TEST REPORT

REPORT NUMBER: 102288099MID-003
ORIGINAL ISSUE DATE: March 30, 2016

EVALUATION CENTER
Intertek
8431 Murphy Drive
Middleton, WI 53562

RENDERED TO

C.R. Laurence Co., Inc.
2503 E Vernon Ave
Vernon, CA 90058-1826
Contact: Mr. Ron Wooten
Phone: (323) 588-1281
Email: ron_wooten@crlaurence.com

PRODUCT EVALUATED: C.R. Laurence Co., Inc. 487 Series Office Partition Door Assembly
EVALUATION PROPERTY: Air Leakage of Door Assemblies

Report of Testing C.R. Laurence Co., Inc. 487 Series Office Partition Door Assembly with the applicable requirements of the following criteria: ANSI/UL1784-2015 "Air Leakage Tests of Door Assemblies and Other Opening Protectives".

1 Table of Contents

Revision Summary

DATE	SUMMARY
March 30, 2016	Original Report

2 Introduction

Intertek has conducted testing for C.R. Laurence Co., Inc. 487 Series Office Partition Door Assembly. Testing was conducted in accordance with UL 1784-2015. This evaluation was completed March 22, 2016.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were submitted directly from the client. Sample selection was conducted by an Intertek representative September 17, 2015 at the manufacturing facility. Samples were received at the Evaluation Center on February 26, 2016 (MID1602260836-001).

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

A nominal 6' x 7' C.R. Laurence Co., Inc. 487 Series Office Partition Door Assembly consisting of aluminum frame sections, pair doors, astragal gasket, and intumescent. The three piece aluminum framing was mounted into a wall section consisting of 2 x 4 lumber construction with 5/8" drywall on both sides built to the clients suggested rough opening. The 3 extruded aluminum sections were fastened to the wall section using #6 x 2-1/2" bugle head screws approximately 10-1/2" o.c. The corners of the frame were fit together using a slot and tab design and secured together using a flat "L" bracket with #10 x 3/4" self drilling screws. The corners of the frame sections were sealed using mineral wool and high temperature RTV caulk. An extruded aluminum cover was locked into place over both sides of each frame section. The exterior perimeter of each cover section was sealed to the drywall using high temperature RTV caulk. The frame sections had a bulb style gasket retained in the extrusion that compressed to the face of the doors. The nominal 6' x 7' pair doors were described as 20 minute minimum fire rated wood flush doors. The doors were secured to the frame using CB4532D 4.5" stainless steel commercial bearing hinges, 3 per door, 6 total in the assembly. The secondary door was secured with 94232D top and bottom flush bolts. The primary door was secured with a C.R. Laurence Co., Inc. D50ENT heavy duty grade 1 lever lockset. A Pemko 355CS96 double door astragal with aluminum retainer and bulb style gasket was mechanically fastened to the meeting edge of the secondary door in a manner that the bulb compressed to the face of the primary door. Notches were cut in the retainer to allow the strike and bolt actuators to remain functional. A Pemko HSS2000 hot smoke edge seal was applied to the face of the frame sections and meeting edge of the secondary door. Detailed drawings are included in this report.

Testing was conducted with the assembly installed per the client's instructions. The client witnessed that the installation was completed correctly.

4 Testing and Evaluation Methods

4.1. TEST STANDARD 1

ANSI/UL 1784-2015 Air Leakage Tests of Door Assemblies and Other Opening Protectives.

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

Closing Force = 7 lbs. Area = 42 ft^2

Configuration	Test Pressure ("H_2O)	Chamber Temp (°F)	Sample Leakage (SCFM)	Leakage Rate (SCFM/ft^2)
Inswing	0.05	66	8.28	0.20
	0.10	66	12.27	0.29
	0.20	66	21.26	0.51
	0.30	66	24.97	0.59
Outswing	0.05	65	4.46	0.11
	0.10	65	6.91	0.16
	0.20	65	11.06	0.26
	0.30	65	15.57	0.37
Inswing Elevated Temp.	0.05	392	6.86	0.16
	0.10	395	10.77	0.26
	0.20	396	14.36	0.34
	0.30	397	16.08	0.38

Note: All tests were conducted with an artificial bottom seal.

