

Standard Specification for Installing Lock-Strip Gaskets and Infill Glazing Materials¹

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1. Scope

1.1 This specification covers installation procedures for lock-strip gaskets that comply with Specification C 542 and for infill glazing materials in lockstrip gasket glazing applications used in building walls which are not more than 15° from a vertical plane. The prime performance considerations are weathertightness against air and water infiltration, and structural integrity under wind loads.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI units in parentheses are provided for information only.

2. Referenced Documents

2.1 ASTM Standards:

- C 542 Specification for Lock-Strip Gaskets²
- C 717 Terminology of Building Seals and Sealants²
- C 963 Specification for Packaging, Identification, Shipment, and Storage of Lock-Strip Gaskets²
- C 964 Guide for Lock-Strip Gasket Glazing²

3. Terminology

3.1 *Definitions*—Refer to Terminology C 717 for the following terms used in this Specification: bite, edge spacer, elastomer, gasket, glazing, hardness, joint, lock-strip gasket, reglet, sealant, setting block and spacer.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *clamping pressure, n*—the pressure exerted by the lip of a lock-strip gasket on material installed in the channel when the lock-strip is in place.

3.2.2 *durometer, n*—(1) an instrument for measuring the hardness of rubber-like materials. (2) a term used to identify the relative hardness of rubber-like materials, for example, “low durometer” (relatively soft) or “high durometer” (relatively hard).

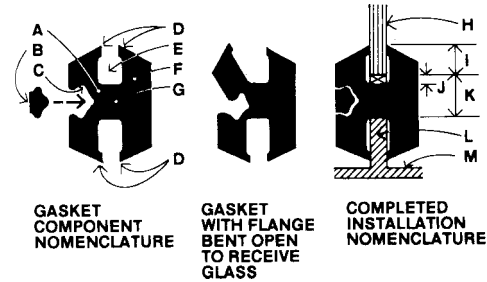
3.2.3 *edge clearance, n*—the distance between the bottom of a channel of a lock-strip gasket and the edge of material installed in the channel (see Figs. 1-3).

3.2.4 *elongation, n*—increase in length, expressed as a percentage of the original length.

¹ This specification is under the jurisdiction of ASTM Committee C-24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.73 on Compression Seal and Lock-Strip Gaskets.

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² Annual Book of ASTM Standards, Vol 04.07.



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|----------------------|----------------------------|
| A Hinge | H Glass or panel |
| B Lock-strip | I Bite |
| C Lock-strip cavity | J Edge clearance |
| D Lip (sealing edge) | K Frame-to-glass dimension |
| E Channel recess | L Frame lug |
| F Flange | M Frame |
| G Web | |

FIG. 1 Basic H-Type gasket, its functional principles and nomenclature

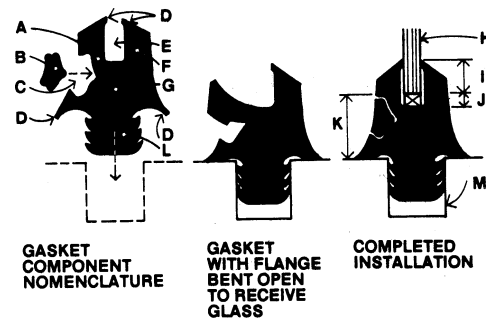
3.2.5 *filler strip*—see *lock-strip*, the preferred term.

3.2.6 *flange, n*—that part of a lock-strip gasket which extends to form one side of a channel (see Figs. 1 and 2).

3.2.7 *gasket, structural*—see *gasket, lock-strip*, the preferred term.

3.2.8 *gasket, zipper*—see *gasket, lock-strip*, the preferred term.

3.2.9 *H-gasket*—see *gasket, lock-strip* and Fig. 1.



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|----------------------|----------------------------|
| A Hinge | H Glass or panel |
| B Lock-strip | I Bite |
| C Lock-strip cavity | J Edge clearance |
| D Lip (sealing edge) | K Frame-to-glass dimension |
| E Channel recess | L Spline |
| F Flange | M Reglet |
| G Web | |

FIG. 2 Reglet-type gasket, its functional principles and nomenclature

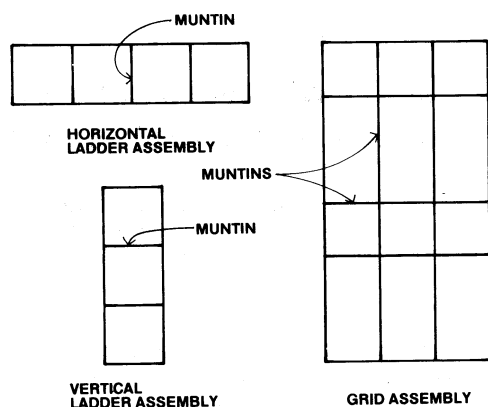


FIG. 3 Gasket Systems

3.2.10 *hinge, n*—the minimum thickness of gasket material between the channel recess and the lock-strip cavity; the plane at which bending occurs when the flange is bent open to receive or release installed material.

