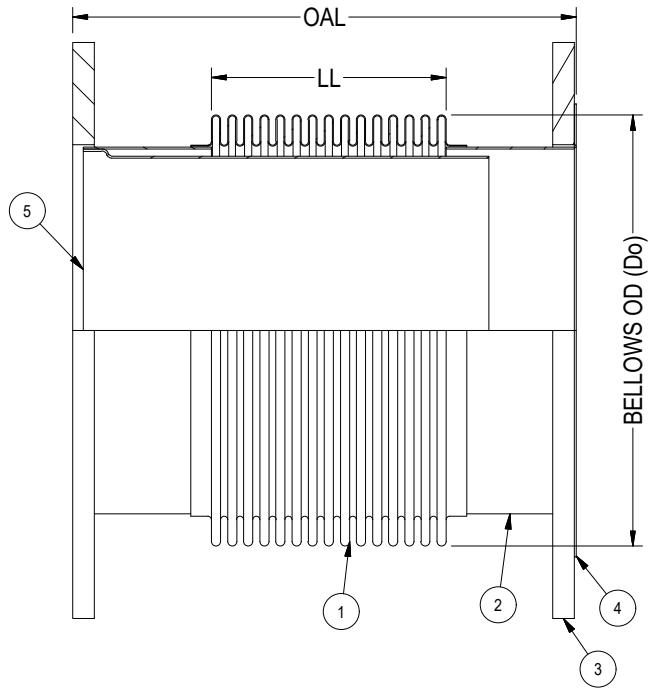
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-31 W/ LINER, 150# PLT FIXED & FLOATING FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTED | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0031 | SHEET#: 1 OF 2 REV. E |



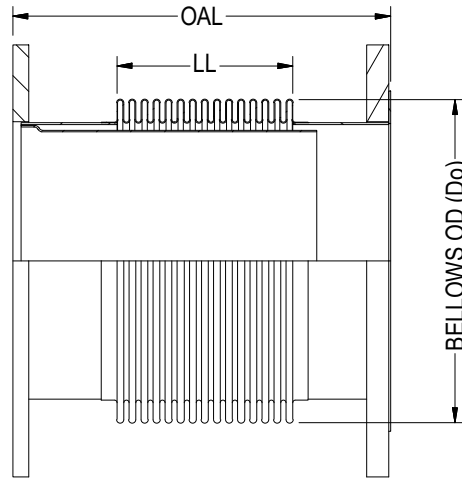
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| | ⑤ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

- WITHOUT FLOW LINER (SEE TYPE-11).
- CONTROL RODS (SEE TYPE-41).
- EXTERNAL COVER.

| | | | | | | | | | |
|---|-------------|------------------------|--------------------|------------------|-----------------|--|---|----------------|--------|
| | | | | | |  Bellows Systems | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | |
| | | | | | | | SINGLE EXPANSION JOINT TYPE SU-31 SPECIFICATION SHEET | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | DRAWING NUMBER: 130-CAT-0031 | SHEET#: 2 OF 2 | REV. E |
| <small>THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI).</small> | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0031 | | SHEET#: 2 OF 2 | REV. E |

TYPE SU-32



ISOMETRIC VIEW

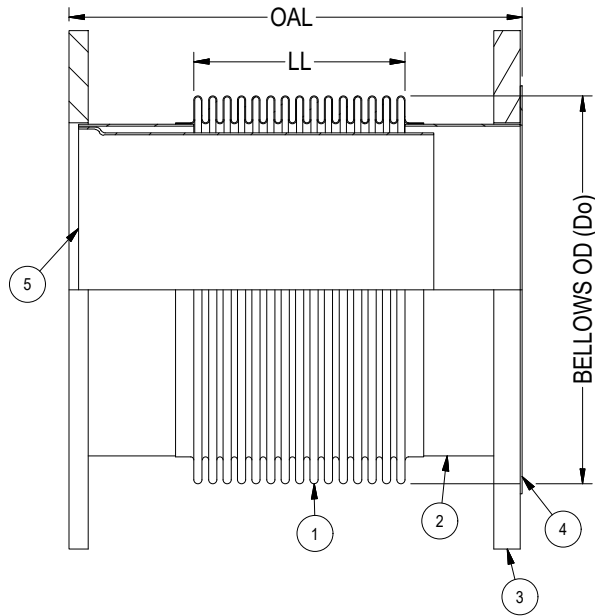
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK & 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-32 W/ LINER, 150# LW PLT & 150# PLT FX & FL FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0032 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



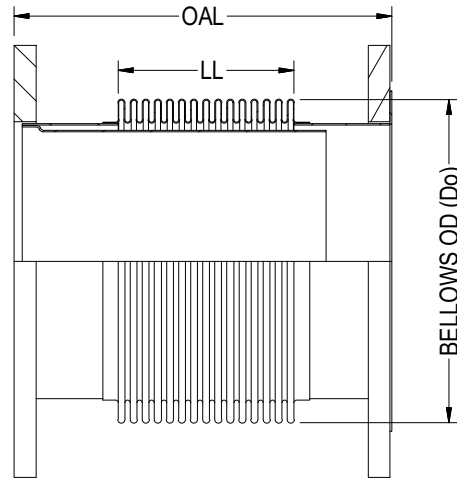
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| | ⑤ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-02).
2. CONTROL RODS (SEE TYPE-42).
3. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|-----------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-32 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING NUMBER: 130-CAT-0032 | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | SCALE: AS SHOWN | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI |
| | | | | | | DATE: 03/02/2023 | SHEET#: 2 OF 2 |
| | | | | | | REV. E | |

TYPE SU-33



ISOMETRIC VIEW

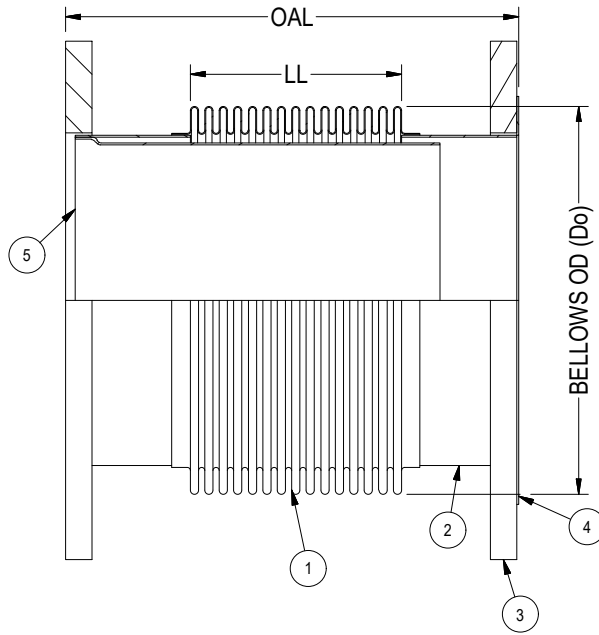
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-33 W/ LINER, 150# PLT FIXED & FLOATING FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0033 | SHEET#: 1 OF 2 REV. E |



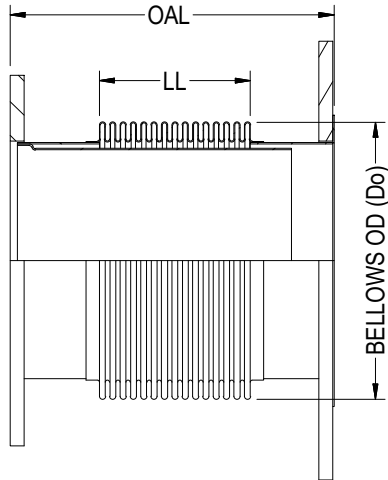
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| | ⑤ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-03).
2. CONTROL RODS (SEE TYPE-43).
3. EXTERNAL COVER.

| | | | | | | | | |
|--|------------------|---------------------------|-----------------------|---------------------|--------------------|--|---|-----------|
| | | | | | |  | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | SINGLE EXPANSION JOINT TYPE SU-33 SPECIFICATION SHEET | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0033 | SHEET#: 2 OF 2 | REV. E |

TYPE SU-34



ISOMETRIC VIEW

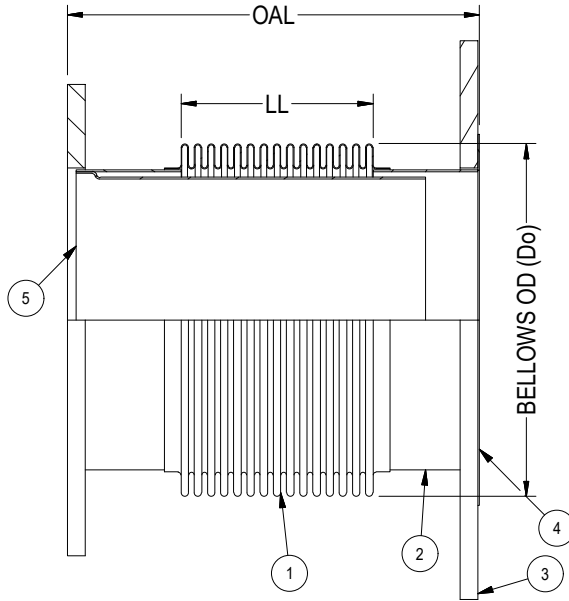
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK & 150# REDUCER-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-34 W/ LINER, 150# LW PLT & 150# RED FX & FL FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0034 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



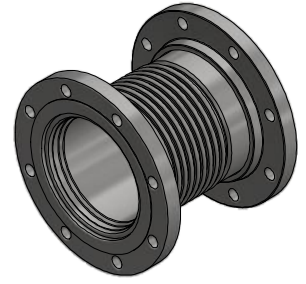
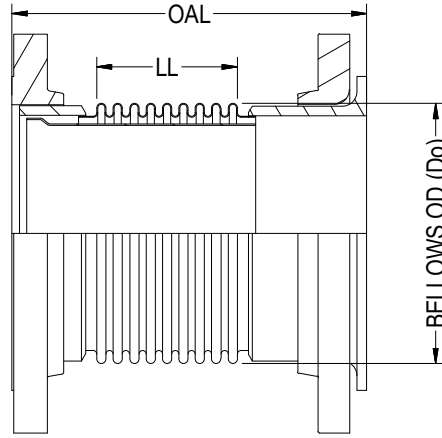
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | REDUCER SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ VANSTONE: | | | | |
| | ⑤ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

- WITHOUT FLOW LINER (SEE TYPE-04).
- CONTROL RODS (SEE TYPE-44).
- EXTERNAL COVER.

| | | | | | | | | | | |
|--|------------------|------------|-----|---------------------------|-----------------------|--|---|---------------------------------|-------------------|-----------|
| | | | | | |  Bellows Systems | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | SINGLE EXPANSION JOINT TYPE SU-34 SPECIFICATION SHEET | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0034 | SHEET#: 2 OF 2 | REV. E |

