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INSTALLATION INSTRUCTIONS FOR BALCO, INC. DURAFLEX™ NW SERIES NO WING SEAL FLOOR EXPANSION JOINT SYSTEMS

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INSTALLATION INSTRUCTIONS FOR BALCO, INC. DURAFLEX™ NW SERIES - NO WING SEAL SYSTEMS IN FLOORS

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 systems are shipped unassembled. Upon receipt, these products should be stored in the horizontal position in a clean, dry location. Store these products in a protected area. Do not allow Lube Adhesive to freeze. The recommended shelf life of Balco, Inc. Lube Adhesive is six (6) months from the date of manufacture. Store these products at a temperature range of 60-80°F.

NW SERIES NO WING SEAL SYSTEMS PARTS LISTS

	NW-250	NW-300	NW-400	NW-500	NW-600
A. Compression Seal	NW250	NW300	NW400	NW500	NW600
B. Lube Adhesive	LA36T	LA36T	LA36T	LA36T	LA36T

TOOLS REQUIRED

This is a list of tools and materials recommended for use in the installation of these joint systems. Tools and materials in this list are not provided by Balco, Inc. Tools and materials marked with an asterisk (*) must be pre-approved by Balco, Inc.

A. Tape Measure
B. Level
C. Concrete Saw
D. Disc Grinder
E. Diamond Grinding Disc
F. Disc Grinder
G. Concrete Patching Material*
H. Sandblasting Equipment
I. Air Compressor (fitted with an oil trap)
J. Markers for marking Concrete and Seal
K. Utility Knife
L. Clean White Rags
M. Welding Equipment (for Tack Welding)[1]
N. 1/4" X 1/4" Stop Bars (Steel)[1]
O. Bulk Caulking Gun
P. Margin Trowel
Q. Tape for masking substrate
R. Kraft Paper
S. Toluene
T. Clean Plastic Sheet
U. Miter Box
V. Back Saw
W. Splicing Iron

[1] These items are only required for steel blockouts (steel angle cast into the concrete).

PRELIMINARY REQUIREMENTS

1. Scope of Preliminary Requirements

The expansion joint opening must be formed to a uniform width for the entire length of the joint. Balco, Inc. recommends that integral supporting seats for the seal be formed at the time of the concrete pour. To select the proper seal size, the following should be considered:

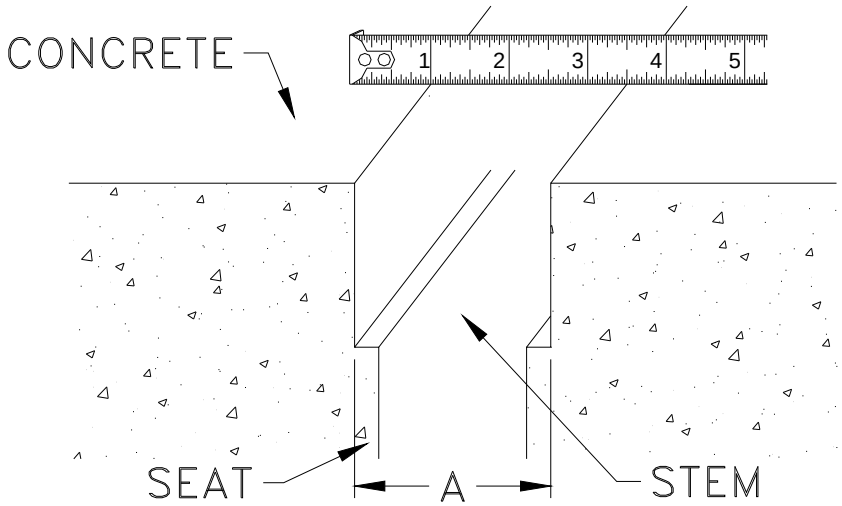

Figure 1

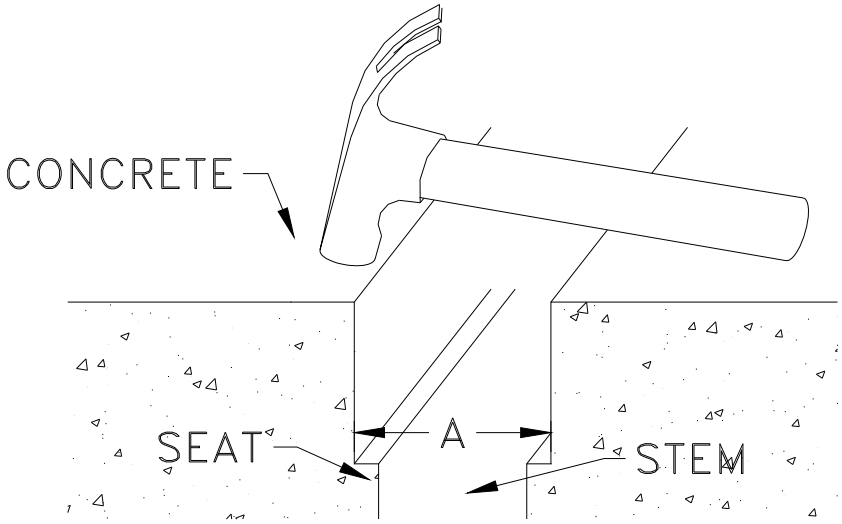

Figure 2

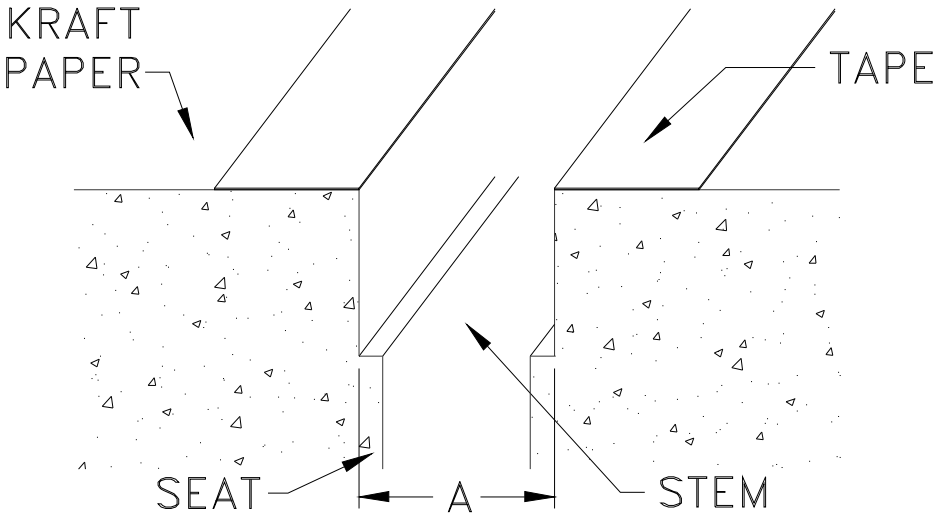

Figure 3

A. The size of the joint opening measured at a 70°F temperature should be verified and recorded by the Engineer of record (see Figure 1). Please note that the joint size indicated in Figure 1 is representative, and the actual required joint size may vary from that indicated in Figure 1.

B. The Engineer shall determine the movement required at the joint location.

C. Regional temperature history will determine the increment of movement per degree of temperature.

D. Other movement requirements, such as longitudinal rack, deflection, etc. should be considered and accounted for.

2. Jobsite Conditions and Survey

The conditions of the joint opening must be surveyed prior to beginning installation work. The following points should be considered and action implemented where required:

A. Interface walls of the joint opening must run parallel, straight and plumb.

B. Access to the bonding surface of the interface walls must be free and clear. Any obstructions must be accounted for in the installation process.

C. Spalls in the concrete are to be repaired with an approved patching material. Consult the Engineer for a list of acceptable patching products.

D. After patching, or reworking, the concrete or steel stem walls should be 'sound'.

E. Measure the expansion joint opening and correlate with the deck temperature. Verify that the opening width is synchronized with the values in the Temperature-Adjustment Table supplied by the Engineer.

F. Review all directional change locations; advise Balco, Inc. of the details.

3. Concrete Joint Opening Preparation

A. The expansion joint opening must be constructed straight, parallel and plumb. Concrete saws and diamond grinding disks should be used to correct any deviations.

B. Supporting seats for the seal must be at the elevation and of the dimensions indicated on the details.

C. Spalls in the concrete must be repaired by using a pre-approved patching material.

D. A tooled edge on the corners of the concrete is desired. The radiused edge reduces the effects of impact loading from vehicles and lessens the chance of edge erosion, cracking or spalling.

E. Concrete adjacent to the expansion joint system must be sound. This should be confirmed by tapping these areas with a hammer (see Figure 2). If a hollow sound is heard or if the concrete cracks, crumbles or loosens, the unsound concrete must be removed and repaired with a structural repair mortar.

F. Edge spalling, sharp projections and concrete voids (bug holes) shall also be repaired prior to proceeding with the joint installation. All repair materials used should have reached full cure conditions as specified by the repair material manufacturer. All obstructions such as form work and refuse shall be removed from the joint opening.