3.2.11 *horizontal ladder gasket, n*—a ladder gasket installed in a vertical plane in such a way that the intermediate cross members (muntins) are vertical members (see Fig. 3).

3.2.12 *ladder gasket, n*—a lock-strip gasket in the form of a subdivided frame having one or more integrally formed intermediate cross members (see Fig. 3).

3.2.13 *lip, n*—the inner face of the tip of a flange on a lock-strip gasket (see Figs. 1 and 2).

3.2.14 *lip pressure, n*—the pressure exerted by the lip of a lock-strip gasket on material installed in the channel when the lock-strip is in place.

3.2.15 *lock-strip or locking strip, n*—the strip that is designed to be inserted in the lock-strip cavity to force the lips against material placed in the channel (see Figs. 1 and 2).

3.2.16 *lock-strip cavity, n*—the groove in the face of a lock-strip gasket designed to receive and retain the lock-strip (see Figs. 1 and 2).

3.2.17 *muntin, n*—a secondary intermediate member in a multiple-opening gasket system subdividing a glazed area.

3.2.18 *reglet gasket*³—see *gasket, lock-strip* and Fig. 2.

3.2.19 *spacer shim, n*—a length of suitable material placed in the gasket channel to maintain proper edge clearance at the sides of an installed panel or glass.

3.2.20 *supported gasket member, n*—a gasket member held in place by a supporting frame member.

3.2.21 *spline or tongue, n*—that part of a reglet-type lock-strip gasket which is designed to be installed in a reglet in supporting material (see Fig. 2).

3.2.22 *unsupported gasket member, n*—a gasket member joining infill materials without being held in place by a supporting frame member.

3.2.23 *vertical ladder gasket, n*—a ladder gasket installed in a vertical plane in such a way that the intermediate cross members (muntins) are horizontal members (see Fig. 3).

3.2.24 *web, n*—that part of an H-type lock-strip gasket that extends between the flanges, forming two channels and that

part of a reglet-type lock-strip gasket that extends between the flanges and spline (see Figs. 1 and 2).

4. Significance and Use

4.1 This specification can be referred to in contract documents as a method and workmanship standard for the installation of lock-strip gasket glazing systems. See also related standards (Specifications C 542 and C 963, Guide C 964, and Terminology C 717).

5. Installation

5.1 *Inspection of Components*—Before installing gaskets, the installer shall check the mounting frames to see that they are within specified dimensional tolerances and not out-of-square or plane, and check all gaskets for type, dimensions, and defects such as misalignment at molded corners and damaged lips. Installation shall not proceed until corrections have been made.

5.2 *Environmental Conditions*—Maximum efficiency and sealing capability of gaskets is achieved in a clean, dry, warm environment, with the gasket kept resilient during the entire installation process. During cold weather the use of temporary enclosures around the units to be glazed or paneled will facilitate temperature control and also aid in keeping open gasket channels clean and dry.

5.3 *Preparation and Conditioning of Gaskets*—Lock-strip gaskets require conditioning prior to installation in order to restore maximum resiliency and remove deformations after prolonged storage in a coiled or stressed position. Gaskets shall be unpacked from their containers and conditioned for 24 h in a temperature not lower than 70°F (21.1°C) by being placed flat or hung on racks to permit recovery of their original shapes. Racks shall be free of rough surfaces, projections, sharp edges, and other conditions that could damage the gaskets. When the ambient temperature is 50°F (10°C) or below and a heated space is not available, gaskets shall be heated by other means to remove deformations and provide a high degree of flexibility and resiliency. This may be done by warming them in hot water or heated containers. Gaskets shall not be heated by being draped over heated units or placed in direct contact with a flame or fired heating device. The installation of glass, panel, and lock-strip shall be completed while the gasket is still warm and pliable and with the gasket channels clean and dry.

5.4 *Use of Tools*—To minimize the possibility of damage, sharp or pointed tools or implements such as screwdrivers or putty knives shall not be used on lock-strip gaskets. Suitable gasket installation tools, such as nonmetallic spatulas and engineered lock-strip insertion devices, are available from the gasket manufacturer.