5.1.1. Statement of Measurement Uncertainty

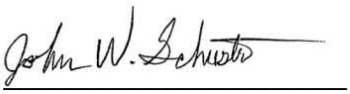
All measurements were taken with 95% confidence level. Pressure measurements were taken with an inclined manometer (WHI #173) with an accuracy of +/- 0.02" w.c. Air flow measurements were taken with a laminar flow element (WHI #562) with an accuracy of +/- 1% of reading. Temperature measurements were taken with a thermocouple meter (WHI #054) with an accuracy of +/- 2 degrees.

6 Conclusion

The C.R. Laurence Co., Inc. 487 Series Office Partition Door Assembly described in this report performed as stated above when tested in accordance with UL 1784-2015.

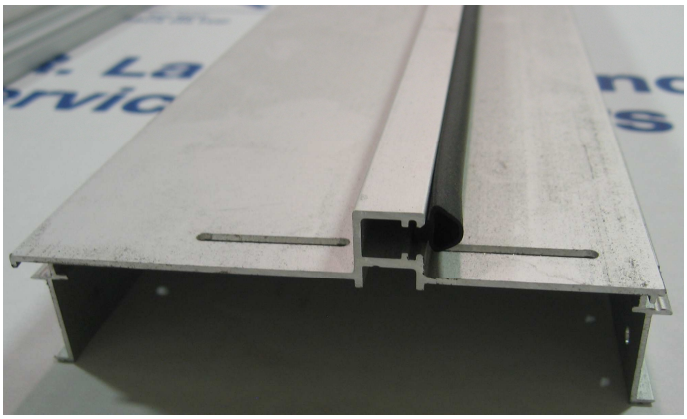
The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

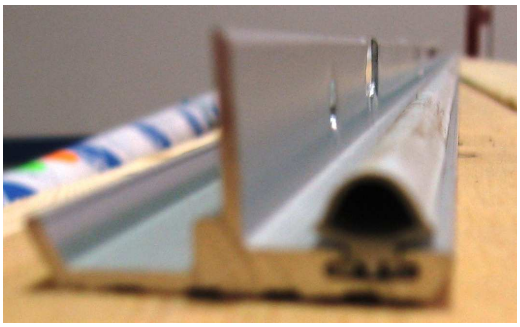
INTERTEK

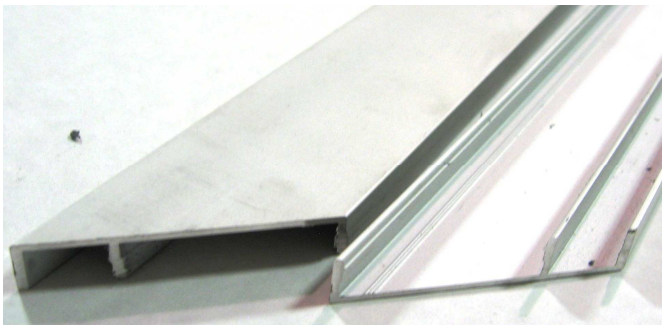
Reported by: 
John Schuster
Fenestration Engineer

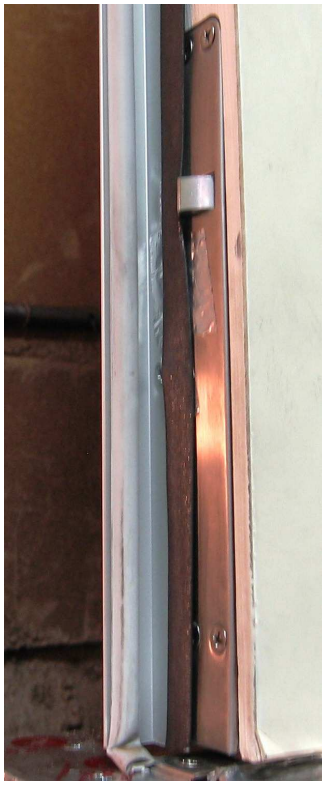
Reviewed by: 
Russ Burt
Senior Associate Engineer

