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INSTALLATION INSTRUCTIONS FOR TYPES XH4FS & XH4FVS HEAVY DUTY JOINT COVER SYSTEMS

Revised 09/02

INSTALLATION INSTRUCTIONS FOR BALCO, INC. EXTRA HEAVY DUTY FLOOR EXPANSION JOINT COVER TYPES XH4FS & XH4FVS

The following installation instructions are very important. Read them carefully, and be sure you understand them completely before you begin any work.

STORAGE & HANDLING

The expansion joint covers are shipped unassembled. Store this product in the horizontal position in a clean, dry location. This is a finished product. Store this product in a protected area. Please note that bronze and stainless steel cover plates are also available for these models.

XH4FS-X & XH4FVS-X PARTS LISTS[1]

	XH4FS-X[1]	XH4FVS-X[1]
A. Subchannel Assembly:		
1. Base Member[2]	101NS	101NS
2. Cover Plate[3]	103NS	103NS
3. Cover Plate Fasteners[4]:		
a. Cover Plate Bolt	F1458S	F1458S
b. Cover Plate Nut	HRLN14S	HRLN14S
B. Subchannel Assembly Anchor[5]	21T	21T
C.. Center Plate	133N	188N
D. Wall Subchannel	N/A[6]	N108
E. Surface-Mounted Floor Subchannel[7]	N108E	N/A

[1] Corresponding systems are also available in Bronze and in Stainless Steel (Cover Plates, Center Plates, and Exposed Anchors will be bronze or stainless steel.

[2] Base member 201NS is used with systems installed into 2" or wider nominal joints.

[3] Cover Plate 203NS is used with systems installed into 2" or wider nominal joints.

[4] Fasteners supplied may differ from those listed here, depending on materials supplied and on project conditions. HB14214 w/HJN14 are used for cast-in-place installations.

[5] Center Plate listed is for an XH4FS-1; other systems use other center plates, including: 1633N, 1688N, 233N, or Bent Plates (3/16" or 1/4" thickness, typical)

[6] Not Applicable.

[7] These subchannels are surface-mounted onto the existing side of a New-to-Existing installation in which a blockout is not provided.

TOOLS REQUIRED

A. Drill Bits for Installation of Subchannel Assembly Anchors;
B. Drill Bits for drilling anchor holes in Base Members;
C. Electric Drill;
D. Sockets for Fasteners and Anchors;
E. Phillips Head Bits.

INSTALLATION

These installation instructions are for use in the installation of expansion joint cover types XH4FS-1, XH4FS-1-2, XH4FS-2, XH4FVS-1, XH4FVS-1-2, XH4FVS-2, and the corresponding Bronze and Stainless Steel joint cover systems. The system may be mechanically fastened to a prepared blockout, or the system may be cast-in-place. Blockouts may be formed at the time of the initial concrete pour or at a later time by removing material from the slab. Refer to the details for the required depth and width of the blockout. Please note that the total blockout width must be a minimum of 1/4" greater than the total width of the joint cover system and the total blockout depth must be a minimum of 1/16" greater than the total depth of the joint cover system. To ensure a good installation, use level and true blockout materials. For purposes of these installation instructions, extrusions are assumed to be 20 feet in length. The joint cover system shall be installed as follows:

STEP 1. Review Balco, Inc. approved shop drawings for types and locations.

STEP 2. If the installation is a floor to wall condition, install the floor subchannel base member in accordance with the appropriate procedures given below.

STEP 3. If a blockout has been formed by removing material from the slab, check the subchannels' setting beds for uneven conditions. Thoroughly clean the void of any loose materials (sand, dirt, debris, etc.). If uneven conditions exist, use grout to level the subchannels' setting beds.

NOTE: FOR EXTERIOR INSTALLATIONS OR INSTALLATIONS THAT WILL BE EXPOSED TO SIGNIFICANT DAILY OR SEASONAL CLIMATIC CHANGES, IT IS NECESSARY TO LEAVE A GAP BETWEEN ADJOINING BASE MEMBER EXTRUSIONS. THIS GAP IS TO ALLOW THE THERMAL EXPANSION OF THE EXTRUSIONS. A 1/8" GAP IS RECOMMENDED BETWEEN ADJOINING BASE MEMBERS IF THE BASE MEMBERS ARE PROVIDED IN LENGTHS OF 10 FEET OR LESS. A 1/4" GAP IS RECOMMENDED BETWEEN ADJOINING BASE MEMBERS IF THE BASE MEMBERS ARE PROVIDED IN LENGTHS GREATER THAN 10 FEET.