TYPE SU-35



ISOMETRIC VIEW

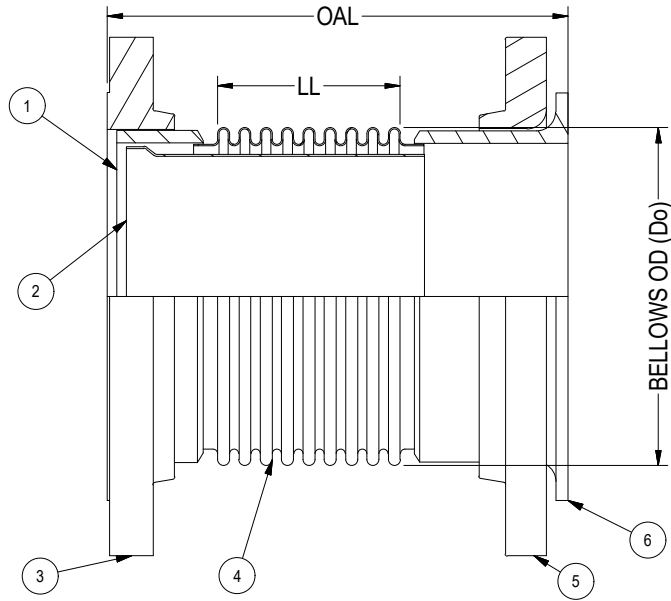
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.60 | 1.86 | 6.00 |
| 1.25 | 1.80 | 1.80 | 6.00 |
| 2 | 2.40 | 7.04 | 12.00 |
| 2 | 2.40 | 11.06 | 16.00 |
| 2 | 2.45 | 15.03 | 20.00 |
| 2.5 | 3.00 | 1.95 | 7.00 |
| 2.5 | 3.00 | 6.89 | 12.00 |
| 2.5 | 3.00 | 10.88 | 16.00 |
| 2.5 | 3.00 | 14.88 | 20.00 |
| 3 | 3.80 | 1.84 | 7.00 |
| 3 | 3.80 | 6.80 | 12.00 |
| 3 | 3.80 | 10.79 | 16.00 |
| 3 | 3.50 | 14.87 | 20.00 |
| 3.5 | 4.30 | 1.35 | 7.00 |
| 3.5 | 4.30 | 6.26 | 12.00 |
| 3.5 | 4.30 | 10.25 | 16.00 |
| 3.5 | 4.20 | 14.21 | 20.00 |
| 4 | 4.50 | 1.29 | 7.00 |
| 4 | 4.70 | 6.25 | 12.00 |
| 4 | 4.70 | 10.14 | 16.00 |
| 4 | 4.70 | 14.17 | 20.00 |
| 5 | 5.70 | 1.18 | 7.00 |
| 5 | 6.00 | 6.08 | 12.00 |
| 5 | 5.90 | 10.04 | 16.00 |
| 5 | 6.00 | 13.98 | 20.00 |
| 6 | 6.90 | 5.44 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 6 | 6.90 | 9.42 | 16.00 |
| 6 | 6.80 | 13.38 | 20.00 |
| 8 | 8.80 | 4.75 | 12.00 |
| 8 | 8.80 | 8.74 | 16.00 |
| 8 | 8.80 | 12.74 | 20.00 |
| 10 | 10.90 | 3.62 | 12.00 |
| 10 | 10.90 | 7.57 | 16.00 |
| 10 | 10.90 | 11.53 | 20.00 |
| 12 | 12.80 | 2.43 | 12.00 |
| 12 | 12.80 | 6.37 | 16.00 |
| 12 | 12.80 | 10.33 | 20.00 |
| 14 | 14.30 | 2.38 | 12.00 |
| 14 | 14.30 | 6.27 | 16.00 |
| 14 | 14.30 | 10.26 | 20.00 |
| 16 | 16.20 | 2.06 | 12.00 |
| 16 | 16.20 | 6.06 | 16.00 |
| 16 | 16.20 | 10.03 | 20.00 |
| 18 | 18.20 | 1.89 | 12.00 |
| 18 | 18.20 | 5.79 | 16.00 |
| 18 | 18.20 | 9.84 | 20.00 |
| 20 | 20.30 | 1.72 | 12.00 |
| 20 | 20.30 | 5.70 | 16.00 |
| 20 | 20.30 | 9.66 | 20.00 |
| 24 | 24.30 | 1.35 | 12.00 |
| 24 | 24.30 | 5.36 | 16.00 |
| 24 | 24.30 | 9.34 | 20.00 |

NOTES:

1. FLANGES ARE OF 150# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. PIPE WELD END WALL THICKNESS IS BASED ON STD./SCH. ALTERNATIVE SIZES AVAILABLE ON REQUEST.
4. PIPE END MATERIAL: ASTM A106 B. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
5. LAP JOINT STUB END MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
6. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
7. BELLOW MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
8. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
9. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
10. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|--|--------------|
| | | | |  Bellows Systems CAGE CODE: 22727 | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-35 W/ LINER, 150# RFSO FIXED & FLOATING FLG | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: | 130-CAT-0035 |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | DRAWN BY: U GULATI | |
| | | | | DATE: 03/02/2023 | | SCALE: AS SHOWN | |
| | | | | | | SHEET#: 1 OF 2 | |
| | | | | | | REV. F | |



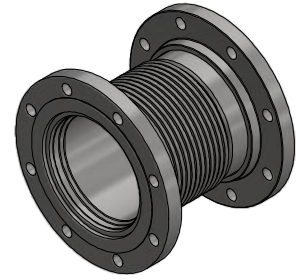
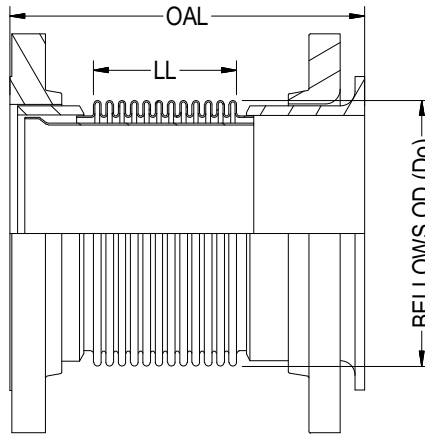
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MAT'L'S: | ① PIPE END: | | | | |
| | ② LINER: | | | | |
| | ③ FLANGE: | | | | |
| | ④ BELLOWS: | | | | |
| | ⑤ LAP JOINT FLANGE: | | | | |
| | ⑥ STUB END: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

- WITHOUT FLOW LINER (SEE TYPE-05).
- CONTROL RODS (SEE TYPE-45).
- EXTERNAL COVER.

| | | | | | | | | |
|---|------------------|------------|-----|--|-----------------------|---|--------------------|-----------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-35 SPECIFICATION SHEET | | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | DRAWING NUMBER: 130-CAT-0035 | SHEET#: 2 OF 2 | REV. F |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: 130-CAT-0035 | SHEET#: 2 OF 2 | REV. F |
| <small>THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI).</small> | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/02/2023 | SCALE: AS SHOWN | |

TYPE SU-36



ISOMETRIC VIEW

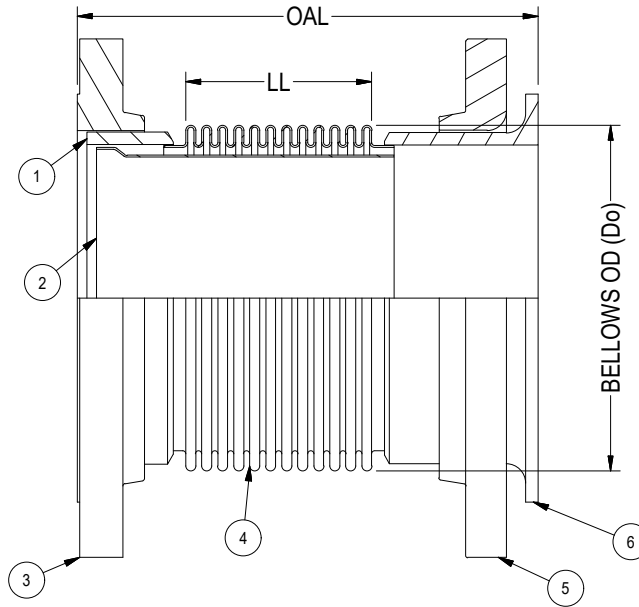
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.50 | 1.83 | 6.00 |
| 1.25 | 1.80 | 1.80 | 6.00 |
| 2 | 2.50 | 7.05 | 12.00 |
| 2 | 2.47 | 11.08 | 16.00 |
| 2 | 2.40 | 15.11 | 20.00 |
| 2.5 | 3.00 | 1.88 | 7.00 |
| 2.5 | 3.00 | 6.92 | 12.00 |
| 2.5 | 3.00 | 10.89 | 16.00 |
| 2.5 | 3.00 | 14.90 | 20.00 |
| 3 | 3.80 | 1.75 | 7.00 |
| 3 | 3.75 | 6.85 | 12.00 |
| 3 | 3.75 | 10.76 | 16.00 |
| 3 | 3.75 | 14.78 | 20.00 |
| 3.5 | 4.40 | 1.29 | 7.00 |
| 3.5 | 4.40 | 6.23 | 12.00 |
| 3.5 | 4.40 | 10.17 | 16.00 |
| 3.5 | 4.40 | 14.13 | 20.00 |
| 4 | 4.95 | 1.24 | 7.00 |
| 4 | 4.95 | 6.19 | 12.00 |
| 4 | 4.95 | 10.12 | 16.00 |
| 4 | 4.80 | 14.17 | 20.00 |
| 5 | 5.80 | 1.13 | 7.00 |
| 5 | 5.80 | 6.12 | 12.00 |
| 5 | 5.80 | 10.07 | 16.00 |
| 5 | 5.80 | 14.04 | 20.00 |
| 6 | 7.00 | 5.44 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 6 | 7.00 | 9.48 | 16.00 |
| 6 | 7.00 | 13.34 | 20.00 |
| 8 | 9.00 | 4.84 | 12.00 |
| 8 | 9.00 | 8.78 | 16.00 |
| 8 | 9.00 | 12.73 | 20.00 |
| 10 | 11.00 | 3.65 | 12.00 |
| 10 | 11.00 | 7.63 | 16.00 |
| 10 | 11.00 | 11.57 | 20.00 |
| 12 | 13.00 | 2.36 | 12.00 |
| 12 | 13.00 | 6.34 | 16.00 |
| 12 | 13.00 | 10.33 | 20.00 |
| 14 | 14.13 | 2.26 | 12.00 |
| 14 | 14.13 | 6.28 | 16.00 |
| 14 | 14.13 | 10.28 | 20.00 |
| 16 | 16.50 | 1.95 | 12.00 |
| 16 | 16.50 | 6.01 | 16.00 |
| 16 | 16.50 | 10.04 | 20.00 |
| 18 | 18.50 | 1.79 | 12.00 |
| 18 | 18.50 | 5.84 | 16.00 |
| 18 | 18.50 | 9.86 | 20.00 |
| 20 | 20.50 | 1.63 | 12.00 |
| 20 | 20.50 | 5.65 | 16.00 |
| 20 | 20.50 | 9.67 | 20.00 |
| 24 | 24.50 | 1.33 | 12.00 |
| 24 | 24.60 | 5.30 | 16.00 |
| 24 | 24.80 | 9.31 | 20.00 |