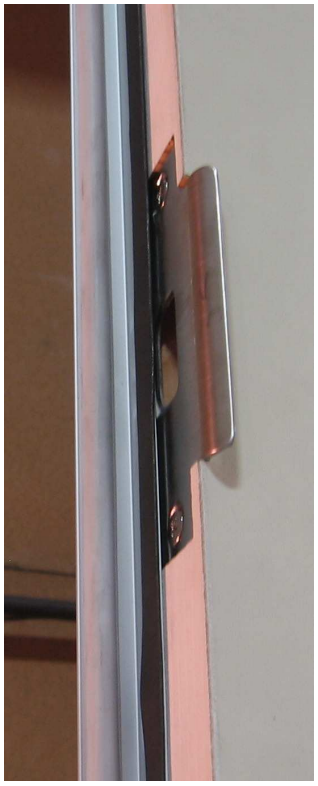
PHOTOS/DRAWINGS

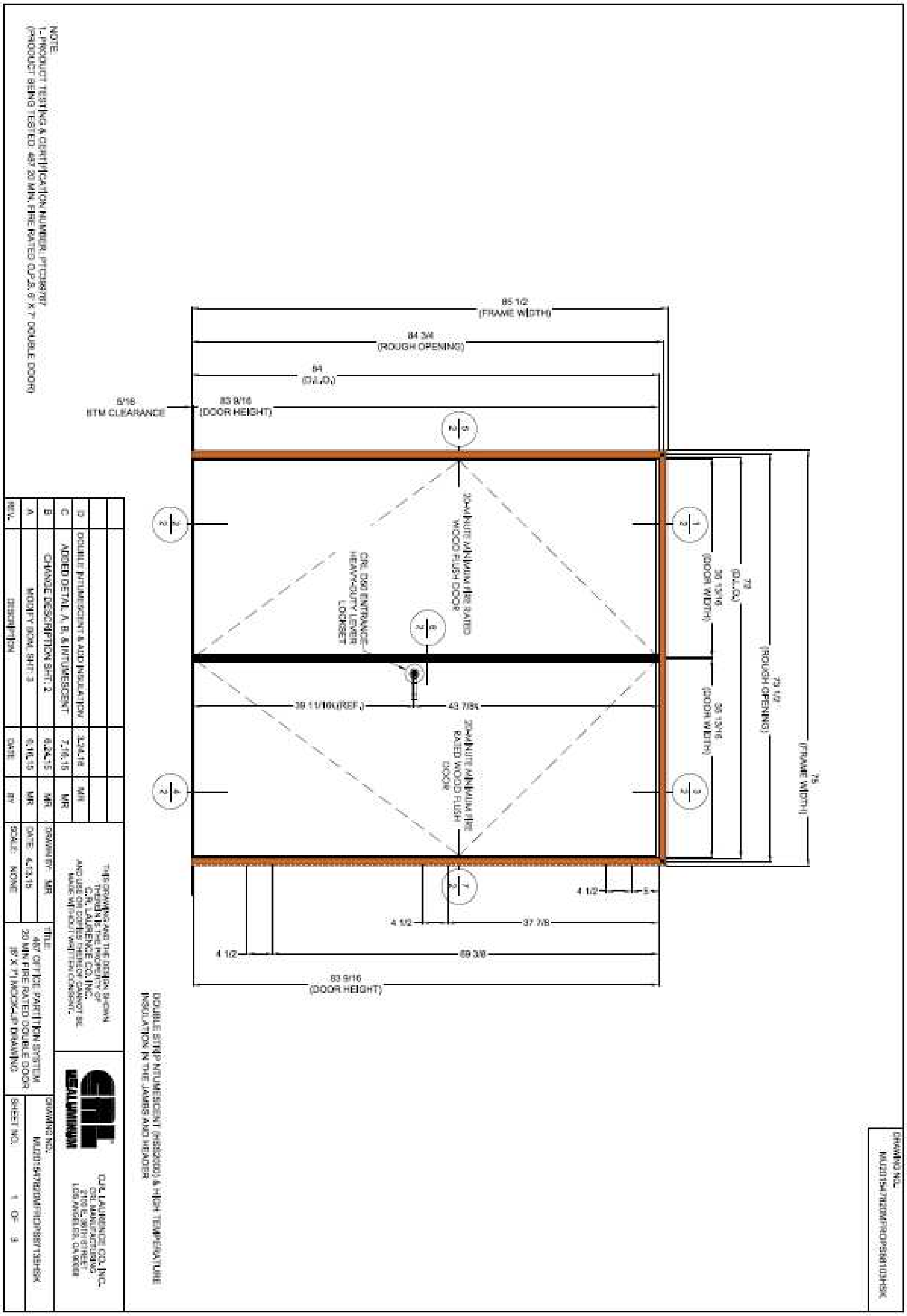


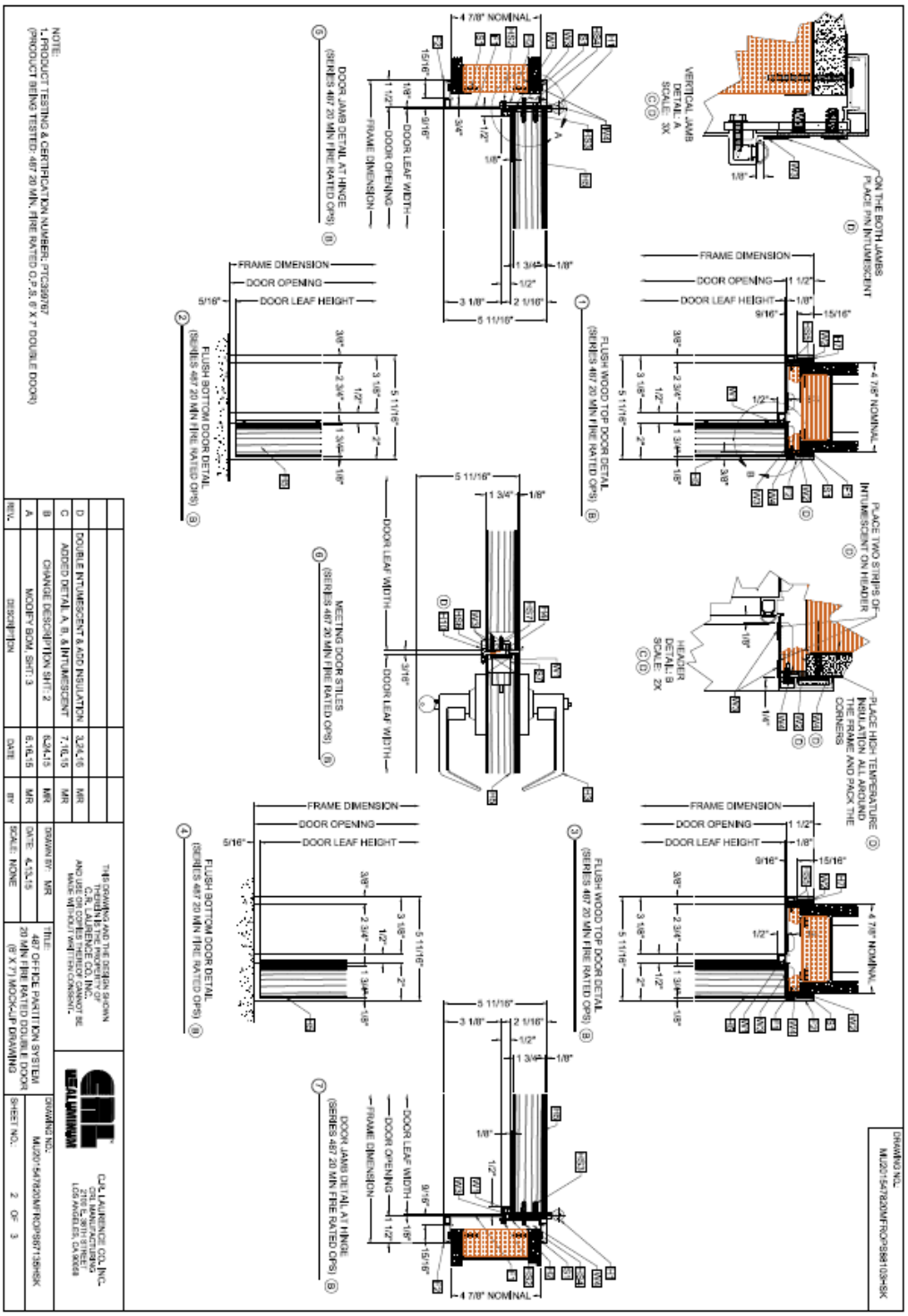









85 1/2
(FRAME WIDTH)
84 3/4
(ROUGH OPENING)
83 9/16
(DOOR HEIGHT)
BTM CLEARANCE
(DOOR WIDTH)
(ROUGH OPENING)
(FRAME WIDTH)
(DOOR HEIGHT)


FLUSH WOOD TOP DOOR DETAL (SERIES 467 20 MIN FIRE RATED OPS) (B)
FLUSH BOTTOM DOOR DETAL (SERIES 467 20 MIN FIRE RATED OPS) (B)
MEETING DOOR STILES (SERIES 467 20 MIN FIRE RATED OPS) (B)
DOOR JAMB DETAIL AT HINGE (SERIES 467 20 MIN FIRE RATED OPS) (B)
VERTICAL JAMB DETAIL A SCALE: 3X
