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Underwriters Laboratories Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096

UL Standard for Safety
for
Sliding Hardware for Standard, Horizontally Mounted Tin-Clad Fire Doors, UL 14B

Seventh Edition, Dated December 13, 1993

Revisions: This Standard contains revisions through and including October 10, 1996.

A change is indicated by a note following the affected item. The note is preceded and followed by an asterisk.

The revisions dated October 10, 1996 include a reprinted title page (page 1) for this Standard.

As indicated on the title page (page 1), this UL Standard for Safety is an American National Standard. Attention is directed to the note on the title page of this Standard outlining the procedures to be followed to retain the approved text of this ANSI/UL Standard.

As indicated on the title page (page 1), this UL Standard for Safety has been adopted by the Department of Defense.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

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This Standard consists of pages dated as shown in the following checklist:

Page	Date
tr1 – tr4	October 10, 1996
1	December 13, 1993 (Reprinted October 10, 1996)
2	October 10, 1996
3	December 4, 1995
4	December 13, 1993
5 – 7	December 4, 1995

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tr3

8	December 13, 1993
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DECEMBER 13, 1993

(Title Page Reprinted: October 10, 1996)



1

UL 14B**Standard for****Sliding Hardware for Standard, Horizontally
Mounted Tin-Clad Fire Doors**

First Edition – March, 1917
 Second Edition – February, 1943
 Third Edition – November, 1953
 Fourth Edition – December, 1968
 Fifth Edition – June, 1973
 Sixth Edition – January, 1979

Seventh Edition**December 13, 1993**

Approval as an American National Standard (ANSI) covers the numbered paragraphs on pages dated December 13, 1993 and December 4, 1995. These pages should not be discarded when revised or additional pages are issued if it is desired to retain the ANSI approved text.

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

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 Approved as ANSI/UL 14B-1978 (R1984), July 19, 1984
 Approved as ANSI/UL 14B-1996, May 28, 1996

The Department of Defense (DoD) has adopted UL 14B on October 24, 1984. The publication of revised pages or a new edition of this standard will not invalidate the DoD adoption.

Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements.

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**Underwriters Laboratories Inc.®**A not-for-profit organization dedicated to public safety
and committed to quality service**December 4, 1995****Revision pages for****Standard for****Sliding Hardware for Standard, Horizontally Mounted Tin-Clad Fire Doors****UL 14B, Seventh Edition**

Attached to this transmittal notice is a revision of the seventh edition of UL 14B.

A CHANGE ON A PAGE DATED DECEMBER 4, 1995 IS INDICATED BY A SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THIS REVISION IS BEING ISSUED TO MAKE EDITORIAL CHANGES. THESE REVISED REQUIREMENTS ARE NOW IN EFFECT.

Attention is directed to the note on the title page of this standard identifying that the Department of Defense has adopted the text of UL 14B.

Revised and/or additional pages may be issued from time to time.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the following checklist:

Page	Date
1	December 13, 1993 (Reprinted December 4, 1995)
2	—
3	December 4, 1995
4	December 13, 1993
5 – 7	December 4, 1995
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DECEMBER 13, 1993

(Title Page Reprinted: December 4, 1995)

1

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements apply to hardware for horizontally sliding fire doors which have demonstrated in fire tests fire-resistive properties warranting their use with two-ply and three-ply tin-clad fire doors tested in accordance with the Standard for Fire Tests of Door Assemblies, UL 10B (ASTM E152, NFPA No. 252).

1.2 Requirements for the location and time rating are contained in codes, such as the BOCA National Building Code, Standard Building Code (for SBCCI), and Uniform Building Code (for ICBO). The method of installation required for fire doors is not included in these codes. Requirements for the details for the installation of horizontally sliding two-ply and three-ply tin-clad fire doors are included in the Standard for Fire Doors and Windows, NFPA 80.

1.2 revised December 4, 1995

1.3 The hardware included in these requirements is designed for mounting standard two-ply and three-ply tin-clad horizontally sliding fire doors for protection of openings not exceeding the dimensions for the hourly classifications indicated in Table 1.1.