NOTES:

1. FLANGES ARE OF 300# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. PIPE WELD END WALL THICKNESS IS BASED ON STD./SCH. ALTERNATIVE SIZES AVAILABLE ON REQUEST.
4. PIPE END MATERIAL: ASTM A106 B. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
5. LAP JOINT STUB END MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
6. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
7. BELLOW MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
8. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
9. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
10. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|---|-------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-36 W/ LINER, 300#RFSO, FIXED & FLOATING FLG | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: 130-CAT-0036 | SHEET#: 1 OF 2 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | DRAWN BY: U GULATI | |
| | | | | DATE: 03/13/2023 | | SCALE: AS SHOWN | |
| | | | | | | REV. F | |

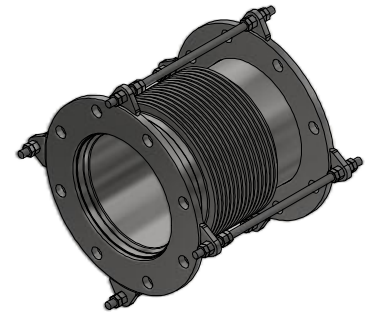
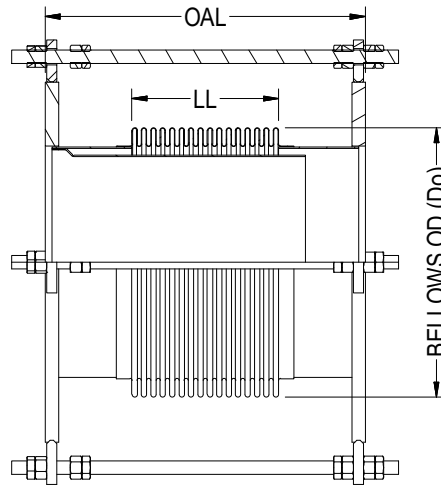


| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MAT'L'S.: | ① PIPE END: | | | | |
| | ② LINER: | | | | |
| | ③ FLANGE: | | | | |
| | ④ BELLOWS: | | | | |
| | ⑤ LAP JOINT FLANGE: | | | | |
| | ⑥ STUB END: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

- OPTIONAL FEATURES:**
- WITHOUT FLOW LINER (SEE TYPE-06).
 - CONTROL RODS (SEE TYPE-46).
 - EXTERNAL COVER.

| | | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|-----------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-36 SPECIFICATION SHEET | | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | DRAWING NUMBER: 130-CAT-0036 | SHEET#: 2 OF 2 | REV. F |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: 130-CAT-0036 | SHEET#: 2 OF 2 | REV. F |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/13/2023 | SCALE: AS SHOWN | |

TYPE SU-41



ISOMETRIC VIEW

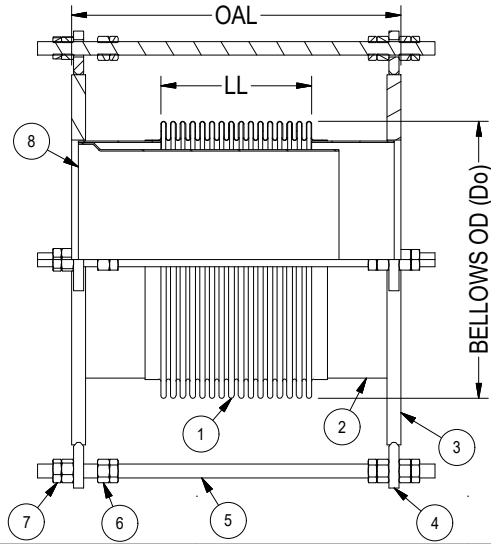
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-41 W/ 150# LW PLT FLG, LINER & CONTROL ROD | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0041 | SHEET#: 1 OF 2 |
| | | | | | | REV. F | |



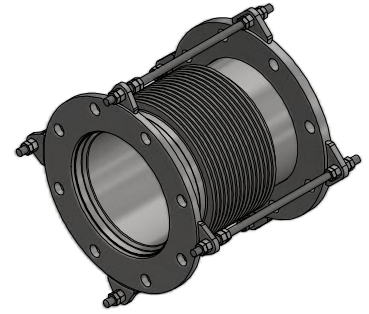
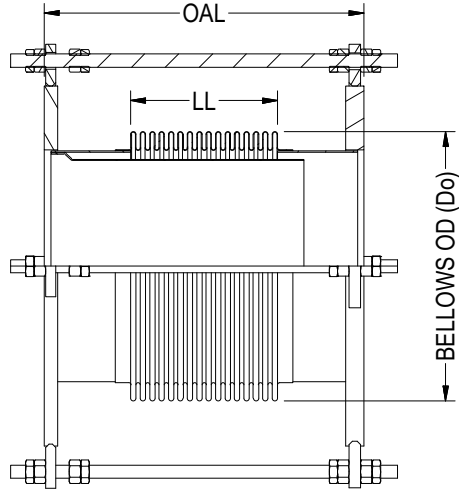
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LUG: | | | | |
| | ⑤ CONTROL ROD: | | | | |
| | ⑥ HEX NUTS: | | | | |
| | ⑦ HEX JAM NUTS: | | | | |
| | ⑧ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV 1/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-01).
2. FLOW LINER (SEE TYPE-21).
3. EXTERNAL COVER.

| | | | | | | | | | | |
|--|------------------|------------|-----|------------------------|--------------------|--|---|------------------------------|----------------|--------|
| | | | | | |  Bellows Systems | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | SINGLE EXPANSION JOINT TYPE SU-41 SPECIFICATION SHEET | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | DRAWING NUMBER: 130-CAT-0041 | SHEET#: 2 OF 2 | REV. F | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0041 | SHEET#: 2 OF 2 | REV. F |

TYPE SU-42



ISOMETRIC VIEW

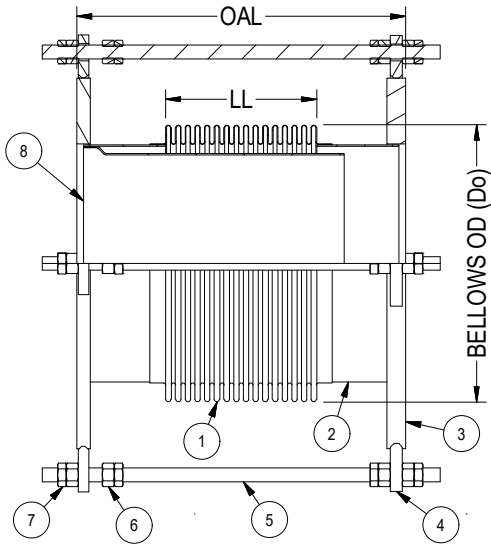
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK & 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-42 W/ 150# LW PLT, 150# PLT FLG, LINER & CONTROL ROD | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0042 | SHEET#: 1 OF 2 |
| | | | | | | REV. F | |

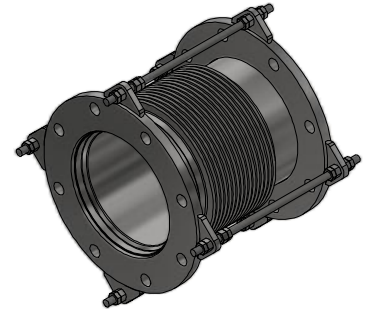
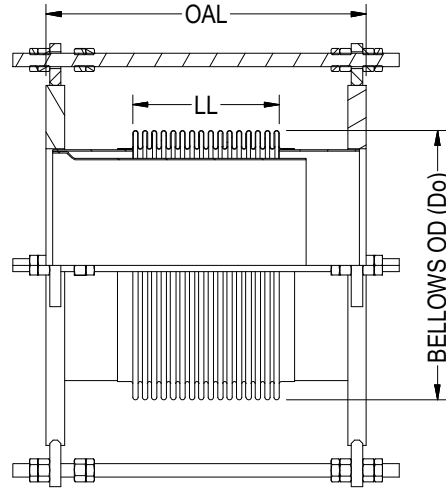


| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LUG: | | | | |
| | ⑤ CONTROL ROD: | | | | |
| | ⑥ HEX NUTS: | | | | |
| | ⑦ HEX JAM NUTS: | | | | |
| | ⑧ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV 1/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

- OPTIONAL FEATURES:**
- WITHOUT FLOW LINER (SEE TYPE-02).
 - FLOW LINER (SEE TYPE-22).
 - EXTERNAL COVER.

| | | | | | | | |
|--|------------------|---------------------------|-----------------------|--|--------------------|---|-------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-42 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0042 | SHEET#: 2 OF 2 |
| | | | | | | REV. F | |

TYPE SU-43



ISOMETRIC VIEW

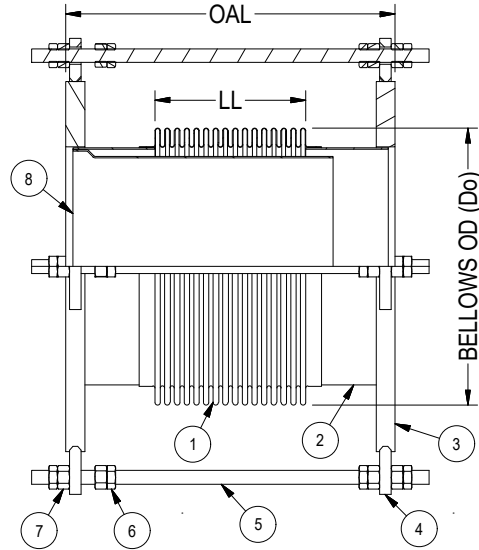
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT-11/16" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-43 W/ 150# PLT FLG, LINER & CONTROL RODS | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0043 | SHEET#: 1 OF 2 |
| | | | | | | REV. F | |



