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NEMA OS 1-1989

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Standards Publication No. OS 1

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

NEMA

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION ■ 2101 L STREET, N.W., WASHINGTON, D.C. 20037

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NEMA OS 1-1989

OS 1

SHEET-STEEL OUTLET BOXES, DEVICE BOXES, COVERS, AND BOX SUPPORTS

Published by

National Electrical Manufacturers Association
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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 which are in 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:

1. Environmental conditions
2. System design
3. Equipment selection and application
4. Installation
5. Operating practices
6. 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 with 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.

The publication will be reviewed periodically by the Outlet and Switch Box Section of NEMA 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
2101 L Street, N.W., Suite 300
Washington, D.C. 20037

OS1-1989 revises and supersedes OS 1-1984. New or revised portions of the text are followed by their appropriate designations (NEMA Standard, Authorized Engineering Information, or Suggested Standard for Future Design) and the approval date of 11-17-1989.

*ANSI/NFPA 70-1990. Copies are available from the National Fire Protection Association, Batterymatch Park, Quincy, MA 02269, or from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

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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 Underwriters Laboratories Inc.'s *Metallic Outlet Boxes,* 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 100 cubic inches in volume except multiple gang device boxes.

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Section 1
DEFINITIONS

A *box support* is a means of securing an outlet or device box to the building structure. Supports shall be permitted to be an integral part of the box, attached to the box, or entirely separate.

NEMA Standard 11-16-1972.

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

1. A *gangable device box* is designed to permit the removal of one or both sides of the box to join (or gang) as many sections as required, while maintaining a high degree of strength and rigidity.
2. A *nongangable device box* has permanently affixed sides.
3. A *thru-wall box* is open at both front and back to permit the mounting of a flush device on each side of a partition.
4. A *tile-wall box* has square corners and no ears for use in tile, masonry, or marble walls.

NEMA Standard 11-17-1989.

An *extension ring* (which need not be round) is intended to extend the sides of an outlet box or flush device box to increase the box depth.

NEMA Standard 11-17-1989.

An *outlet box* is used in an electrical wiring system for containing wire, taps, splices, or devices. It has provisions for the entry of conduit or cable assemblies and for the attachment of a separate cover which is used to close the box or provide support for devices or fixtures. With the cover in place, the enclosure guards live parts against accidental contact and protects the environment from faults occurring within the enclosure.

NEMA Standard 11-17-1989.

NOTE: An outlet box is made of metal or suitable nonmetallic material. The function of an outlet box when completely closed by a cover, which may or may not be part of a wiring device, is to guard live parts against outside accidental contact, to protect the surrounding environment from faults occurring within the enclosure, to permit inspection of the wiring system, and to provide a safe means for replacement of wiring devices. Normally, outlet boxes have provisions in the side, ends, and bottom for the entrance of conductors through conduit, cable, or tubing. Outlet boxes also have 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 fixture assemblies and lamp holders.
b. Access to the raceway system for which it is designed.
c. Extension of existing raceway or wiring system.
d. Ground continuity through the raceway or wiring system for which it is designed.
e. Utilization of accessories like fixture studs, clamps, bar hangers, extension rings, and so forth.

Authorized Engineering Information 11-8-1973.

The term *outlet box* includes the following specific types:

1. A *cable box* is provided with clamps for use with cable or flexible nonmetallic tubing.
2. A *concrete box* is especially intended for support in concrete. It shall be permitted to be constructed to allow end-to-end extension and the application of covers on two sides. This box is not intended for floor installation.
3. A *conduit box* is designed for connection to rigid metal or nonmetallic conduit, electrical metallic or nonmetallic tubing, flexible metal conduit, cable, flexible nonmetallic tubing, or liquid tight conduit.
4. A *floor box* is specifically designed for flush installation in a floor.
5. A *gang box* is designed to accept one or more devices and has provisions for the installation of one or more removable partitions.
6. A *hung-ceiling box* consists of a ring and a back plate with supporting bars (see 2.4.4) 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.
7. An *outlet box cover* is intended to provide closure for the face of a box. The cover may or may not support or be provided with means for support of a wiring device, pendant cord, and so forth.

NEMA Standard 11-17-1989.

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Section 2
GENERAL

2.1 MATERIAL

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

1. The minimum thickness at or within 1/4 inch of any right-angle bend in a drawn sheet-steel box shall be 0.041 inch.
2. The average thickness of the sides and ends (see 2.9) of a drawn box shall be permitted to be 0.058 inch based on three measurements made on the side and end of the box not less than 3/4 inch 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 1/4 inch from the front, at a point 1/4 inch from the right-angle bend at the back, and at a point equidistant between the two.

NEMA Standard 5-16-1984.

2.2 CORROSION PROTECTION

All 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, pierced holes and cut edges formed from zinc-coated stock, and bar 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 0.0005 inch nor a minimum of 0.0004 inch on box supports, external clamps, and the outside surface of boxes and covers.

NOTE: See UL 514A for method of determining compliance. (This note approved as Authorized Engineering Information.)

2.2.2 Inside Surfaces

The average thickness of a zinc coating shall be not less than 0.00015 inch nor a minimum of less than 0.0001 inch on internal clamps and the inside surface of boxes and covers.

NOTE: See UL 514A for method of determining compliance. (This note approved as Authorized Engineering Information.)

2.2.3 Screws

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

NEMA Standard 11-17-1989.

2.3 OPENINGS

2.3.1 Conduit Knockouts

Conduit knockout openings which are 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 so that locknuts, bushings, or connectors, when in position, shall be permitted to be seated against these surfaces.

NEMA Standard 11-16-1972.

The drawings in this publication illustrate the minimum number of conduit knockouts considered adequate in a side, end, bottom, or cover of a box. These drawings show typical knockout locations but are not intended to be required locations. Additional knockouts may be provided.

Authorized Engineering Information 11-16-1972.

2.3.2 Cable-Size Knockouts

Cable-size knockout 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. Such openings shall be located in flat surfaces. Clamps shall be installed in all cable boxes to firmly secure the cable or tubing. Cable-size knockouts shall have slots not more than 0.040 square inch in area.

NEMA Standard 11-17-1989.

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

Authorized Engineering Information 11-16-1972.

2.3.3 Diameters of Knockouts

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

NEMA Standard 5-16-1984.

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Table 2-1
DIAMETER OF KNOCKOUTS

Trade Size of Knockout	Diameter, Inches		
	Nominal	Minimum	Maximum
Cable Size[1]	0.656	0.651	0.661
1/2"	0.875	0.859	0.906
3/4"	1.109	1.094	1.141
1"	1.375	1.359	1.406
1 1/4"	1.734	1.719	1.766

[1]The maximum dimension of horseshoe-shaped cable-size knockout, 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 17/64 inch. 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.

NEMA Standard 11-17-1989.

Table 2-2
AREA OF OPEN HOLES

Type of Box	Maximum Area of Openings, Square In.		
	Total for Box	In Bottom (See 2.9)	In Any End or Side (See 2.9)
Single unit or 2 to 4 multiple-gang units . . .	0.452	0.332	0.200
5 to 7 multiple-gang units . . .	0.784	0.664	0.200
8 or more multiple-gang units	1.116	0.996	0.200

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 which is provided as a part of a box shall be so designed and constructed as to provide ample strength and rigidity.

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 0.036 inch in thickness and suitably attached to the box.

2.4.2 Stud Face Brackets

The steel of stud face brackets at the prong line shall be not less than 1 1/2 inches wide and not less than 0.0625 inch thick, or of such other dimensions as will furnish equivalent rigidity. Such brackets shall be capable of supporting a 50-pound weight for 5 minutes without breaking or pulling loose from the box.

2.4.3 Stud Side Brackets

The steel of stud side brackets shall be not less than 3/4 inch wide and not less than 0.054 inch thick, or of such other dimensions as will furnish equivalent rigidity. Such brackets shall be capable of supporting a 50-pound weight 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 3/16 x 1/2 inch in cross section or be so constructed as to be capable of supporting a 200-pound weight for 5 minutes without breaking or pulling loose from its box.

NEMA Standard 5-16-1984.

2.5 COVER SCREWS

Cover screws shall be long enough to engage at least two full threads in the metal of the ears but not so long that, when the covers are clamped securely in position, they extend into the outlet box more than 3/8 inch.

NEMA Standard 11-16-1972.

2.6 MARKINGS

2.6.1 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.*[1]

[1]ANSI NFPA 70-1990. Copies are available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, or from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

2.6.2 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, "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

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interlocking cable. Clamps which are suitable for use with all six types of materials require no marking.

NEMA Standard 11-17-1989.

2.7 GROUNDING

At least one 10-32 tapped ground screw hole shall be provided in all boxes designed for use with nonmetallic cable systems.

NEMA Standard 5-16-1984.

2.8 DIMENSIONAL TOLERANCES

Fractional dimensions shall be held to ± 1/32 inch and decimal dimensions shall be held to ± 0.010 inch unless otherwise indicated on the drawings.

NEMA Standard 11-16-1972.

2.9 FIGURES (SEE 2.3)

Figures 70 through 400 (see Table 2-3) give the sizes, dimensions, location and arrangement of knockouts, as well as other details pertaining to boxes, covers, extensions and supports. 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.

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.

Authorized Engineering Information 5-16-1984.

Figure 2-3 illustrates minimum box cover face opening.

Suggested Standard for Future Design 5-16-1984.

Figure 2-4 illustrates clearances between device box plaster ear mounting screws.

NEMA Standard 5-16-1984.

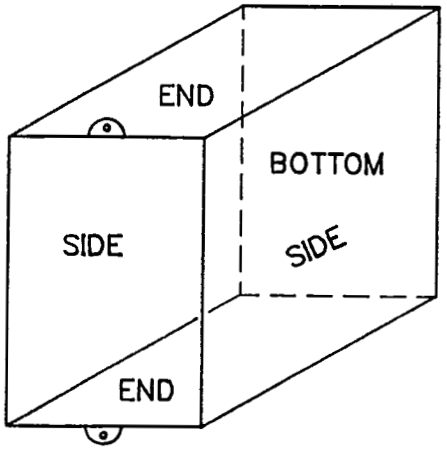


Figure 2-1
DEVICE BOX

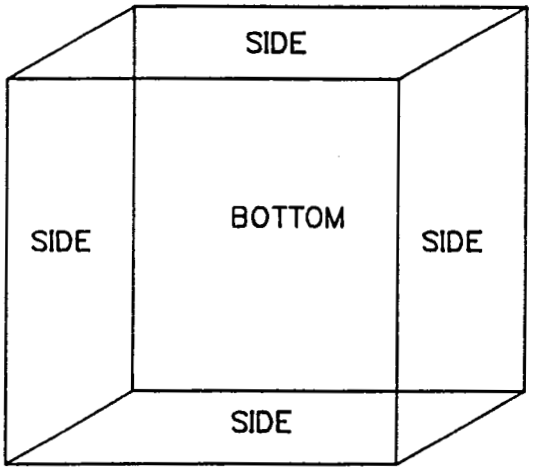
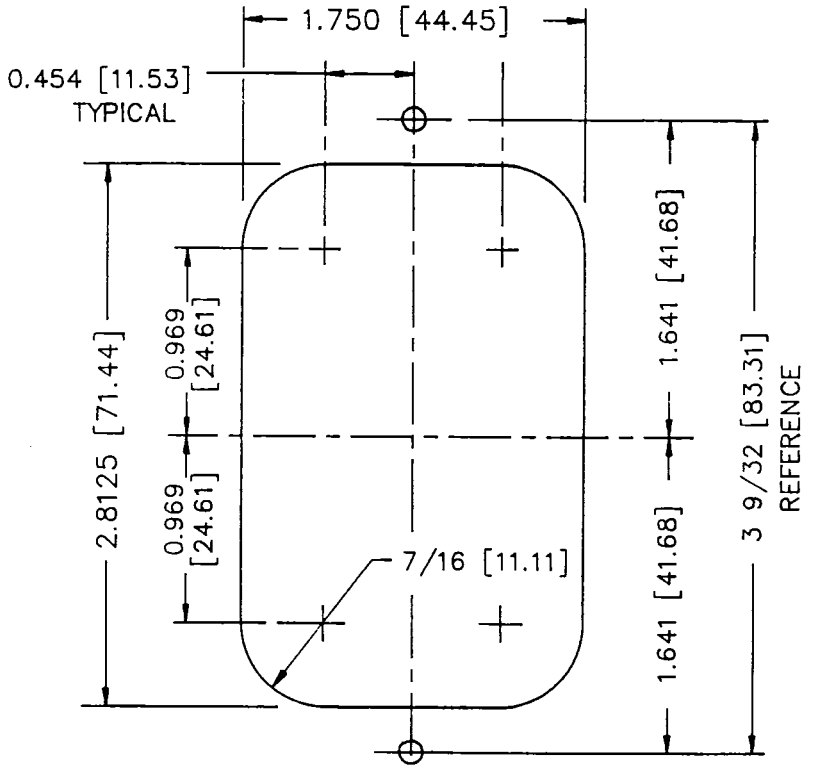


Figure 2-2
OUTLET BOX

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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].

Suggested Standard for Future Design 5-16-1984.

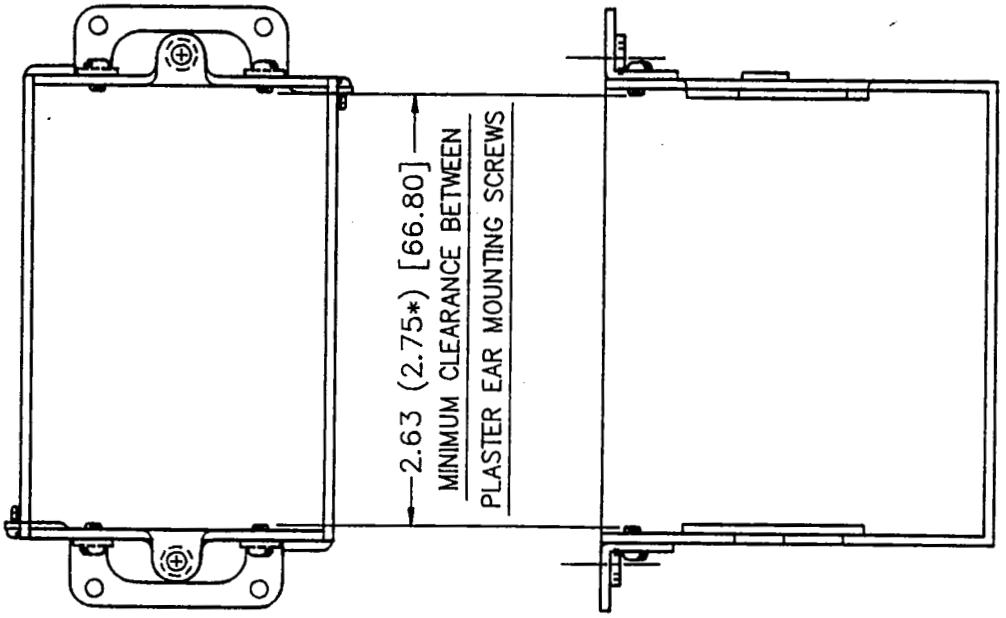
Figure 2-3
MINIMUM BOX/COVER FACE OPENING

NOTE: This standard corresponds to the Wiring Device Maximum Envelope Dimensions illustrated in NEMA Standards Publication WD 6, *Wiring Devices – Dimensional Requirements*. Available space at depths within the box may be further reduced by accessory hardware such as machine screws, nails, cable clamps, fixture studs, and so forth.

Authorized Engineering Information 5-16-1984.

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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].

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

*Dimension in parentheses is approved as a Suggested Standard for Future Design 5-16-1984.

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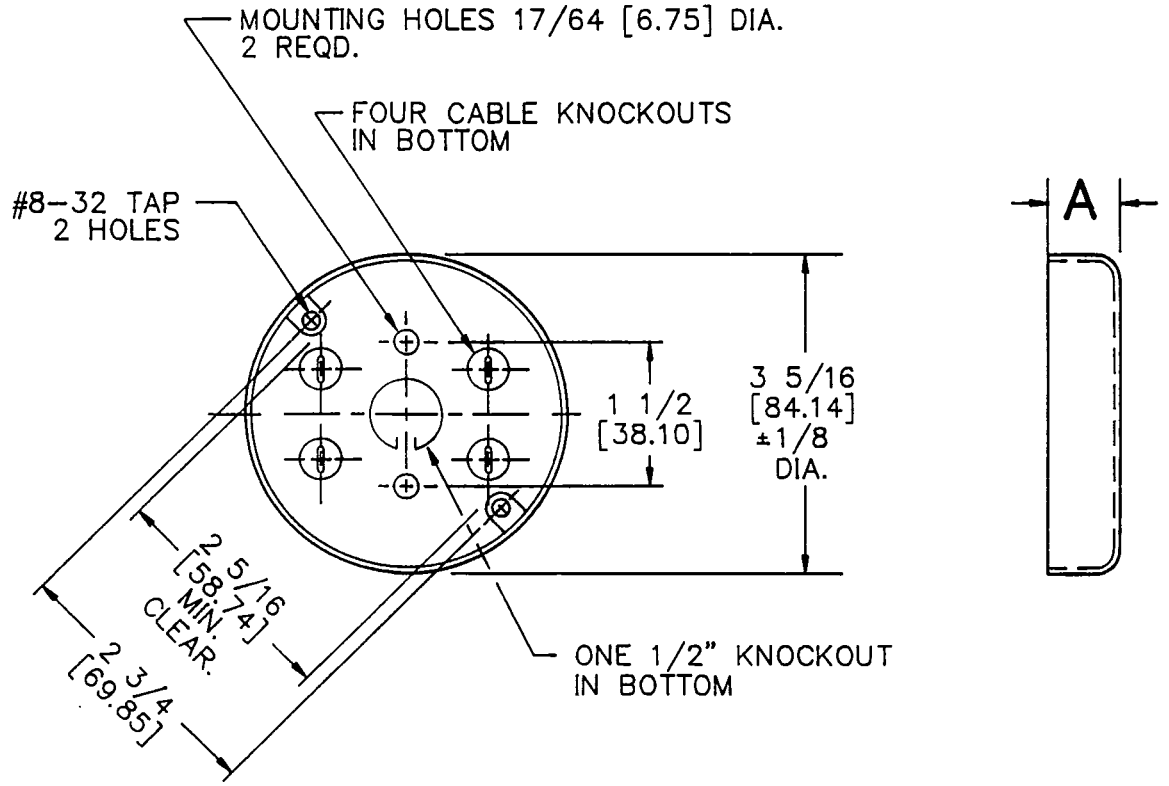
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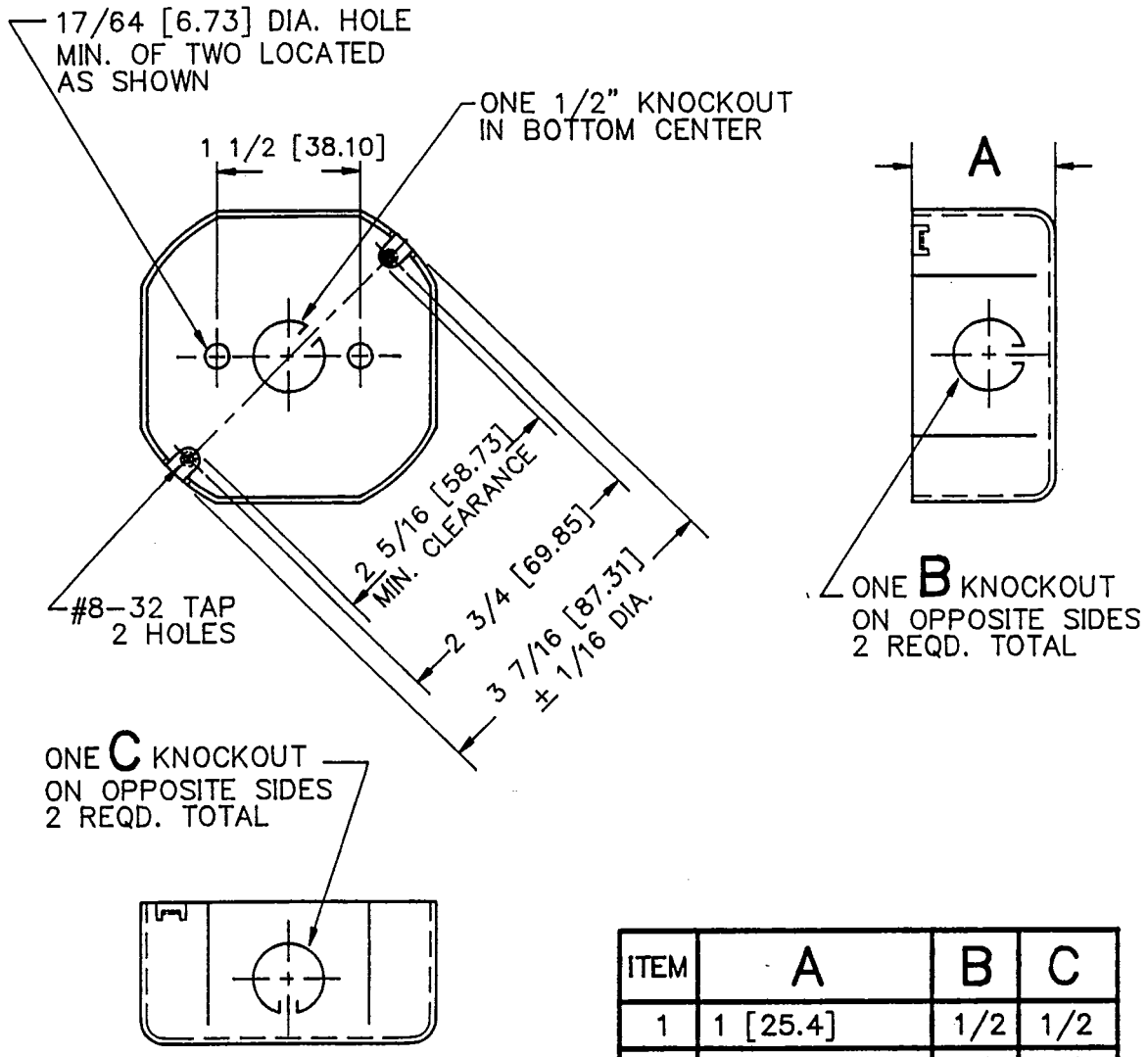


ITEM	A
1	1/2 [12.70]
2	3/4 [19.05]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 70
3 1/4" ROUND CABLE BOX

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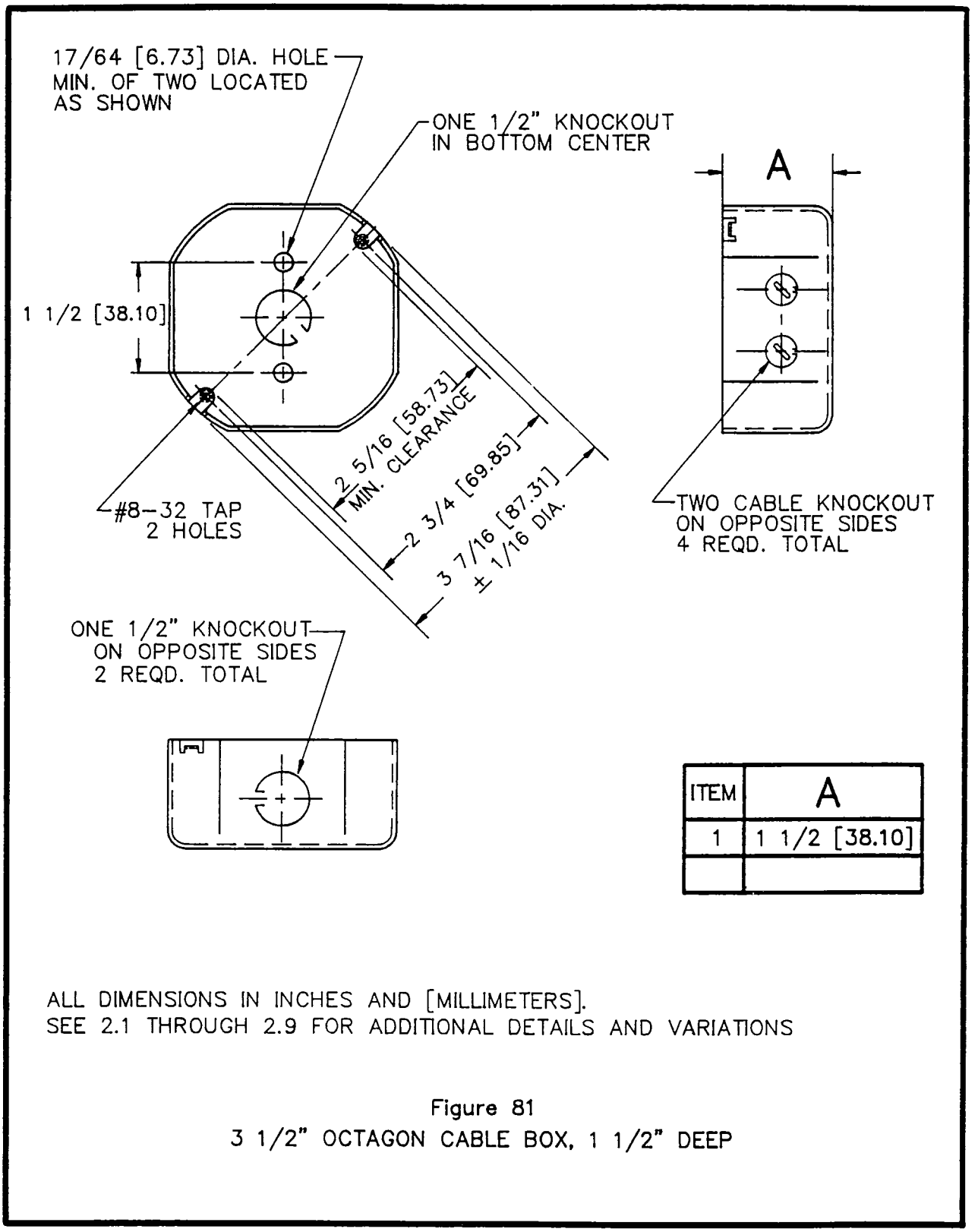


ITEM	A	B	C
1	1 [25.4]	1/2	1/2
2	1 1/2 [38.10]	1/2	3/4

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 80
3 1/2" OCTAGON BOX, 1 1/2" AND 1" DEEP, 1/2" AND 3/4" KNOCKOUTS

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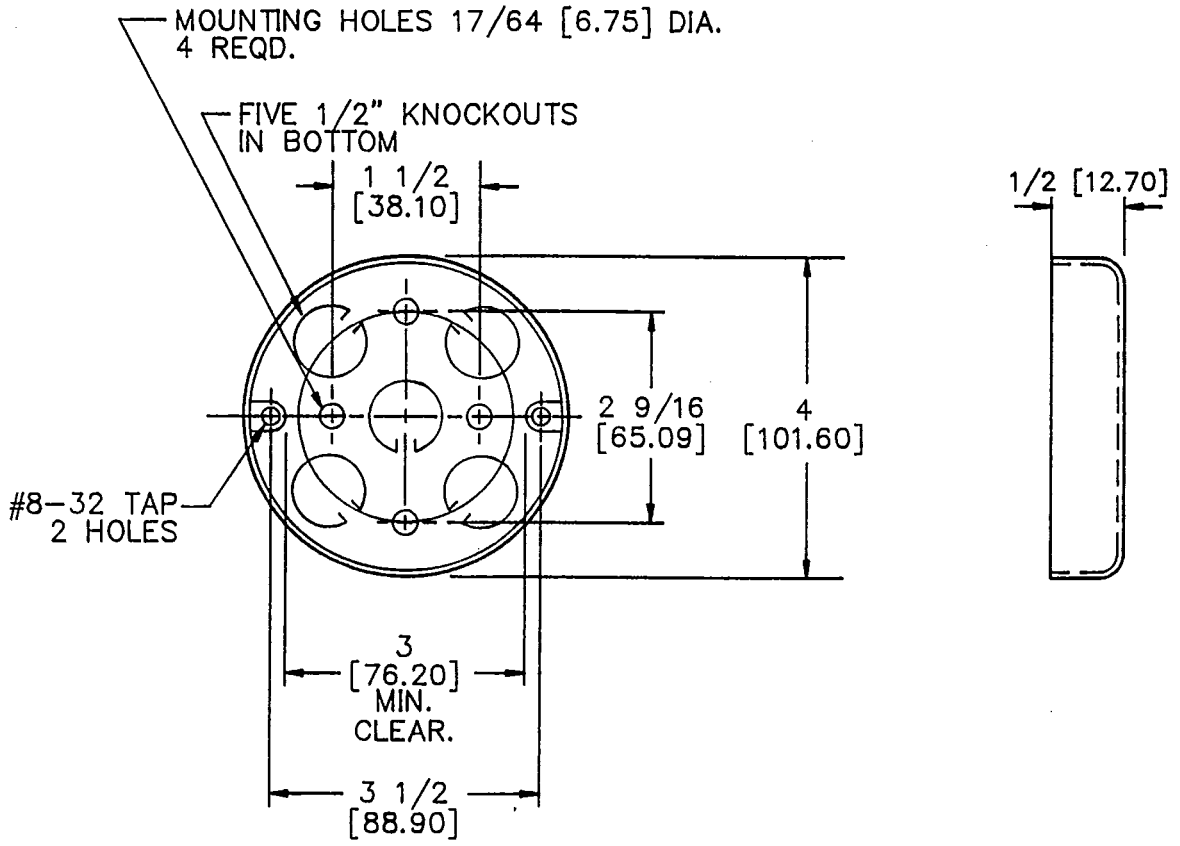


ITEM	A
1	1 1/2 [38.10]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

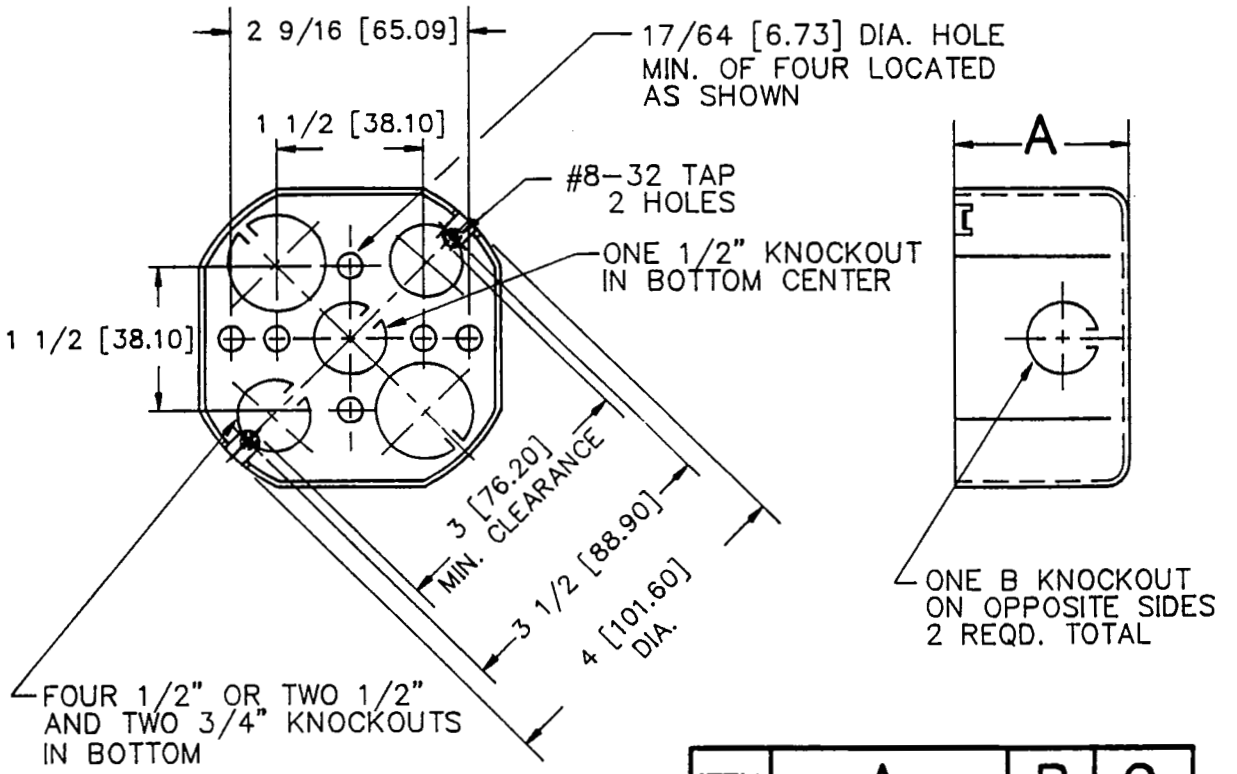
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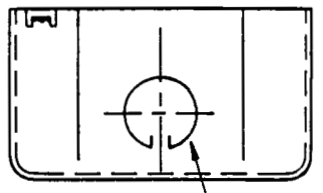


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 90
4" ROUND BOX, 1/2" KNOCKOUTS

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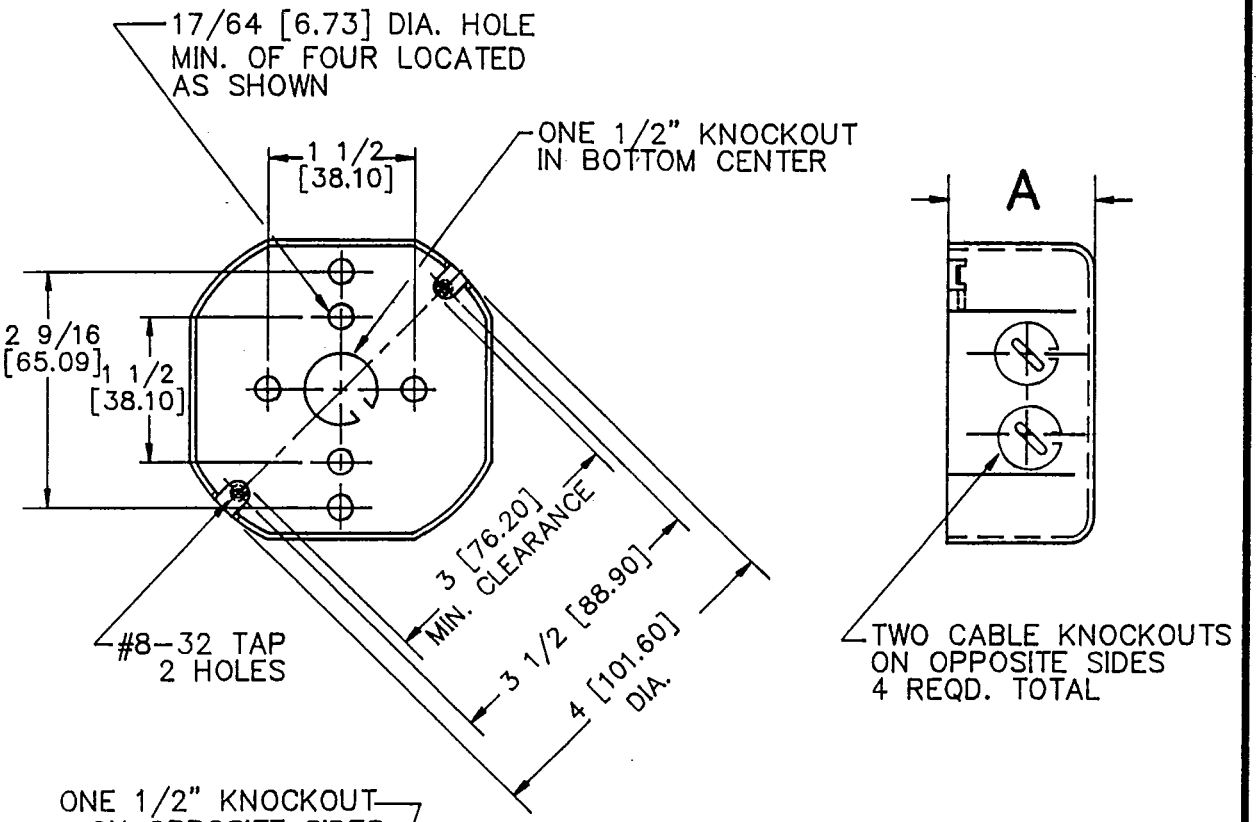