STEP 4. If the joint cover system is to be cast in place, proceed directly to Step 15. If the installation is to be mechanically fastened into a blockout, mark the locations for the anchor holes on the subchannel assembly base members (part no. 101NR), if the anchor holes have not been predrilled in the subchannels at the factory (see Figure 1). Standard anchor hole spacing is 20" o.c. with an anchor hole a nominal 3" from each end of each subchannel extrusion.

STEP 5. Drill the anchor holes into the subchannel assembly base members at the locations marked in Step 4.

STEP 6. If fire barrier is specified, install it at this time. Refer to the appropriate fire barrier type installation instructions for additional instructions regarding the installation of Balco, Inc. Fire Barrier Systems.

STEP 7. If water barrier is specified, install it at this time. Refer to "Installation Instructions For .045 EPDM Water Barrier Systems" for additional instructions concerning the installation of optional EPDM Water Barrier.

STEP 8. Select one of the subchannel assembly base members , with anchor holes already drilled into it. Place the base member into its properly installed position, and using it as a template, mark the location of the anchors on the substrate (see Figure 2).

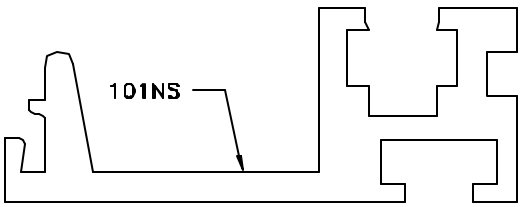

Figure 1

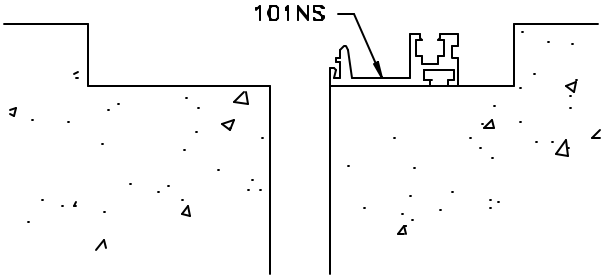

Figure 2

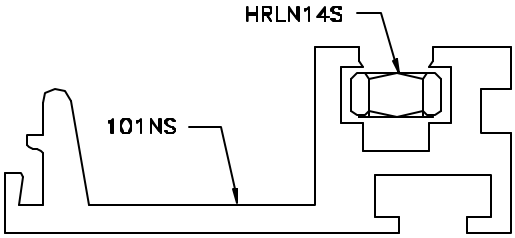

Figure 3

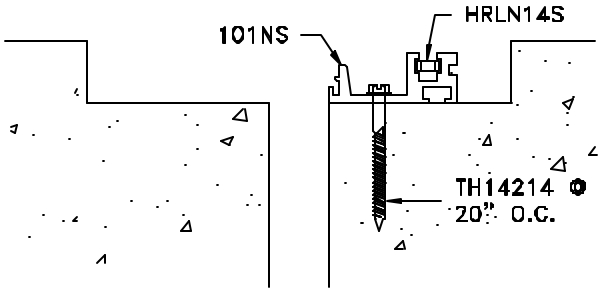

Figure 4

STEP 9. Remove the subchannel assembly base member from the installation area and drill the anchor holes into the substrate at the locations marked in Step 8.

NOTE: OBSERVE NORMAL SAFETY PRECAUTIONS WHEN DRILLING TO AVOID ALL UTILITIES AND RE-BAR.

STEP 10. Clean away any dirt, dust, and debris from the installation area.

STEP 11. Select a cover plate and count the number of anchor holes in it.

STEP 12. Slide one lock nut for each anchor hole counted in Step 11 (part no. HRLN14S) into the selected base member section's raceway (see Figure 3).

STEP 13. Put the subchannel assembly base member back into the properly installed position and attach it to the substrate using the fasteners provided. Ensure that the base member is at the proper elevation and that it is plumb, level, and properly aligned (see Figure 4).