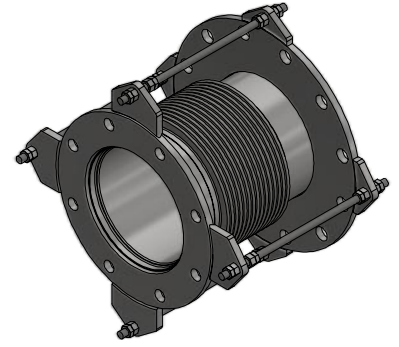
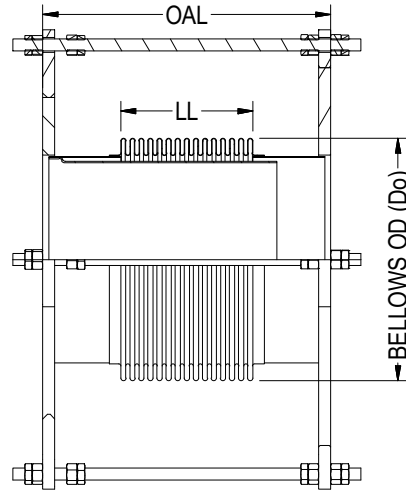
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LUG: | | | | |
| | ⑤ CONTROL ROD: | | | | |
| | ⑥ HEX NUTS: | | | | |
| | ⑦ HEX JAM NUTS: | | | | |
| | ⑧ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-03).
2. FLOW LINER (SEE TYPE-23).
3. EXTERNAL COVER.

| | | | | | | | | |
|--|------------------|---------------------------|-----------------------|---------------------|--------------------|--|---|-----------|
| | | | | | |  Bellows Systems | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | SINGLE EXPANSION JOINT TYPE SU-43 SPECIFICATION SHEET | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0043 | SHEET#: 2 OF 2 | REV. F |

TYPE SU-44



ISOMETRIC VIEW

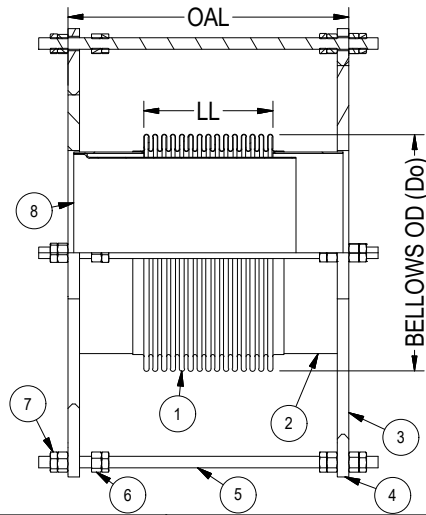
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# REDUCER-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-44 W/ 150# LW PLT, 150# RED FLG, LINER & CTRL RODS | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/10/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0044 | SHEET#: 1 OF 2 REV. E |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | REDUCER SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATLS.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LUG: | | | | |
| | ⑤ CONTROL ROD: | | | | |
| | ⑥ HEX NUTS: | | | | |
| | ⑦ HEX JAM NUTS: | | | | |
| | ⑧ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV 1/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

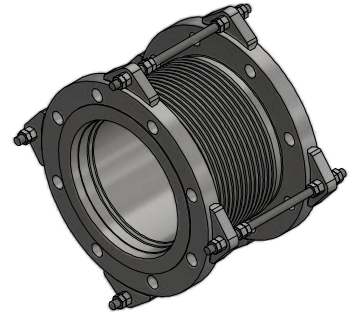
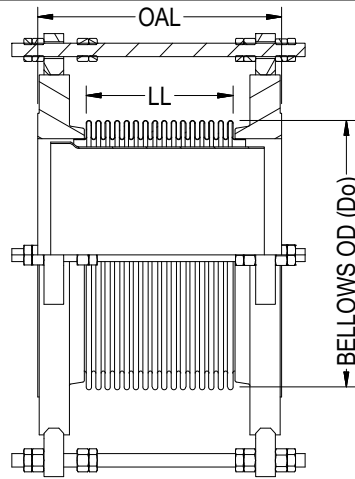
OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-04).
2. FLOW LINER (SEE TYPE-24).
3. EXTERNAL COVER.

| | | | | | | | | |
|------|------------------|------------|-----|-------|-------|--|---|-------------------------------------|
| | | | | | |  Bellows Systems | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | | SINGLE EXPANSION JOINT TYPE SU-44 SPECIFICATION SHEET | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | | DRAWING NUMBER: 130-CAT-0044 |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | | SHEET SIZE: 8.5" x 11" |
| | | | | | | DRAWN BY: U GULATI | | |
| | | | | | | DATE: 03/10/2023 | | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0044 | | |
| | | | | | | SHEET #: 2 OF 2 | | REV. E |

THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI).

TYPE SU-45



ISOMETRIC VIEW

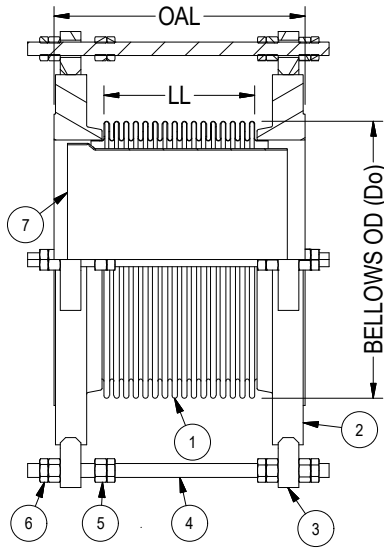
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 2.00 | 2.30 | 4.00 |
| 1 | 2.30 | 4.17 | 6.00 |
| 1 | 2.70 | 5.97 | 8.00 |
| 1.25 | 2.80 | 3.83 | 6.00 |
| 1.25 | 3.00 | 5.75 | 8.00 |
| 1.5 | 3.00 | 3.72 | 6.00 |
| 1.5 | 3.20 | 5.63 | 8.00 |
| 2 | 3.50 | 3.52 | 6.00 |
| 2 | 3.62 | 5.42 | 8.00 |
| 2.5 | 3.70 | 3.52 | 6.00 |
| 2.5 | 3.90 | 5.27 | 8.00 |
| 3 | 4.30 | 3.37 | 6.00 |
| 3 | 4.55 | 5.17 | 8.00 |
| 3.5 | 4.90 | 3.16 | 6.00 |
| 3.5 | 5.10 | 4.15 | 7.00 |
| 4 | 5.60 | 2.97 | 6.00 |
| 4 | 6.40 | 8.62 | 12.00 |
| 4 | 7.30 | 20.08 | 24.00 |
| 5 | 6.60 | 2.82 | 6.00 |
| 5 | 7.30 | 8.39 | 12.00 |
| 5 | 7.80 | 20.10 | 24.00 |
| 6 | 7.60 | 2.65 | 6.00 |
| 6 | 7.90 | 8.34 | 12.00 |
| 6 | 8.80 | 19.88 | 24.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 2.27 | 6.00 |
| 8 | 10.40 | 7.92 | 12.00 |
| 8 | 11.00 | 19.41 | 24.00 |
| 10 | 12.40 | 7.69 | 12.00 |
| 10 | 13.00 | 19.16 | 24.00 |
| 12 | 14.80 | 7.03 | 12.00 |
| 12 | 15.00 | 18.69 | 24.00 |
| 14 | 16.30 | 6.79 | 12.00 |
| 14 | 16.70 | 18.34 | 24.00 |
| 16 | 18.30 | 2.54 | 8.00 |
| 16 | 18.40 | 6.92 | 12.50 |
| 16 | 18.50 | 18.11 | 24.00 |
| 18 | 19.70 | 2.43 | 8.00 |
| 18 | 20.45 | 11.96 | 18.00 |
| 18 | 20.90 | 17.75 | 24.00 |
| 20 | 21.70 | 2.05 | 8.00 |
| 20 | 22.20 | 11.78 | 18.00 |
| 20 | 22.70 | 17.54 | 24.00 |
| 22 | 24.20 | 5.46 | 12.00 |
| 22 | 24.50 | 11.25 | 18.00 |
| 22 | 24.70 | 17.06 | 24.00 |
| 24 | 26.10 | 5.27 | 12.00 |
| 24 | 26.60 | 11.03 | 18.00 |
| 24 | 26.80 | 16.83 | 24.00 |

NOTES:

1. FLANGES ARE OF 150# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY (STD), 2 PLY OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-45 W/ 150# RFSO FLG & CONTROL RODS | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/10/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0045 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



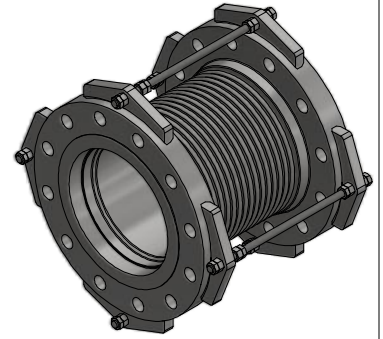
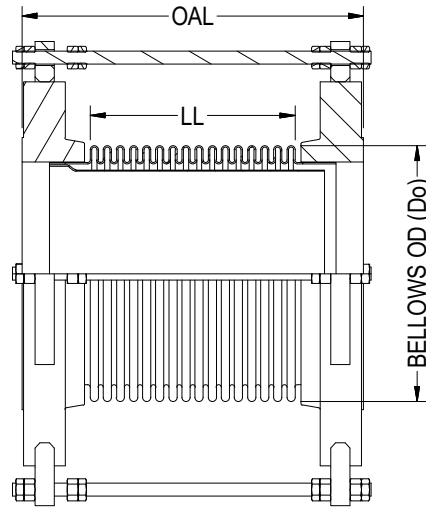
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| | ③ LUG: | | | | |
| | ④ CONTROL ROD: | | | | |
| | ⑤ HEX NUTS: | | | | |
| | ⑥ HEX JAM NUTS: | | | | |
| | ⑦ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-05).
2. FLOW LINER (SEE TYPE-25).
3. EXTERNAL COVER.

| | | | | | | | | | |
|--|-------------|-------|-----|-------|-------|---|------------------------------|---------------------|--------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-45 SPECIFICATION SHEET | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | DRAWING NUMBER: 130-CAT-0045 | SHEET#: 2 OF 2 | REV. E |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/10/2023 | SCALE: AS SHOWN |