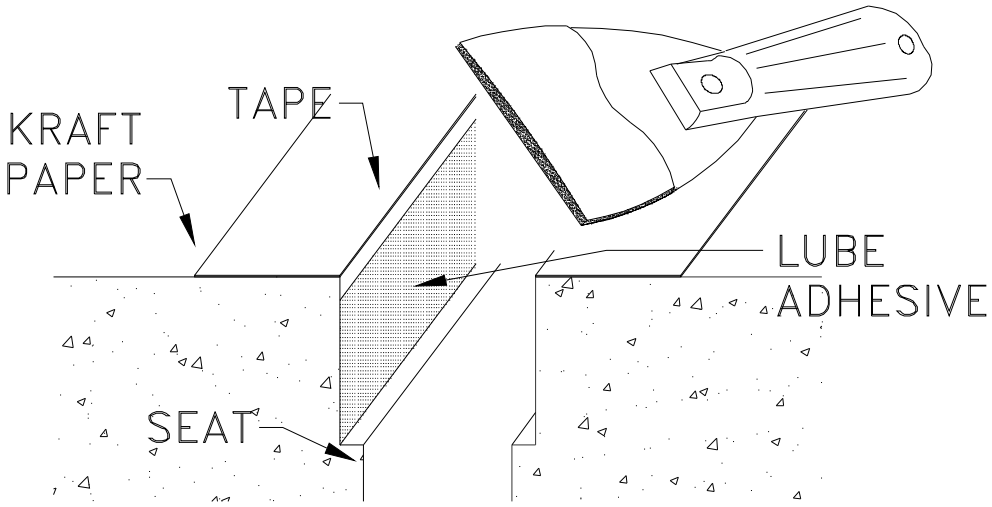

Figure 4

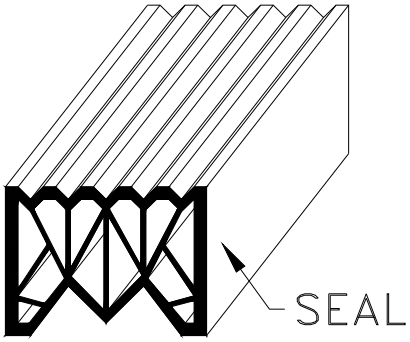

Figure 5

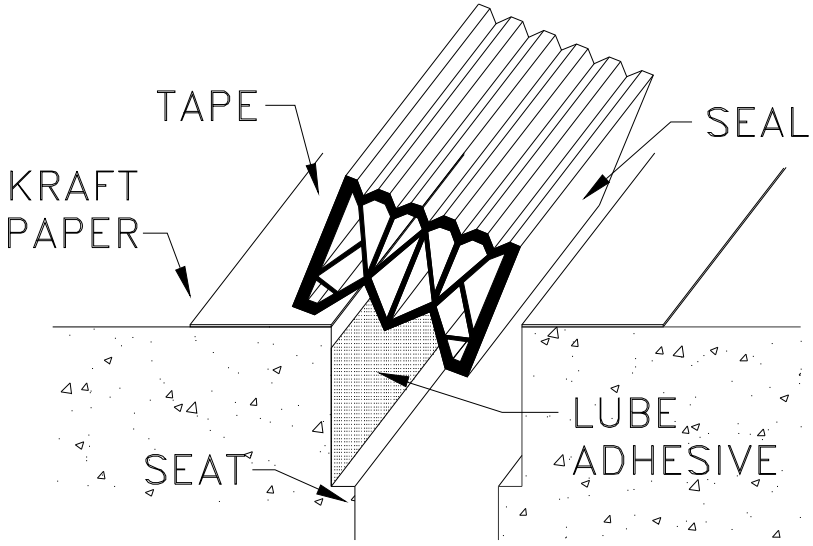

Figure 6

G. Repair mortars acceptable to Balco, Inc. include; Thoroc 1060, Emaco T-415 and Sika 123. Contact Balco, Inc. for recommendations on other compatible repair mortars.

H. Areas that are repaired must also be sound and be confirmed by tapping these areas with a hammer. If a hollow sound is heard or the repaired area cracks, crumbles or loosens, the unsound repair must be completely removed and repaired again with a structural repair mortar. Access to the bonding surface of the interface walls must be free and clear. Any obstructions must be accounted for in the installation process.

I. Prior to progressing with the installation of the seal, clean the interface walls of the concrete to remove any laitance, loose material, dirt, grease, oil, etc.

