ANSI/NEMA OS 1

Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports

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Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports

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Foreword

The purpose of this standards publication is to provide a guide to the types and sizes of metal outlet boxes, and supports for general use or suggested for future design or both. The standards present dimensional data needed for the safety and convenience of interchangeability with associated equipment. All items when properly installed and properly used contribute to safety.

Properly manufactured boxes and covers are, however, only one factor in minimizing the hazards, which may be associated with the use of electricity. The reduction of hazard involves the joint efforts of the various equipment manufacturers, the system designer, the installer, and user. Information is provided herein to assist users and others in the proper selection of boxes and covers.

The manufacturer has limited or no control over the following factors which are vital to a safe installation:

a. Environmental conditions
b. System design
c. Equipment selection and application
d. Installation
e. Operating practices
f. Maintenance

This publication is not intended to instruct the user of the boxes and covers with regard to these factors except insofar as suitable equipment to meet needs can be recognized in this publication.

These standards are necessarily limited to defining the construction requirements for the products covered herein. The publication has been promulgated with a view towards reducing the hazard to persons and property when boxes and covers conforming to these standards are properly selected and installed in accordance with the *National Electrical Code*[*].

This Standards Publication has been reviewed with input obtained from independent testing laboratories and major consumer representatives.

This publication is reviewed periodically by the NEMA Outlet and Switch Box Section, so that it will be kept up to date with advancing technology. Comments will be welcomed and should be sent to:

Vice President, Engineering
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209

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This Standards Publication was developed by the Outlet and Switchbox Section. Section approval of the standard does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the Outlet and Switchbox Section was composed of the following members:

Allied Moulded Products, Inc.—Bryan, OH
Arlington Industries, Inc.—Scranton, PA
Bowers, A Subsidiary of Thomas & Betts—Memphis, TN
Bridgeport Fittings, Inc.—Bridgeport, CT
CANTEX INC.—Mineral Wells, TX
Cooper B-Line—Highland, IL
Cooper Crouse-Hinds—Syracuse, NY
EGS Electrical Group—Skokie, IL
Erico, Inc.—Solon, OH
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Section 1
GENERAL

1.1 SCOPE

This Standards Publication covers those general-purpose metal outlet boxes, device boxes, covers, and supports that are widely used by the consumer. These items (covered by UL 514A) are designed to facilitate the pulling of wires, to protect and facilitate wiring splices and taps, to provide a means of mounting and protecting wiring devices, and to provide a connection for rigid conduit, electrical metallic tubing, armored cable, metal clad cable, nonmetallic sheathed cable, flexible metallic conduit and knob-and-tube wiring systems.

Excluded from this Standards Publication are the following: “conduit bodies” and similar types of boxes; cabinets or cutout boxes; pull boxes; floor boxes; flush device plates; boxes, plates and covers designed for use with surface metal raceway systems only; and boxes larger than 1650 cubic cm (100 cubic in.) in volume except multiple gang device boxes.

1.2 REFERENCES

The following publications are adopted in part, by reference in this publication, and are available from the organizations below. Unless otherwise noted, references are to the most recent edition.

National Electrical Manufacturers Association
1300 N. 17th Street, Suite 1867
Rosslyn, VA 22209

NEMA OS 3 *Selection and Installation Guidelines for Electrical Outlet Boxes*

National Fire Protection Association
Batterymarch Park
Quincy, MA 00269

ANSI/NFPA 70 *National Electrical Code®*

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

ANSI/UL 514A *Metallic Outlet Boxes*

1.3 DEFINITIONS

blank cover: An outlet box cover having no knockouts or openings, other than those used to mount to a box. These covers complete the enclosure.

blank/knockout cover: An outlet box cover that contains a knockout which can be removed to accommodate a fitting for a pendant cord, etc. When left in place it may serve as a blank cover.

box (electrical): Part of an enclosure provided with means for mounting a cover, cover-plate, accessory, etc.

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box extender: An accessory installed in or on a box that is mounted in a finished structure. The box extender rests on the edge of the existing box (fixed depth) or extends into the box (adjustable depth). It is not mechanically secured to the box. The flange of the box extender, if provided, rests on the finished surface.

box support: A means for securing an outlet or device box to the building structure (e.g. bracket) or finished surface. Supports can be an integral part of the box, attached to the box, or entirely separate.

bracket: A box support for securing an outlet box or device box in place in walls or ceilings, or to wall studs, building structures, or structural members.

cable box: An outlet box provided with clamps for use with metallic or nonmetallic cables or flexible nonmetallic tubing, or any combination of said cables and tubing. (See outlet box.)

clamp: A part of, or an accessory to a cable box to secure flexible nonmetallic tubing (Loom) or cable to the box.

concrete box: An outlet box especially intended for support in concrete, typically constructed to allow end-to-end extension and the application of covers on two sides. This box is not intended for floor installation.

conduit box: An outlet box designed with circular knockouts for conduits or fittings.

device box: A box which is designed to receive and support switches, receptacles, and similar devices. The term “device box” includes the following specific types:

a. Single gang—fixed sides, accommodates a single device
b. Two gang—fixed sides, accommodates up to two devices
c. Three gang—fixed sides, accommodates up to three devices
d. Four gang—fixed sides, accommodates up to four devices
e. Gangable—permits the removal of one or both sides of the box to join (or gang) as many sections as required

device mounting covers: A device box cover that provides a mounting platform for a wiring device. The device is mounted on top of the cover. The cover may be raised. These covers are also sometimes referred to as mud rings. A wallplate is required to complete the enclosure.

exposed work cover: A device box cover that is typically raised having cutouts to accept and support wiring devices. The devices are mounted to the underside of the cover. These covers also complete the enclosure.

flush-mounted box: A box that is so designed as to have a minimal front projection from the surface surrounding the box opening.

hung-ceiling box: A box that consists of a ring and a back plate with supporting bars for use with rigid metal or nonmetallic conduit, electrical metallic or nonmetallic tubing, flexible metallic conduit, armored cable, flexible nonmetallic tubing, or nonmetallic sheathed cable above suspended ceilings.

junction box: A junction box with a volume of 1650 cm^3 (100 cu. in.) is considered an outlet box.

knockout: A portion of the wall of a box that can be removed readily in order to provide an opening for the entry of tubing, conduit, or cable.

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listed: Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that the equipment, material, or services either meets appropriate designated standards or has been tested and found suitable for a specified purpose.

outlet box: A box used in an electrical wiring system for containing wire, taps, splices, or devices. It has provisions for the entry of conduit, tubing, or cable assemblies and for the attachment of a separate cover, which is used to close the box or provide support for the devices or fixtures.

NOTE–The function of an outlet box, when completely closed by a cover or part of a wiring device acting as a cover, is to guard live parts against outside incidental contact, to protect the surrounding environment from faults occurring within the outlet box, to permit inspection of the wiring system, and to provide a safe means for replacement of wiring devices. Normally, outlet boxes have provisions for the entrance of conductors through conduit, cable, or tubing. Outlet boxes also have a provision for fastening covers, which are separate or a part of a wiring device. The fastening means is not a hinge and provides for future removal. An outlet box also provides one or more of the following:

a. Support for luminaire (fixture) assemblies and lampholders
b. Access to the raceway system for which it is designed
c. Extension of existing raceway or wiring systems
d. Ground continuity within the raceway or the wiring system
e. Utilization of accessories such as fixture studs, clamps, bar hangers, extension rings, and such.

outlet box cover: A cover which is intended to close the face of a box.

surface-mounted box: A box designed and intended to be mounted on a surface and to be exposed to sight rather than recessed in a wall, ceiling, or partition.

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Section 2
SPECIFICATIONS

2.1 MATERIAL

2.1.1 The thickness of boxes and covers of flat rolled sheet steel shall be not less than 1.59 mm (0.0625 inch) except that:

a. The minimum thickness at or within 6.35 mm (1/4 in.) of any right-angle bend in a drawn sheet-steel box shall not be less than 1.04 mm (0.041 in.).
b. The average thickness of the sides and ends (see 2.9) of a drawn box shall be permitted to be 1.47 mm (0.058 in.) based on three measurements made on the side and end of the box not less than 19.1 mm (3/4 in.) from a right-angle bend. The three measurements are to be made in a line perpendicular to the front of the box at a point 6.35 mm (1/4 in.) from the front, at a point 6.35 mm (1/4 in.) from the right-angle bend at the back, and at a point equidistant between the two.
c. Listed boxes and covers shown to have equivalent strength and characteristics shall be permitted to be made of thinner sheet steel.

2.1.2 A flush device box extender of flat rolled sheet steel shall be permitted to be 0.76 mm (0.030 in.) minimum thickness. See Figure 202.

2.2 CORROSION PROTECTION

The surfaces of sheet-steel boxes, covers, and supports (except tapped holes, the area under the heads of screws securing the sides of a gangable device box, pieced holes and cut edges formed from zinc-coated stock, and hangers made of steel bar stock) shall be protected against corrosion.

2.2.1 Outside Surfaces

The average thickness of a zinc coating shall be not less than 0.013 mm (0.0005 in.) nor a minimum of 0.0102 mm (0.0004 in.) on box supports, external clamps, and the outside surface of boxes and covers. Alternate coatings may be approved.

NOTE—See UL 514A for method of determining compliance.

2.2.2 Inside Surfaces

The average thickness of a zinc coating shall be not less than 0.0038 mm (0.00015 in.) nor a minimum of less than 0.0025 mm (0.0001 in.) on internal clamps and the inside surface of boxes and covers. The coating thickness on interior surfaces not able to be contacted by a 19.1 mm (3/4 in.) diameter ball is not specified but the presence of a coating is to be determined by visual inspection. Alternate coatings may be approved.

NOTE—See UL 514A for method of determining compliance.

2.2.3 Screws

Screws of ferrous material shall be protected against corrosion by a zinc coating.

2.2.4 Spot or Injection Welds

The thickness of coating on spot or injection welds is not specified, but the presence of a coating shall be determined by visual inspection.

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2.3 OPENINGS

2.3.1 Conduit Knockouts

Conduit knockout openings provided in boxes or covers for the entrance of conduit shall be effectively closed to afford protection practically equivalent to that of the box walls; however, the knockouts shall be so cut that they can be removed without deforming the box or cover in which they are located. Such knockout openings shall be located in flat surfaces of the boxes to permit locknuts, bushings, or fittings to be seated fully against these surfaces when installed as intended.

NOTE–The drawings in this publication illustrate the placement of conduit knockouts in a side, end, bottom, or cover of a box. These drawings show typical knockout locations but are not intended to be required locations.

Knockouts shall effectively cover the openings in which they are located, and the clearance between the knockout and the opening shall not be more than 0.25 mm (0.010 in.).

2.3.2 Cable-Size Knockouts

Cable-size knockouts openings which are provided in boxes for the entrance of tubing or cable shall be effectively closed to afford protection practically equivalent to that of the box walls; however, the knockouts shall be so cut that they can be removed without deforming the box in which they are located. Clamps shall be installed in all cable boxes to firmly secure the cable or tubing. Cable-size knockouts shall have pryout openings not more than 1.016 sq. mm (0.040 square in.) in area.

The drawings shown in this publication illustrate the minimum number of cable-size knockouts considered adequate. Additional knockouts may be provided.

2.3.3 Diameters of Knockouts

The actual diameters for five nominal sizes of knockouts shall be as shown in Table 2-1.

Table 2-1
DIAMETER OF KNOCKOUTS

Trade Size of Knockout	Diameter, mm (Inches)		
	Nominal	Minimum	Maximum
Cable Pryout*	16.662 (0.656)	16.535 (0.651)	16.789 (0.661)
1/2 (16)	22.225 (0.875)	21.819 (0.859)	23.012 (0.906)
3/4 (21)	28.169 (1.109)	27.788 (1.094)	28.981 (1.141)
1 (27)	34.925 (1.375)	34.519 (1.359)	35.712 (1.406)
1-1/4 (35)	44.044 (1.734)	43.663 (1.719)	44.856 (1.766)

* The maximum dimension of horseshoe-shaped cable-size knockout (pryout), perpendicular to a flat side, shall be considered its diameter.

2.3.4 Open Holes

No dimension of an open hole in a box shall exceed 6.747 mm (17/64 in.). The total area of open holes shall not exceed the values shown in Table 2-2.

In computing the area of openings, the oblique portion of a bevel-cornered box shall be considered as a part of the integral end.

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Table 2-2
OPENINGS IN A BOX

Type of box, number of gangs	Maximum area of openings, mm² (in.²)	
	All openings	Openings in bottom
Single	291 (0.45)	215 (0.33)
2	355 (0.55)	270 (0.42)
3	420 (0.65)	330 (0.51)
4	484 (0.75)	385 (0.60)
5	549 (0.85)	450 (0.70)
6	613 (0.95)	515 (0.80)
7	678 (1.05)	580 (0.90)
8 [a]	742 (1.15) [a]	645 (1.0) [a]

NOTE 1–A pryout slot in the area of the box where a CLAMP is provided shall be disregarded, except when the pryout slot extends outside the area of the knockout, in which case, one-half of the area of the pryout slot or opening not covered by the clamp shall be used in computing the total area.

NOTE 2**–**An opening adjacent to an integral ear provided for die clearance only shall be disregarded in computing the total area.

NOTE 3–The oblique side of a box with bevelled corners shall be included as part of the end of the box.

[a] For each additional gang over 8, add 65 mm² (0.100 in.²) to all openings and the openings in the bottom.

2.4 SUPPORTS

Boxes shall be so designed that they can be securely fastened in place without depending on the support furnished by any system of wiring. A box support provided as a part of a box shall be so designed and constructed as to provide ample strength and rigidity.

A box support that is provided separately shall be so designed and constructed as to securely attach to the box for which it is intended and provide ample strength and rigidity. The means necessary to attach the support to the box shall be provided with the support.

Provision for supporting a device within the box shall be independent of the means used to support the box.

2.4.1 Supporting Ears

Supporting ears shall be of flat-rolled sheet steel not less than 0.91 mm (0.036 in.) in thickness (or equivalent in strength) and suitably attached to the box.

2.4.2 Stud Face Brackets

Brackets shall be capable of supporting a mass of 23 kg (50 lbs.) for 5 minutes without breaking or pulling loose from the box.

2.4.3 Stud Side Brackets

Brackets shall be capable of supporting a mass of 23 kg (50 lbs.) for 5 minutes without breaking or pulling loose from the box.

2.4.4 Bar Hangers (Adjustable or Fixed)

Bar hangers shall be made of steel 4.8 x 12.7 mm (3/16 x 1/2 in.) in cross section or be so constructed as to be capable of supporting a mass of 91 kg (200 lbs.) for 5 minutes without breaking or pulling loose from its box.

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Bar hangers having only the provision for mounting from a ceiling grid (such as for a drop ceiling) shall be so constructed as to be capable of supporting a mass of 23 kg (50 lbs.) for 5 minutes without breaking or pulling loose from the box.

2.4.5 Holes Provided for Mounting

Holes provided in the sides of a box for through-nailing shall be so located as to permit without interference, the installation of typical wiring devices, so as not to restrict of designed wiring capacity.

2.5 COVER SCREWS

Cover screws shall be long enough to engage at least two full threads in the metal of the ears or box.

2.6 BOXES FOR SUPPORTING EQUIPMENT OR ACCESSORIES

A box that is intended to provide a means for support for equipment such as a luminaire (lighting fixture), ceiling-suspended fan or other accessory from the box, shall be so designed and equipped to withstand the mechanical forces to which it is likely to be subjected during normal use.

NOTE–See UL 514A for method for determining compliance.

2.6.1 Boxes for Luminaire Support

A box that is intended to support a luminaire weighing more than 2.7 kg (6 lbs.) shall include at least two 8-32 mounting screws.

2.6.2 Boxes for Ceiling-Suspended Fan Support

A box that is intended to support a ceiling-suspended fan, with or without accessories, shall include at least two 8-32 or 10-32 screws.

2.7 DEVICE BOXES

A box intended to house a wiring device, such as a switch or receptacle, shall be so designed and constructed to provide secure mounting of the device as intended.

2.8 BOXES AND MOUNTS FOR OTHER DEVICES AND ACCESSORIES

A box or mount for other devices, accessories or wiring methods, such as Class 2, telecommunications and information technology, or other low voltage systems, shall be so designed and constructed to permit the secure mounting of the device accessory or wiring method as intended.

2.9 BOXES FOR HIGH AND LOW VOLTAGE CIRCUITS

2.9.1 A box intended to house both conductors of power, lighting or Class 1 (high voltage) circuits and conductors or cables of communications, Class 2, Class 3 or conductive and nonconductive optical fiber cable (low voltage) circuits shall be provided with a means for isolating the high voltage and low voltage circuits and devices into discrete wiring compartments.

2.9.2 Means for isolating wiring compartments may be furnished separately.

2.10 MARKINGS

2.10.1 Boxes and Covers

Boxes and covers shall be plainly marked with the name or trademark of the manufacturer and cubic capacity as required by the National Electrical Code®. This marking may be expressed in “cm³” and/or “cu in.”

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2.10.2 Boxes for Supporting Equipment or Accessories

A box intended to support a luminaire or ceiling-suspended fan or other accessory shall comply with the marking requirements in UL 514A.

2.10.3 Clamps

A clamp which is furnished as part of a box shall be marked to indicate the type of material with which it is intended to be used—"A" for armored cable, "F" for flex metal conduit, "N" for nonmetallic sheathed cable, "T" for flexible nonmetallic tubing, "MCC" for metal corrugated cable, "MCS" for metal clad smooth cable, and "MCI" for metal clad interlocking cable. Clamps that are suitable for use with all types of materials require no marking.

2.11 GROUNDING

A means shall be provided in each metal box for the connection of an equipment grounding conductor. The means shall be permitted to be a tapped hole (such as a #10-32) or equivalent. If an #8-32 tapped hole is used it must be identified and marked.

2.12 DIMENSIONS

2.12.1 Trade Sizes

Trade sizes such as 3-1/2, 4, and 4-11/16 associated with boxes in Table 2-3 and the figures are based on their nominal face dimensions in inches.

Trade sizes and metric designators associated with knockouts are for identification purposes only and are not actual dimensions.

2.12.2 Dimensional Tolerances

In the figures, fractional inch dimensions shall be held to ±1/32 in. and all decimal dimensions shall be held to ± 0.25 mm (± 0.01 in.) unless otherwise indicated.

2.13 FIGURES (SEE TABLE 2-3)

Figures 70 through 400 (see Table 2-3) give the sizes, dimensions, locations and arrangement of knockouts, as well as other details pertaining to boxes, covers, extensions and supports. Clauses 2.1 through 2.12 offer additional variations and details. Overall dimensions of drawn boxes are the dimensions at the point of tangency of the radius from the bottom of the box to the sides or ends, or both, of the box and not at the open face of the box.

NOTE–Figures are not shown in actual dimensions.

Certain noncritical construction and functional details are purposely avoided; for example, construction differences between assembled and drawn boxes, of the functional differences between screw holes, notches, keyhole slots, or straight slots in box covers are not covered by the drawings. Dimensions applicable to screw holes in box covers represent the final installed positions of cover screws.

Figures 2-1 and 2-2 illustrate the nomenclature used when referring to the sides, bottoms, and ends of boxes.
Figure 2-3 illustrates minimum box cover face opening.
Figure 2-4 illustrates clearances between device box plaster ear mounting screws.
Figure 2-5 illustrates alternate knockout designs.
Figure 2-6 illustrates alternate cover mounting holes or slots.
Figure 2-7 illustrates alternate device mounting holes (or knockouts).
Figure 2-8 illustrates alternate pryout configurations.
Figure 2-9 illustrates alternate exposed work cover configurations.

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Table 2-3
INDEX OF FIGURES

DESCRIPTION	FIGURE NO.
OUTLET BOXES AND OUTLET BOX EXTENSIONS	
3-1/2" ROUND BOXES	
Cable, 1/2 and 3/4 Deep	
70	
3-1/2" OCTAGON BOXES	
1-1/2" and 1" Deep, 1/2 (16) and 3/4 (21) Knockouts	80
Cable, 1-1/2" Deep	81
4" ROUND BOX	
1/2" Deep, 1/2 (16) Knockouts	90
Cable, 1/2" Deep	91
4" OCTAGON BOXES	
1-1/2" and 2-1/8" Deep, 1/2 (16), 3/4 (21), and 1 (27) Knockouts	100
Cable, 1-1/2" and 2-1/8" Deep	101
4" SQUARE BOXES	
1-1/4", 1-1/2", and 2-1/8" Deep, 1/2 (16) Knockouts	110
1-1/2", and 2-1/8" Deep, 3/4 (21) and 1 (27) Knockouts	111
1-1/2", and 2-1/8" Deep, Combination 1/2 (16) and 3/4 (21) Knockouts	112
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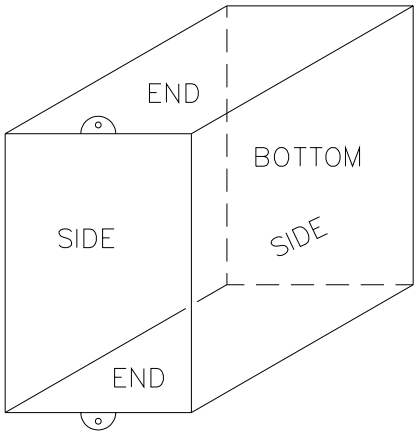


Figure 2–1
DEVICE BOX

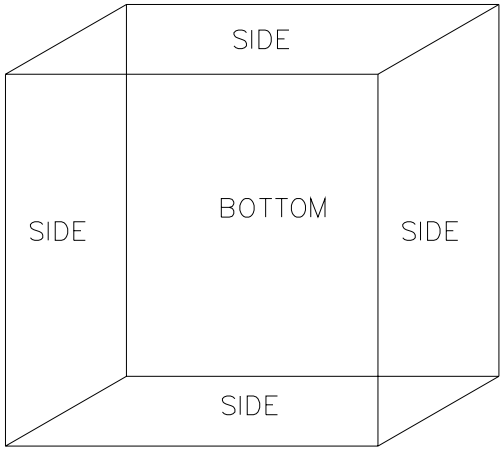
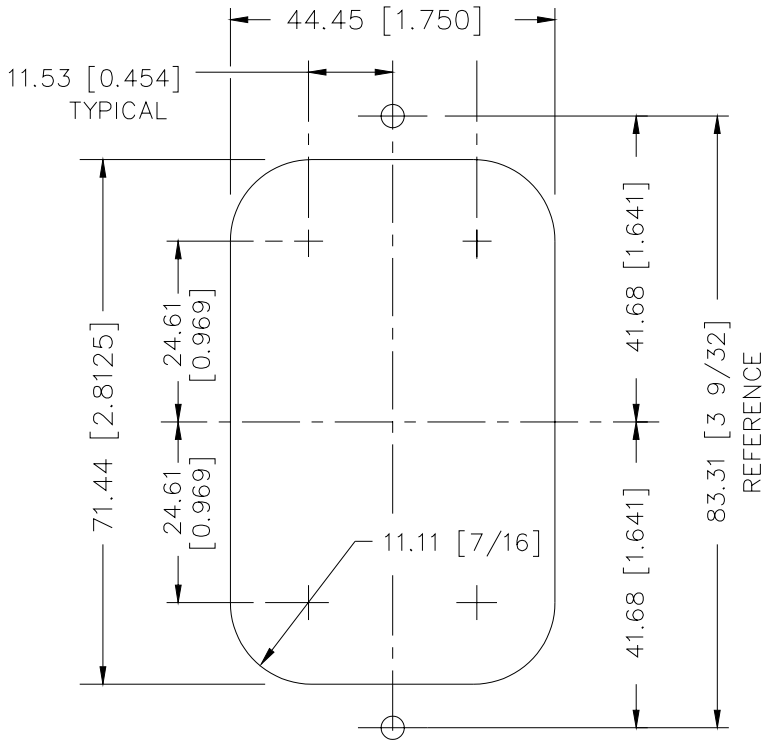


Figure 2–2
OUTLET BOX

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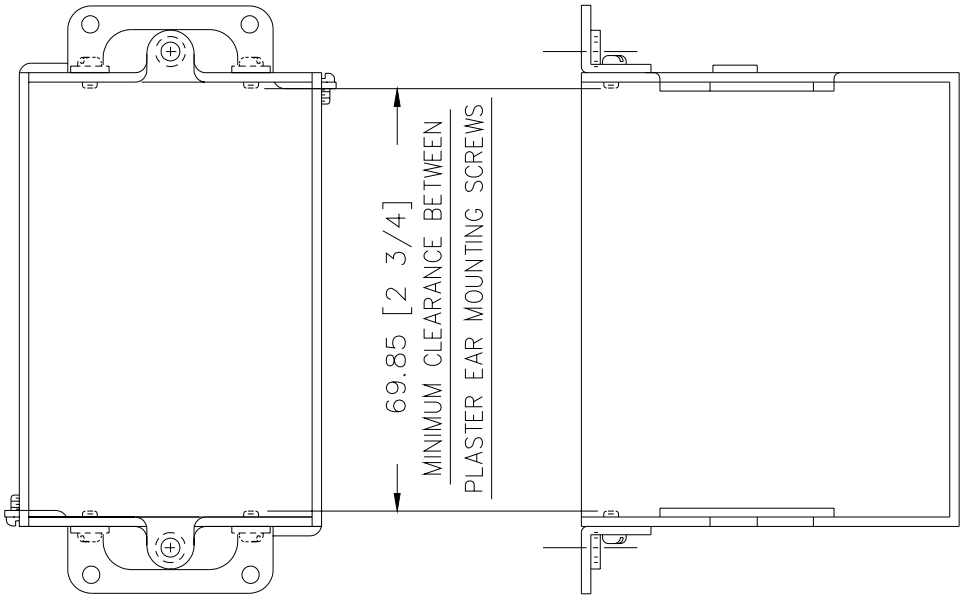


NOTE:
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Figure 2–3
MINIMUM BOX/COVER FACE OPENING

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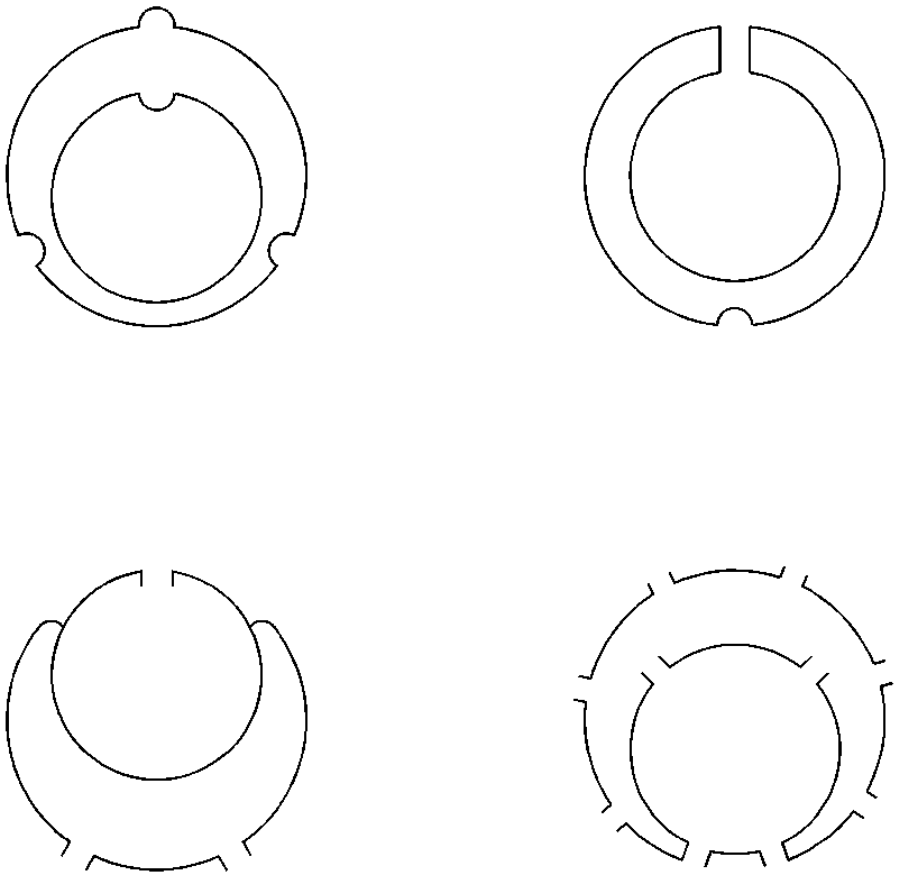
Figure 2–4
CLEARANCE BETWEEN DEVICE BOX PLASTER EAR MOUNTING SCREWS

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ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 2–5



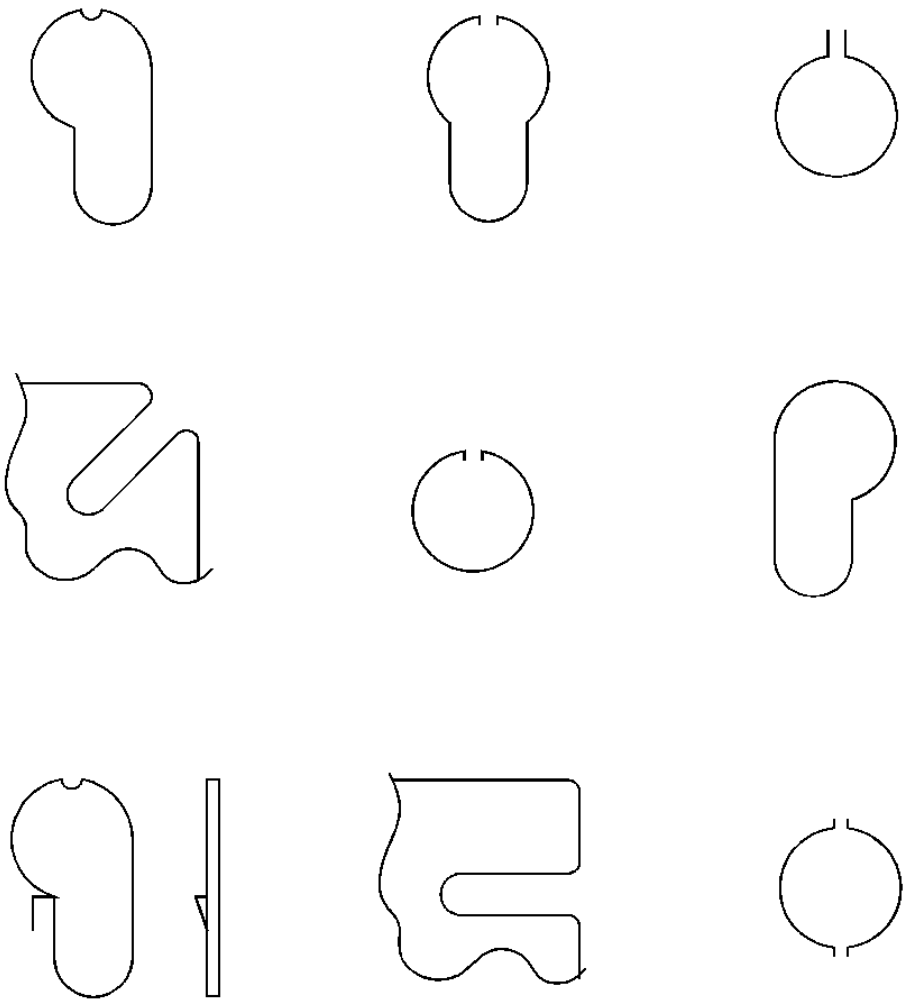
NO SCALE

Figure 2–5

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ALTERNATE COVER MOUNTING HOLE(S)/SLOTS(S) CONFIGURATIONS



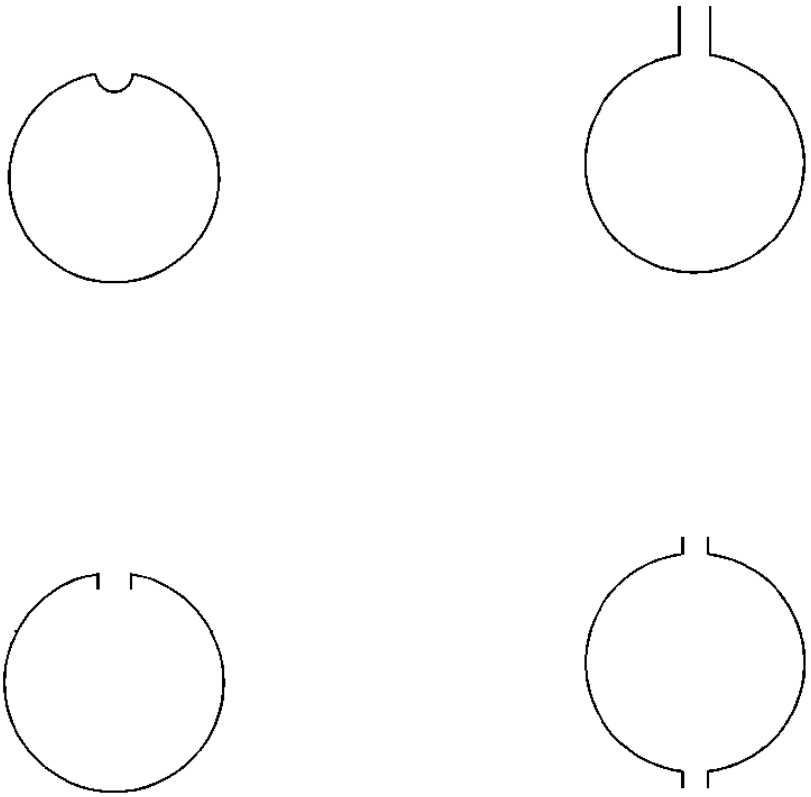
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Figure 2–6

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ALTERNATE DEVICE MOUNTING CONFIGURATIONS FOR COVERS



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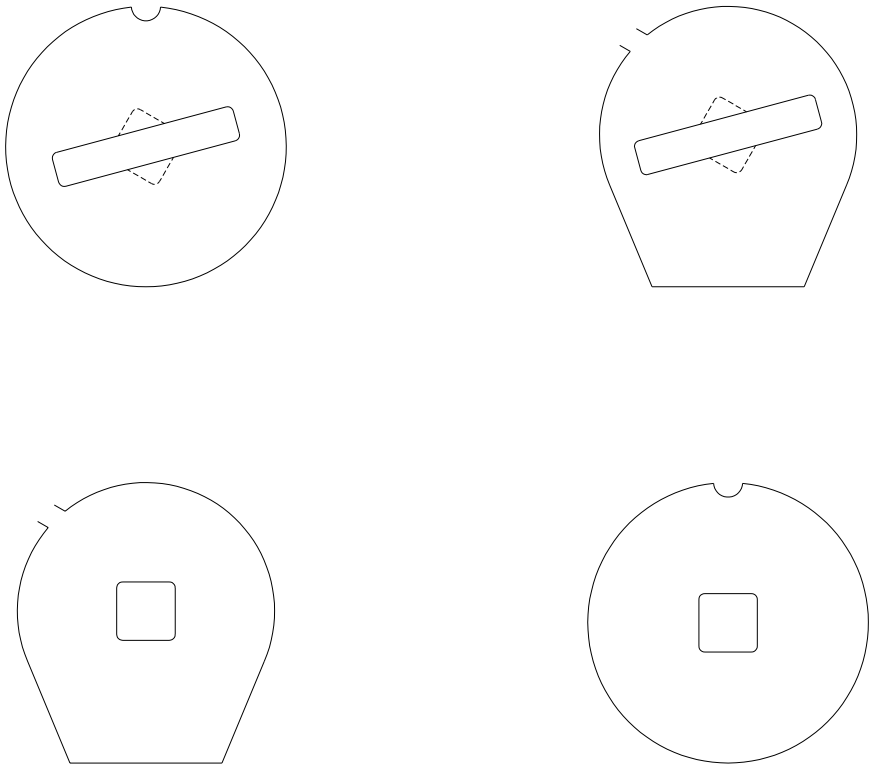
MOUNTING CONFIGURATIONS MAY BE OPEN HOLES OR KNOCKOUTS AND MAY BE COUNTERSUNK 82 DEGREES FOR #6 OVAL HEAD MACHINE SCREW.