ITEM	A	B	C
1	1 1/2 [38.10]	1/2	1/2
2	1 1/2 [38.10]	3/4	3/4
3	1 1/2 [38.10]	1/2	3/4
4	2 1/8 [53.97]	1/2	1/2
5	2 1/8 [53.97]	3/4	3/4
6	2 1/8 [53.97]	1	1
7	2 1/8 [53.97]	1/2	3/4
8	2 1/8 [53.97]	3/4	1

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 100
4" OCTAGON BOX, 1 1/2" AND 2 1/8" DEEP, 1/2", 3/4", OR 1" KNOCKOUTS

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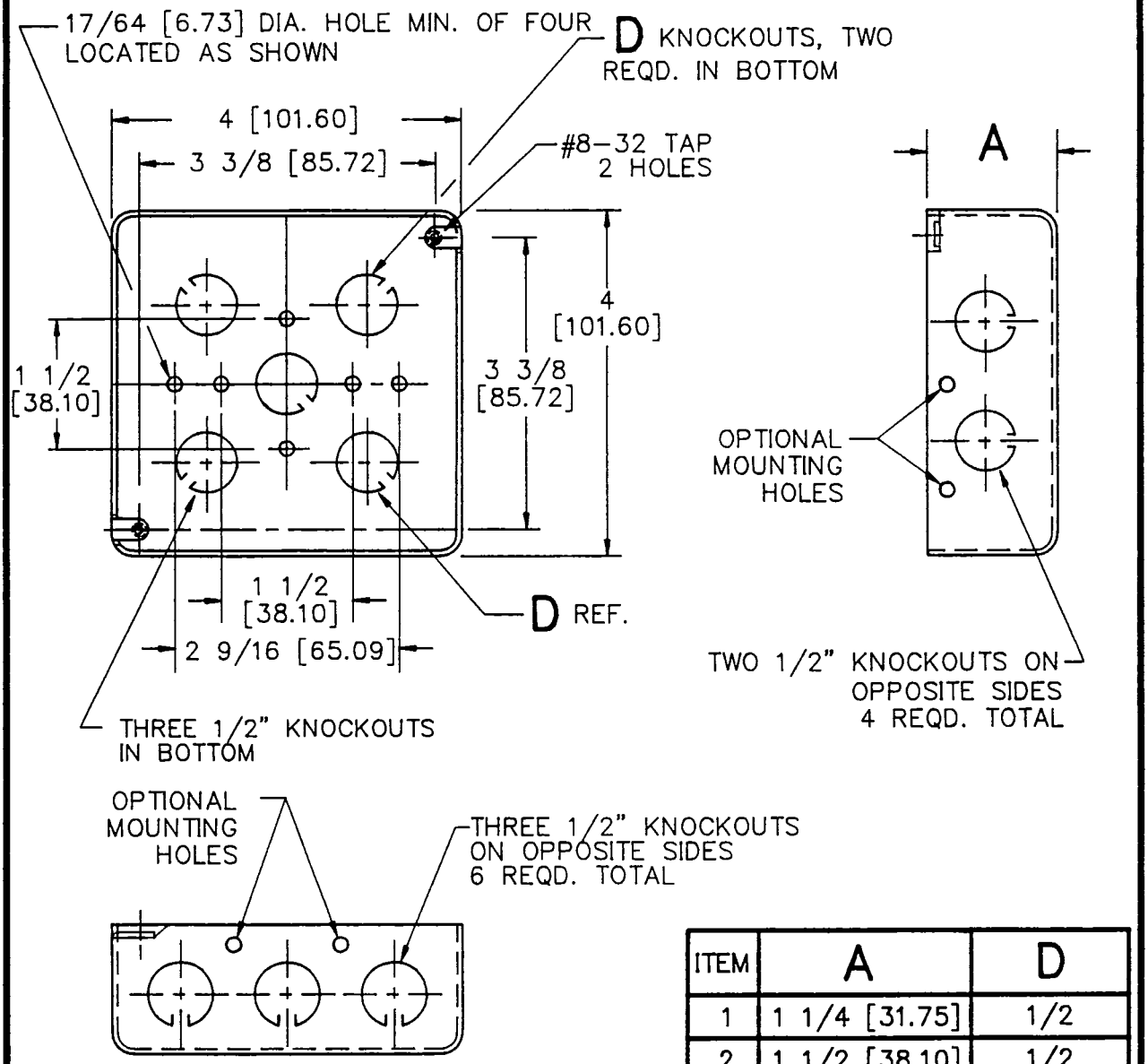


ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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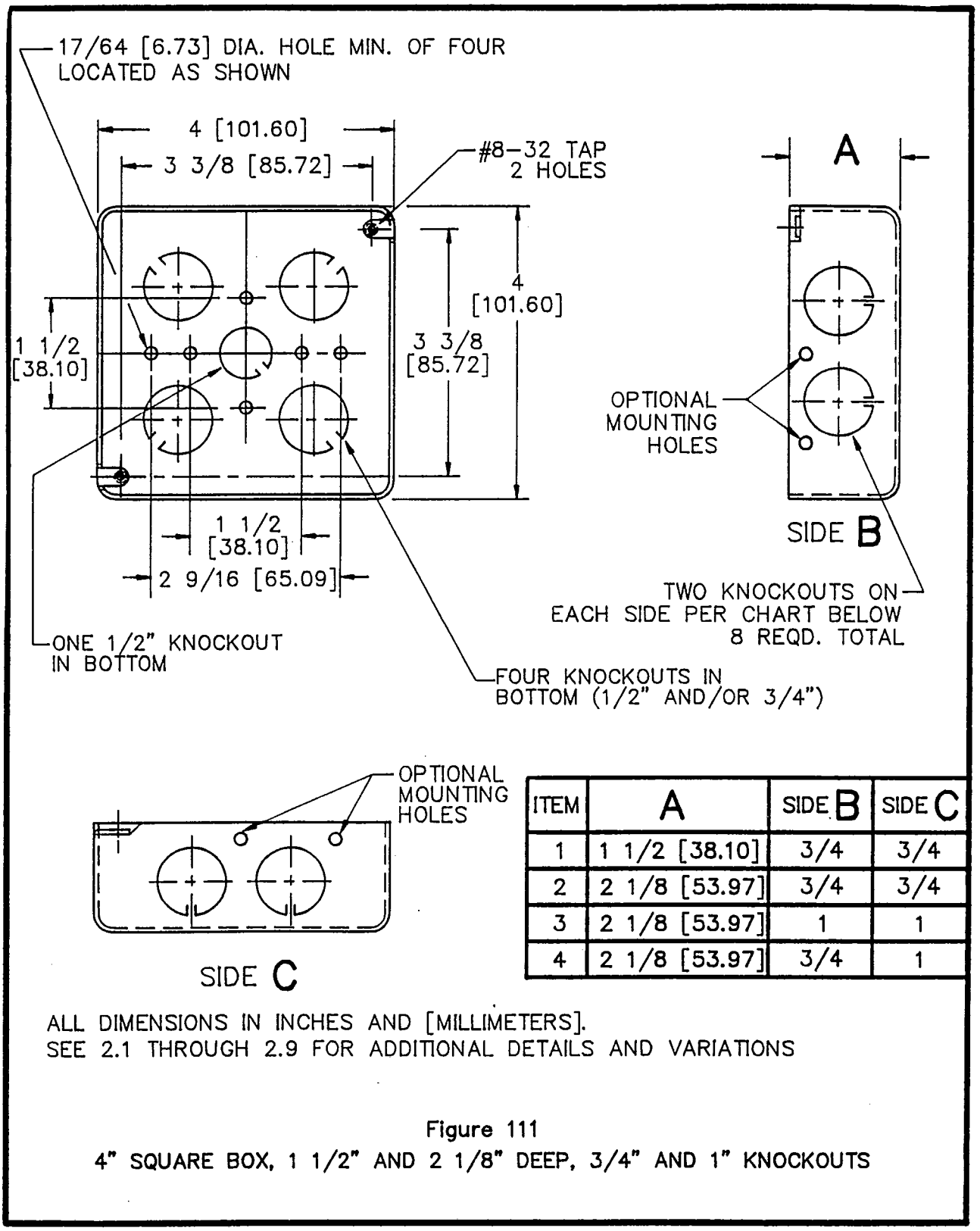


ITEM	A	D
1	1 1/4 [31.75]	1/2
2	1 1/2 [38.10]	1/2
3	2 1/8 [53.97]	1/2 OR 3/4

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 110
4" SQUARE BOX, 1 1/4", 1 1/2", AND 2 1/8" DEEP, 1/2" KNOCKOUTS

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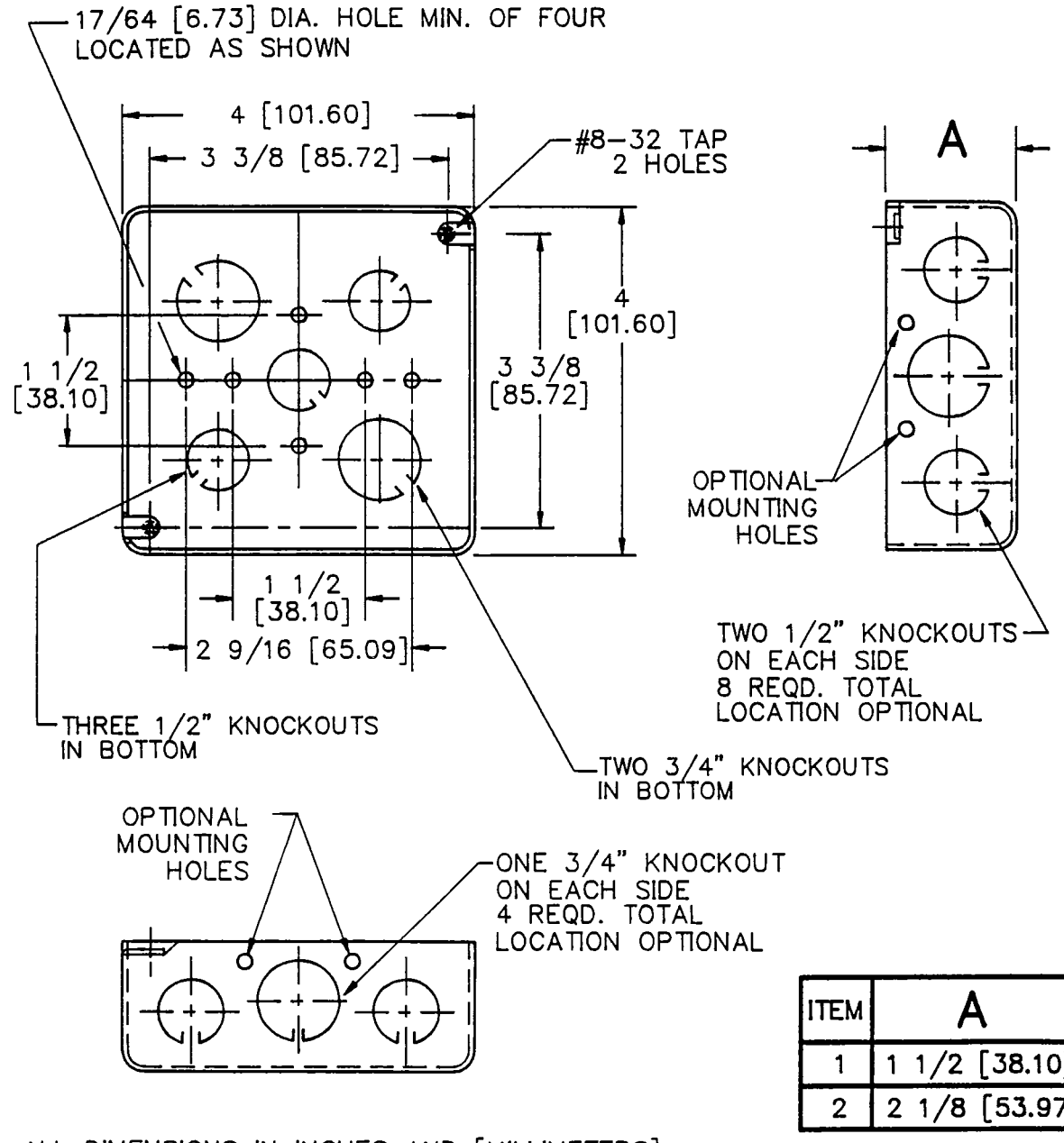


ITEM	A	SIDE B	SIDE C
1	1 1/2 [38.10]	3/4	3/4
2	2 1/8 [53.97]	3/4	3/4
3	2 1/8 [53.97]	1	1
4	2 1/8 [53.97]	3/4	1

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 111
4" SQUARE BOX, 1 1/2" AND 2 1/8" DEEP, 3/4" AND 1" KNOCKOUTS

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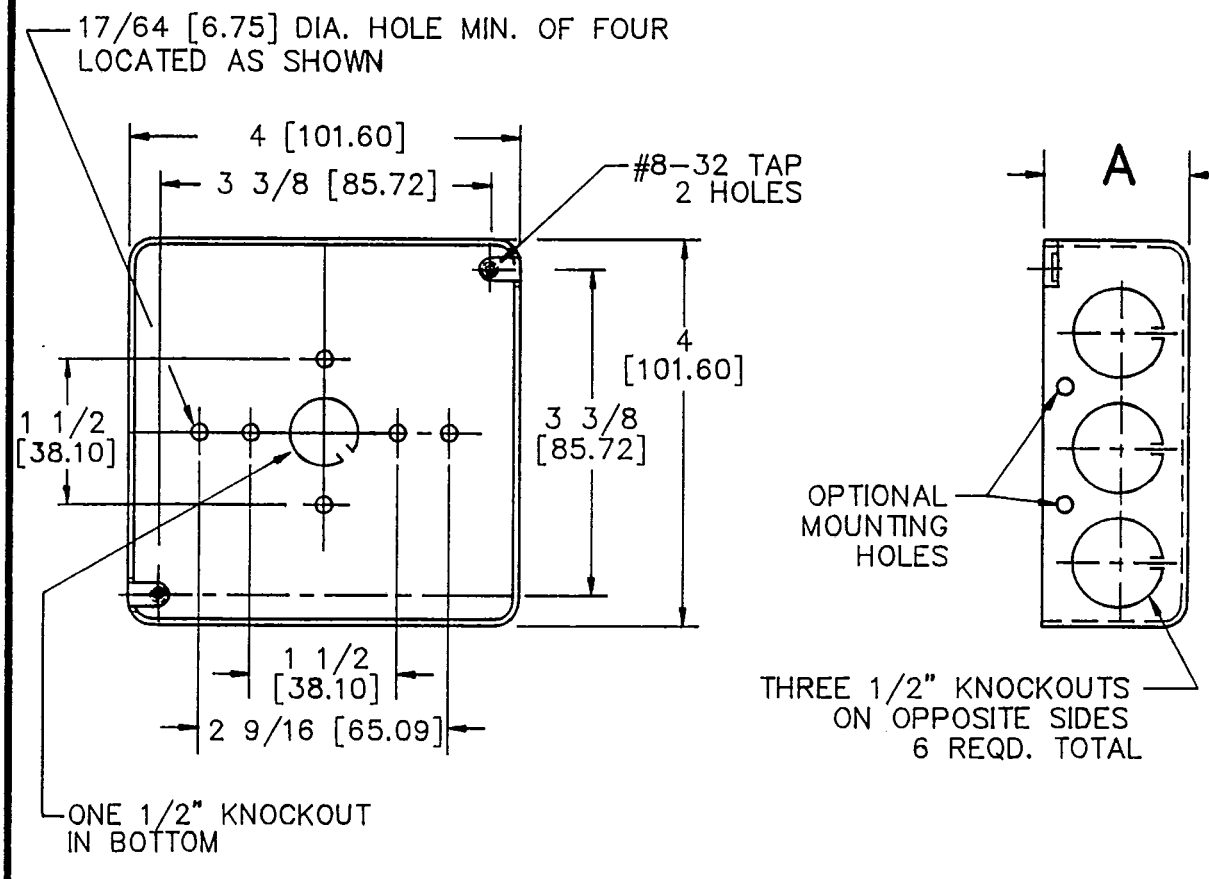


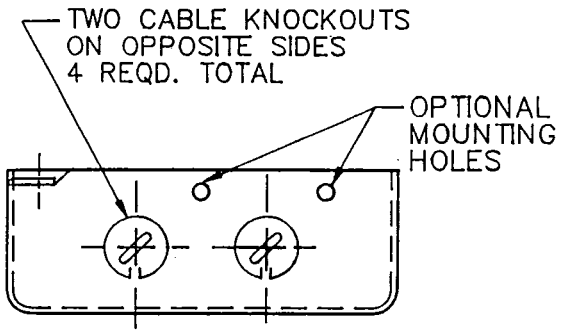
ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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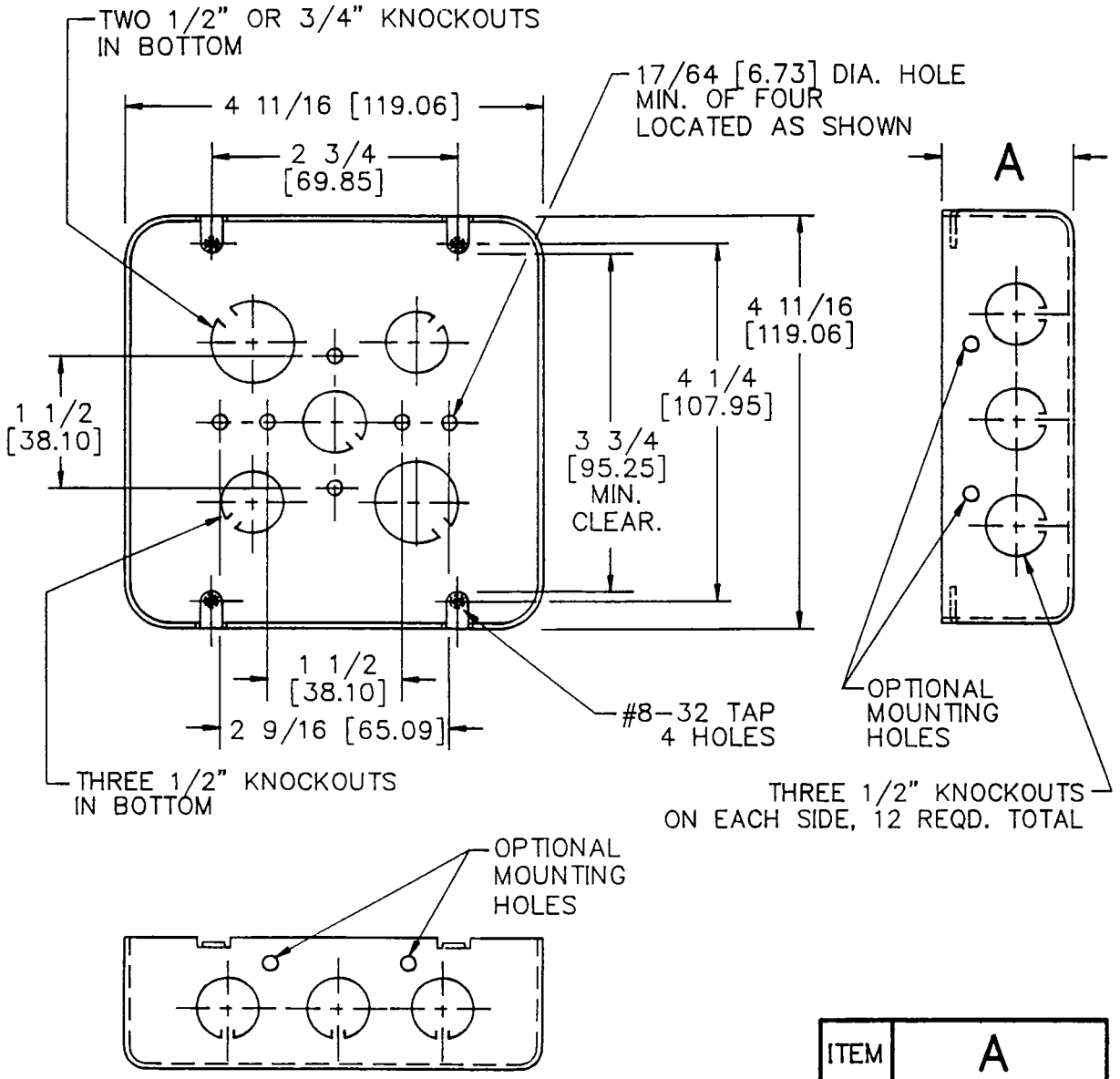


ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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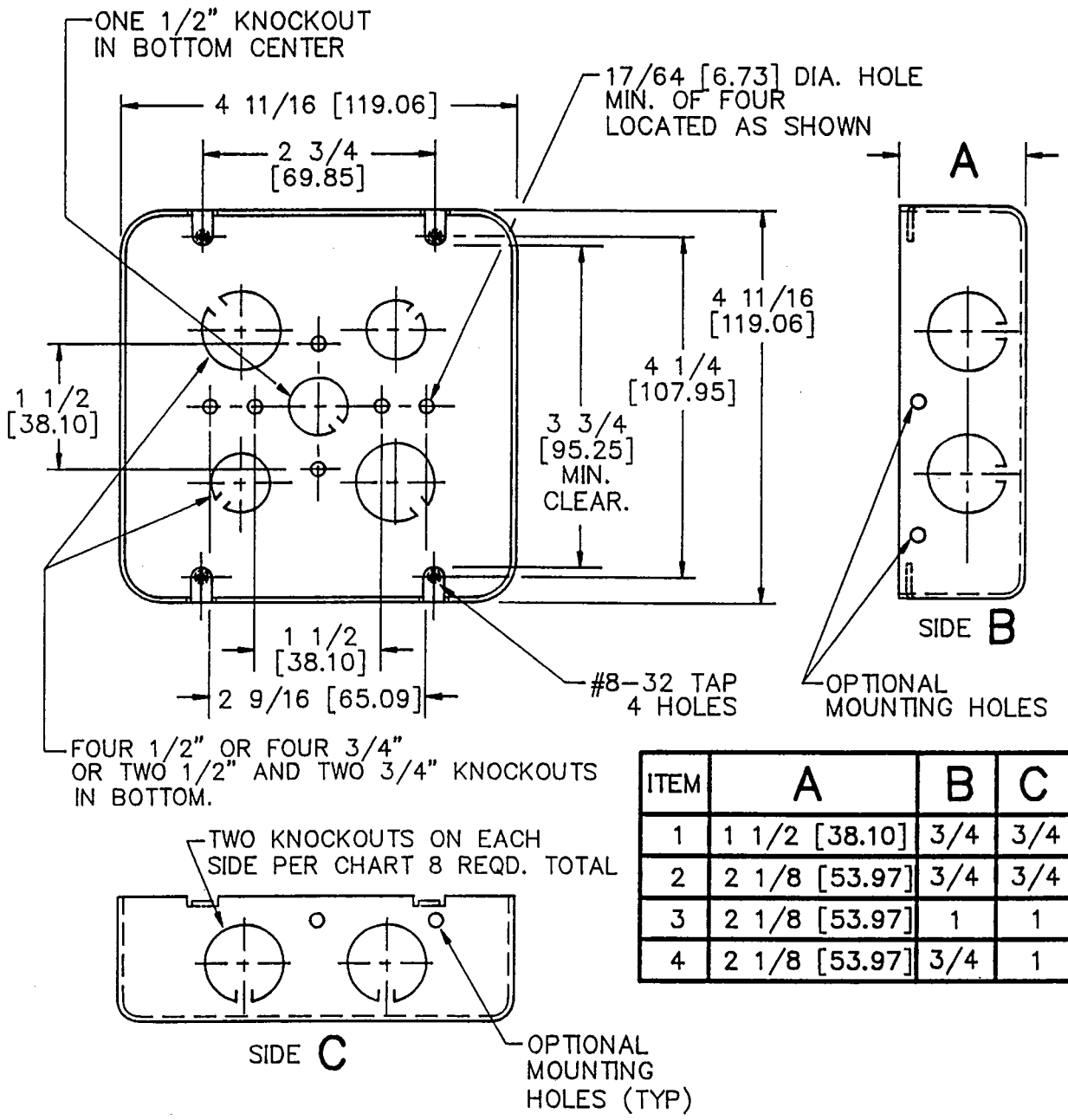


ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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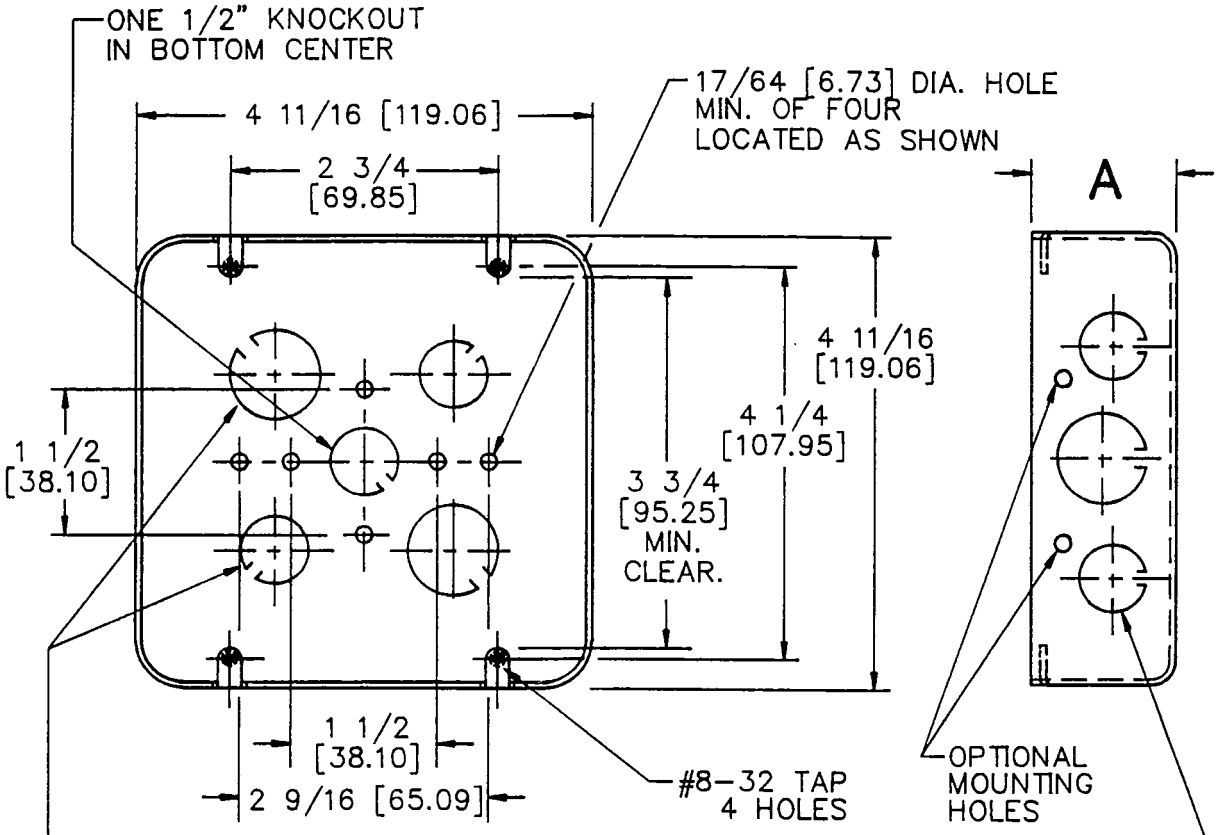
ITEM	A	B	C
1	1 1/2 [38.10]	3/4	3/4
2	2 1/8 [53.97]	3/4	3/4
3	2 1/8 [53.97]	1	1
4	2 1/8 [53.97]	3/4	1

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 121

4 11/16" SQUARE BOX , 1 1/2" AND 2 1/8" DEEP, 3/4" AND 1" KNOCKOUTS

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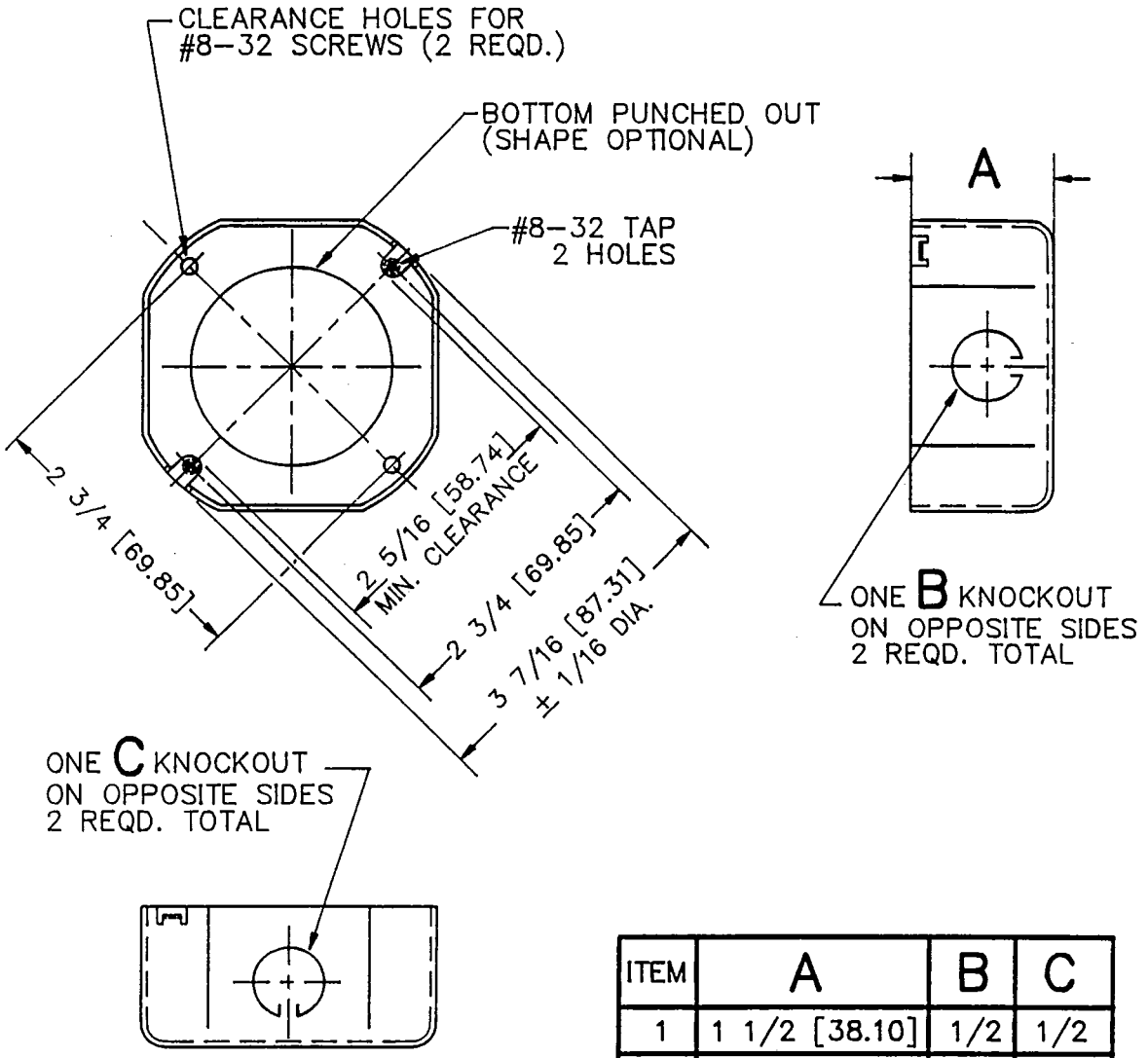


ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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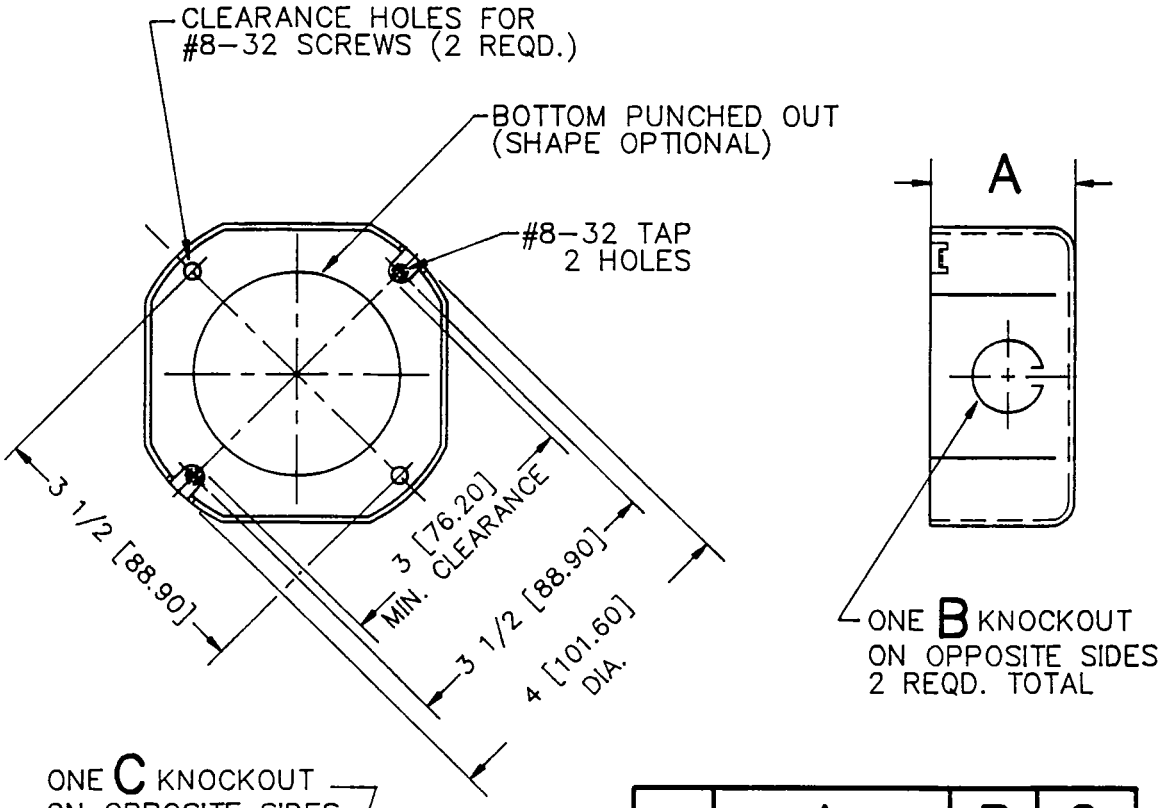