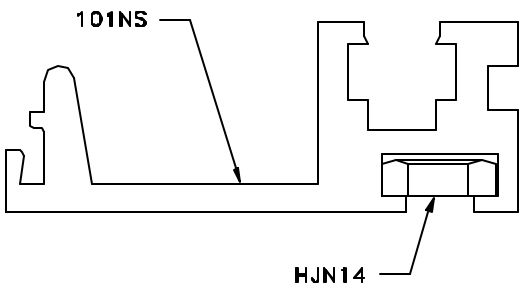

Figure 5

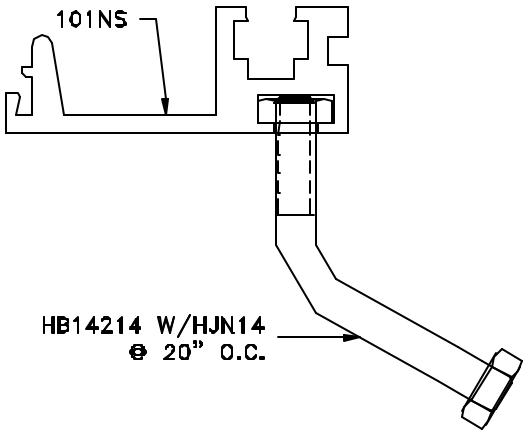

Figure 6

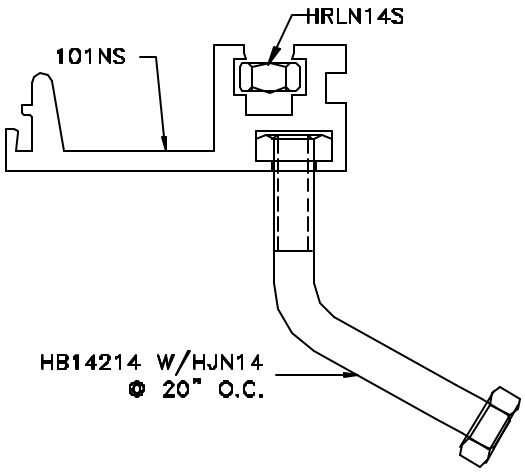

Figure 7

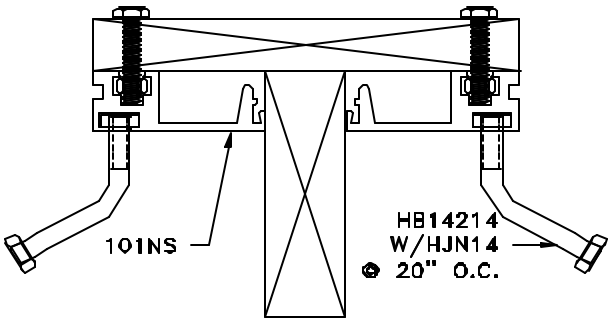

Figure 8

STEP 14. Repeat Step 8 through Step 13 until all the subchannel assembly base members have been installed. Proceed directly to Step 26.

STEP 15. If the installation is a floor to wall condition, proceed directly to Step 34. If the installation is in an expansion joint between new construction and an existing structure and a surface-mounted extrusion (part no. N108E) is provided, proceed directly to Step 50.

STEP 16. If the installation is to be cast in place, select one of the subchannel assembly base members and slide fourteen (14) jamb nuts (part no. HJN14) into the base member's raceway (see Figure 5).

STEP 17. Using the jamb nuts, attach the HB14214 to the base member, spacing the fasteners 20" o.c. with a fastener attached at a nominal 3" from each end of the base member (see Figure 6).

STEP 18. Repeat Step 16 and Step 17 until all the fasteners have been attached to all the base members.

STEP 19. Select a cover plate and count the number of anchor holes in it.

