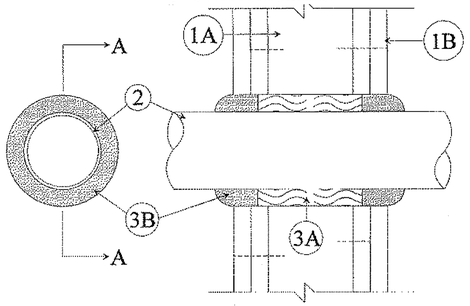
System No. W-L-1007

June 23, 2000

(Formerly System No. 236)

F Rating — 1 and 2 Hr (See Item 1)

T Ratings — 0, 1/2 and 1-1/2 Hr (See Item 2)



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. In 2 hr fire-rated assemblies, steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. In 1 hr fire-rated assemblies, steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.

B. **Gypsum Board* —** 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 5 in.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrant —** One metallic pipe or conduit to be centered within the firestop system. A nom annular space of 1/4 in. is required within the firestop system. Pipe or conduit to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or conduits may be used:

A. **Steel Pipe —** Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Conduit —** Nom 4 in. diam (or smaller) steel electrical metallic tubing or 4 in. diam steel conduit.

The T Rating of the firestop system is dependent upon the max diam of the through-penetrant and hourly rating of the wall assembly as shown in the table below:

Max Diam of Through Penetrant	Rating of Wall Hr	T Rating Hr
1/2	2	1-1/2
1/2	1	1
2	2	1/2
2	1	1/2
4	2	0
4	1	0

3. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material* —** In 2 hr fire-rated assemblies, min 3 in. thickness of min 4 pcf mineral wool insulation firmly packed into opening as a permanent form. In 1 hr fire-rated assemblies, min 2-7/8 in. thickness of min 4 pcf mineral wool insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Material* — Sealant —** In 2 hr fire-rated assemblies, min 1 in. thickness of fill material applied within annulus, flush with both surfaces of wall. Additional fill material to be installed such that a min 1/2 in. thick crown is formed around the penetrating item. In 1 hr fire-rated assemblies, min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall. Additional fill material to be installed such that a min 1 in. thick crown is formed around the penetrating item.

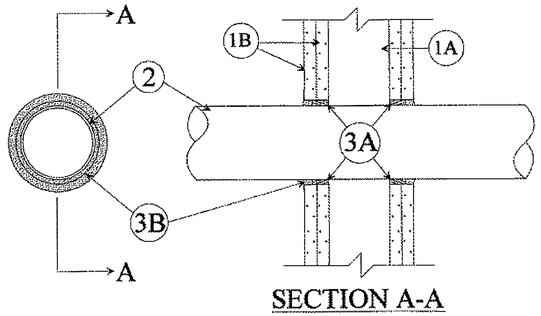
W R GRACE & CO - CONN — FS900, FS901, FS903, FS903CG, FS905, FS905CG, FS929, FST901, FST903 and FST905 Sealant.

System No. W-L-1089

June 23, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr



SECTION A-A

1. **Wall Assembly —** The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing in all four sides.

B. **Gypsum Board* —** 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 24-5/8 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrant —** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and the periphery of opening shall be min 1/8 in. to max 1/2 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 24 in diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 24 in. diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 4 in. diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.

D. **Copper Tubing —** Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe —** Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** In 2 hr fire-rated assemblies, min 2 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form on both sides of wall. Packing material to be recessed from both surfaces of the wall as required to accommodate the required thickness of fill material. In 1 hr fire-rated assemblies, min 3-3/4 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be flush with both surfaces of the wall.

B. **Fill, Void or Cavity Material* — Sealant —** In 2 hr fire-rated assemblies, 1/4 in. thickness of fill material applied within the annulus on both surfaces of wall. Additional fill material to be installed such that a min 1-1/4 in. thick crown is formed around the penetrating item and lapping a min 1/4 in. beyond the periphery of the opening. In 1 hr fire-rated assemblies, a min 1/2 in. thick crown is formed around the penetrating item and lapping a min 1/2 in. beyond the periphery of the opening on both surfaces of wall.

W R GRACE & CO - CONN — FS 1900 Sealant

*Bearing the UL Classification Mark

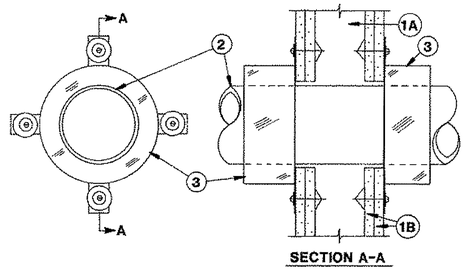
System No. W-L-2037

June 23, 2000

Formerly System No. 612

F Rating — 1, 1-1/2 and 2 Hr (See Item 2)

T Rating — 3/4 and 1-1/2 Hr (See Item 2)



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.