ITEM	A	B	C
1	1 1/2 [38.10]	1/2	1/2

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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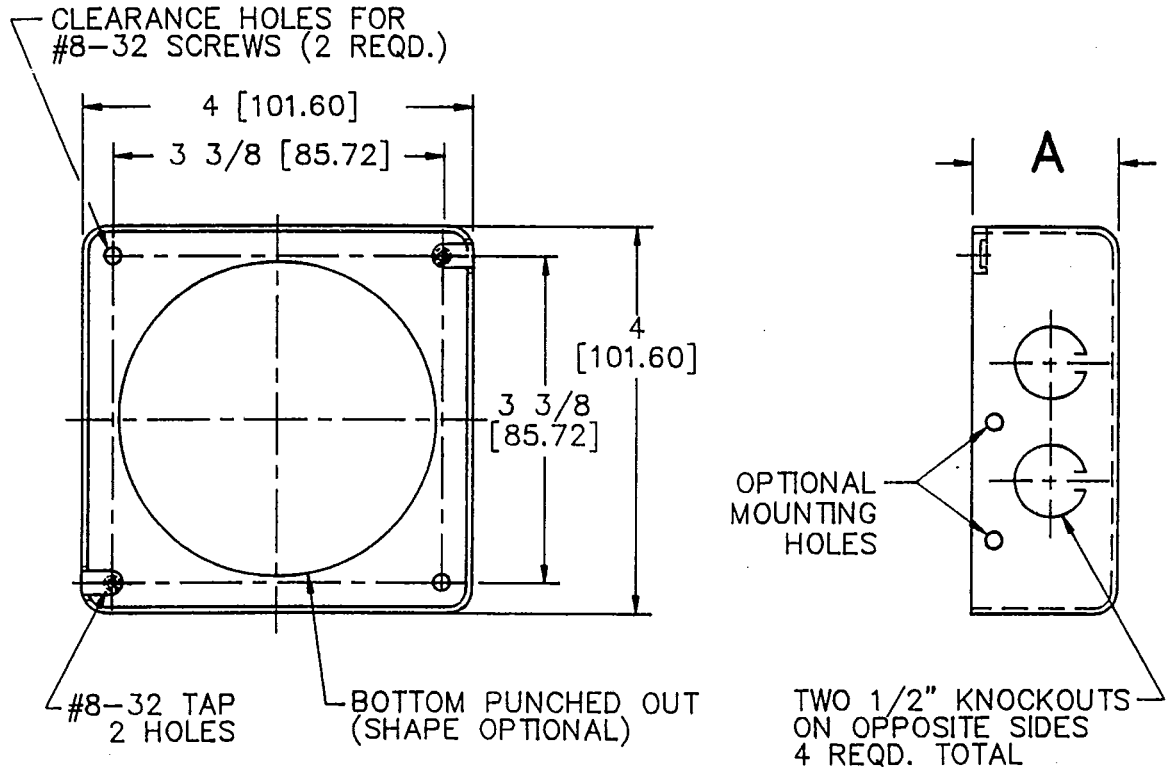


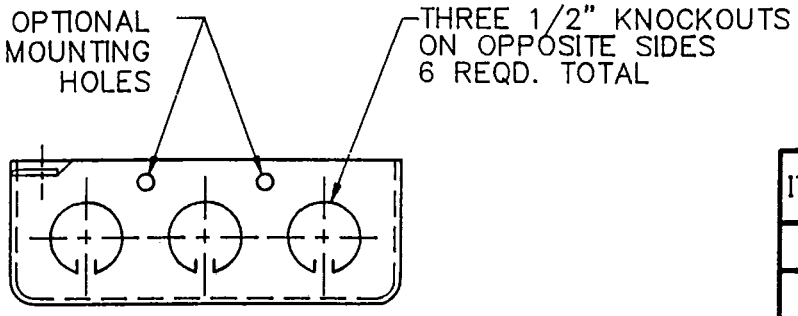
ITEM	A	B	C
1	1 1/2 [38.10]	1/2	1/2
2	1 1/2 [38.10]	3/4	3/4
3	1 1/2 [38.10]	1/2	3/4
4	2 1/8 [53.97]	1/2	1/2
5	2 1/8 [53.97]	3/4	3/4
6	2 1/8 [53.97]	1	1
7	2 1/8 [53.97]	1/2	3/4

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 130
4" OCTAGON BOX EXTENSION, 1 1/2" AND 2 1/8" DEEP, 1/2", 3/4", AND 1" KNOCKOUTS

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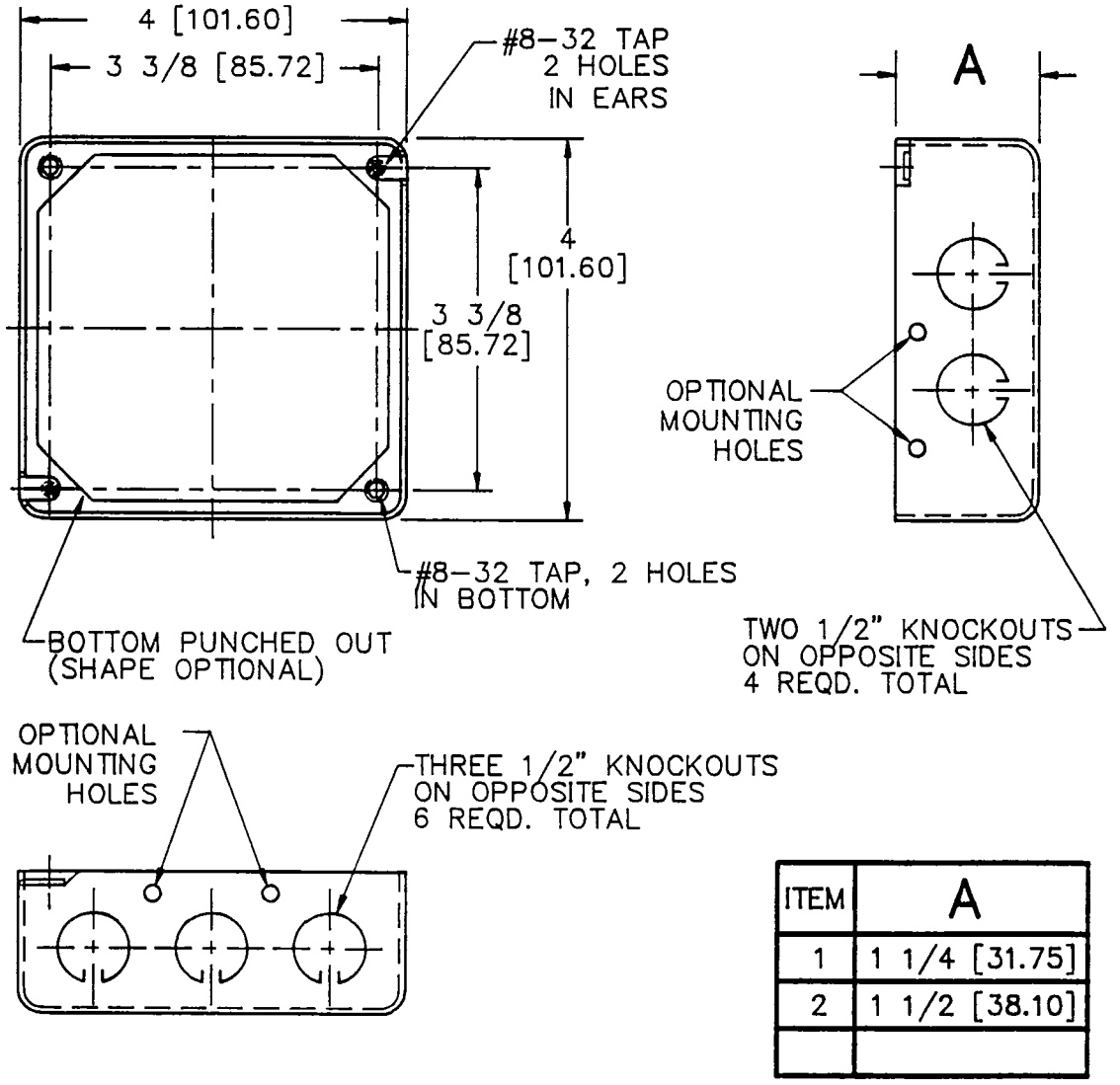


ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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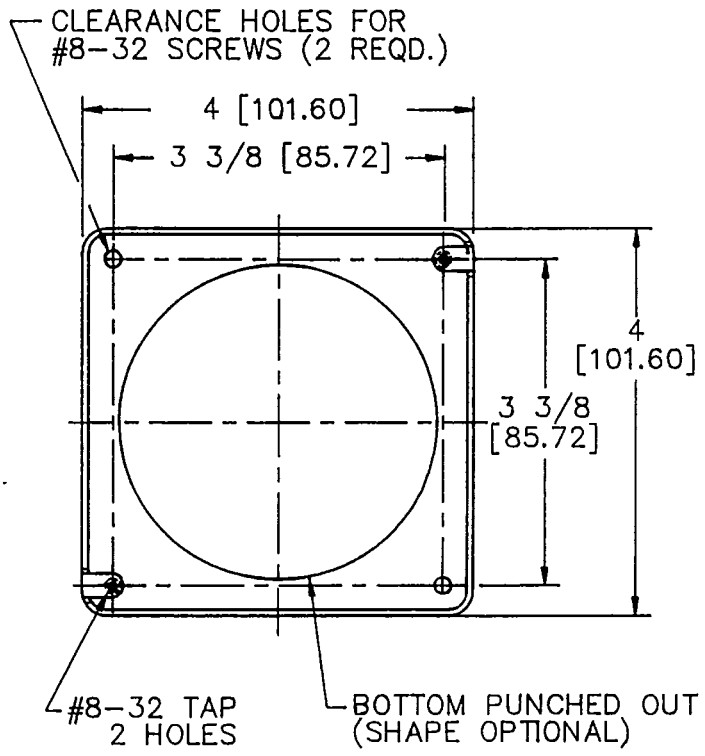


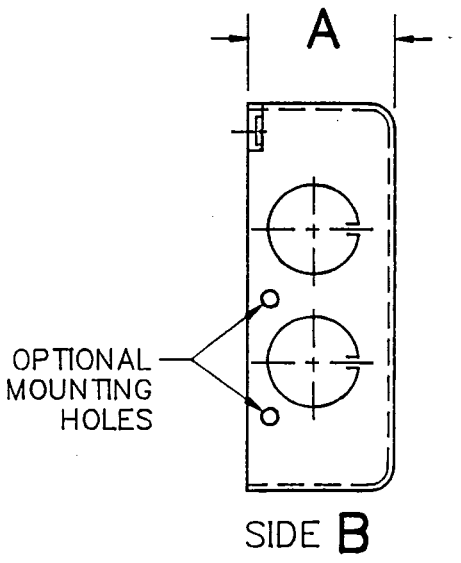
ITEM	A
1	1 1/4 [31.75]
2	1 1/2 [38.10]

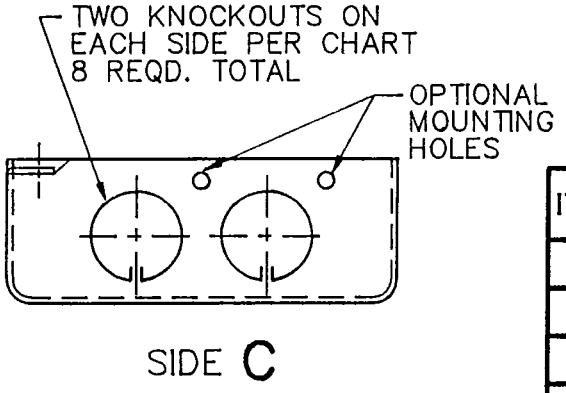
ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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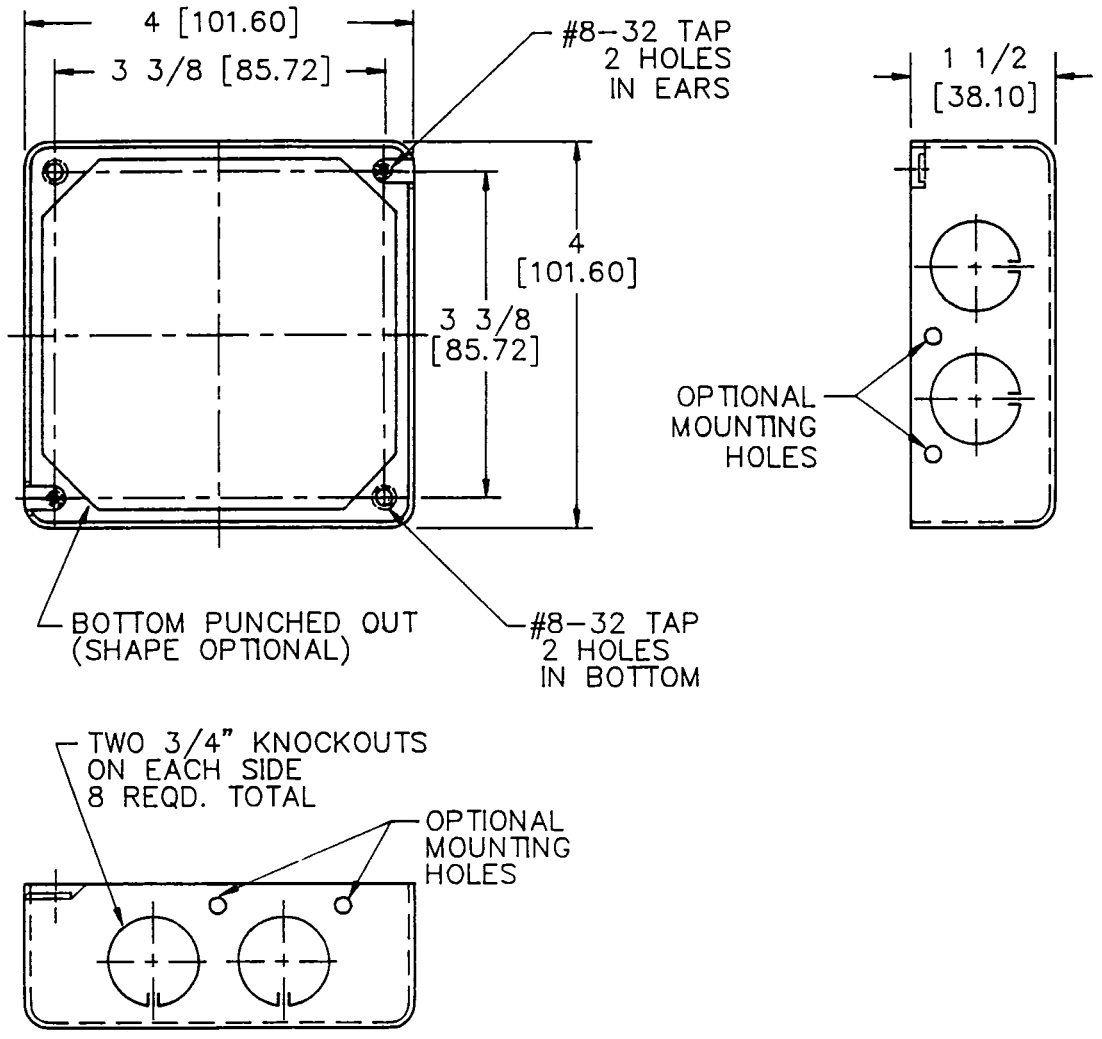


ITEM	A	SIDE B	SIDE C
1	1 1/2 [38.10]	3/4	3/4
2	2 1/8 [53.97]	3/4	3/4
3	2 1/8 [53.97]	1	1
4	2 1/8 [53.97]	3/4	1

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

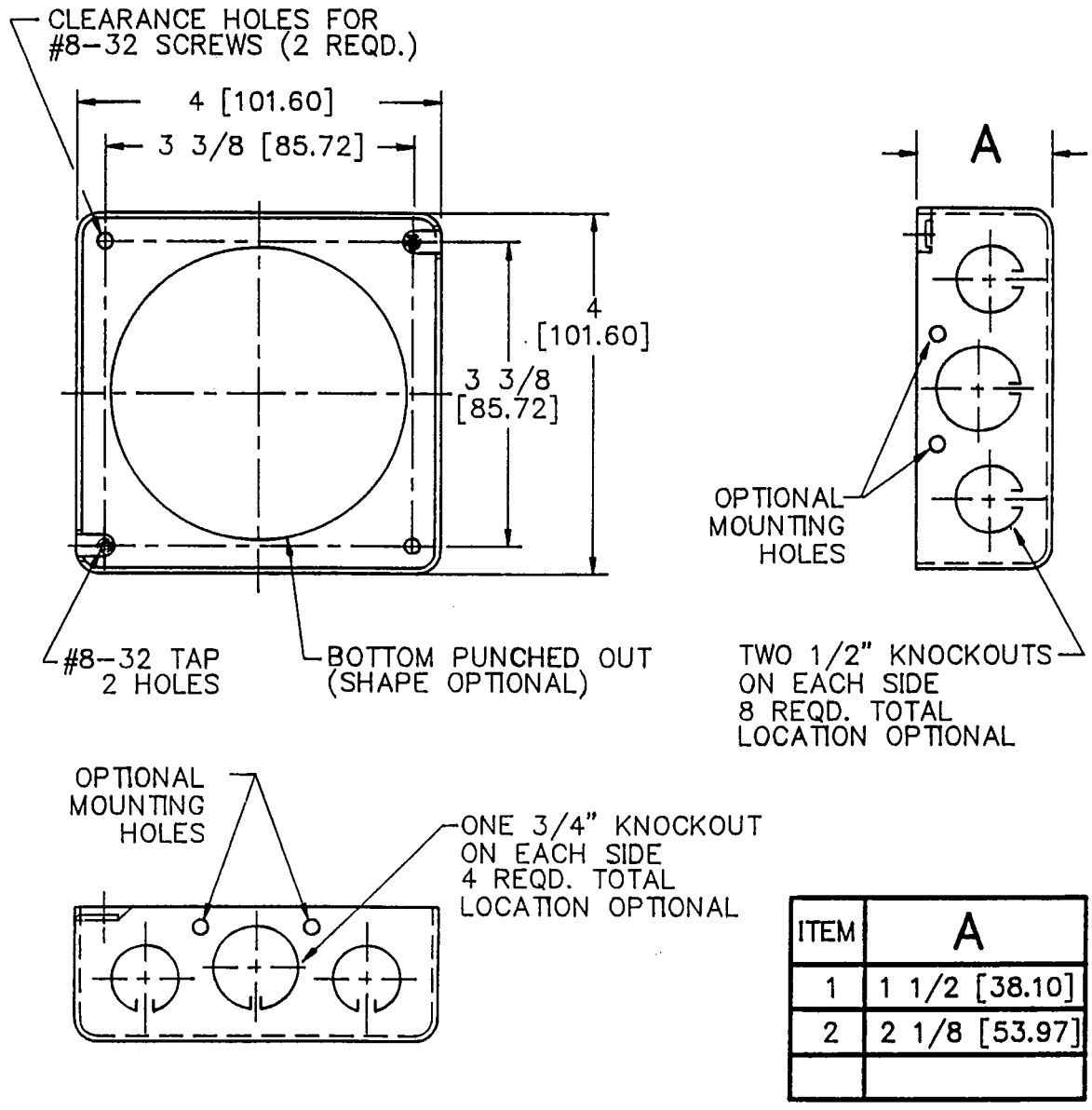
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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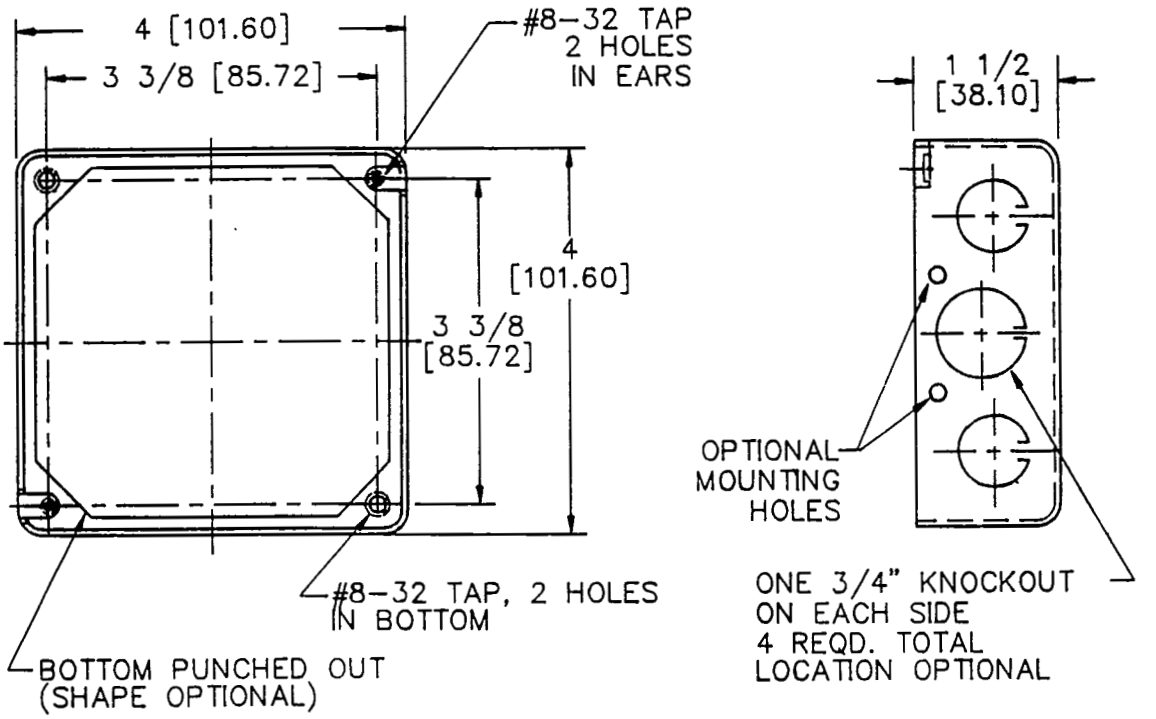


ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

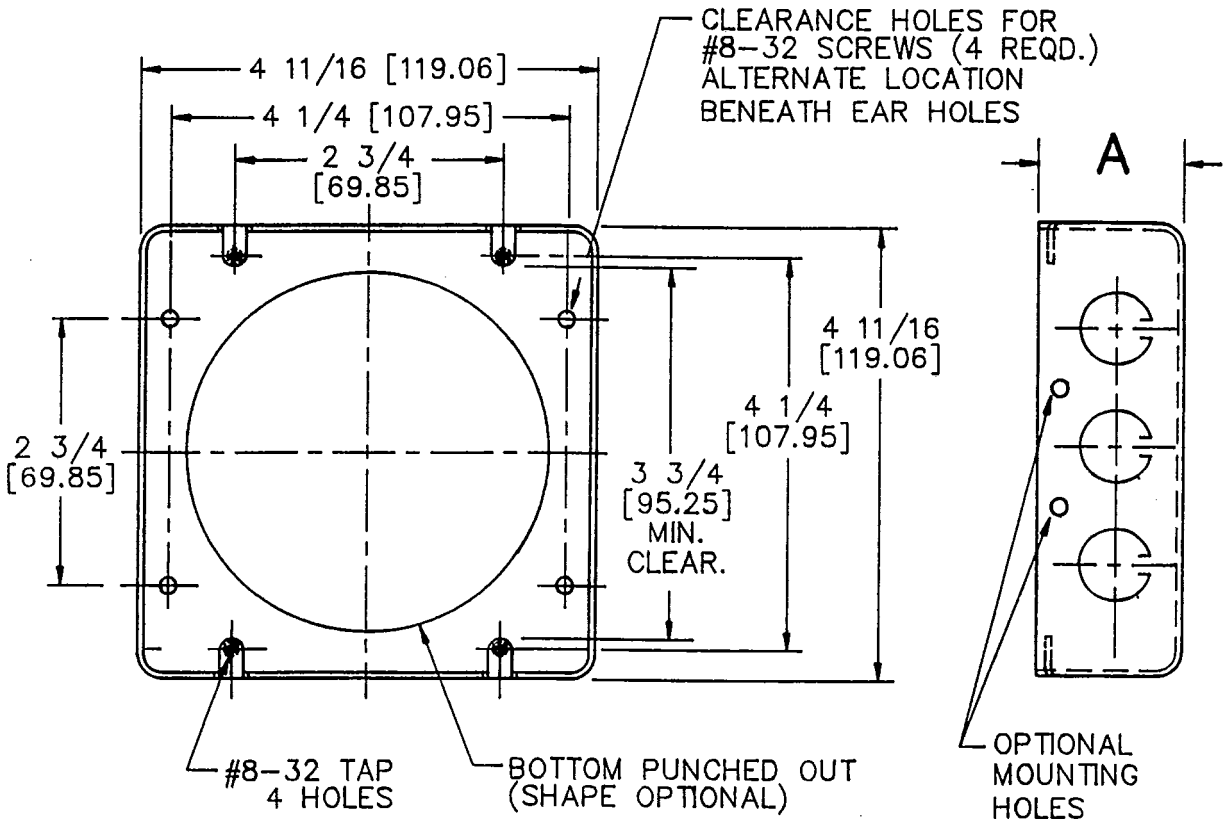
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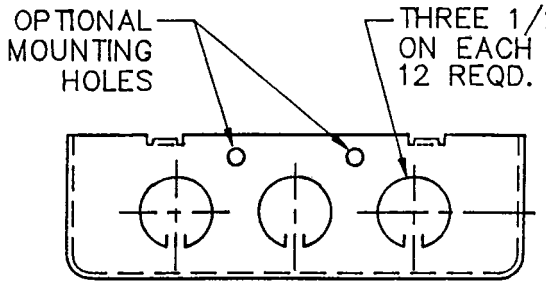


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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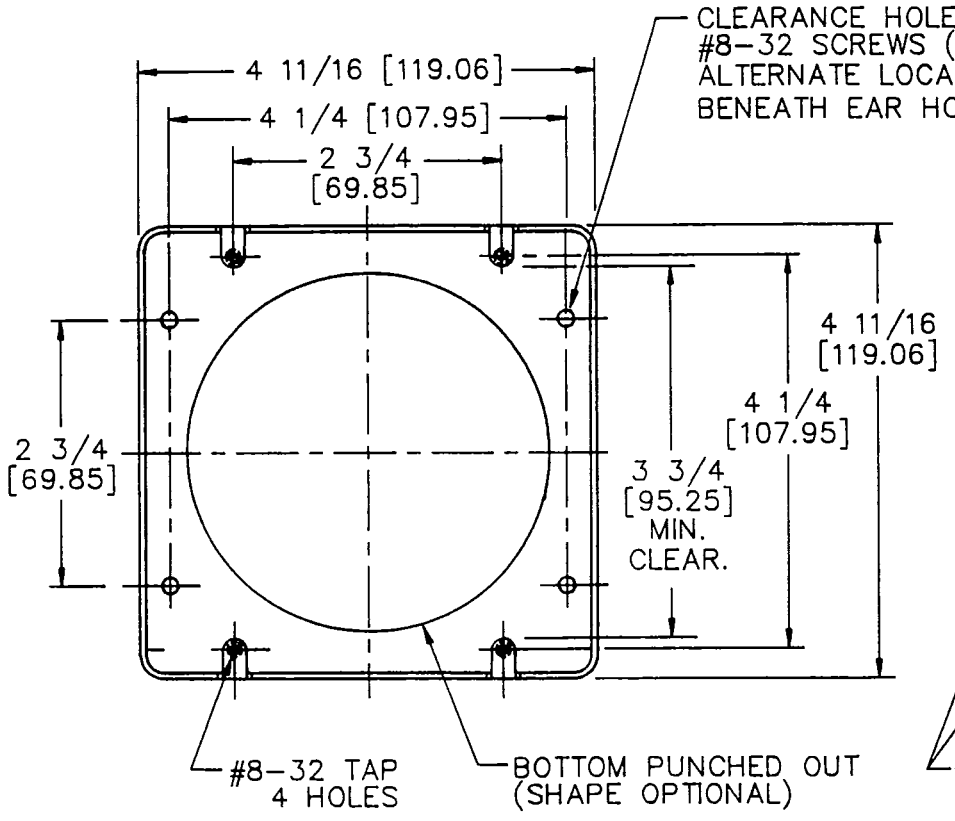


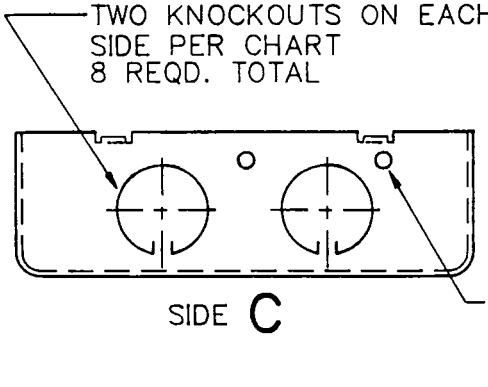
ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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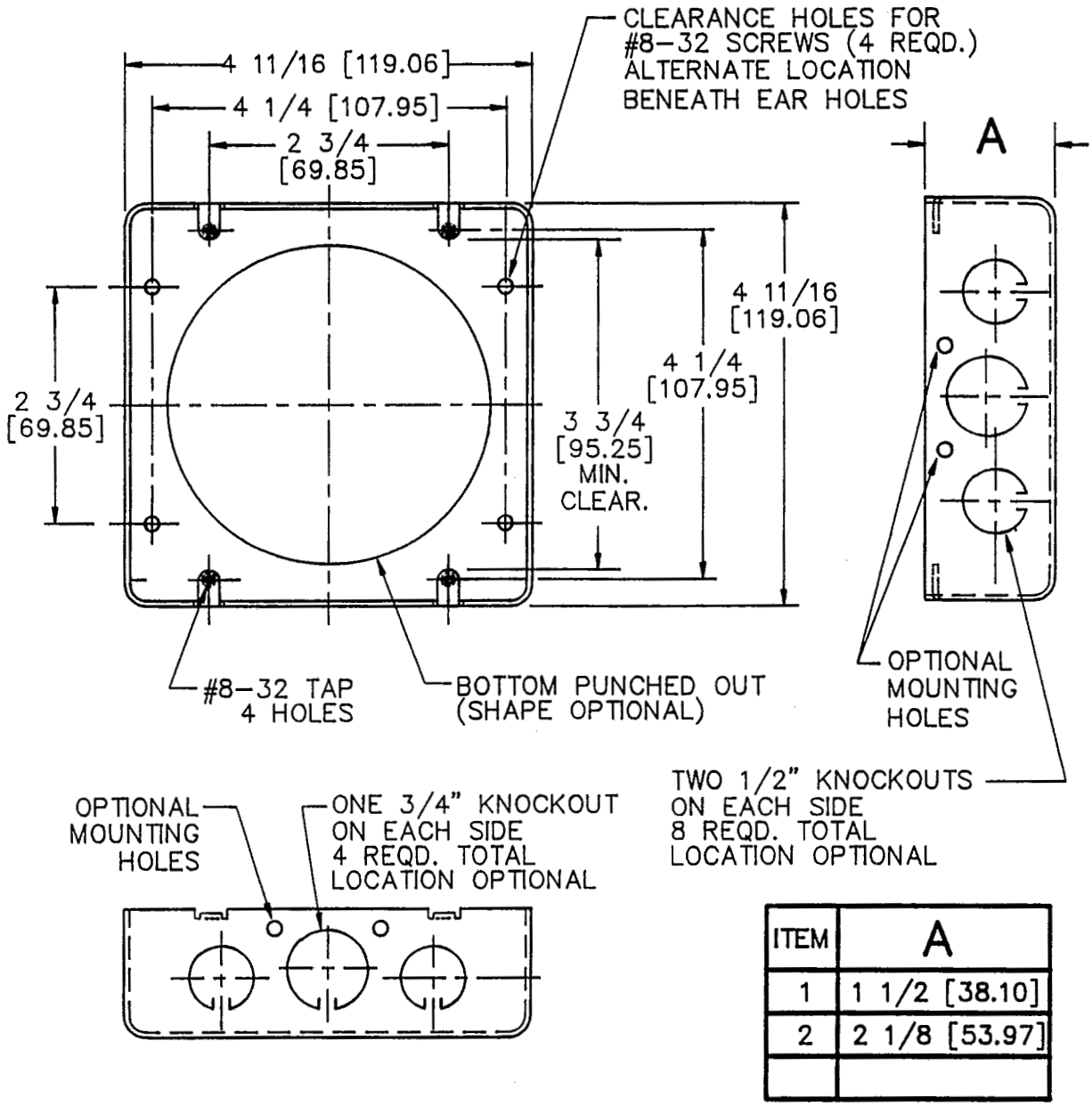
ITEM	A	B	C
1	1 1/2 [38.10]	3/4	3/4
2	2 1/8 [53.97]	3/4	3/4
3	2 1/8 [53.97]	1	1
4	2 1/8 [53.97]	3/4	1
5	2 1/8 [53.97]	3/4 1	3/4 1