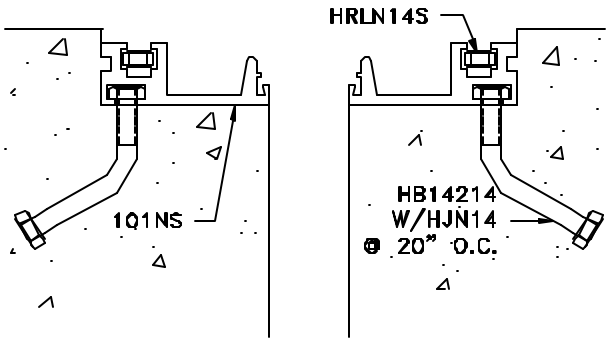

Figure 9

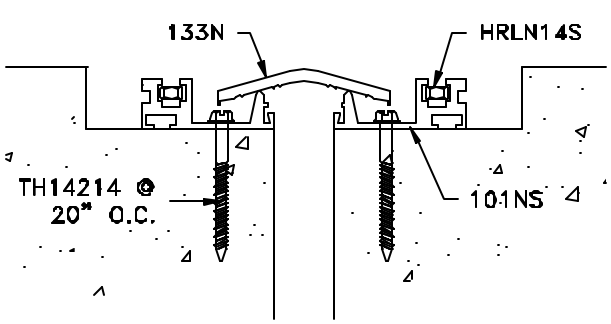

Figure 10

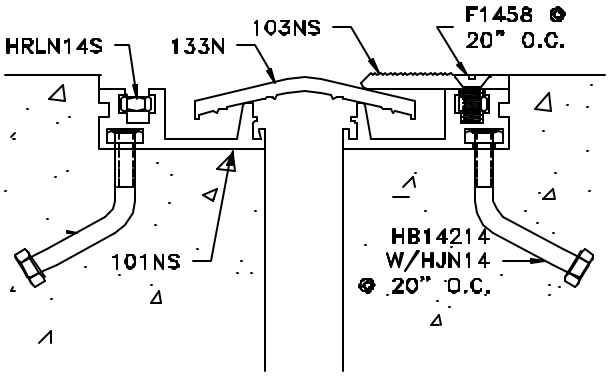

Figure 11

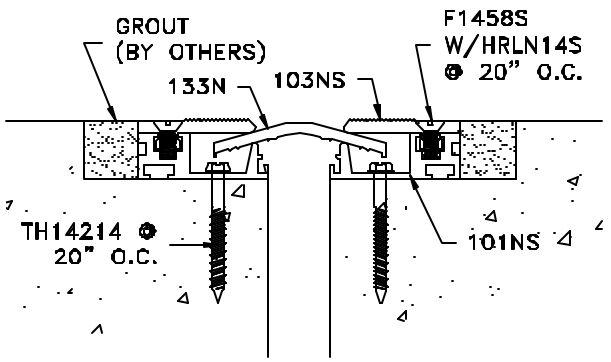

Figure 12

STEP 20. Slide one lock nut for each anchor hole counted in Step 19 (part no. HLN14S) into each base member section's raceway (see Figure 7).

STEP 21. Attach the subchannel assembly base members to the concrete forms. The base members may be wired into place or otherwise affixed in place for the concrete pour. A suggested attachment is illustrated in Figure . Ensure that the base members are at the correct elevation, and that they are plumb, level, and properly aligned (see Figure 8).

STEP 22. Pour and finish the concrete in accordance with all applicable requirements and standard industry practice.

STEP 23. Clean any excess concrete away from the base member's exposed surfaces before the concrete is allowed to set up.

STEP 24. After the concrete has set up, remove the concrete forms from the expansion joint cover installation (see Figure 9).

NOTE: FOR EXTERIOR INSTALLATIONS OR INSTALLATIONS THAT WILL BE EXPOSED TO SIGNIFICANT DAILY OR SEASONAL CLIMATIC CHANGES, IT IS NECESSARY TO LEAVE A GAP BETWEEN ADJOINING COVER PLATES AND BETWEEN ADJOINING CENTER PLATES. THIS GAP IS TO ALLOW THE THERMAL EXPANSION OF THE EXTRUSIONS. A 1/8" GAP IS RECOMMENDED BETWEEN ADJOINING PLATES IF THE PLATES ARE PROVIDED IN LENGTHS OF 10 FEET OR LESS. A 1/4" GAP IS RECOMMENDED BETWEEN ADJOINING PLATES IF THE PLATES ARE PROVIDED IN LENGTHS GREATER THAN 10 FEET.

STEP 25. If the installation is a floor to wall condition, proceed directly to Step 34. If the installation is in an expansion joint between new construction and an existing structure and a surface-mounted extrusion (part no. N108E) is provided, proceed directly to Step 50.

STEP 26. Place the center plate (part no. 133N) in position on the subchannel assembly base members. Ensure that the center plate is level and that it is properly aligned and centered over the void (see Figure 10).

STEP 27. Place a cover plate (part no. 103NS) next to the base member onto which it is to be installed, aligning the cover plate with the base member.

STEP 28. Using the cover plate as a template, align the lock nuts in the base member's raceway with the pre-drilled anchor holes in the cover plate.

STEP 29. Put the cover plate in position over its corresponding base member and over one end of the center plate. Ensure that the center plate remains level and centered over the void.

STEP 30. Attach the cover plate to the base member using the fasteners provided (part no. F1458S). Ensure that the cover plate is plumb, and level and that it is properly aligned (see Figure 11). Tighten the fasteners by hand. Do not overtighten the fasteners.

STEP 31. Repeat the procedures established in Step 26 through Step 30 until all the center plates and cover plates have been installed.

STEP 32. Grout the mechanically fastened joint covers into place using a non-shrink, metallic, epoxy grout or other non-shrink grout as appropriate (see Figure 12).

STEP 33. Clean any excess grout from the joint cover system's exposed surfaces before it is allowed to set up.

NOTE: STEP 34 THROUGH STEP 49 FOLLOWING ARE ONLY APPLICABLE TO FLOOR-TO-WALL SYSTEMS.
STEP 50 THROUGH STEP 64 FOLLOWING ARE ONLY APPLICABLE TO NEW-TO-EXISITING FLOOR SYSTEMS.