Figure 2–7

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ALTERNATIVE PRYOUT CONFIGURATIONS



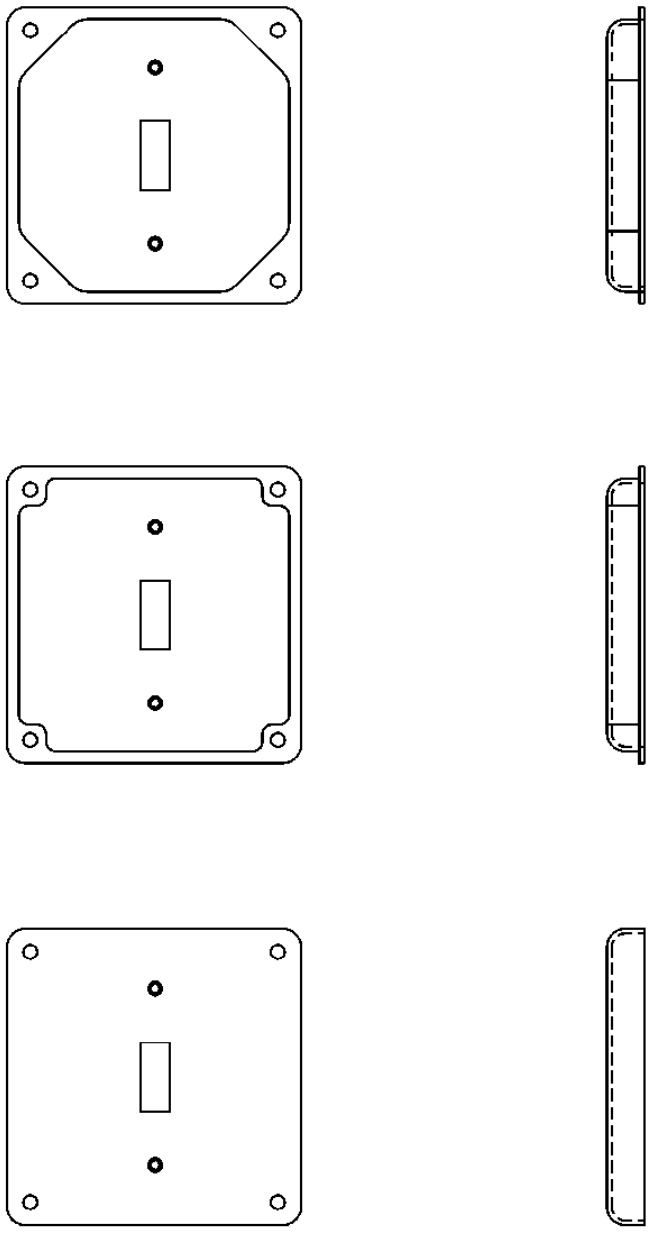
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Figure 2–8

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ALTERNATE EXPOSED WORK COVER CONFIGURATIONS

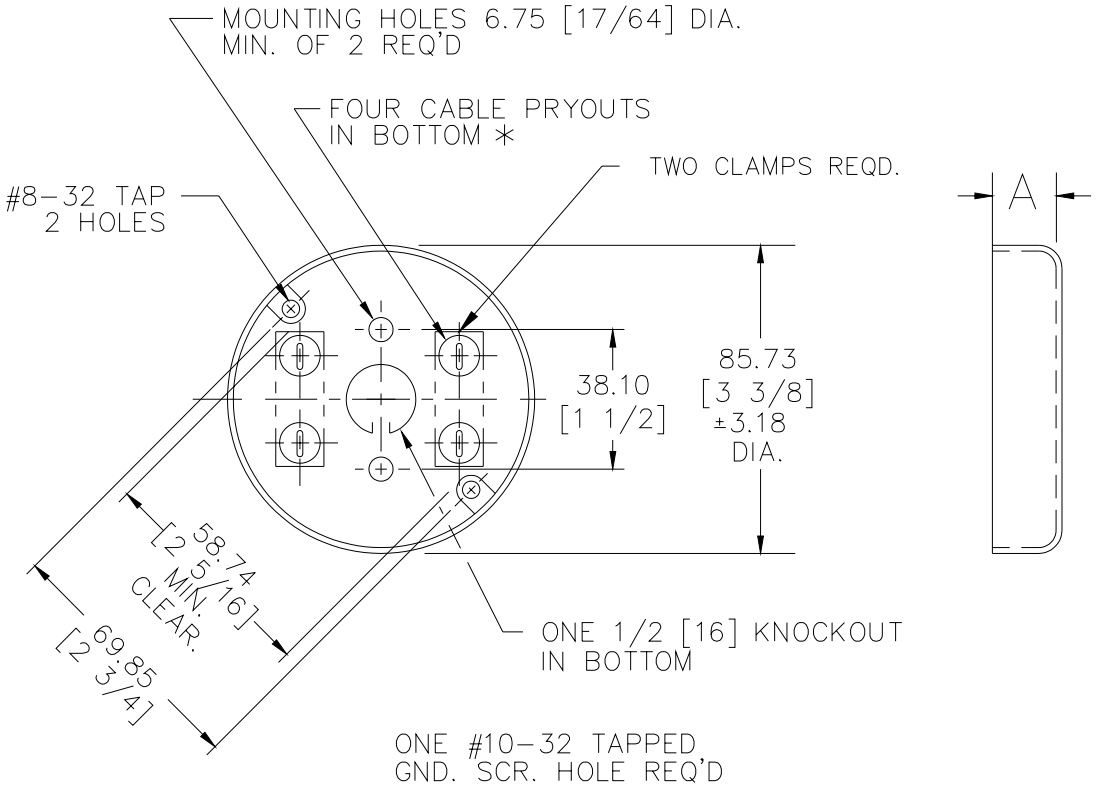


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Figure 2–9

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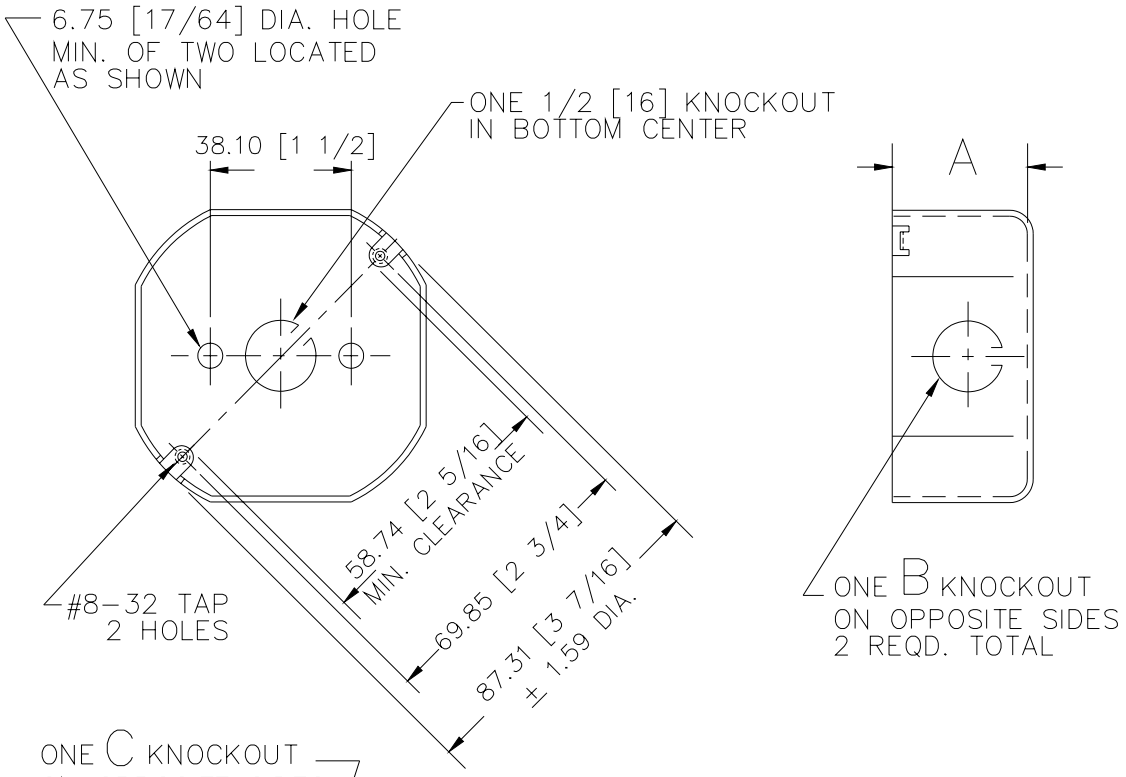
ITEM	A
1	12.70 [1/2]
2	19.05 [3/4]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-8 FOR ALTERNATE PRYOUT CONFIGURATIONS

Figure 70
3 1/4" ROUND CABLE BOX

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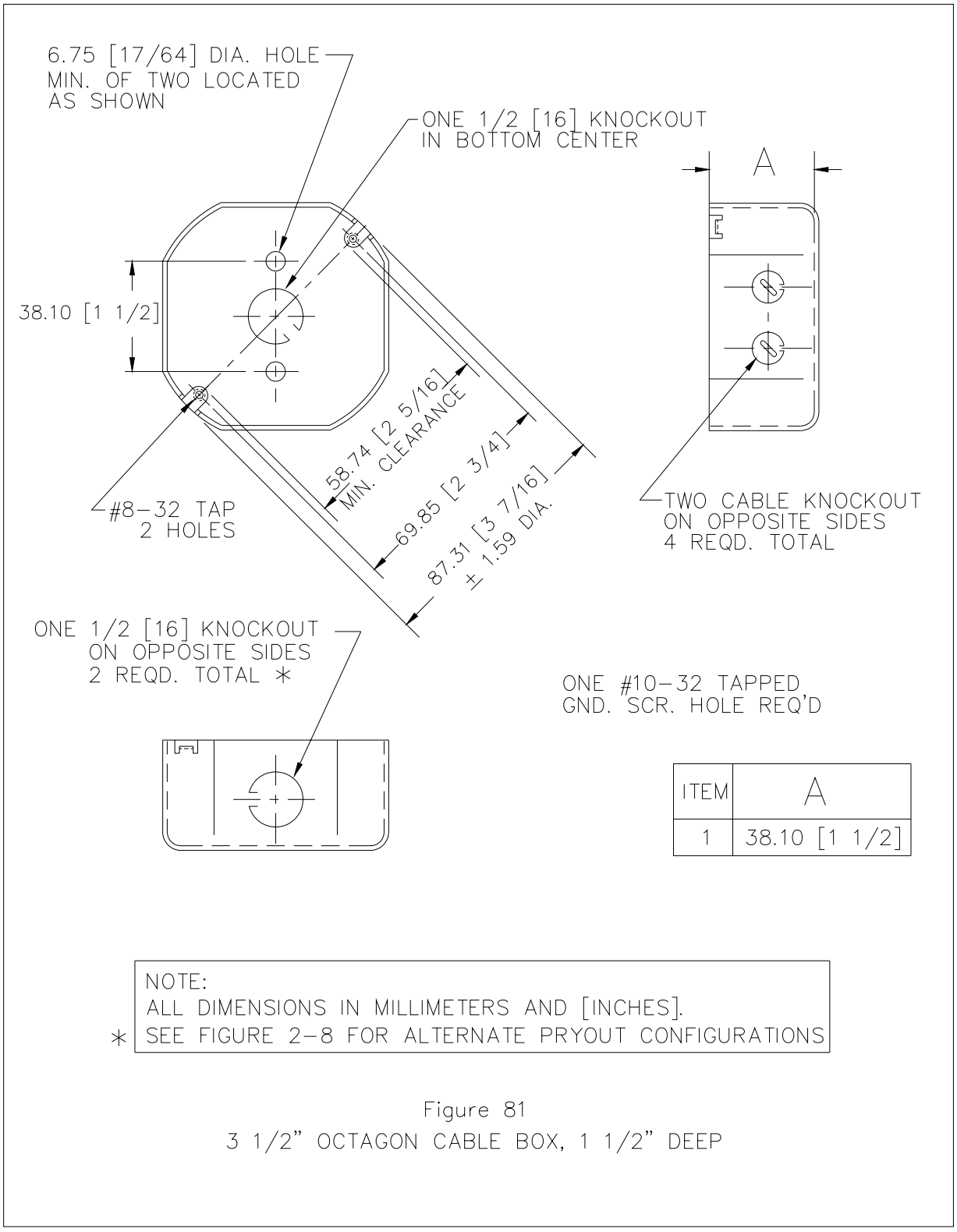
ITEM	A	B	C
1	38.10 [1 1/2]	1/2 [16]	3/4 [21]
2	53.98 [2 1/8]	1/2 [16]	3/4 [21]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 80
3 1/2" OCTAGON BOX, 1 1/2" AND 2 1/8" DEEP

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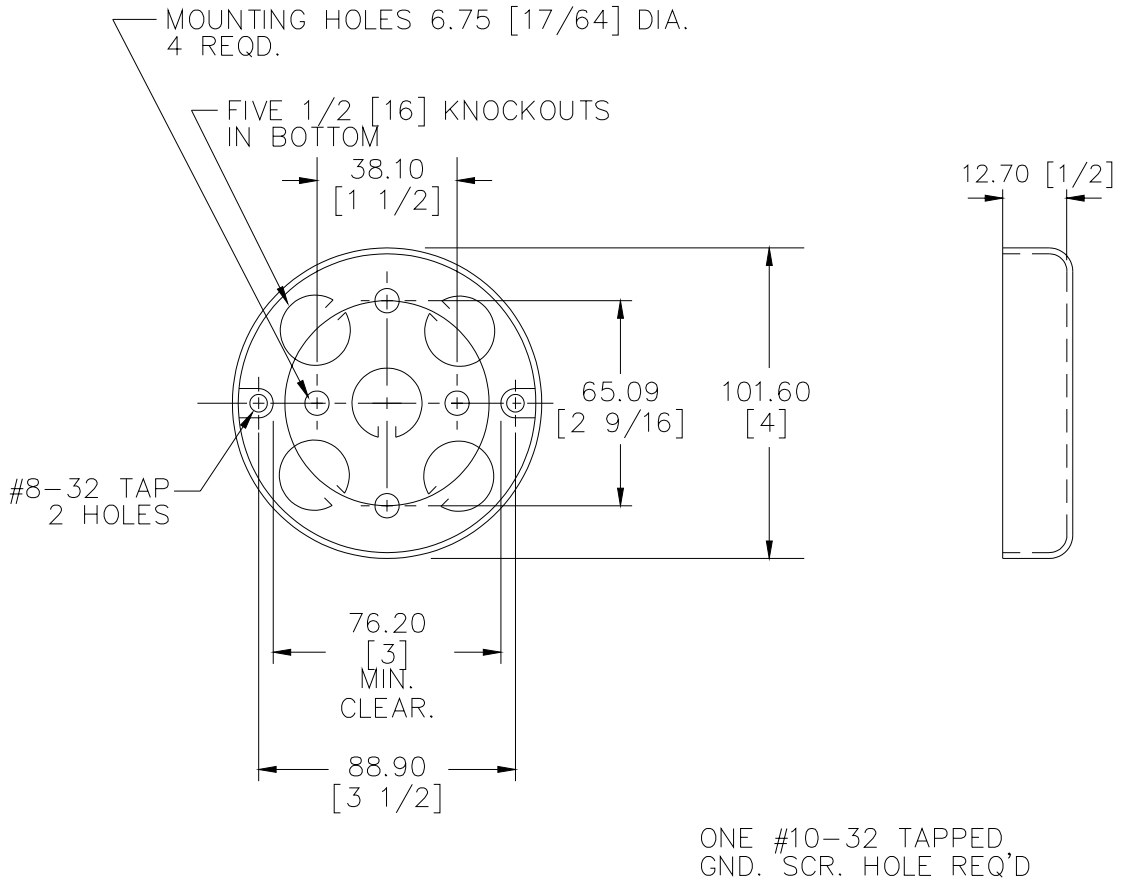
ITEM	A
1	38.10 [1 1/2]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-8 FOR ALTERNATE PRYOUT CONFIGURATIONS

Figure 81
3 1/2" OCTAGON CABLE BOX, 1 1/2" DEEP

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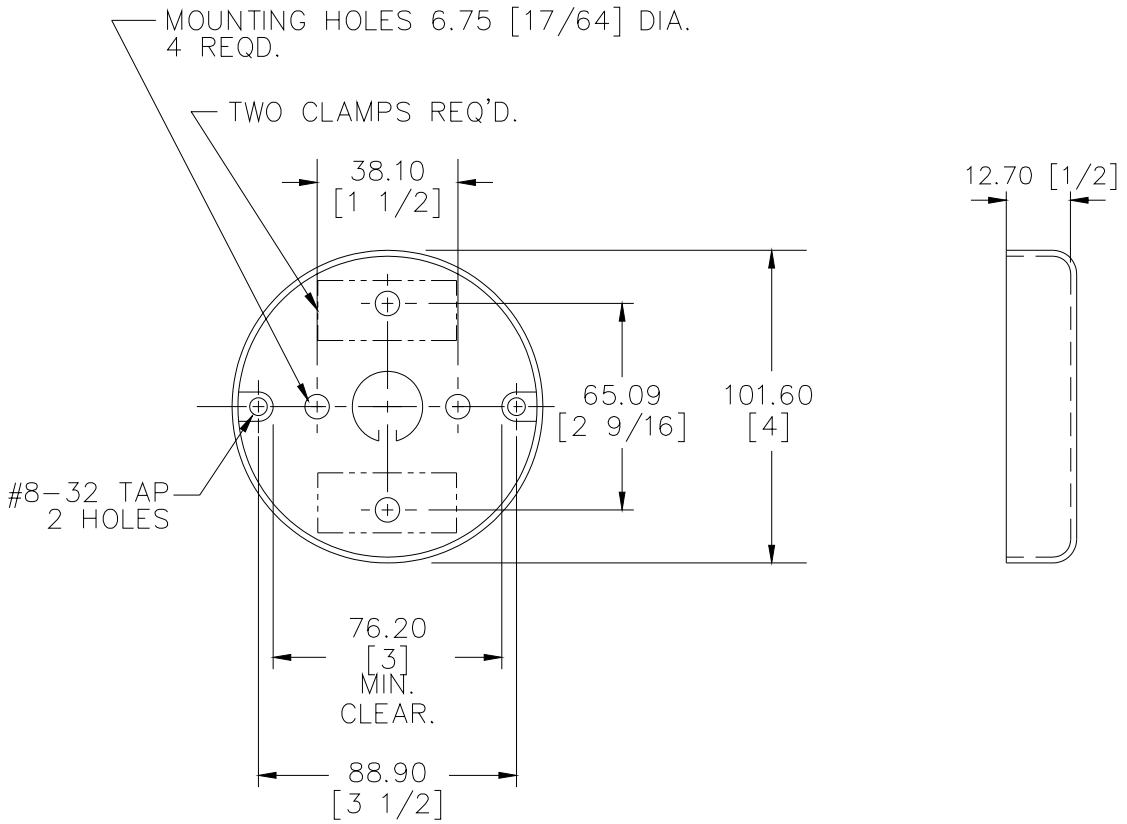


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].

Figure 90
4" ROUND BOX, 1/2 [16] KNOCKOUTS

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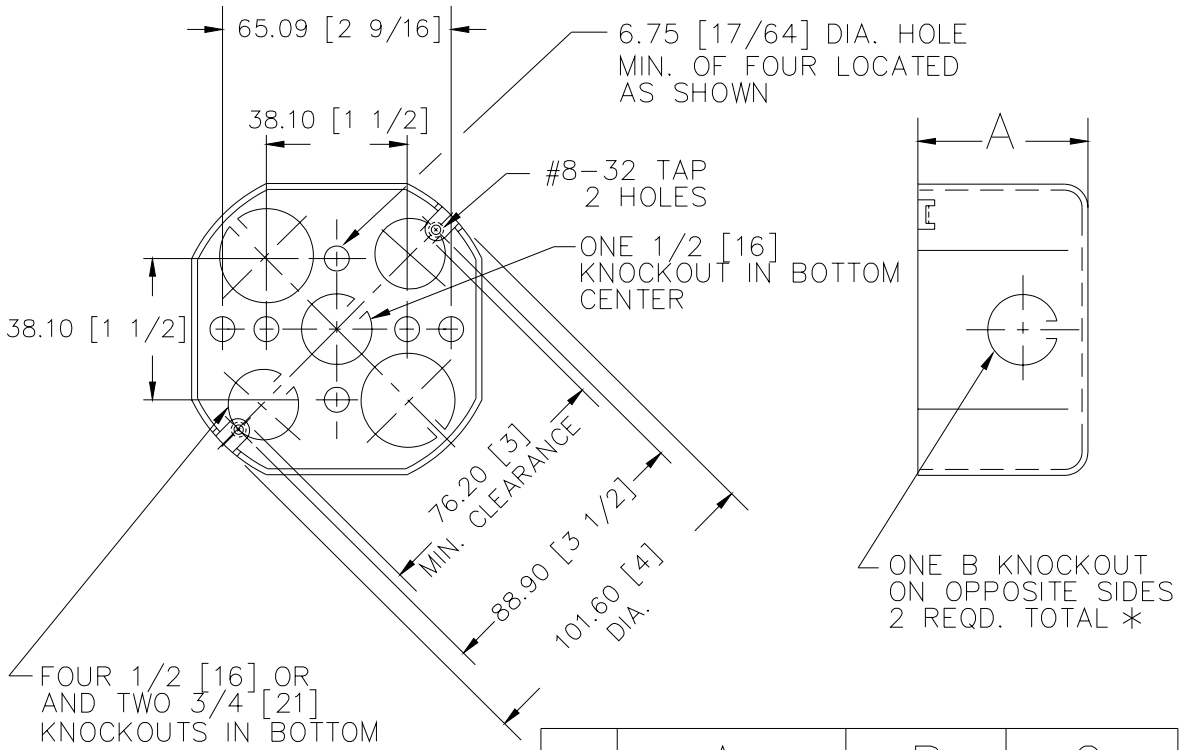


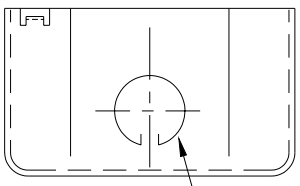
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].

Figure 91
4" ROUND BOX (PAN) WITH CABLE CLAMPS

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ITEM	A	B	C
1	38.10 [1 1/2]	1/2 [16]	1/2 [16]
2	38.10 [1 1/2]	3/4 [21]	3/4 [21]
3	38.10 [1 1/2]	1/2 [16]	3/4 [21]
4	53.98 [2 1/8]	1/2 [16]	1/2 [16]
5	53.98 [2 1/8]	3/4 [21]	3/4 [21]
6	53.98 [2 1/8]	1 [27]	1 [27]
7	53.98 [2 1/8]	1/2 [16]	3/4 [21]
8	53.98 [2 1/8]	3/4 [21]	1 [27]

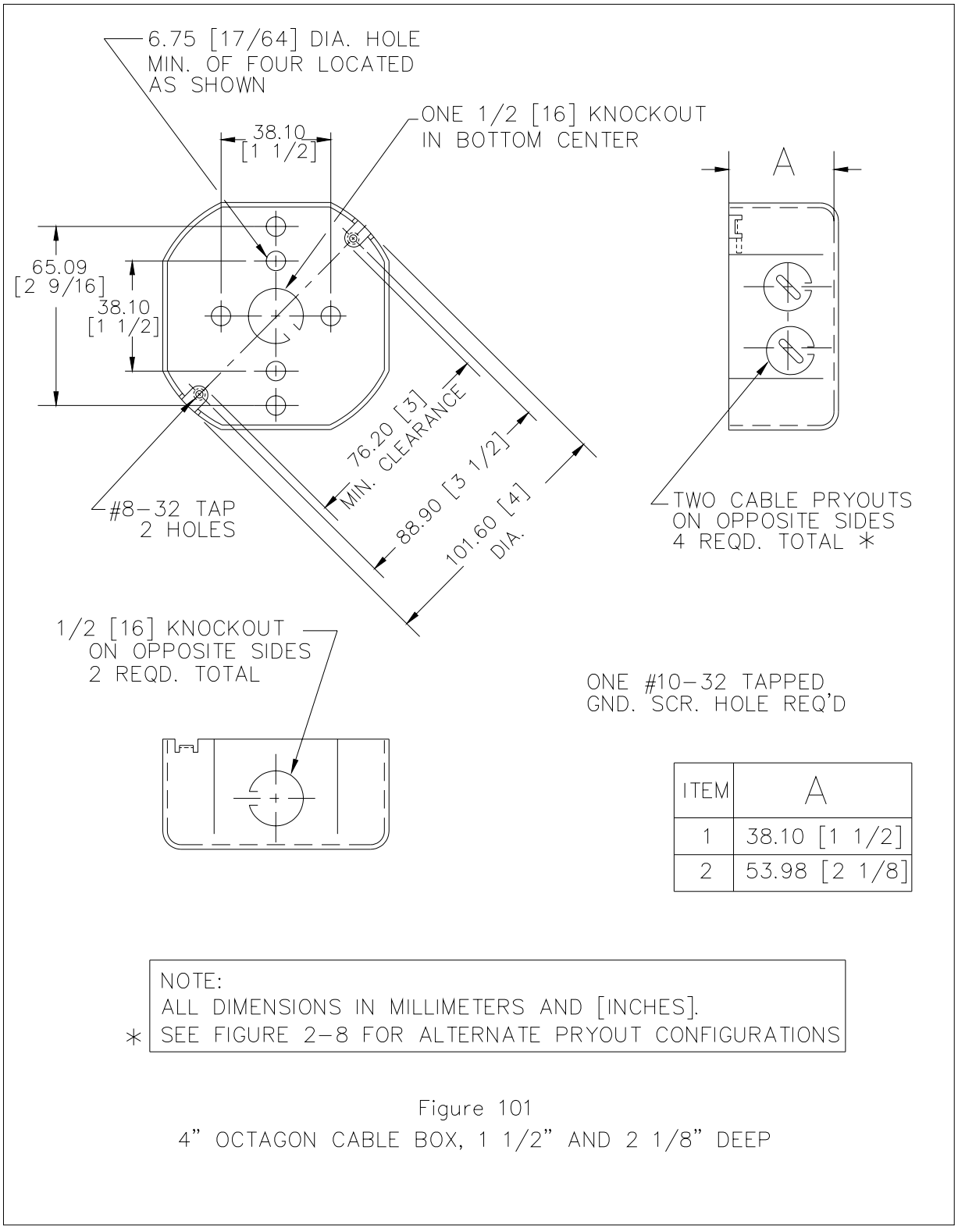
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 100

4" OCTAGON BOX, 1 1/2" AND 2 1/8" DEEP, 1/2 [16], 3/4 [21], OR 1 [27] KNOCKOUTS

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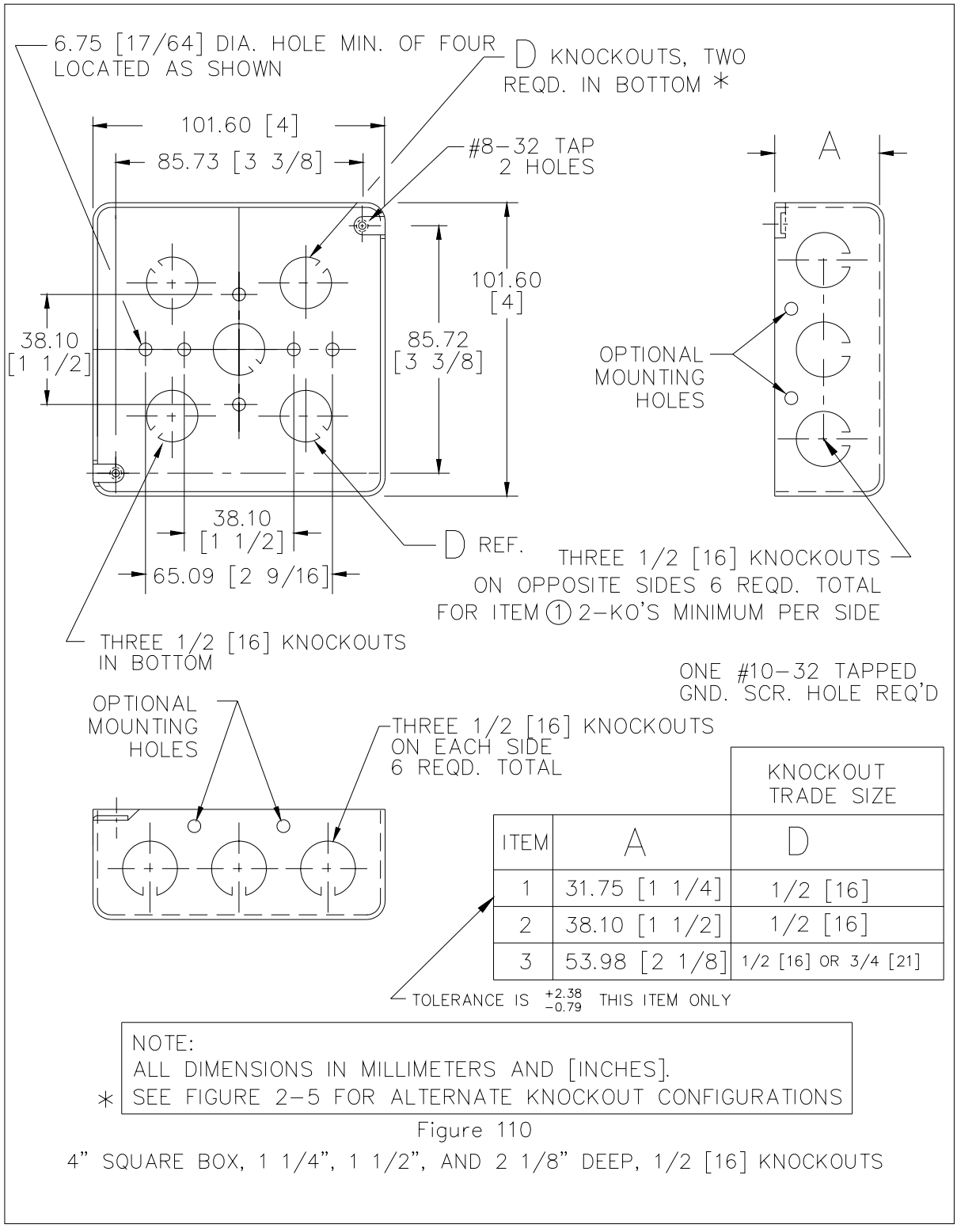
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-8 FOR ALTERNATE PRYOUT CONFIGURATIONS

Figure 101
4" OCTAGON CABLE BOX, 1 1/2" AND 2 1/8" DEEP

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ITEM	KNOCKOUT TRADE SIZE A	KNOCKOUT TRADE SIZE D
1	31.75 [1 1/4]	1/2 [16]
2	38.10 [1 1/2]	1/2 [16]
3	53.98 [2 1/8]	1/2 [16] OR 3/4 [21]

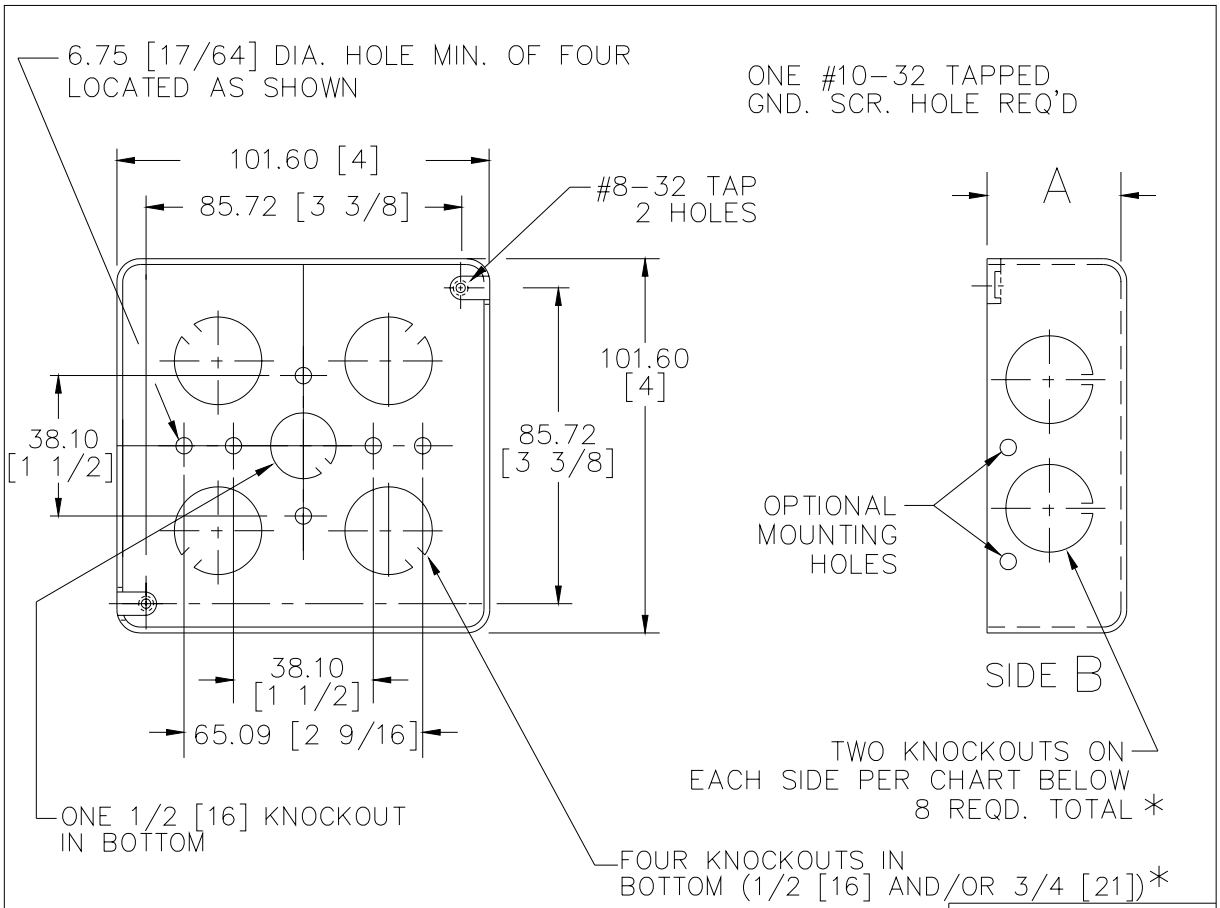
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 110

4" SQUARE BOX, 1 1/4", 1 1/2", AND 2 1/8" DEEP, 1/2 [16] KNOCKOUTS

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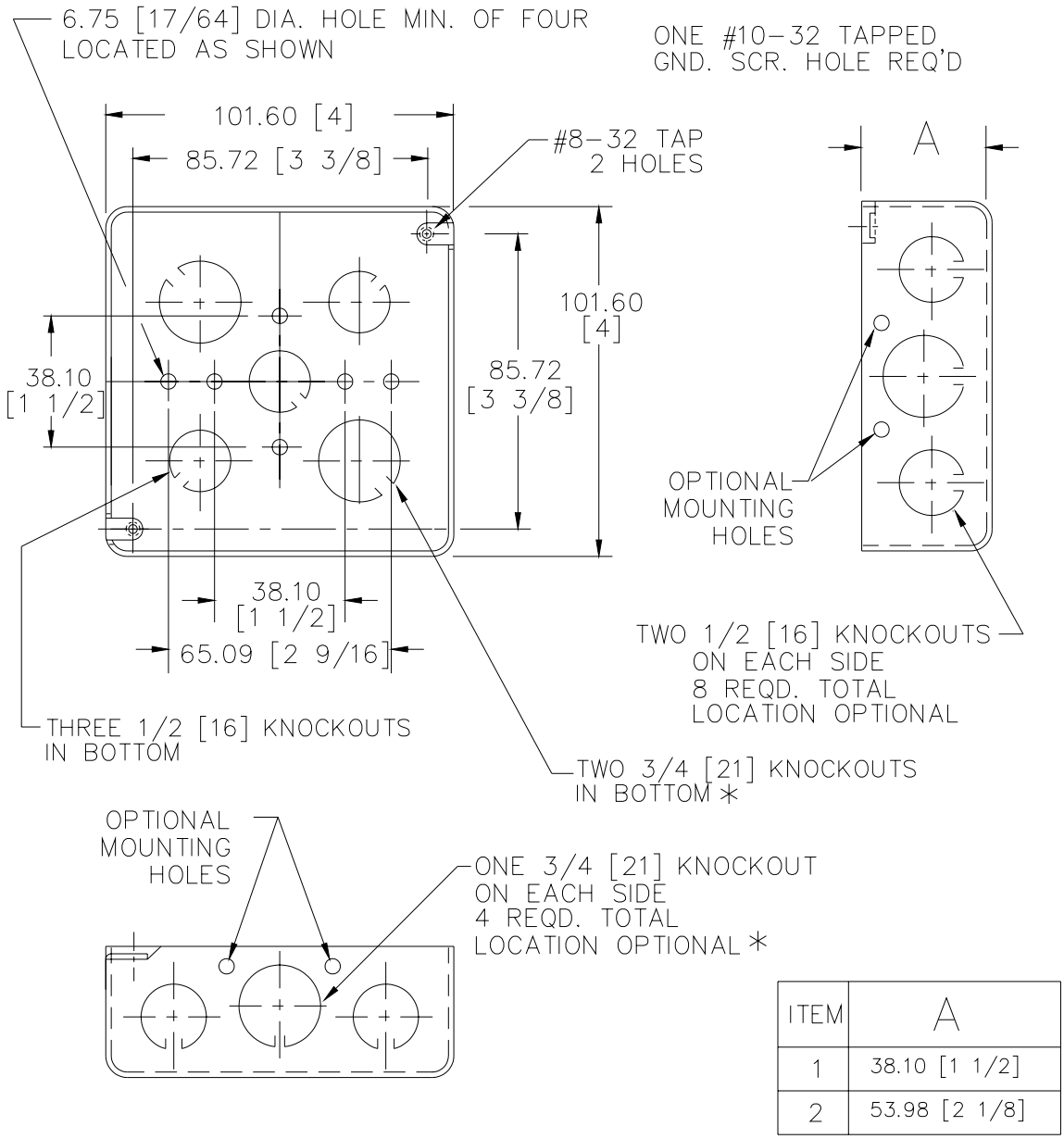
ITEM	A	KNOCKOUT TRADE SIZE SIDE B	SIDE C
1	38.10 [1 1/2]	3/4 [21]	3/4 [21]
2	53.98 [2 1/8]	3/4 [21]	3/4 [21]
3	53.98 [2 1/8]	1 [27]	1 [27]
4	53.98 [2 1/8]	3/4 [21]	1 [27]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 111
4" SQUARE BOX, 1 1/2" AND 2 1/8" DEEP, 3/4 [21] AND 1 [27] KNOCKOUTS

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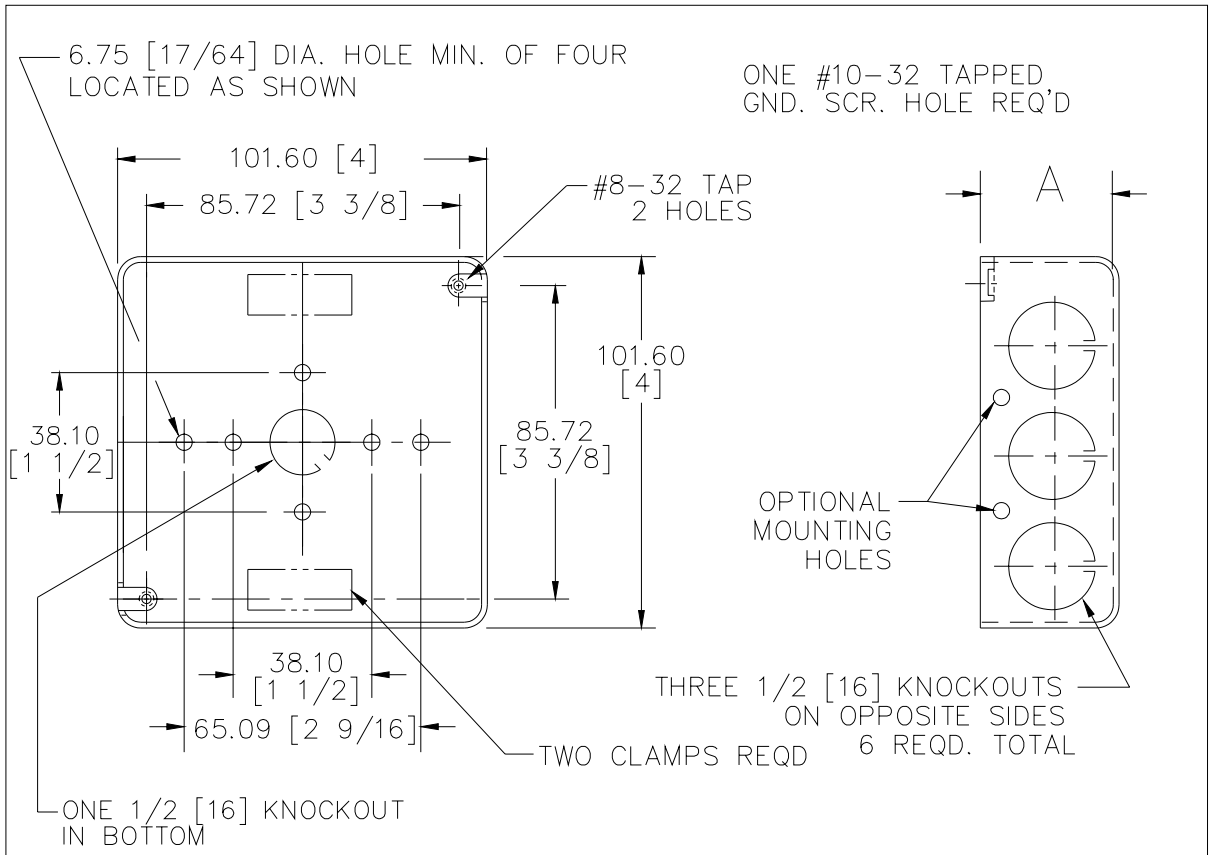
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

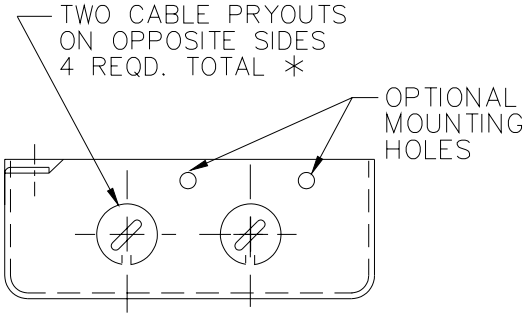
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 112
4" SQUARE BOX , 1 1/2" AND 2 1/8" DEEP, COMBINATION
1/2 [16] AND 3/4 [21] KNOCKOUTS

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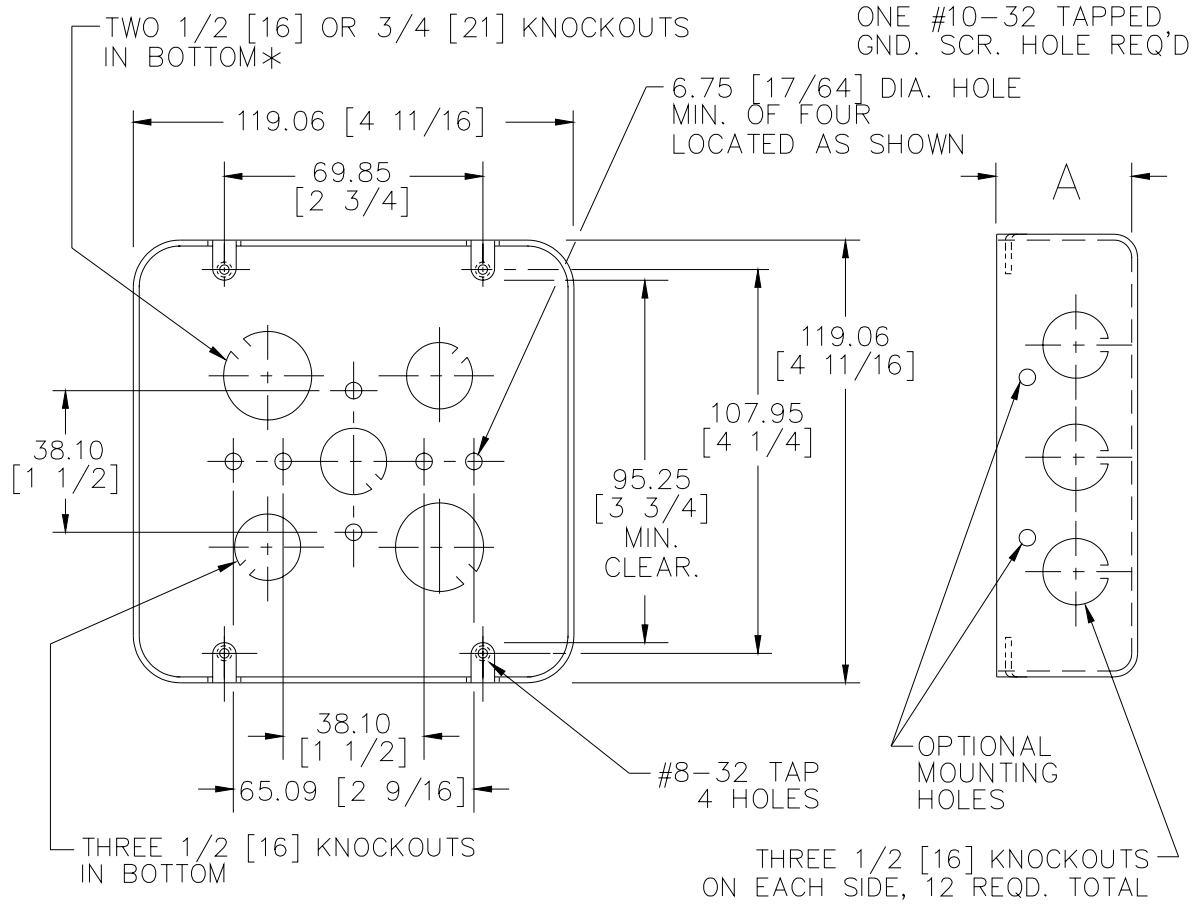
ITEM	A
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2	53.98 [2 1/8]

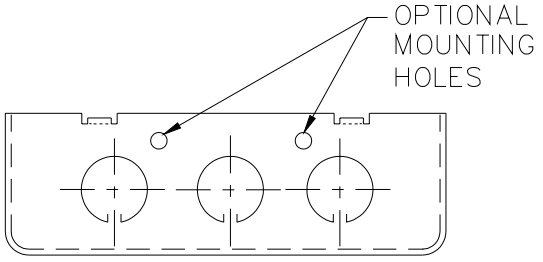
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-8 FOR ALTERNATE PRYOUT CONFIGURATIONS