TYPE SU-46



ISOMETRIC VIEW

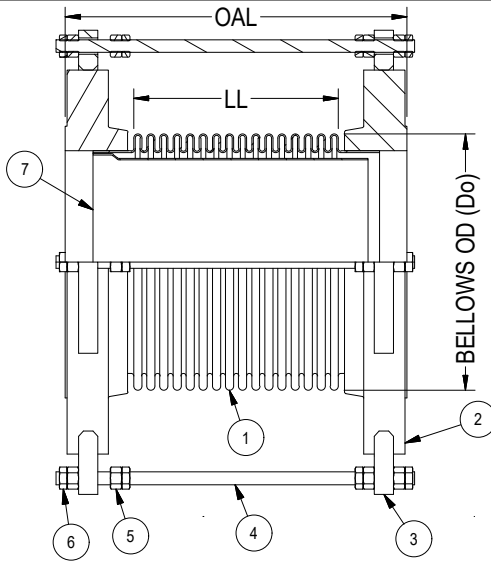
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.63 | 3.75 | 6.00 |
| 1 | 1.60 | 5.76 | 8.00 |
| 1.25 | 2.05 | 3.73 | 6.00 |
| 1.25 | 2.00 | 5.73 | 8.00 |
| 1.5 | 2.30 | 3.46 | 6.00 |
| 1.5 | 2.30 | 5.43 | 8.00 |
| 2 | 2.95 | 3.19 | 6.00 |
| 2 | 2.89 | 5.23 | 8.00 |
| 2.5 | 3.50 | 2.84 | 6.00 |
| 2.5 | 3.50 | 4.84 | 8.00 |
| 3 | 4.13 | 4.43 | 6.00 |
| 3 | 4.30 | 2.49 | 8.00 |
| 3.5 | 4.90 | 2.29 | 6.00 |
| 3.5 | 4.88 | 4.25 | 8.00 |
| 4 | 5.50 | 2.02 | 6.00 |
| 4 | 5.50 | 8.04 | 12.00 |
| 4 | 5.50 | 19.94 | 24.00 |
| 5 | 6.50 | 7.80 | 12.00 |
| 5 | 6.50 | 19.74 | 24.00 |
| 6 | 7.60 | 7.67 | 12.00 |
| 6 | 7.60 | 19.62 | 24.00 |
| 8 | 10.00 | 2.66 | 8.00 |
| 8 | 10.00 | 6.94 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 18.66 | 24.00 |
| 10 | 11.90 | 2.45 | 8.00 |
| 10 | 12.00 | 6.57 | 12.00 |
| 10 | 12.00 | 18.45 | 24.00 |
| 12 | 13.90 | 2.02 | 8.00 |
| 12 | 13.90 | 6.10 | 12.00 |
| 12 | 14.25 | 17.89 | 24.00 |
| 14 | 15.50 | 5.78 | 12.00 |
| 14 | 15.50 | 17.67 | 24.00 |
| 16 | 17.50 | 11.19 | 18.00 |
| 16 | 17.50 | 17.23 | 24.00 |
| 18 | 19.50 | 4.77 | 12.00 |
| 18 | 19.25 | 10.80 | 18.00 |
| 18 | 19.50 | 16.77 | 24.00 |
| 20 | 21.50 | 4.35 | 12.00 |
| 20 | 21.65 | 10.28 | 18.00 |
| 20 | 21.65 | 16.28 | 24.00 |
| 22 | 23.80 | 3.96 | 12.00 |
| 22 | 23.70 | 9.42 | 18.00 |
| 22 | 23.70 | 14.94 | 24.00 |
| 24 | 25.90 | 3.45 | 12.00 |
| 24 | 25.60 | 9.32 | 18.00 |
| 24 | 25.65 | 15.33 | 24.00 |

NOTES:

1. FLANGES ARE OF 300# RFSO.(ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|--|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-46 W/ 300# RFSO FLG, LINER & CONTROL RODS | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/13/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0046 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



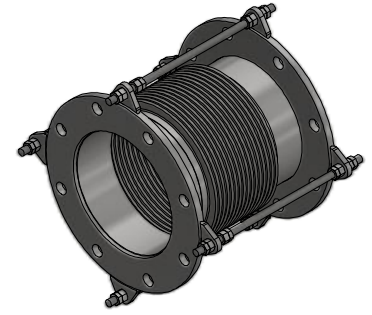
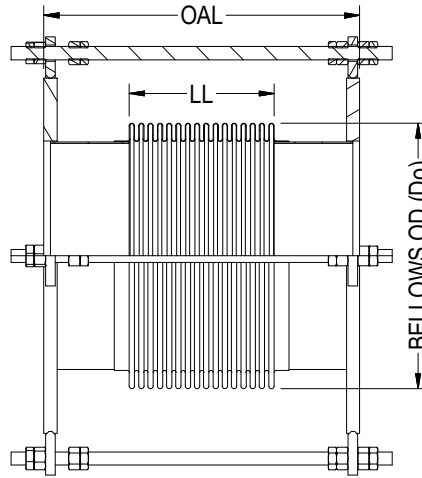
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| | ③ LUG: | | | | |
| | ④ CONTROL ROD: | | | | |
| | ⑤ HEX NUTS: | | | | |
| | ⑥ HEX JAM NUTS: | | | | |
| | ⑦ LINER: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-06).
2. FLOW LINER (SEE TYPE-26).
3. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|---------------------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-46 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING NUMBER: 130-CAT-0046 | |
| D | UPDATED NOTES | 09/12/2023 | UG | | | SCALE: AS SHOWN | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI |
| | | | | | | DATE: 03/13/2023 | DRAWING NUMBER: 130-CAT-0046 |
| | | | | | | SHEET#: 2 OF 2 | REV. E |

TYPE SU-51



ISOMETRIC VIEW

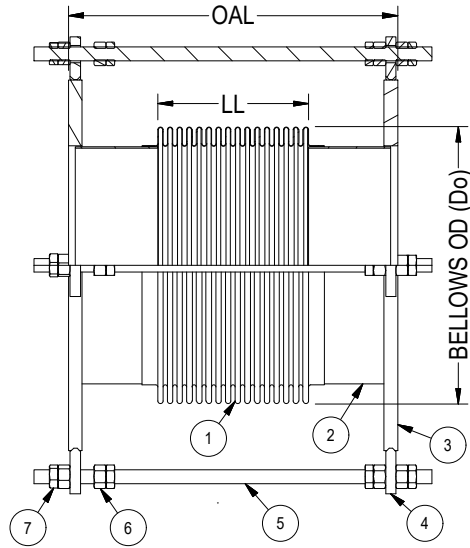
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK.(ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|---|--------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-51 W/ 150# LW PLT FLG & CONTROL RODS | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: | 130-CAT-0051 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | DRAWN BY: U GULATI | |
| | | | | DATE: 03/08/2023 | | SCALE: AS SHOWN | |
| | | | | | | SHEET#: 1 OF 2 | |
| | | | | | | REV. F | |



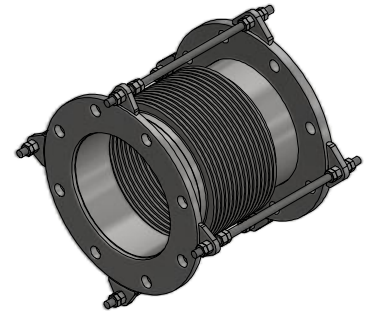
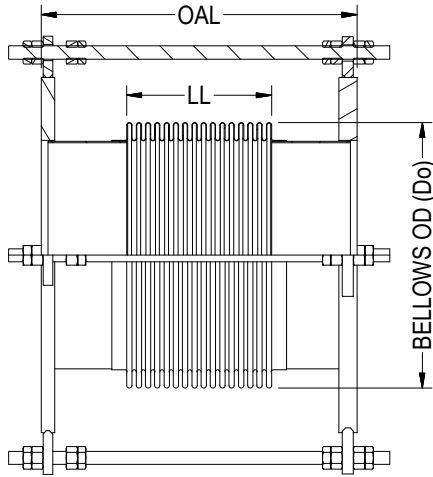
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LUG: | | | | |
| | ⑤ CONTROL ROD: | | | | |
| | ⑥ HEX NUTS: | | | | |
| | ⑦ HEX JAM NUTS: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV 1/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-01).
2. FLOW LINER (SEE TYPE-21).
3. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|-----------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-51 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING NUMBER: 130-CAT-0051 | |
| E | UPDATED NOTES | 09/12/2023 | UG | | | SHEET# 2 OF 2 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI |
| | | | | | | DATE: 03/08/2023 | SCALE: AS SHOWN |
| | | | | | | REV. F | |

TYPE SU-52



ISOMETRIC VIEW

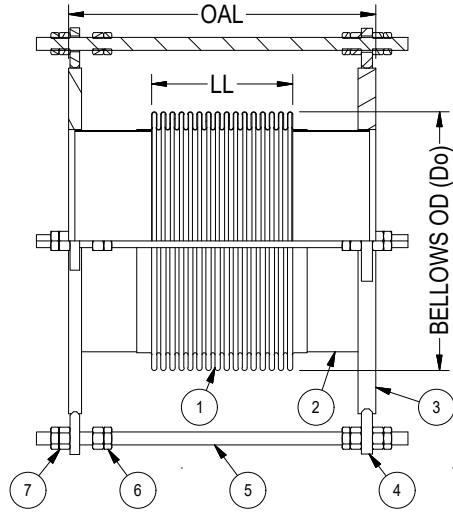
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK & 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|---|-------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-52 W/ 150# LW PLT, 150# PLT FLG & CONTROL RODS | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | | |
| E | UPDATED NOTES | 09/13/2023 | UG | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: 130-CAT-0052 | SHEET#: 1 OF 1 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | DRAWN BY: U GULATI | |
| | | | | DATE: 03/08/2023 | | SCALE: AS SHOWN | |
| | | | | | | REV. F | |



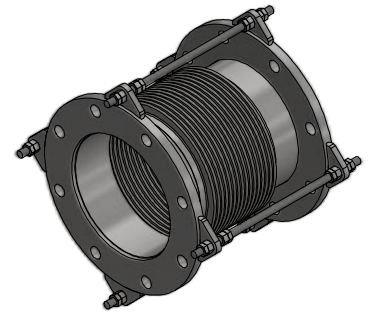
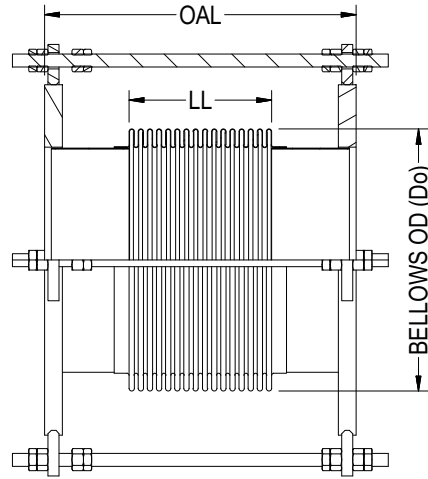
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| MATL'S.: | NO. OF CYCLES: | | | | |
| | ①. BELLOWS: | | | | |
| | ②. WELD NECK: | | | | |
| | ③. FLANGE: | | | | |
| | ④. LUG: | | | | |
| | ⑤. CONTROL ROD: | | | | |
| | ⑥. HEX NUTS: | | | | |
| ⑦. HEX JAM NUTS: | | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-02).
2. FLOW LINER (SEE TYPE-22).
3. EXTERNAL COVER.

| | | | | | | | | | | |
|--|------------------|------------|-----|---------------------------|-----------------------|--|---|---------------------------------|-------------------|-----------|
| | | | | | |  Bellows Systems | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | | |
| | | | | | | | SINGLE EXPANSION JOINT TYPE SU-52 SPECIFICATION SHEET | | | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | | | | |
| E | UPDATED NOTES | 09/13/2023 | UG | | | | | | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN | DRAWING NUMBER: 130-CAT-0052 | SHEET#: 2 OF 2 | REV. F |