1.3 revised December 4, 1995

1.4 These requirements do not cover automatic releasing or closing mechanisms.

1.5 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involve a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard cannot be judged to comply with this standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

1.5 revised December 4, 1995

Table 1.1
Limitations in types and dimensions

Type of door	Maximum area		Maximum width		Maximum height		Hourly rating
	square feet	m ²	feet	m	feet	m	
Three-ply	120	11.2	12	3.6	12	3.6	3, 1-1/2, 1, 3/4
Two-ply	80	7.4	10	3.1	10	3.1	1-1/2, 1, 3/4

Table 1.1 revised December 4, 1995

2 Units of Measurement

2.1 When a value for measurement is followed by a value in other units in parentheses, the second value is only approximate. The first stated value is the requirement. SI units as employed are in accordance with the Standard for the Practice for Use of the International System of Units (SI) (the Modernized Metric System) ANSI/ASTM E380-91a.

2.2 The tolerance for all dimensions shall be as specified with the dimension. Where no tolerance is shown, the tolerances specified in Appendix B shall apply. See Appendix B for specifications.

2.2 added December 4, 1995

3 Undated References

3.1 Any undated reference to a code or standard appearing in the requirements of this standard is to be interpreted as referring to the latest edition of that code or standard.

CONSTRUCTION

4 General

4.1 Each complete set of hardware for horizontally sliding tin-clad fire doors is to include:

- a) One track, length equal to twice the width of the opening plus 21 inches (530 mm) drilled for wall bolts.
- b) Two hangers for openings 6 feet (1.8 m) and less in width; three hangers for openings wider than 6 feet (1.8 m), and bolts for attaching hangers to door.
- c) Two front binders for openings 8 feet (2.4 m) and less in height; three front binders for openings in excess of 8 feet (2.4 m); one rear binder and rear-binder pocket with strip for openings of 7 feet (2.1 m) and not more than 10 feet (3.1 m) in height; two rear binders and rear-binder pockets with strips for openings exceeding 10 feet (3.1 m).
- d) One stay roll with attachment bolts required for the form of sill used.
- e) One bracket for each track bolt.
- f) Two half-oval chafing strips for back of door; two flat strips for front of door opposite of half-oval strips; bolts for fastening above strips together through door; length of strips to be 4 inches (102 mm) less than width of door. Doors exceeding 8 feet (2.4 m) in height require three chafing strip assemblies. A rear-binder pocket strip to be employed in lieu of the top oval chafing strip on doors equipped with two rear-binder pockets.
- g) One strip 5 inches (127 mm) less than width of door to take wear of stay roll; and wood screws for attachment.
- h) One wedge with screws for attachment.
- i) Handles with bolts and screws for attachment.
- j) One front bumper and one back bumper.
- k) Four bumper shoes and screws for attachment; each bumper shoe is made in two pieces.
- l) Washers for all wall bolts.
- m) Instructions for installation.

5 Flat Tracks

5.1 General

5.1.1 Flat tracks shall be made of flat-rolled steel with rounded edges 3-1/2 inches (89 mm) wide and 3/8 inch (9.5 mm) thick. Details are shown in Figure 5.1.

5.1.2 The length shall be equal to twice the width of the opening plus 21 inches (533 mm). The length of the track is given in terms of the wall opening, 12 inches (305 mm) being allowed for the lap and width of the door, 8 inches (203 mm) for attaching front and back bumpers, and 1 inch (25.4 mm) for clearance when the door is full open.

5.2 Holes for wall bolts

5.2.1 Holes for wall bolts shall be 13/16 inch (20.6 mm) in diameter and located so that a wall bolt shall be placed directly opposite each hanger when the door is closed and so that front and back bumpers can be attached to the end bolts. See Figure 5.1 for details.

5.2.2 The location of bolt holes and the number and location of hangers are shown in Table 5.1.

5.2.3 The space (A) in Table 5.1 shall always be on the side of the door opening toward which the door closes. This is the lower end when the track is inclined.

5.2.3 revised December 4, 1995

5.2.4 Doors for openings in excess of 6 feet (1.8 m) in width shall require three hangers.

5.2.5 When the size of the door opening is not specified in Table 5.1, the proper interpolation shall be made for the bolt spacing in accordance with 5.2.6.