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 151

4 11/16" SQUARE BOX EXTENSION, 1 1/2" AND 2 1/8" DEEP,
3/4" AND 1" KNOCKOUTS

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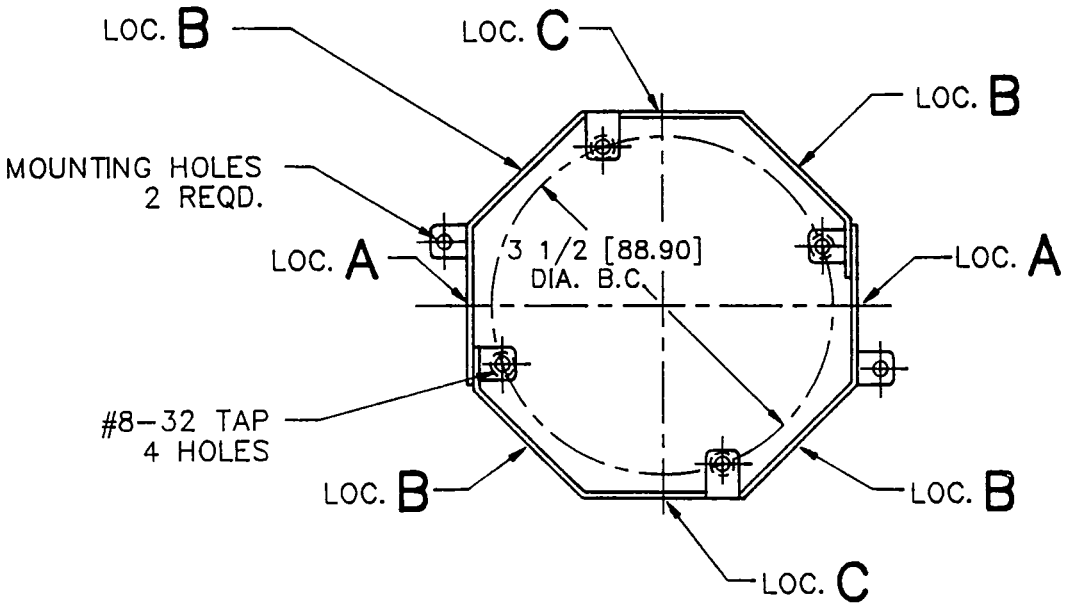


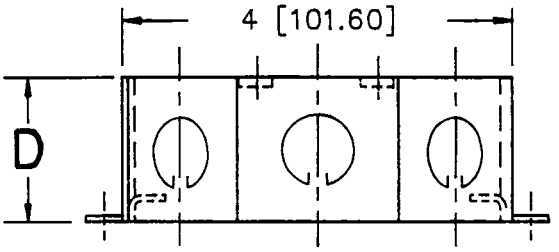
ITEM	A
1	1 1/2 [38.10]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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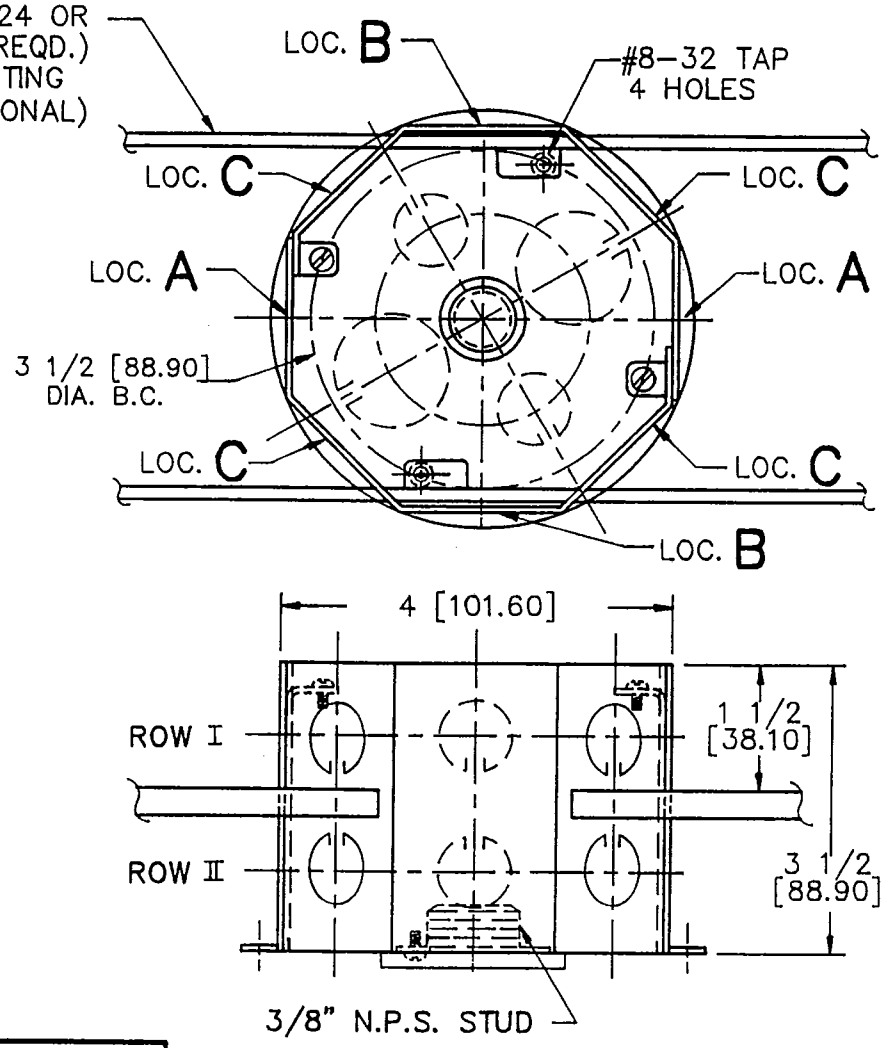
ITEM	D
1	2 [50.80]
2	2 1/2 [63.50]
3	3 [76.20]
4	3 1/2 [88.90]
5	4 [101.60]
6	5 [127.00]
7	6 [152.40]

	KNOCKOUT INFORMATION			
STYLE	AMOUNT & SIZE	A	B	C
A	EIGHT 1/2"	1/2	1/2	1/2
B	SIX 3/4"	NONE	3/4	3/4
C	FOUR 1/2", FOUR 3/4"	1/2	3/4	1/2
D	FOUR 3/4", TWO 1"	NONE	3/4	1

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 160
CONCRETE RING, 1/2", 3/4", AND 1" KNOCKOUTS

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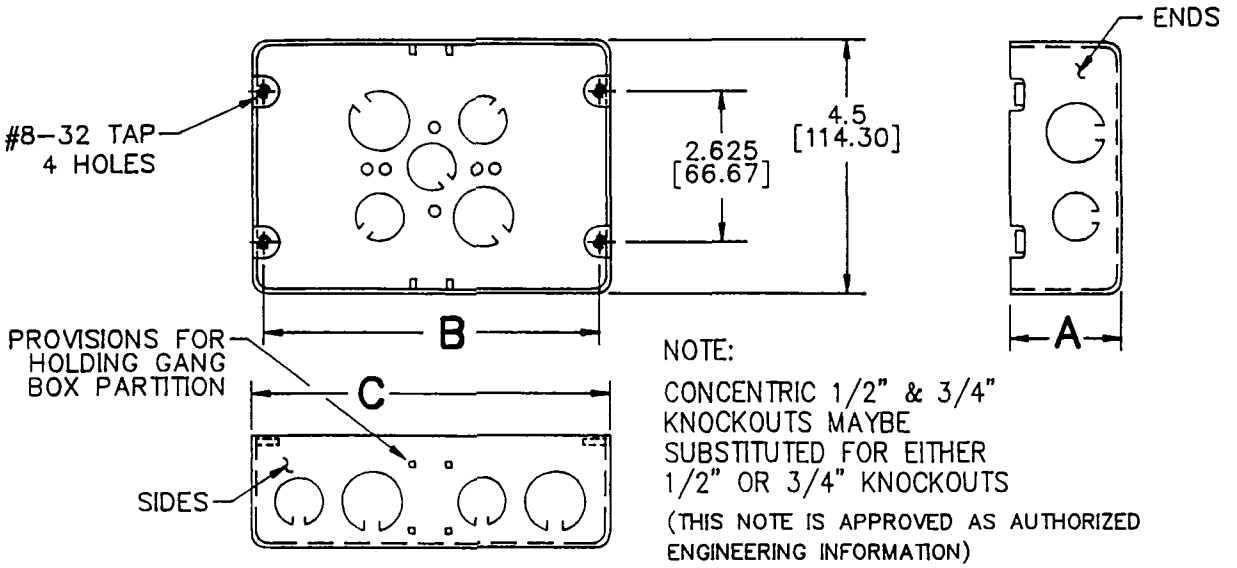
ITEM	BAR LENGTH (2 REQD. PER BOX)
4	18
5	24
6	30

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

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 161
HUNG CEILING BOX, 1/2" AND 3/4" KNOCKOUTS

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NOTE:

CONCENTRIC 1/2" & 3/4" KNOCKOUTS MAYBE SUBSTITUTED FOR EITHER 1/2" OR 3/4" KNOCKOUTS

(THIS NOTE IS APPROVED AS AUTHORIZED ENGINEERING INFORMATION)

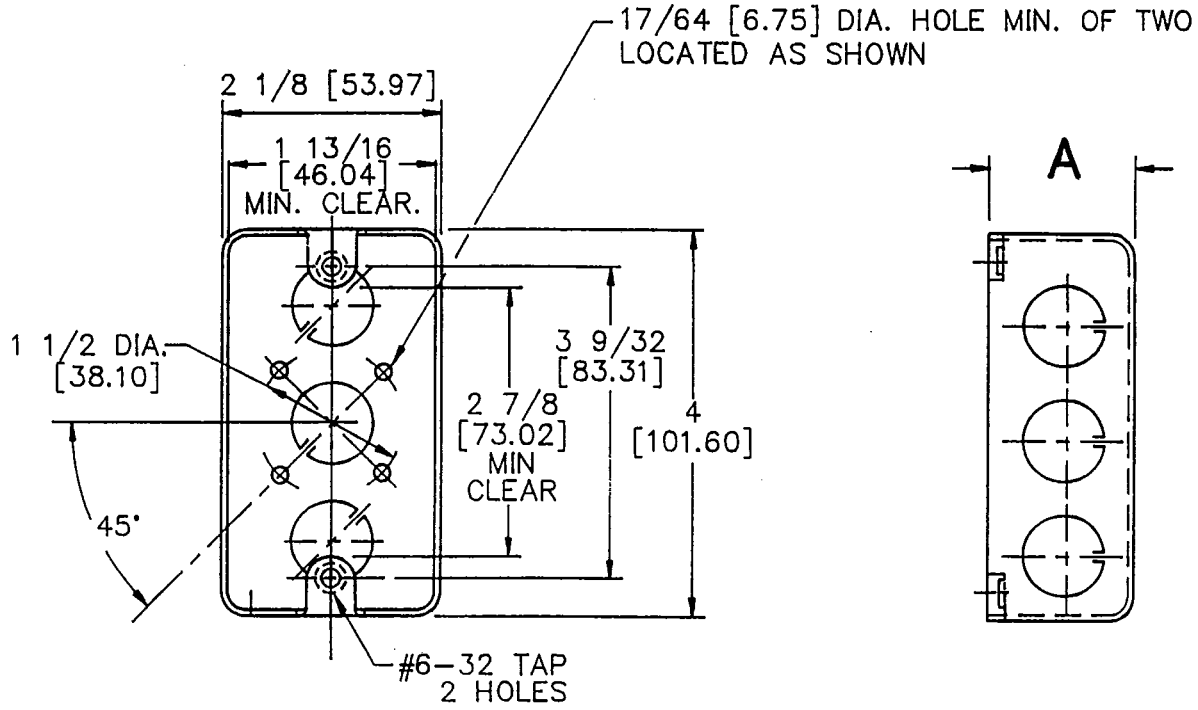
ITEM	NO. OF GANGS	A	B	C	KNOCKOUTS							
					SIDES			ENDS			BOTTOM	
					1/2	3/4	1	1/2	3/4	1	1/2	3/4
1	2	1 5/8 [41.27]	6 3/8 [161.92]	6 13/16 [173.04]	4	4	–	2	2	–	3	2
2	2	2 1/2 [63.50]	6 3/8 [161.92]	6 13/16 [173.04]	–	4	2	–	2	2	3	2
3	3	1 5/8 [41.27]	8 3/16 [207.96]	8 5/8 [219.07]	6	4	–	2	2	–	6	4
4	3	2 1/2 [63.50]	8 3/16 [207.96]	8 5/8 [219.07]	–	8	2	–	2	2	6	4
5	4	1 5/8 [41.27]	10 [254.00]	10 7/16 [265.11]	6	6	–	2	2	–	6	4
6	4	2 1/2 [63.50]	10 [254.00]	10 7/16 [265.11]	–	4	4	–	2	2	6	4
7	5	1 5/8 [41.27]	11 13/16 [300.04]	12 1/4 [311.15]	8	6	–	2	2	–	6	4
8	5	2 1/2 [63.50]	11 13/16 [300.04]	12 1/4 [311.15]	–	6	4	–	2	2	6	4
9	6	1 5/8 [41.27]	13 5/8 [346.07]	14 1/16 [357.19]	8	8	–	2	2	–	6	4
10	6	2 1/2 [63.50]	13 5/8 [346.07]	14 1/16 [357.19]	–	6	6	–	2	2	6	4
11	7	1 5/8 [41.27]	15 7/16 [392.11]	15 7/8 [403.22]	10	8	–	2	2	–	6	4
12	7	2 1/2 [63.50]	15 7/16 [392.11]	15 7/8 [403.22]	–	8	6	–	2	2	6	4
13	8	1 5/8 [41.27]	17 1/4 [438.15]	17 11/16 [449.26]	10	10	–	2	2	–	6	4
14	8	2 1/2 [63.50]	17 1/4 [438.15]	17 11/16 [449.26]	–	8	8	–	2	2	6	4
15	9	1 5/8 [41.27]	19 1/16 [484.19]	19 1/2 [495.30]	12	10	–	2	2	–	6	4
16	9	2 1/2 [63.50]	19 1/16 [484.19]	19 1/2 [495.30]	–	10	8	–	2	2	6	4
17	10	1 5/8 [41.27]	20 7/8 [530.23]	21 5/16 [541.34]	12	12	–	2	2	–	6	4
18	10	2 1/2 [63.50]	20 7/8 [530.23]	21 5/16 [541.34]	–	10	10	–	2	2	6	4

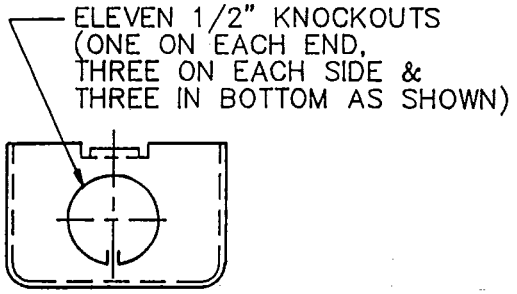
ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 170

GANG BOXES, 1 5/8" AND 2 1/2" DEEP, 1/2", 3/4" AND 1" KNOCKOUTS

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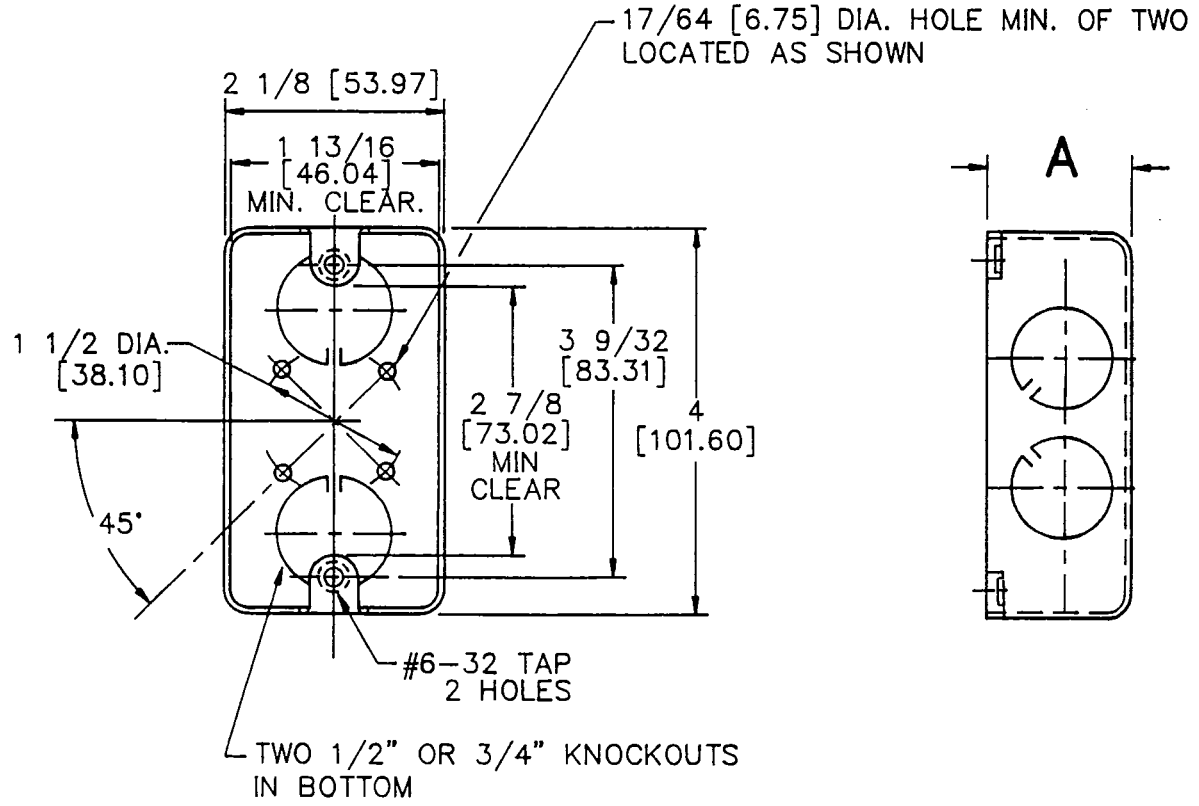


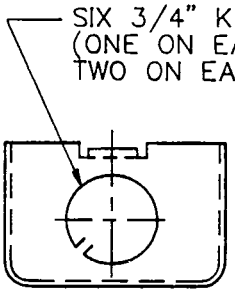
ITEM	A
1	1 1/2 [38.10]
2	1 7/8 [47.63]
3	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 200
NONGANGABLE DEVICE BOXES, 1/2" KNOCKOUTS

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ITEM	A
1	1 7/8 [47.63]
2	2 1/8 [53.97]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 201
NONGANGABLE DEVICE BOXES, 3/4" KNOCKOUTS

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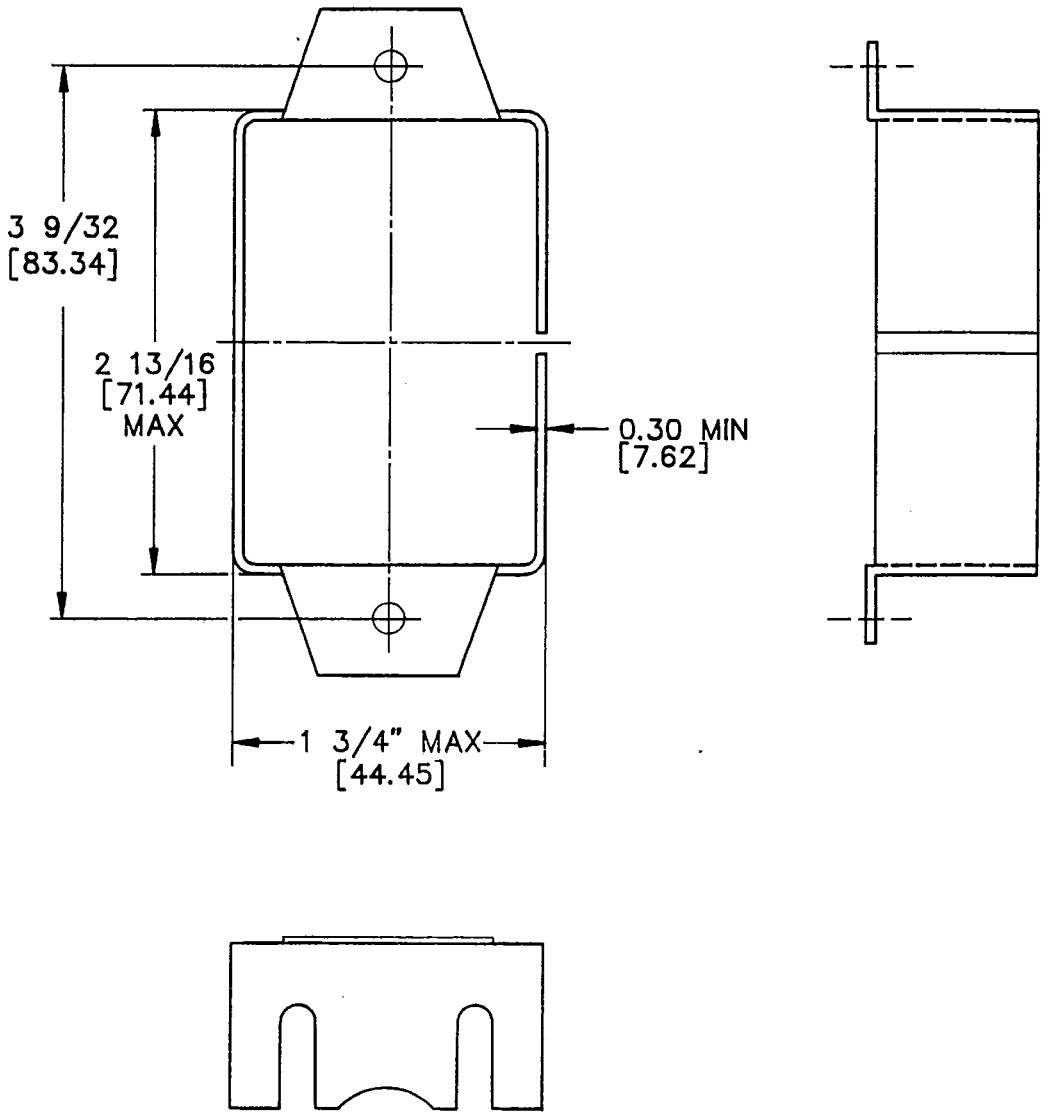
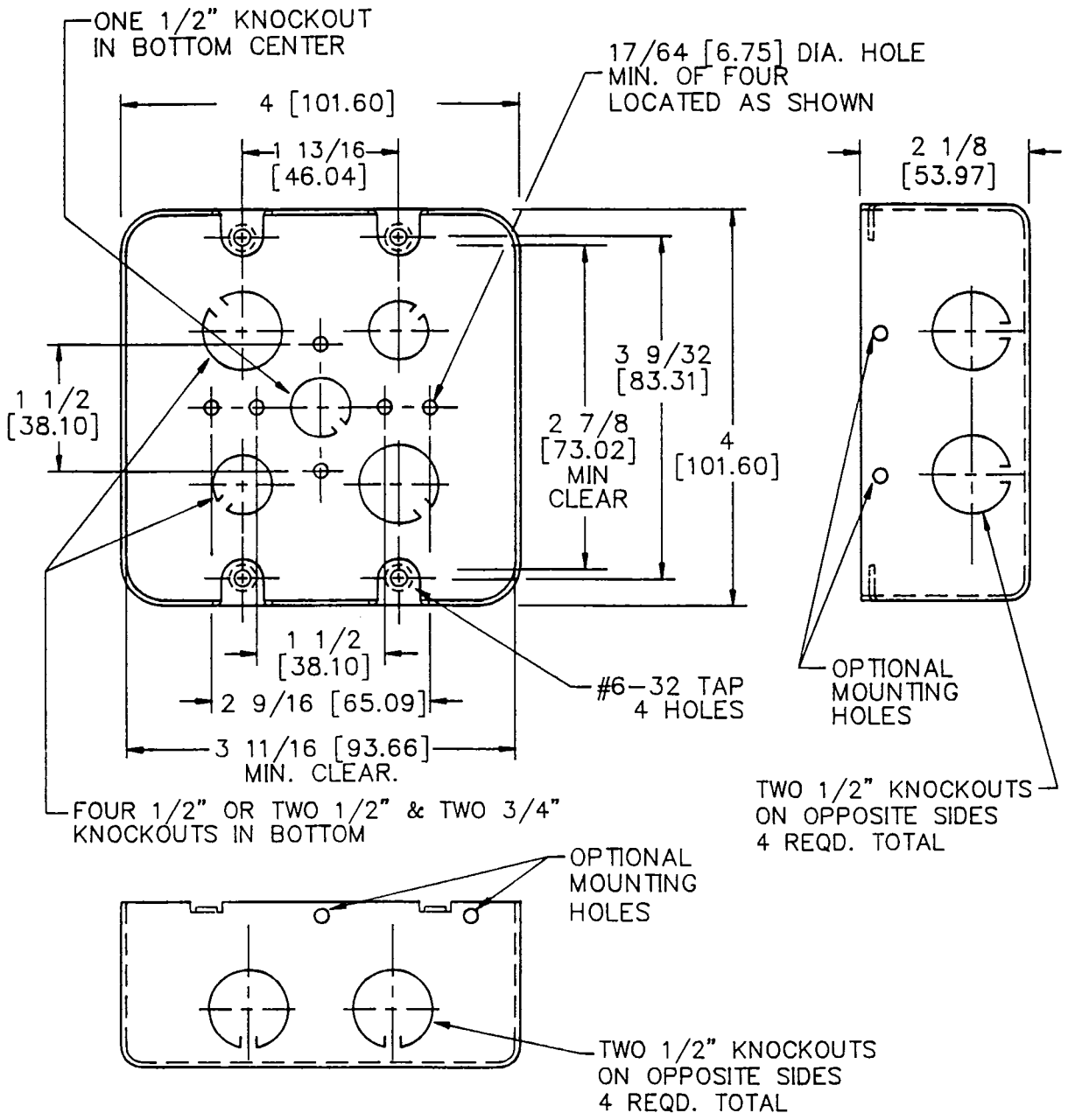


Figure 202
A FLUSH DEVICE BOX EXTENSION RING
(GOOF RING)

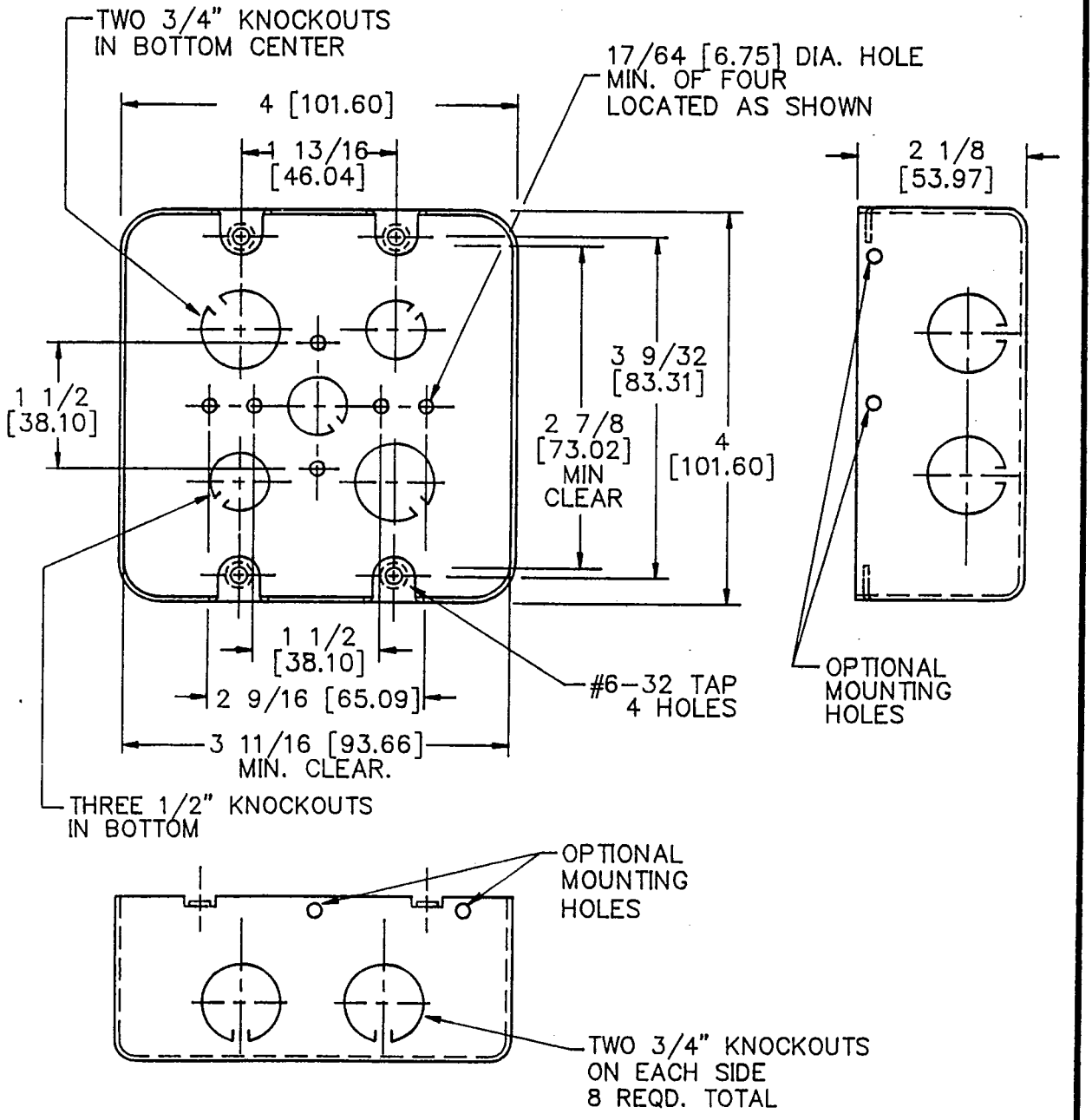
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
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Figure 210
4" SQUARE BOX FOR TWO DEVICES, 1/2" KNOCKOUTS

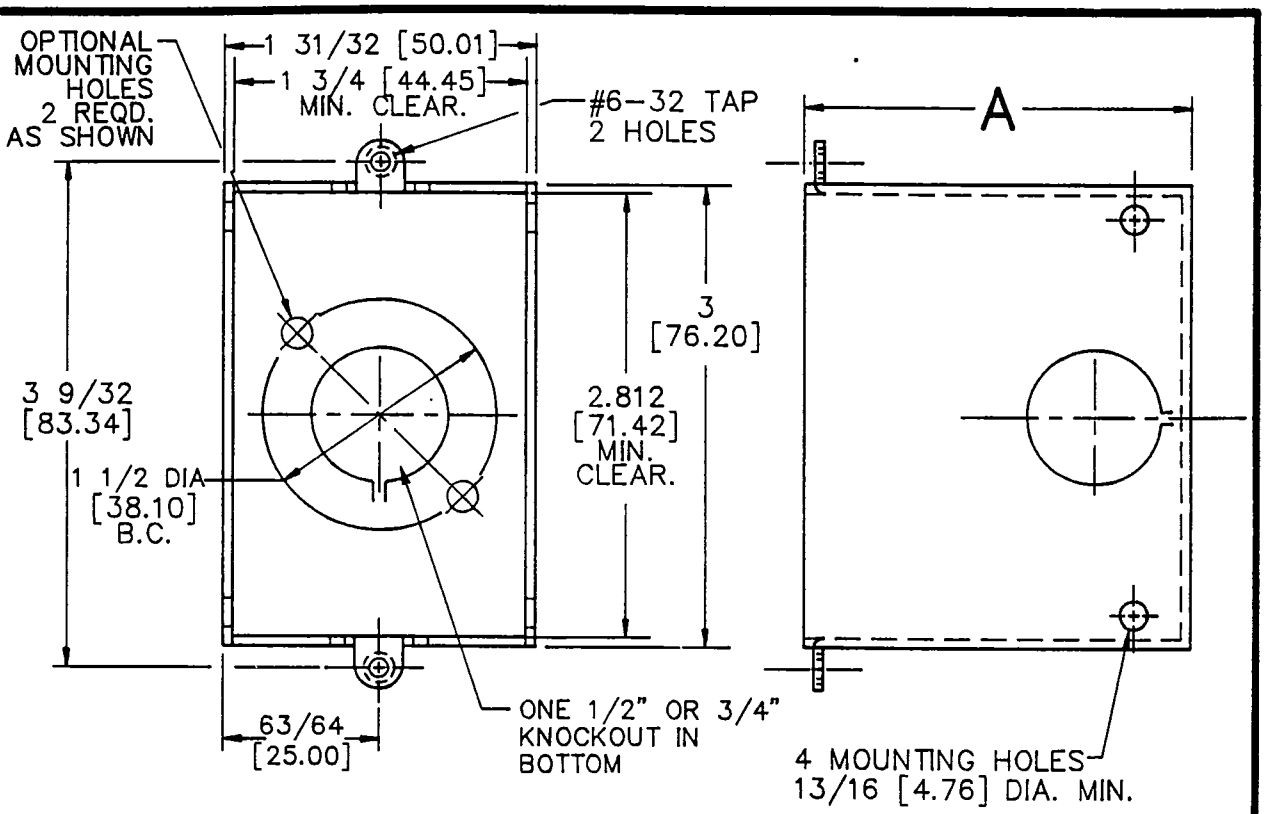
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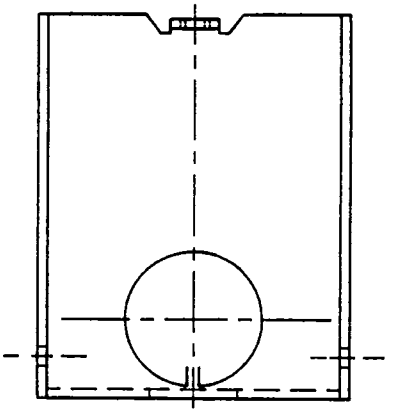