Figure 113
4" SQUARE CABLE BOX, 1 1/2" AND 2 1/8" DEEP

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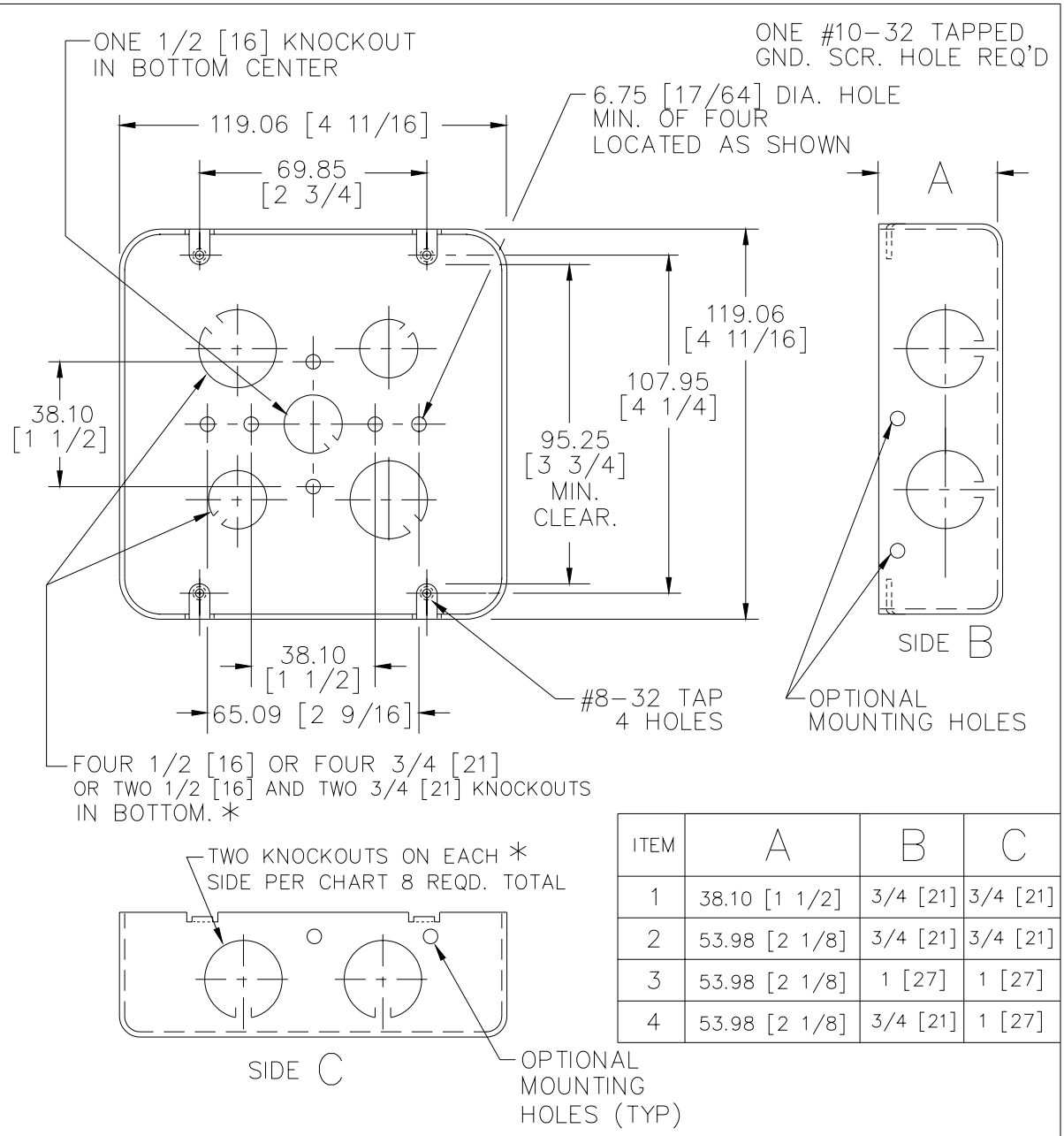
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 120
4 11/16" SQUARE BOX, 1 1/2" AND 2 1/8" DEEP, 1/2 [16] KNOCKOUTS

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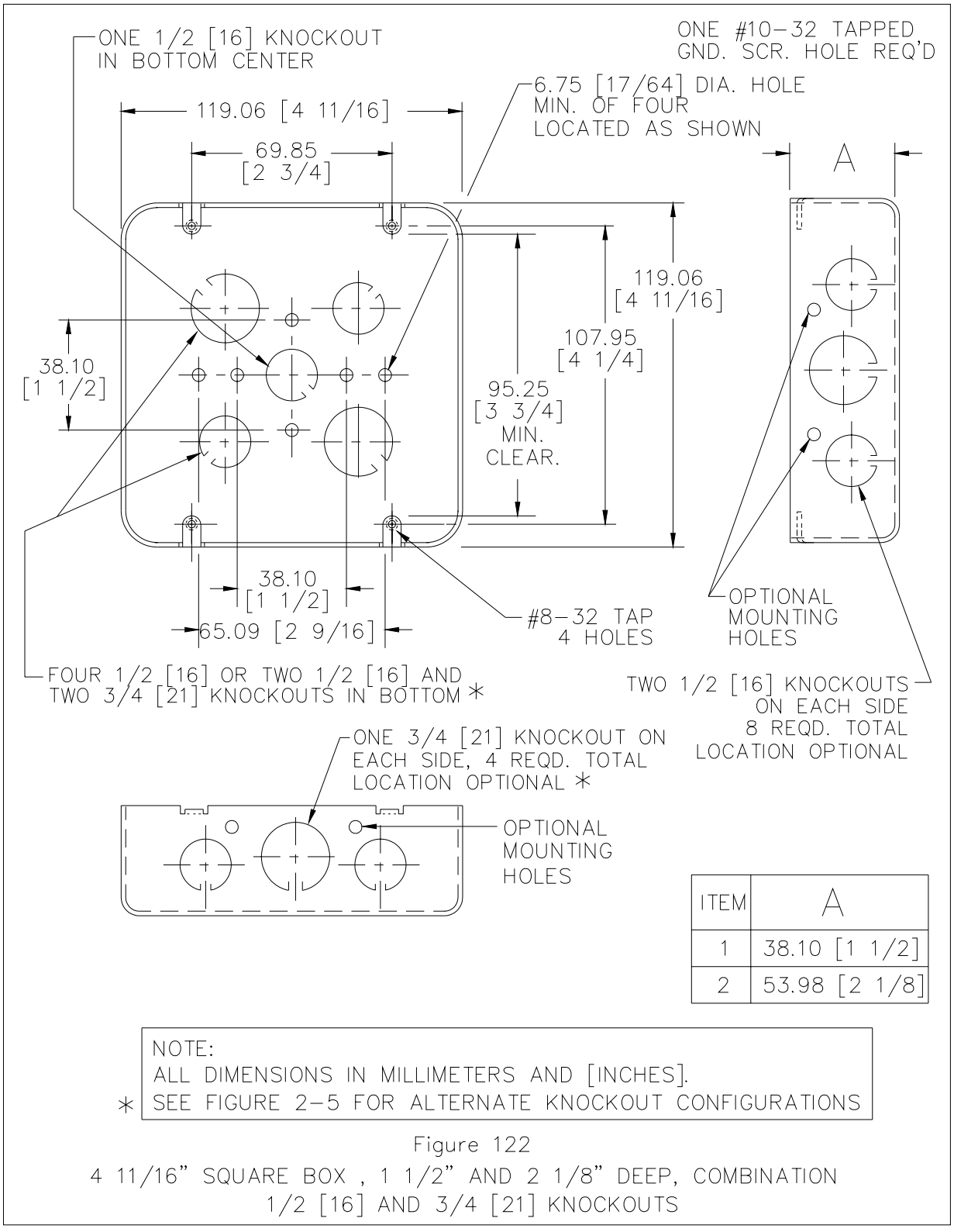
ITEM	A	B	C
1	38.10 [1 1/2]	3/4 [21]	3/4 [21]
2	53.98 [2 1/8]	3/4 [21]	3/4 [21]
3	53.98 [2 1/8]	1 [27]	1 [27]
4	53.98 [2 1/8]	3/4 [21]	1 [27]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 121
4 11/16" SQUARE BOX , 1 1/2" AND 2 1/8" DEEP,
3/4 [21] AND 1 [27] KNOCKOUTS

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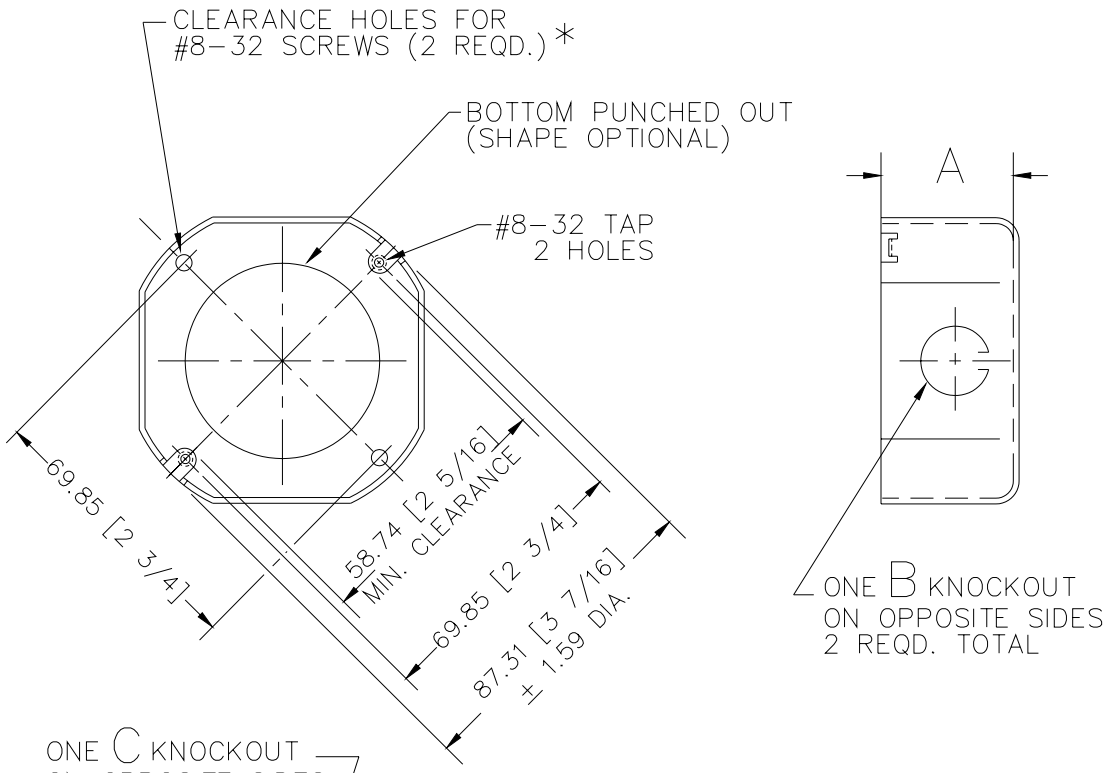
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 122
4 11/16" SQUARE BOX , 1 1/2" AND 2 1/8" DEEP, COMBINATION
1/2 [16] AND 3/4 [21] KNOCKOUTS

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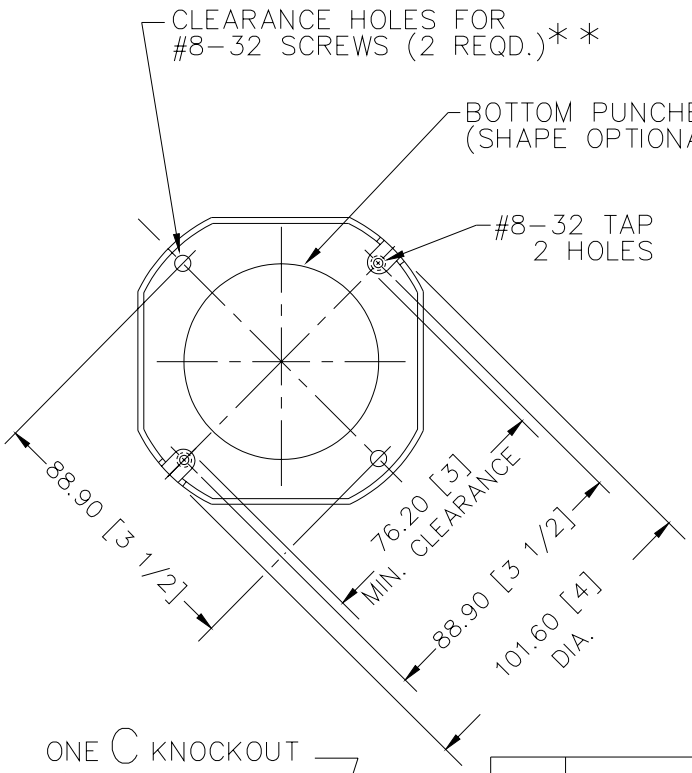
	KNOCKOUT TRADE SIZE		
ITEM	A	B	C
1	38.10 [1 1/2]	1/2 [16]	1/2 [16]

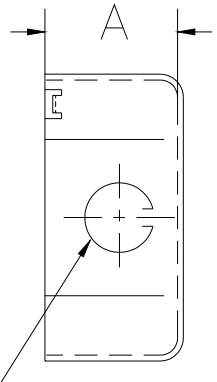
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

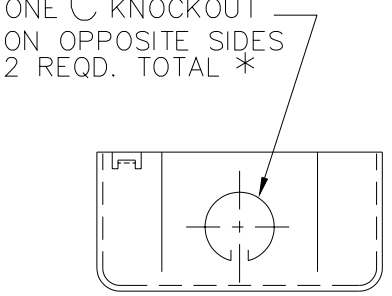
Figure 125
3 1/2" OCTAGON BOX EXTENSION, 1 1/2" DEEP, 1/2 [16] KNOCKOUTS

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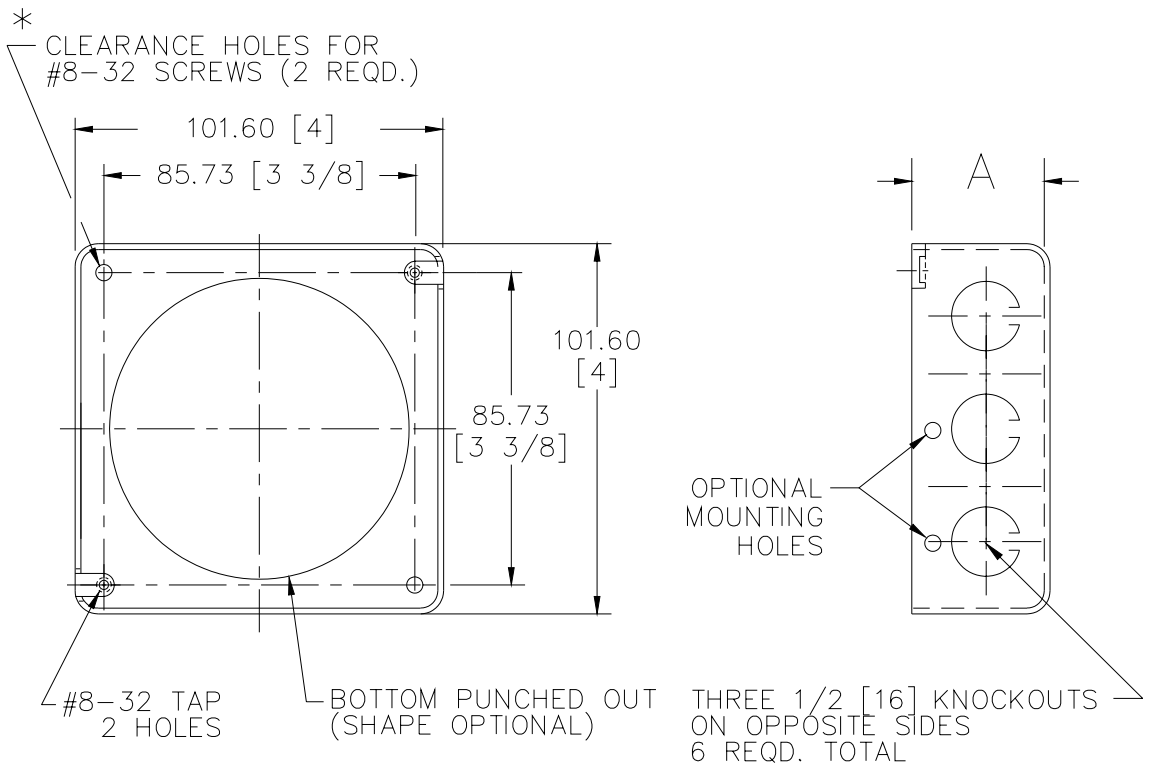
		KNOCKOUT TRADE SIZE	
ITEM	A	B	C
1	38.10 [1 1/2]	1/2 [16]	1/2 [16]
2	38.10 [1 1/2]	3/4 [21]	3/4 [21]
3	38.10 [1 1/2]	1/2 [16]	3/4 [21]
4	53.98 [2 1/8]	1/2 [16]	1/2 [16]
5	53.98 [2 1/8]	3/4 [21]	3/4 [21]
6	53.98 [2 1/8]	1 [27]	1 [27]
7	53.98 [2 1/8]	1/2 [16]	3/4 [21]

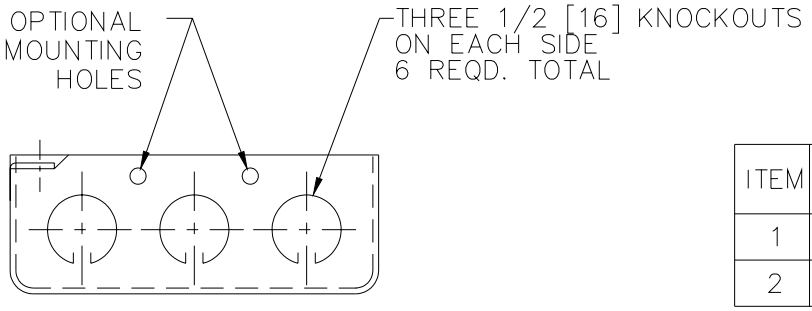
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS
** SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

Figure 130
4" OCTAGON BOX EXTENSION, 1 1/2" AND 2 1/8" DEEP,
1/2 [16], 3/4 [21], AND 1 [27] KNOCKOUTS

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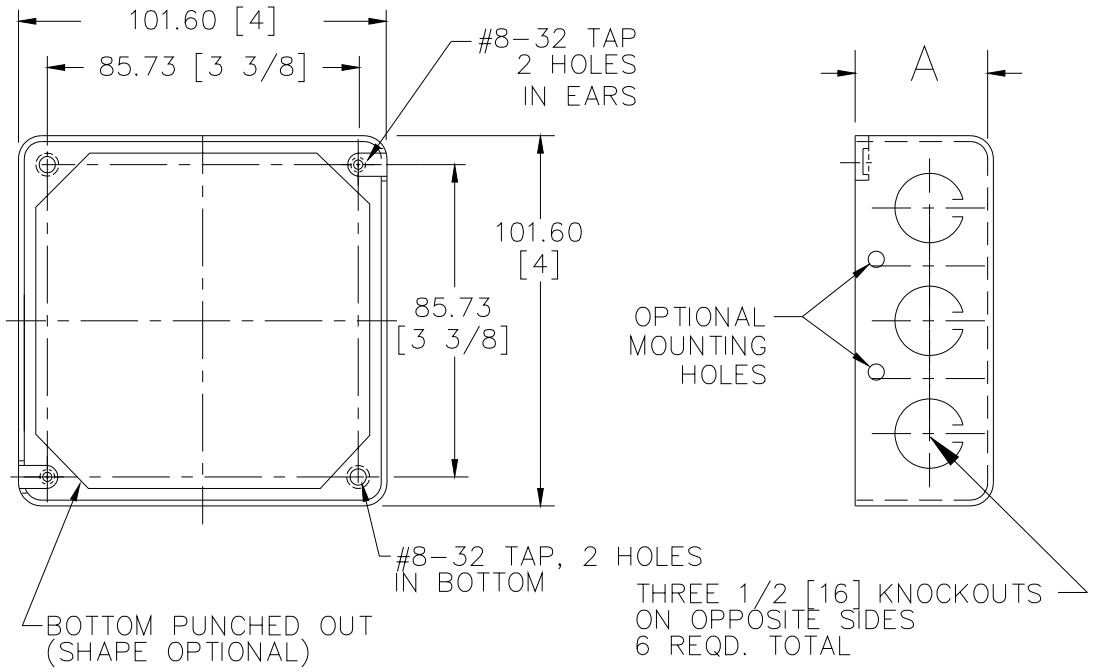
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

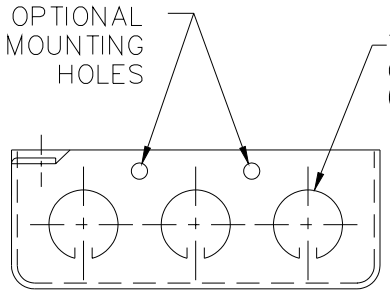
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

Figure 140
4" SQUARE BOX EXTENSION, 1 1/2 AND 2 1/8" DEEP, 1/2 [16] KNOCKOUTS

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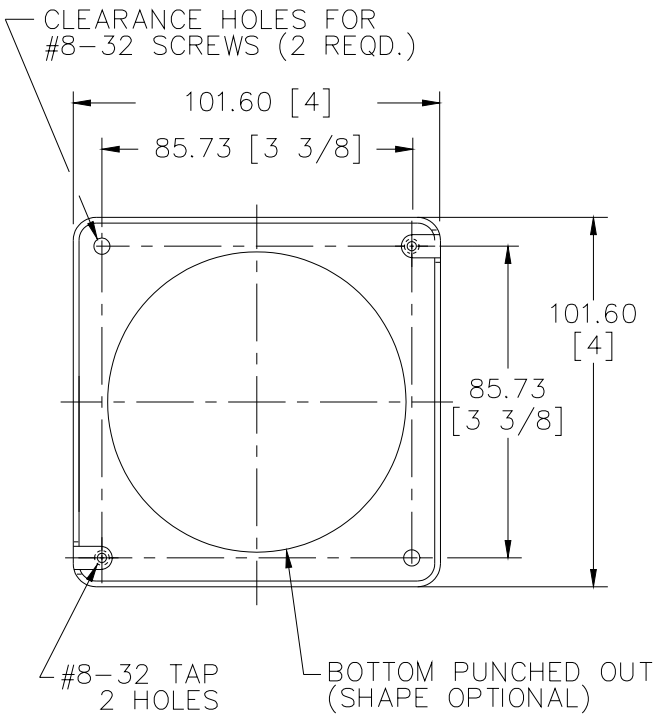
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

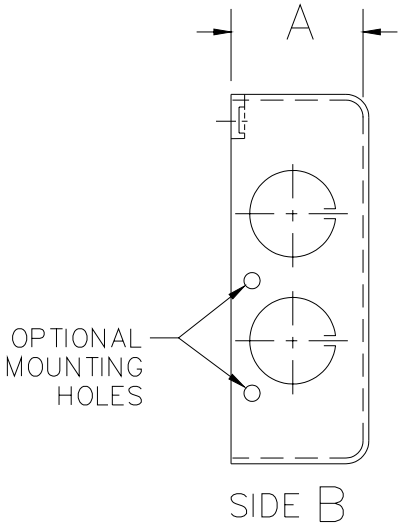
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].

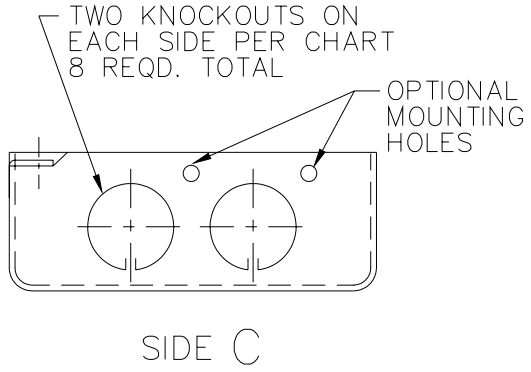
Figure 141
4" SQUARE THRU-WALL BOX, 1 1/4" AND 1 1/2" DEEP, 1/2 [16] KNOCKOUTS

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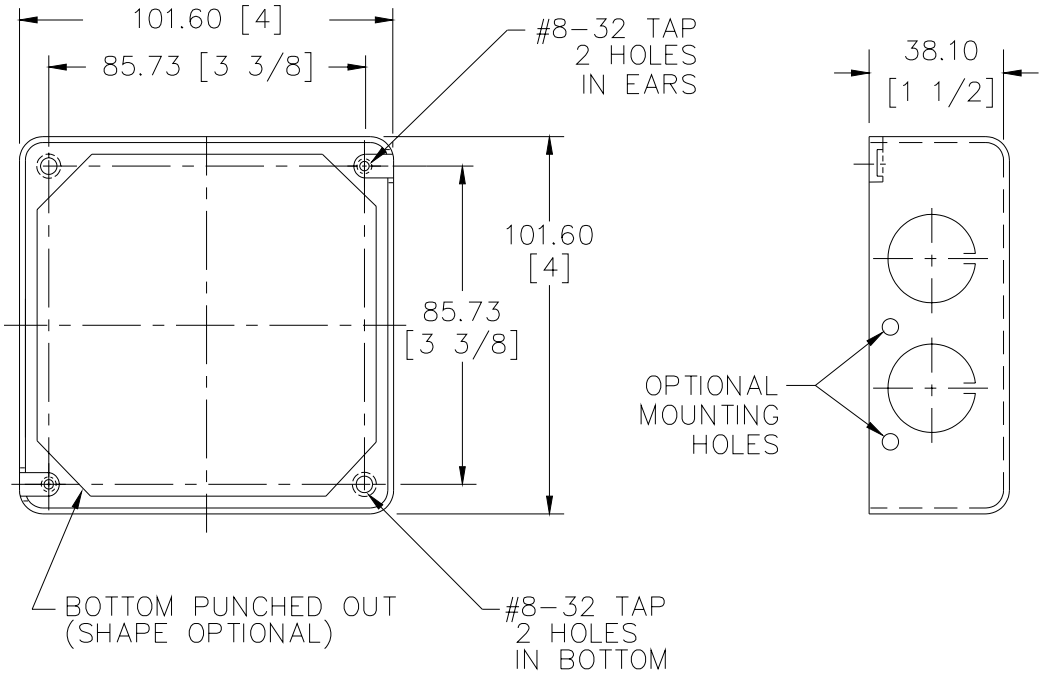
ITEM	A	KNOCKOUT TRADE SIZE SIDE B	KNOCKOUT TRADE SIZE SIDE C
1	38.10 [1 1/2]	3/4 [21]	3/4 [21]
2	53.98 [2 1/8]	3/4 [21]	3/4 [21]
3	53.98 [2 1/8]	1 [27]	1 [27]
4	53.98 [2 1/8]	3/4 [21]	1 [27]

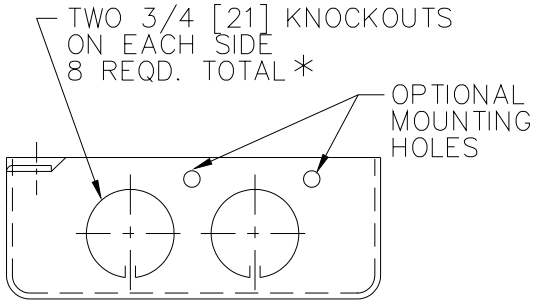
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS
** SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

Figure 142
4" SQUARE BOX EXTENSION, 1 1/2" AND 2 1/8" DEEP, 3/4 [21] AND 1 [27] KNOCKOUTS

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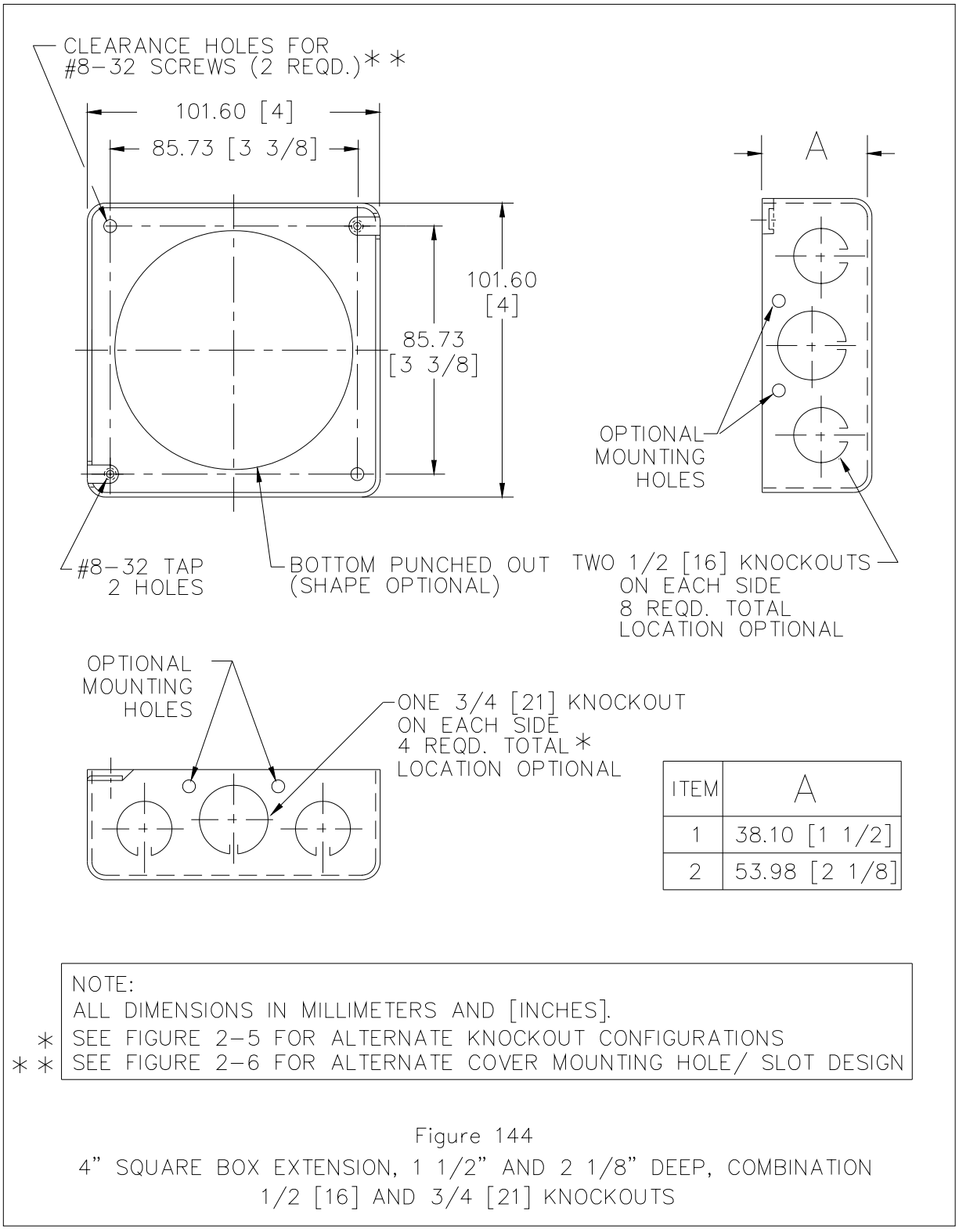


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 143
4" SQUARE THRU-WALL BOX, 1 1/2" DEEP, 3/4 [21] KNOCKOUTS

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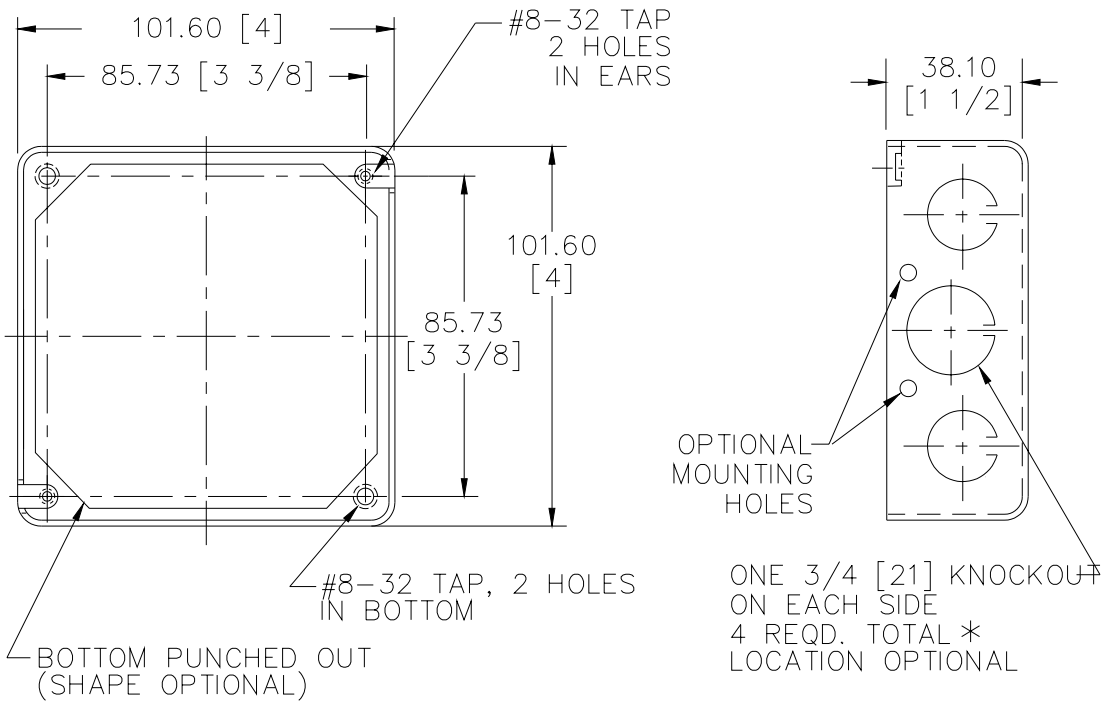
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

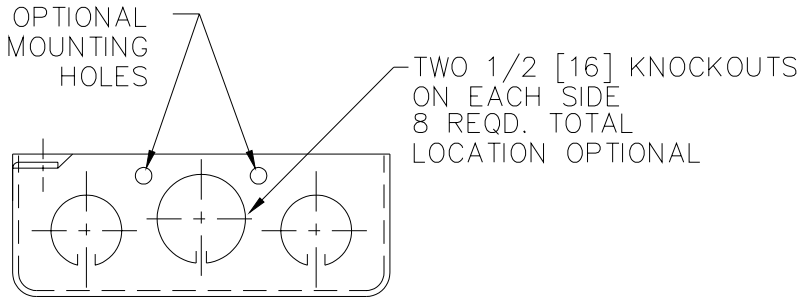
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS
** SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

Figure 144
4" SQUARE BOX EXTENSION, 1 1/2" AND 2 1/8" DEEP, COMBINATION
1/2 [16] AND 3/4 [21] KNOCKOUTS

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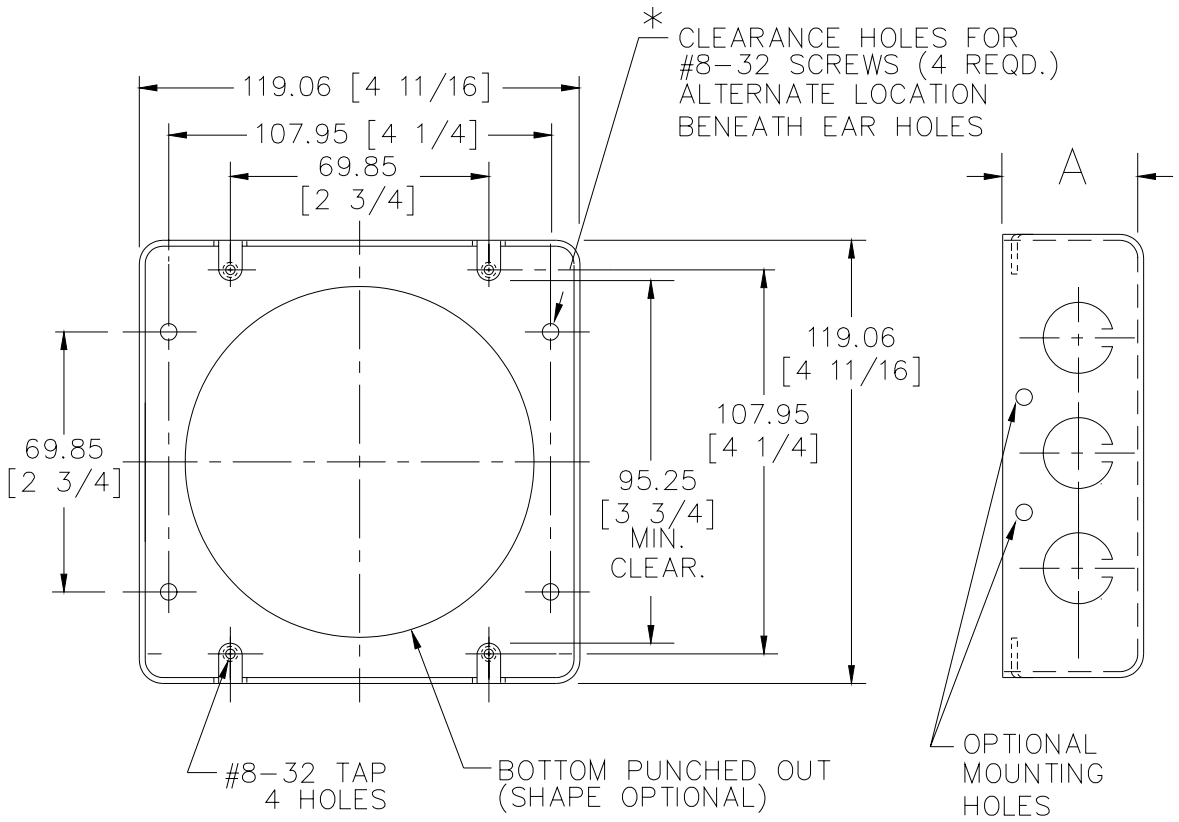


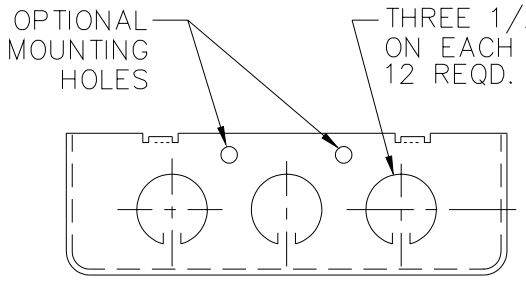
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 145
4" SQUARE THRU-WALL BOX, 1 1/2" DEEP, COMBINATION
1/2 [16] AND 3/4 [21] KNOCKOUTS

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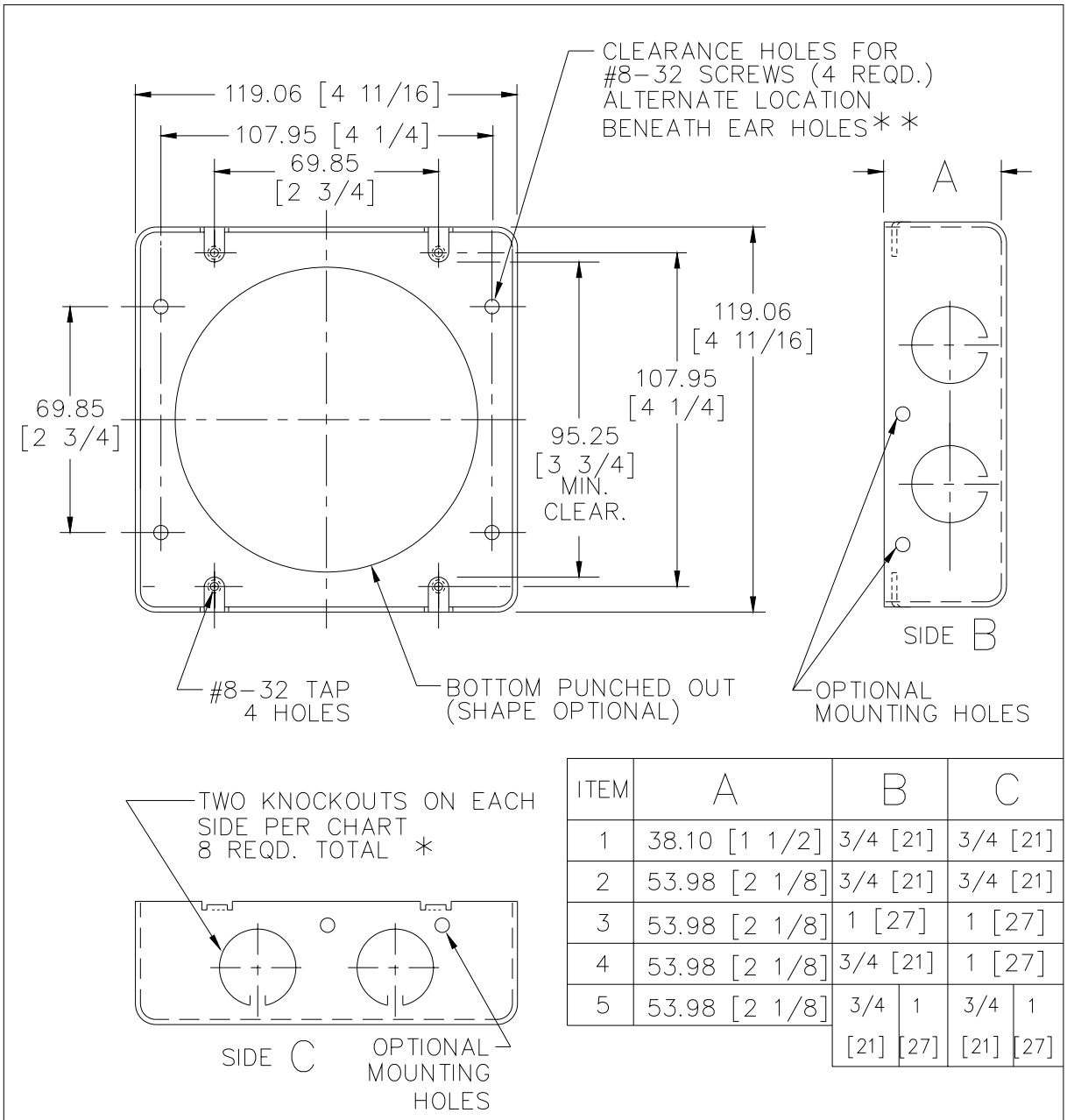
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