5.2.5 revised December 4, 1995

5.2.6 To determine the proper spacings for track bolt holes where the track is for an opening of a width not specified in Table 5.1, add to each of the spacings (excepting dimension "A" given in the table) for an opening of the next smaller width in the table than that width under consideration, a value "C" obtained from the formula:

$$C = 2 \frac{(D - d)}{(b - 1)}$$

in which:

C is the correction factor in inches or mm,

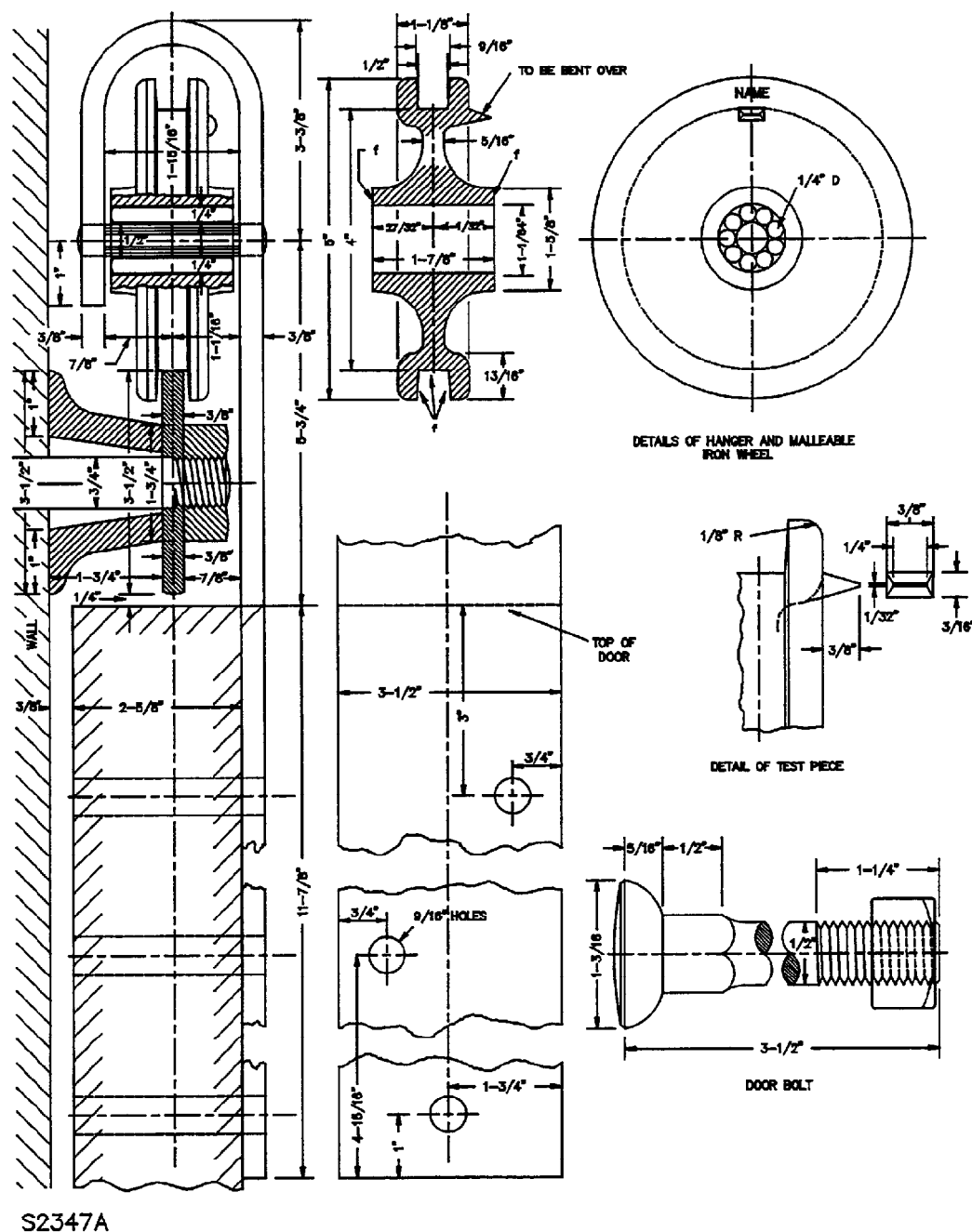
D is the width (in inches or mm) of opening under consideration,

d is the width (in inches or mm) of opening next smaller in table, and

b is the number of bolts required by Table 5.1 for track for width opening of size d.