5.5 *Use of Lubricants*—If necessary a lubricant may be applied to the contact surfaces of the gasket to ease the installation and help prevent damage to the gasket, glass, or panel. The lubricant shall be nonstaining, nontoxic, noncorrosive, chemically stable, compatible with all contact components, easily removable from exposed surfaces by dry wiping or with water, and acceptable to the manufacturer of the supporting frame, panel, and gasket.

³ Patented, U.S. 3,068,617 and U.S. 3,213,584.

5.6 *Use of Supplementary Wet Sealants*—The use of supplementary wet sealants in conjunction with lock-strip gasket installations is only required under certain conditions. Such a condition would occur when the outer lip of the gasket extends over a butt joint in the supporting frame. The void formed between the gasket and frame shall be sealed at the time of installation with a wet sealant. However, the sealant may be omitted if the system is designed to drain any water that enters to the exterior, and the omission of a wet sealant is agreeable to the purchaser and seller. Another condition would be at field butt joints in gaskets. Such joints require the use of a sealant installed in, rather than on top of, the joint at the time of the gasket installation. The wet sealant used, as well as the sealant manufacturer's requirements for cleaning and priming the surfaces to be sealed, shall be compatible with the components in contact with it and acceptable to the manufacturers of the components. The use of wet sealants to remedy a defective or damaged gasket or improperly fabricated supporting frame shall not be permitted, unless agreeable to the purchaser and seller.

5.7 *Installation of Single-Opening Gasket Systems:*

5.7.1 *H-Type Gasket*—Install the upper gasket corners first, and then install the lower gasket corners onto the supporting frame. To avoid slippage, engage both horizontal and vertical members for about 1 ft (305 mm) in both directions from the corners, and work the gasket until the web is snug against head and jambs and the corners are square. Then work the remainder of the gasket onto the supporting frame by starting from each corner and working towards the center of each side, making sure the gasket web is firmly seated against the frame and that the sealing lips are not curled under, particularly at the corners. Pull each corner of outer flange about 1/4 in. (6.35 mm) away from the supporting frame with thumb or nonmetallic spatula and then release to ensure uncurling any corner lips hidden from view.

5.7.2 *Reglet-Type Gasket*—Insert the upper gasket corners first, and then install the lower gasket corners into the groove

or reglet of the supporting frame, seating them firmly with a resiliently faced hammer and a wooden or metal block having smooth, rounded edges and corners. Then, on each side, insert the gasket into the groove at the center of each side working from the center to the corners and from the corners to the center, equalizing the crowd over the length of each side until the lips are firmly and continuously seated against the supporting frames.

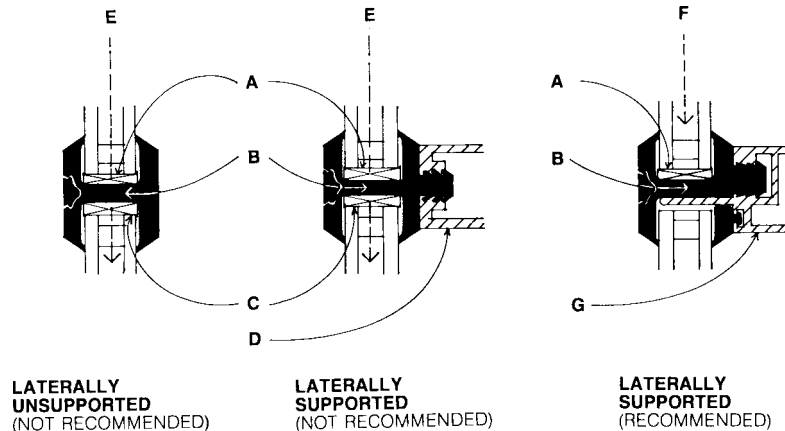
5.8 *Installation of Multiple-Opening Gasket Systems (See Figs. 3 and 4):*

5.8.1 *Unsupported Vertical Ladder Assembly*—Laterally unsupported vertical ladder type installations as illustrated in Fig. 4, where the vertical load of a light of glass is transferred through the gasket web to the light below, with lateral support at the jambs, are not recommended. Refer to Guide C 964 for a discussion of the disadvantages of this type of system.

5.8.2 *Unsupported Horizontal Ladder Assembly*—Mark on the head and sill frame members the exact location of the center line of the vertical gasket muntin. Install the jamb section first, then work along the head and sill to the first muntin. Align each gasket muntin with the center lines marked on the head and sill. Install the glass or panel. The installation of setting blocks and edge spacers can be performed as described in 5.10. Then insert the lock-strip at the sill and head, running to within a few inches of the first gasket muntin. Continue the procedure by installing the next glass or panel. Insert the lock-strip into the muntin first and continue with the insertion of the lock-strip at the head and sill members. Repeat the procedure until all glass or panels are installed.