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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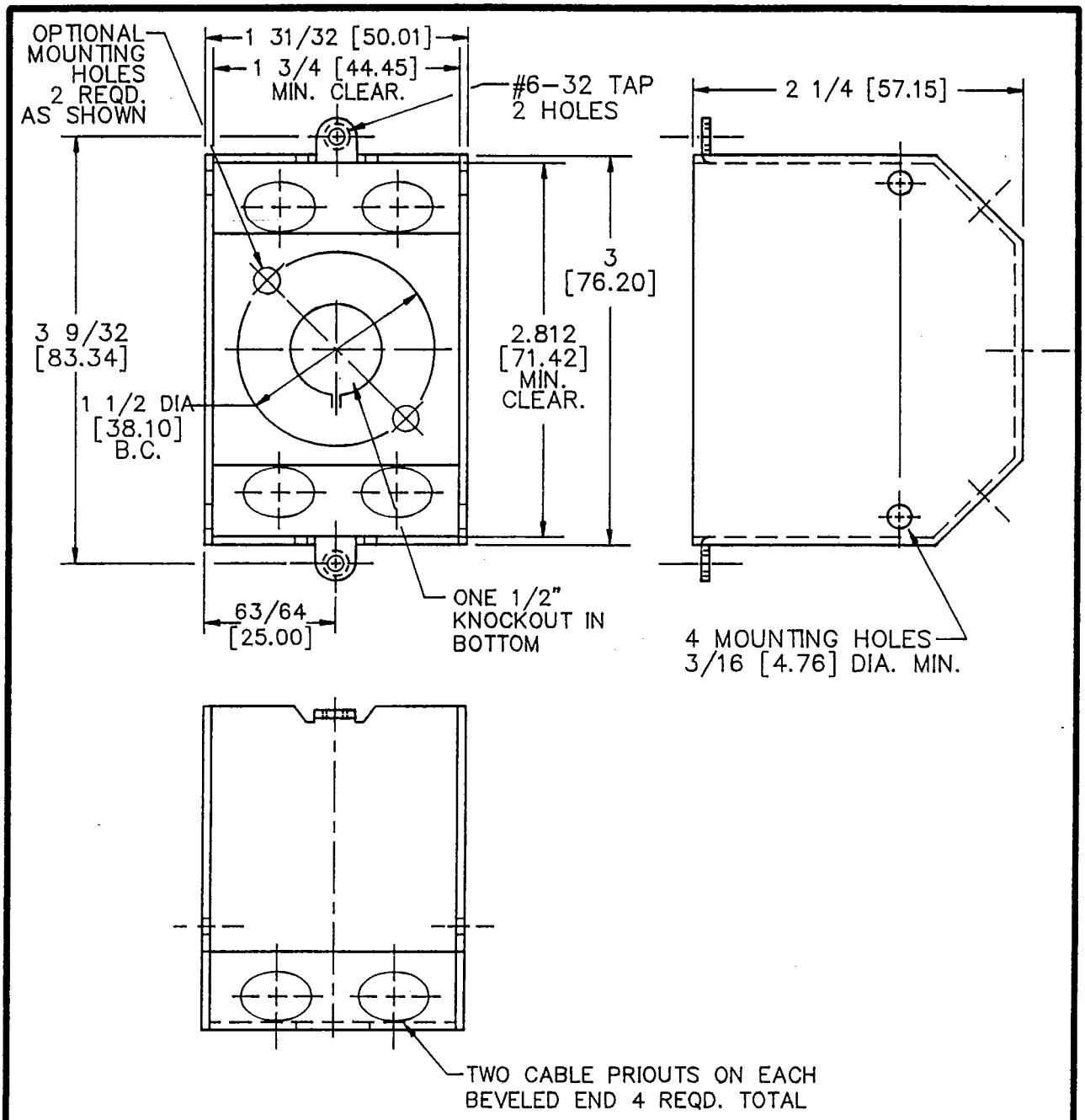


ITEM	A	1/2" K.O.'S		3/4" K.O.'S	
		SIDES	ENDS	SIDES	ENDS
1	1 1/2 [38.10]	–	2	–	–
2	2 [50.80]	–	2	–	–
3	2 1/2 [63.50]	2	2	–	–
4	2 1/2 [63.50]	–	–	2	2
5	2 3/4 [69.85]	2	2	–	–
6	2 3/4 [69.85]	–	–	2	2
7	3 1/2 [88.90]	4	4	–	–
8	3 1/2 [88.90]	–	–	4	4

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 220
SINGLE DEVICE BOX FOR 1/2" OR 3/4" KNOCKOUTS

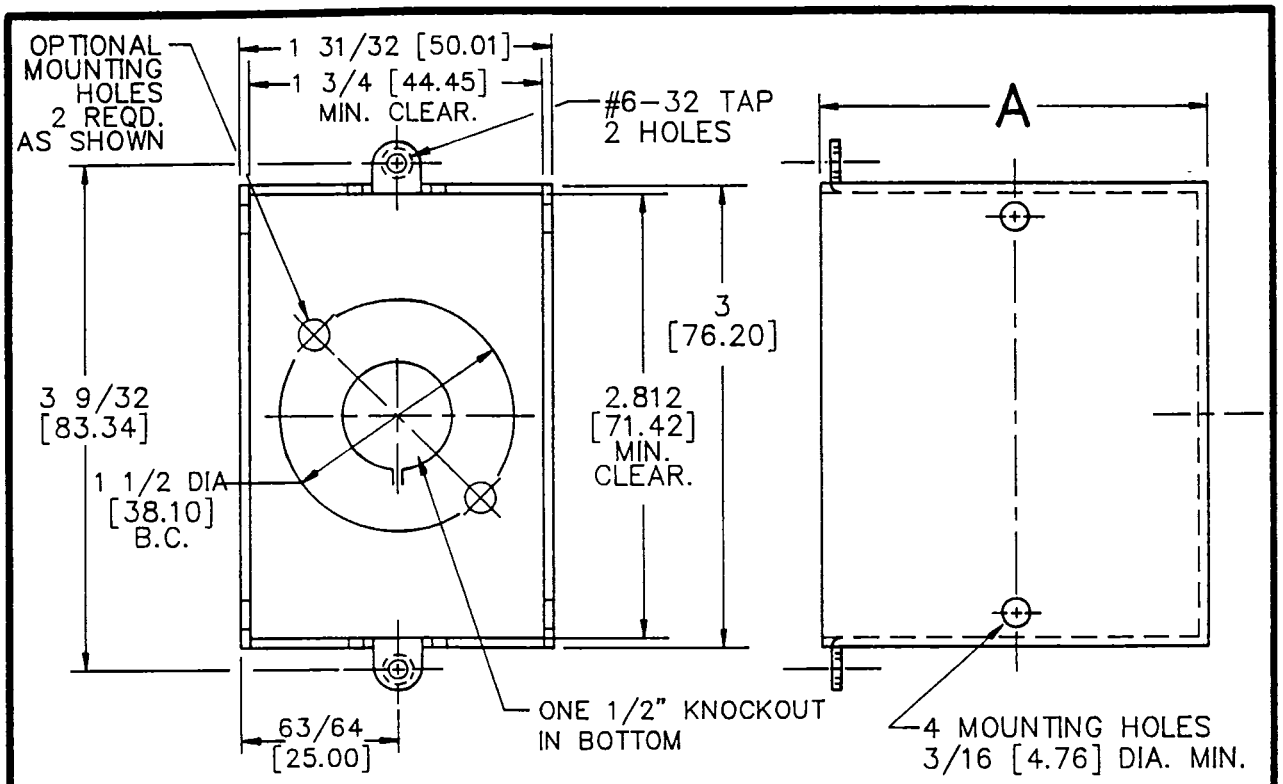
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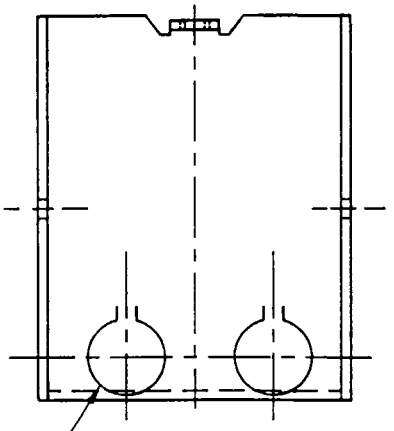


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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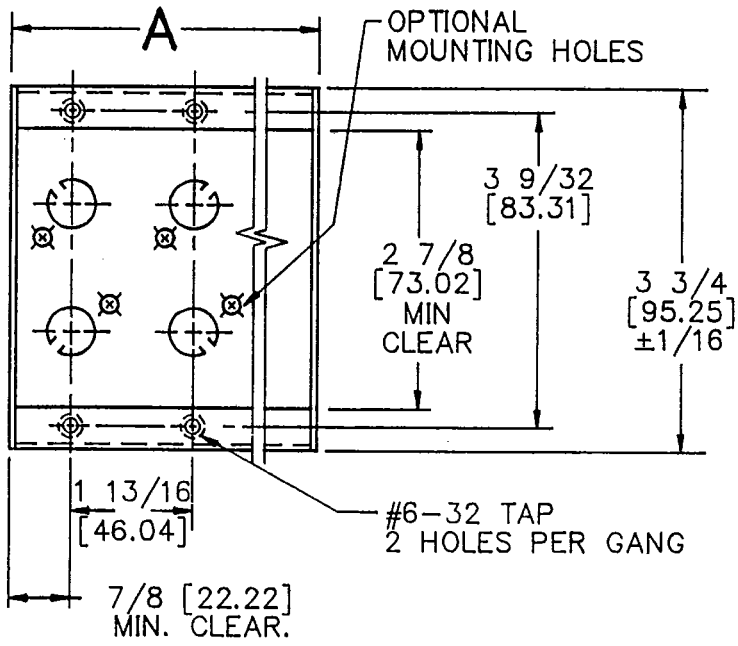


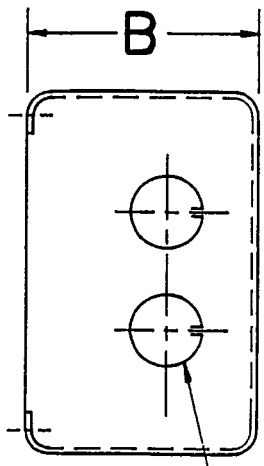
ITEM	A
1	1 1/2 [38.10]
2	2 [50.80]
3	2 1/2 [63.5]
4	2 3/4 [69.85]
5	3 1/2 [88.90]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

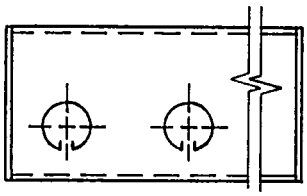
Figure 222
SINGLE DEVICE BOX FOR CABLE

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TWO 1/2" KNOCKOUTS ON EACH SIDE, ONE (PER GANG) ON EACH END, & ONE OR MORE (PER GANG) ON BOTTOM. TOTAL NO. REQD. (PER GANG) AS SHOWN IN CHART BELOW.



GANG 3 THRU 10 HAVE ONE KNOCKOUT PER GANG IN BOTTOM

TYPE OF BOX	A ± 1/16	B				TOTAL K.O.'S REQD.
		ITEM	SHALLOW	ITEM	DEEP	
1 GANG	2 [50.8]	1	2 1/2[63.5]	2	3 1/2[88.9]	7
2 GANG	3 13/16[96.84]	3	2 1/2[63.5]	4	3 1/2[88.9]	10
3 GANG	5 5/8 [142.87]	5	2 1/2[63.5]	6	3 1/2[88.9]	13
4 GANG	7 7/16 [188.91]	7	2 1/2[63.5]	8	3 1/2[88.9]	16
5 GANG	9 1/4 [234.95]	9	2 1/2[63.5]	10	3 1/2[88.9]	19
6 GANG	11 1/16[280.99]	11	2 1/2[63.5]	12	3 1/2[88.9]	22
7 GANG	12 3/4 [323.85]	13	2 1/2[63.5]	14	3 1/2[88.9]	25
8 GANG	14 9/16[369.89]	15	2 1/2[63.5]	16	3 1/2[88.9]	28
9 GANG	16 3/8[415.92]	17	2 1/2[63.5]	18	3 1/2[88.9]	31
10 GANG	18 3/16[461.96]	19	2 1/2[63.5]	20	3 1/2[88.9]	34

NOTE:

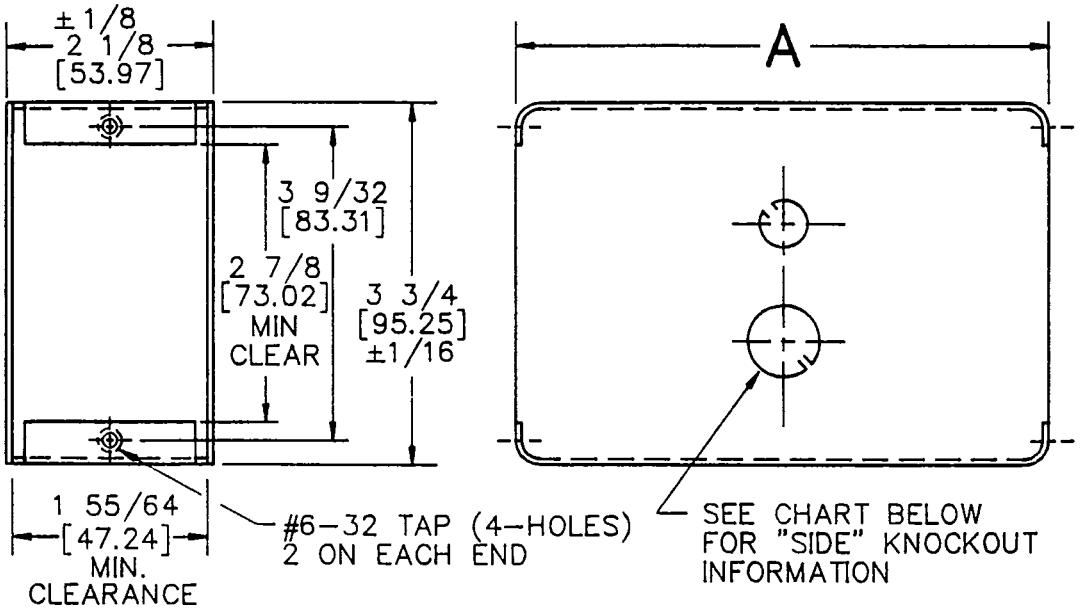
CONCENTRIC 1/2" & 3/4" KNOCKOUTS MAYBE SUBSTITUTED FOR 1/2" KNOCKOUTS

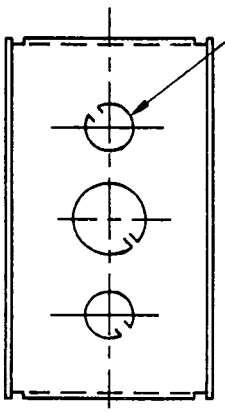
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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ITEM	A	KNOCKOUT INFORMATION			
		SIDES		TOP & BOTTOM	
		REQD	SIZE	REQD	SIZE
1	3 1/2	1 EA.	1/2	1 EA.	3/4
		1 EA.	3/4	–	–
2	5 1/2	1 EA.	1/2	2 EA.	1/2
		1 EA.	3/4	1 EA.	3/4
3	7 1/2	1 EA.	1/2	2 EA.	1/2
		1 EA.	3/4	1 EA.	3/4

NOTE:

CONCENTRIC 1/2" & 3/4" KNOCKOUTS MAYBE SUBSTITUTED FOR EITHER 1/2" OR 3/4" KNOCKOUTS

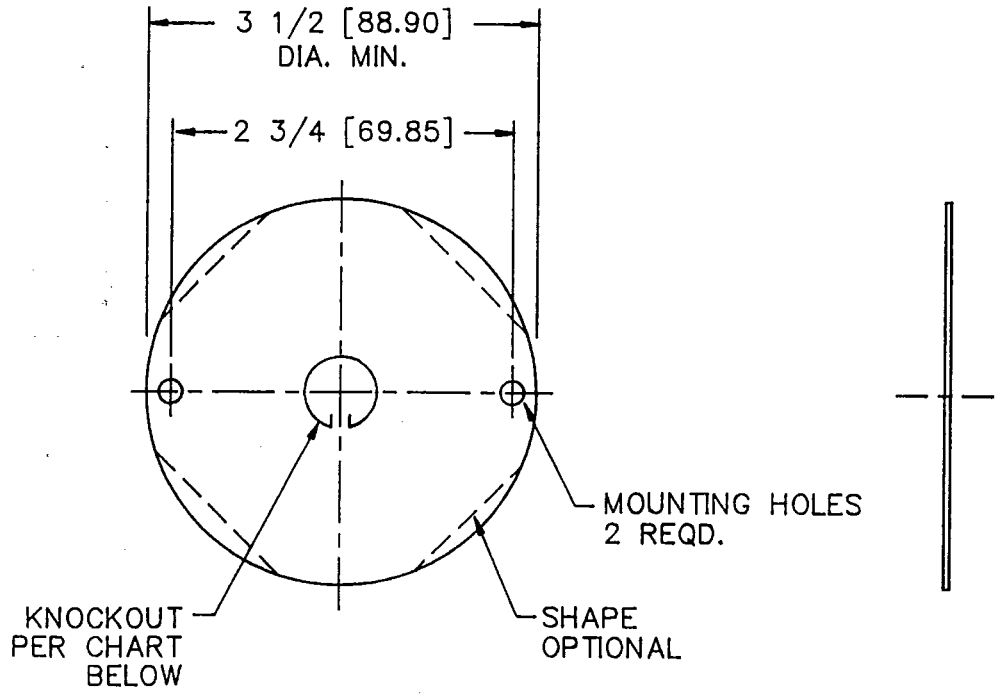
(THIS NOTE IS APPROVED AS AUTHORIZED ENGINEERING INFORMATION)

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 241

MASONRY THRU-WALL BOXES, 1/2" AND 3/4" KNOCKOUTS, SINGLE GANG

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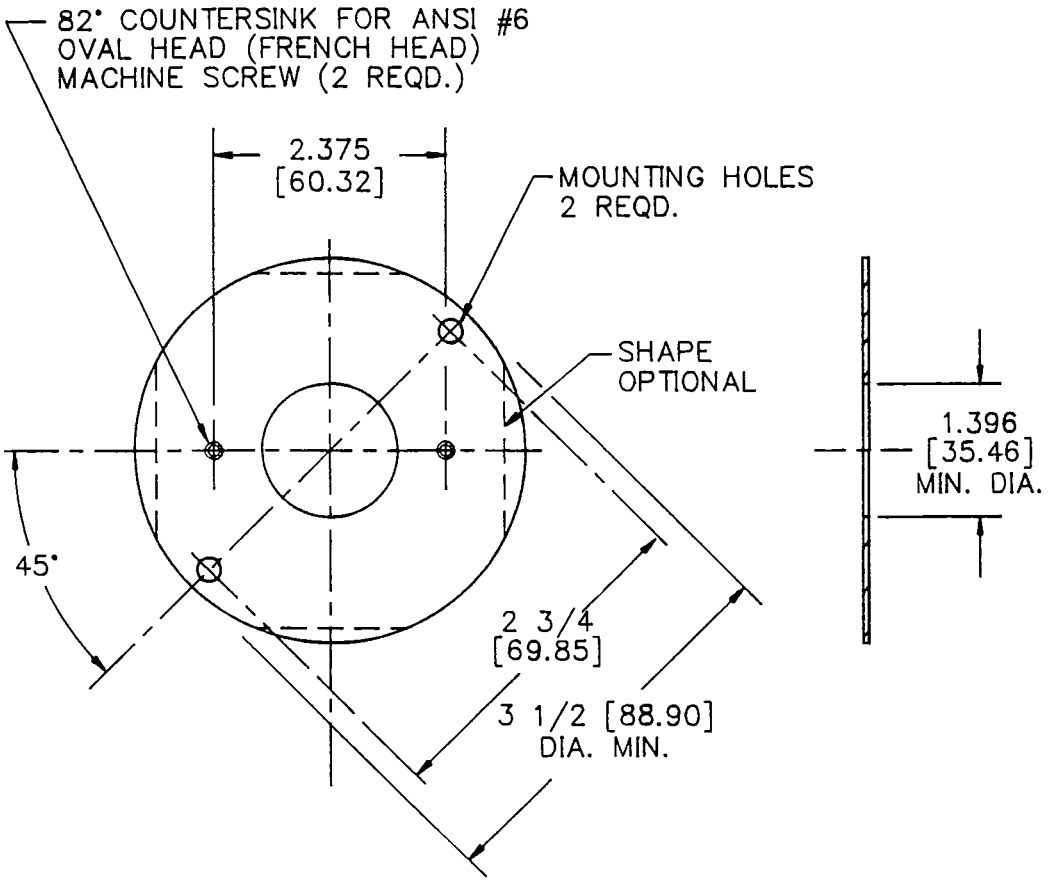


ITEM	KNOCKOUT
1	NONE
2	1/2

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

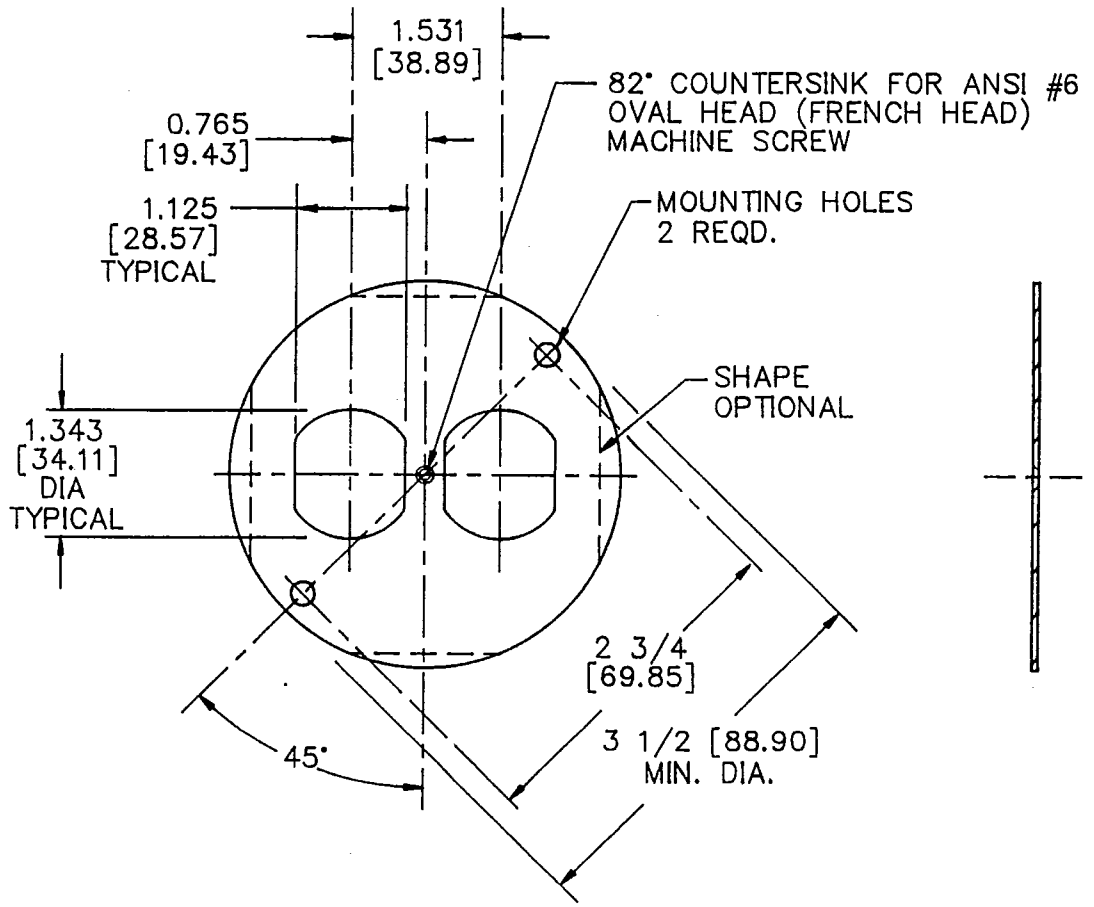
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

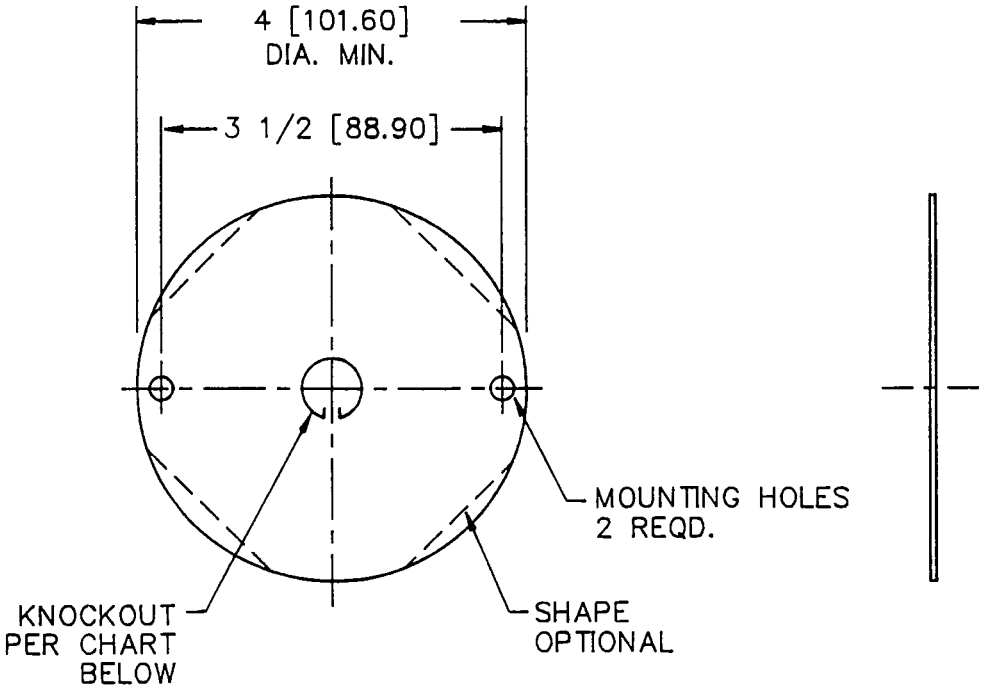
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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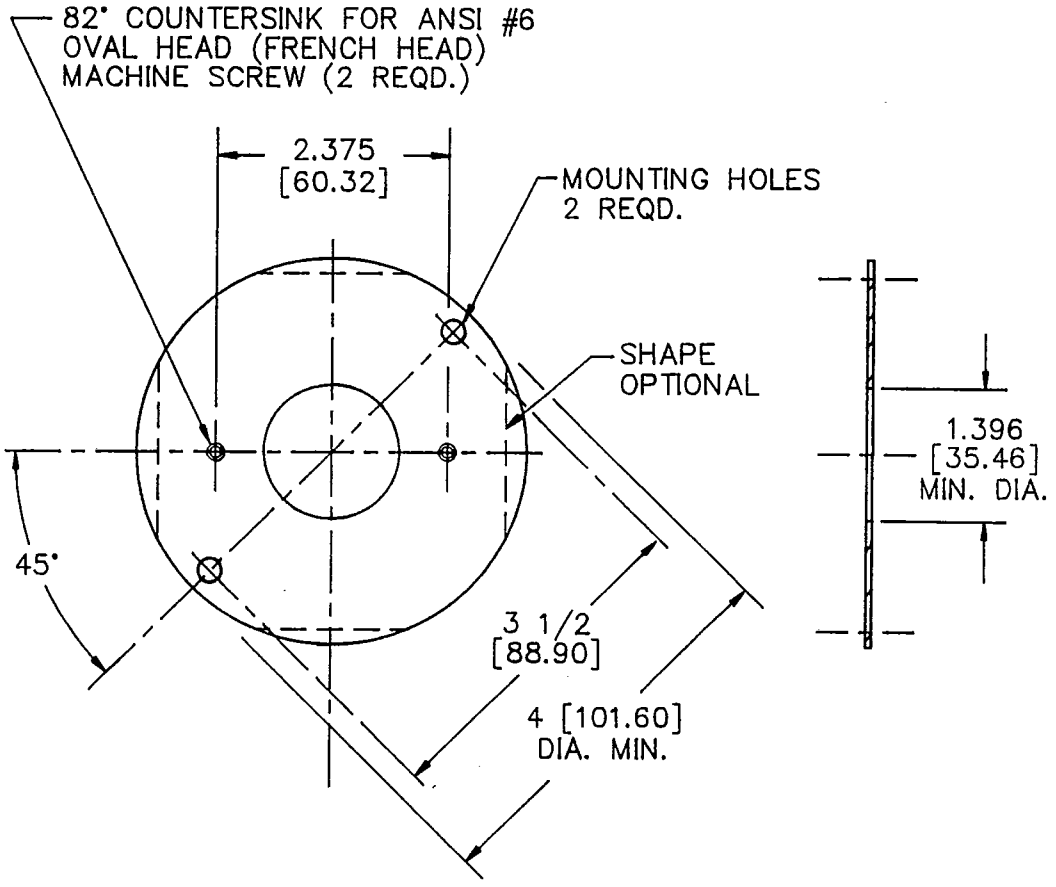


ITEM	KNOCKOUT
1	NONE
2	1/2

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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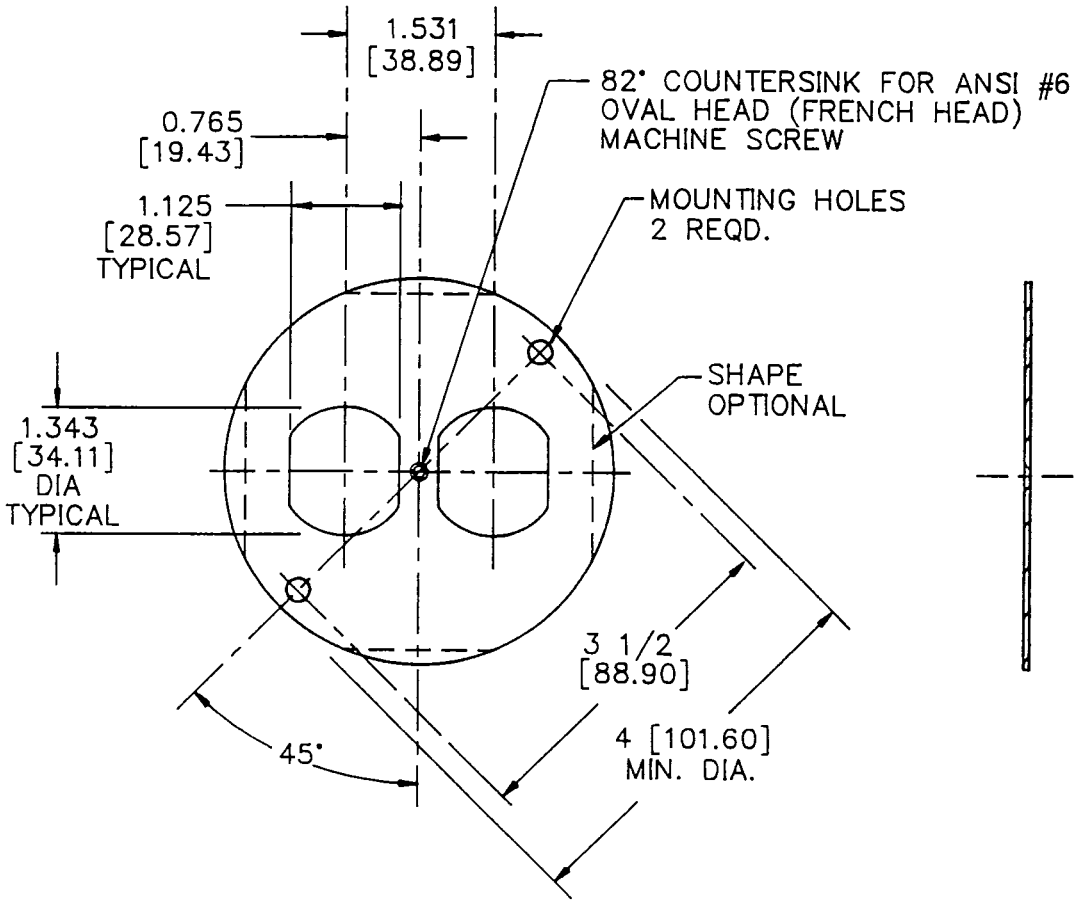


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 301

FLAT COVER FOR SINGLE CONVENIENCE OUTLET FOR 4" OCTAGON BOX

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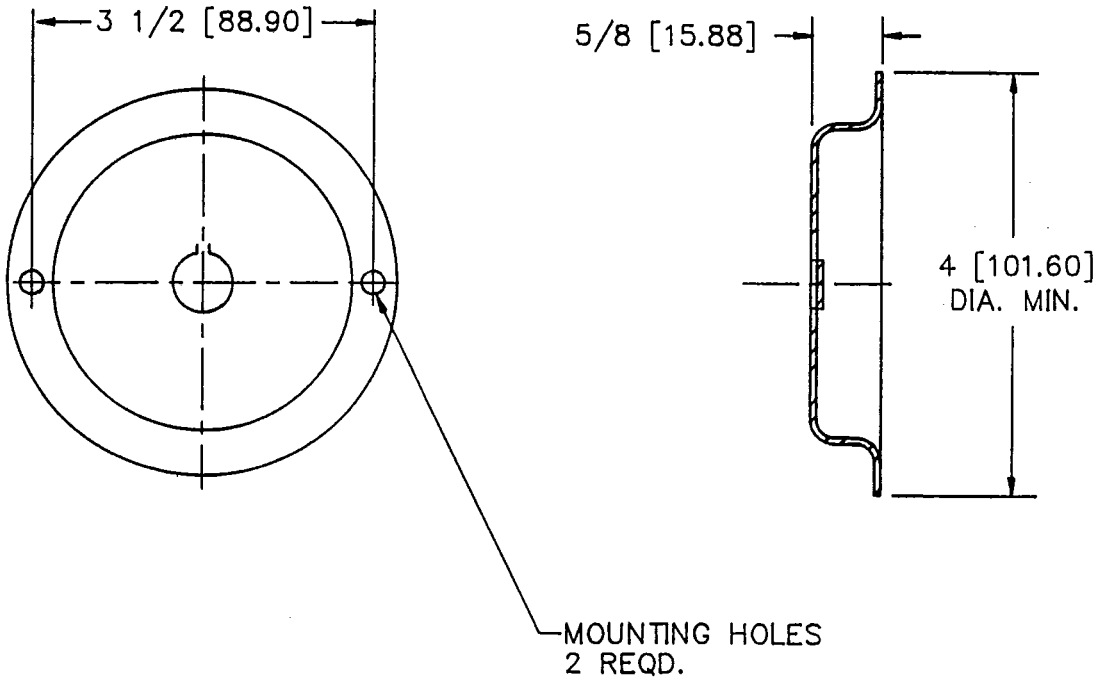