TYPE SU-53



ISOMETRIC VIEW

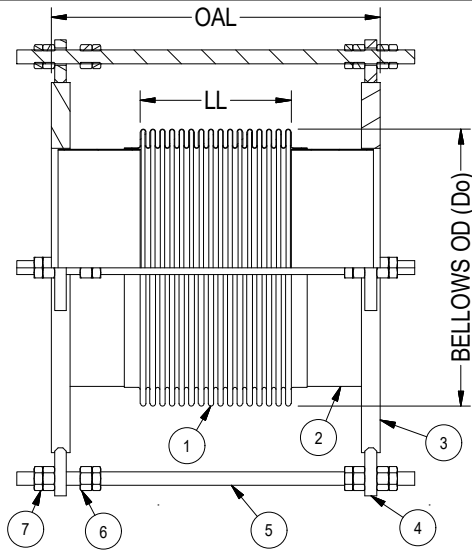
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-53 W/ 150# PLT FLG & CONTROL RODS | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| E | UPDATED NOTES | 09/13/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/08/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0053 | SHEET#: 1 OF 2 |
| | | | | | | REV. F | |



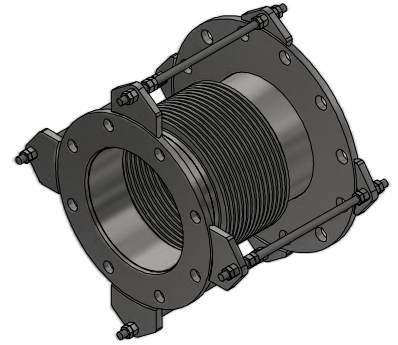
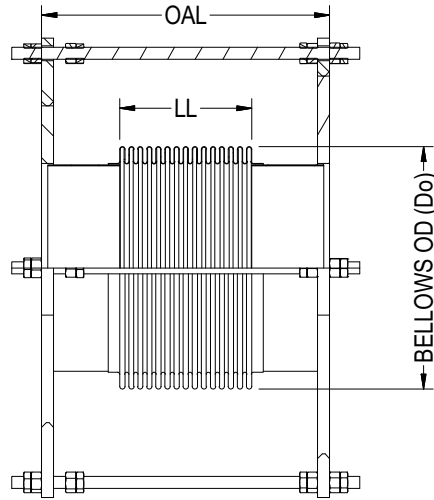
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LUG: | | | | |
| | ⑤ CONTROL ROD: | | | | |
| | ⑥ HEX NUTS: | | | | |
| | ⑦ HEX JAM NUTS: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-03).
2. FLOW LINER (SEE TYPE-23).
3. EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|-----------------------|
|  Bellows Systems | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-53 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| F | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWING NUMBER: 130-CAT-0053 | |
| E | UPDATED NOTES | 09/13/2023 | UG | | | SCALE: AS SHOWN | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI |
| | | | | | | DATE: 03/08/2023 | REV. #: 2 OF 2 |
| | | | | | | REV. #: F | |

TYPE SU-54



ISOMETRIC VIEW

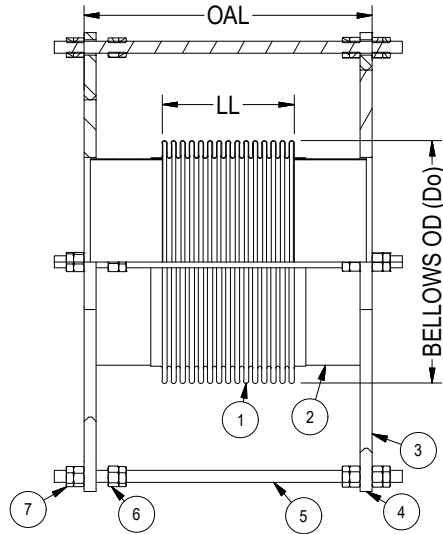
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 6.00 |
| 2 | 3.10 | 6.00 | 12.00 |
| 2-1/2 | 3.70 | 2.00 | 6.00 |
| 2-1/2 | 3.70 | 6.00 | 12.00 |
| 3 | 4.40 | 2.00 | 6.00 |
| 3 | 4.40 | 6.00 | 12.00 |
| 4 | 5.36 | 2.50 | 6.00 |
| 4 | 5.36 | 5.50 | 12.00 |
| 4 | 5.15 | 9.00 | 18.00 |
| 5 | 6.70 | 3.00 | 8.00 |
| 5 | 6.55 | 5.50 | 12.00 |
| 6 | 7.70 | 3.00 | 8.00 |
| 6 | 7.63 | 5.50 | 12.00 |
| 8 | 10.10 | 4.13 | 8.00 |
| 8 | 10.10 | 5.50 | 12.00 |
| 10 | 12.00 | 2.00 | 4.00 |
| 10 | 12.10 | 4.00 | 8.00 |
| 10 | 12.00 | 5.50 | 12.00 |
| 12 | 14.80 | 6.00 | 12.00 |
| 12 | 14.00 | 8.00 | 18.00 |
| 12 | 14.30 | 13.50 | 23.00 |
| 14 | 16.30 | 1.25 | 4.50 |
| 14 | 16.00 | 4.50 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 23.00 |
| 16 | 17.75 | 8.00 | 16.00 |
| 16 | 17.75 | 13.50 | 23.00 |
| 18 | 20.20 | 4.00 | 12.00 |
| 18 | 20.20 | 10.00 | 18.00 |
| 18 | 20.20 | 13.00 | 23.00 |
| 20 | 22.00 | 4.00 | 6.00 |
| 20 | 22.25 | 4.50 | 12.00 |
| 20 | 21.91 | 9.00 | 18.00 |
| 20 | 21.75 | 13.50 | 23.00 |
| 24 | 25.90 | 4.50 | 12.00 |
| 24 | 26.00 | 12.00 | 18.00 |
| 24 | 26.00 | 13.00 | 22.00 |
| 24 | 25.75 | 20.00 | 36.00 |
| 26 | 27.75 | 14.00 | 22.00 |
| 26 | 27.75 | 18.00 | 30.00 |
| 28 | 30.70 | 12.50 | 24.00 |
| 30 | 31.75 | 4.00 | 10.00 |
| 30 | 32.00 | 8.00 | 16.00 |
| 30 | 31.75 | 18.00 | 29.00 |
| 36 | 38.25 | 2.50 | 7.00 |
| 36 | 38.40 | 6.00 | 12.00 |
| 36 | 37.97 | 9.00 | 17.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK AND 150# REDUCER-1/2" THK.(ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-54 W/ 150# LW PLT, 150# RED FLG & CONTROL RODS | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/13/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/10/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0054 | SHEET#: 1 OF 2 REV. E |

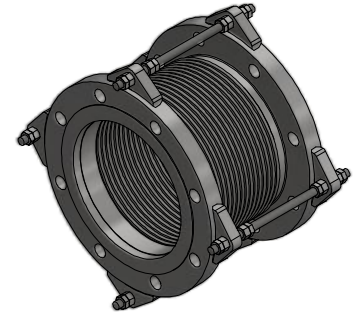
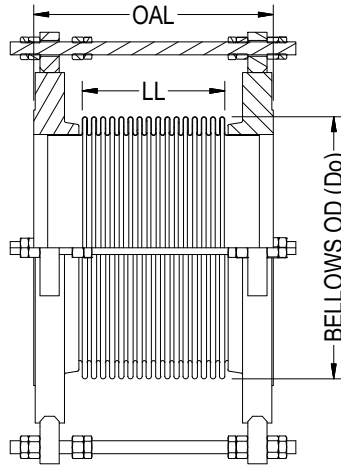


| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | REDUCER SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② WELD NECK: | | | | |
| | ③ FLANGE: | | | | |
| | ④ LUG: | | | | |
| | ⑤ CONTROL ROD: | | | | |
| | ⑥ HEX NUTS: | | | | |
| | ⑦ HEX JAM NUTS: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

- OPTIONAL FEATURES:**
- WITHOUT FLOW LINER (SEE TYPE-04).
 - FLOW LINER (SEE TYPE-24).
 - EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-54 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/13/2023 | UG | | | | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/10/2023 | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0054 | SHEET#: 2 OF 2 |
| | | | | | | REV. E | |

TYPE SU-55



ISOMETRIC VIEW

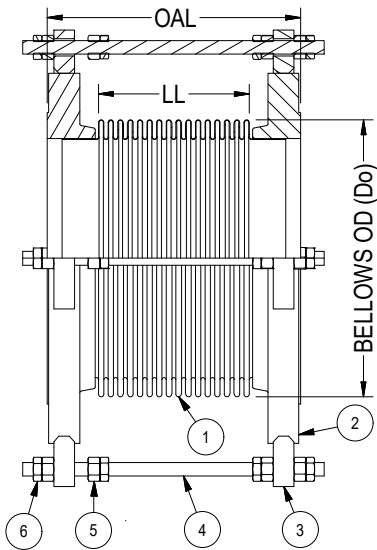
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 2.00 | 2.30 | 4.00 |
| 1 | 2.30 | 4.17 | 6.00 |
| 1 | 2.70 | 5.97 | 8.00 |
| 1.25 | 2.80 | 3.83 | 6.00 |
| 1.25 | 3.00 | 5.75 | 8.00 |
| 1.5 | 3.00 | 3.72 | 6.00 |
| 1.5 | 3.20 | 5.63 | 8.00 |
| 2 | 3.50 | 3.52 | 6.00 |
| 2 | 3.62 | 5.42 | 8.00 |
| 2.5 | 3.70 | 3.52 | 6.00 |
| 2.5 | 3.90 | 5.27 | 8.00 |
| 3 | 4.30 | 3.37 | 6.00 |
| 3 | 4.55 | 5.17 | 8.00 |
| 3.5 | 4.90 | 3.16 | 6.00 |
| 3.5 | 5.10 | 4.15 | 7.00 |
| 4 | 5.60 | 2.97 | 6.00 |
| 4 | 6.40 | 8.62 | 12.00 |
| 4 | 7.30 | 20.08 | 24.00 |
| 5 | 6.60 | 2.82 | 6.00 |
| 5 | 7.30 | 8.39 | 12.00 |
| 5 | 7.80 | 20.10 | 24.00 |
| 6 | 7.60 | 2.65 | 6.00 |
| 6 | 7.90 | 8.34 | 12.00 |
| 6 | 8.80 | 19.88 | 24.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 2.27 | 6.00 |
| 8 | 10.40 | 7.92 | 12.00 |
| 8 | 11.00 | 19.41 | 24.00 |
| 10 | 12.40 | 7.69 | 12.00 |
| 10 | 13.00 | 19.16 | 24.00 |
| 12 | 14.80 | 7.03 | 12.00 |
| 12 | 15.00 | 18.69 | 24.00 |
| 14 | 16.30 | 6.79 | 12.00 |
| 14 | 16.70 | 18.34 | 24.00 |
| 16 | 18.30 | 2.54 | 8.00 |
| 16 | 18.40 | 6.92 | 12.50 |
| 16 | 18.50 | 18.11 | 24.00 |
| 18 | 19.70 | 2.43 | 8.00 |
| 18 | 20.45 | 11.96 | 18.00 |
| 18 | 20.90 | 17.75 | 24.00 |
| 20 | 21.70 | 2.05 | 8.00 |
| 20 | 22.20 | 11.78 | 18.00 |
| 20 | 22.70 | 17.54 | 24.00 |
| 22 | 24.20 | 5.46 | 12.00 |
| 22 | 24.50 | 11.25 | 18.00 |
| 22 | 24.70 | 17.06 | 24.00 |
| 24 | 26.10 | 5.27 | 12.00 |
| 24 | 26.60 | 11.03 | 18.00 |
| 24 | 26.80 | 16.83 | 24.00 |