5.2.6 revised December 4, 1995

Figure 5.1
Hardware for sliding two-ply and three-ply
tin-clad doors, including track, hangers,
hanger bolts, and track wall brackets



Note: See Appendix A for SI Equivalents.

Table 5.1
Spacing for bolt holes in flat track

Size of opening		Length of track		Space A 1st bolt		Space B 2nd bolt		Space C 3rd bolt		Space D 4th bolt		Space E 5th bolt		Space F 6th bolt		Space G 7th bolt		Space H 8th bolt		Space I 9th bolt		Space J 10th bolt		Space K 11th bolt	
ft.	in.	ft.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
3	0	0.91	7	9	2.36	1-3/4	45	112-1/4	310	124	610	26-1/2	675	26-3/4	680										
3	0	0.99	8	3	2.52	1-3/4	45	112-1/4	310	127	685	28	710	28-1/4	720										
3	6	1.07	8	9	2.67	1-3/4	45	113-1/4	340	128	710	30	760	30-1/4	770										
3	9	1.14	9	3	2.82	1-3/4	45	113-1/4	340	131	785	31-1/2	800	31-3/4	805										
4	0	1.22	9	9	2.97	1-3/4	45	114-1/4	360	132	815	33-1/2	850	33-3/4	855										
4	3	1.30	10	3	3.12	1-3/4	45	114-1/4	360	135	890	35	890	35-1/4	895										
4	6	1.37	10	9	3.28	1-3/4	45	115-1/4	385	136	915	37	940	37-1/4	945										
4	9	1.45	11	3	3.43	1-3/4	45	115-1/4	385	139	945	39	985	39-1/4	990										
5	0	1.53	11	9	3.58	1-3/4	45	116-1/4	415	140	975	41	1015	41-1/4	1020										
5	3	1.60	12	3	3.73	1-3/4	45	116-1/4	415	143	1000	43	1040	43-1/4	1045										
5	6	1.68	12	9	3.89	1-3/4	45	117-1/4	440	146	1030	45	1070	45-1/4	1075										
5	9	1.75	13	3	4.04	1-3/4	45	117-1/4	440	149	1060	47	1100	47-1/4	1105										
6	0	1.83	13	9	4.19	1-3/4	45	118-1/4	465	150	1090	49	1130	49-1/4	1135										
6	3	1.91	14	3	4.34	1-3/4	45	118-1/4	465	153	1120	51	1160	51-1/4	1165										
6	6	1.98	14	9	4.50	1-3/4	45	119-1/4	490	156	1150	53	1190	53-1/4	1195										
6	9	2.06	15	3	4.65	1-3/4	45	119-1/4	490	159	1180	55	1220	55-1/4	1225										
7	0	2.13	15	9	4.80	1-3/4	45	120-1/4	515	160	1210	57	1250	57-1/4	1255										
7	3	2.21	16	3	4.95	1-3/4	45	120-1/4	515	163	1200	59	1240	59-1/4	1245										
7	6	2.29	16	9	5.11	1-3/4	45	121-1/4	540	166	1190	61	1230	61-1/4	1235										
7	9	2.36	17	3	5.26	1-3/4	45	121-1/4	540	169	1180	63	1220	63-1/4	1225										
8	0	2.44	17	9	5.41	1-3/4	45	122-1/4	565	170	1170	65	1210	65-1/4	1215										
8	3	2.52	18	3	5.56	1-3/4	45	122-1/4	565	173	1160	67	1200	67-1/4	1205										
8	6	2.59	18	9	5.72	1-3/4	45	123-1/4	590	176	1150	69	1190	69-1/4	1195										
8	9	2.67	19	3	5.87	1-3/4	45	123-1/4	590	179	1140	71	1180	71-1/4	1185										
9	0	2.74	19	9	6.02	1-3/4	45	124-1/4	615	180	1130	73	1170	73-1/4	1175										
9	3	2.82	20	3	6.17	1-3/4	45	124-1/4	615	183	1120	75	1160	75-1/4	1165										
9	6	2.90	20	9	6.33	1-3/4	45	125-1/4	640	186	1110	77	1150	77-1/4	1155										
9	9	2.97	21	3	6.48	1-3/4	45	125-1/4	640	189	1100	79	1140	79-1/4	1145										
10	0	3.05	21	9	6.63	1-3/4	45	126-1/4	665	190	1090	81	1130	81-1/4	1135										
10	3	3.12	22	3	6.78	1-3/4	45	126-1/4	665	193	1080	83	1120	83-1/4	1125										
10	6	3.20	22	9	6.93	1-3/4	45	127-1/4	690	196	1070	85	1110	85-1/4	1115										
10	9	3.28	23	3	7.09	1-3/4	45	127-1/4	690	199	1060	87	1100	87-1/4	1105										
11	0	3.35	23	9	7.24	1-3/4	45	128-1/4	715	200	1050	89	1090	89-1/4	1095										
11	3	3.43	24	3	7.39	1-3/4	45	128-1/4	715	203	1040	91	1080	91-1/4	1085										
11	6	3.51	24	9	7.54	1-3/4	45	129-1/4	740	206	1030	93	1070	93-1/4	1075										
11	9	3.58	25	3	7.70	1-3/4	45	129-1/4	740	209	1020	95	1060	95-1/4	1065										
12	0	3.66	25	9	7.85	1-3/4	45	130-1/4	765	210	1010	97	1050	97-1/4	1055										