Figure 150
4 11/16" SQUARE BOX EXTENSION,
1-1/2" AND 2-1/8" DEEP, 1/2 [16] KNOCKOUTS

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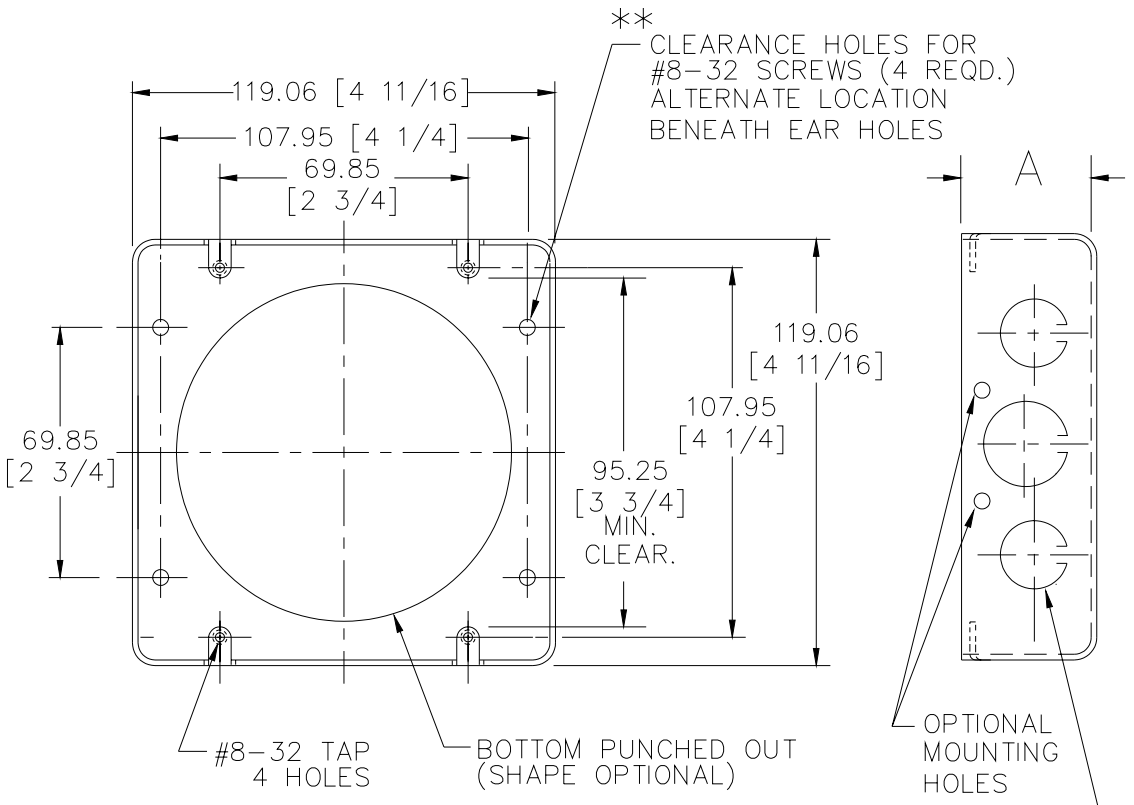
ITEM	A	B		C	
1	38.10 [1 1/2]	3/4 [21]		3/4 [21]	
2	53.98 [2 1/8]	3/4 [21]		3/4 [21]	
3	53.98 [2 1/8]	1 [27]		1 [27]	
4	53.98 [2 1/8]	3/4 [21]		1 [27]	
5	53.98 [2 1/8]	3/4 [21]	1 [27]	3/4 [21]	1 [27]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS
* * SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

Figure 151
4 11/16" SQUARE BOX EXTENSION, 1 1/2" AND 2 1/8" DEEP,
3/4 [21] AND 1 [27] KNOCKOUTS

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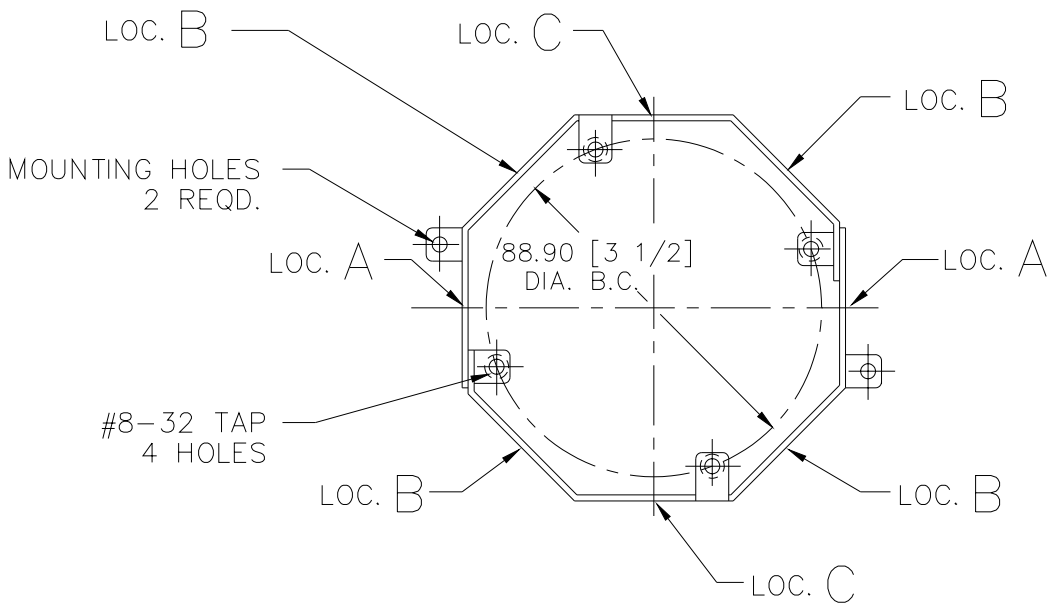
ITEM	A
1	38.10 [1 1/2]
2	53.98 [2 1/8]

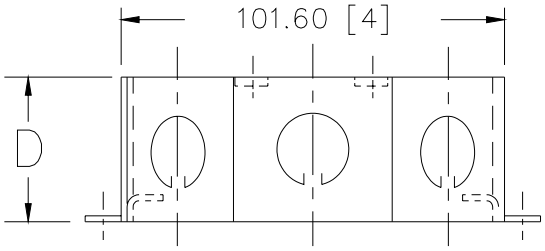
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS
** SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE/ SLOT DESIGN

Figure 152
4 11/16" SQUARE BOX EXTENSION, 1 1/2" AND 2 1/8" DEEP, COMBINATION 1/2 [16] AND 3/4 [21] KNOCKOUTS

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ITEM	D
1	50.80 [2]
2	63.50 [2 1/2]
3	76.20 [3]
4	88.90 [3 1/2]
5	101.60 [4]
6	127.00 [5]
7	152.40 [6]

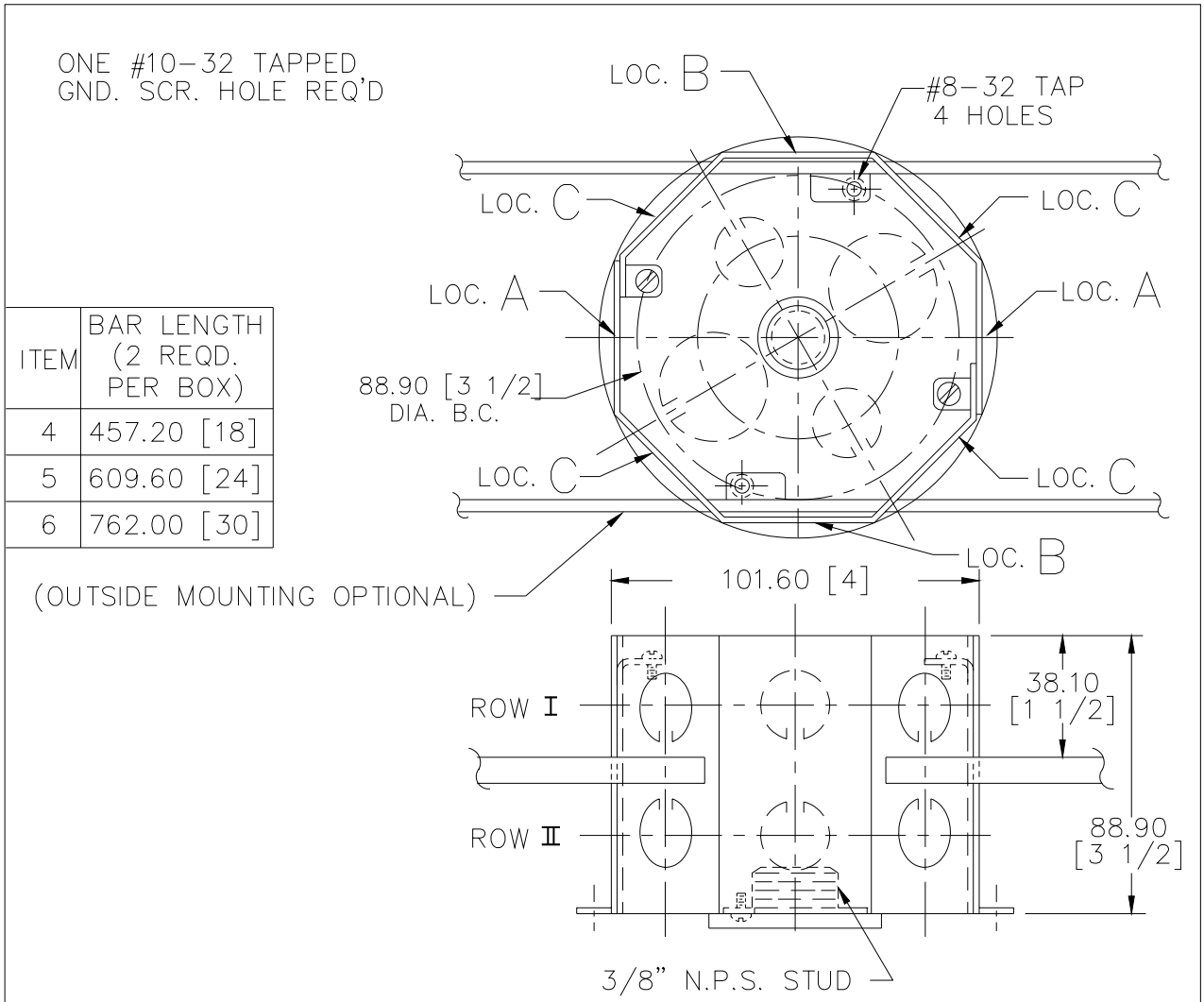
	KNOCKOUT INFORMATION			
STYLE	AMOUNT & SIZE	A	B	C
A	EIGHT 1/2 [16]	1/2 [16]	1/2 [16]	1/2 [16]
B	SIX 3/4 [21]	NONE	3/4 [21]	3/4 [21]
C	FOUR 1/2 [16], FOUR 3/4 [21]	1/2 [16]	3/4 [21]	1/2 [16]
D	FOUR 3/4 [21] TWO 1 [27]	NONE	3/4 [21]	1 [27]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 160
CONCRETE RING, 1/2 [16], 3/4 [21], AND 1 [27] KNOCKOUTS

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ITEM	BAR LENGTH (2 REQD. PER BOX)
4	457.20 [18]
5	609.60 [24]
6	762.00 [30]

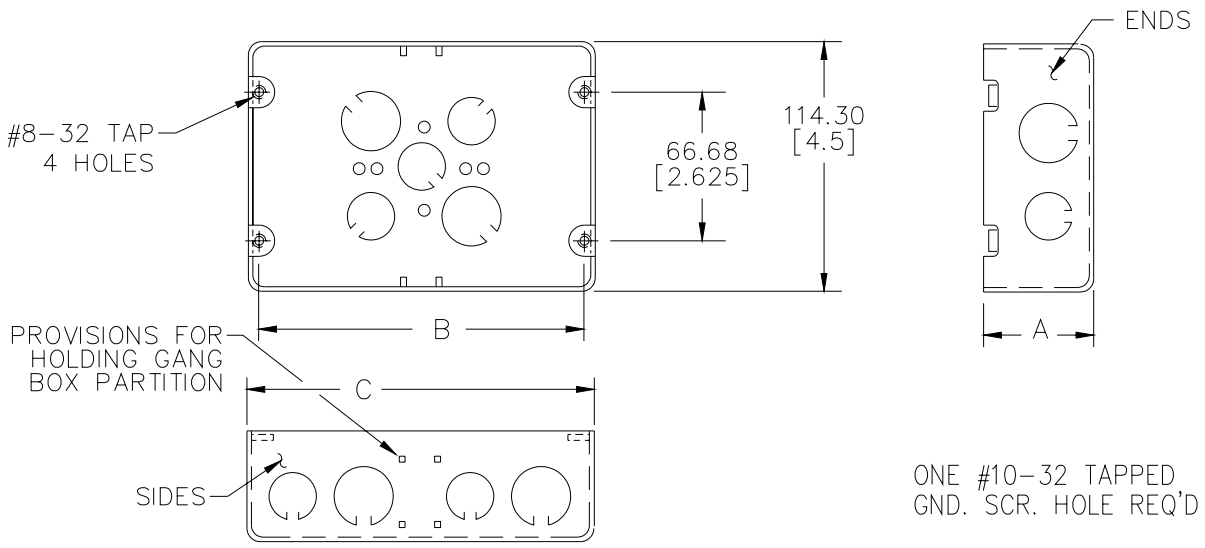
ITEM	KNOCKOUT INFORMATION				
	AMOUNT & SIZE	ROW	A	B	C
1	EIGHT 1/2 [16]	I	1/2 [16]	1/2 [16]	3/4 [21]
	EIGHT 3/4 [21]	II	1/2 [16]	1/2 [16]	3/4 [21]
2	SIX 3/4 [21]	I	NONE	NONE	NONE
		II	NONE	3/4 [21]	3/4 [21]
3	EIGHT 1/2 [16]	I	NONE	NONE	NONE
		II	1/2 [16]	1/2 [16]	1/2 [16]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 161
HUNG CEILING BOX, 1/2 [16] AND 3/4 [21] KNOCKOUTS

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ITEM	NO. OF GANGS	A	B	C	KNOCKOUTS							
					SIDES			ENDS			BOTTOM	
					1/2 [16]	3/4 [21]	1 [27]	1/2 [16]	3/4 [21]	1 [27]	1/2 [16]	3/4 [21]
1	2	41.28 [1 5/8]	161.93 [6 3/8]	173.04 [6 13/16]	4	4	–	2	2	–	3	2
2	2	63.50 [2 1/2]	161.93 [6 3/8]	173.04 [6 13/16]	–	4	2	–	2	2	3	2
3	3	41.28 [1 5/8]	207.96 [8 3/16]	219.08 [8 5/8]	6	4	–	2	2	–	6	4
4	3	63.50 [2 1/2]	207.96 [8 3/16]	219.08 [8 5/8]	–	8	2	–	2	2	6	4
5	4	41.28 [1 5/8]	254.00 [10]	265.11 [10 7/16]	6	6	–	2	2	–	6	4
6	4	63.50 [2 1/2]	254.00 [10]	265.11 [10 7/16]	–	4	4	–	2	2	6	4
7	5	41.28 [1 5/8]	300.04 [11 13/16]	311.15 [12 1/4]	8	6	–	2	2	–	6	4
8	5	63.50 [2 1/2]	300.04 [11 13/16]	311.15 [12 1/4]	–	6	4	–	2	2	6	4
9	6	41.28 [1 5/8]	346.08 [13 5/8]	357.19 [14 1/16]	8	8	–	2	2	–	6	4
10	6	63.50 [2 1/2]	346.08 [13 5/8]	357.19 [14 1/16]	–	6	6	–	2	2	6	4
11	7	41.28 [1 5/8]	392.11 [15 7/16]	403.23 [15 7/8]	10	8	–	2	2	–	6	4
12	7	63.50 [2 1/2]	392.11 [15 7/16]	403.23 [15 7/8]	–	8	6	–	2	2	6	4
13	8	41.28 [1 5/8]	438.15 [17 1/4]	449.26 [17 11/16]	10	10	–	2	2	–	6	4
14	8	63.50 [2 1/2]	438.15 [17 1/4]	449.26 [17 11/16]	–	8	8	–	2	2	6	4
15	9	41.28 [1 5/8]	484.19 [19 1/16]	495.30 [19 1/2]	12	10	–	2	2	–	6	4
16	9	63.50 [2 1/2]	484.19 [19 1/16]	495.30 [19 1/2]	–	10	8	–	2	2	6	4
17	10	41.28 [1 5/8]	530.23 [20 7/8]	541.34 [21 5/16]	12	12	–	2	2	–	6	4
18	10	63.50 [2 1/2]	530.23 [20 7/8]	541.34 [21 5/16]	–	10	10	–	2	2	6	4

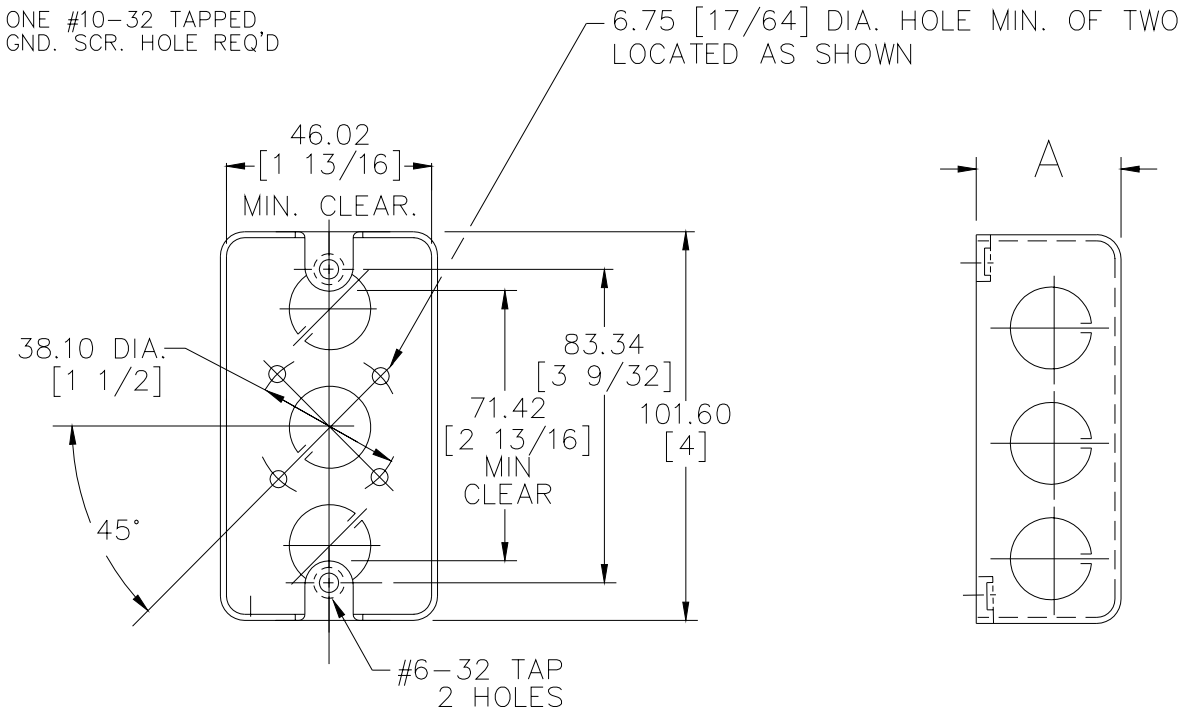
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

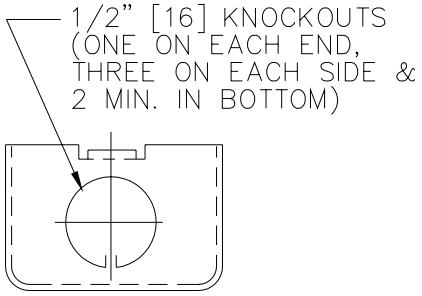
Figure 170

GANG BOXES, 1 5/8" AND 2 1/2" DEEP, 1/2 [16], 3/4 [21] & 1 [27] KNOCKOUTS

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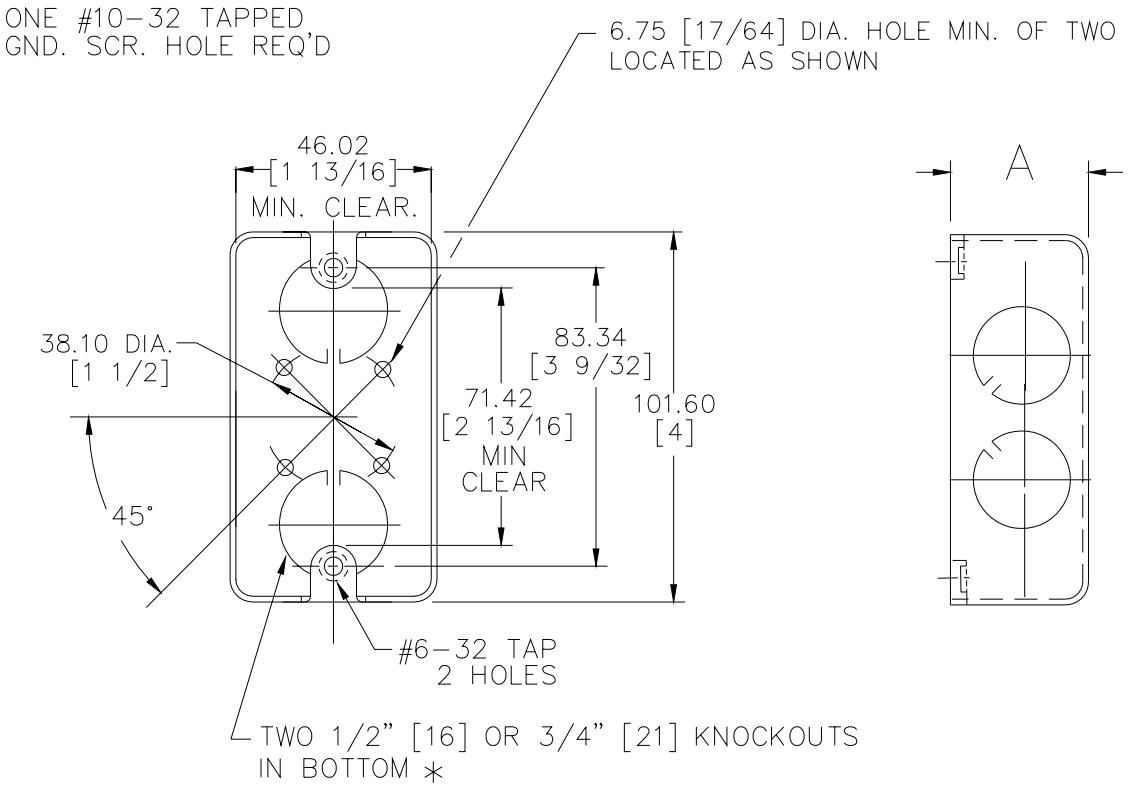
ITEM	$A^{+.79}_{-2.38}$
1	38.10 [1 1/2]
2	47.63 [1 7/8]
3	53.98 [2 1/8]

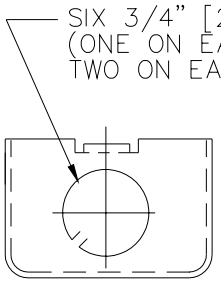
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].

Figure 200
NONGANGABLE DEVICE BOXES, 1/2" [16] KNOCKOUTS

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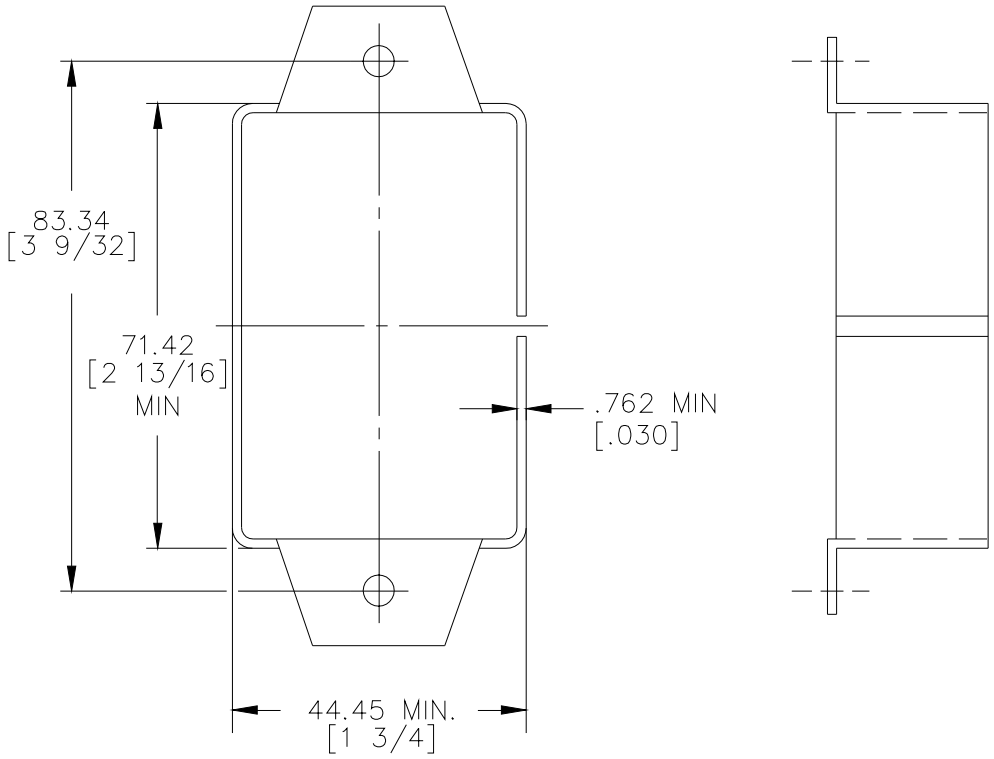
ITEM	A +.79 −2.38
1	47.63 [1 7/8]
2	53.98 [2 1/8]

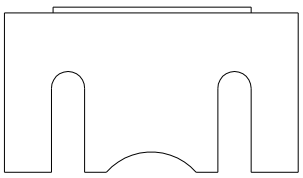
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 201
NONGANGABLE DEVICE BOXES, 3/4" [21] KNOCKOUTS

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NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].

Figure 202
A FLUSH DEVICE BOX EXTENDER
(GOOF RING)

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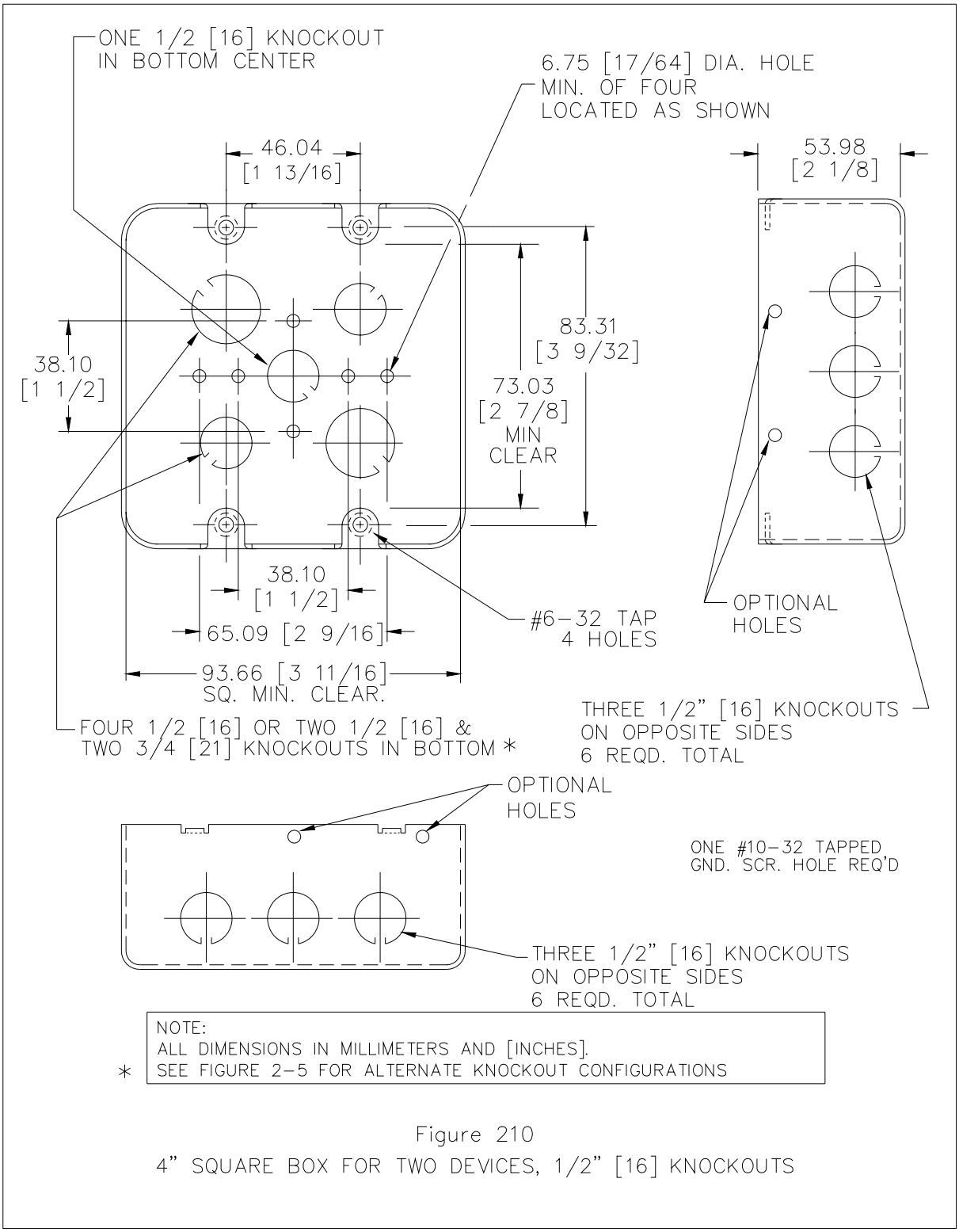
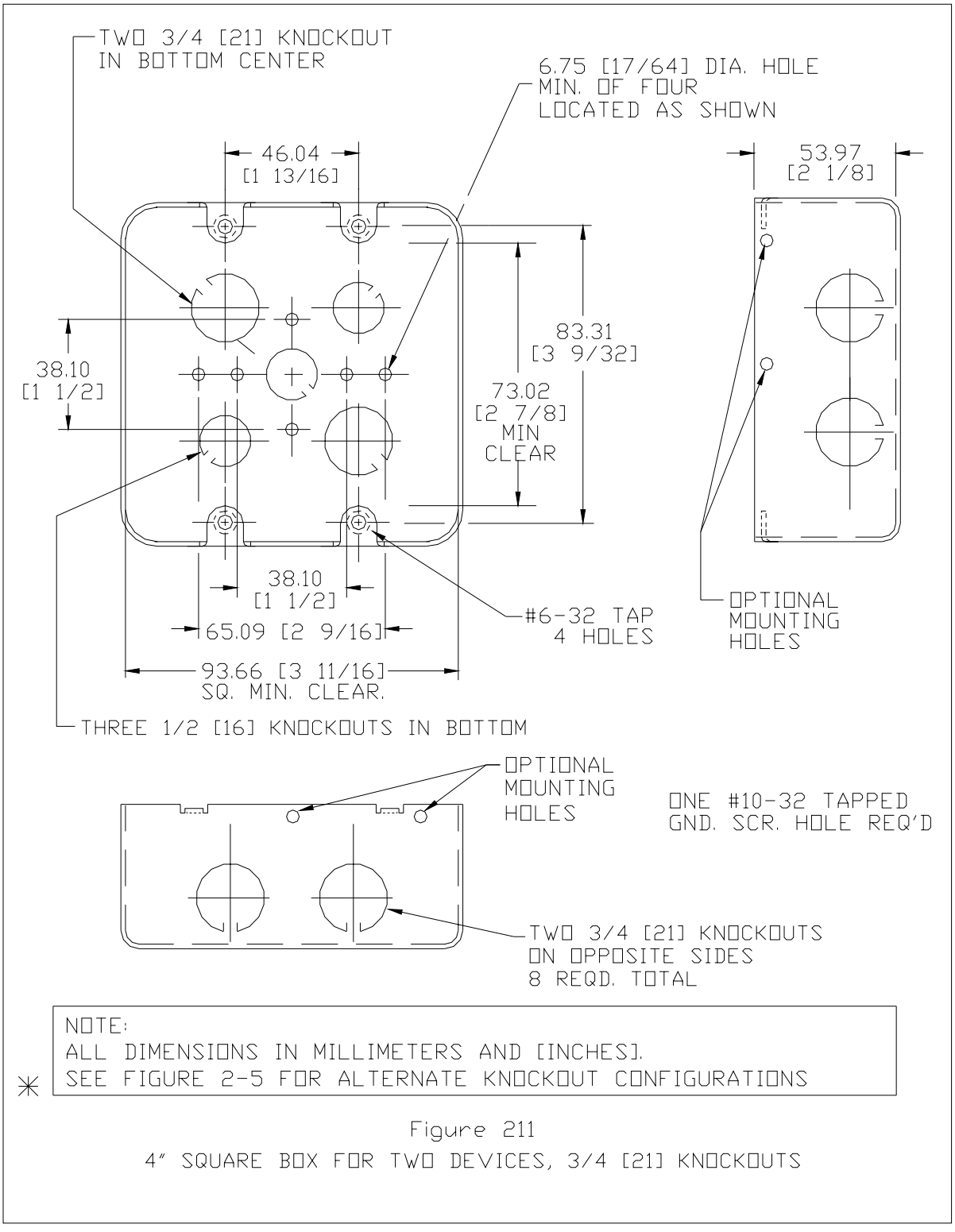


Figure 210
4" SQUARE BOX FOR TWO DEVICES, 1/2" [16] KNOCKOUTS

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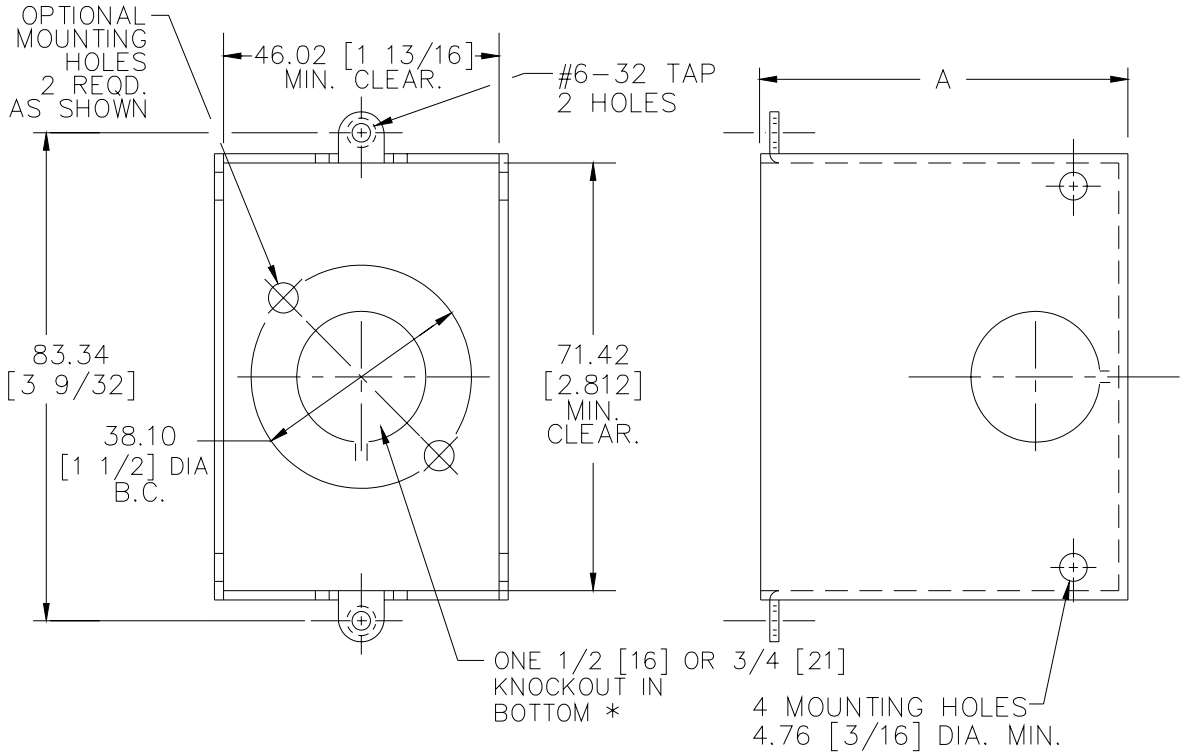


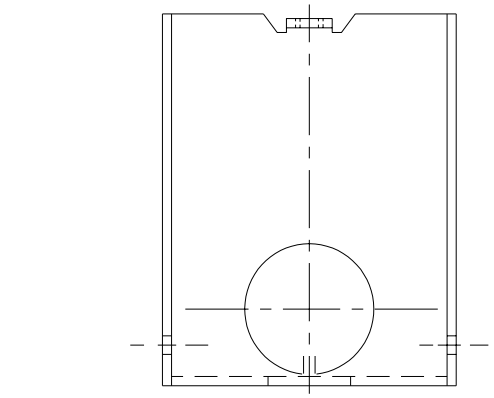
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
✳ SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 211
4" SQUARE BOX FOR TWO DEVICES, 3/4 [21] KNOCKOUTS

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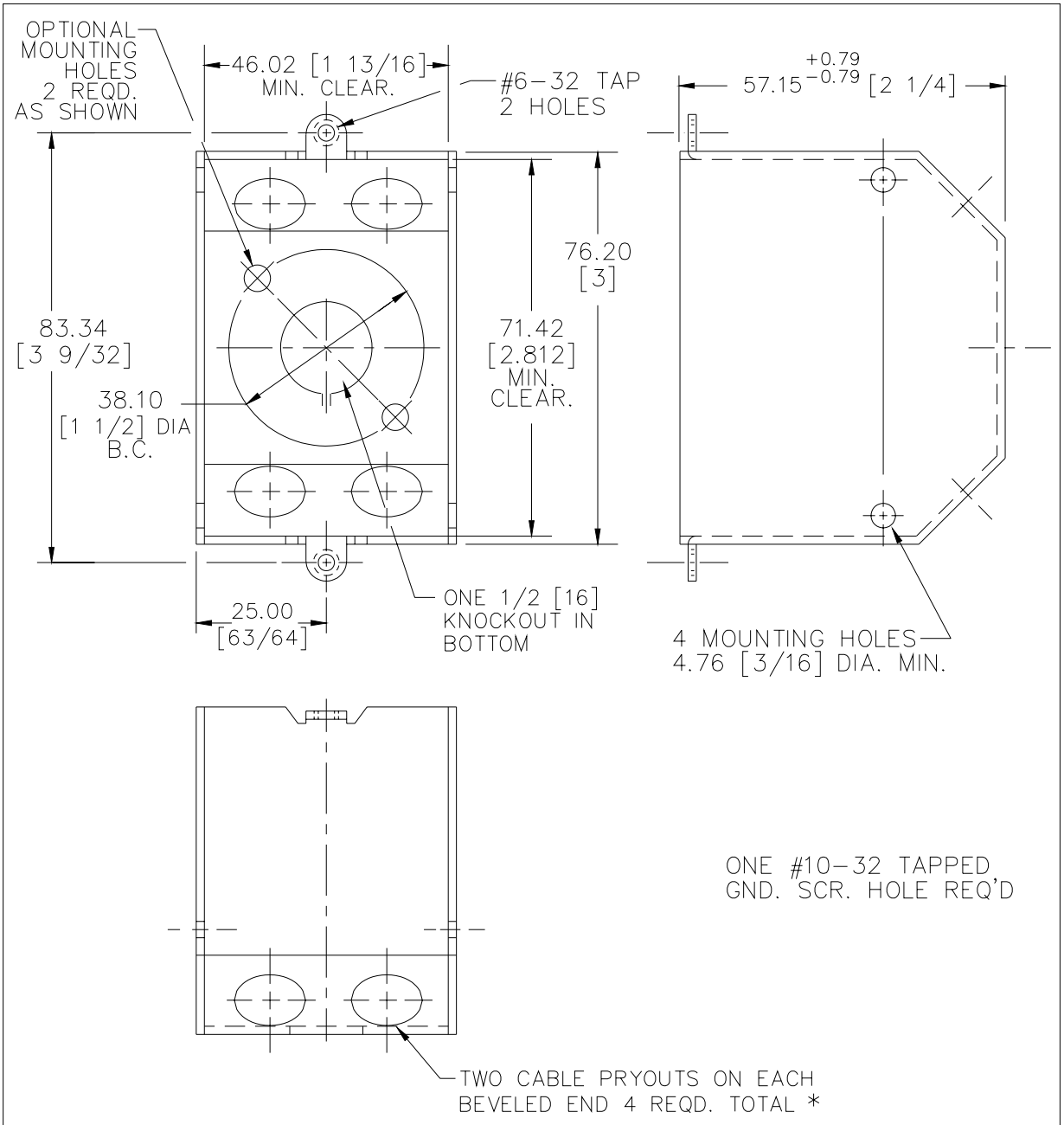
ITEM	A	1/2 [16] K.O.'S		3/4 [21] K.O.'S	
		SIDES	ENDS	SIDES	ENDS
1	38.10 [1 1/2]	–	2	–	–
2	50.80 [2]	–	2	–	–
3	63.50 [2 1/2]	2	2	–	–
4	63.50 [2 1/2]	–	–	2	2
5	69.85 [2 3/4]	2	2	–	–
6	69.85 [2 3/4]	–	–	2	2
7	88.90 [3 1/2]	4	4	–	–
8	88.90 [3 1/2]	–	–	4	4

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 220
SINGLE DEVICE BOX FOR 1/2 [16] OR 3/4 [21] KNOCKOUTS