NOTES:

1. FLANGES ARE OF 150# RF50. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY (STD), 2 PLY OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-55 W/ 150# RESO FLG & CONTROL RODS | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/13/2023 | UG | | | | |
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| | | | | | | DRAWING NUMBER: 130-CAT-0055 | SHEET#: 1 OF 2 REV. E |



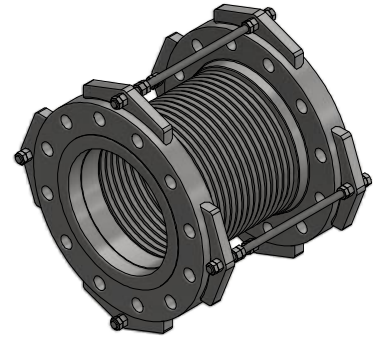
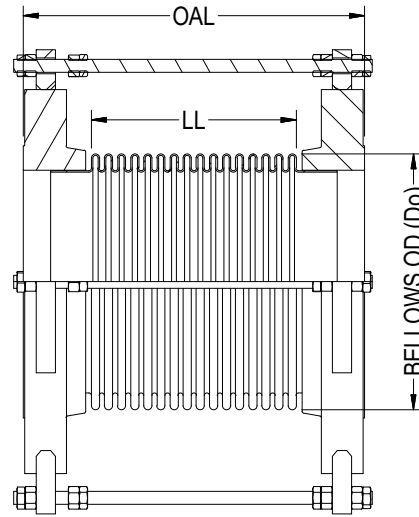
| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S.: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| | ③ LUG: | | | | |
| | ④ CONTROL ROD: | | | | |
| | ⑤ HEX NUTS: | | | | |
| | ⑥ HEX JAM NUTS: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. WITHOUT FLOW LINER (SEE TYPE-05).
2. FLOW LINER (SEE TYPE-25).
3. EXTERNAL COVER.

| | | | | | | | | | |
|--|-------------|-------|-----|------------------------|--------------------|--|---|----------------|--------|
| | | | | | |  Bellows Systems | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | | |
| | | | | | | | SINGLE EXPANSION JOINT TYPE SU-55 SPECIFICATION SHEET | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | DRAWING NUMBER: 130-CAT-0055 | SHEET#: 2 OF 2 | REV. E |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | DRAWN BY: U GULATI | DATE: 03/06/2023 | SCALE: AS SHOWN | | |

TYPE SU-56



ISOMETRIC VIEW

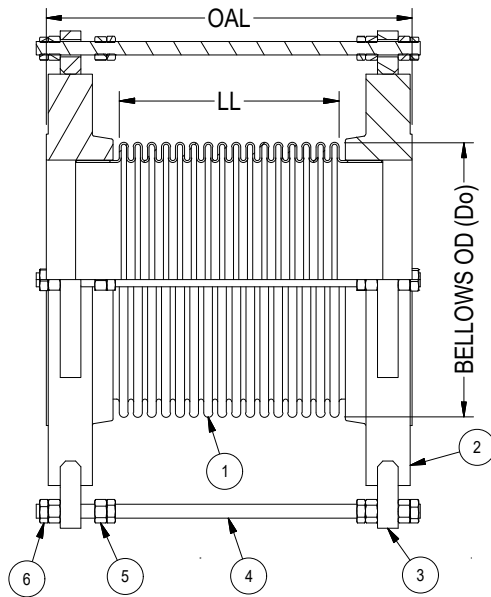
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 1 | 1.63 | 3.75 | 6.00 |
| 1 | 1.60 | 5.76 | 8.00 |
| 1.25 | 2.05 | 3.73 | 6.00 |
| 1.25 | 2.00 | 5.73 | 8.00 |
| 1.5 | 2.30 | 3.46 | 6.00 |
| 1.5 | 2.30 | 5.43 | 8.00 |
| 2 | 2.95 | 3.19 | 6.00 |
| 2 | 2.89 | 5.23 | 8.00 |
| 2.5 | 3.50 | 2.84 | 6.00 |
| 2.5 | 3.50 | 4.84 | 8.00 |
| 3 | 4.13 | 4.43 | 6.00 |
| 3 | 4.30 | 2.49 | 8.00 |
| 3.5 | 4.90 | 2.29 | 6.00 |
| 3.5 | 4.88 | 4.25 | 8.00 |
| 4 | 5.50 | 2.02 | 6.00 |
| 4 | 5.50 | 8.04 | 12.00 |
| 4 | 5.50 | 19.94 | 24.00 |
| 5 | 6.50 | 7.80 | 12.00 |
| 5 | 6.50 | 19.74 | 24.00 |
| 6 | 7.60 | 7.67 | 12.00 |
| 6 | 7.60 | 19.62 | 24.00 |
| 8 | 10.00 | 2.66 | 8.00 |
| 8 | 10.00 | 6.94 | 12.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 8 | 9.80 | 18.66 | 24.00 |
| 10 | 11.90 | 2.45 | 8.00 |
| 10 | 12.00 | 6.57 | 12.00 |
| 10 | 12.00 | 18.45 | 24.00 |
| 12 | 13.90 | 2.02 | 8.00 |
| 12 | 13.90 | 6.10 | 12.00 |
| 12 | 14.25 | 17.89 | 24.00 |
| 14 | 15.50 | 5.78 | 12.00 |
| 14 | 15.50 | 17.67 | 24.00 |
| 16 | 17.50 | 11.19 | 18.00 |
| 16 | 17.50 | 17.23 | 24.00 |
| 18 | 19.50 | 4.77 | 12.00 |
| 18 | 19.25 | 10.80 | 18.00 |
| 18 | 19.50 | 16.77 | 24.00 |
| 20 | 21.50 | 4.35 | 12.00 |
| 20 | 21.65 | 10.28 | 18.00 |
| 20 | 21.65 | 16.28 | 24.00 |
| 22 | 23.80 | 3.96 | 12.00 |
| 22 | 23.70 | 9.42 | 18.00 |
| 22 | 23.70 | 14.94 | 24.00 |
| 24 | 25.90 | 3.45 | 12.00 |
| 24 | 25.60 | 9.32 | 18.00 |
| 24 | 25.65 | 15.33 | 24.00 |

NOTES:

1. FLANGES ARE OF 300# RFSO. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-105. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 304. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING TEMPERATURE & PRESSURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-------|---|-------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-56 W/ 300# RFSO FLG & CONTROL RODS | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | CAGE CODE: 22727 | | DRAWING NUMBER: 130-CAT-0056 | SHEET#: 1 OF 1 |
| D | UPDATED NOTES | 09/13/2023 | UG | DRAWN BY: U GULATI | | SCALE: AS SHOWN | REV. E |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | DRAWING NUMBER: 130-CAT-0056 | SHEET#: 1 OF 1 |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | SHEET SIZE: 8.5" x 11" | | DATE: 03/13/2023 | |

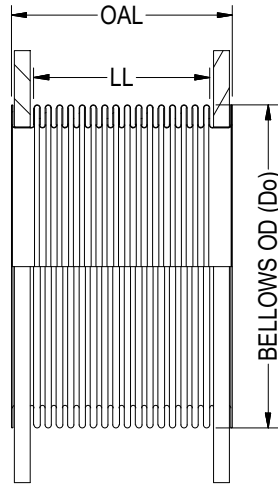


| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| | ③ LUG: | | | | |
| | ④ CONTROL ROD: | | | | |
| | ⑤ HEX NUTS: | | | | |
| | ⑥ HEX JAM NUTS: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

- OPTIONAL FEATURES:**
- WITHOUT FLOW LINER (SEE TYPE-06).
 - FLOW LINER (SEE TYPE-26).
 - EXTERNAL COVER.

| | | | | | | | |
|--|------------------|------------|-----|-------|-------|---|--------------------|
|  | | | | | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT TYPE SU-56 SPECIFICATION SHEET | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | DRAWN BY: U GULATI | |
| D | UPDATED NOTES | 09/13/2023 | UG | | | DATE: 03/13/2023 | |
| THIS DRAWING AND ALL OF THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF BELLOWS SYSTEMS, INC. AND MAY NOT BE REPRODUCED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF BELLOWS SYSTEMS, INC. (BSI). | | | | | | SHEET SIZE: 8.5" x 11" | SCALE: AS SHOWN |
| | | | | | | DRAWING NUMBER: 130-CAT-0056 | SHEET#: 2 OF 2 |
| | | | | | | REV. E | |