t—Figures with a dagger indicate bolts opposite hangers.

Figure 5.2 Track wall bracket

Figure 5.2 relocated as Figure 6.1 December 4, 1995

6 Hangers

6.1 Hangers for three-ply doors

6.1.1 FRAME – A frame shall be made of flat-rolled steel, 3-1/2 inches (89 mm) width, 3/8 inch (9.5 mm) thick, and at least 21 inches (533 mm) long overall. Details are shown in Figure 5.1. The pendant shall be provided with three 9/16 inch (14.3 mm) holes for door bolts spaced as shown in Figure 5.1, and with malleable-iron, wrought-iron, or steel wheels at least 4 inches (102 mm) in diameter at the bottom of the groove and 5 inches (127 mm) in diameter overall. The bottom and sides of the groove shall be machine finished and the flanges flared slightly from the bottom of the groove.

6.1.2 WHEELS – A wheel shall be provided with roller bearings at least 1-7/8 inches (48 mm) long on the axle. The rollers shall operate between finished surfaces, shall be straight, and the ends of the rollers and hub shall be machine finished.

6.1.3 The distance between the inside of the pendant and the center of the groove in the wheel shall be 1-1/16 inch (27 mm), to provide ample clearance for the heads or nuts of the track bolts.

6.1.4 When made of malleable iron, the wheel shall be provided with a test piece for indicating that the casting has been made malleable. The test piece shall be bent over and hammered down, and the wheel shall be placed with the test piece on the outside when the hanger is in position as shown in Figure 5.1.

6.1.4 revised December 4, 1995

6.1.5 AXLES – An axle shall be made of steel not less than 1/2 inch (12.7 mm) in diameter, the ends being headed over on the outside of the frame. The axle shall be normal to the inside face of the pendant of the hanger. The holes shall be drilled after the head of the frame is formed.

6.1.6 BOLTS – Three 1/2-inch (12.7-mm) flat- or countersunk-head carriage bolts, 3-1/2 inches (89 mm) long, shall be provided for each hanger, as shown in Figure 5.1. Washers are not required with countersunk bolts.

6.1.6 revised December 4, 1995

6.2 Track wall brackets

6.2.1 A track wall bracket, of which details are shown in Figures 5.1 and 6.1, shall be made of cast iron, 3-1/2 inches (89 mm) in diameter on the wall, 1-3/4 inches (45 mm) in diameter at the track, and 1-3/4 inches between the track and wall. The brackets shall have a bearing of 1 inch (25.4 mm) against the wall at their outer edges.