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 302

FLAT COVER FOR DUPLEX CONVENIENCE OUTLET FOR 4" OCTAGON BOX

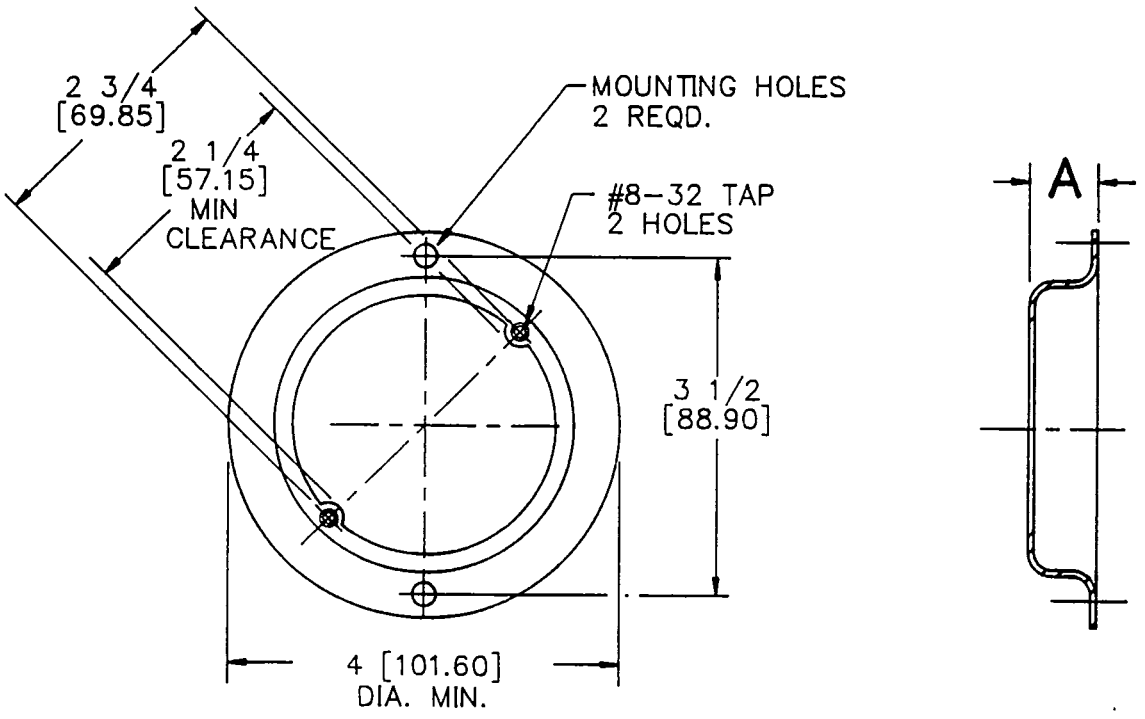
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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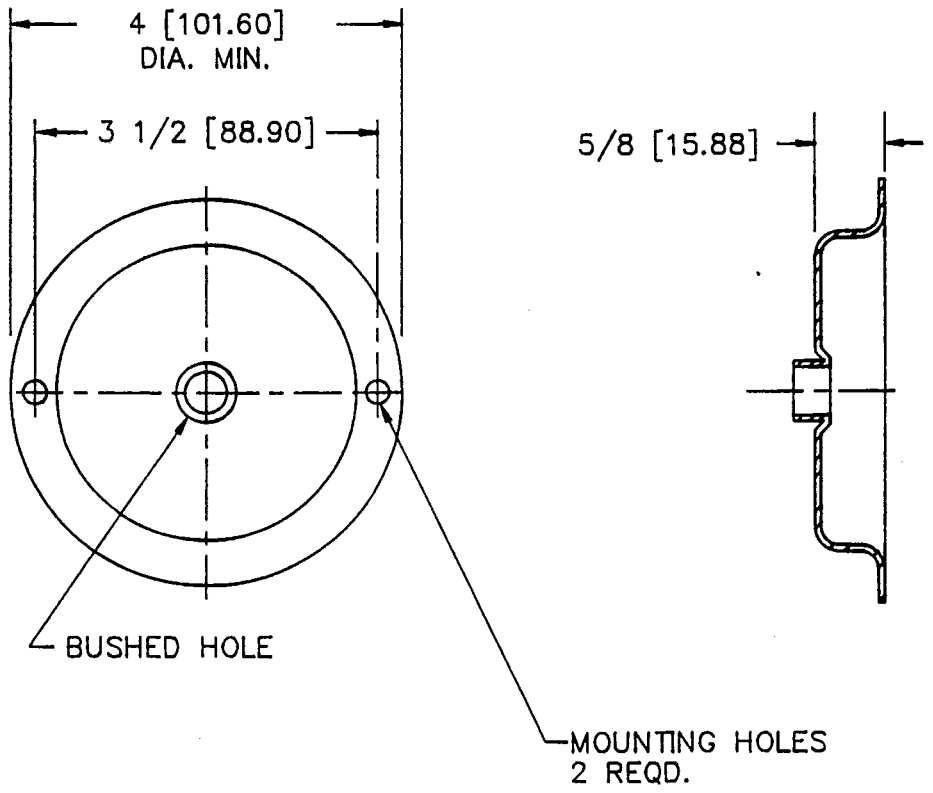


ITEM	A
1	1/2 [12.70]
2	5/8 [15.88]
3	3/4 [19.05]
4	1 [25.40]
5	1 1/4 [31.75]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

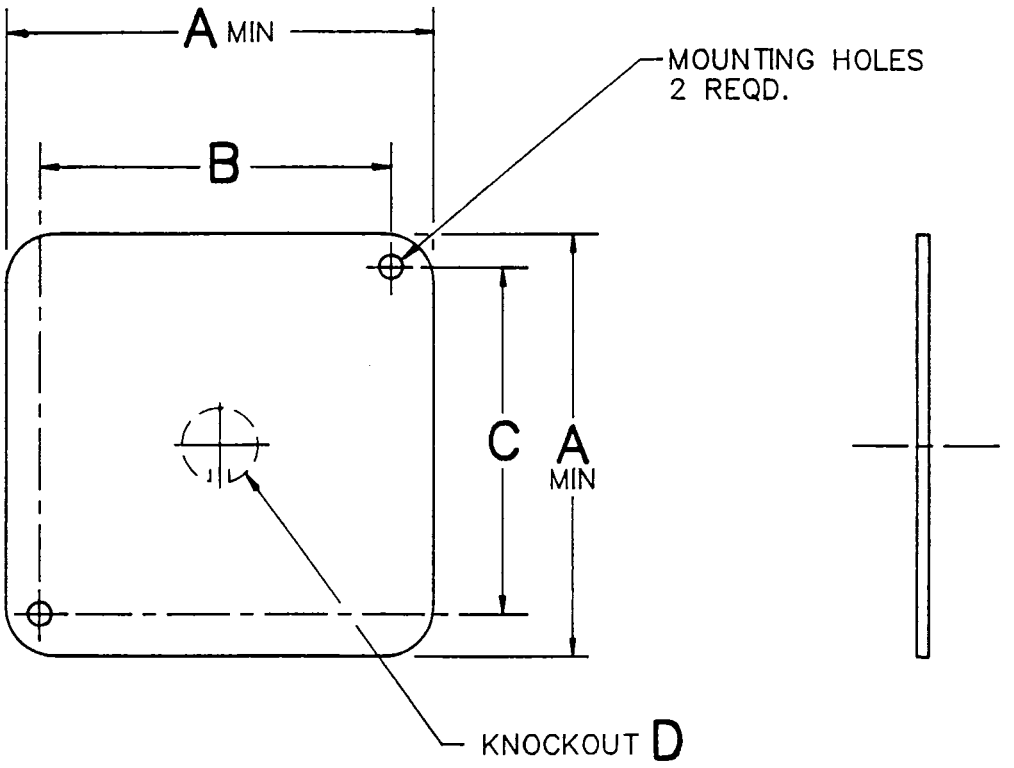
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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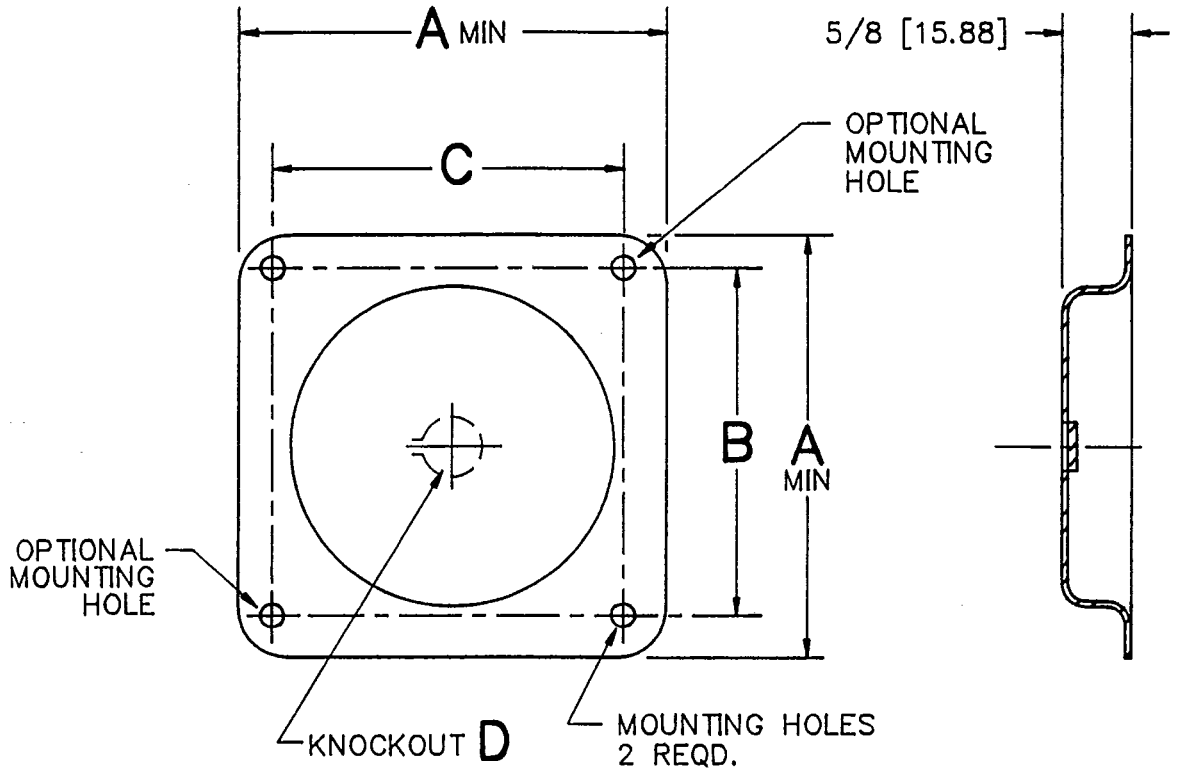


ITEM	A MIN.	B	C	KNOCKOUT D
1	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	NONE
2	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	NONE
3	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	1/2
4	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	1/2

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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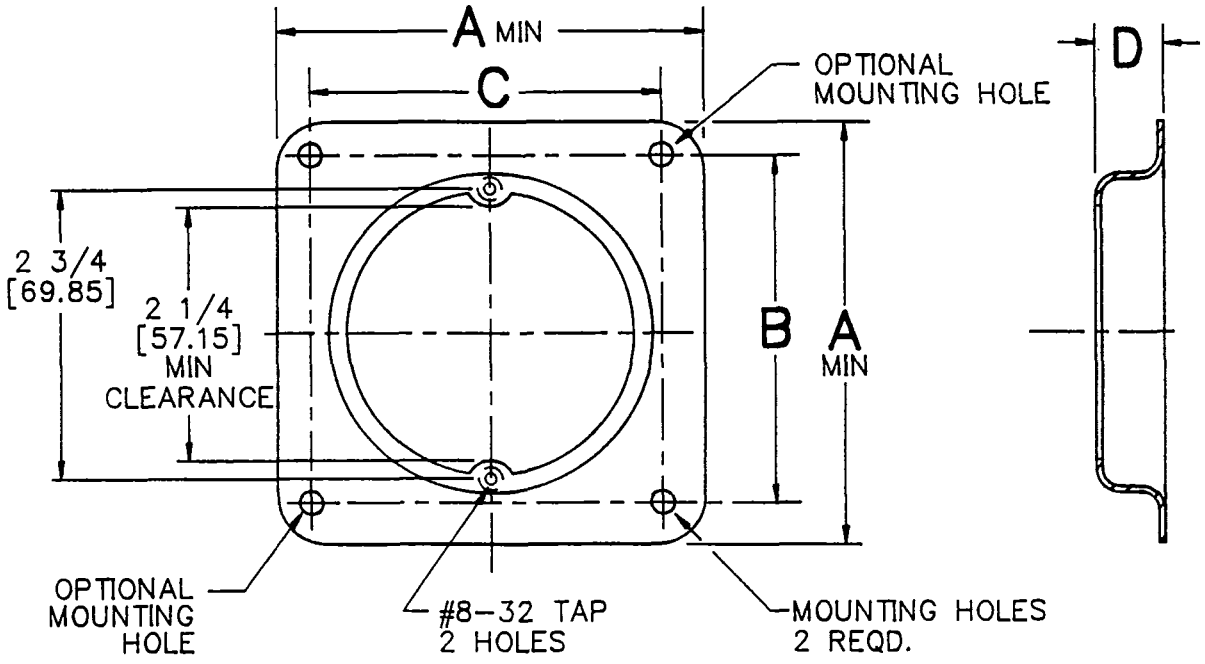


ITEM	A MIN.	B	C	KNOCKOUT D
1	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	NONE
2	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	NONE
3	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	1/2
4	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	1/2

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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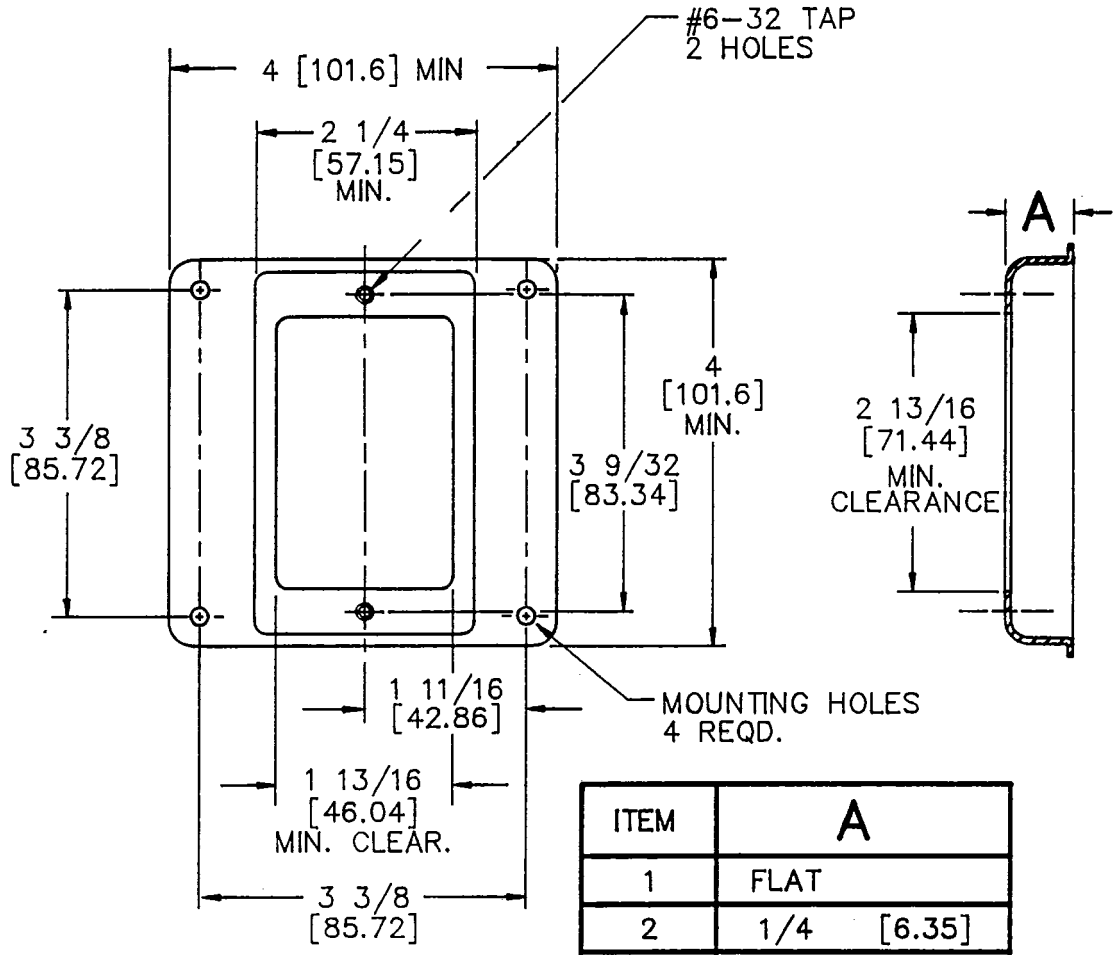


ITEM	A MIN.	B	C	D
1	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	1/2 [12.70]
2	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	5/8 [15.88]
3	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	3/4 [19.05]
4	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	1 [25.40]
5	4 [101.60]	3 3/8 [85.72]	3 3/8 [85.72]	1 1/4 [31.75]
6	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	1/2 [12.70]
7	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	5/8 [15.88]
8	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	3/4 [19.05]
9	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	1 [25.40]
10	4 11/16 [119.06]	4 1/4 [107.95]	2 3/4 [69.85]	1 1/4 [31.75]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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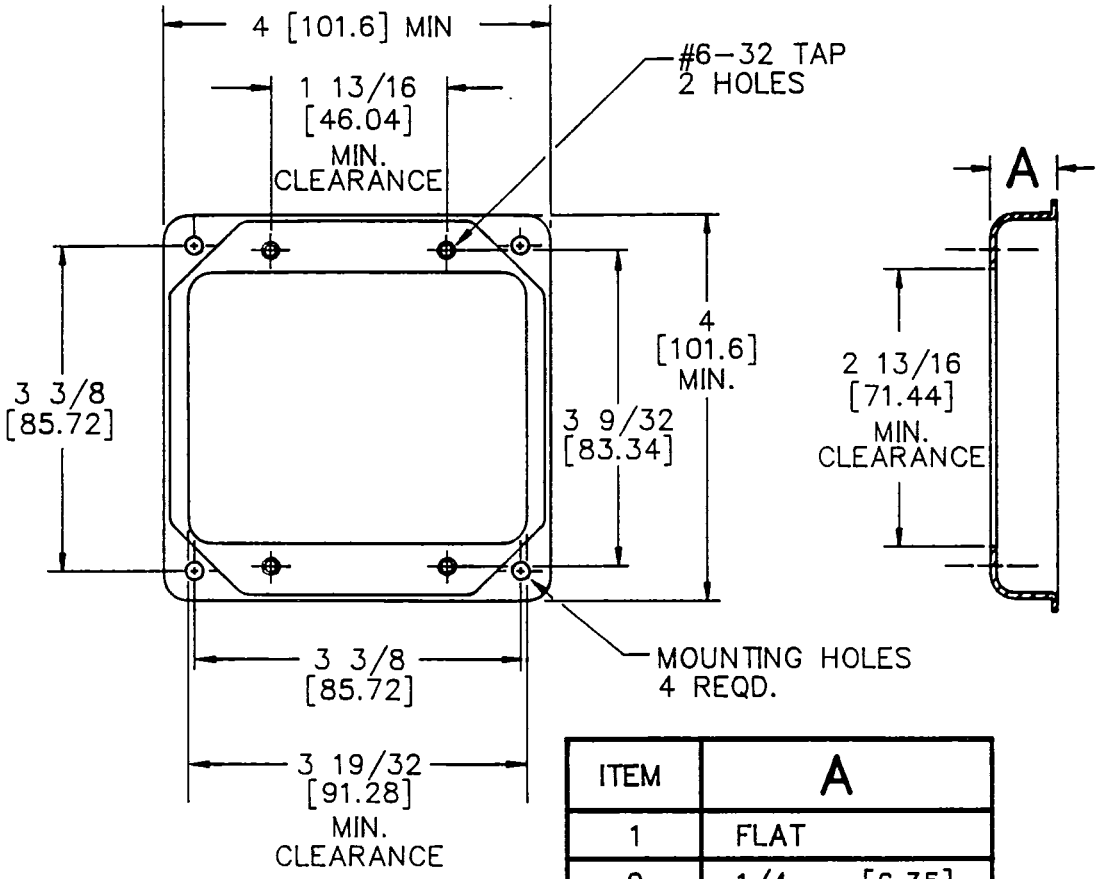


ITEM	A	
1	FLAT	
2	1/4	[6.35]
3	1/2	[12.70]
4	5/8	[15.88]
5	3/4	[19.05]
6	1	[25.40]
7	1 1/4	[31.75]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 313
ONE-DEVICE COVER FOR 4" SQUARE BOX

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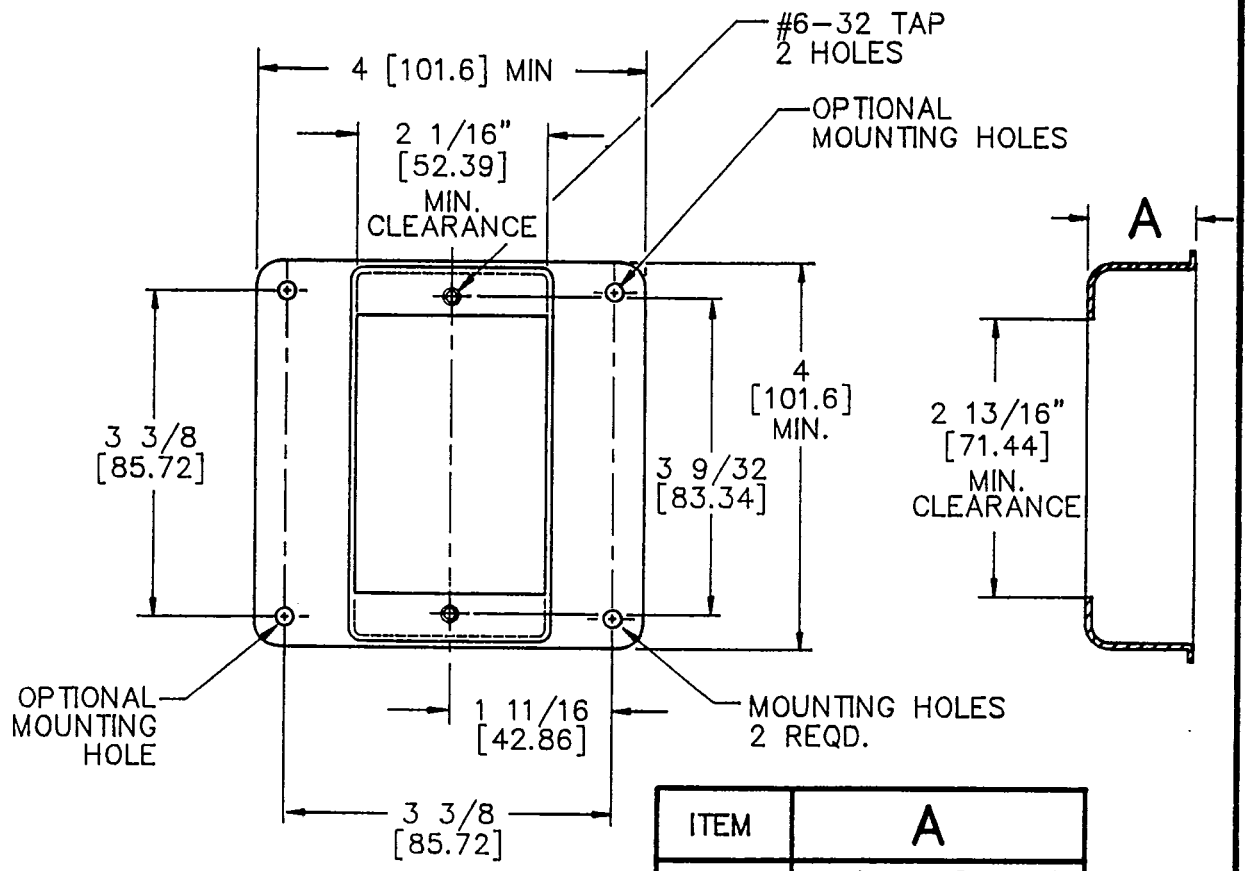


ITEM	A	
1	FLAT	
2	1/4	[6.35]
3	1/2	[12.70]
4	5/8	[15.88]
5	3/4	[19.05]
6	1	[25.40]
7	1 1/4	[31.75]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 314
TWO-DEVICE COVER FOR 4" SQUARE BOX

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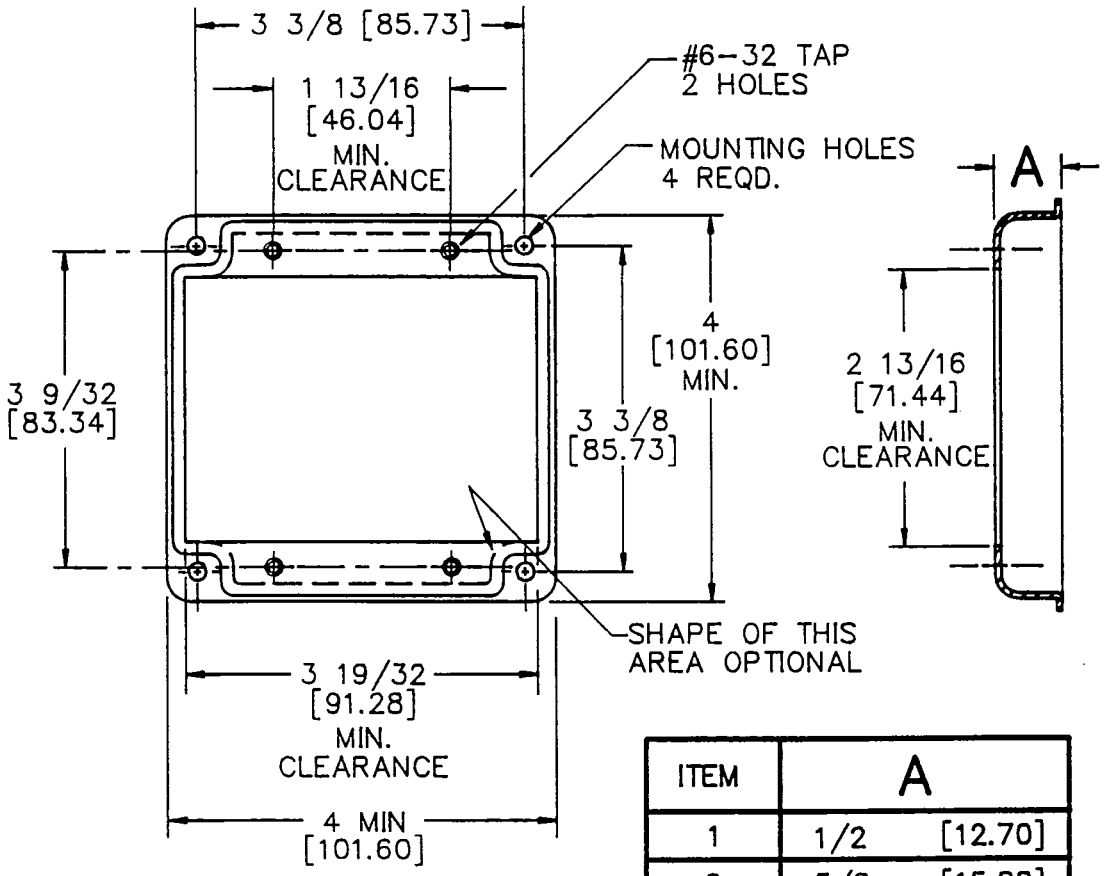


ITEM	A	
1	1/2	[12.70]
2	5/8	[15.88]
3	3/4	[19.05]
4	1	[25.40]
5	1 1/4	[31.75]
6	1 1/2	[38.10]
7	2	[50.80]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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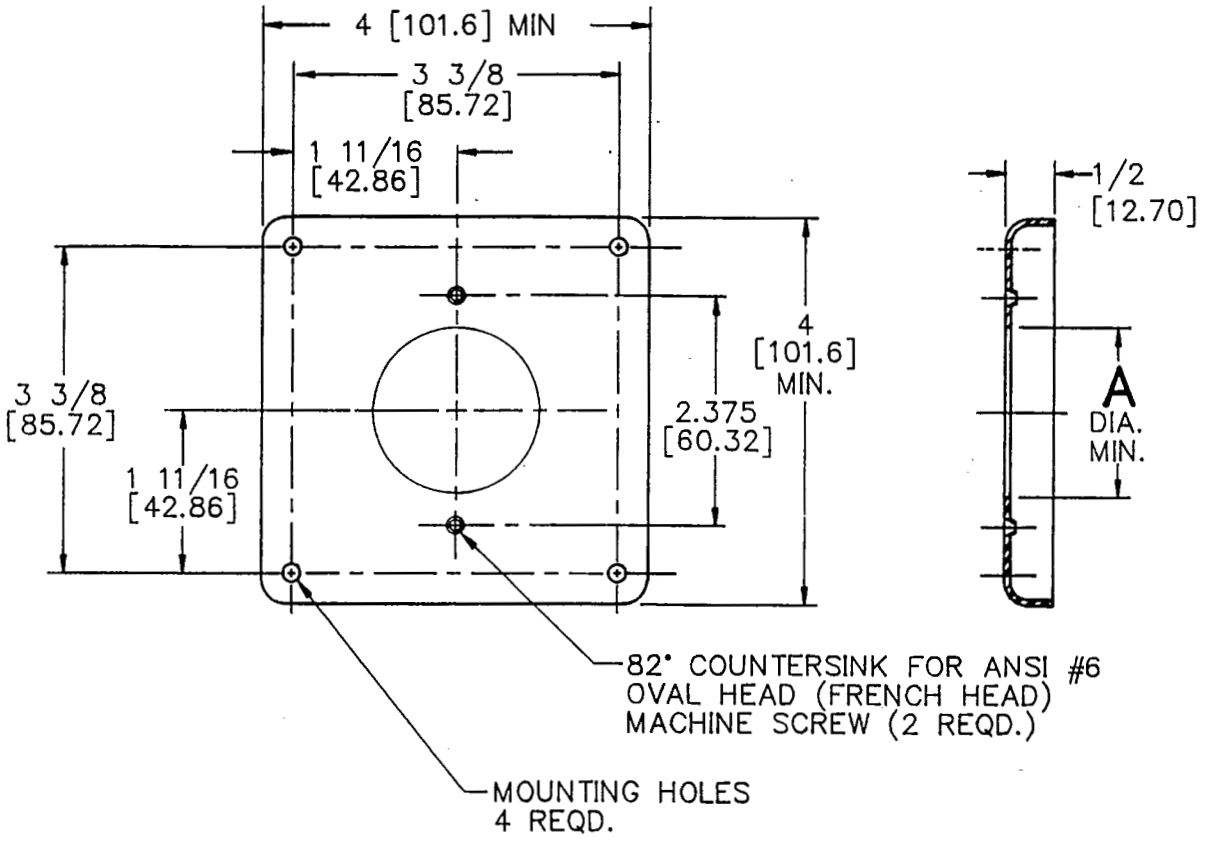


ITEM	A	
1	1/2	[12.70]
2	5/8	[15.88]
3	3/4	[19.05]
4	1	[25.40]
5	1 1/4	[31.75]
6	1 1/2	[38.10]
7	2	[50.80]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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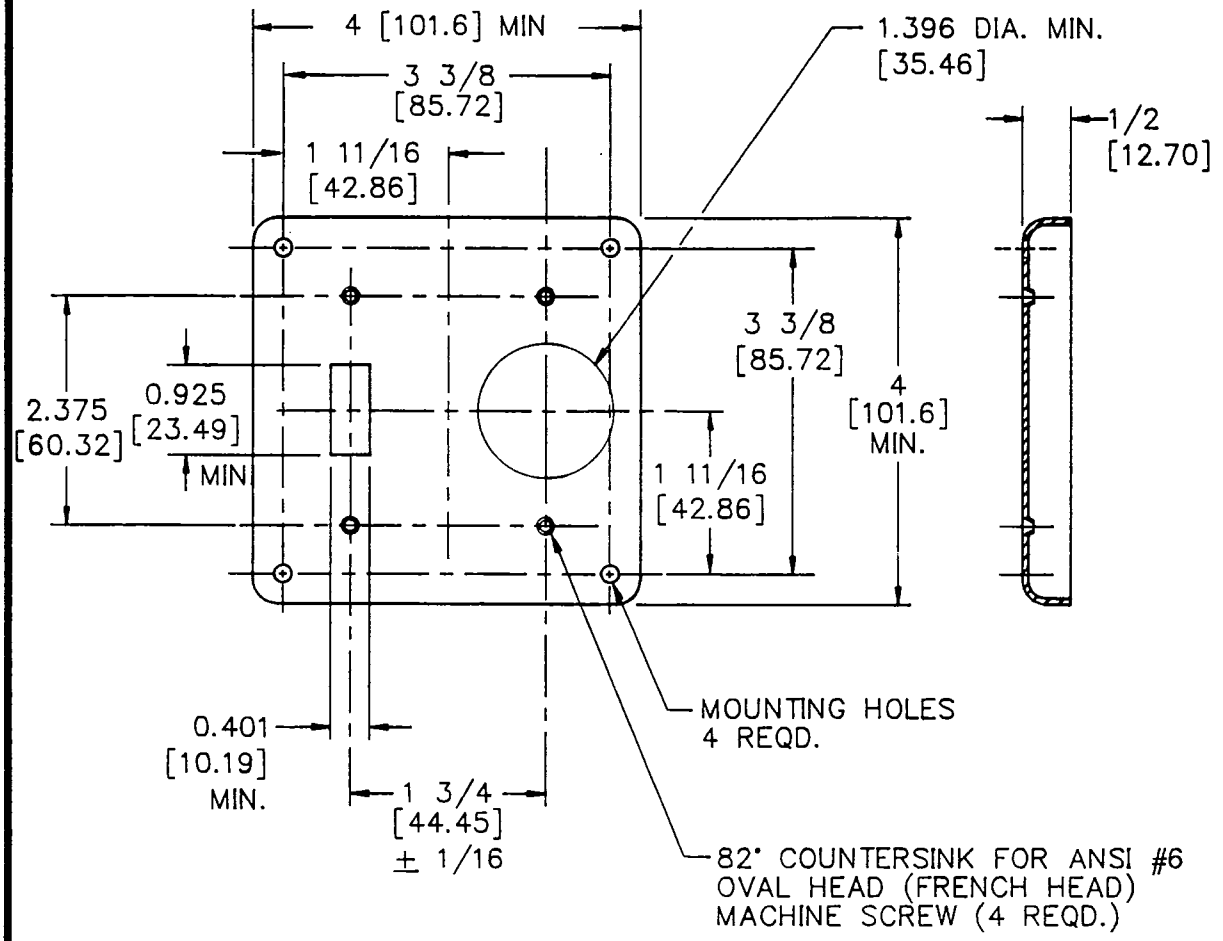