STEP 34. If the anchor holes have not been predrilled into the wall extrusions (part no. N108) at the factory, mark the locations for the anchor holes on the wall extrusions (see Figure 13). The anchors are spaced 20" o.c. with an anchor placed at a nominal 3" from each end of the extrusion.

STEP 35. Draw a horizontal line on the facing wall 1" above the top of the floor surface.

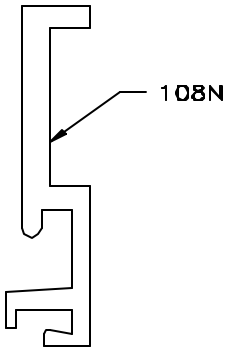

Figure 13

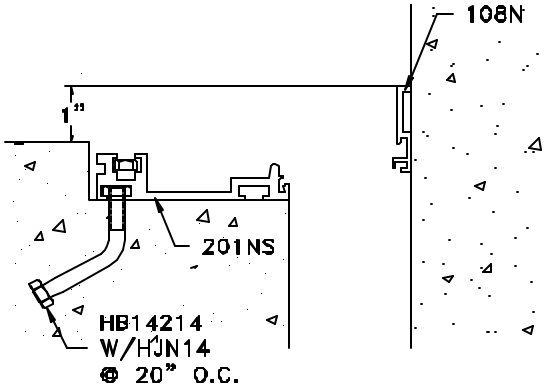

Figure 14

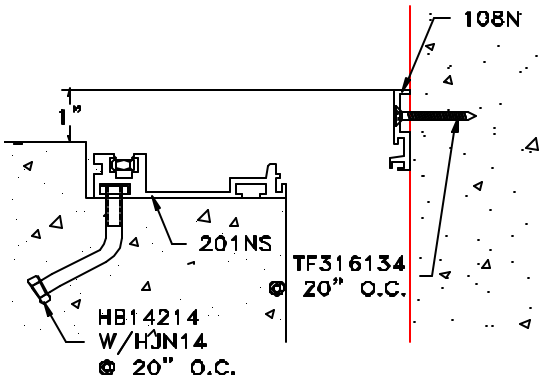

Figure 15

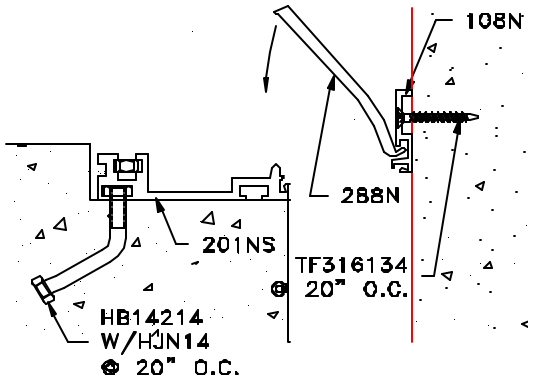

Figure 16

STEP 36. Select a wall extrusion and place it in its installed position, aligning the top edge of the extrusion with the line drawn in Step 35 (see Figure 14). Ensure that the wall extrusion is level and properly aligned.

STEP 37. Using the extrusion as a guide, mark the location for the anchors on the substrate.

STEP 38. Remove the wall extrusion from the installation area and drill the anchor holes into the wall at the locations marked in Step 37.

NOTE: OBSERVE NORMAL SAFETY PRECAUTIONS WHEN DRILLING TO AVOID ALL UTILITIES AND RE-BAR.

STEP 39. Clean away any dirt, dust, and debris from the installation area.

STEP 40. Put the wall extrusion back into place and attach it to the wall using the fasteners provided. Ensure that the wall extrusion remains level and properly aligned (see Figure 15).