HEADER DETAIL B SCALE: 2X
ON THE BOTH JAMBS PLACE PIN INTUMESCENT (D)
PLACE TWO STRIPS OF INTUMESCENT ON HEATER (D)
PLACE HIGH TEMPERATURE INSULATION ALL AROUND THE FRAME AND PACK THE CORNERS (C)
FRAME DIMENSION
DOOR OPENING
DOOR LEAF HEIGHT
DOOR LEAF WIDTH
4 7/8" NOMINAL
NOTE:
1. PRODUCT TESTING & CERTIFICATION NUMBER: PTC9387B7
(PRODUCT BEING TESTED: 467 20 MIN. FIRE RATED O.P.S. 6' X 7' DOUBLE DOOR)
REV.
DESCRIPTION
DATE
BY
D
DOUBLE INTUMESCENT & ADD INSULATION
3/24/16
MR
C
ADDED DETAIL A, B, & INTUMESCENT
7/16/15
MR
B
CHANGE DESCRIPTION SHT 2
5/24/15
MR
A
MODIFY BOM, SHT. 3
6/16/15
MR
THIS DRAWING AND THE DESIGN SHOWN THEREON IS THE PROPERTY OF C.R. LAURENCE CO., INC. AND USE OR COPIES THEREOF CANNOT BE MADE WITHOUT WRITTEN CONSENT.
DRAWN BY: MR
DATE: 4/15/15
SCALE: NONE
TITLE: 467 OFFICE PARTITION SYSTEM 20 MIN FIRE RATED DOUBLE DOOR (6' X 7') MOCK-UP DRAWING
C.R.L. LAURENCE CO., INC.
CRL MANUFACTURING
2725 SOUTH ALAMEDA STREET
LOS ANGELES, CA 90058
DRAWING NO.: MU201547820MFROP9887103HSK
SHEET NO.: 2 OF 3
DRAWING NO.
MU201547820MFROP9887103HSK

BILL OF MATERIAL 487 OFFICE PARTITION 20 MINUTE FIRE RATED DOUBLE DOOR (A)