ITEM	A MIN.
1	1.396 [35.46]
2	1.586 [40.28]
3	1.711 [43.46]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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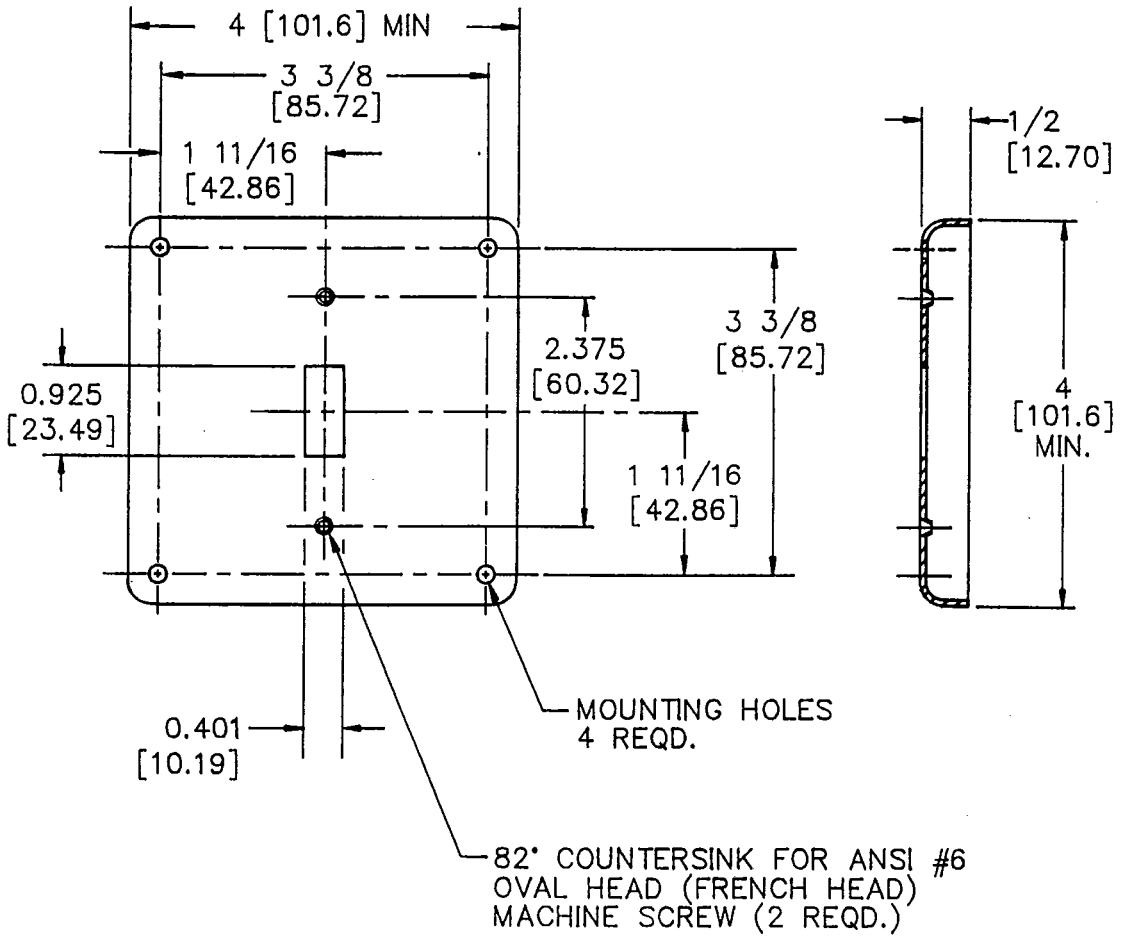


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 321

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

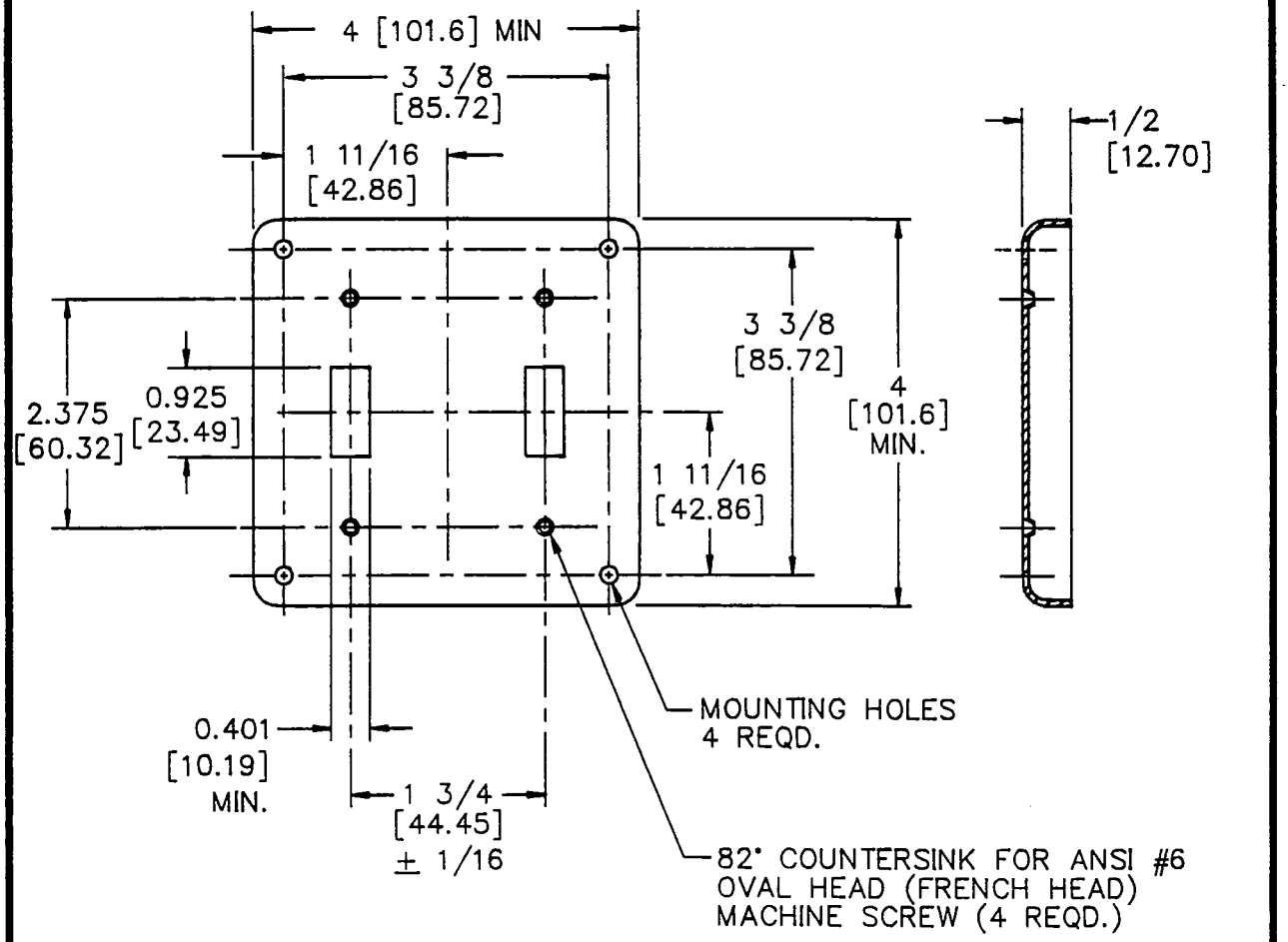
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

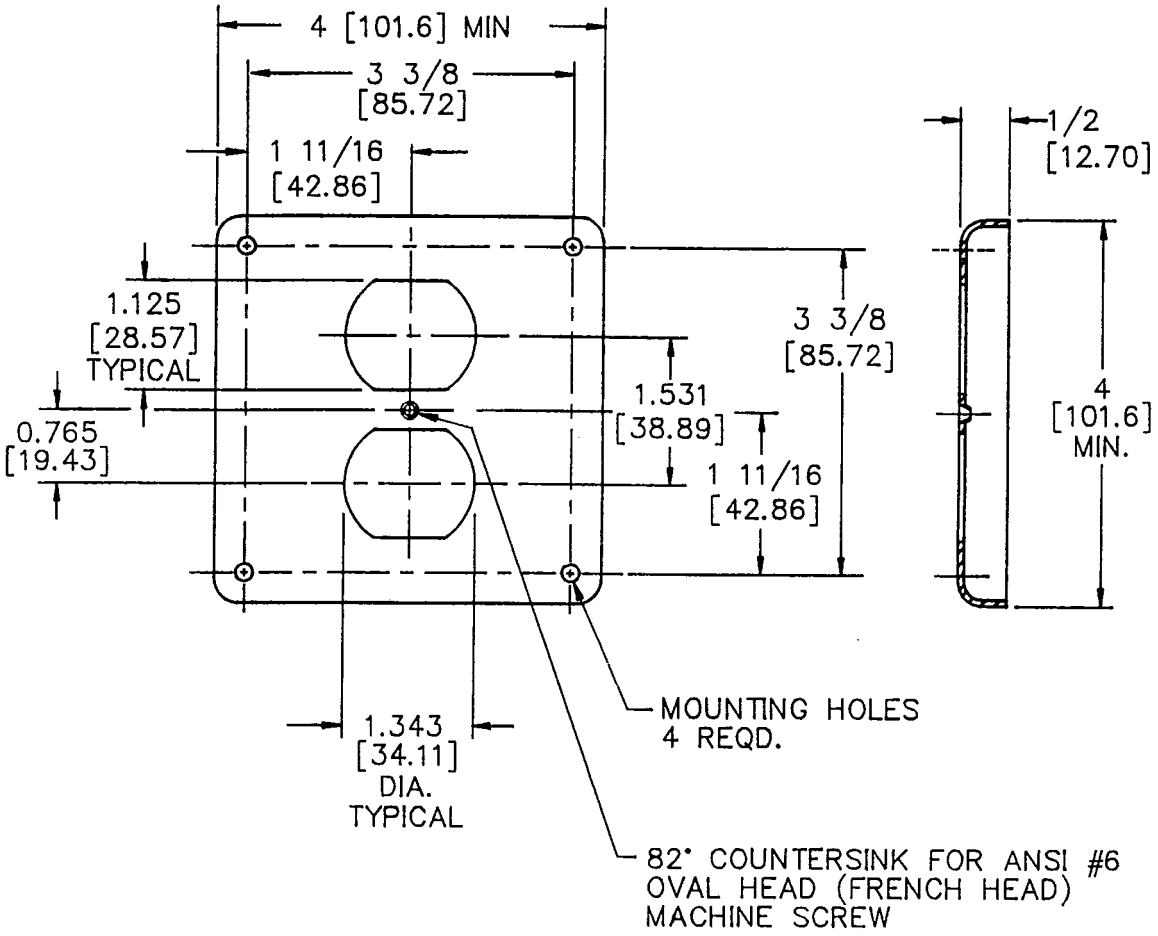
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

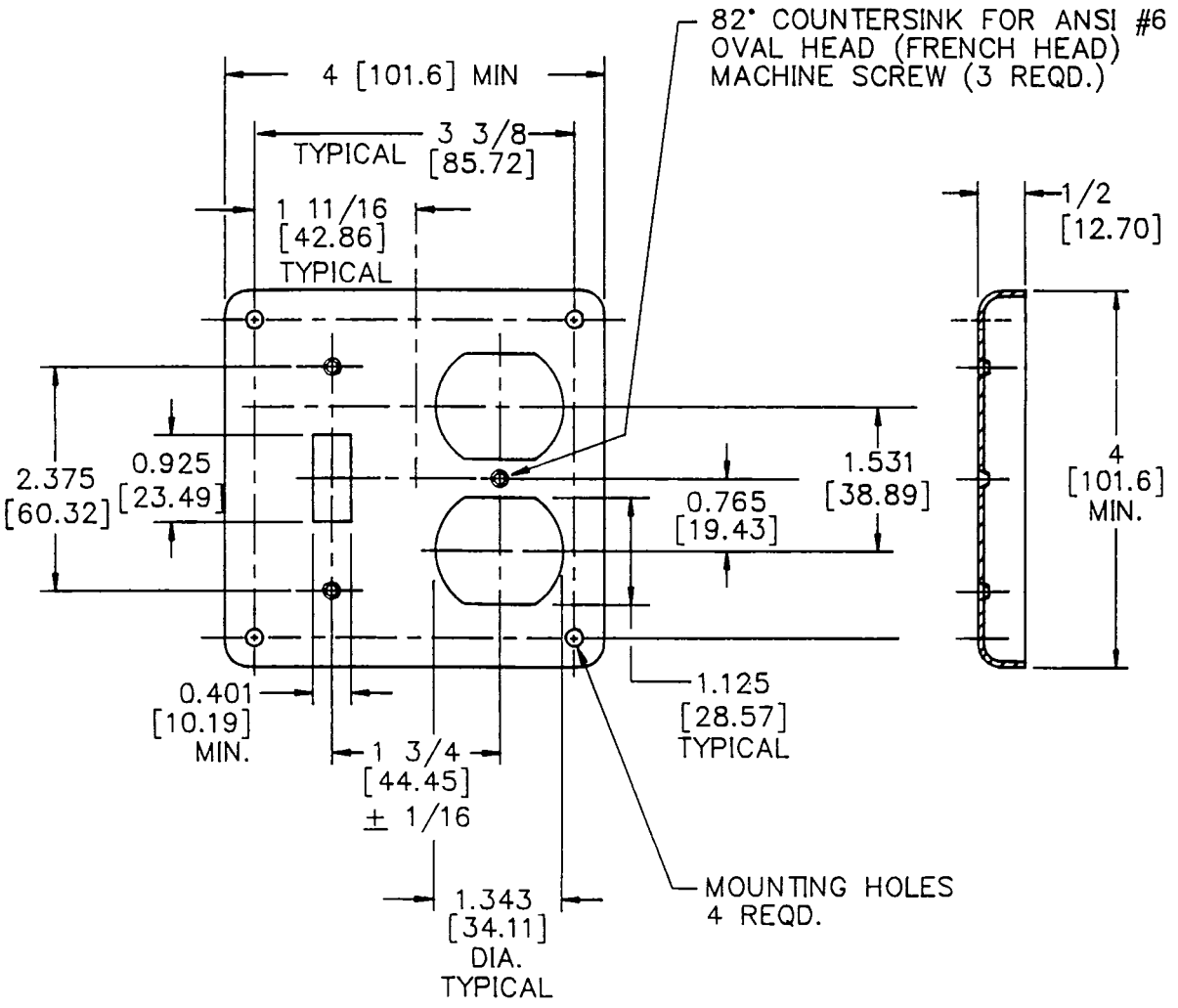
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 324
SURFACE COVER FOR ONE DUPLEX RECEPTACLE FOR 4" SQUARE BOX

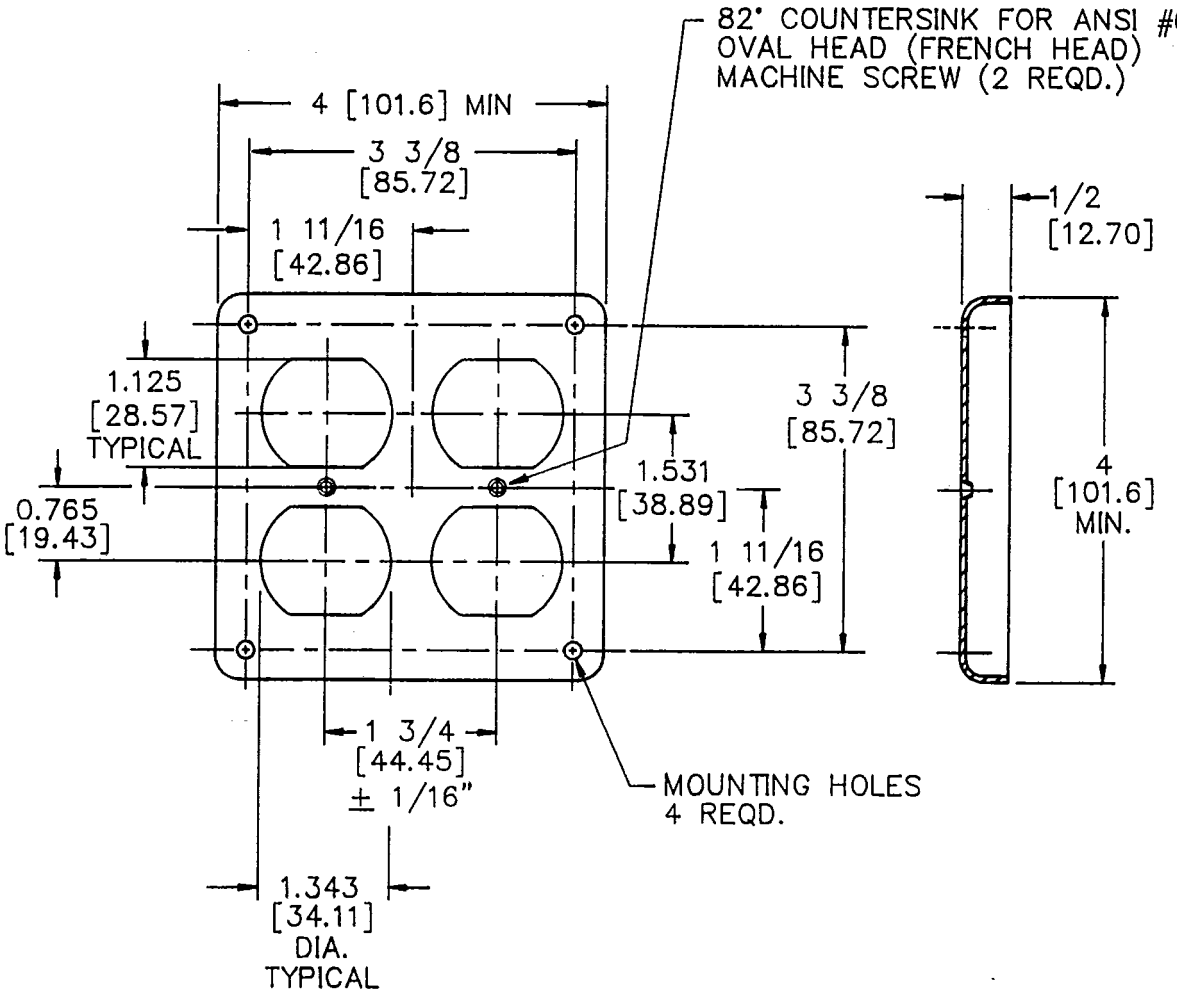
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

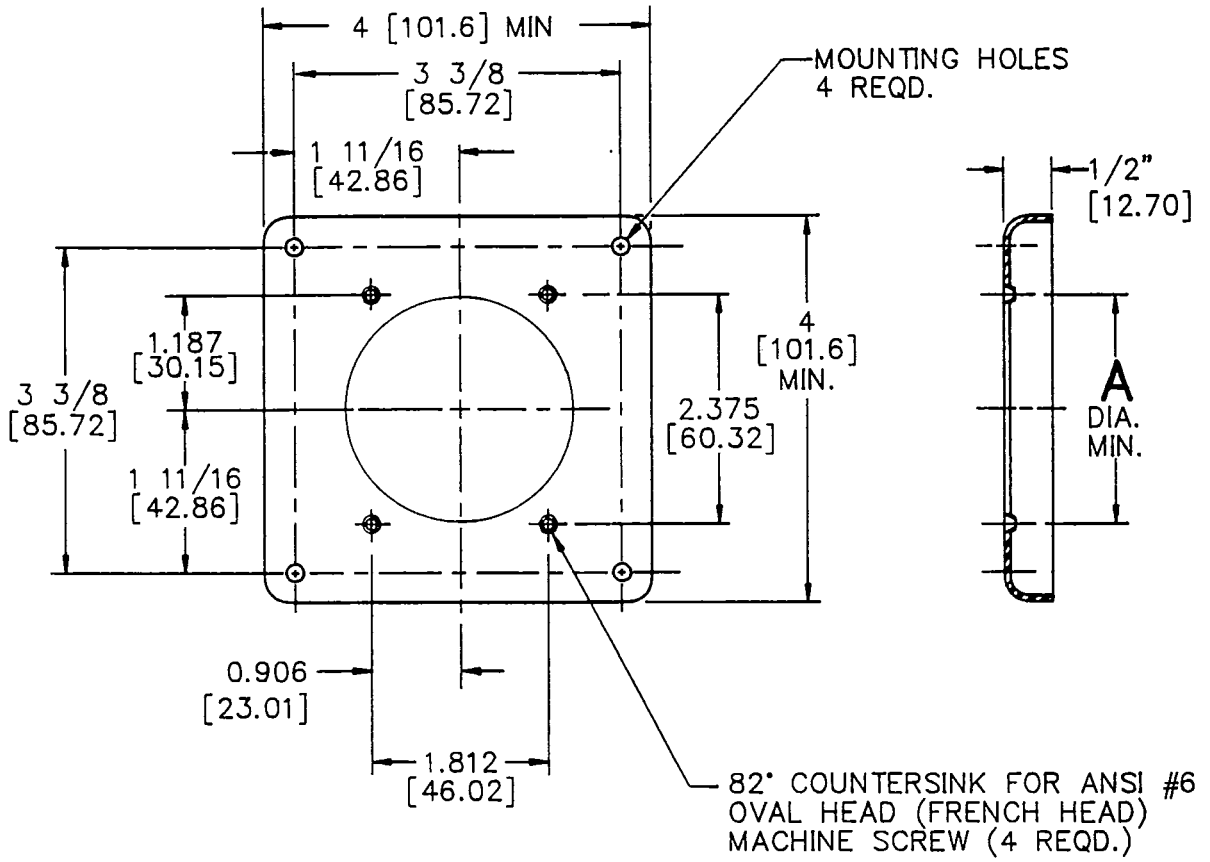
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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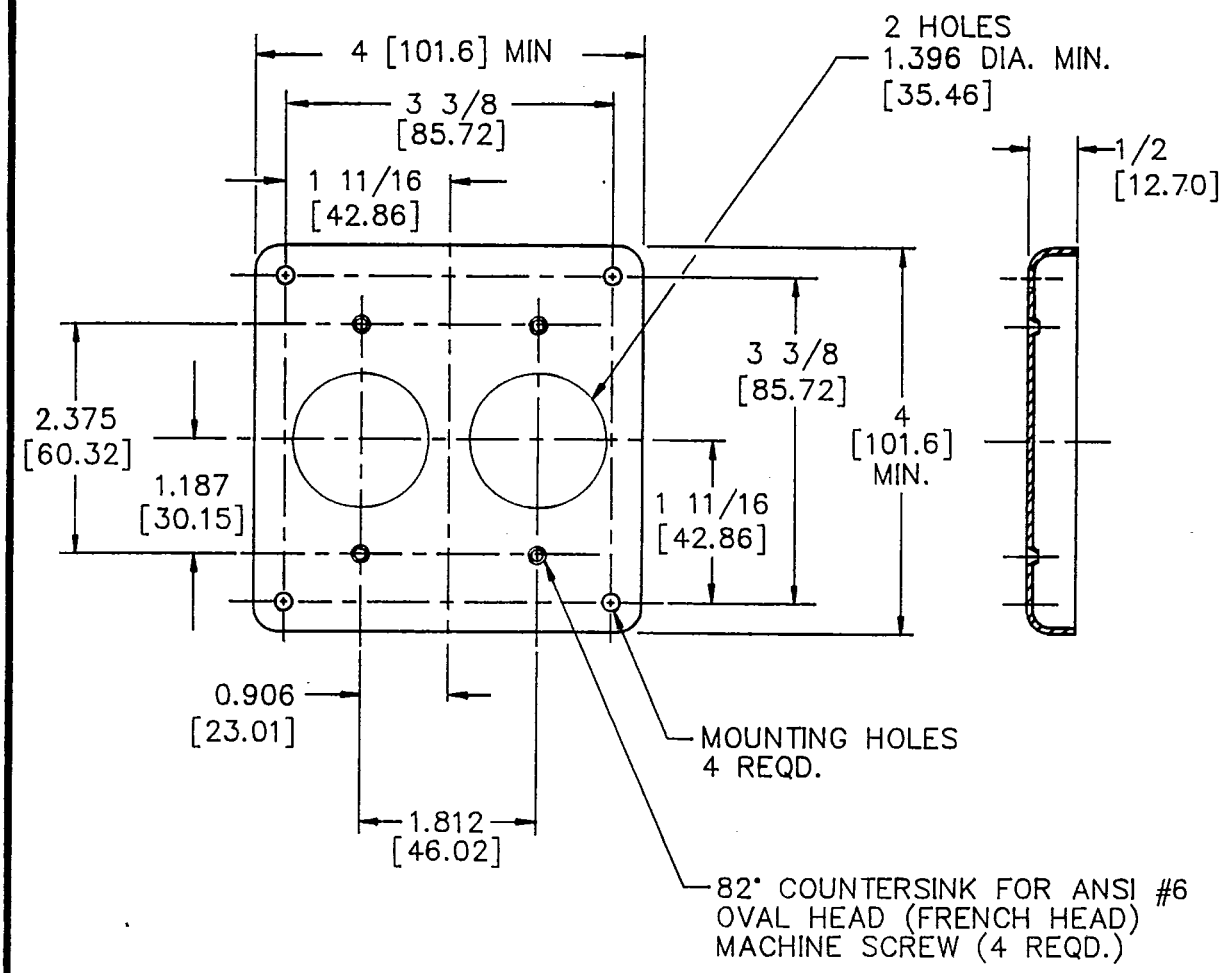
ITEM	A MIN.	
1	2.140	[54.36]
2	2.452	[62.28]
3	2.625	[66.68]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 327

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

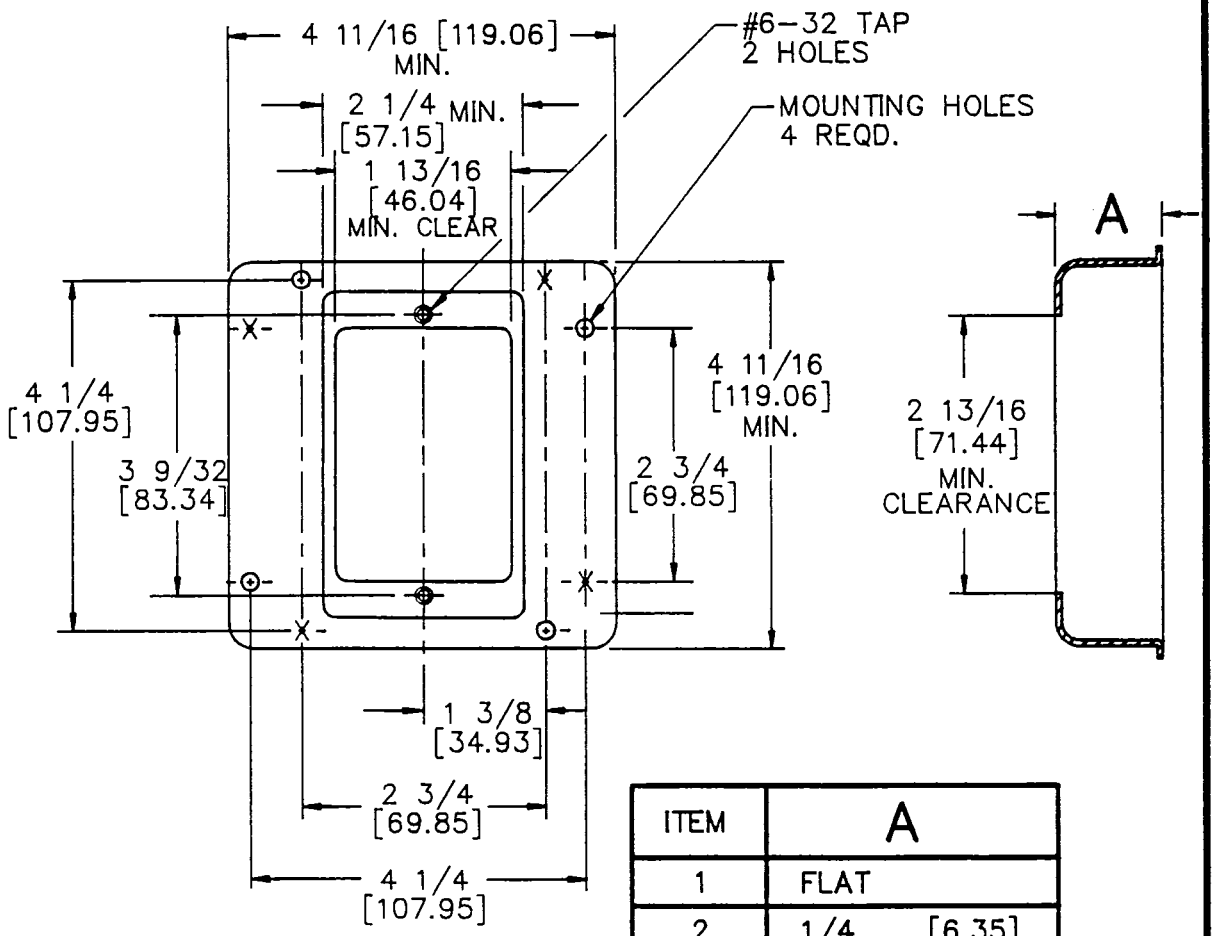
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
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Figure 328
SURFACE COVER FOR TWO SINGLE RECEPTACLES FOR 4" SQUARE BOX

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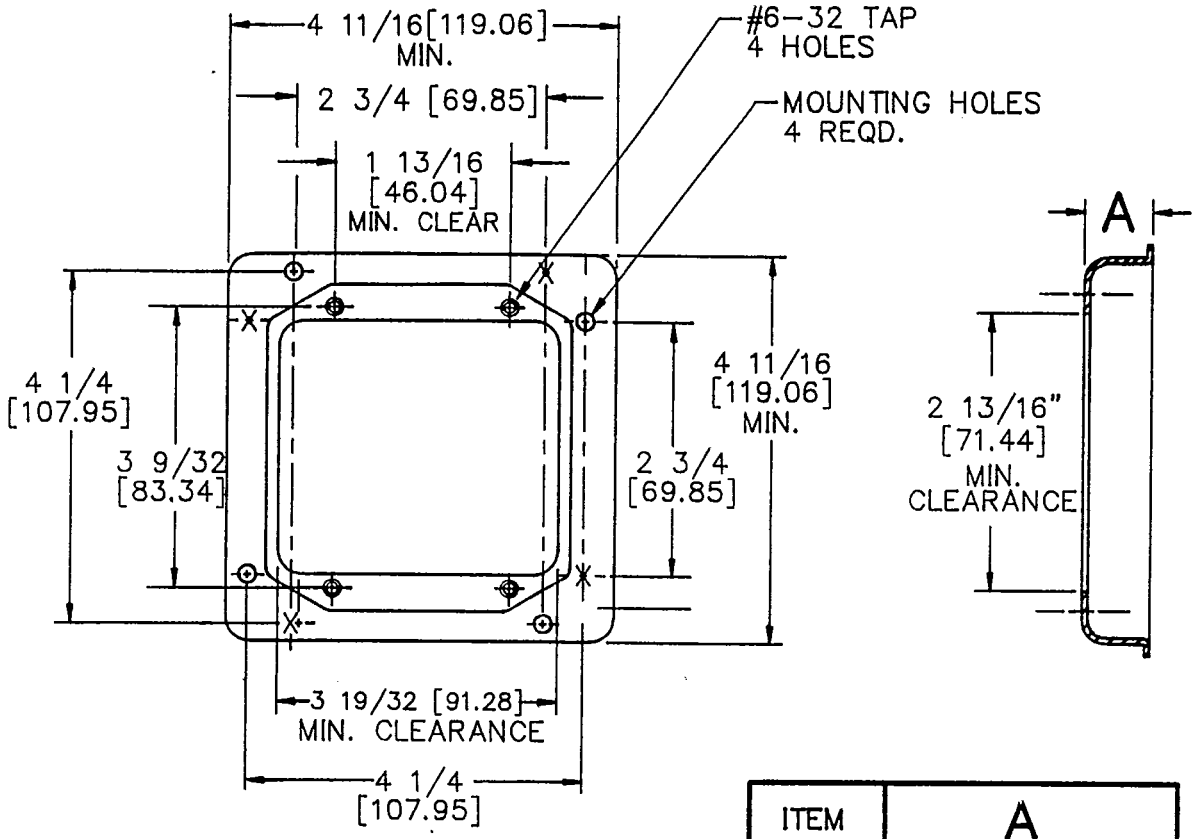
ITEM	A	
1	FLAT	
2	1/4	[6.35]
3	1/2	[12.70]
4	5/8	[15.88]
5	3/4	[19.05]
6	1	[25.40]
7	1 1/4	[31.75]

X-ALTERNATE MOUNTING HOLE LOCATION

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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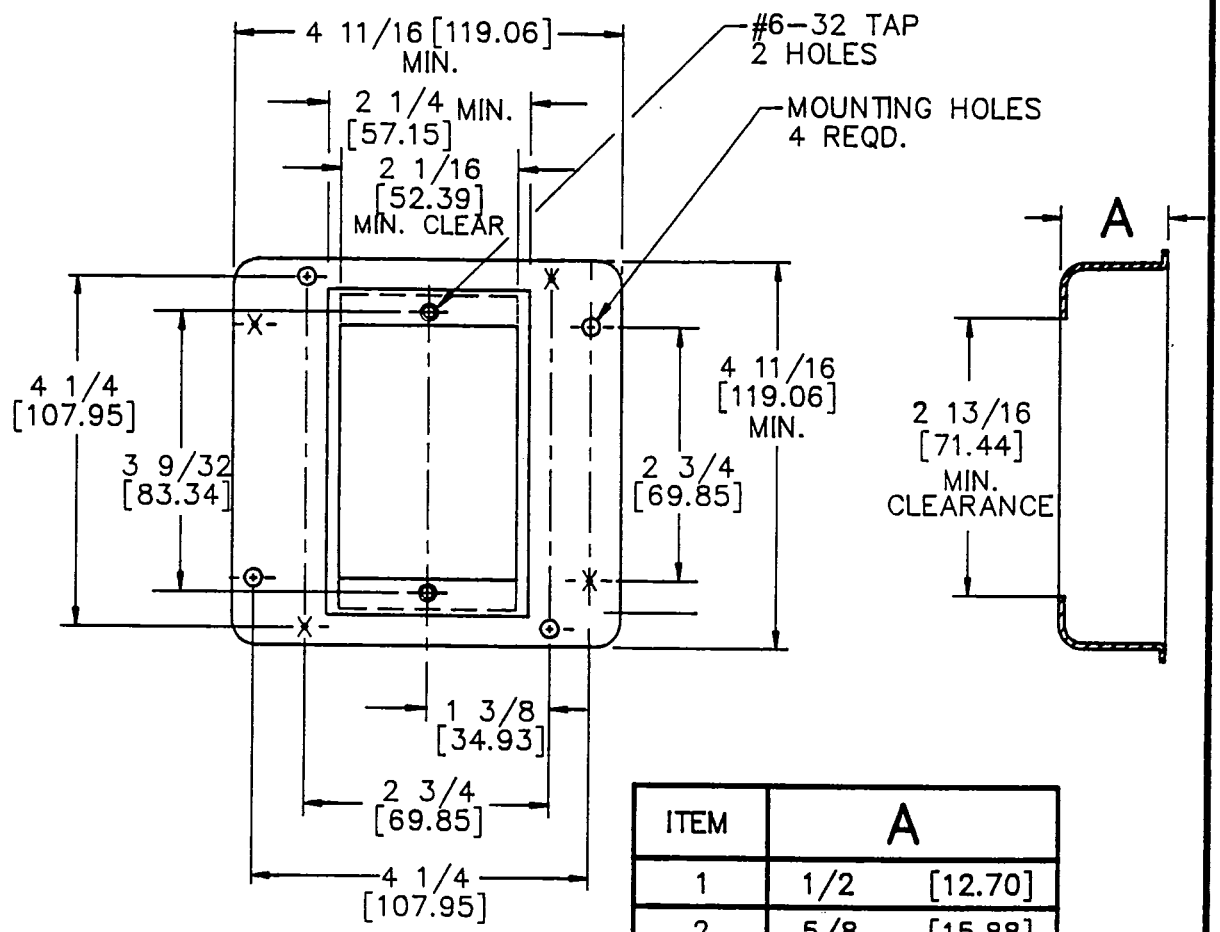
ITEM	A	
1	FLAT	
2	1/4	[6.35]
3	1/2	[12.70]
4	5/8	[15.88]
5	3/4	[19.05]
6	1	[25.40]
7	1 1/4	[31.75]