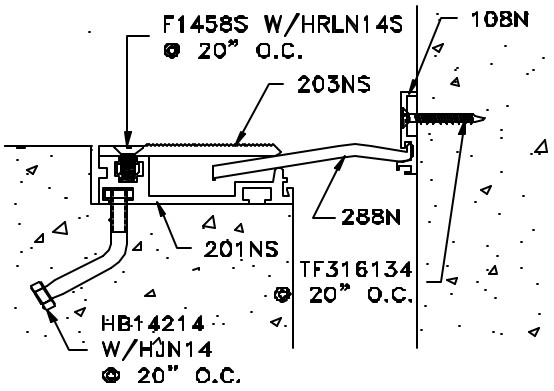

Figure 17

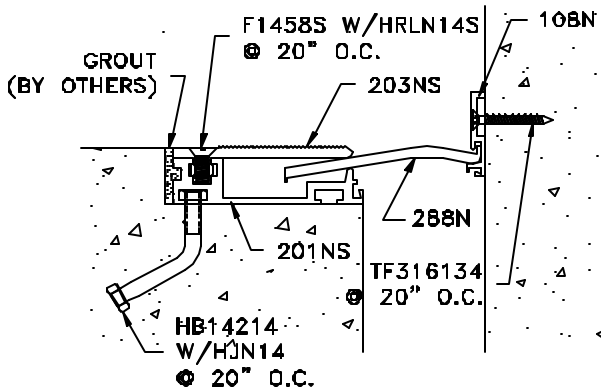

Figure 18

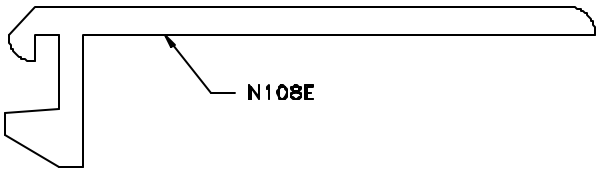

Figure 19

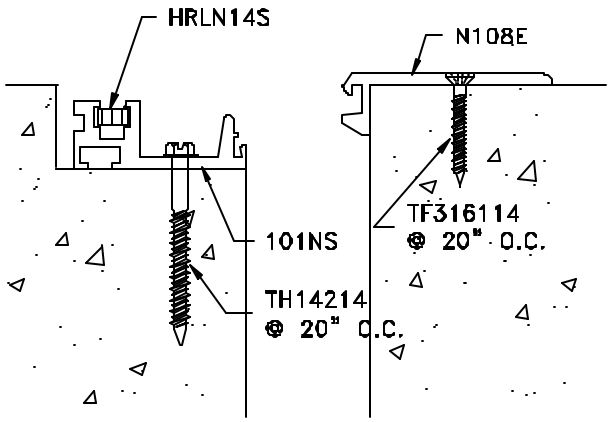

Figure 20

STEP 41. Repeat Step 35 through Step 40 for each wall extrusion until all the wall extrusions have been installed.

STEP 42. Select a center plate and position it parallel to the wall extrusion.

STEP 43. Insert the center plate's continuous tab into the wall extrusion's track and rotate the center plate downward onto the base member so that the center plate fully engages with the wall extrusion (see Figure 16).

STEP 44. Place a cover plate next to the base member onto which it is to be installed, aligning the cover plate with the base member.

STEP 45. Using the cover plate as a template, align the lock nuts in the base member's raceway with the predrilled anchor holes in the cover plate.

STEP 46. Put the cover plate in position over its corresponding base member and over the free end of the center plate. Ensure that the center plate remains level and centered over the void.