ITEM #		PART NO.	DESCRIPTION
H1	HARDWARE, FASTENERS & SEALS	CB4538D	SATIN STAINLESS STEEL 4.5 X 4.5 COMMERCIAL BEARING HINGES
H33		"	# 12 X 1-1/4 FLAT HD WOOD SCW, INCLUDE IN THE HINGE PACKAGE
H34		"	# 12 - 24 X ½ FLAT HD MACHINE SCW, INCLUDED IN HINGE PACKAGE
H2		89562	BACK PLATE TO HINGE
H32		"	P/N: 98683A216, # 8 X 5/8 HEX WASHER HEAD S.M.S.
H3		DSDENT	HEAVY-DUTY GRADE 1 LEVER LOCK SET (FUNCTION OPTIONAL)
		"	# 8 - 32 X 3/4 FLAT HD PH SCREW, BLUE ZINC
		"	# 8 - 32 X 1-1/4 FLAT HD PH SCREW, YELLOW ZINC
		"	# 10 - 32 X 1/16 FLAT HD PH SCW, YELLOW ZINC
		"	1/4 - 20 X 9/16 FLAT HD PH SCW, YELLOW ZINC
H4		PLK1ABA	STRIKE, BRUSHED STAINLESS STEEL (INCLUDE SCW HARDWARE)
H35		"	# 10 - 32 X 3/4 UNDER CUT FLAT HD PH SCREW, BLUE ZINC
H5		6976BG	CRL-US ALUM SC SERIES WOOD FLUSH DOOR 20-MIN. FIRE RATED
H7		TS8	ANGLE CLIP 4 X 2 X 2
H36		"	P/N: 20061601, # 6 - 20 X 1/2 P-H-P, TEK SCREWS
H9		94230D	FLUSH BOLT
		"	# 8 - 32 X 1/2 FLAT HD PH SCREW, STAINLESS STEEL
		"	# 8 - 32 X 1 FLAT HD PH SCREW, STAINLESS STEEL
		"	# 10 X 1 FLAT HD PH SMS, BLUE ZINC PLATED
		"	1 X 8 1/2, BRUSHED STAINLESS STEEL FACE PLATE
		"	1 X 2 1/4, BRUSHED STAINLESS STEEL FRAME (SILL STRIKE)
		"	1 X 2 1/4 BRUSHED STAINLESS STEEL ACTIVE DOOR STRIKE
H10		3905_S	"T" ASTRAGAL W/ SILICONE BULB SEAL
H36		"	# 8 X 1, PHILLIP FLAT HEAD SHEET METAL SCREWS
W1		"	P/N: NP800; FIRE DOOR GASKET 60 DURO FLAME
W2		"	HIGH TEMPERATURE SILICONE (D)
W3		"	P/N: HS62000 BLK HOT SMOKE SEAL 25 FLEXIBLE INTUMESCENT STRIP (C)
W4		9328K41	VERY HIGH TEMP MINERAL WOOL INSULATION (D)
S1		93128A080	FLAT HEAD PH, SELF DRILLING DRYWALL SCREW
H35		"	P/N: 20061601, # 6 - 20 X 1/2 P-H-P, TEK SCREWS
F1	FRAME	4876500	DOOR FRAME
F2		4876515	TRIM 1-1/2"

D	DOUBLE INTUMESCENT & ADD INSULATION	3-24-16	MR		
C	ADDED DETAIL A, B, & INTUMESCENT	7-16-15	MR		
B	CHANGE DESCRIPTION SHT. 2	6-24-15	MR		
A	MODIFY BOM, SHT. 3	6-16-15	MR		
REV.	DESCRIPTION	DATE	BY	SCALE: NONE	DRAWN BY: MR DATE: 4-13-15

NOTE
1. PRODUCT TESTING & CERTIFICATION NUMBER: PTC0300767
(PRODUCT BEING TESTED 487 20 MIN. FIRE RATED 6'3"x 8' 7" DOUBLE DOOR)

THE DRAWING AND THE DESIGN SHOWN THEREON ARE THE PROPERTY OF C.R. LAURENCE CO, INC. AND USE OR COPIES THEREOF CANNOT BE MADE WITHOUT WRITTEN CONSENT.