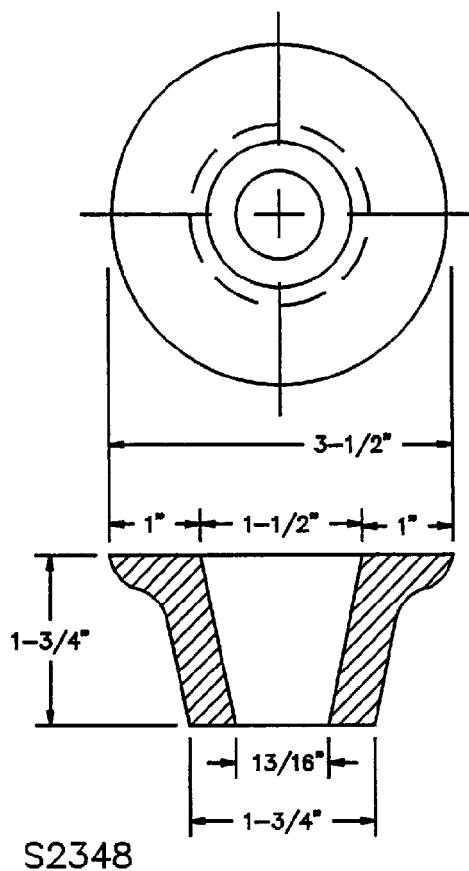
6.2.1 revised December 4, 1995

6.3 Hangers for two-ply doors

6.3.1 A hanger for a two-ply tin-clad door shall be constructed in the same way as a hanger for a three-ply door, except that the pendant shall be offset 3/4 inch (19.1 mm) toward the door at a point 5-3/4 inches (146 mm) below the center of the wheel. Bolts shall be 2-3/4 inches (70 mm) long.

6.3.1 revised December 4, 1995

Figure 6.1
Track wall bracket



Note: See Appendix A for SI Equivalents.

Figure 5.2 relocated as Figure 6.1 December 4, 1995

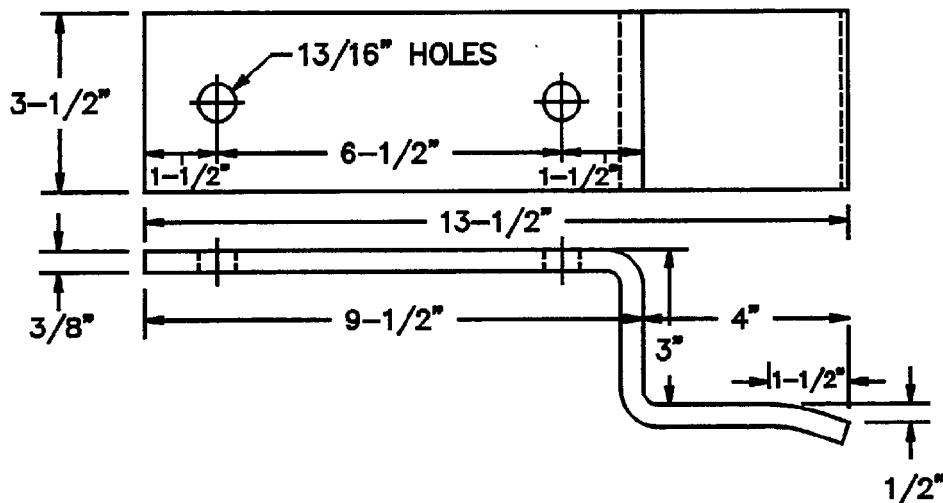
7 Front Binders

7.1 A front binder for a three-ply door shall be made of flat-rolled steel, 3-1/2 inches (89 mm) wide and 3/8 inch (9.5 mm) thick and at least 13-1/2 inches (343 mm) long overall, as shown in Figure 7.1. Binders shall be provided with two 13/16 inch (20.6 mm) holes for wall bolts. Holes shall be spaced 1-1/2 inches (38 mm) from each end of the wall contact portion of the front binder.

7.2 The end lapping of the door shall be offset away from the wall 3 inches (76 mm), the outer 1-1/2 inches (38 mm) being curved away from the door 1/2 inch (12.7 mm) to provide free entrance for the door.

7.3 A front binder for a two-ply door shall be constructed as specified for a three-ply door, except that the end lapping the door shall be offset away from the door 2-1/4 inches (57 mm).

Figure 7.1
Front binder



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Note: See Appendix A for SI Equivalents.

