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Legacy report on the 1997 Uniform Building Code™

DIVISION: 05—METALS

Section: 05090—Metal Fastenings

DIVISION: 06—WOOD AND PLASTICS

Section: 06060—Connectors and Fasteners

DIVISION: 09—FINISHES

Section: 09130—Acoustical Suspension

I-LAG™ BRAND EYE LAG SCREWS AND WIRE SYSTEM

DOC'S MARKETING CORPORATION

4121 GUARDIAN STREET
SIMI VALLEY, CALIFORNIA 93603

1.0 SUBJECT

I-LAG™ Brand Eye Lag Screws and Wire System.

2.0 DESCRIPTION

2.1 General:

I-LAG brand screw fasteners having part numbers 750 SD, 750 SD DH, W300, and W300 DH and the I-LAG wire systems are recognized for use in supporting interior suspended ceiling systems. The I-LAG brand screw fastener Nos. 750 SD and 750 SD DH are eye lag type screws manufactured from AISI C 1018 or C 1022 heat-treated steel having an electroplated zinc Type II coating, giving them a yellowish or golden appearance. The W300 and W300 DH screws are manufactured from AISI C 1010 low carbon steel that is not heat-treated. These screws are either uncoated or electroplated with zinc Type I coating that is silver in appearance. The ceiling wire system consists of DH ceiling wire and DH angle clips or DH I-LAG screw fasteners shown in Figure 1. The DH wire has a "T" head on the end of the wire and is made of No. 12 gage [0.1046 inch (2.66 mm)] wire complying with ASTM A 641. The DH angle clips are 90-degree-angle clips measuring 0.07 inch (1.9 mm) thick, 0.75 inch (19.1 mm) wide, 0.65 inch (16.5 mm) long in the short side and 1.25 inch (31.74 mm) long in the longer side. The short side has a 0.217-inch (5.5 mm) diameter and a pre-drilled hole in the middle for fastening to the framing system, and the longer side has a slotted hole that is 0.37 inch long by 0.17 inch wide (9.40 mm by 4.31 mm) at the bottom and 0.105 inch wide (2.67 mm) at the top of the slot for use with the DH ceiling wire. The DH angle clip is made from low-carbon steel complying with AISI 1010 and is shown in Figure 1.

2.1.1 750 SD AND 750 SD DH: The 750 SD is a self-tapping screw fastener designed for installation into steel. Each fastener is 2 inches (51 mm) long and consists of a 0.3-inch-long (7.6 mm) self-tapping portion, 0.5-inch-long (12.7 mm) threaded portion, 0.19-inch-diameter (4.8 mm) shank, and a 0.5-inch-diameter-by- 0.08-inch-thick (12.7 mm by 2 mm) washer portion. The fastener portion above the washer consists of a 0.21-inch-diameter-by-0.6-inch-long (5.3 mm by 15 mm) shank portion and a 0.08-inch-thick-by-0.5-inch-long (2 mm by 12.7 mm) flattened eyelet portion having a 0.18-inch-diameter (4.6 mm) hole as shown in Figure 1. The 750 SD DH is similar to the 750 SD screw except that the eyelet has a slotted hole instead of a round hole as shown in Figure 1. The slotted hole is for use with the DH ceiling wire.

2.1.2 W300 AND W300-DH: The W300 is a sharp-pointed screw fastener designed for use with wood framing. Each fastener is 3 inches (76 mm) long and consists of a 1 1/2-inch-long (38 mm) threaded portion and a 0.19-inch-diameter (4.8 mm) shank, and a 0.08-inch-thick-by-0.71-inch-long (2 mm by 18 mm) flattened eyelet portion having a 0.22-inch-diameter (5.5 mm) hole as shown in Figure 1. The W300 DH is similar to the W300 screw except that the eyelet has a slotted hole in the flattened eyelet portion instead of a round hole as shown in Figure 1. The slotted hole is 0.37 inch long by 0.17 inch wide (9.40 mm by 4.31 mm) at the bottom and 0.105 inch wide (2.67 mm) at the top of the slot, and is for use with the DH ceiling wire.

2.2 Allowable Loads:

Allowable fastener loads are as shown in Table 1. The allowable loads for the 750 SD and 750 SD DH screw fasteners are loads for the screws fastened into steel sheets having minimum uncoated thicknesses of 0.030 inch, 0.036 inch, 0.047 inch and 0.062 inch (0.76 mm, 0.91 mm, 1.19 mm and 1.57 mm), and 38,000 psi (262 MPa) minimum yield strength.

Allowable loads for the W300 and W300 DH screw fasteners are based on fasteners attaching into lumber having minimum 0.46 specific gravity.

2.3 Installation:

The self-tapping and sharp-point screws are installed without predrilling holes in the receiving material. Fasteners are installed with an eye lag jig pole, 1/4-inch (6.4 mm) hex driver and a variable speed drill having a minimum speed of 200 rpm. Installed fasteners must protrude through the attached

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steel members three full threads beyond the members and must be fully embedded into wood framing members. The distance from the center of a fastener to the edge and end of the steel and wood framing members shall not be less than 2 inches (51 mm).

The minimum spacing in steel is $\frac{3}{4}$ inch (19.1 mm). The minimum spacing in wood is determined in accordance with Sections 8.5.5 and 8.5.6 of the NDS-91, adopted as set forth in Chapter 23, Division III, Part I, of the 1997 *Uniform Building Code*TM (UBC).