TITLE:
487 OFFICE PARTITION SYSTEM
20 MIN FIRE RATED DOUBLE DOOR
(8' X 7') MOCK-UP DRAWING

C.R. LAURENCE CO., INC.
CRL MANUFACTURING
2503 EAST VERNON AVE.
LOS ANGELES, CA 90058

DRAWING NO.:
MU2015478DMFRDPS8F10SHSK

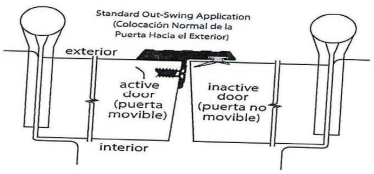
SHEET NO.: 3 OF 3

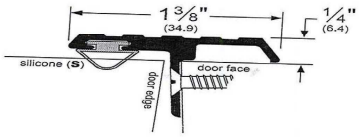
DRAWING NO.:
MU2015478DMFRDPS8F10SHSK

INSTALLATION INSTRUCTIONS:

For use with bevel edge outswing or double-egress doors.

1. Measure, mark, and trim astragal to full length of door, leaving insert slightly longer than the metal at each end.
   NOTE: For best seal, insert should touch header at top and threshold (or floor) at bottom.
2. Place astragal on active door (see figure below).
3. Secure in place with supplied screws.





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ASSA ABLOY

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Fax: 877.535.7444
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355CS96_INS
Rev 3 - 11.21.13

PEMKO
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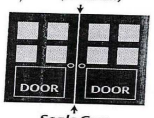
DOUBLE DOOR ASTRAGAL

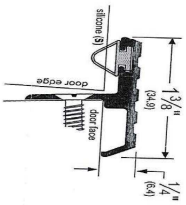
"T" and Overlapping Astragals

96" (243.8 cm)



Seals Gap Between a Pair of Doors

- Seals against air, dust, water, & sound
- Screws included
- Pre-drilled holes for easy installation



Product / Finish

355CS96

Clear Anodized Aluminum with Silicone Insert

Testing/Ratings

10C

CLASSIFIED C UL US 4L10

Category J gaskets for use with listed steel frames and/or classified steel covered composite, hollow metal doors rated up to and including 3 hours; wood and plastic covered composite doors rated up to and including 1-1/2 hours; and wood core doors rated for 20 minutes.

Tools Required

www.pemko.com

0 86787 33481 1

M-1830151

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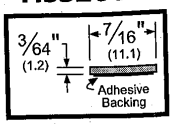
ASSA ABLOY

HSS2000



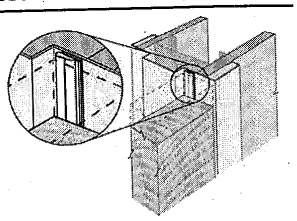
HOT SMOKE SEAL

Tested and Classified for Fire

Edge Seal

Use on Meeting Stile of a Pair of Doors

- Adhesive backed intumescent.
- Pemko's intumescent edge seal can be used on a wide range of 20, 45, 90, and 180 minute rated door applications.
- Helps prevent penetration of life threatening hot smoke and hot gasses by expanding and filling the gap between a pair of doors.
- Activation takes place without noxious fumes or smoke being given off.
- Chemically inert; highly stable.
- Carbon dioxide, moisture and erosion-resistant.
- Can be painted to match door.



FOR DOOR FRAME APPLICATIONS

BHMA CERTIFIED ES10C C US CLASSIFIED UL US IS47 Miscellaneous Fire Door Accessory

Cladding materials for doors and frames intended for application on listed fire door frames used with steel doors rated up to and including 3 h, wood composite doors rated up to and including 1-1/2 h, and wood core fire doors rated up to 20 min without hose stream.

HSS2000-24
Graphite

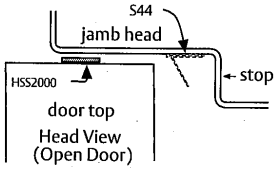
1 piece @ 288"

HEIGHT	WIDTH	LENGTH
3/64" (1.2 mm)	7/16" (11.1 mm)	24' (7.3 m)

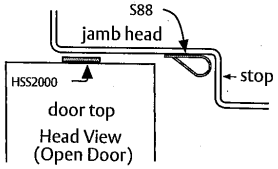
M

WHERE TO INSTALL:

HSS2000 Mounted on the Top Edge of the Door at the Door Jamb Head



HSS2000 Mounted on the Top Edge of the Door at the Door Jamb Head



HSS2000 on Frame with Square Edge Door

On square edges, install HSS2000 (& S44 or S88, when required) on jamb at positions shown.