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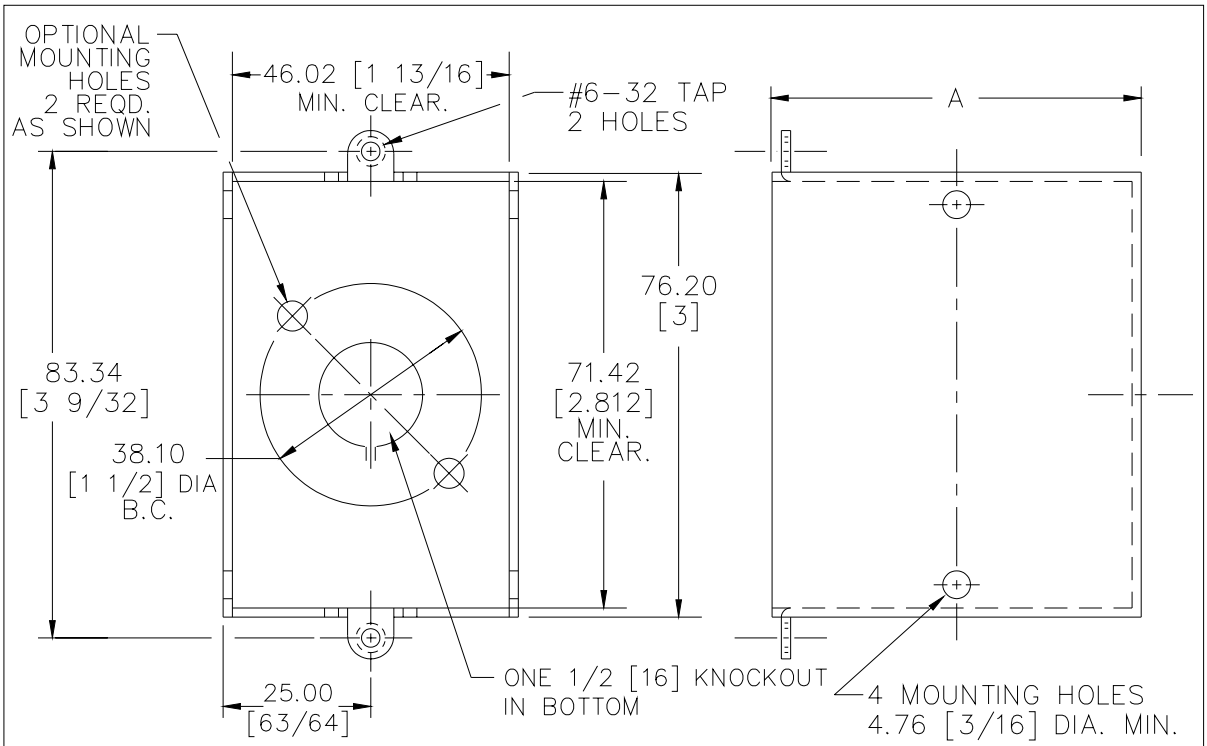


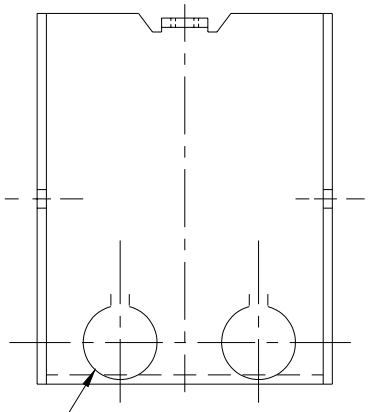
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-8 FOR ADDITIONAL PRYOUT CONFIGURATIONS

Figure 221
GANGABLE DEVICE BOX FOR CABLE, 2 1/4" DEEP, WITH BEVEL CORNER

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ONE #10-32 TAPPED GND. SCR. HOLE REQ'D

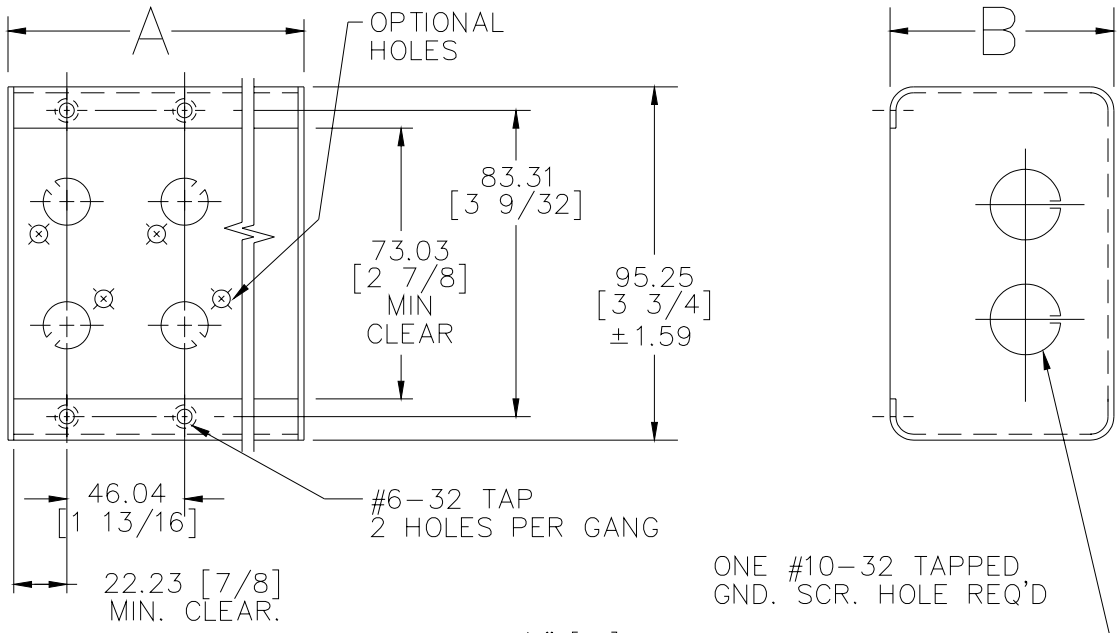
ITEM	A
1	38.10 [1 1/2]
2	50.80 [2]
3	63.50 [2 1/2]
4	69.85 [2 3/4]
5	88.90 [3 1/2]

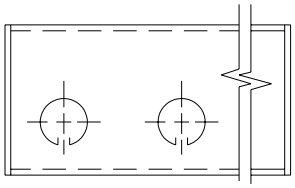
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-8 FOR ADDITIONAL PRYOUT CONFIGURATIONS

Figure 222
SINGLE DEVICE BOX FOR CABLE

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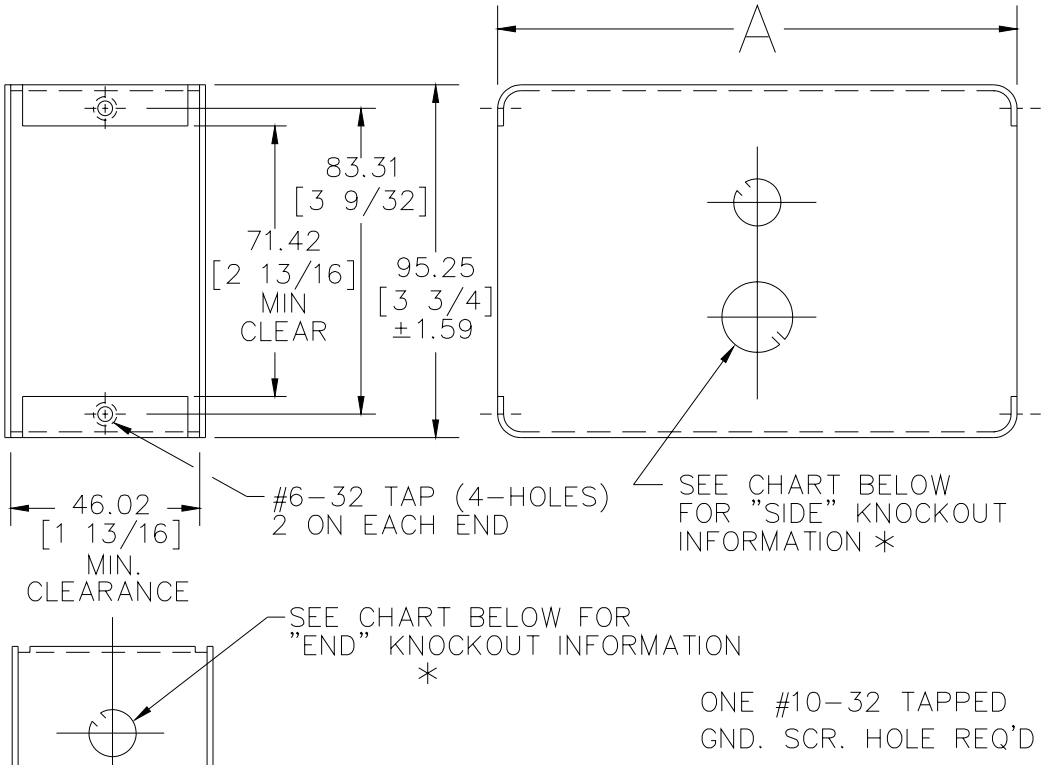
TYPE OF BOX	A ± 1.59	B				MIN. K.O.'S REQD.
		ITEM	SHALLOW	ITEM	DEEP	
1 GANG	50.80 [2]	1	63.5 [2 1/2]	2	88.9 [3 1/2]	7
2 GANG	96.84 [3 13/16]	3	63.5 [2 1/2]	4	88.9 [3 1/2]	10
3 GANG	142.87 [5 5/8]	5	63.5 [2 1/2]	6	88.9 [3 1/2]	13
4 GANG	188.91 [7 7/16]	7	63.5 [2 1/2]	8	88.9 [3 1/2]	16
5 GANG	234.95 [9 1/4]	9	63.5 [2 1/2]	10	88.9 [3 1/2]	19
6 GANG	280.99 [11 1/16]	11	63.5 [2 1/2]	12	88.9 [3 1/2]	22
7 GANG	323.85 [12 3/4]	13	63.5 [2 1/2]	14	88.9 [3 1/2]	25
8 GANG	369.89 [14 9/16]	15	63.5 [2 1/2]	16	88.9 [3 1/2]	28
9 GANG	415.93 [16 3/8]	17	63.5 [2 1/2]	18	88.9 [3 1/2]	31
10 GANG	461.96 [18 3/16]	19	63.5 [2 1/2]	20	88.9 [3 1/2]	34

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 240
TILE WALL BOXES, 1/2" [16] KNOCKOUTS, SINGLE AND MULTIGANG

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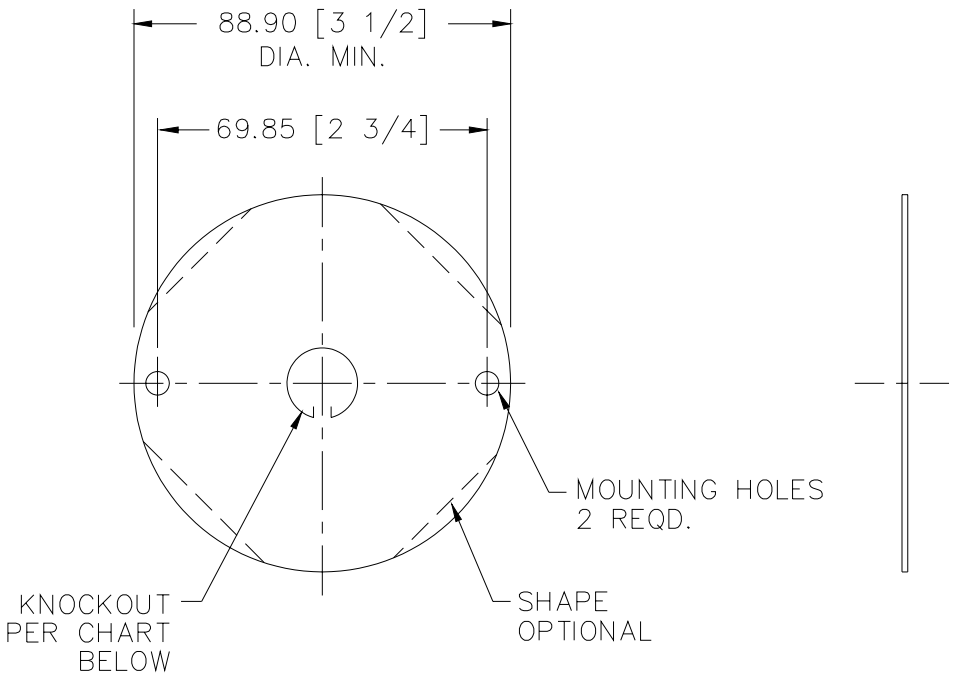
ITEM	A	KNOCKOUT TRADE SIZE AND QUALITY			
		SIDES		END	
		REQD	SIZE	REQD	SIZE
1	88.90 [3 1/2]	1 EA.	1/2 [16]	1 EA.	3/4 [21]
		1 EA.	3/4 [21]	–	–
2	139.70 [5 1/2]	1 EA.	1/2 [16]	2 EA.	1/2 [16]
		1 EA.	3/4 [21]	1 EA.	3/4 [21]
3	190.50 [7 1/2]	1 EA.	1/2 [16]	2 EA.	1/2 [16]
		1 EA.	3/4 [21]	1 EA.	3/4 [21]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS

Figure 241
MASONRY THRU-WALL BOXES, 1/2" [16] AND 3/4" [21] KNOCKOUTS, SINGLE GANG

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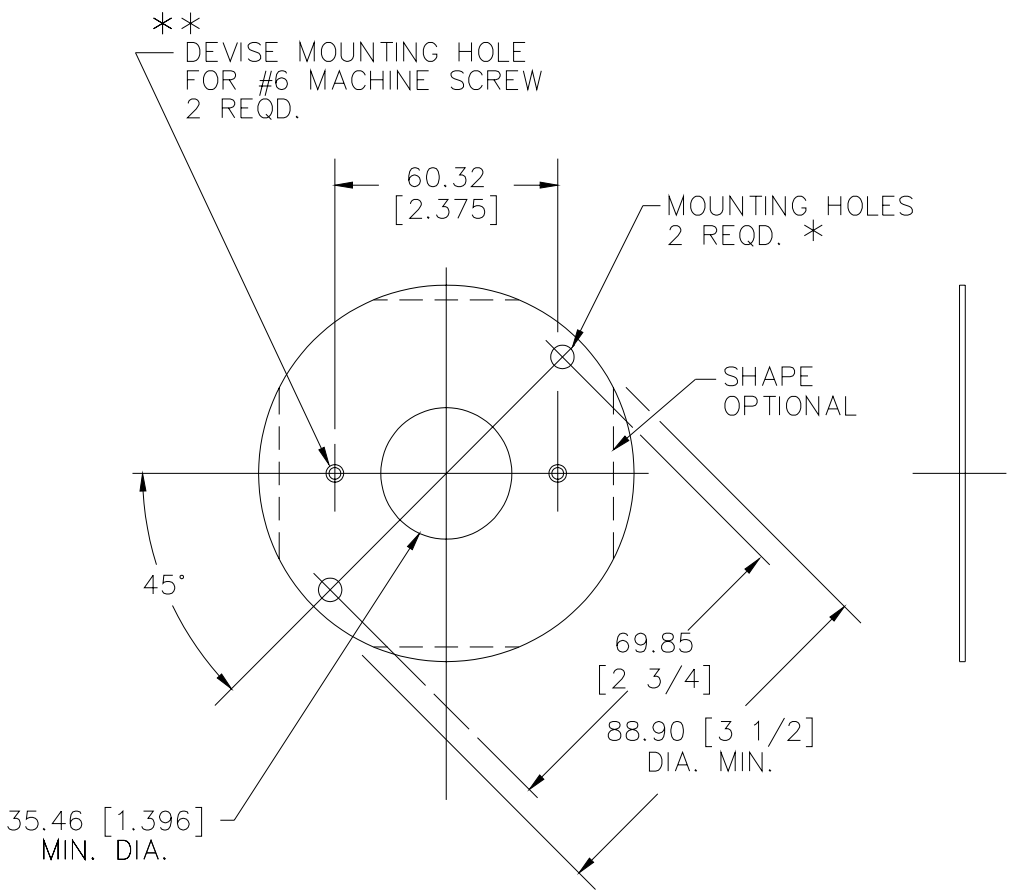
ITEM	KNOCKOUT
1	NONE
2	1/2 [16]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 280
FLAT COVER FOR 3 1/2" OCTAGON BOX, WITH OR WITHOUT 1/2 [16] KNOCKOUT

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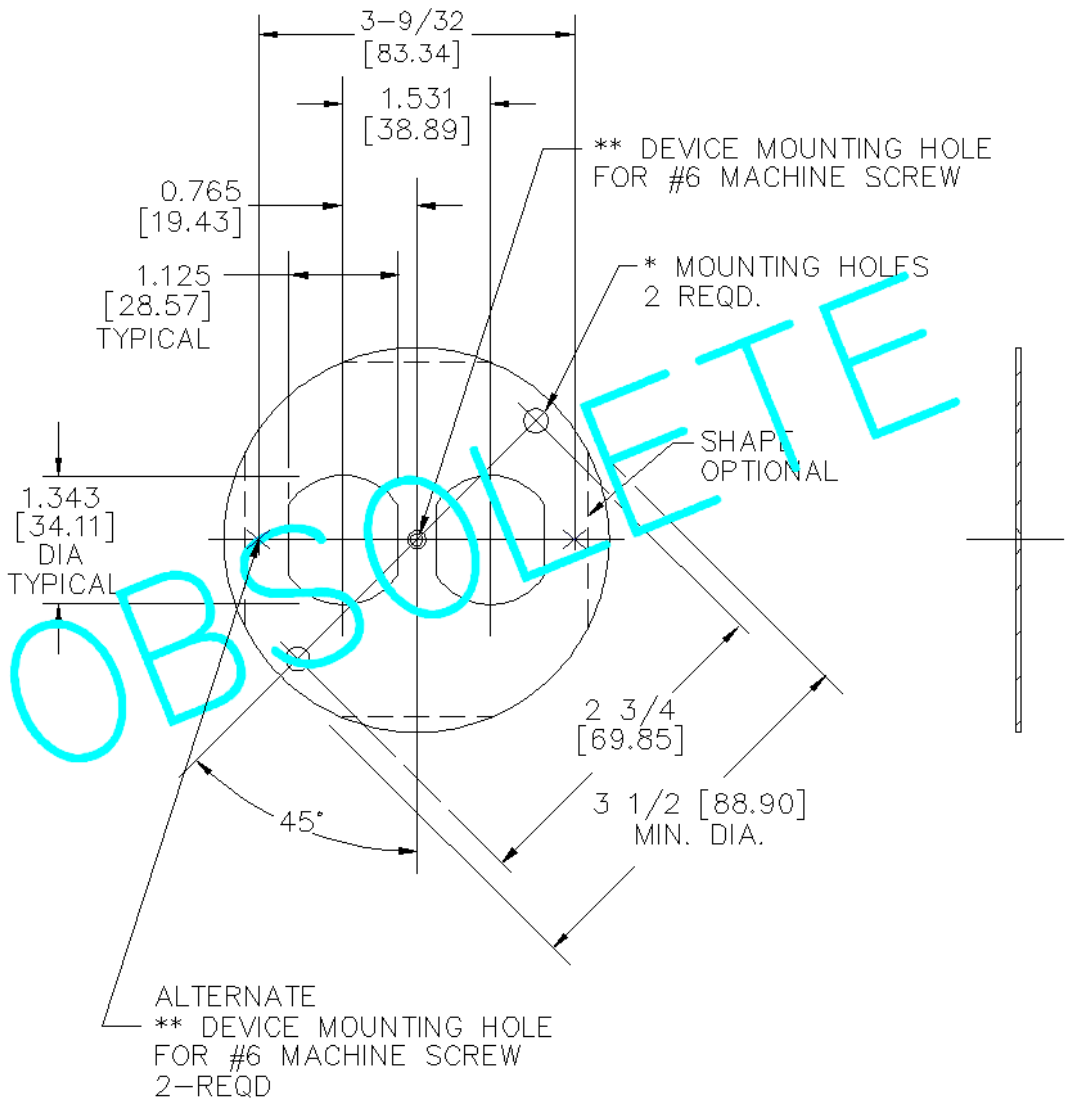


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS

Figure 281
FLAT COVER FOR SINGLE CONVENIENCE OUTLET FOR 3 1/2" OCTAGON BOX

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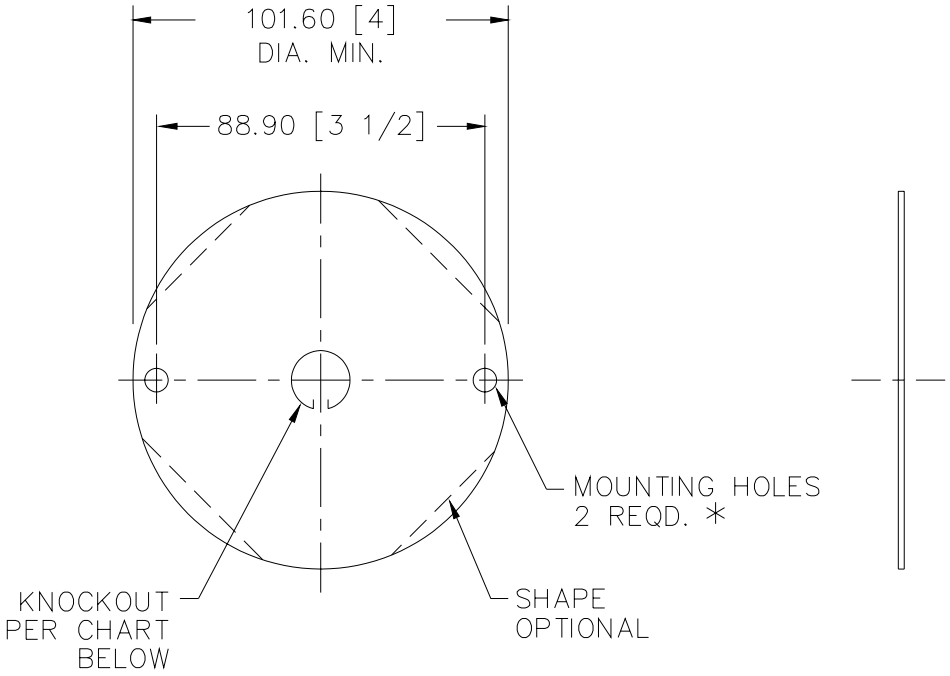
OBSOLETE

NOTE:
ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS

Figure 282
FLAT COVER FOR DUPLEX CONVENIENCE OUTLET FOR 3 1/2" OCTAGON BOX

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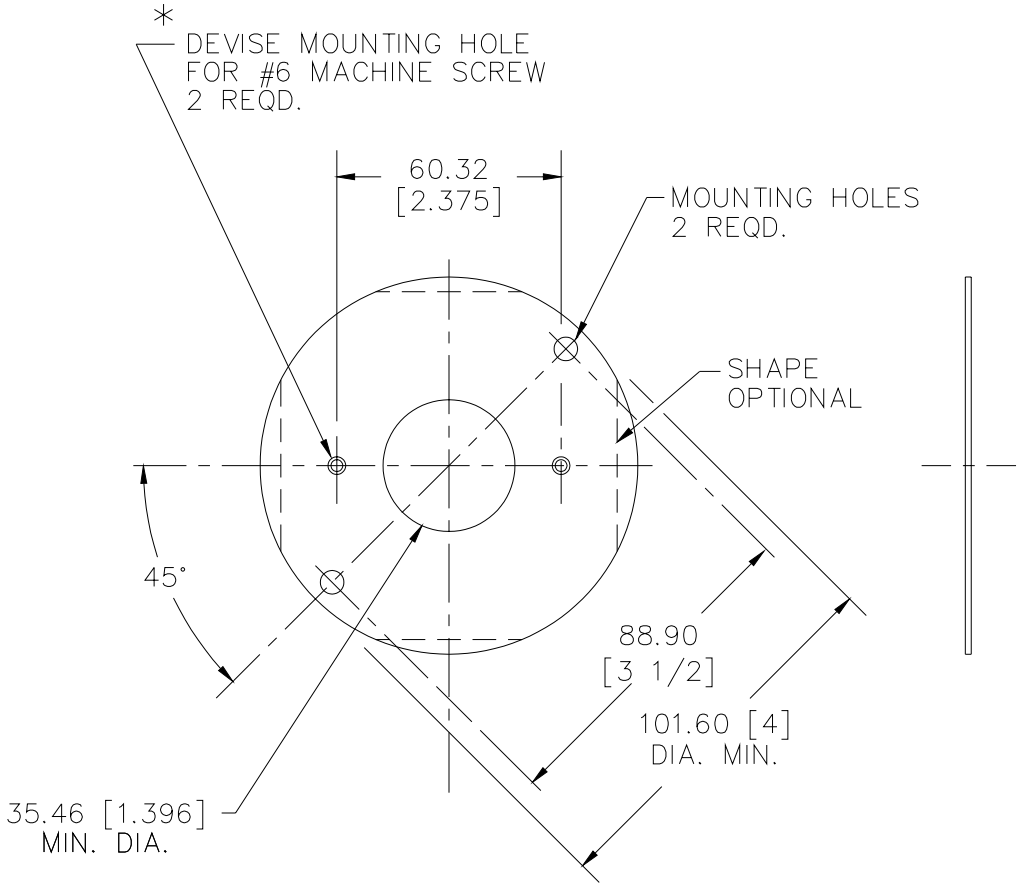
ITEM	KNOCKOUT
1	NONE
2	1/2 [16]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 300
FLAT COVER FOR 4" OCTAGON BOX, WITH OR WITHOUT 1/2 [16] KNOCKOUTS

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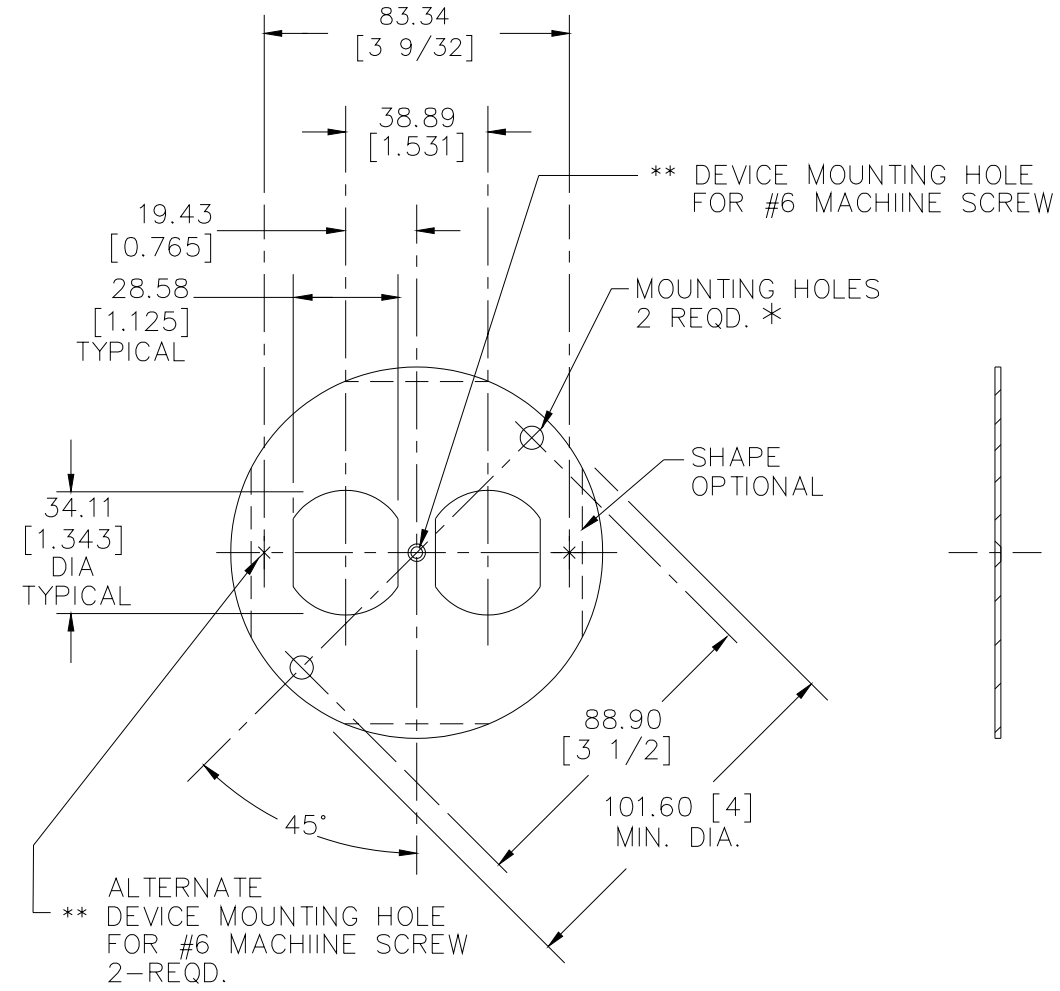
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 301

FLAT COVER FOR SINGLE CONVENIENCE OUTLET FOR 4" OCTAGON BOX

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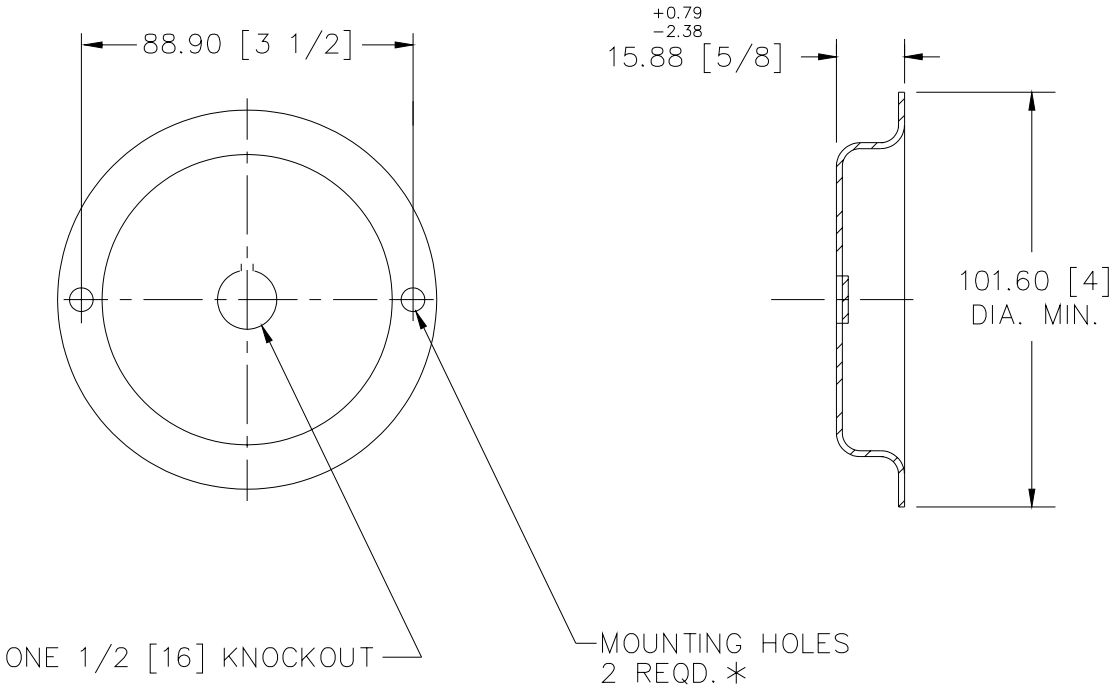


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 302
FLAT COVER FOR DUPLEX CONVENIENCE OUTLET FOR 4" OCTAGON BOX

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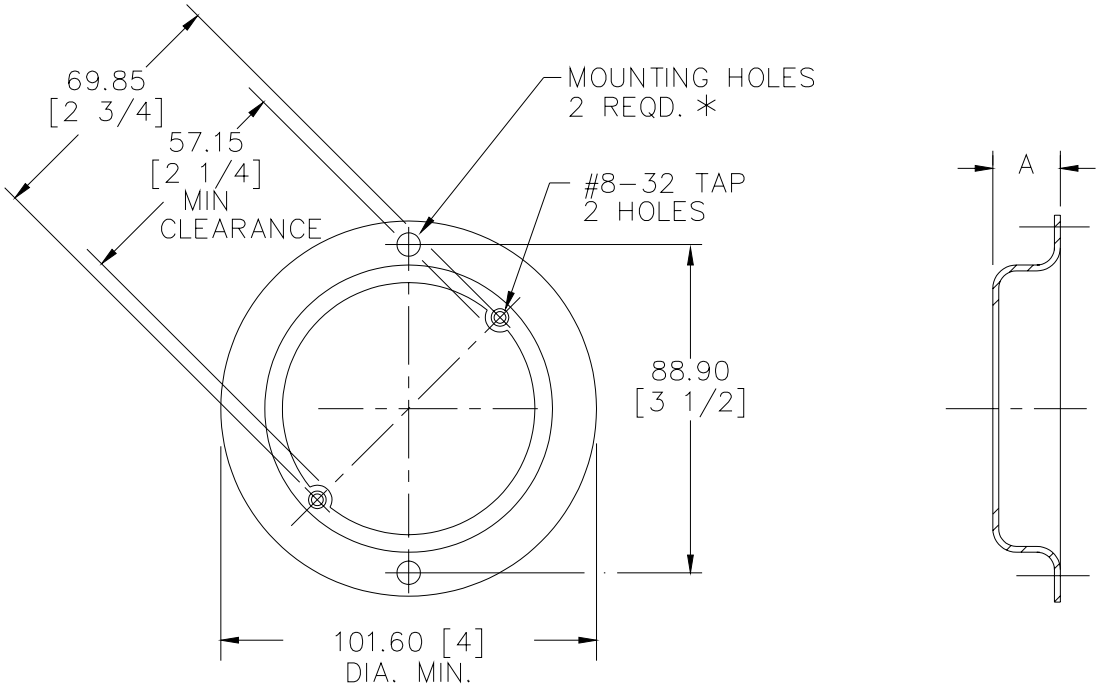


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
∗ SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE EXPOSED WORK COVER CONFIGURATIONS

Figure 303
RAISED COVER WITH ONE 1/2 [16] KNOCKOUT FOR 4" OCTAGON BOX

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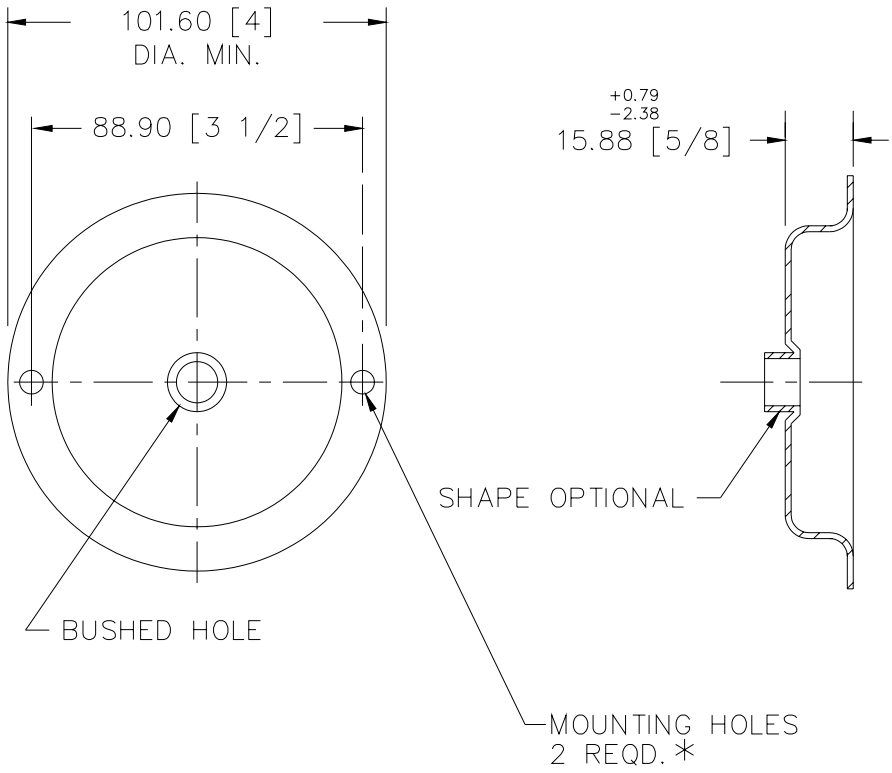
ITEM	$A^{+0.79}_{-2.38}$
1	12.70 [1/2]
2	15.88 [5/8]
3	19.05 [3/4]
4	25.40 [1]
5	31.75 [1 1/4]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 304
RAISED COVER WITH CENTER BLANKED OUT FOR 4" OCTAGON BOX

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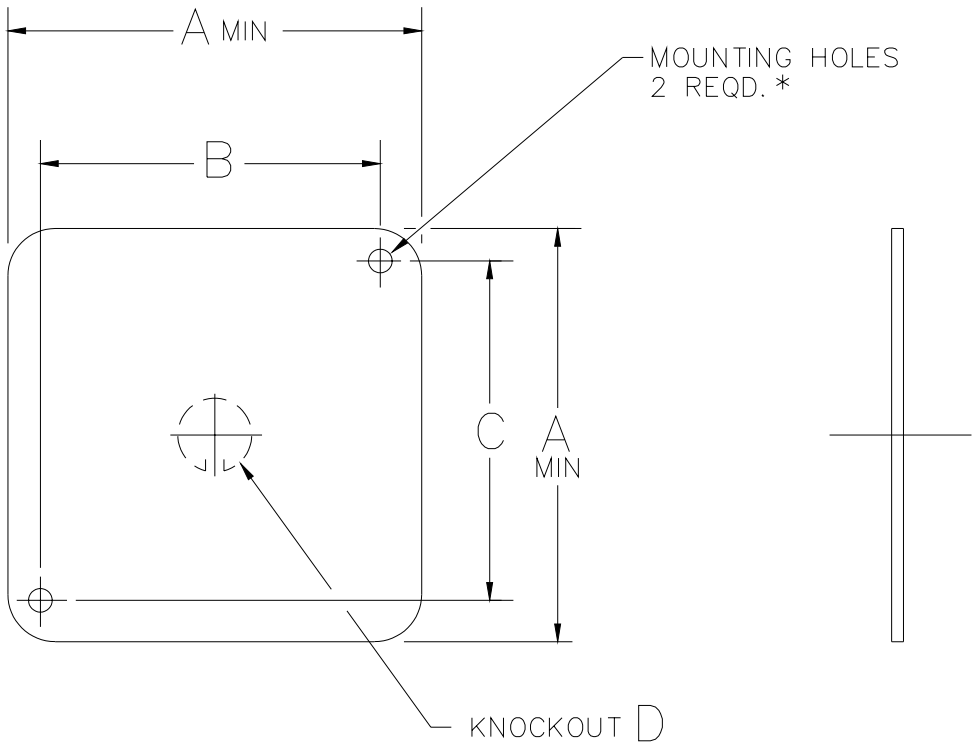


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 305
RAISED COVER FOR DROP CORD FOR 4" OCTAGON BOX

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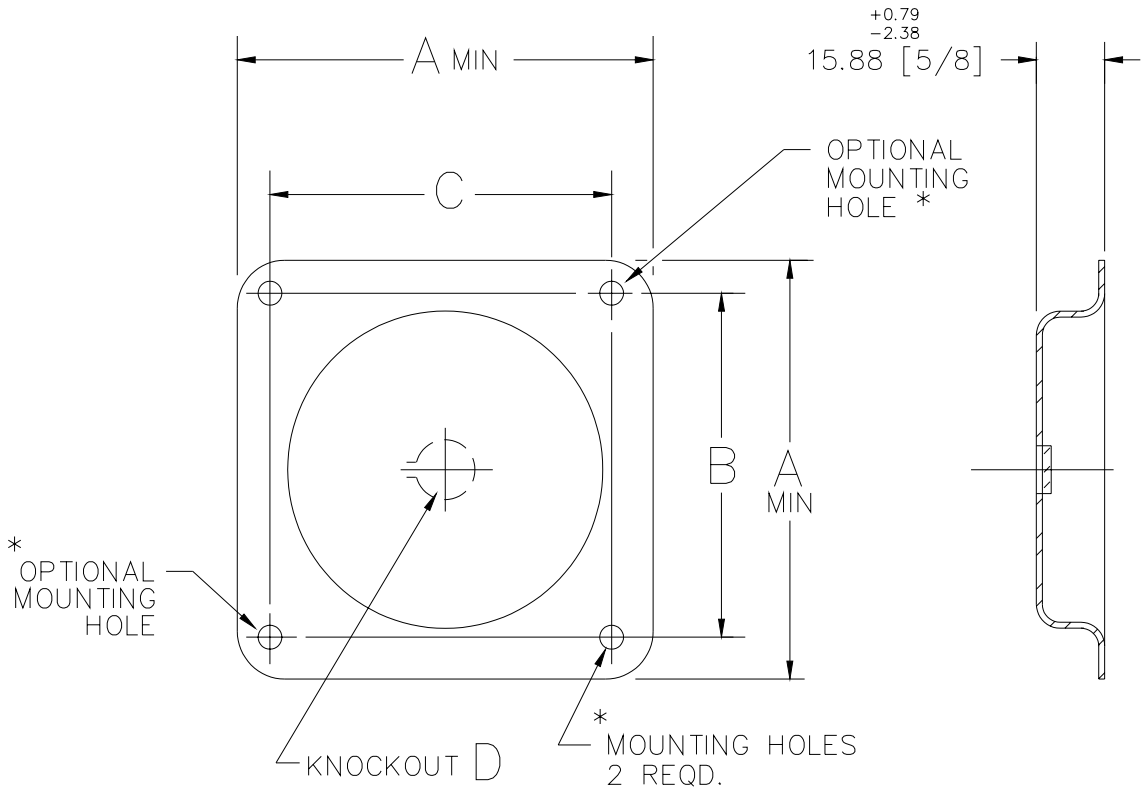
ITEM	A MIN.	B	C	KNOCKOUT D
1	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	NONE
2	119.06 [4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	NONE
3	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	1/2 [16]
4	119.06 [4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	1/2 [16]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 310
FLAT COVER FOR 4" AND 4 11/16" SQUARE BOX, WITH OR WITHOUT 1/2 [16] KNOCKOUTS