8 Rear Binders and Rear-Binder Pockets

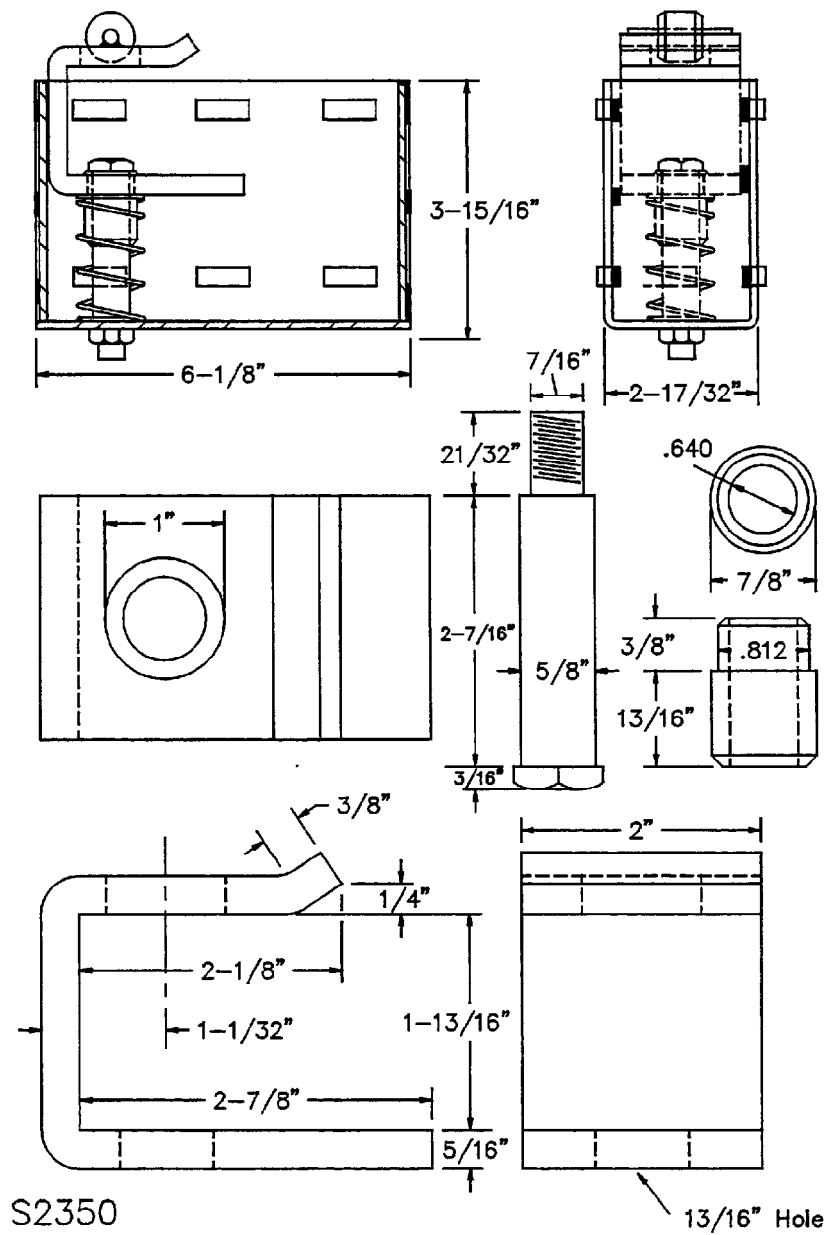
8.1 A rear binder for both a two- and a three-ply door shall be made of cold-rolled steel and shall not be less than 5/16 inch (7.9 mm) thick, and of the shape illustrated in Figure 8.1. A binder box shall be constructed of mild steel not less than 1/8 inch (3.2 mm) thick.

8.2 A rear binder shall have a construction equivalent to that illustrated by Figure 8.1. The binder shall be provided with a 3/4 inch (19.1 mm) diameter by 3/8 inch (9.5 mm) long hard brass roller secured with a 1/4 inch (6.4 mm) diameter by 1-3/4 inch (45 mm) long steel pin. For adjustment of the binder, a shoulder bolt with a stud sleeve, a coil spring of 0.093 inch (2.36 mm) diameter bronze wire and a 7/16 inch (11.1 mm) diameter nut shall be provided as shown in Figure 8.1.