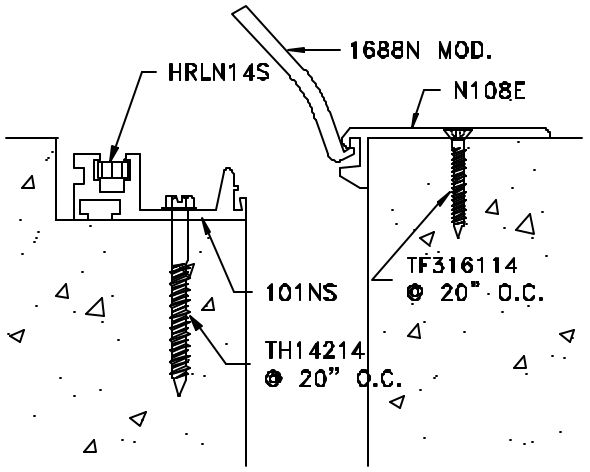

Figure 21

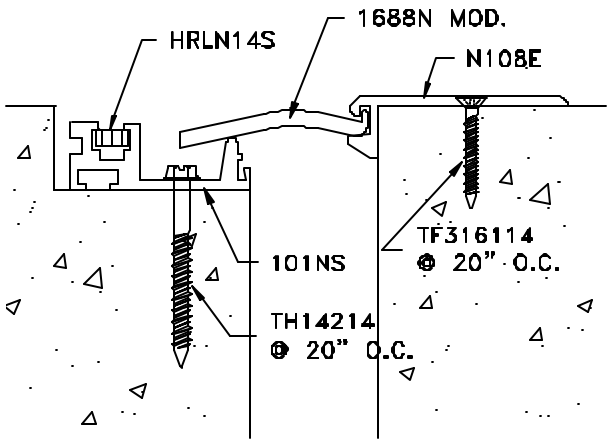

Figure 22

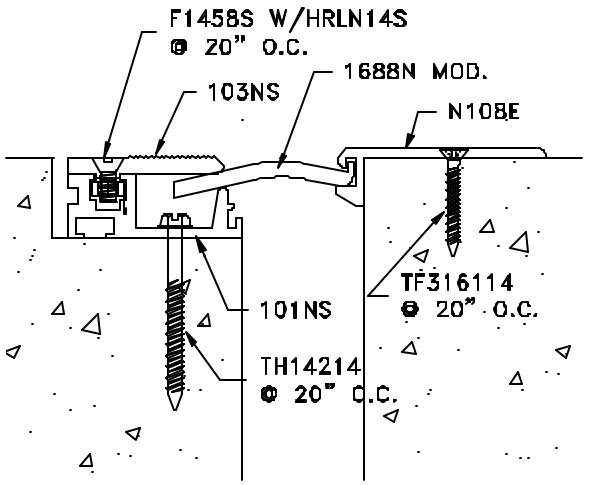

Figure 23

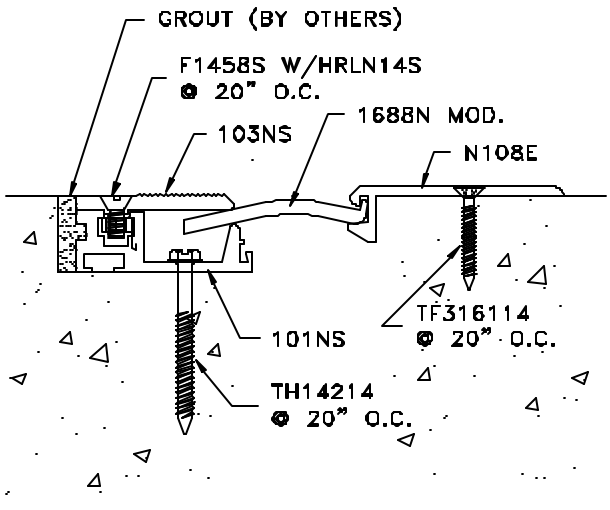

Figure 24

STEP 47. Attach the cover plate to the base member using the fasteners provided (part no. F1458S). Ensure that the cover plate is plumb, and level and that it is properly aligned (see Figure 17).

STEP 48. Repeat the procedures established in Step 42 through Step 47 until all the center plates and cover plates have been installed.

STEP 49. Grout the mechanically fastened joint covers into place using a non-shrink, metallic, epoxy grout or other non-shrink grout as appropriate (see Figure 18).

NOTE: STEP 50 THROUGH STEP 64 FOLLOWING ARE ONLY APPLICABLE TO NEW-TO-EXISTING FLOOR SYSTEMS.

STEP 50. If the anchor holes have not been predrilled into the surface-mounted extrusions (part no. N108E) at the factory, mark the locations for the anchor holes on the surface-mounted extrusions (see Figure 19). The anchors are spaced 20" o.c. with an anchor placed at a nominal 3" from each end of the extrusion.

STEP 51. Select a surface-mounted extrusion and place it in its installed position. Ensure that the surface-mounted extrusion is level and properly aligned.

STEP 52. Using the extrusion as a guide, mark the location for the anchors on the substrate.

STEP 53. Remove the surface-mounted extrusion from the installation area and drill the anchor holes into the substrate at the locations marked in Step 52.

NOTE: OBSERVE NORMAL SAFETY PRECAUTIONS WHEN DRILLING TO AVOID ALL UTILITIES AND RE-BAR.

STEP 54. Clean away any dirt, dust, and debris from the installation area.

STEP 55. Put the surface-mounted extrusion back into place and attach it to the substrate using the fasteners provided. Ensure that the surface-mounted extrusion remains level and properly aligned (see Figure 20).

STEP 56. Repeat Step 51 through Step 55 for each surface-mounted extrusion until all the surface-mounted extrusions have been installed.

STEP 57. Select a center plate and position it parallel to the surface-mounted extrusion.

STEP 58. Insert the center plate's continuous tab into the surface-mounted extrusion's track and rotate the center plate downward onto the base member so that the center plate fully engages with the surface-mounted extrusion (see Figure 21 and Figure 22).

STEP 59. Place a cover plate next to the base member onto which it is to be installed, aligning the cover plate with the base member.

STEP 60. Using the cover plate as a template, align the lock nuts in the base member's raceway with the predrilled anchor holes in the cover plate.

STEP 61. Put the cover plate in position over its corresponding base member and over the free end of the center plate. Ensure that the center plate remains level and centered over the void.

STEP 62. Attach the cover plate to the base member using the fasteners provided (part no. F1458S). Ensure that the cover plate is plumb, and level and that it is properly aligned (see Figure 23).

STEP 63. Repeat the procedures established in Step 57 through Step 62 until all the center plates and cover plates have been installed.

STEP 64. Grout the mechanically fastened joint covers into place using a non-shrink, metallic, epoxy grout or other non-shrink grout as appropriate (see Figure 24).