2.4 Identification:

Fasteners are embossed with four "I"s radiating from the shank on the top portion of the washer as shown in Figure 1. Each box of fasteners has a label bearing the I-LAG brand name, the manufacturer's name and address, the fastener type, the quantity, and the ICC-ES evaluation report number (ER-5367), as noted in Figure 2.

Each wrapping of the hanger wires has a label bearing the DH hanger wire brand name, the manufacturer's name and address, the wire size, the quantity, and the ICC-ES evaluation report number (ER-5367), as noted in Figure 2.

3.0 EVIDENCE SUBMITTED

Data in accordance with the Acceptance Criteria for Tapping Screw Fasteners (AC118), dated July 1996, and the Acceptance Criteria for Wood Screws (AC120), dated September 1999; reports of wire tension tests and DH screw pull-out and tension tests; installation instructions; and a quality control manual.

4.0 FINDINGS

That the I-LAGTM Brand eye lag screws and wire system described in this report comply with the 1997 *Uniform Building Code*TM, subject to the following conditions:

- 4.1 Fasteners are installed in accordance with the manufacturer's instructions and this report.**
- 4.2 Allowable loads comply with Table 1.**
- 4.3 Allowable loads shall not be increased due to duration of load such as wind or earthquake forces.**
- 4.4 Calculations shall be submitted to the building official, proving that applied loads are less than the allowable loads in this report.**

This report is subject to re-examination in two years.

TABLE 1—ALLOWABLE SCREW LOADS (pounds)

I-LAG PART NUMBER	STEEL (THICKNESS) ^{1,3}								WOOD ²	
	No. 22 Gage (0.03 inch)		No. 20 Gage (0.036 inch)		No. 18 Gage (0.047 inch)		No. 16 Gage (0.062 inch)		Minimum 0.46 Specific Gravity	
	Tension	45 Degrees ⁴	Tension	45 Degrees ⁴	Tension	45 Degrees ⁴	Tension	45 Degrees ⁴	Tension	45 Degrees ⁴
750 SD or 750 SD DH	135	170	170	190	245	280	340	375	NA	NA
W300 or W300 DH	NA	NA	NA	NA	NA	NA	NA	NA	270	140

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.9 kPa.

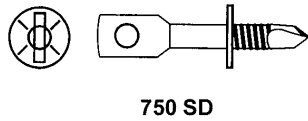
NA = Not applicable

¹Values are based on steel sheets having a minimum yield strength of 38,000 psi.

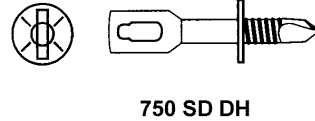
²Based on minimum 1 $\frac{1}{2}$ -inch screw penetration into wood member.

³Based on minimum three full threads protrusion beyond the steel member.

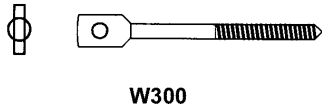
⁴Load applied 45 degrees from the longitudinal axis of the fastener.



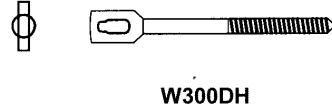
750 SD



750 SD DH



W300



W300DH

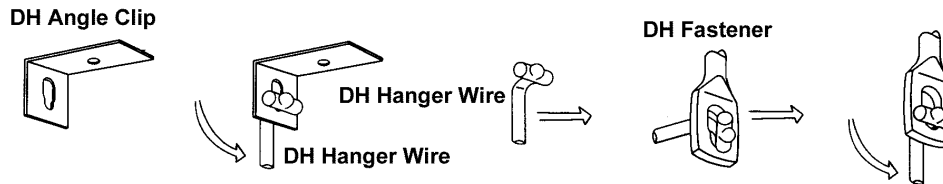
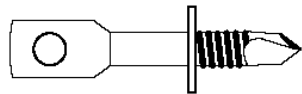


FIGURE 1—I-LAG BRAND SCREW FASTENERS AND DH CEILING WIRE SYSTEM

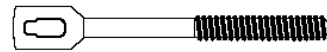


1000 pcs
part# 750 SD

I-LAG. SELF DRILLING SHEET METAL SCREWS

ER-5367

For suspended ceiling applications only.
Sold by weight: 21lbs
Distributed by Doc's Marketing
5158 Goldman Avenue, Unit A
Moorpark, California 93021



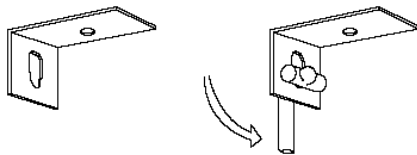
1000 pcs
part# W300 DH

I-LAG. WOOD SCREW

ER-5367

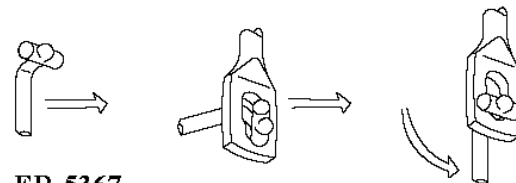
For suspended ceiling applications only.
Sold by weight: 23 lbs.
Distributed by Doc's Marketing, PATENT PENDING
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DH Angle Clip 1000 pcs



ER-5367
Only for use with suspended ceilings
(Light-duty, Intermediate-duty or Heavy-duty)
Only use in pure tension as shown above
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DH Hanger Wire (12 Gauge) 100 wires



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FIGURE 2—IDENTIFICATION LABEL