8.2 revised December 4, 1995

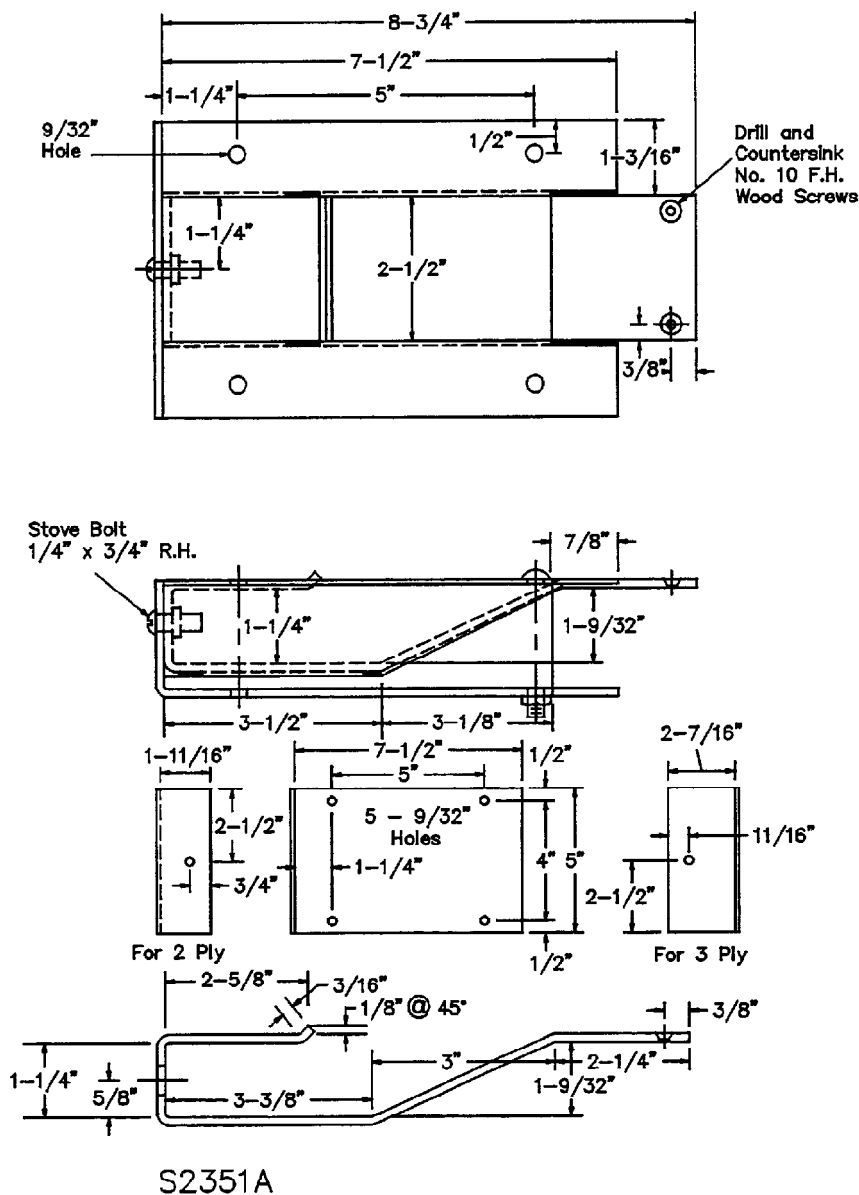
8.3 A rear-binder pocket for a two- and a three-ply door shall be made of not less than 0.093 inch (2.36 mm) cold-rolled steel, formed as shown in Figure 8.2.

Figure 8.1
Rear binder, binder box, shoulder bolt, and stud sleeve



Note: See Appendix A for SI Equivalents.

Figure 8.2
Binder pocket assembly



Note: See Appendix A for SI Equivalents.

9 Stay Rolls

9.1 A stay roll, Type No. 1, for a three-ply tin-clad door shall be a U-shaped member and shall be made of flat-rolled steel, 2-1/2 inches (64 mm) wide and 1/2 inch (12.7 mm) thick, as shown in Figures 9.1 and 9.2 or 9.5.