WARRANTY POLICY

Balco, Inc. warrants to its purchasers that all products sold by it will be free from manufacturing and material defects. Any defective product will be replaced or repaired free of any charge, provided a claim is brought to our attention, in writing, within the established warranty period following the date of shipment by us and provided our examination shows the product has failed under the terms of this warranty. The established warranty period for exterior joint systems (Duraflex™) is five years provided the systems are installed by a Balco Certified Installer. The established warranty period for grids and mats is two (2) years. The established warranty period for all other Balco, Inc. products is one (1) year. Balco, Inc. will not be responsible for installation costs involved in such repair or replacement. Balco, Inc. shall have no obligation under this warranty if owner subjects materials to improper conditions (refer to Balco's installation instructions). This is in lieu of all other warranties, expressed or implied, and is the sole warranty extended by Balco, Inc. Our liability under this warranty is limited to repair or replacement and does not include any responsibility for consequential or other damage of any nature. It is further agreed and understood that the price stated for the seller's products is consideration for the limitation of seller's liability hereunder.

REGISTERED TRADEMARKS
"VINYLINES" "SAF-T-GLO"
"METAFLEX" "SAF-TEN BEVEL"
"SENTRY" "DURAFLEX"
"ILLUMI-TREAD"

BALCO, INC. PATENT NUMBERS
5,357,727; 5,782,044; 5,829,216;
5,832,678; 5,852,902; 6,014,848;
6,115,980; 6,581,347; 6,942,419;
6,955,017; 6,962,026; 7,104,717;
Patents Pending

BALCO INC

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MAINTENANCE MANUAL FOR BALCO, INC. DURAFLEX™ EXTERIOR EXPANSION JOINT SYSTEMS

10/14/04
Document Control No. DM5001

General Maintenance

DuraFlex™ Exterior Expansion Joint Systems will provide maximum long-term service life when a preventative maintenance schedule is established and followed. Balco, Inc. recommends that regularly scheduled surveys and inspections be conducted providing visual inspection of the expansion joint systems and the surrounding substrate.

Maintenance Surveys

Conduct the survey with a focus on the following items:

- Condition of the expansion joint elements: steel, aluminum, elastomers and sealant materials.
- Review attachment medium, whether mechanical or adhesive.
- Inspect surrounding concrete for cracking or other deterioration that can lead to leakage.
- Review all curb, directional changes and splice conditions.
- Inspect the underside of the expansion joint location for staining or leaking indicating water passage.
- Inspect drains and/or scuppers to ensure they are not blocked or clogged to avoid ponding water on the deck.

Facility Maintenance Personnel should conduct this type of survey every six months.

Structure Inspections

Balco, Inc. recommends that every two years a qualified engineer, retained by the facility owner or responsible facility manager, inspect the structure, including the expansion joints, for more serious conditions that may be overlooked in the general surveys described above.

Cleaning

Balco, Inc. recommends sweeping and washing down the expansion joint systems and all floor areas on a regular basis. Balco, Inc. recommends wash downs of a heavy duty nature to ensure that any chlorides on the surface are washed away. Remove any accumulations of sand, dirt or debris from the immediate expansion joint area.

Snowplowing

Keep snow removal equipment to vehicle axle weights below 4,000 pounds. Ensure that snow removal equipment meets the structure's headroom clearances. Check with your garage designer to ensure vehicle weight does not exceed acceptable design load capability per the structure design.

The snow plow blade must not damage the expansion joint system or the surrounding deck surface. To help prevent damage, Balco, Inc. recommends mounting a heavy rubber blade edge to the snow plow's steel edge in order to protect the surfaces or adjusting steel shoes to keep the snow plow blade at least one half inch above the traffic surface.

Prior to beginning snowplowing, plan the procedures used so that plowing performed over the expansion joint system is done at a 45 degree angle or in the direction of the joint length. This will help ensure that the plow blade does not catch in the joint opening and result in damage to the system or the surrounding substrate.

Do not use front loader type equipment as it can cause significant damage to expansion joint systems and to the deck surface. Do not pile snow on top of the expansion joint system and drainage conductors.

Expansion Joint Repair

If defects and damage develop with in-place joint systems, consult an approved Certified Installer for the DuraFlex™ product line for proper repair procedures. Contact Balco, Inc. for a list of approved Certified Installers in your area.

Reference Materials

Parking Garage Maintenance Manual
National Parking Association
1112 16th Street, NW, Suite 300
Washington, DC 20036
(800) 647-PARK

Guide For Making A Condition Survey Of Concrete In Service
American Concrete Institute
P.O. Box 9094
Farmington Hills, MI 48333
(248) 848-3800