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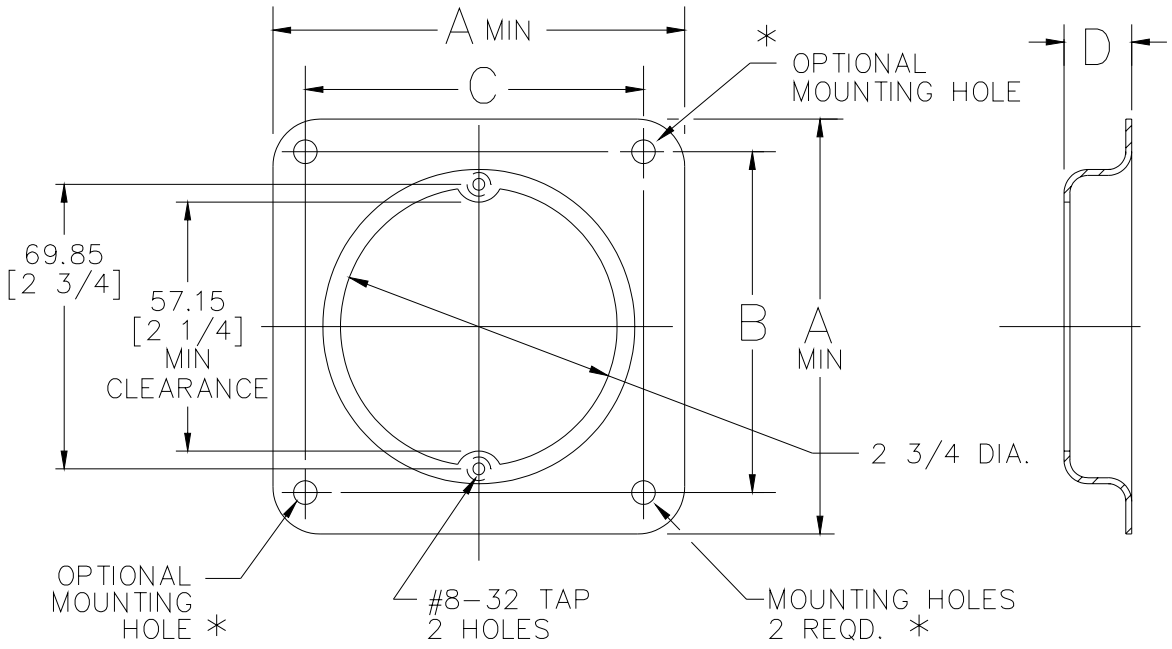
ITEM	A MIN.	B	C	KNOCKOUT D
1	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	NONE
2	119.06 [4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	NONE
3	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	1/2 [16]
4	119.06 [4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	1/2 [16]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 311
RAISED COVER FOR 4" AND 4 11/16" SQUARE BOX WITH 1/2 [16] KNOCKOUT

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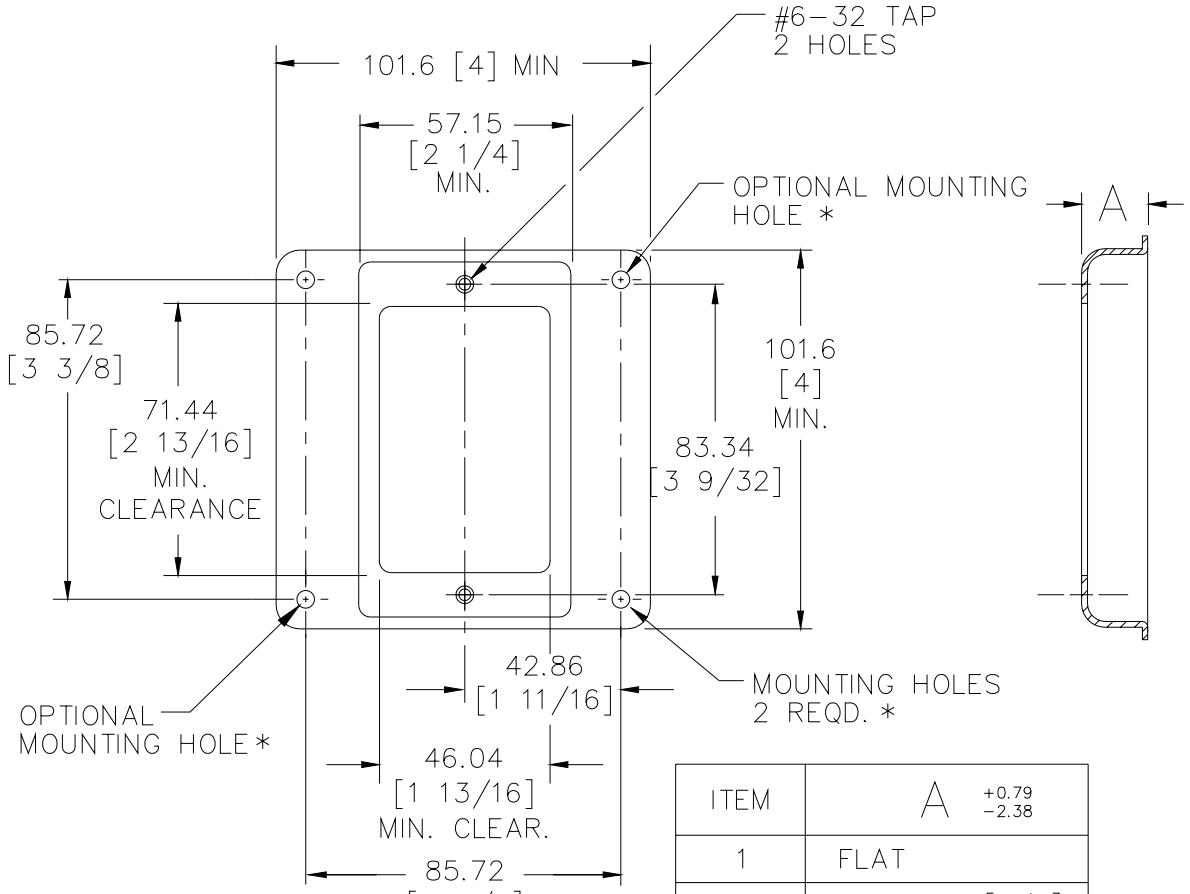
ITEM	A MIN.	B	C	D
1	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	12.70 [1/2]
2	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	15.88 [5/8]
3	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	19.05 [3/4]
4	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	25.40 [1]
5	101.60 [4]	85.73 [3 3/8]	85.73 [3 3/8]	31.75 [1 1/4]
6	119.06[4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	12.70 [1/2]
7	119.06[4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	15.88 [5/8]
8	119.06[4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	19.05 [3/4]
9	119.06[4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	25.40 [1]
10	119.06[4 11/16]	107.95 [4 1/4]	69.85 [2 3/4]	31.75 [1 1/4]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 312
RAISED COVER WITH CENTER BLANKED OUT FOR 4" AND 4 11/16" SQUARE BOX

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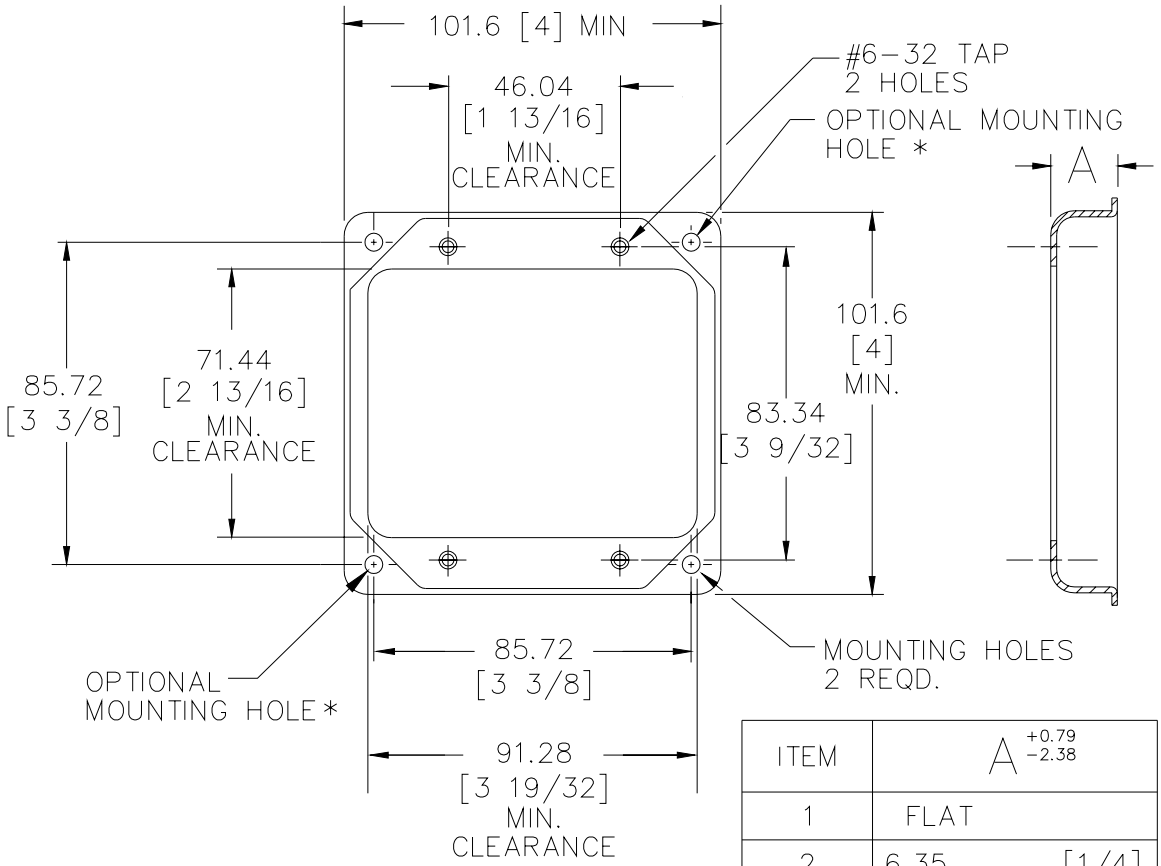
ITEM	A +0.79 −2.38	
1	FLAT	
2	6.35	[1/4]
3	12.70	[1/2]
4	15.88	[5/8]
5	19.05	[3/4]
6	25.40	[1]
7	31.75	[1 1/4]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 313
ONE-DEVICE COVER FOR 4" SQUARE BOX

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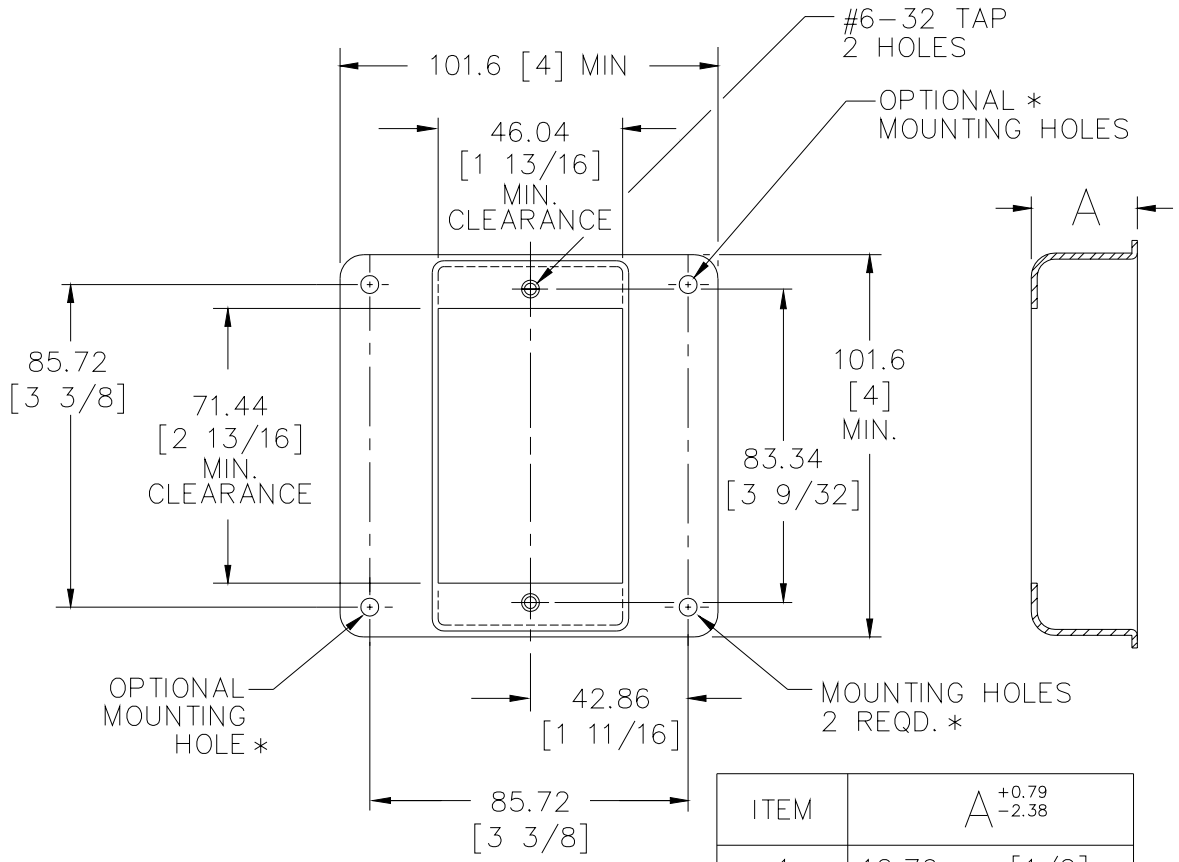
ITEM	$A^{+0.79}_{-2.38}$	
1	FLAT	
2	6.35	[1/4]
3	12.70	[1/2]
4	15.88	[5/8]
5	19.05	[3/4]
6	25.40	[1]
7	31.75	[1 1/4]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 314
TWO-DEVICE COVER FOR 4" SQUARE BOX

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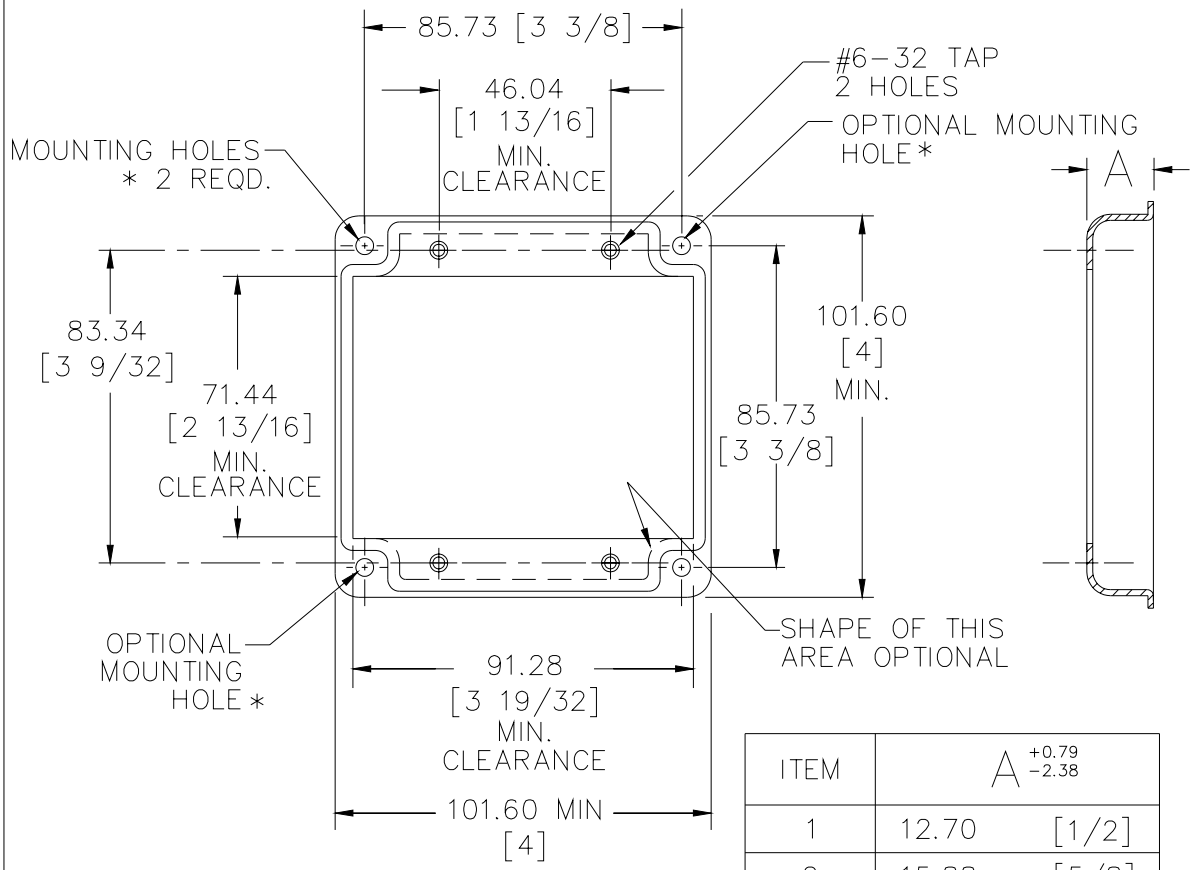
ITEM	$A^{+0.79}_{-2.38}$	
1	12.70	[1/2]
2	15.88	[5/8]
3	19.05	[3/4]
4	25.40	[1]
5	31.75	[1 1/4]
6	38.10	[1 1/2]
7	50.80	[2]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 315
ONE–DEVICE TILE COVER FOR 4" SQUARE BOX

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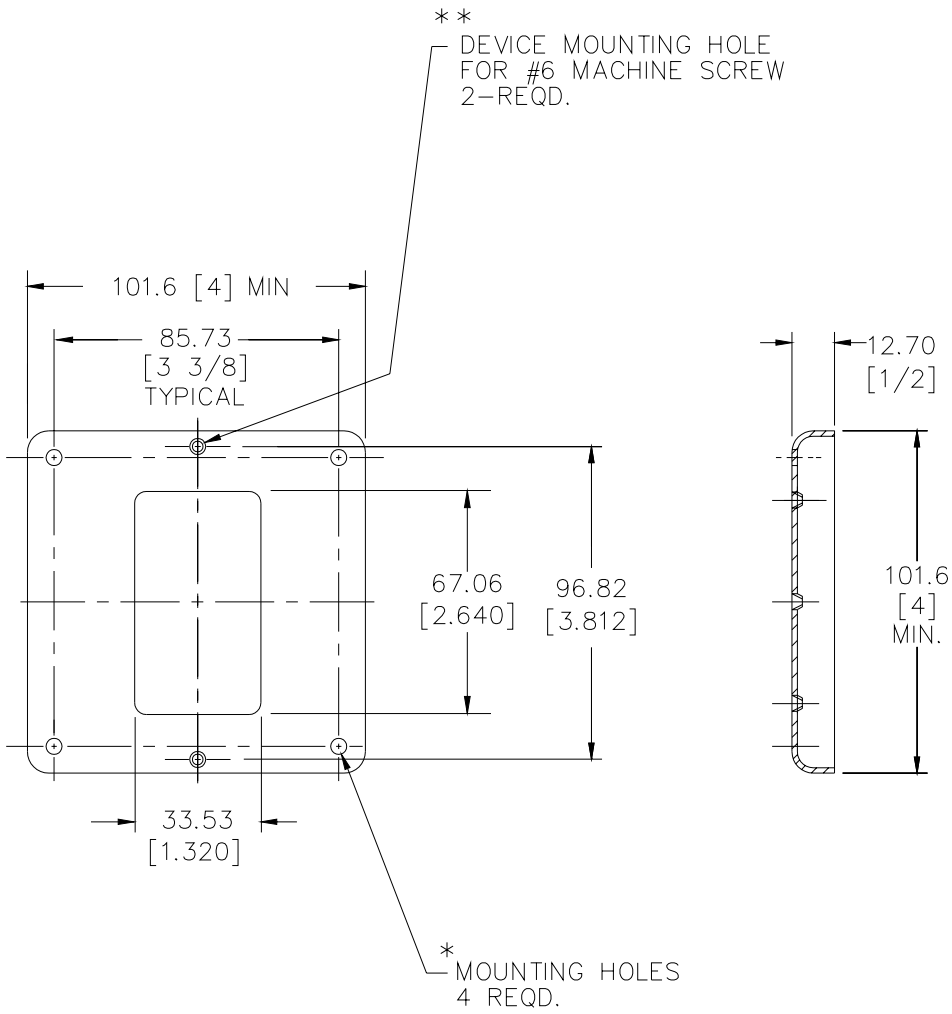
ITEM	A +0.79 −2.38	
1	12.70	[1/2]
2	15.88	[5/8]
3	19.05	[3/4]
4	25.40	[1]
5	31.75	[1 1/4]
6	38.10	[1 1/2]
7	50.80	[2]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 316
TWO-DEVICE TILE COVER FOR 4" SQUARE BOX

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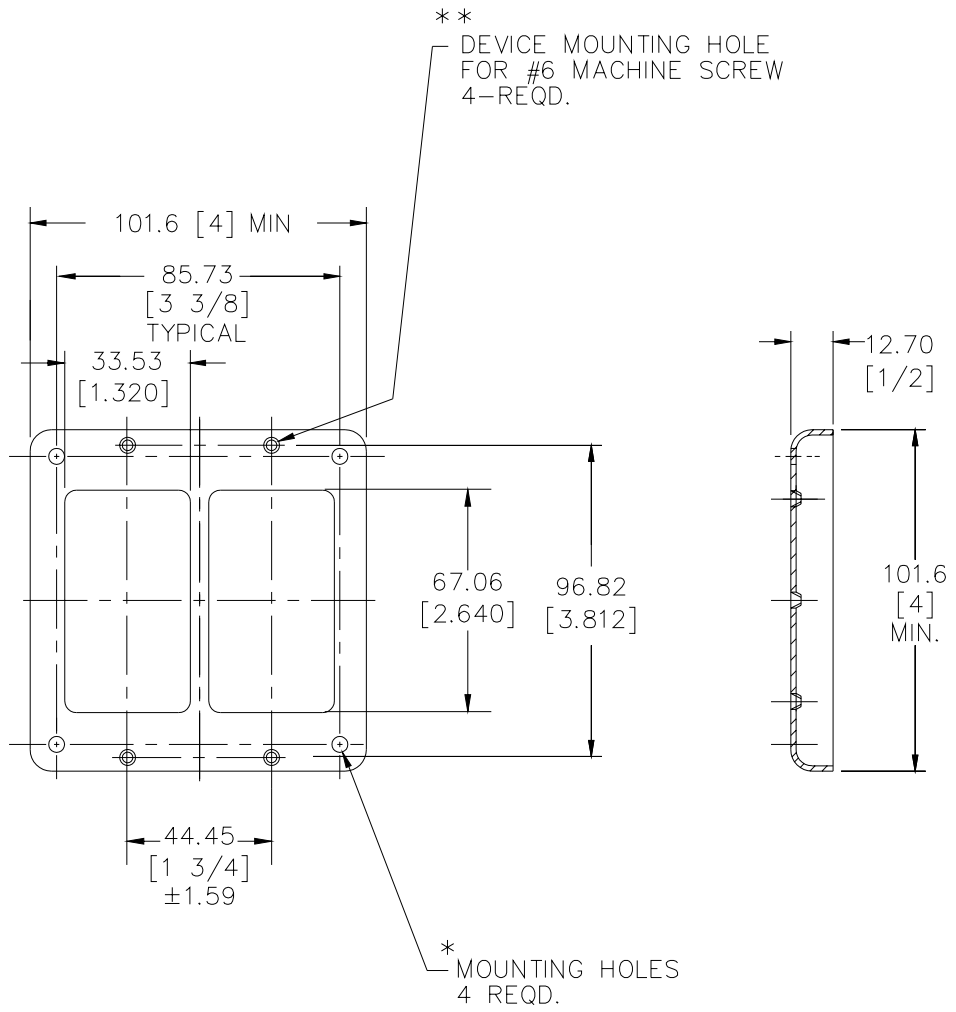


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 317
SURFACE COVER FOR ONE GFCI RECEPTACLE FOR 4" SQUARE BOX

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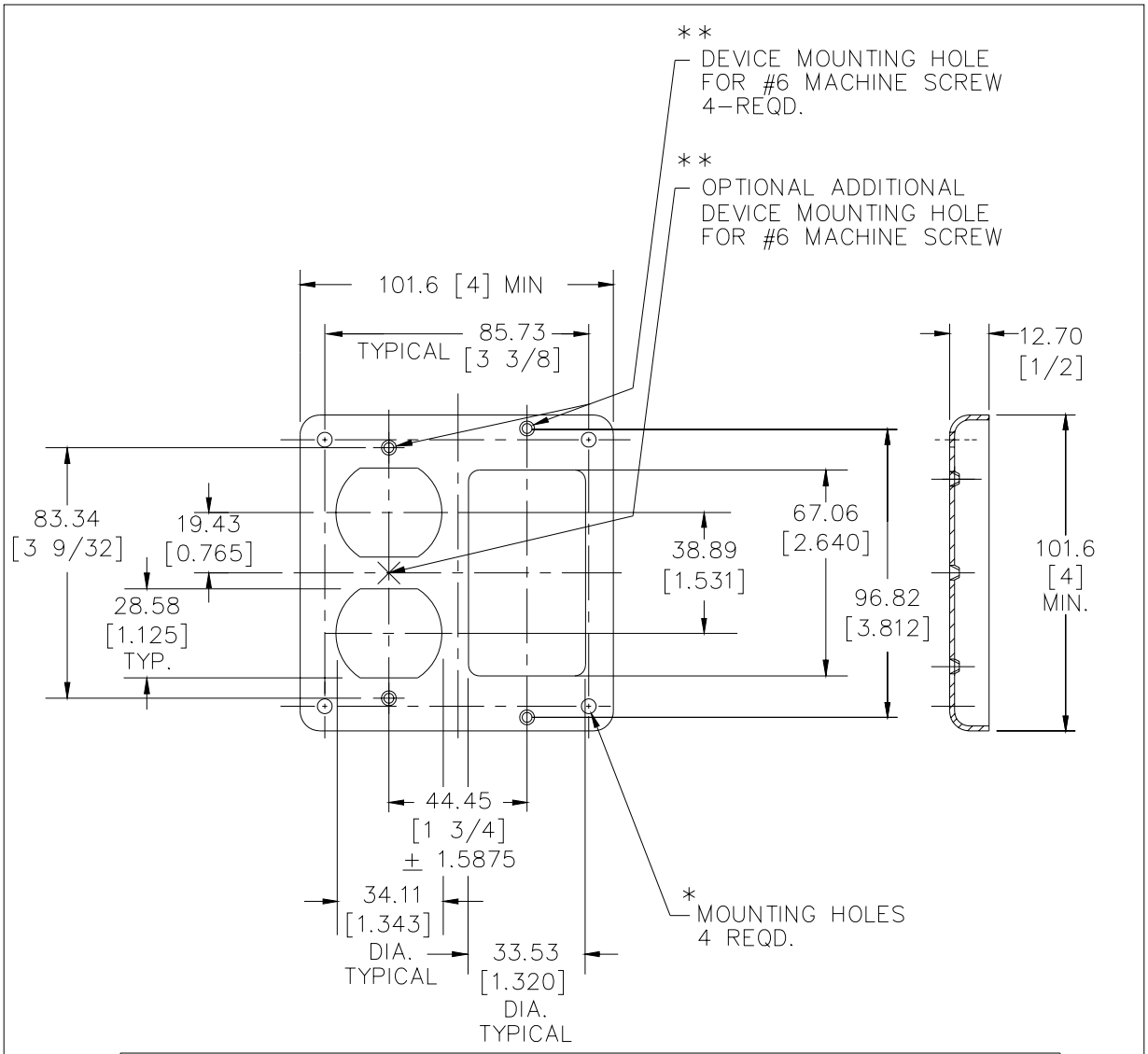


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 318
SURFACE COVER FOR ONE GFCI RECEPTACLE FOR 4" SQUARE BOX

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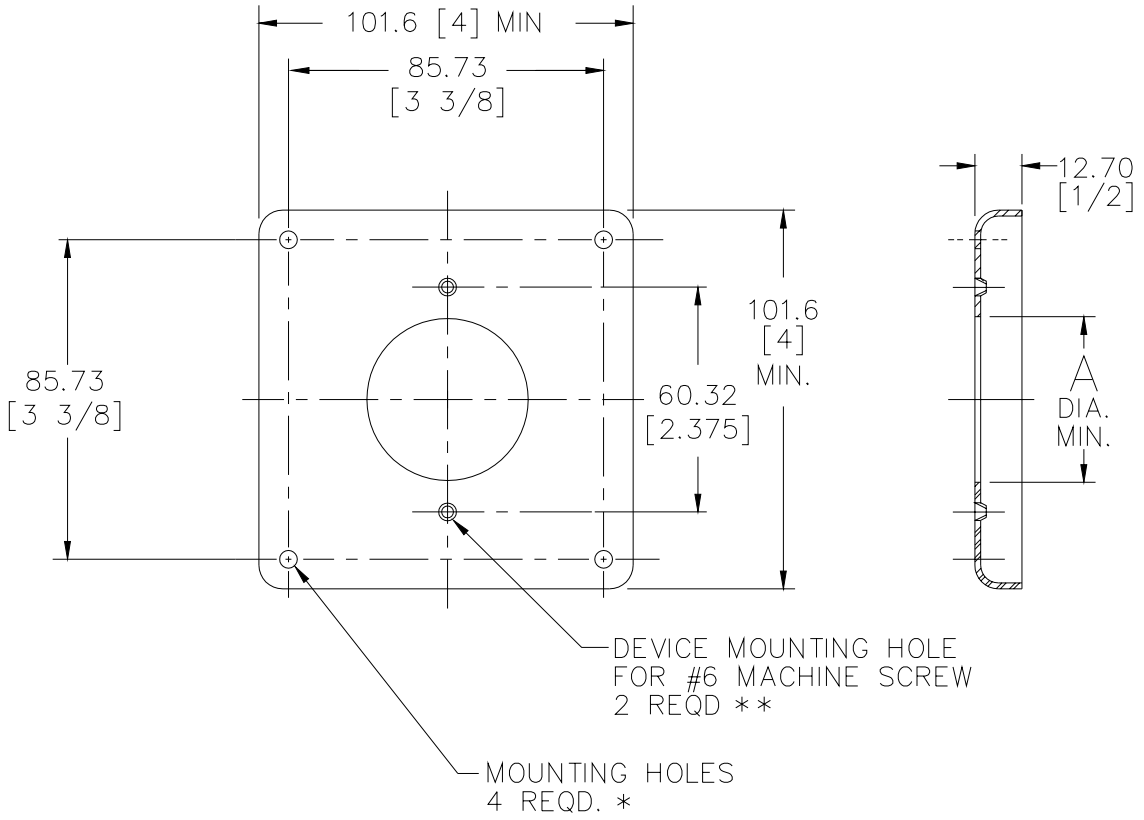


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 319
SURFACE COVER FOR ONE TOGGLE SWITCH AND ONE GFCI RECEPTACLE FOR 4" SQUARE BOX

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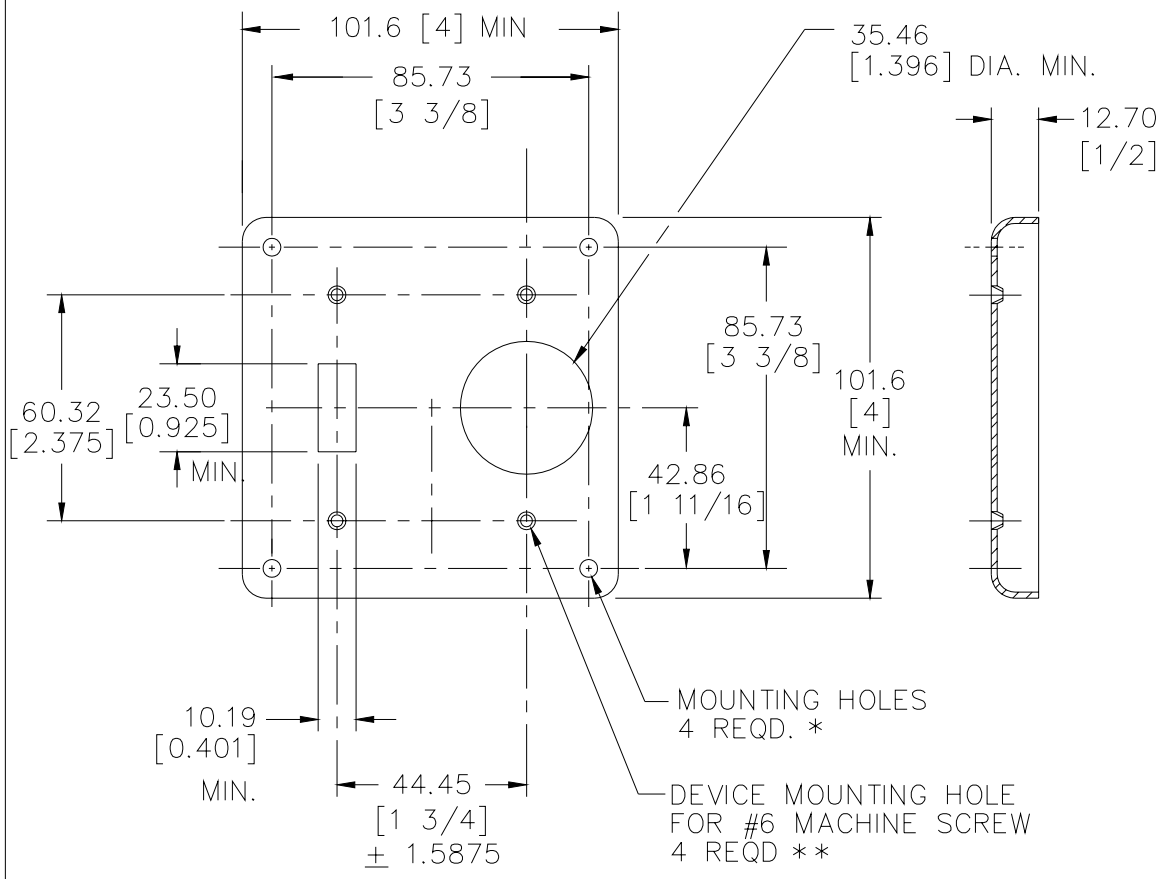
ITEM	A MIN.	
1	35.46	[1.396]
2	40.28	[1.586]
3	43.46	[1.711]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 320
SURFACE COVER FOR SINGLE RECEPTACLE FOR 4" SQUARE BOX

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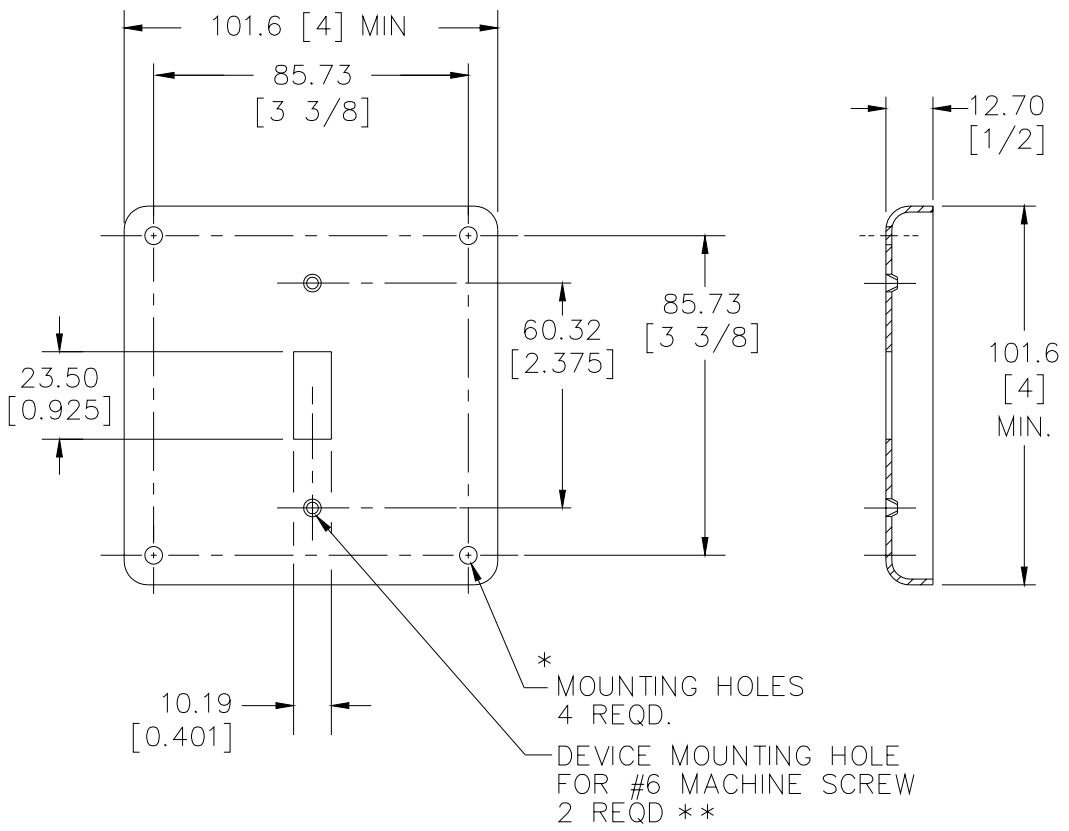
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 321

SURFACE COVER FOR ONE TOGGLE SWITCH AND ONE SINGLE RECEPTACLE FOR 4" SQUARE BOX

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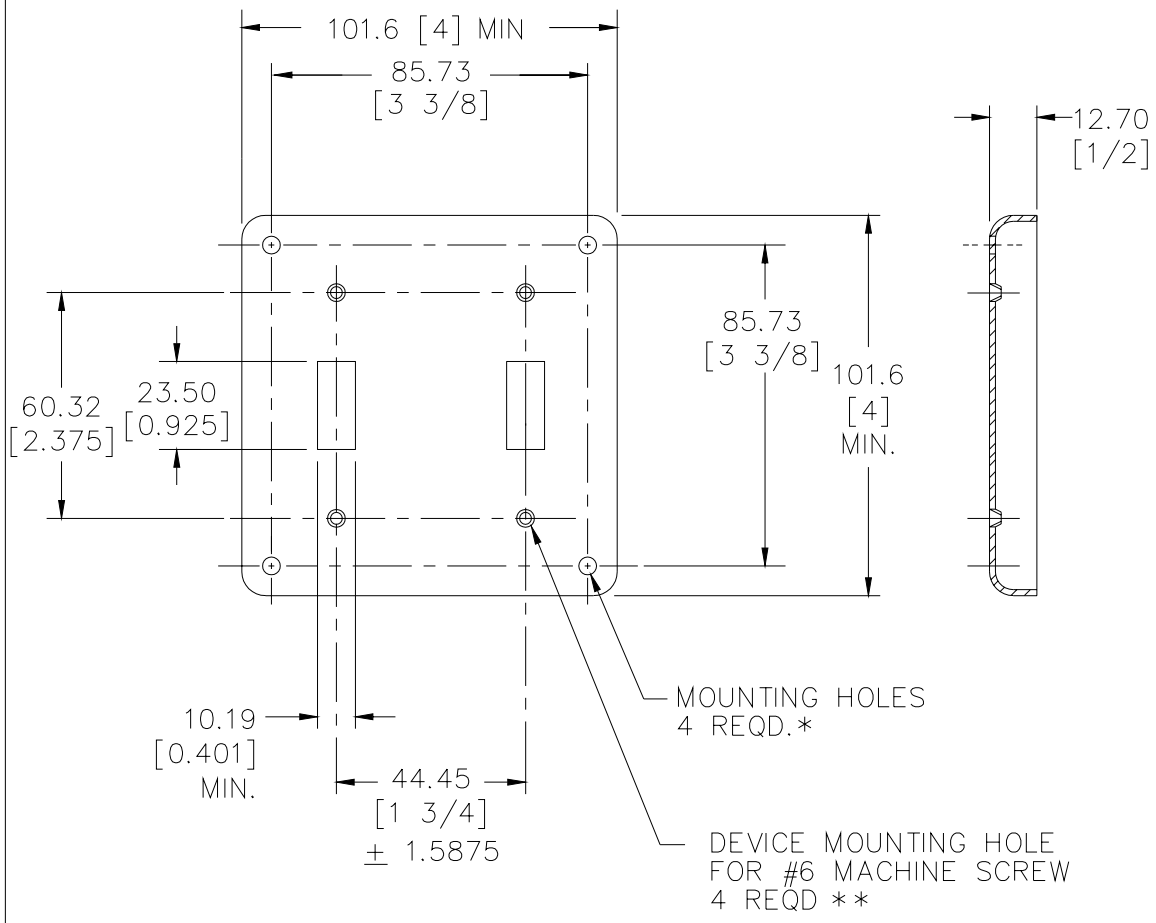


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 322
SURFACE COVER FOR ONE TOGGLE SWITCH FOR 4" SQUARE BOX

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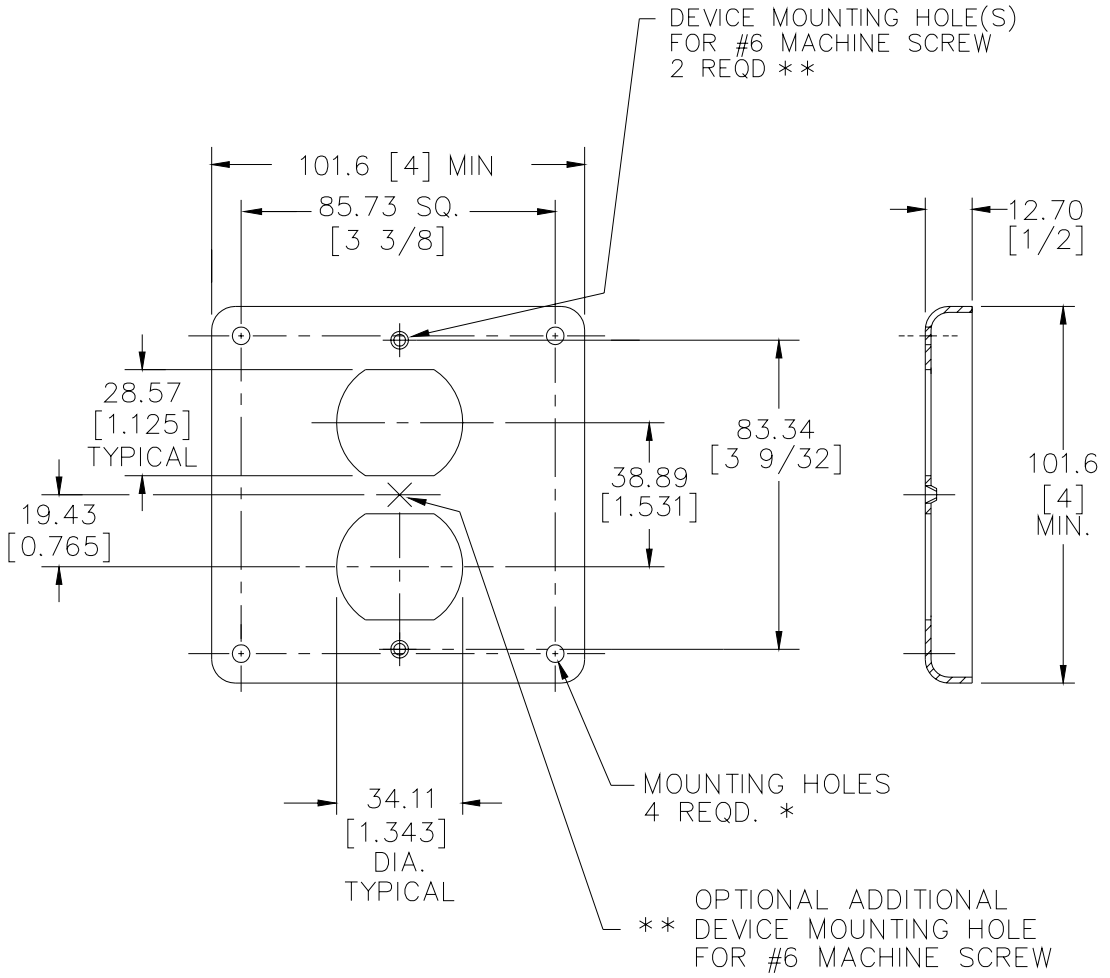