TYPE SU-61



ISOMETRIC VIEW

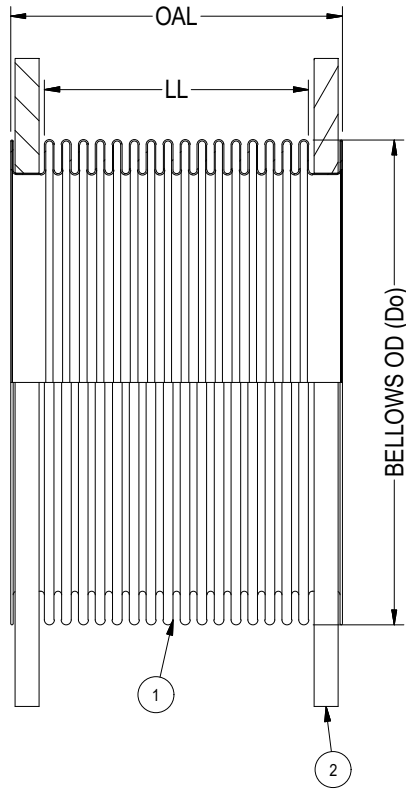
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 4.00 |
| 2 | 3.10 | 6.00 | 8.00 |
| 2-1/2 | 3.70 | 2.00 | 4.00 |
| 2-1/2 | 3.70 | 6.00 | 8.00 |
| 3 | 4.30 | 2.00 | 4.00 |
| 3 | 4.40 | 6.00 | 8.00 |
| 4 | 5.36 | 2.50 | 4.50 |
| 4 | 5.36 | 5.50 | 8.00 |
| 4 | 5.15 | 9.00 | 12.00 |
| 5 | 6.70 | 3.00 | 5.00 |
| 5 | 6.55 | 5.50 | 8.00 |
| 6 | 7.70 | 3.00 | 5.00 |
| 6 | 7.63 | 5.50 | 8.00 |
| 8 | 10.10 | 4.13 | 6.00 |
| 8 | 10.10 | 5.50 | 8.00 |
| 10 | 12.00 | 2.00 | 4.50 |
| 11 | 12.10 | 4.00 | 6.00 |
| 11 | 12.00 | 5.50 | 8.00 |
| 13 | 14.30 | 10.50 | 13.00 |
| 13 | 14.00 | 8.00 | 10.00 |
| 13 | 14.30 | 13.50 | 16.00 |
| 14 | 16.00 | 4.50 | 8.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 16.00 |
| 16 | 17.75 | 8.00 | 12.00 |
| 16 | 17.75 | 13.50 | 16.00 |
| 18 | 20.20 | 4.00 | 8.00 |
| 18 | 20.20 | 10.00 | 13.00 |
| 18 | 20.20 | 13.00 | 16.00 |
| 20 | 22.00 | 4.00 | 8.00 |
| 20 | 21.91 | 9.00 | 12.00 |
| 20 | 21.75 | 13.50 | 16.50 |
| 24 | 25.90 | 5.00 | 8.00 |
| 24 | 26.00 | 12.00 | 16.00 |
| 24 | 26.00 | 13.00 | 16.00 |
| 24 | 25.75 | 20.00 | 24.00 |
| 26 | 27.75 | 14.00 | 18.00 |
| 26 | 27.75 | 18.00 | 22.00 |
| 28 | 30.70 | 12.50 | 16.00 |
| 30 | 31.75 | 4.00 | 8.00 |
| 30 | 32.00 | 8.00 | 12.00 |
| 30 | 31.75 | 18.00 | 22.00 |
| 36 | 38.25 | 2.50 | 8.00 |
| 36 | 38.40 | 6.00 | 10.00 |
| 36 | 37.97 | 9.00 | 13.00 |

NOTES:

1. FLANGES ARE OF 150# LW PLT-1/2" THK. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|--|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-61 W/ 150# LW PLT FLG BOTH FLOATING | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/13/2023 | UG | | | | |
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| | | | | | | DRAWING NUMBER: 130-CAT-0061 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MAT'L'S.: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:
 1. FLOW LINER.
 2. EXTERNAL COVER.

| | | | | | |
|------|------------------|------------|-----|-------|-------|
| | | | | | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | |
| D | UPDATED NOTES | 09/13/2023 | UG | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |



Bellows Systems
 CAGE CODE: 22727

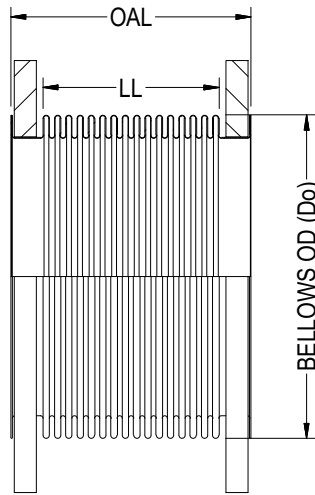
BELLOWS SYSTEMS, INC.
 Houston, TX
 www.bellows-systems.com

SINGLE EXPANSION JOINT
 TYPE SU-61 SPECIFICATION SHEET

| | | |
|------------------------------|----------------|--------|
| DRAWING NUMBER: 130-CAT-0061 | SHEET#: 2 OF 2 | REV. E |
|------------------------------|----------------|--------|

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TYPE SU-63



ISOMETRIC VIEW

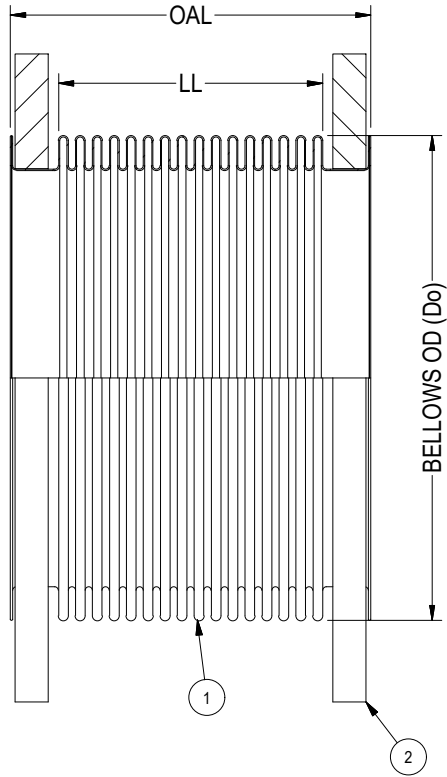
| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 2 | 3.10 | 2.00 | 4.00 |
| 2 | 3.10 | 6.00 | 8.00 |
| 2-1/2 | 3.70 | 2.00 | 4.00 |
| 2-1/2 | 3.70 | 6.00 | 8.00 |
| 3 | 4.30 | 2.00 | 4.00 |
| 3 | 4.40 | 6.00 | 8.00 |
| 4 | 5.36 | 2.50 | 4.50 |
| 4 | 5.36 | 5.50 | 8.00 |
| 4 | 5.15 | 9.00 | 12.00 |
| 5 | 6.70 | 3.00 | 5.00 |
| 5 | 6.55 | 5.50 | 8.00 |
| 6 | 7.70 | 3.00 | 5.00 |
| 6 | 7.63 | 5.50 | 8.00 |
| 8 | 10.10 | 4.13 | 6.00 |
| 8 | 10.10 | 5.50 | 8.00 |
| 10 | 12.00 | 2.00 | 4.50 |
| 11 | 12.10 | 4.00 | 6.00 |
| 11 | 12.00 | 5.50 | 8.00 |
| 13 | 14.30 | 10.50 | 13.00 |
| 13 | 14.00 | 8.00 | 10.00 |
| 13 | 14.30 | 13.50 | 16.00 |
| 14 | 16.00 | 4.50 | 8.00 |

| PIPE SIZE | BELLOWS OD (Do) | LIVE LENGTH (LL) | OVERALL LENGTH (OAL) |
|-----------|-----------------|------------------|----------------------|
| 14 | 15.75 | 13.00 | 16.00 |
| 16 | 17.75 | 8.00 | 12.00 |
| 16 | 17.75 | 13.50 | 16.00 |
| 18 | 20.20 | 4.00 | 8.00 |
| 18 | 20.20 | 10.00 | 13.00 |
| 18 | 20.20 | 13.00 | 16.00 |
| 20 | 22.00 | 4.00 | 8.00 |
| 20 | 21.91 | 9.00 | 12.00 |
| 20 | 21.75 | 13.50 | 16.50 |
| 24 | 25.90 | 5.00 | 8.00 |
| 24 | 26.00 | 12.00 | 16.00 |
| 24 | 26.00 | 13.00 | 16.00 |
| 24 | 25.75 | 20.00 | 24.00 |
| 26 | 27.75 | 14.00 | 18.00 |
| 26 | 27.75 | 18.00 | 22.00 |
| 28 | 30.70 | 12.50 | 16.00 |
| 30 | 31.75 | 4.00 | 8.00 |
| 30 | 32.00 | 8.00 | 12.00 |
| 30 | 31.75 | 18.00 | 22.00 |
| 36 | 38.25 | 2.50 | 8.00 |
| 36 | 38.40 | 6.00 | 10.00 |
| 36 | 37.97 | 9.00 | 13.00 |

NOTES:

1. FLANGES ARE OF 150# PLT. (ANSI B16.5 BOLT PATTERN)
2. FLANGE MATERIAL: ASTM A-36. FOR OTHER OPTIONAL MATERIAL PLEASE CONTACT BSI.
3. OAL IS BASED ON LIVE LENGTH. FOR OTHER OPTIONAL LENGTH PLEASE PROVIDE THEM IN THE SPECIFICATION SHEET.
4. BELLOWS MATERIAL: ASTM A-240 GRADE 321. OTHER MATERIALS (STAINLESS STEEL, NICKEL ALLOYS ETC.) ARE AVAILABLE ON REQUEST.
5. AVAILABLE IN 1 PLY, 2 PLY (STD) OR 3 PLY DESIGNS.
6. SPECIFY DESIGN/OPERATING PRESSURE & TEMPERATURE IN PAGE 2.
7. FOR MOVEMENTS AND LIFE CYCLE REFER TO BELLOWS CATALOG OR CONTACT BSI ENGINEERING.

| | | | | | | | |
|--|------------------|------------|-----|--|-----------------------|---|--------------------|
| | | | |  Bellows Systems | | BELLOWS SYSTEMS, INC. Houston, TX www.bellows-systems.com | |
| | | | | | | SINGLE EXPANSION JOINT STD. TYPE SU-63 W/ 150# PLT FLG BOTH FLOATING | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: | CAGE CODE: 22727 | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | | | |
| D | UPDATED NOTES | 09/13/2023 | UG | | | | |
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| | | | | | | DRAWING NUMBER: 130-CAT-0063 | SHEET#: 1 OF 2 |
| | | | | | | REV. E | |



| | | 1 | 2 | 3 | 4 |
|---|-----------------------|---|---|---|---|
| DIM.: | PIPE/ NOMINAL SIZE: | | | | |
| | OVERALL LENGTH (OAL): | | | | |
| DESIGN: | PRESSURE: | | | | |
| | TEMPERATURE: | | | | |
| MOV. & LIFE CYLS: | AXIAL COMPRESSION: | | | | |
| | AXIAL EXPANSION: | | | | |
| | LATERAL: | | | | |
| | ANGULAR: | | | | |
| | NO. OF CYCLES: | | | | |
| MATL'S: | ① BELLOWS: | | | | |
| | ② FLANGE: | | | | |
| DESIGN CODES/STANDARDS: (EJMA/ ASME SECT VII DIV I/ ASME B 31.1/ ASME B 31.3) | | | | | |
| APPLICATION NOTES: | | | | | |
| QUANTITY: | | | | | |

OPTIONAL FEATURES:

1. FLOW LINER.
2. EXTERNAL COVER.

| | | | | | |
|------|------------------|------------|-----|-------|-------|
| | | | | | |
| E | UPDATED TYPE NO. | 11/8/2023 | UG | | |
| D | UPDATED NOTES | 09/13/2023 | UG | | |
| REV. | DESCRIPTION | DATE: | BY: | CHKD: | APPD: |



Bellows Systems

BELLOWS SYSTEMS, INC.
Houston, TX
www.bellows-systems.com

SINGLE EXPANSION JOINT
TYPE SU-63 SPECIFICATION SHEET



Bellows Systems Inc
10950 Brittmoore Park Dr,
Houston, TX 77041, United States

Sales
(800) 233-0623

For Sales Enquiries
sales@bellows-systems.com



www.bellows-systems.com