5.8.3 *Supported Vertical Ladder Assembly*—Align and secure the gasket horizontal muntins to the corresponding supporting structural members. The gasket muntins are held in line by the structural supporting muntin members with the entire ladder gasket unit completely supported during the installation procedure.

5.8.4 *Supported Horizontal Ladder Assembly*—Mount the gasket to the peripheral frame first. Then align and secure the



- A Setting blocks
- B Web
- C Spacer shims
- D Laterally supporting muntin
- E Vertical load transfer through setting blocks, web, and spacer shims to glass light below is not recommended
- F Vertical load transfer through setting blocks and web to supporting muntin is recommended
- G Laterally and vertically supporting muntin

FIG. 4 Vertical Ladder Assembly Horizontal Muntin

vertical gasket muntins to the corresponding structural supporting members. Vertical spacer shims are not required between the glass or panel edge and the gasket web.

5.8.5 Grid Assembly—A grid assembly is a combination of the horizontal and vertical ladder assemblies. Supported grid gaskets are mounted to the corresponding frame members following the procedures noted under 5.8.3 and 5.8.4.

5.9 Installation of Stick System—A proprietary stick system shall be installed in accordance with the curtain wall manufacturer's instructions.

5.10 Installation of Glass or Panel into Gasket—Inspect, clean, and dry the gasket as required and replace, if damaged, before proceeding with the glazing or paneling operation. If necessary, a lubricant recommended by the gasket manufacturer can be used to aid insertion. Lubricate the surface of the exterior flange on the lock-strip side of the gasket channel that is to receive the glass or panel. Beginning approximately 6 to 8 in. (152 to 203 mm) above the bottom, open the channel lips and engage both lower corners of the glass or panel into the gasket sides and then lower it carefully into the sill channel of the gasket. Maintain the plane of the panel as close to the plane of the opening as possible. Insert a nonmetallic spatula between the edge of the glass or panel and the sealing lip on each side, starting at the bottom of the opening. Proceed upward with both spatulas at the same time, while simultaneously pushing the glass or panel lightly inward. Use care to prevent cutting of gasket sealing lips. When the glass or panel is in jamb channels to within 2 to 3 in. (50 to 76 mm) of uppercorners, begin at the center of the head and work outward each way to engage the head channel. Then, using two spatulas, lift gasket corners over the edge of the glass or panel. Center the glass or panel in the gasket for uniform edge coverage on both sides of the installation. At this time install properly sized setting blocks, if required, by lifting the glass or panel and placing them at the quarter points. Lower the glass or panel onto the blocks, being careful not to displace them. Setting blocks under panels are optional but are required for laminated, insulating, annealed tinted, and reflective glass. The use of setting blocks for other types of glass products shall be in

accordance with the glass manufacturer's recommendations. If necessary, edge spacers may be installed at this time to maintain uniform edge clearance and to preclude lateral displacement of the glass or panel.

5.11 Installation of Lock-Strip—As soon as the glass and panels are in place, install the lock-strip so that the assembly is secure and the gasket channel is sealed. Cut lock-strip for the sill to a length approximately 2 to 3 in. (50 to 76 mm) longer than the sill opening dimension. Lubricate the lock-strip and lock-strip cavity. Thread the lock-strip into the eye of the insertion tool. Start installation of the lock-strip at the sill, trying to keep it under compression instead of tension and leaving an excess of lock-strip at both ends. Repeat this procedure for jambs and head. To avoid any later creep or drawback of the lock-strip from the corners, trim the lock-strip ends approximately $\frac{1}{8}$ to $\frac{1}{4}$ in. (3.18 to 6.35 mm) longer than the lock-strip cavity using garden pruning shears or diagonal cutters, and crowd the lock-strip into place using a nonmetallic tool. Either a mitre or square butt joint is acceptable. When molded lock-strip corners are used, install them first and form butt joints with the lock-strip in compression between the corners.

5.12 Completing the Installation—To straighten the sightline, tap the gasket against the frame using a clean, smooth block of wood. Push the lock-strip into the cavity with a spatula wherever complete insertion was not accomplished. Wipe off excess lubricant. Inspect and rectify any curled-under lips. Contact of the gasket with the frame and panel or glass shall be continuous and positive against smooth flat surfaces.

6. Comparison to Other Standards

6.1 The ASTM Committee with jurisdiction over this standard¹ is not aware of any comparable standards published by other organizations.

7. Keywords

7.1 elastomer; gasket; glazing; installation; lock-strip; pre-formed infill; procedures

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