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 323
SURFACE COVER FOR TWO TOGGLE SWITCHES FOR 4" SQUARE BOX

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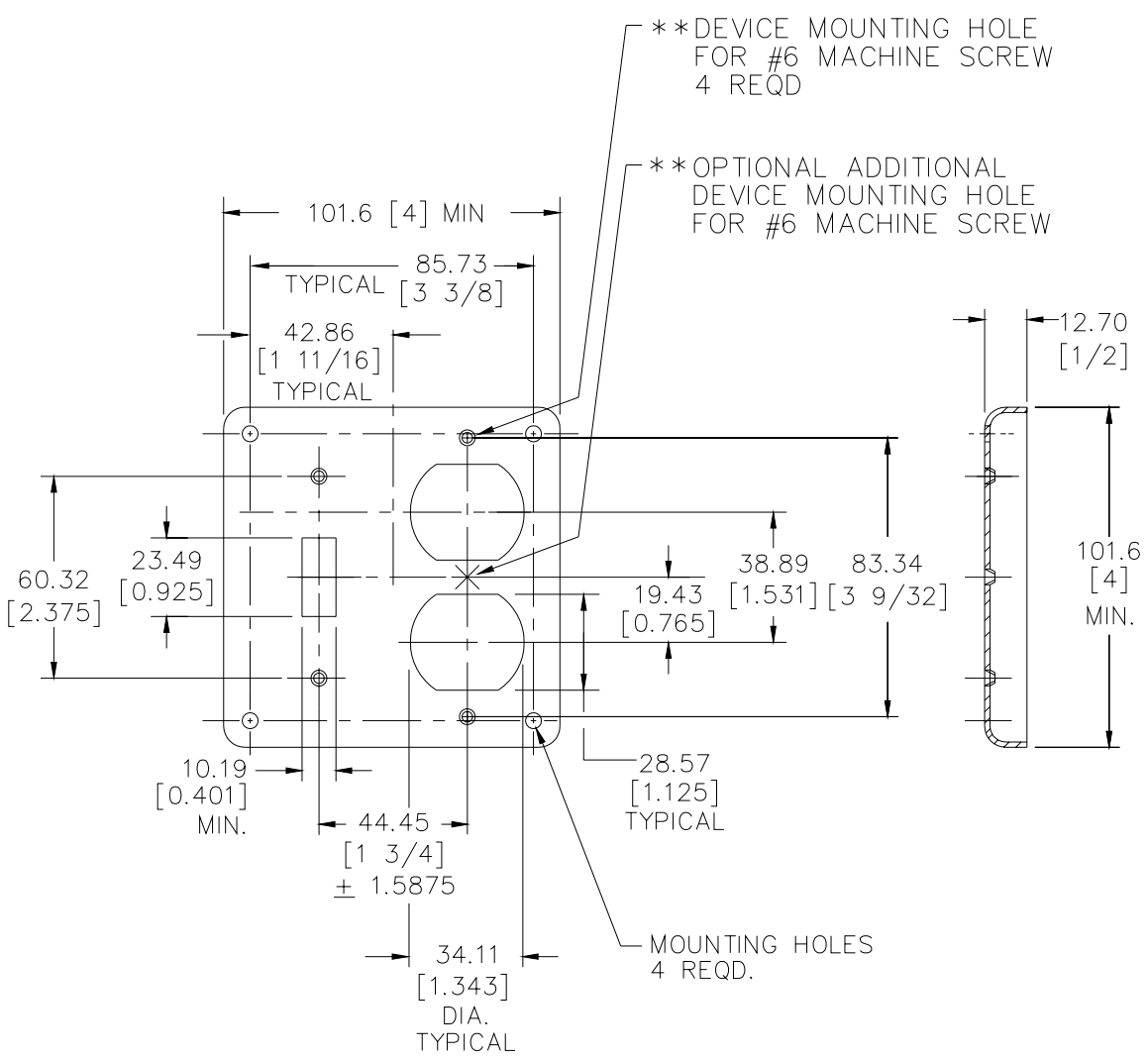
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 324

SURFACE COVER FOR ONE DUPLEX RECEPTACLE FOR 4" SQUARE BOX

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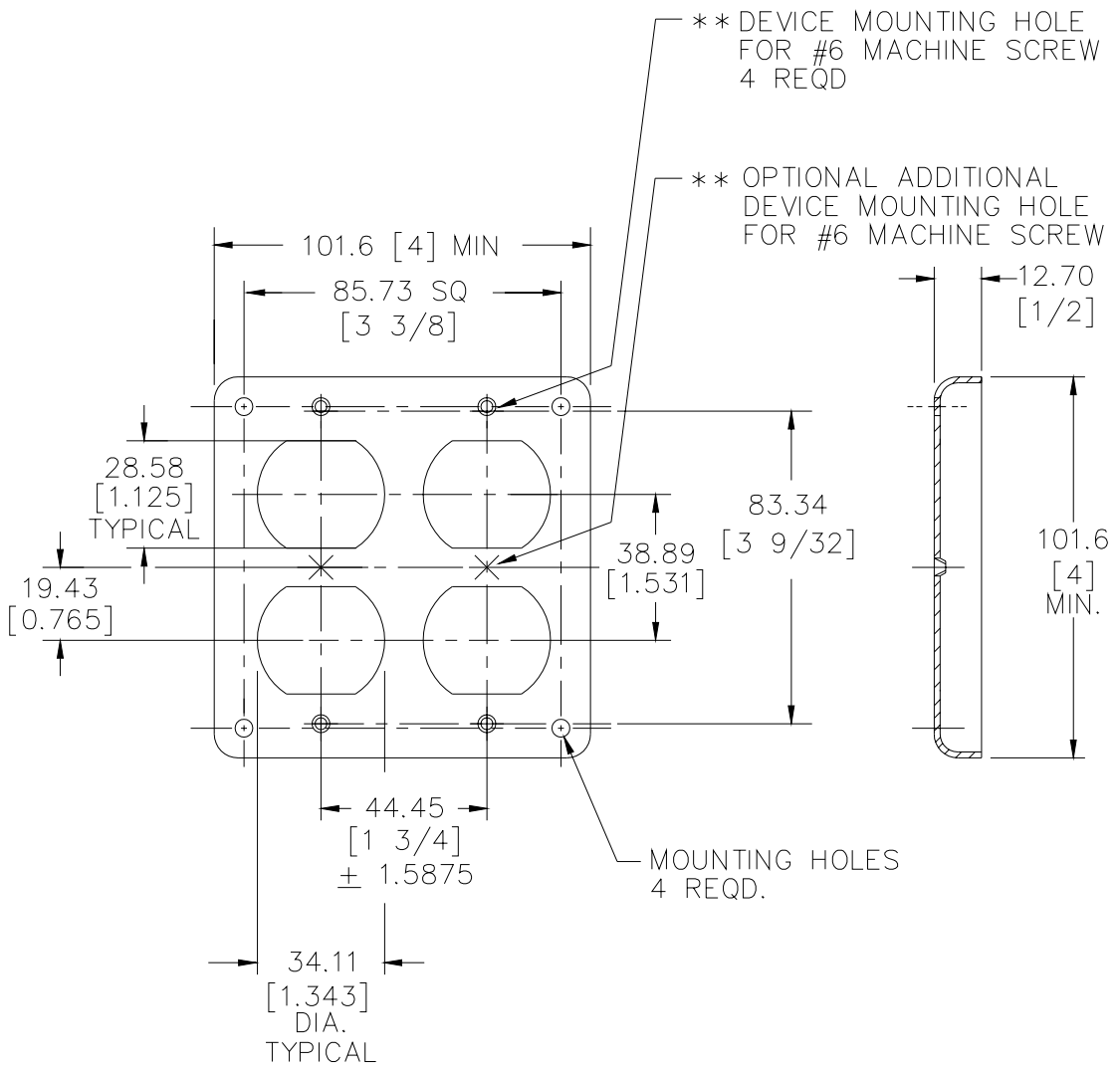


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 325
SURFACE COVER FOR ONE TOGGLE SWITCH AND ONE DUPLEX RECEPTACLE 4" SQUARE BOX

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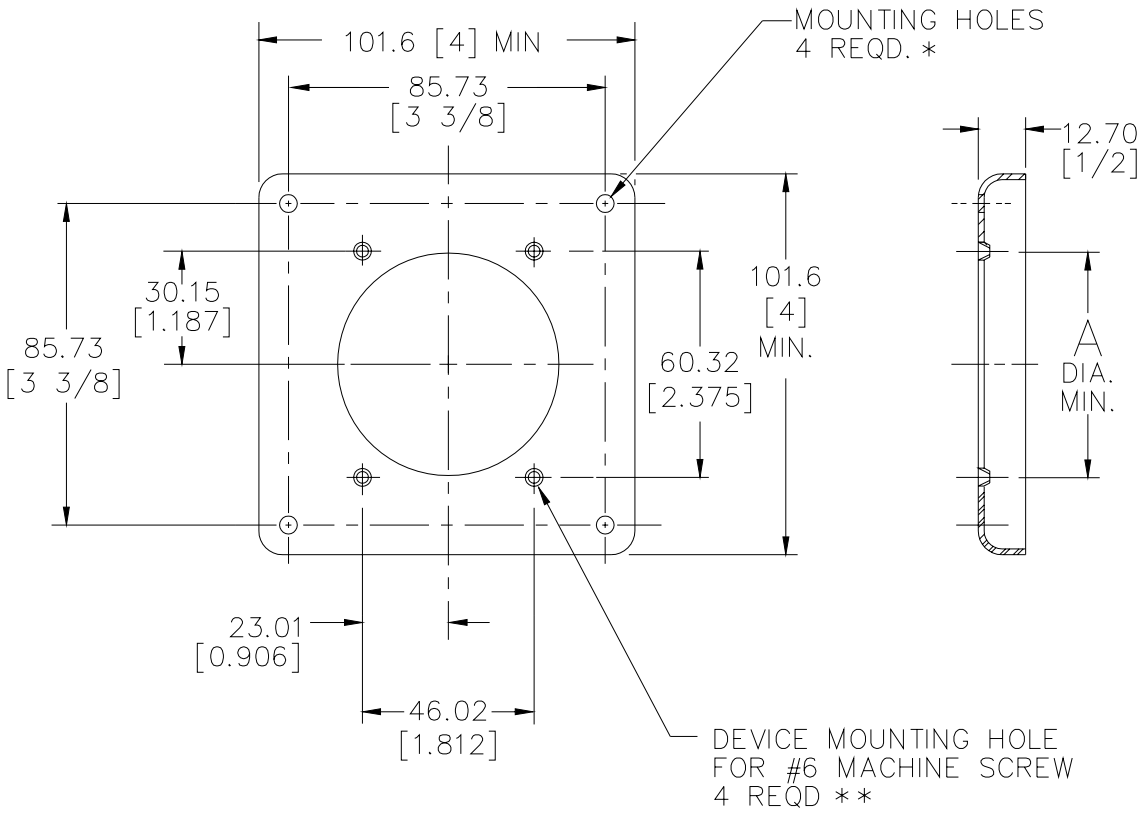


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 326
SURFACE COVER FOR TWO DUPLEX RECEPTACLES FOR 4" SQUARE BOX

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ITEM	A MIN.	
1	54.36	[2.140]
2	62.28	[2.452]
3	66.68	[2.625]

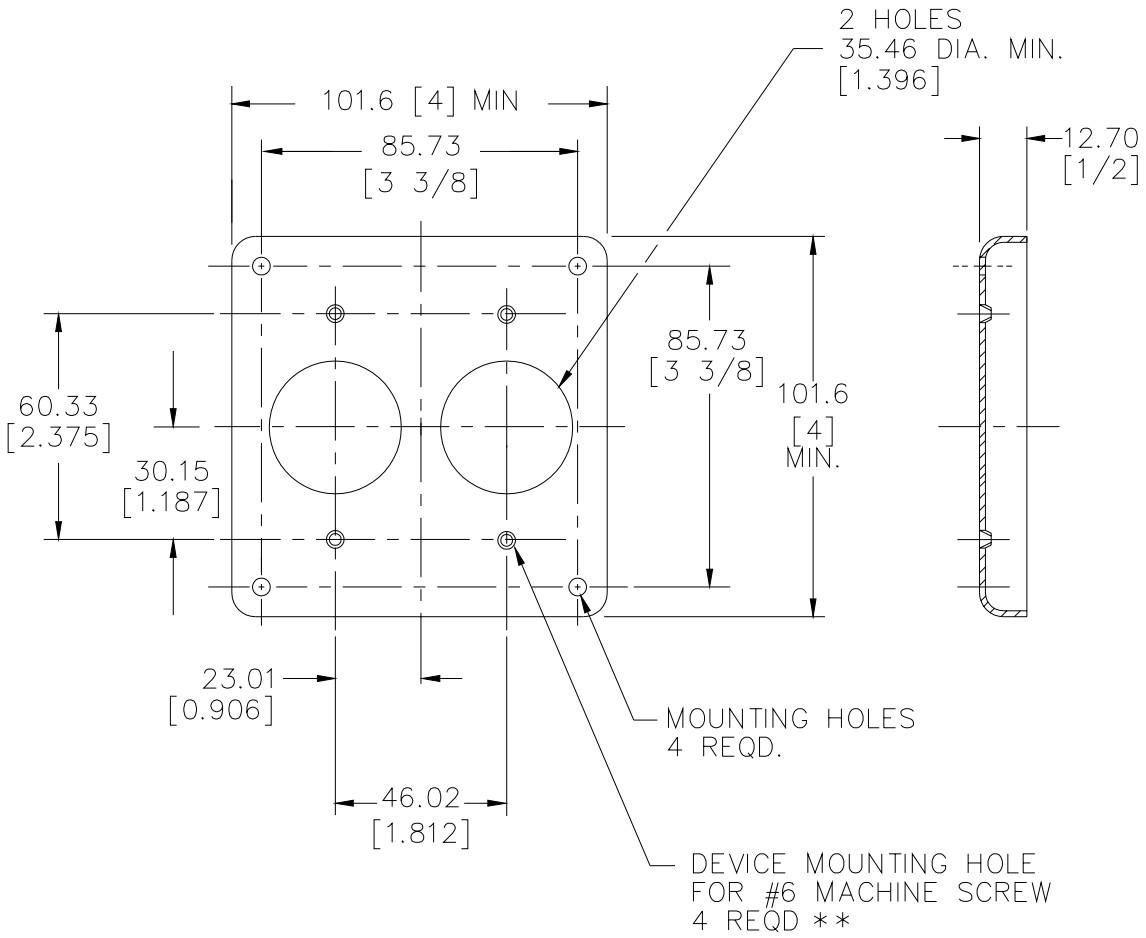
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 327

SURFACE COVER FOR 30-50-60 AMPERE AND 3-WIRE RECEPTACLE FOR 4" SQUARE BOX

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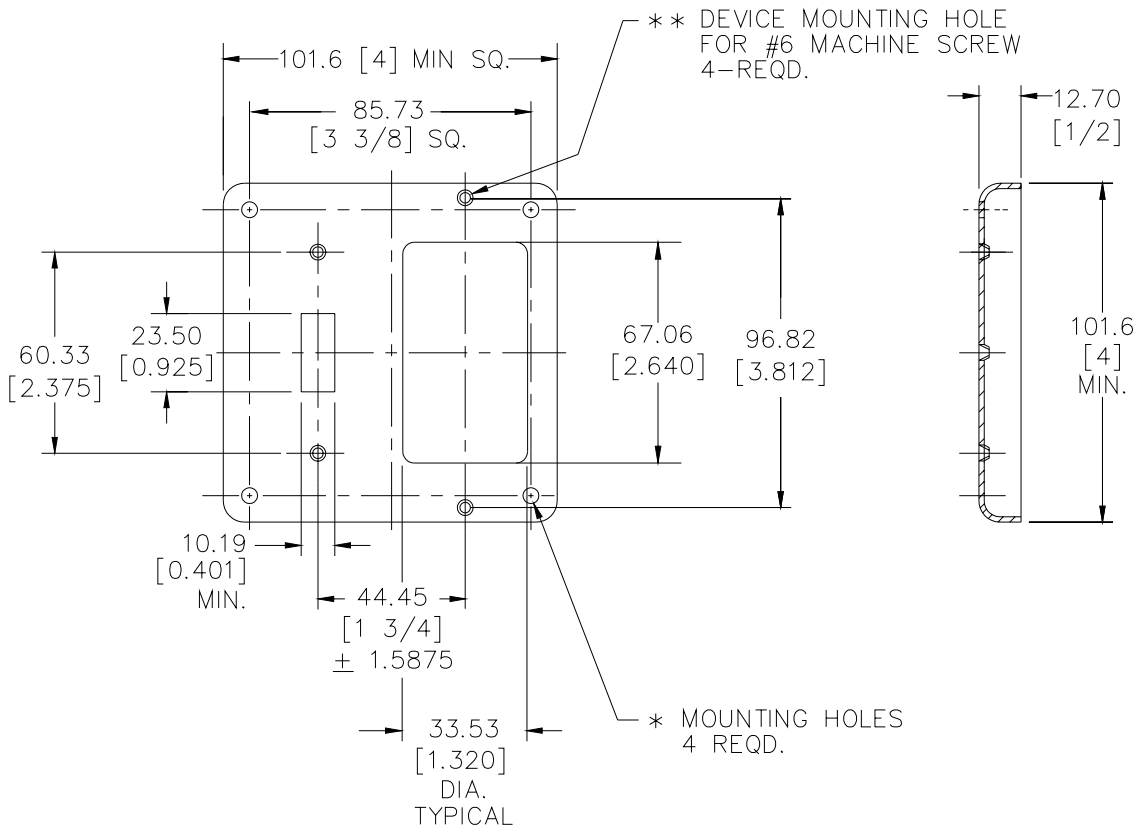


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 328
SURFACE COVER FOR TWO SINGLE RECEPTACLES FOR 4" SQUARE BOX

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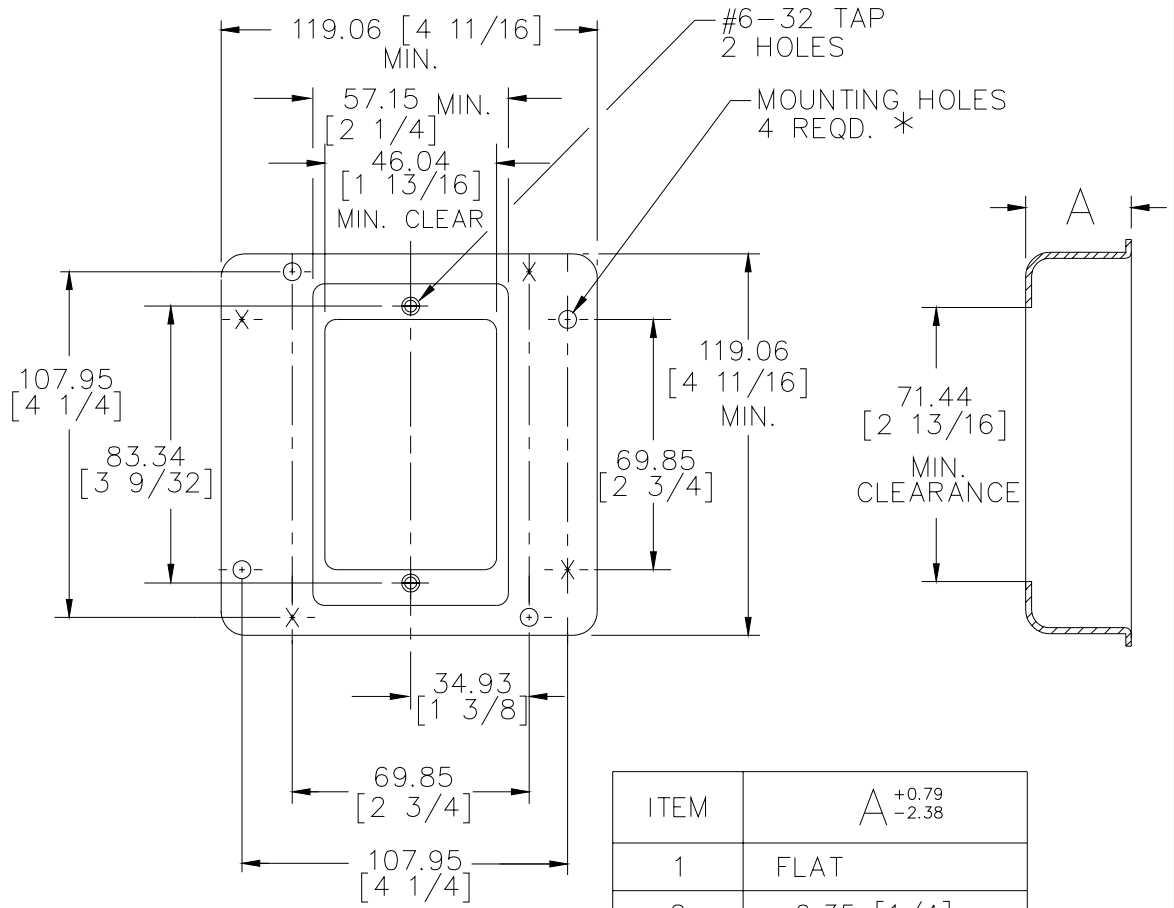


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 329
SURFACE COVER FOR ONE TOGGLE SWITCH AND ONE GFCI RECEPTACLE FOR 4" SQUARE BOX

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ITEM	$A^{+0.79}_{-2.38}$
1	FLAT
2	6.35 [1/4]
3	12.70 [1/2]
4	15.88 [5/8]
5	19.05 [3/4]
6	25.40 [1]
7	31.75 [1 1/4]

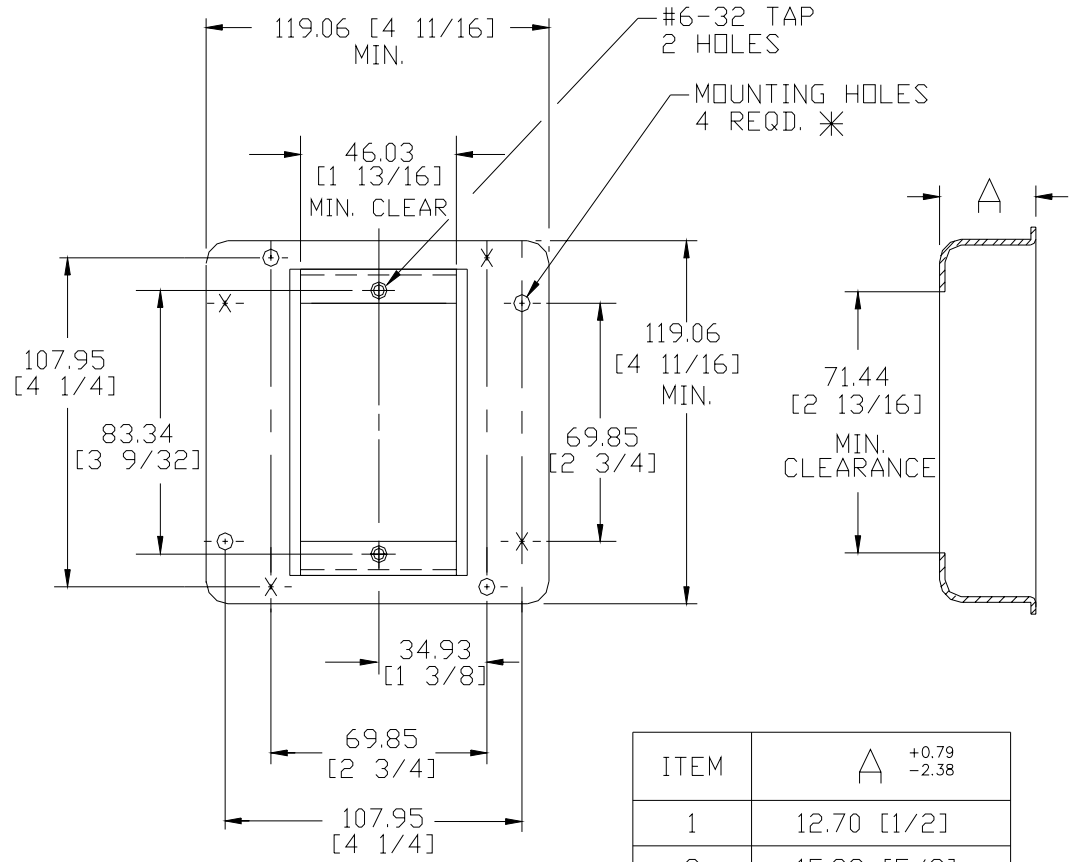
X-ALTERNATE MOUNTING HOLE LOCATION *

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 330
ONE-DEVICE COVER FOR 4 11/16" SQUARE BOX

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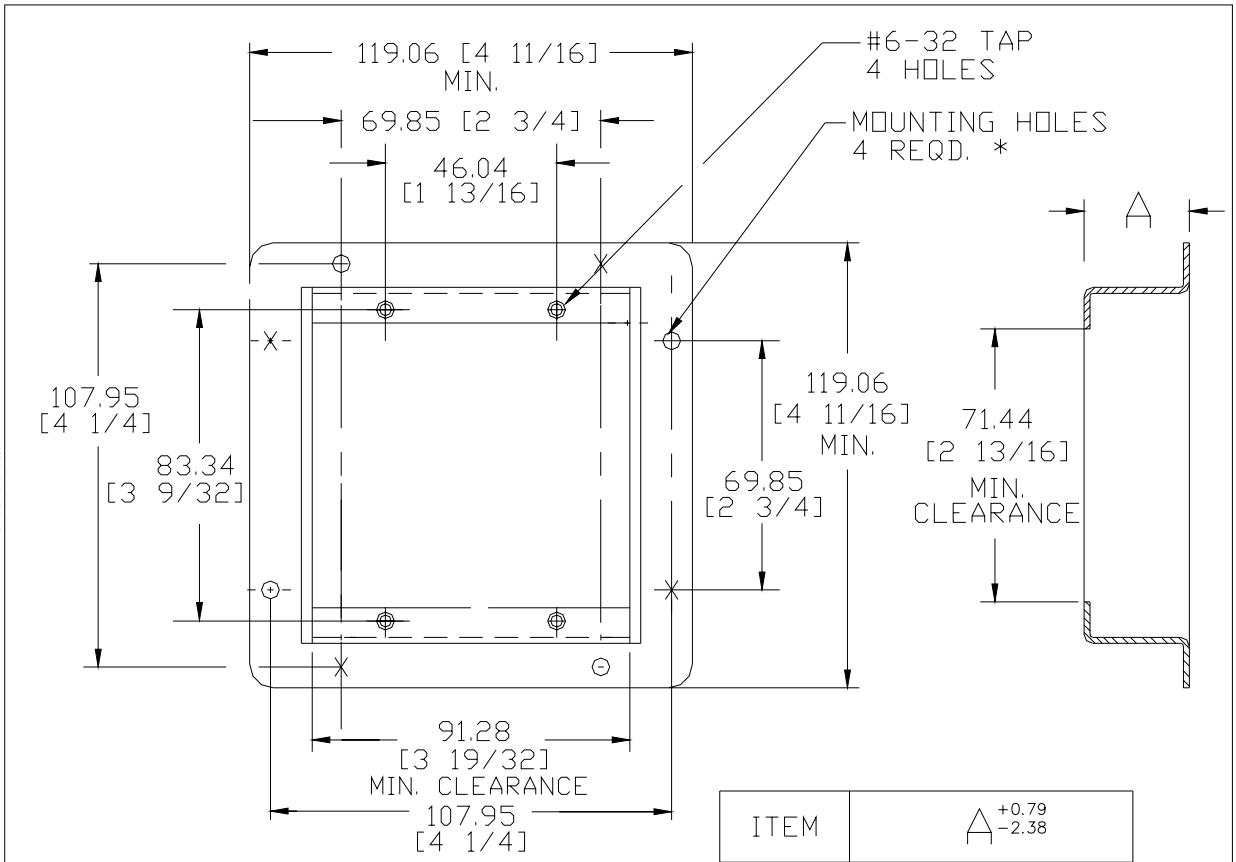
ITEM	A +0.79 −2.38
1	12.70 [1/2]
2	15.88 [5/8]
3	19.05 [3/4]
4	25.40 [1]
5	31.75 [1 1/4]
6	38.10 [1 1/2]
7	50.80 [2]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
✳ SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 332
ONE-DEVICE TILE COVER FOR 4 11/16" SQUARE BOX

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ITEM	△ +0.79 −2.38	
1	12.70	[1/2]
2	15.88	[5/8]
3	19.05	[3/4]
4	25.40	[1]
5	31.75	[1 1/4]
6	38.10	[1 1/2]
7	50.80	[2]

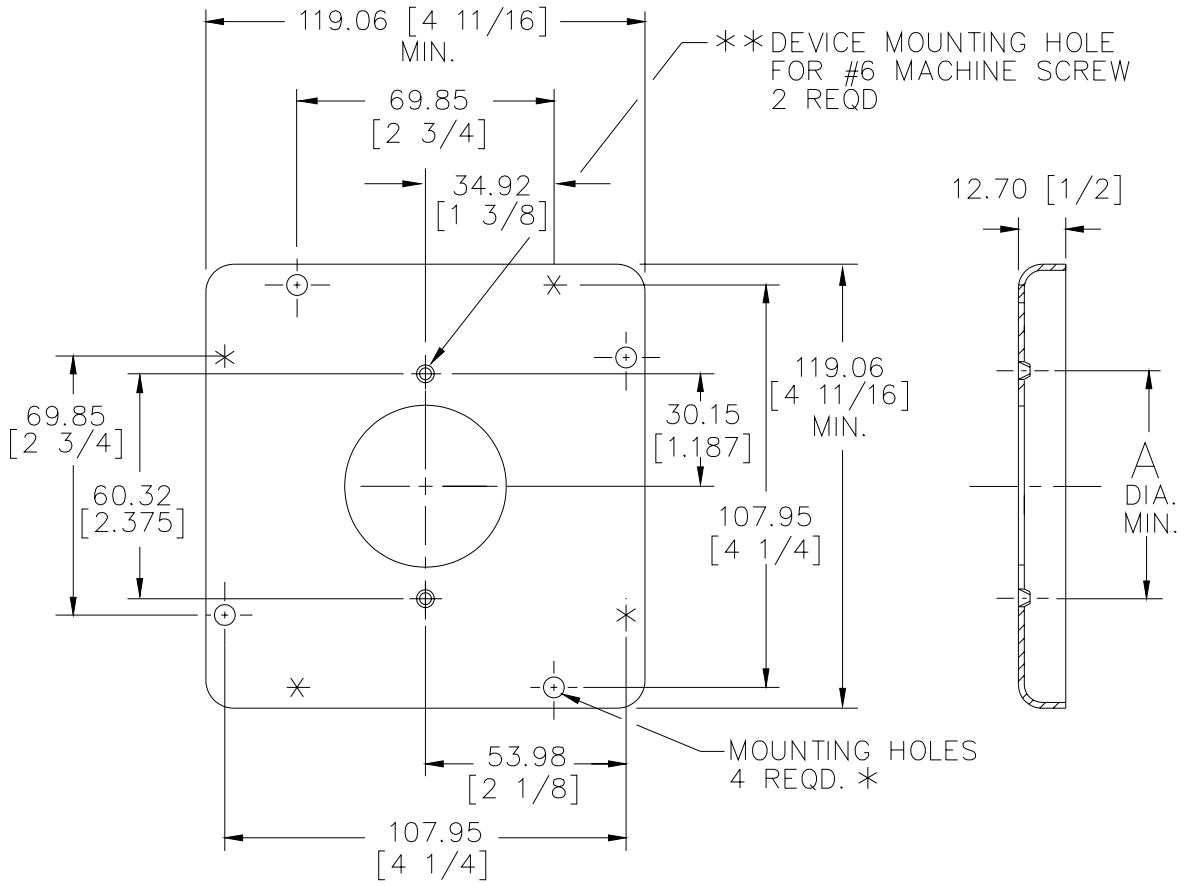
X-ALTERNATE MOUNTING
HOLE LOCATION *

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 333
TWO-DEVICE TILE COVER FOR 4 11/16" SQUARE BOX

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ITEM	A MIN.
1	35.46 [1.396]
2	40.28 [1.586]
3	43.46 [1.711]

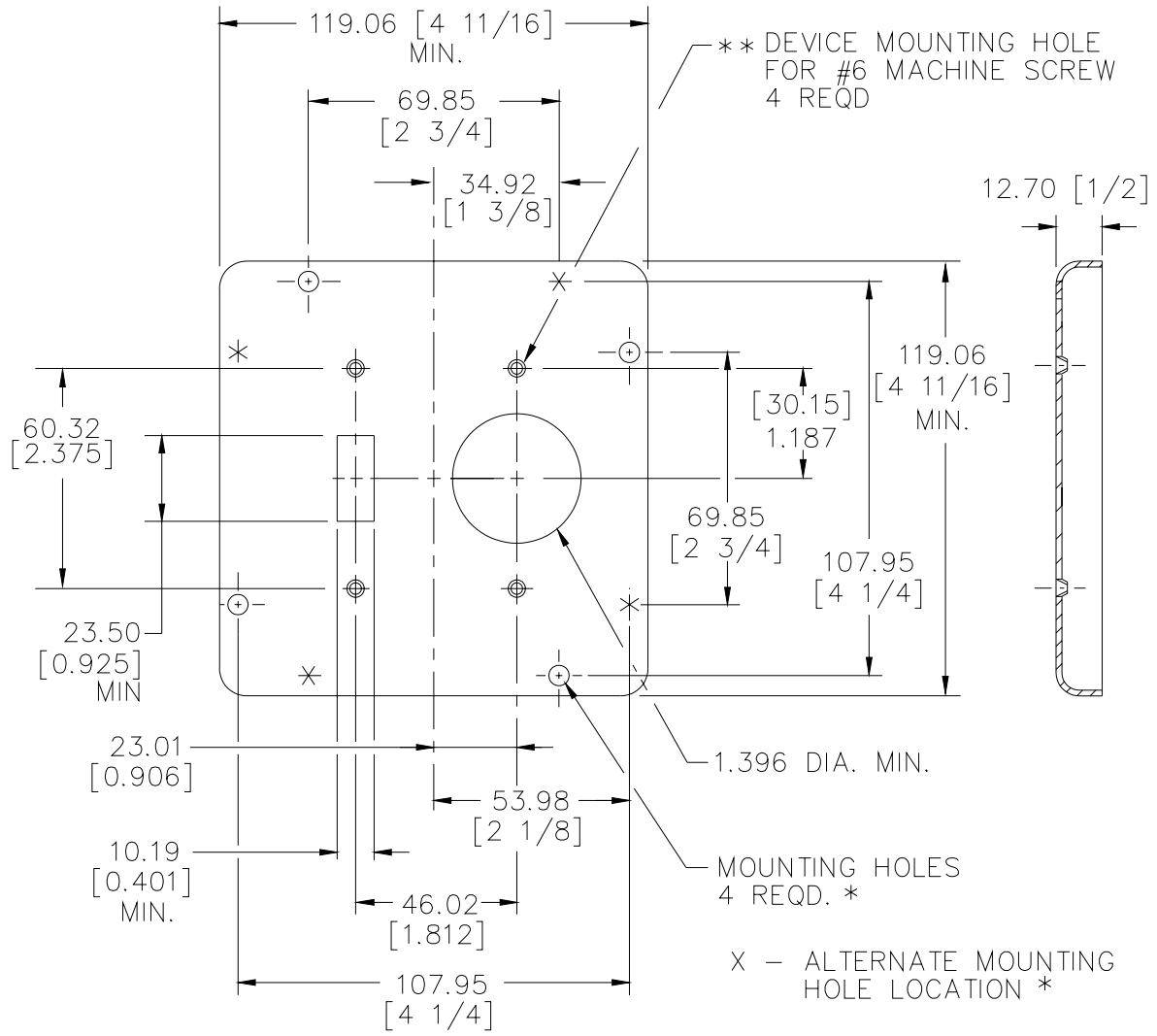
X – ALTERNATE MOUNTING HOLE LOCATION *

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 340
SURFACE COVER FOR SINGLE RECEPTACLES FOR 4 11/16" SQUARE BOX

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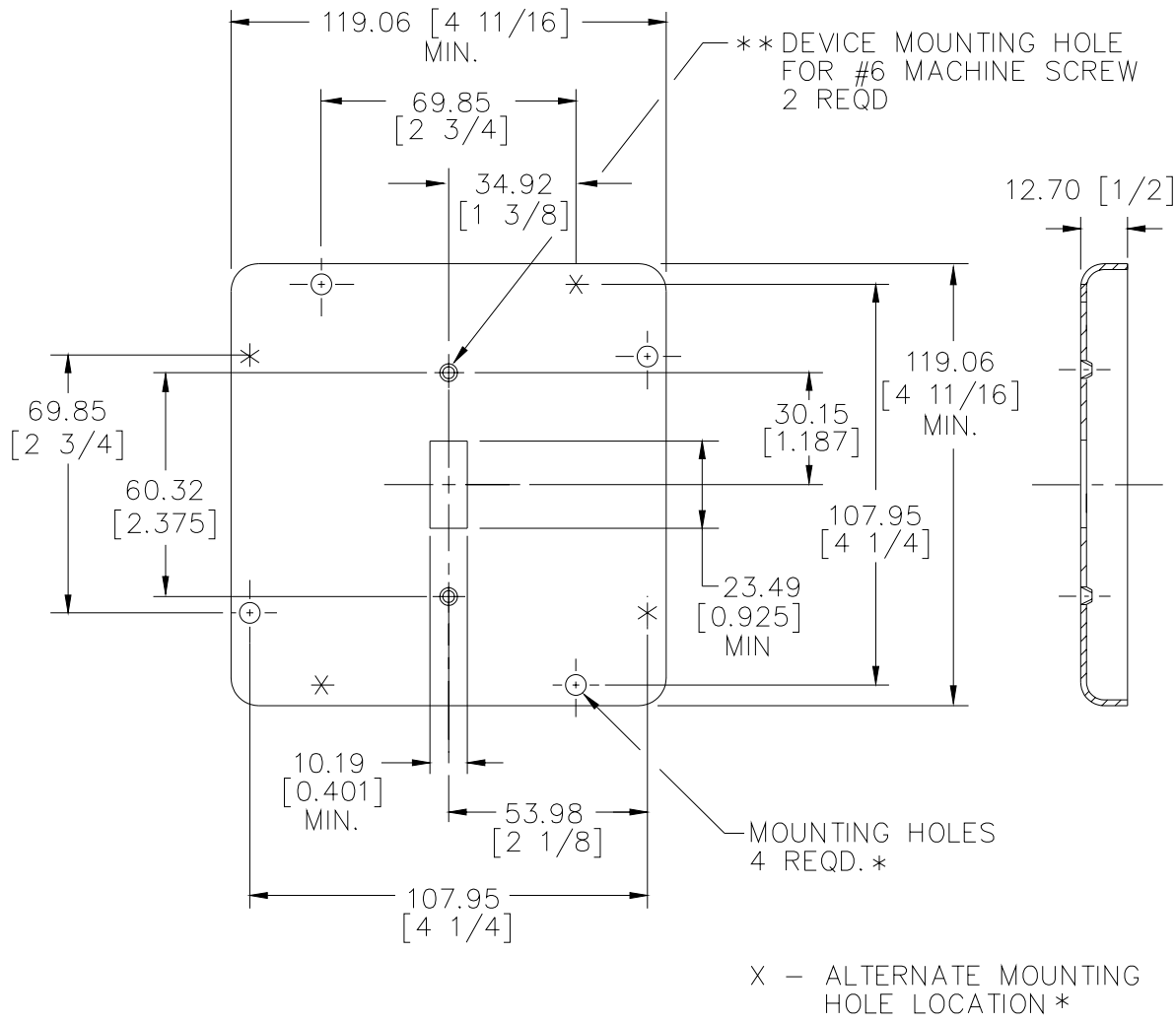


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 341
SURFACE COVER FOR ONE TOGGLE SWITCH AND ONE SINGLE RECEPTACLE FOR 4 11/16" SQUARE BOX