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4. Steel Joint Opening Preparation

A. If the stem is lined with steel plates or angles, the supporting seats for the seal must be fabricated by tack welding 1/4" X 1/4" Stop Bars (steel) to the plates or angles at the elevation indicated on the details.

5. Seal Preparation

A. The seal will be delivered to the site protected in shrink-wrap and banded to a pallet. When ready to begin installation, remove the wrap and uncoil the seal. Allow the seal length to relax until all of the kinks have been relieved. Balco, Inc. recommends placing the seal on a clean piece of plastic sheet to prevent soiling of the seal.

B. Measure and cut the seal to the lengths required for the application. When measuring and cutting the seal, be careful not to pull or stretch the seal.

C. Ensure that the supporting seats are in place prior to beginning the installation of the seal. Supporting seats are required for horizontal installations.

D. Prepare seal splices as necessary. Refer to the section of these installation instructions entitled "Seal Splicing" for instructions for splicing the seal.

6. Personnel Safety

A. As with the use of any chemical, care shall be taken to protect the users. Insulated gloves, Neoprene or other appropriate material, and safety glasses shall be worn at all times. Users should also wear long sleeve shirts and long pants.

B. The work area shall be well ventilated. All users should familiarize themselves with the MSDS information prior to the work.

INSTALLATION

These installation instructions are for use in the installation of the DuraFlex™ NW Series - No Wing Seal Systems Types NW-250, NW-300, NW-400, NW-500 and NW-600 in floor joints. The system shall be installed as follows:

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

STEP 2. Ensure that the joint and concrete, or steel, have been properly prepared for the seal installation in accordance with the section of these instructions entitled "Concrete Joint Opening Preparation", or "Steel Joint Opening Preparation", as applicable.

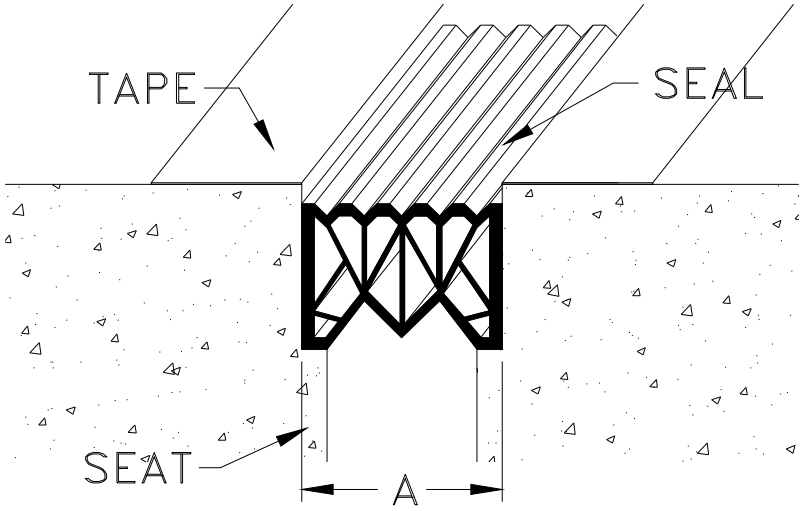

Figure 7

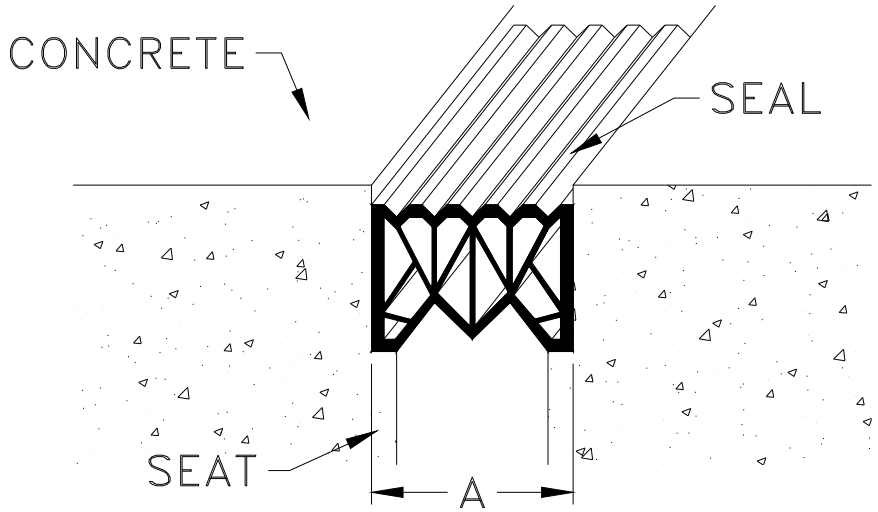

Figure 8

STEP 3. Apply tape to the top surfaces of the concrete adjacent to the expansion joint gap (see Figure 3). Balco, Inc. also recommends that Kraft paper be used in conjunction with the tape to protect the concrete surfaces from Lube Adhesive splatter, spills, tracking, etc.