B. **Gypsum Board* —** 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 9-1/8 in.

2. **Through-Penetrants —** One nonmetallic pipe or conduit to be centered within the firestop system. The annular space between pipe or conduit and periphery of opening shall be a min 0 in. (point contact) to max 1/16 in. Pipe or conduit to be rigidly supported on both sides of wall assembly. The following types and sizes of nonmetallic pipes and conduit may be used:

A. **Polyvinyl Chloride (PVC) Pipe —** Nom 8 in. diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

B. **Rigid Nonmetallic Conduit (RNC)+ —** Nom 4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70).

C. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 4 in. diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems.

D. **Acrylonitrile Butadiene Styrene (ABS) Pipe —** Nom 4 in. diam (or smaller) Schedule 40 cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

E. **Flame Retardant Polypropylene (FRPP) Pipe —** Nom 4 in. diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The F and T ratings of the firestop system are dependent upon the hourly rating of the wall assembly and type and size of through-penetrant as tabulated below:

Type of Through Penetrant	Max Diam of Through Penetrant In.	Rating of Wall Hr	F Rating Hr	T Rating Hr
PVC Pipe	4	2	2	1-1/2
PVC Pipe	8	1	1	3/4
PVC Pipe	8	2	1-1/2	1-1/2
RNC	4	2	2	1-1/2
RNC	4	1	1	3/4
CPVC Pipe	4	2	2	1-1/2
CPVC Pipe	4	1	1	3/4
ABS Pipe	4	2	1-1/2	1-1/2
FRPP Pipe	4	2	1-1/2	1-1/2

3. **Firestop Device* —** Galv steel collar lined with an intumescent material sized to fit the specific diam of the through-penetrant. Device shall be installed around through-penetrant in accordance with accompanying installation instructions. Device incorporates four anchor tabs for securement to each surface of wall assembly by means of 1/8 in. diam by 3 in. long toggle bolts in conjunction with 1/8 in. diam by 3/4 in. and 1/4 in. diam by 1-1/4 in. steel fender washers.

W R GRACE & CO - CONN — FSD Device

+Bearing the UL Listing Mark

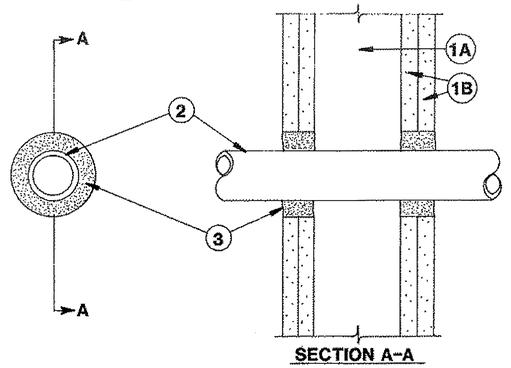
System No. W-L-2038

June 23, 2000

(Formerly System No. 614)

F Rating — 1 and 2 Hr (See Item 1)

T Rating — 1 and 2 Hr (See Item 1)



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.

B. **Gypsum Board* —** 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series design in the UL Fire Resistance Directory. Max diameter of opening is 4-3/8 in.

The hourly F and T ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrants —** One nonmetallic pipe, conduit or tubing to be centered within the firestop system. The max diam of the through penetrant and annular space within the firestop system is dependent upon the type of fill material (Item 3). Pipe, conduit or tubing to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits or tubing may be used:

A. **Polyvinyl Chloride (PVC) Pipe —** Nom 2 in. diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) piping systems.

B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.

C. **Rigid Nonmetallic Conduit+ —** Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70).

D. **Electrical Nonmetallic Tubing (ENT)+ —** Nom 1 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA No. 70).

3. **Fill, Void or Cavity Material* —** Sealant — In 2 hr fire rated assemblies, min 1-1/4 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. In 1 hr fire rated assemblies, min 5/8 in. thickness of fill material applied within the annulus, on both surfaces of wall. Additional fill material to be installed such that a min 5/8 in. thick crown is formed around the penetrating item and lapping a min 1 in. beyond the periphery of the opening.

The max diam of the through penetrant and annular space within the firestop system is dependent upon the type of fill material as tabulated below:

Max Diam of Through Penetrant In.	Nom Annular Space In.	Fill Mtl Type
1	1/2	FSP 1100 Putty
2	1	FS 1900 Sealant

W R GRACE & CO - CONN — FSP 1100 Putty or FS 1900 Sealant.

+Bearing the UL Listing Mark

*Bearing the UL Classification Marking

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TEDROW
ARC4280
STATE OF MAINE

REV. NO.	DATE	DESCRIPTION
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ISSUE DATE: 08-24-15 RELEASED FOR CONSTRUCTION

UL DETAILS

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