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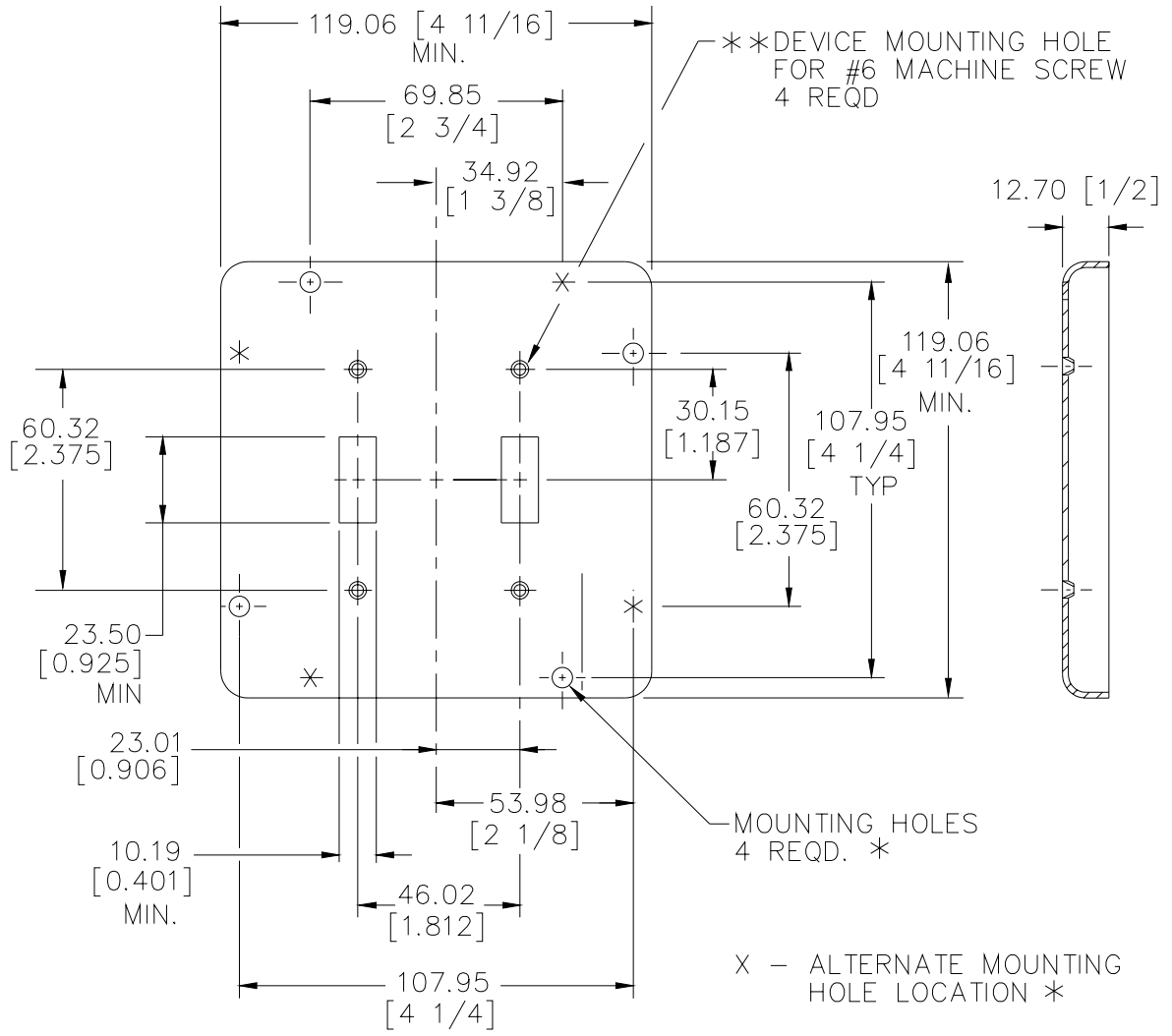


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 342
SURFACE COVER FOR ONE TOGGLE SWITCH FOR 4 11/16" SQUARE BOX

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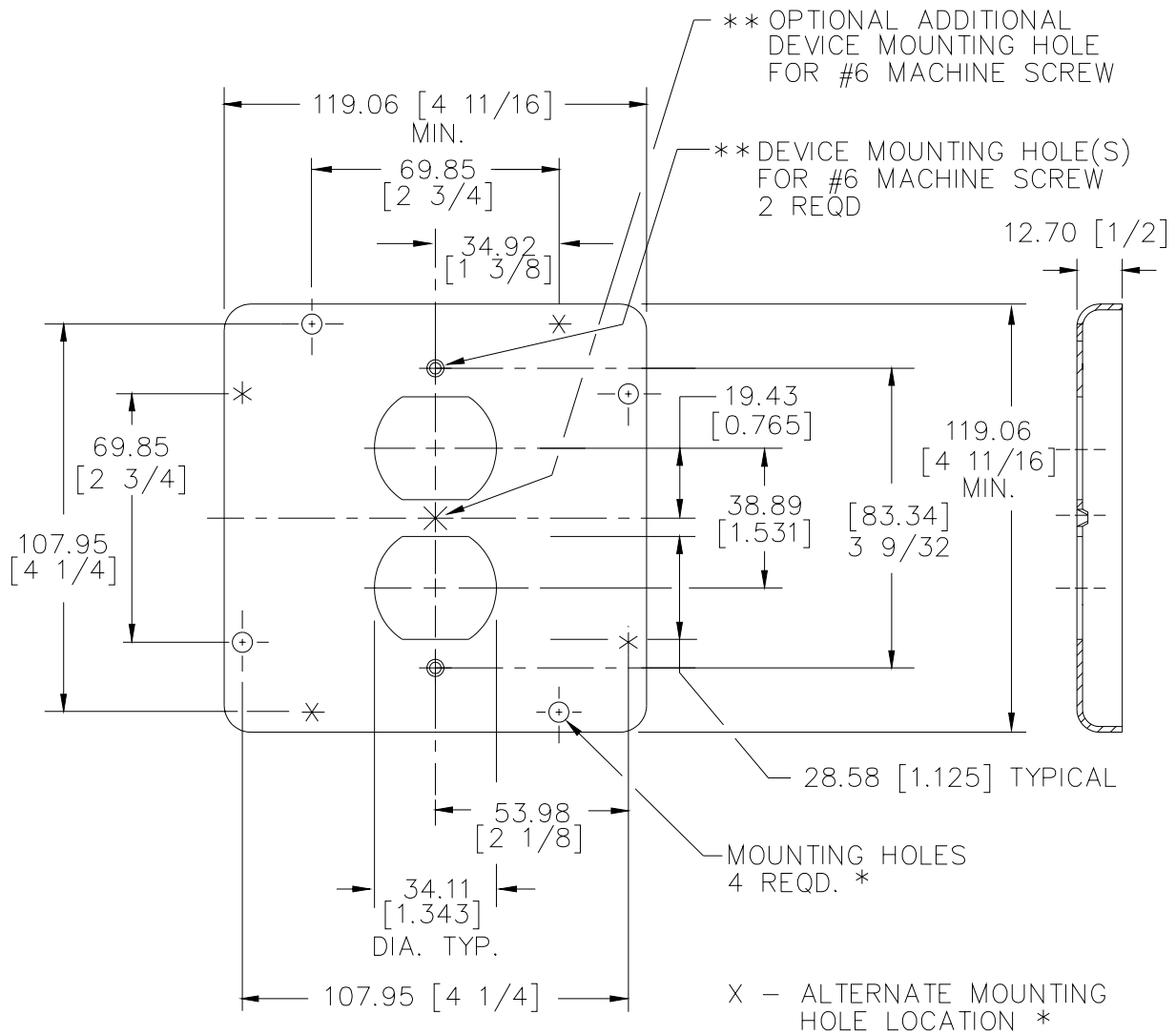


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 343
SURFACE COVER FOR TWO TOGGLE SWITCHES FOR 4 11/16" SQUARE BOX

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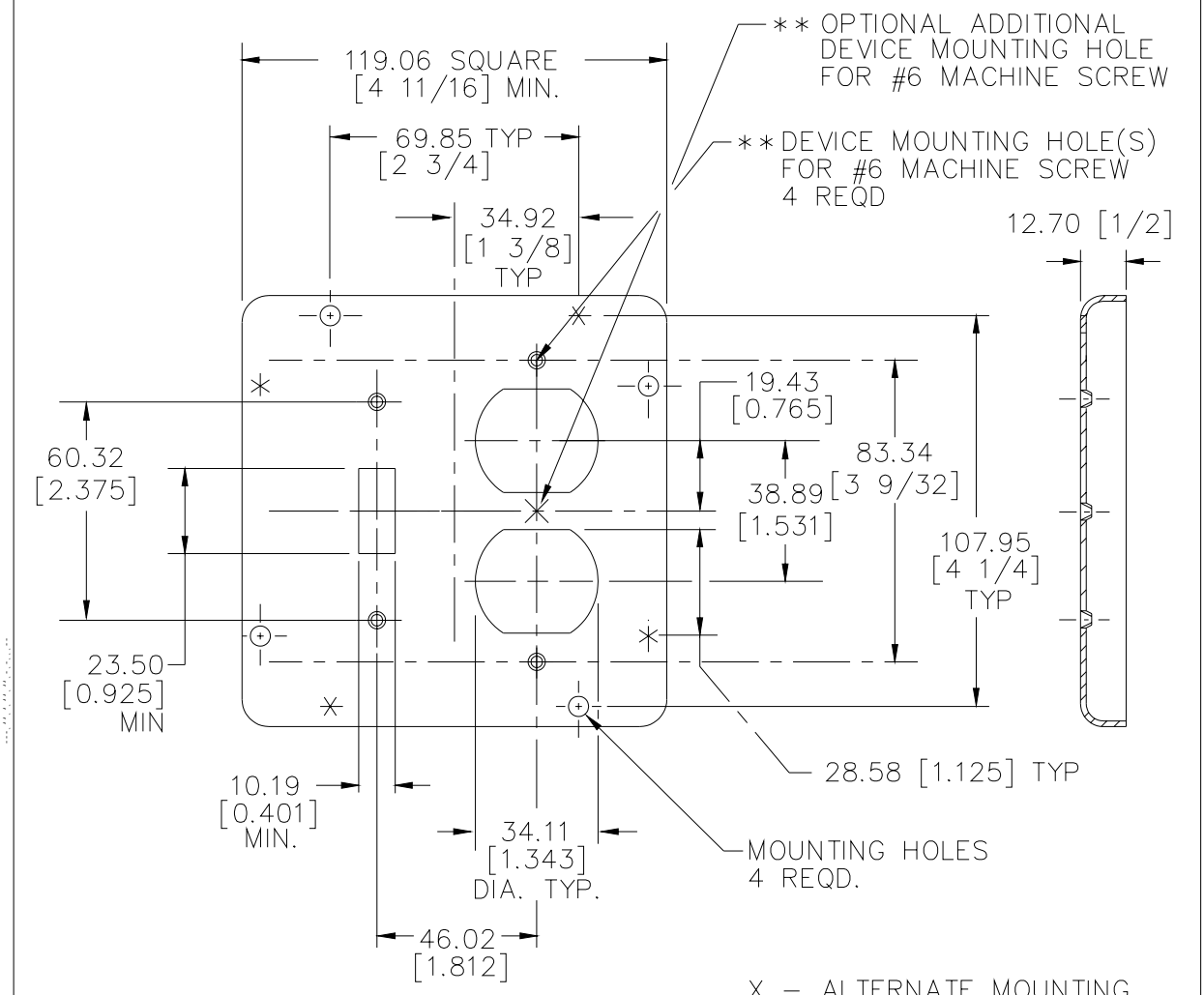


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 344
SURFACE COVER FOR ONE DUPLEX RECEPTACLE FOR 4 11/16" SQUARE BOX

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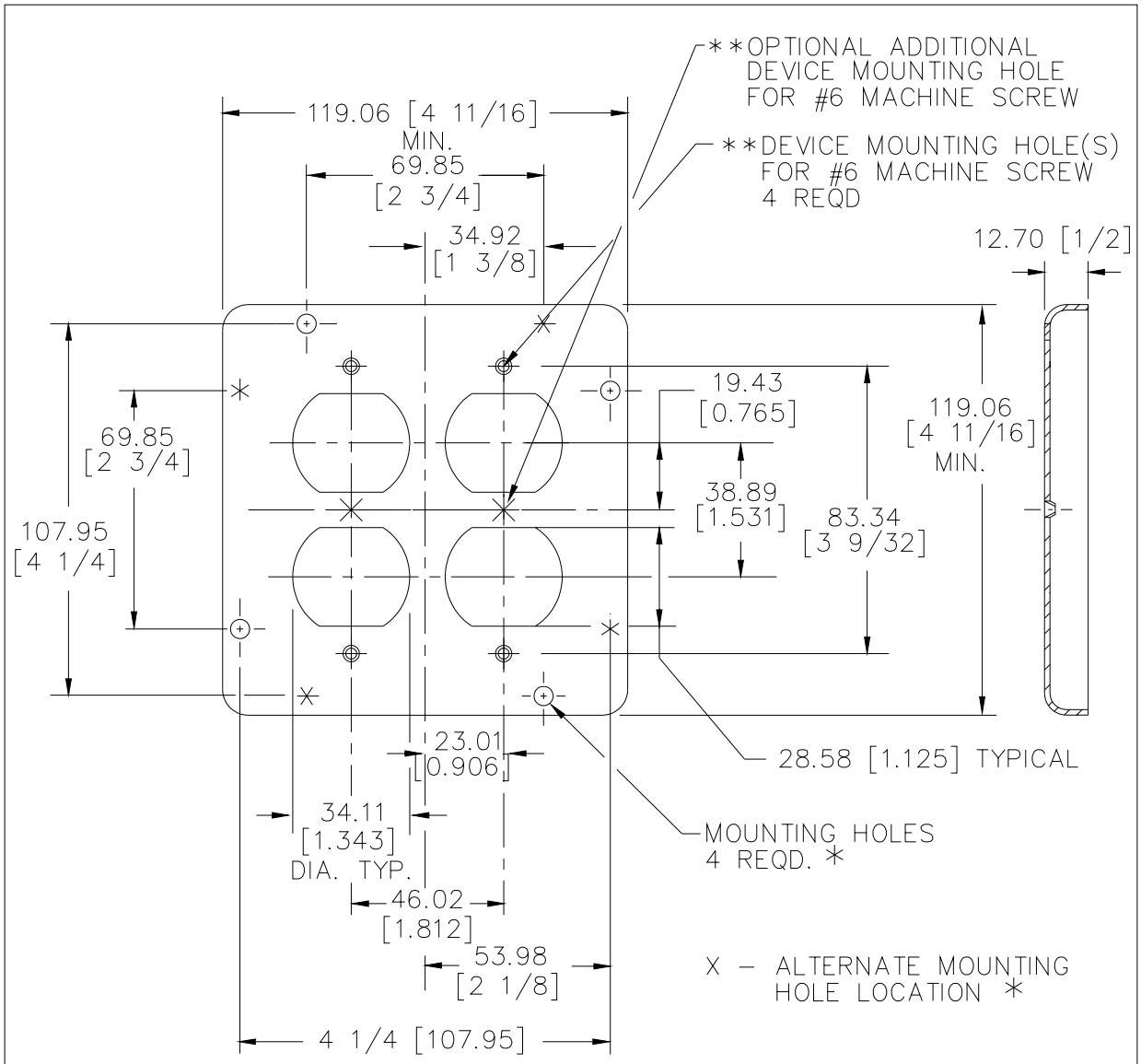


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 345
SURFACE COVER FOR ONE TOGGLE SWITCH AND ONE DUPLEX RECEPTACLE FOR 4 11/16" SQUARE BOX

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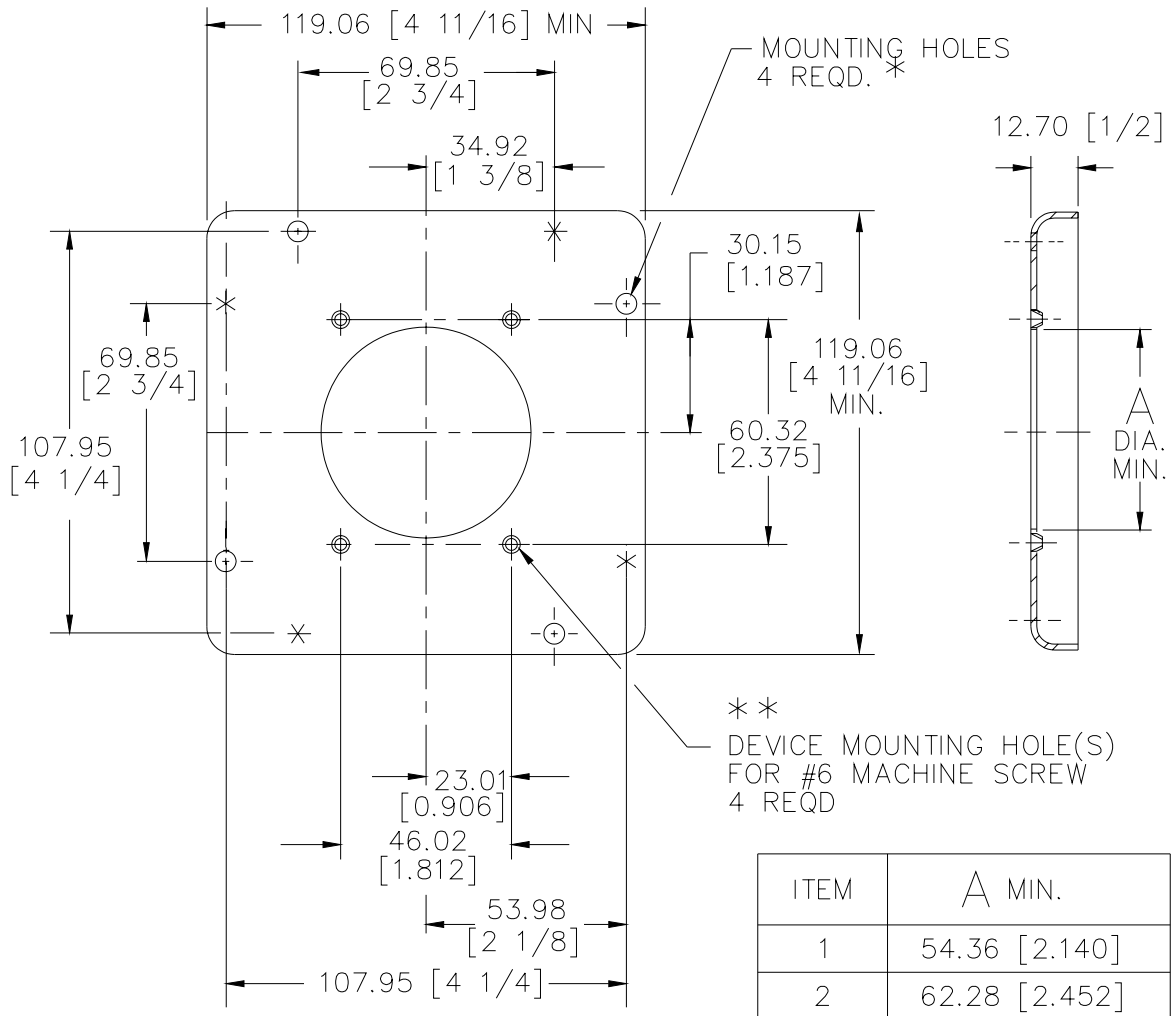


NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 346
SURFACE COVER FOR TWO DUPLEX RECEPTACLES FOR 4 11/16" SQUARE BOX

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ITEM	A MIN.
1	54.36 [2.140]
2	62.28 [2.452]
3	66.68 [2.625]

X – ALTERNATE MOUNTING
HOLE LOCATION *

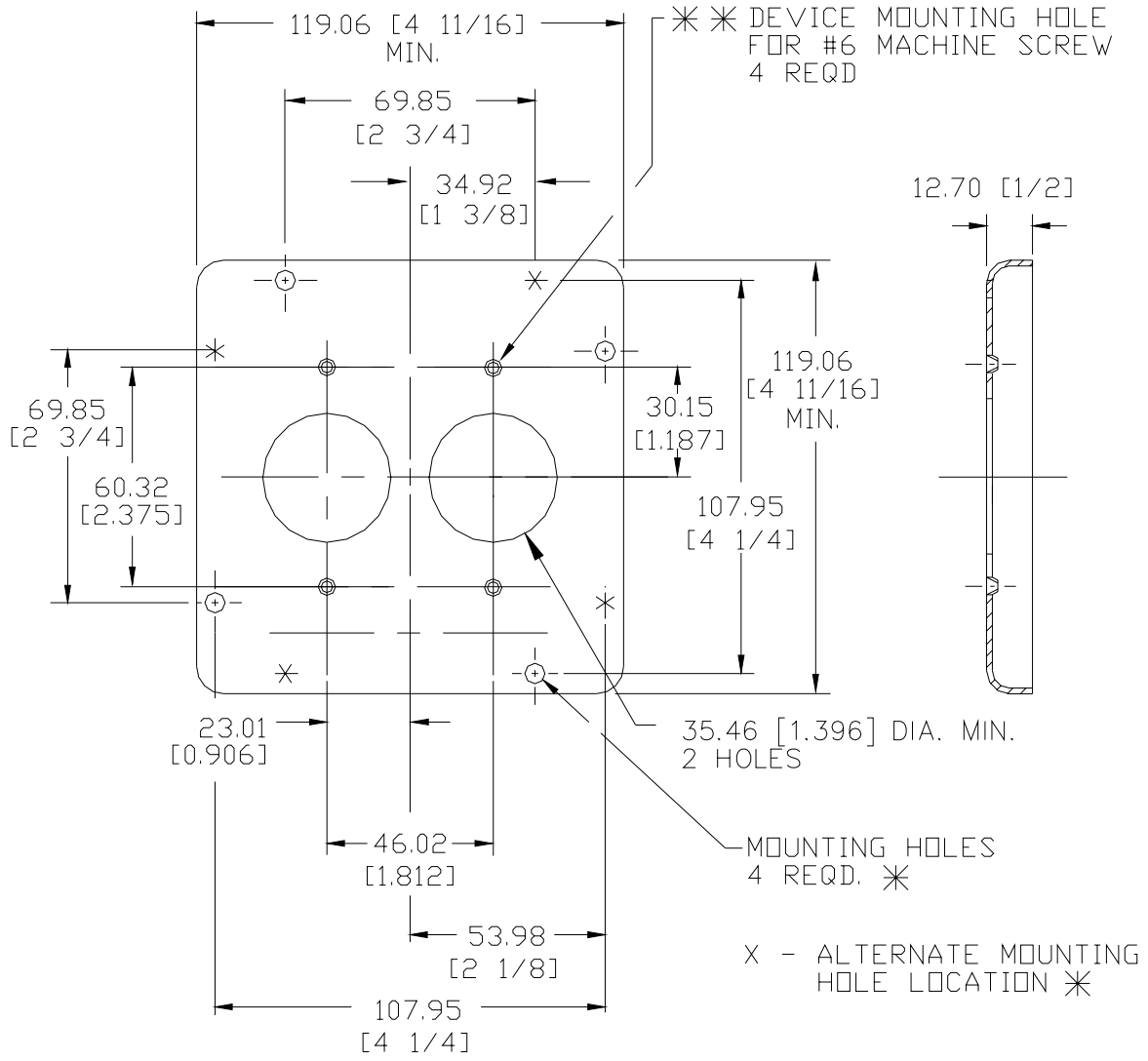
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2–6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2–7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2–9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 347

SURFACE COVER FOR 30–50–60 AMPERE AND 3–WIRE RECEPTACLE
4 11/16" SQUARE BOX

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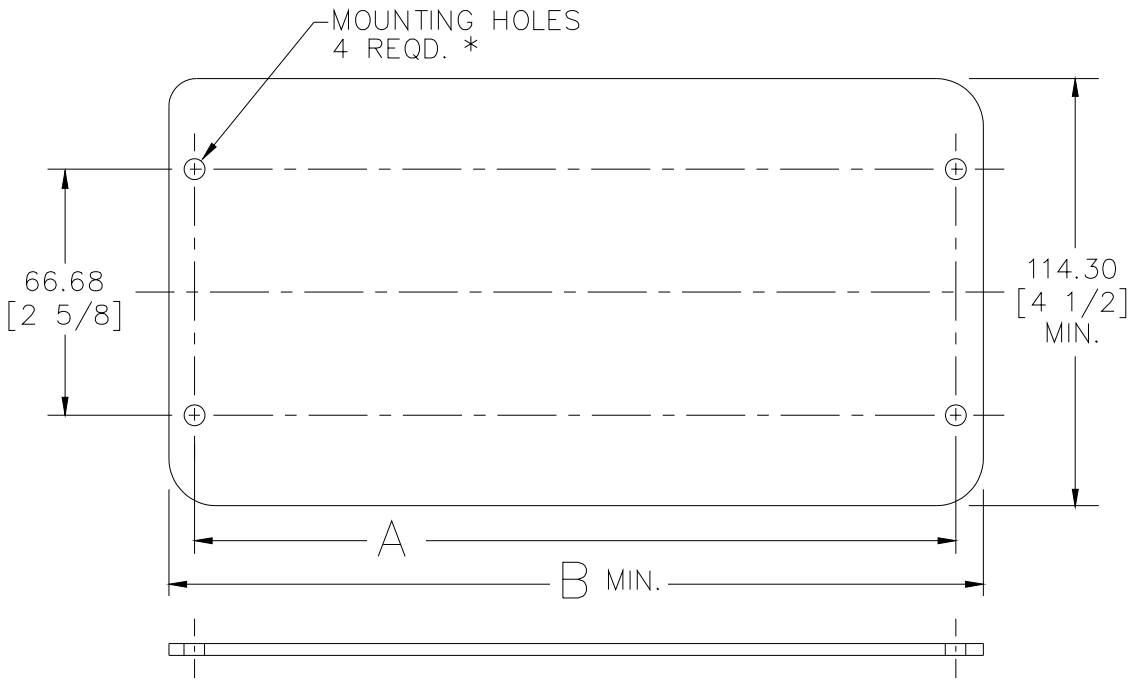
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
✳ SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
✳✳ SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS
SEE FIGURE 2-9 FOR ALTERNATE COVER CONFIGURATIONS

Figure 348

SURFACE COVER FOR TWO SINGLE RECEPTACLES FOR 4-11/16"" SQUARE BOX

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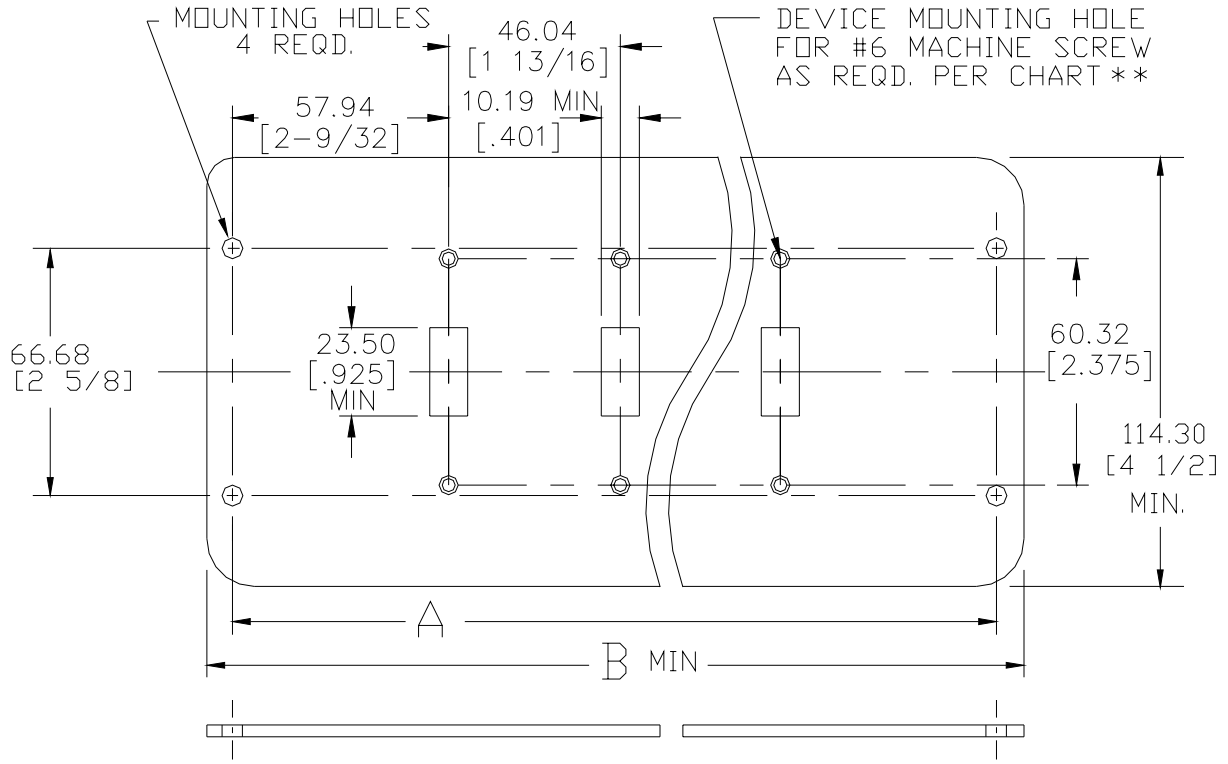
ITEM	NO. OF GANGS	A	B MIN.
1	2	161.92 [6 3/8]	173.04 [6 13/16]
2	3	207.96 [8 3/16]	219.08 [8 5/8]
3	4	254.00 [10]	265.11 [10 7/16]
4	5	300.04 [11 13/16]	311.15 [12 1/4]
5	6	346.08 [13 5/8]	357.19 [14 1/16]
6	7	392.11 [15 7/16]	403.23 [15 7/8]
7	8	438.15 [17 1/4]	449.26 [17 11/16]
8	9	484.19 [19 1/16]	495.30 [19 1/2]
9	10	530.23 [20 7/8]	541.34 [21 5/16]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 350
FLAT BLANK COVERS FOR GANG BOXES

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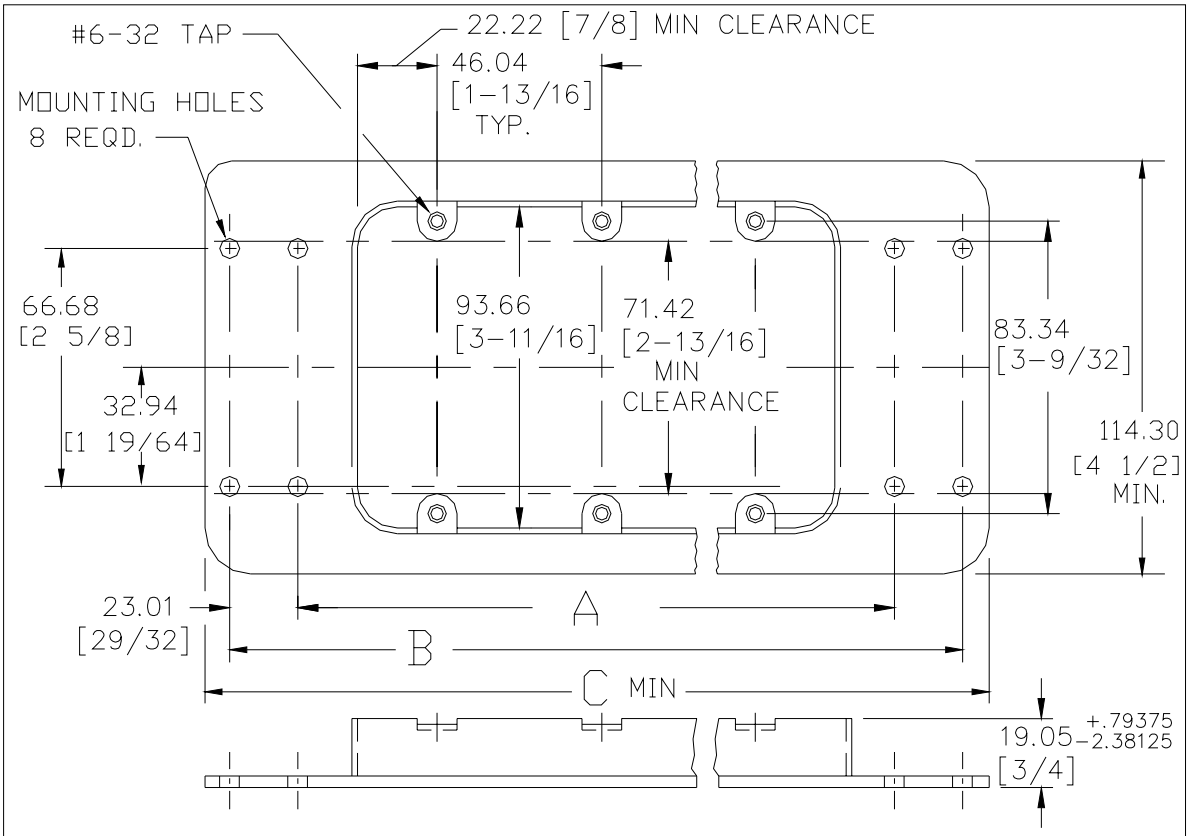
ITEM	NO. OF GANGS	A	B MIN.
1	2	161.92 [6 3/8]	173.04 [6 13/16]
2	3	207.96 [8 3/16]	219.08 [8 5/8]
3	4	254.00 [10]	265.11 [10 7/16]
4	5	300.04 [11 13/16]	311.15 [12 1/4]
5	6	346.08 [13 5/8]	357.19 [14 1/16]
6	7	392.11 [15 7/16]	403.23 [15 7/8]
7	8	438.15 [17 1/4]	449.26 [17 11/16]
8	9	484.19 [19 1/16]	495.30 [19 1/2]
9	10	530.23 [20 7/8]	541.34 [21 5/16]

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS
** SEE FIGURE 2-7 FOR ALTERNATE DEVICE MOUNTING HOLE DESIGNS

Figure 351
FLAT BLANK COVERS FOR GANG BOXES

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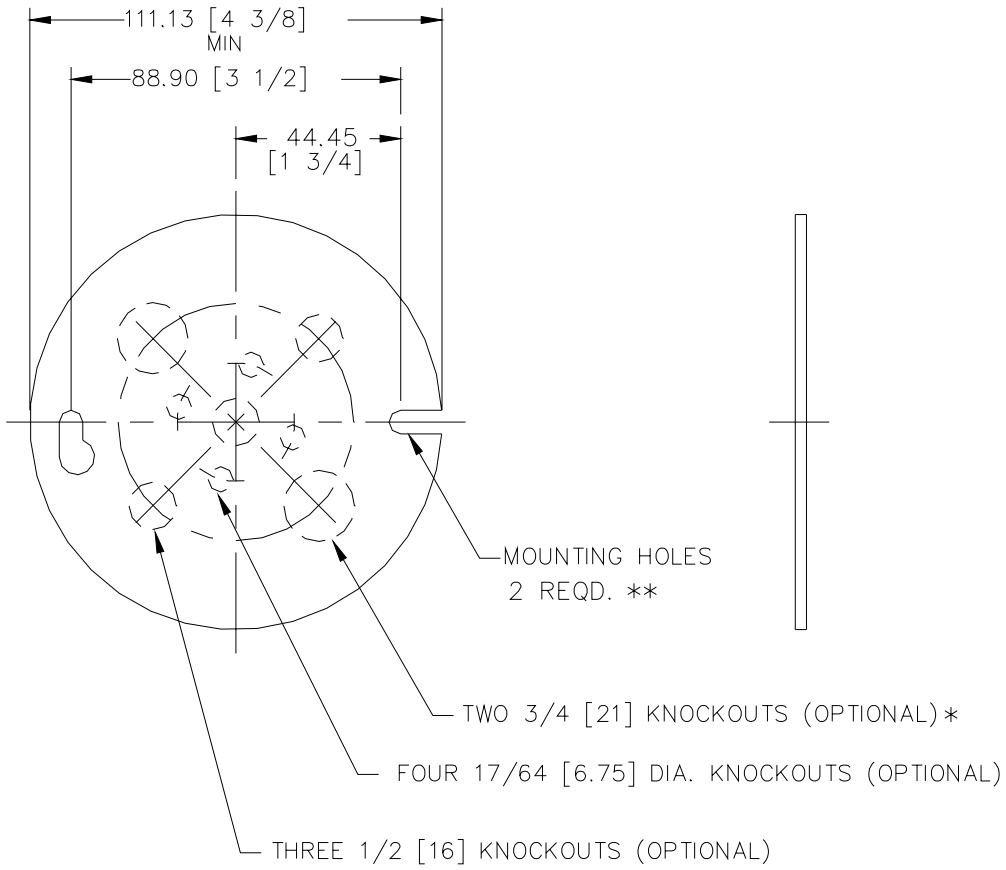
ITEM	NO. OF GANGS	A	B	C MIN.
1	2	115.89 [4 9/16]	161.93 [6-3/8]	173.04 [6 13/16]
2	3	161.93 [6 3/8]	207.96 [8-3/16]	219.07 [8 5/8]
3	4	207.96 [8 3/16]	254.00 [10]	265.11 [10 7/16]
4	5	254.00 [10]	300.04 [11-13/16]	311.15 [12 1/4]
5	6	300.04 [11 13/16]	346.08 [13-5/8]	357.19 [14 1/16]
6	7	346.08 [13 5/8]	392.11 [15-7/16]	403.22 [15 7/8]
7	8	392.11 [15 7/16]	438.15 [17-1/4]	449.26 [17 11/16]
8	9	438.15 [17 1/4]	484.19 [19-1/16]	495.30 [19 1/2]
9	10	484.19 [19 1/16]	530.23 [20-7/8]	541.34 [21 5/16]

NOTE:
ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 352
RAISED COVERS FOR GANG BOXES

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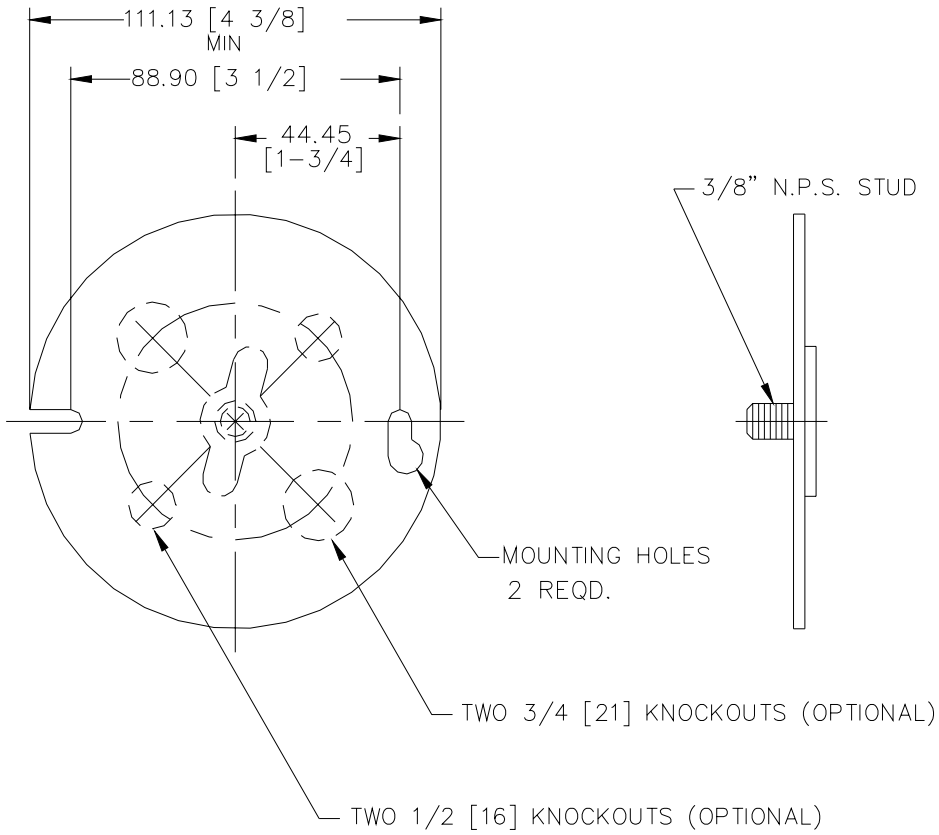
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS
** SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

Figure 360

CONCRETE BACKPLATE COMBINATION 1/2[16] AND 3/4[21] KNOCKOUTS (OPTIONAL)

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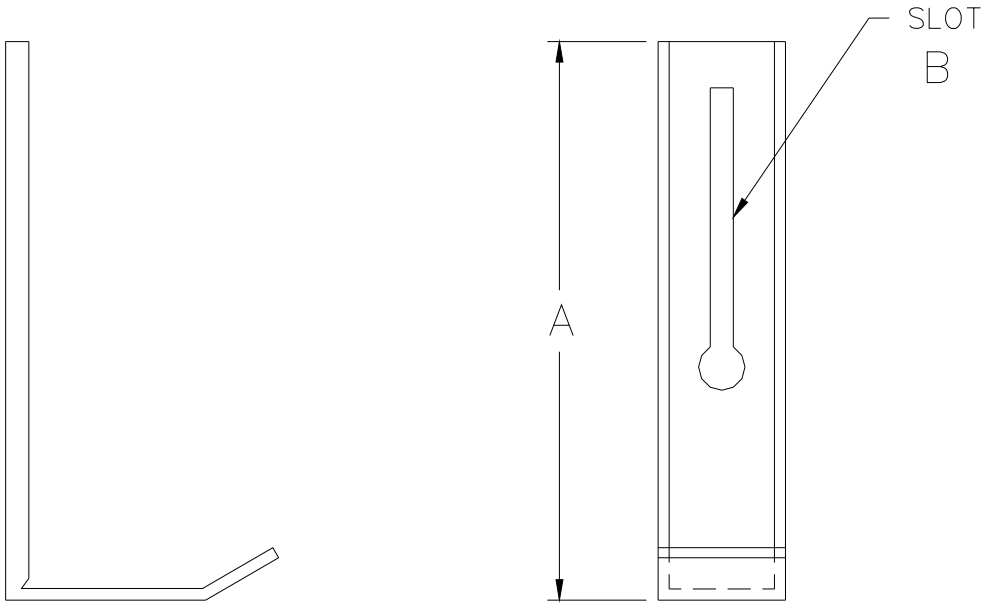
NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].
* SEE FIGURE 2-5 FOR ALTERNATE KNOCKOUT CONFIGURATIONS
** SEE FIGURE 2-6 FOR ALTERNATE COVER MOUNTING HOLE DESIGNS

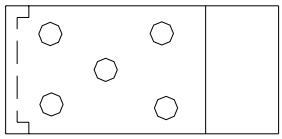
Figure 361

CONCRETE BACKPLATE WITH STUD, 1/2[16] AND 3/4[21] KNOCKOUTS (OPTIONAL)

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ITEM	A	B
1	304.80 [12]	YES
2	304.80 [12]	NONE
3	508.00 [20]	YES
4	508.00 [20]	NONE
5	762.00 [30]	YES

NOTE:
ALL DIMENSIONS IN MILLIMETERS AND [INCHES].

Figure 400
BOX AND CONDUIT SUPPORT

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