NOTE: THE TAPE AND KRAFT PAPER WILL KEEP THE CONCRETE FREE OF SMEARED ADHESIVE.

STEP 4. Mark the recessed depth (1/4") on the joint interface surfaces.

STEP 5. Select the Balco, Inc. Lube Adhesive - LA36T. This is a one part adhesive. Check the adhesive for settling or separation, and remix the adhesive as necessary.

STEP 6. Using a bulk caulking gun (20 oz. foil sausage packs), apply a 3/8" bead of the Lube Adhesive to each of the sidewalls of the expansion joint gap at the recessed depth mark on the joint interface surfaces made in Step 4. Using a margin trowel, spread the Lube Adhesive on the joint gap surface

down to a depth equal to the depth of the side wall of the seal. For constructions formed with supporting seats or where metal seats are provided, this will be the top of the supporting seats (see Figure 4). This depth will vary depending upon seal size.

NOTE: CONSUMPTION VARIES BY SEAL SIZE. A 20 OZ. PACKAGE SHOULD COVER APPROXIMATELY 20 FT. OF JOINT, BOTH SIDES, FOR A TYPICAL 3" SEAL. DO NOT ALLOW THE LUBE ADHESIVE TO DRIP THROUGH THE JOINT ONTO MATERIALS AND CONTENTS OF FLOORS BELOW.

STEP 7. Select the seal (see Figure 5).

STEP 8. Beginning at one end of the seal, gradually compress and push the seal into the joint gap (see Figure 6). Ensure that the seal does not scrape the adhesive away from the joint interface areas to which it was applied.

STEP 9. Position the seal so the its top is approximately 1/4" below the adjoining concrete surfaces (see Figure 7).

STEP 10. Using a clean rag soaked with an organic solvent, wipe the exposed surfaces of the seal until they are clean.

STEP 11. Clean the installation area. Remove the tape from the concrete surface (see Figure 8). Ensure that any remaining Adhesive is properly stored away or are disposed of properly. Ensure that all trash and refuse, including used containers and rags, are disposed of properly.

STEP 12. Open the joint system to traffic immediately.

SEAL SPLICING

Butt Splices of the NW Series No Wing Seal can be accomplished using one of the following two methods. Splices can be easily completed in the field by using a heat fusing process as described in METHOD I below. Splices can also be easily completed in the field using an optional adhesive splice kit and the procedures described under METHOD II below.

METHOD I - HEAT FUSING

STEP 13. Ensure that the mating ends of the seal sections to be spliced together have fresh, straight cuts.

STEP 14. After the Splicing Iron is preheated (approximately 400^{o}F), hold it between each end of the seal joint. Time and temperature to heat fuse seal section together may vary depending upon seal size and environmental conditions.

STEP 15. When each surface shows bead of melted material, quickly remove the splicing iron, and hold the joint ends together until they bond (about 3-5 minutes). Cold water may be sprayed on the joint to expedite cooling. Do not move, bend, stretch or stress the splice before the recommended bond time.

STEP 16. Directional Changes in the Profile can be made by miter-cutting the seal shape and heat-splicing the material lengths together. Transitions may be fabricated in the factory or fabricated at the jobsite. Once the transition is completed, only simple buttsplicing in the field is required to incorporate the transition into the system.

METHOD II - ADHESIVE

STEP 17. Ensure that the mating ends of the seal sections to be spliced together have fresh, straight cuts.

STEP 18. Select the Adhesive Splice Kit. Using Toluene and a clean rag, clean the mating seal surfaces.

STEP 19. Select the Primer and one brush from the Splice Kit, and using the brush, apply the primer to the mating seal surfaces.

STEP 20. Select the Adhesive and the other brush (clean) from the Splice Kit. Using the brush, apply the adhesive to one of the mating ends.

STEP 21. Press the mating seal ends together and hold them together for at least one (1) minute.

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 cover systems (Duraflex™) is five (5) 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; 6,014,848; 6,115,980;
6,581,347; 6,942,419; 6,955,017;
6,962,026; 7,104,717; 7,856,781
SAF-T-GLO patent pending