X-ALTERNATE MOUNTING
HOLE LOCATION

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 331
TWO-DEVICE COVER FOR 4 11/16" SQUARE BOX

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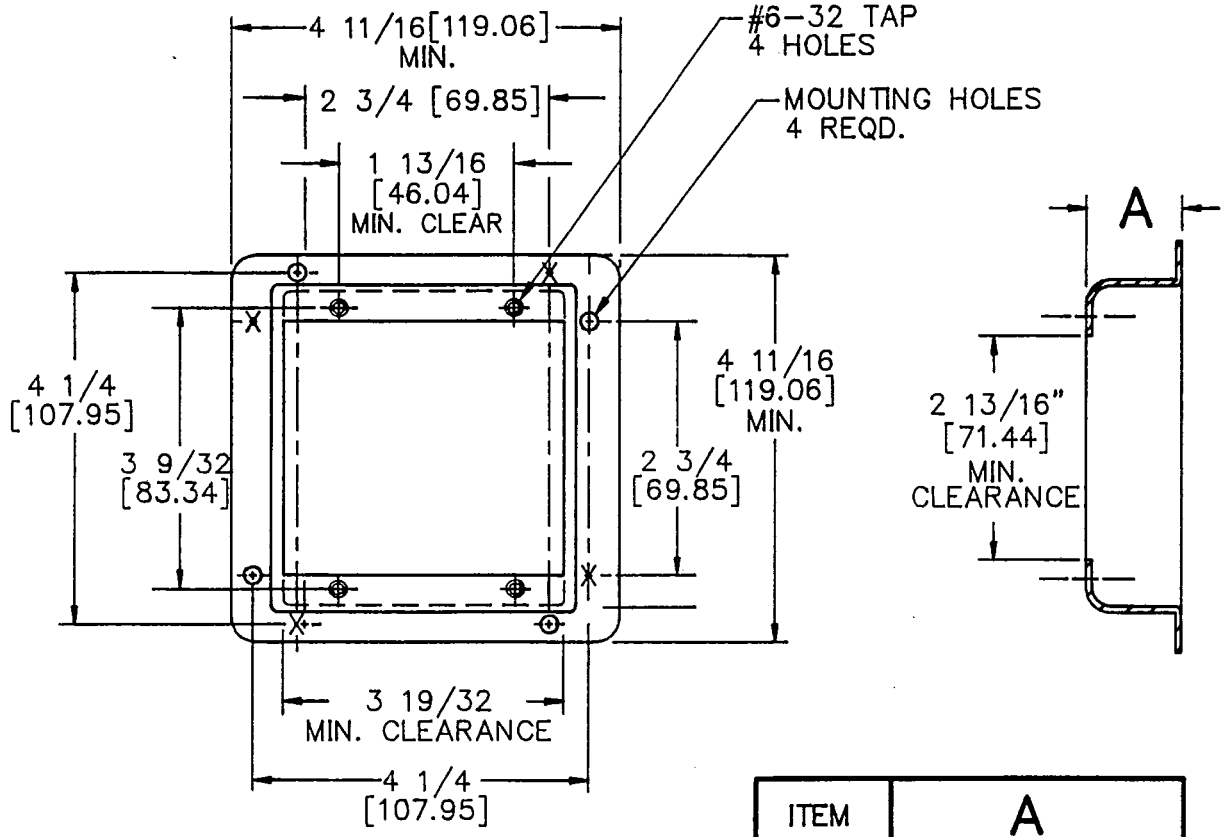
ITEM	A	
1	1/2	[12.70]
2	5/8	[15.88]
3	3/4	[19.05]
4	1	[25.40]
5	1 1/4	[31.75]
6	1 1/2	[38.10]
7	2	[50.80]

X-ALTERNATE MOUNTING HOLE LOCATION

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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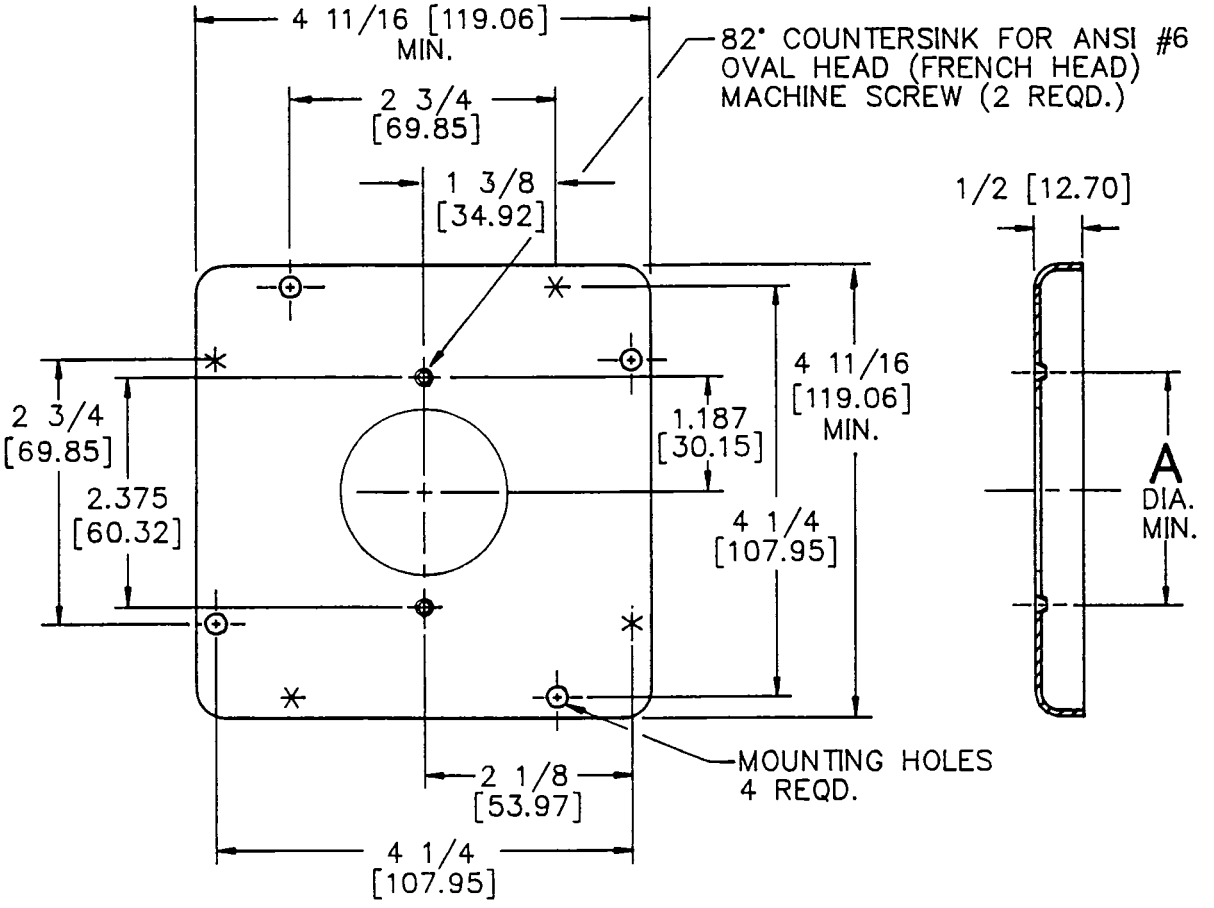
ITEM	A	
1	1/2	[12.70]
2	5/8	[15.88]
3	3/4	[19.05]
4	1	[25.40]
5	1 1/4	[31.75]
6	1 1/2	[38.10]
7	2	[50.8]

X-ALTERNATE MOUNTING
HOLE LOCATION

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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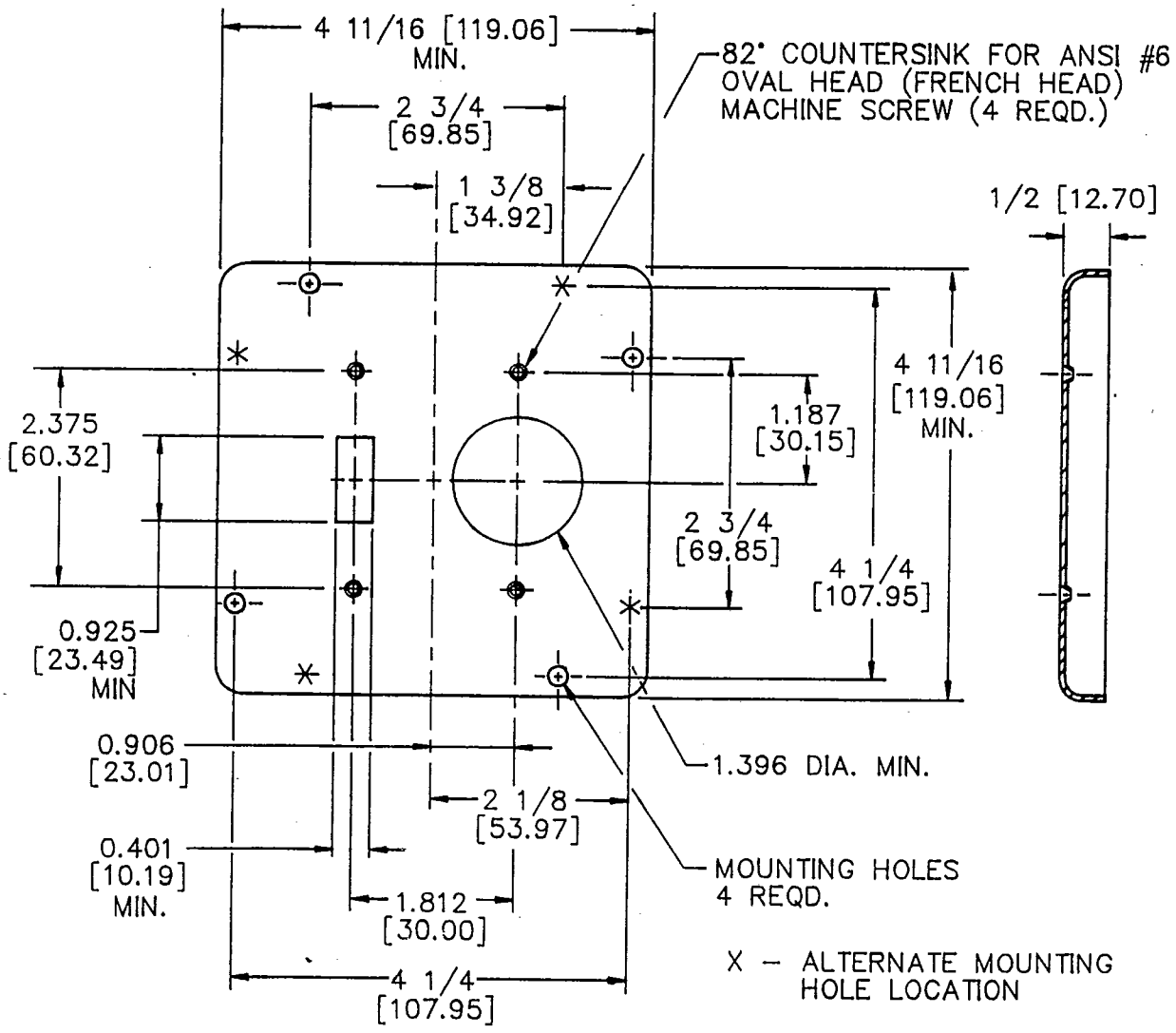
ITEM	A MIN.	
1	1.396	[35.46]
2	1.586	[40.28]
3	1.711	[43.46]

X – ALTERNATE MOUNTING HOLE LOCATION

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

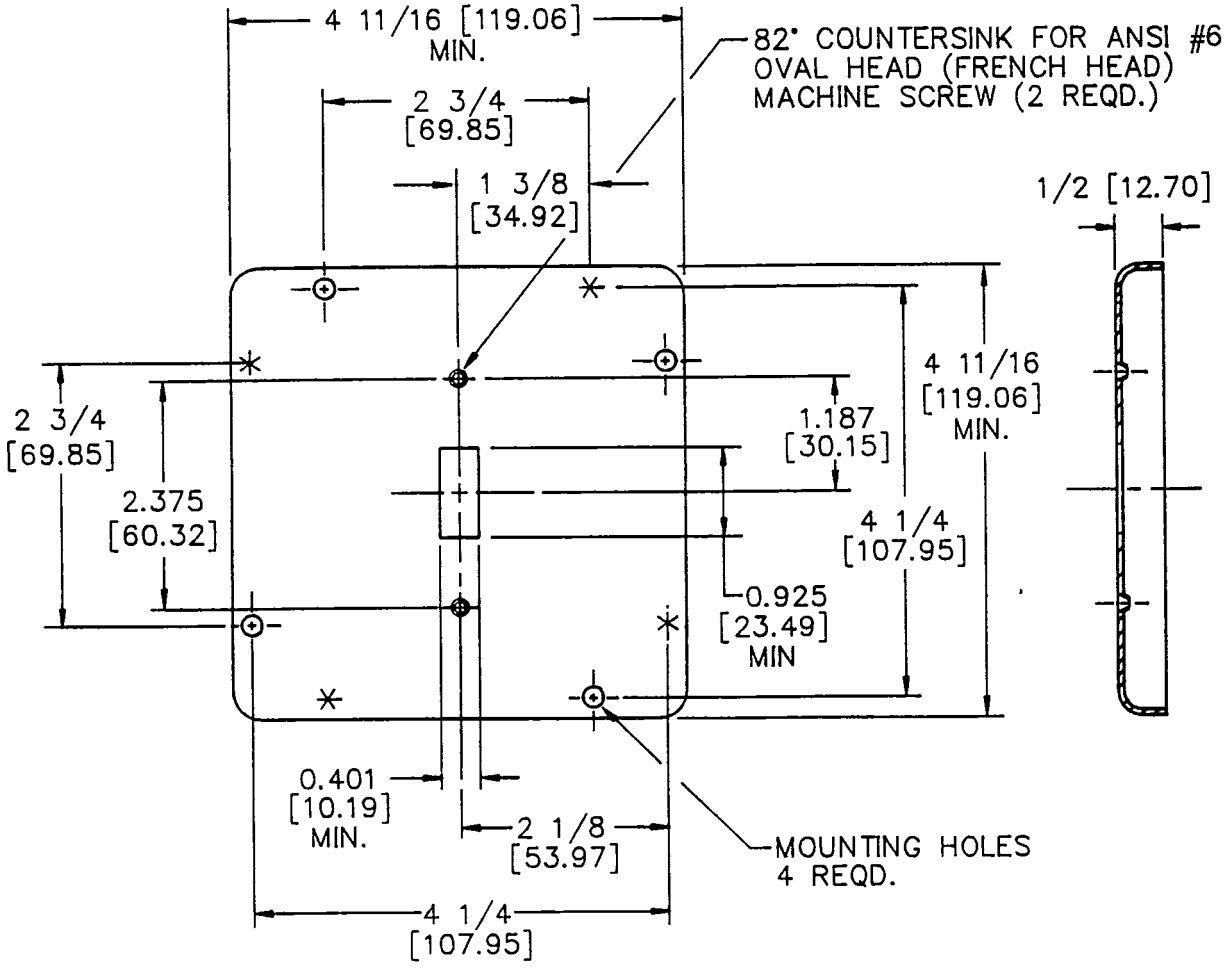
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

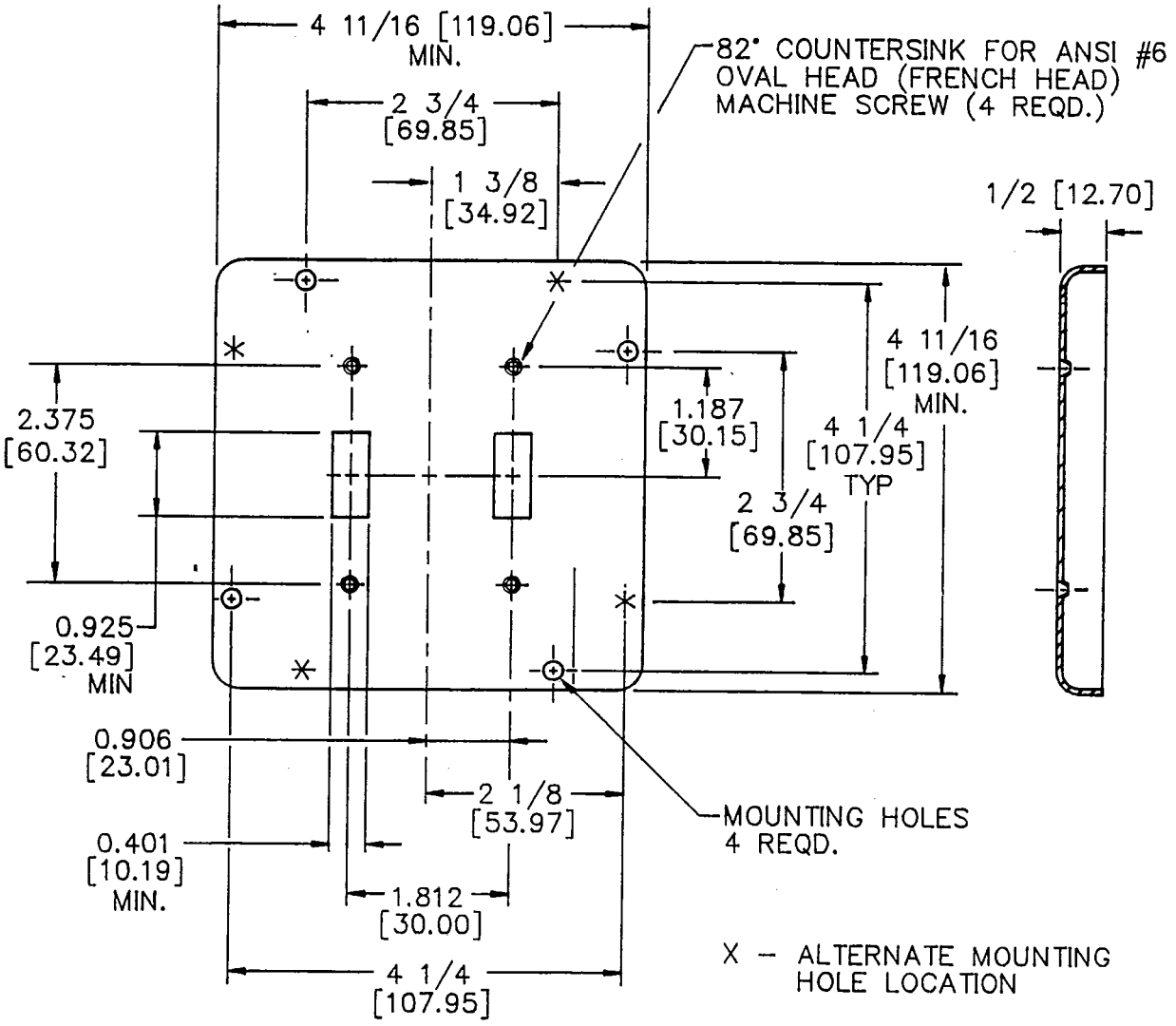
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

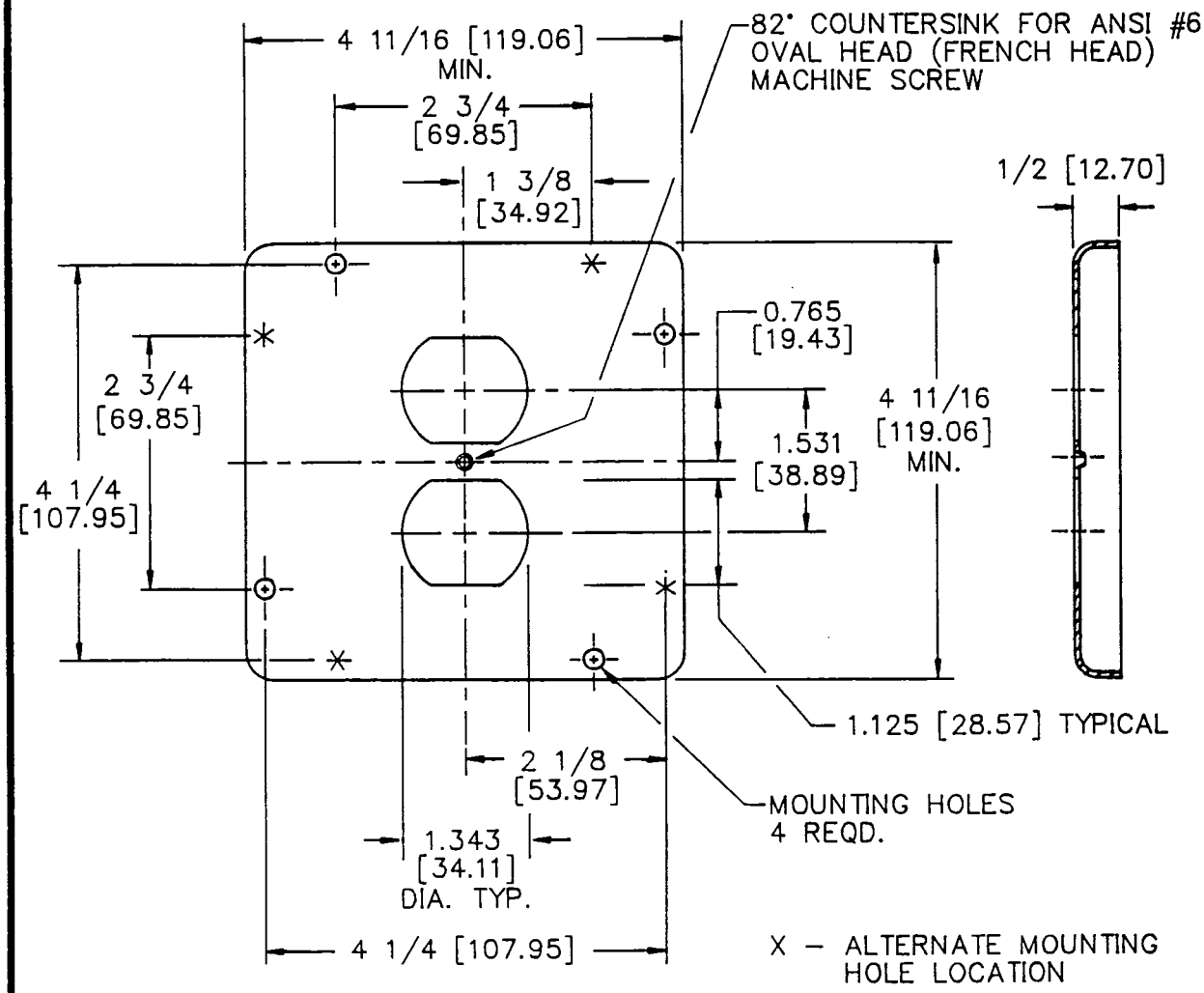
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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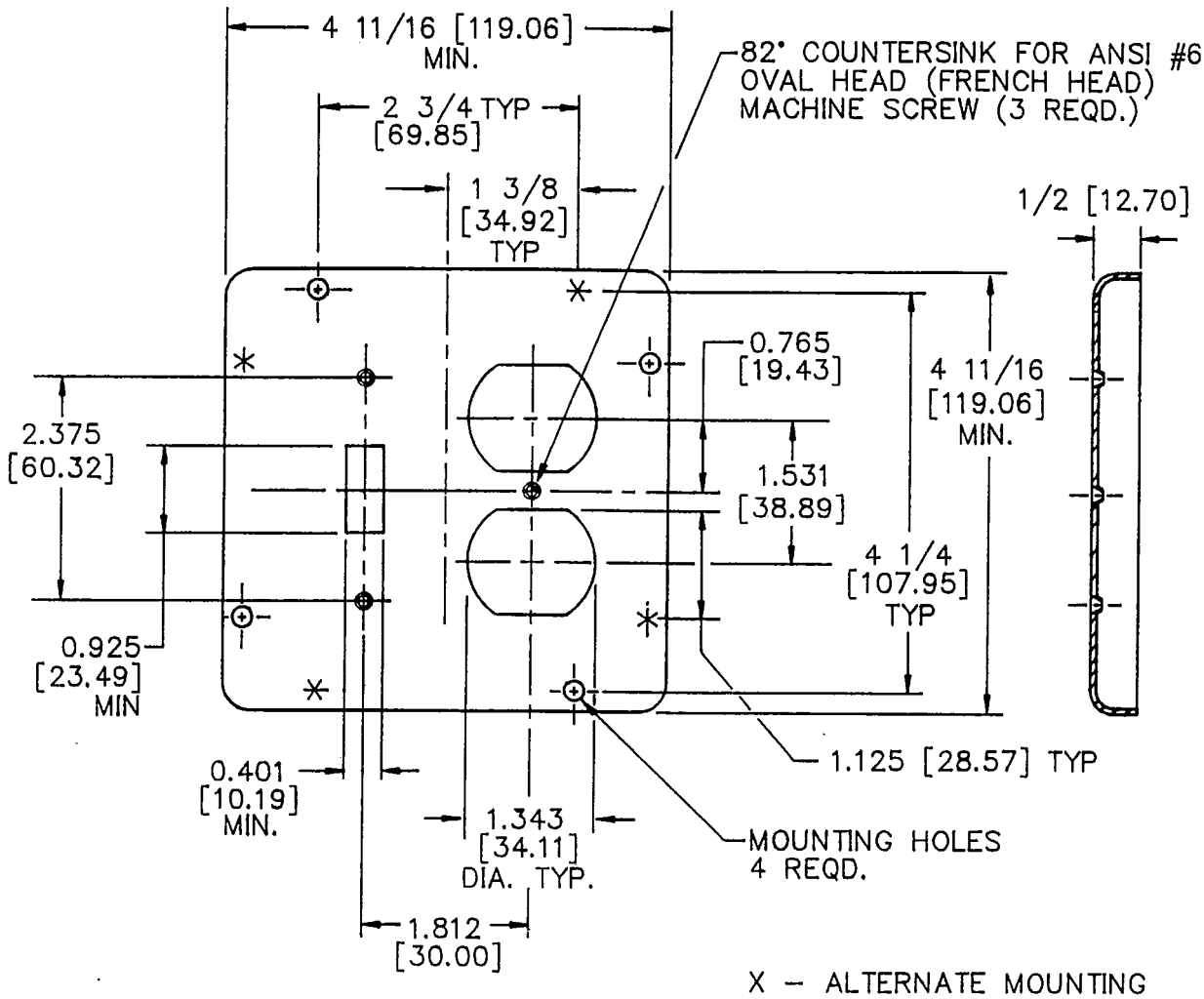


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 344

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

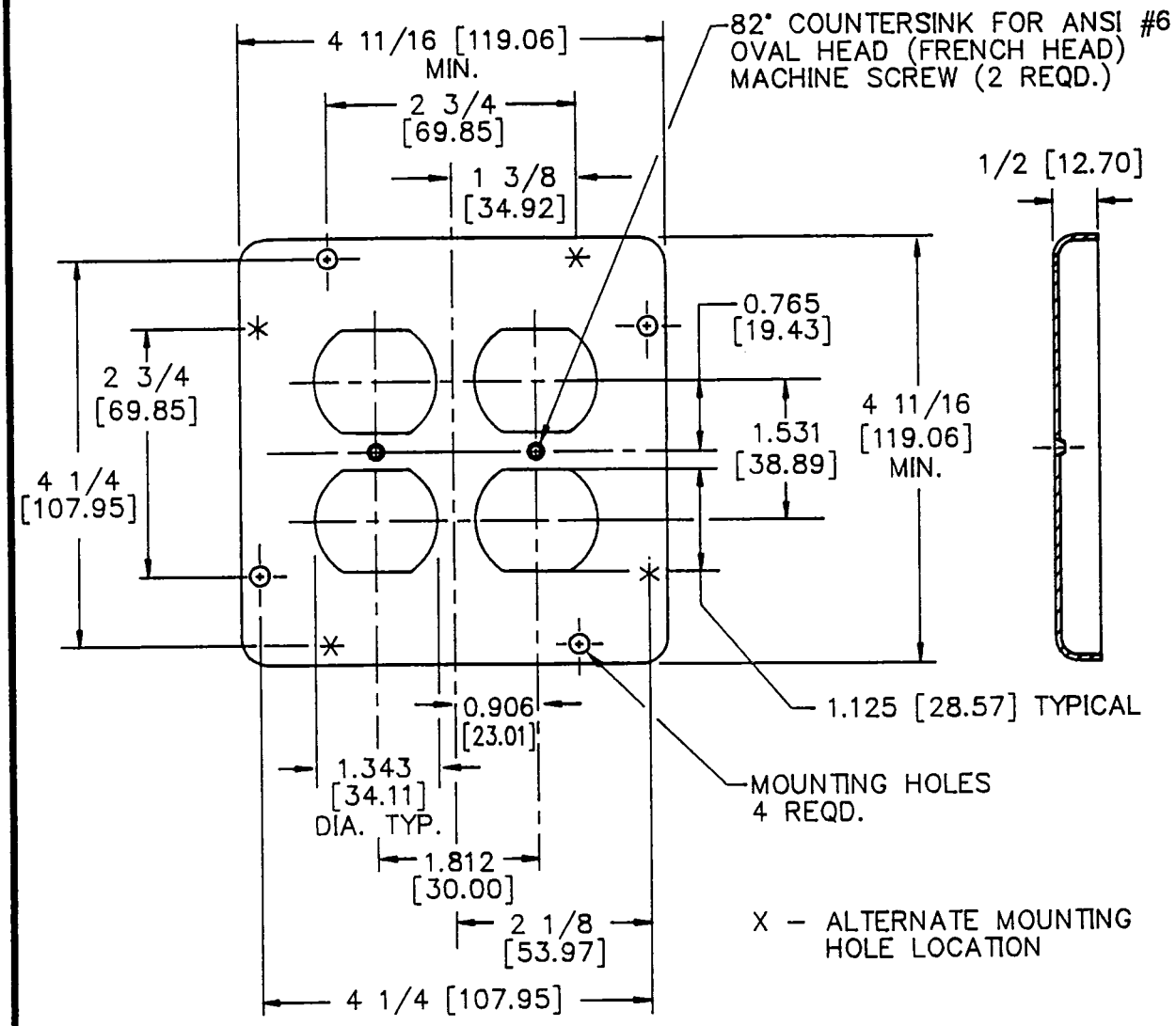
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

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

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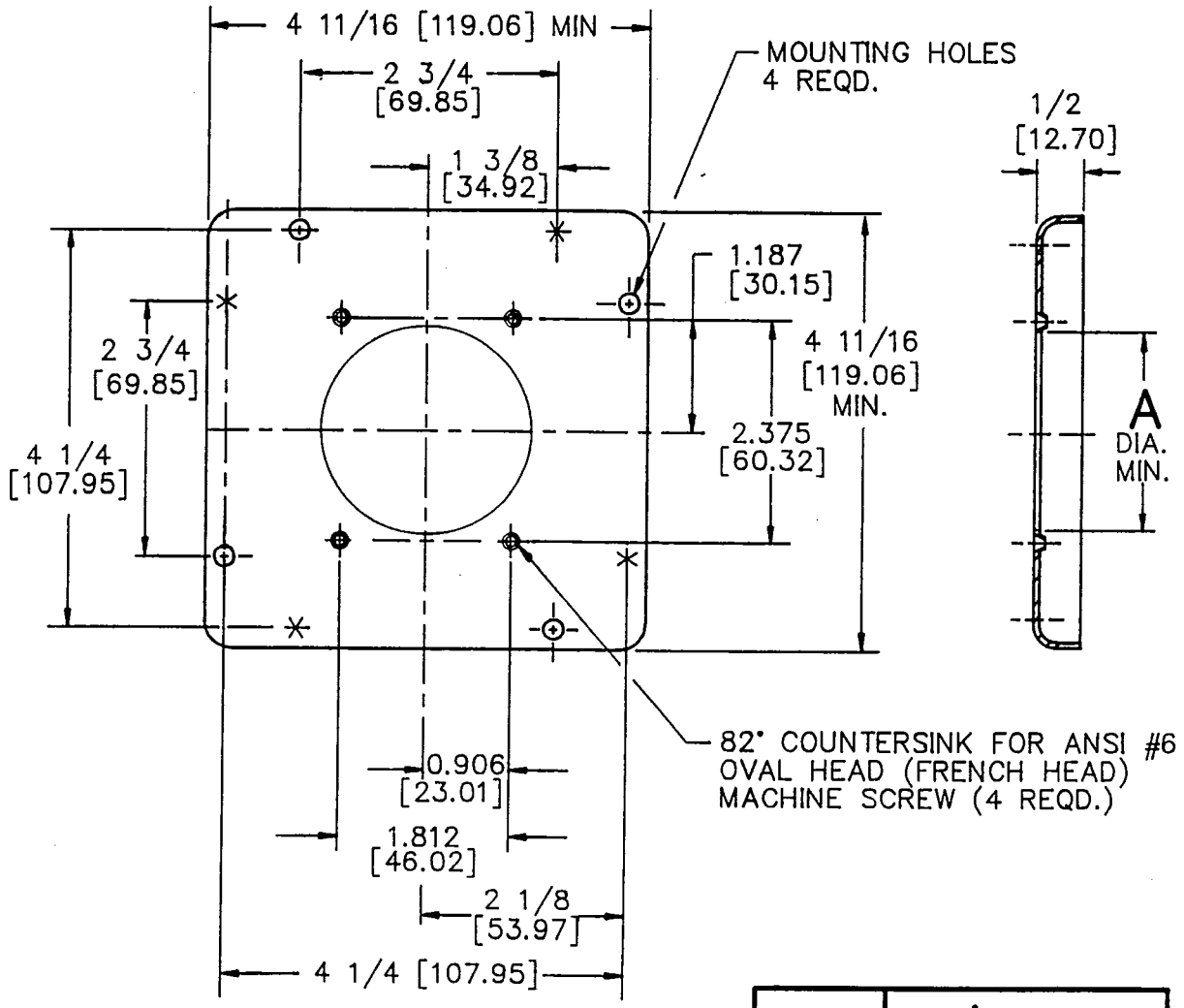
ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 346

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

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X – ALTERNATE MOUNTING HOLE LOCATION

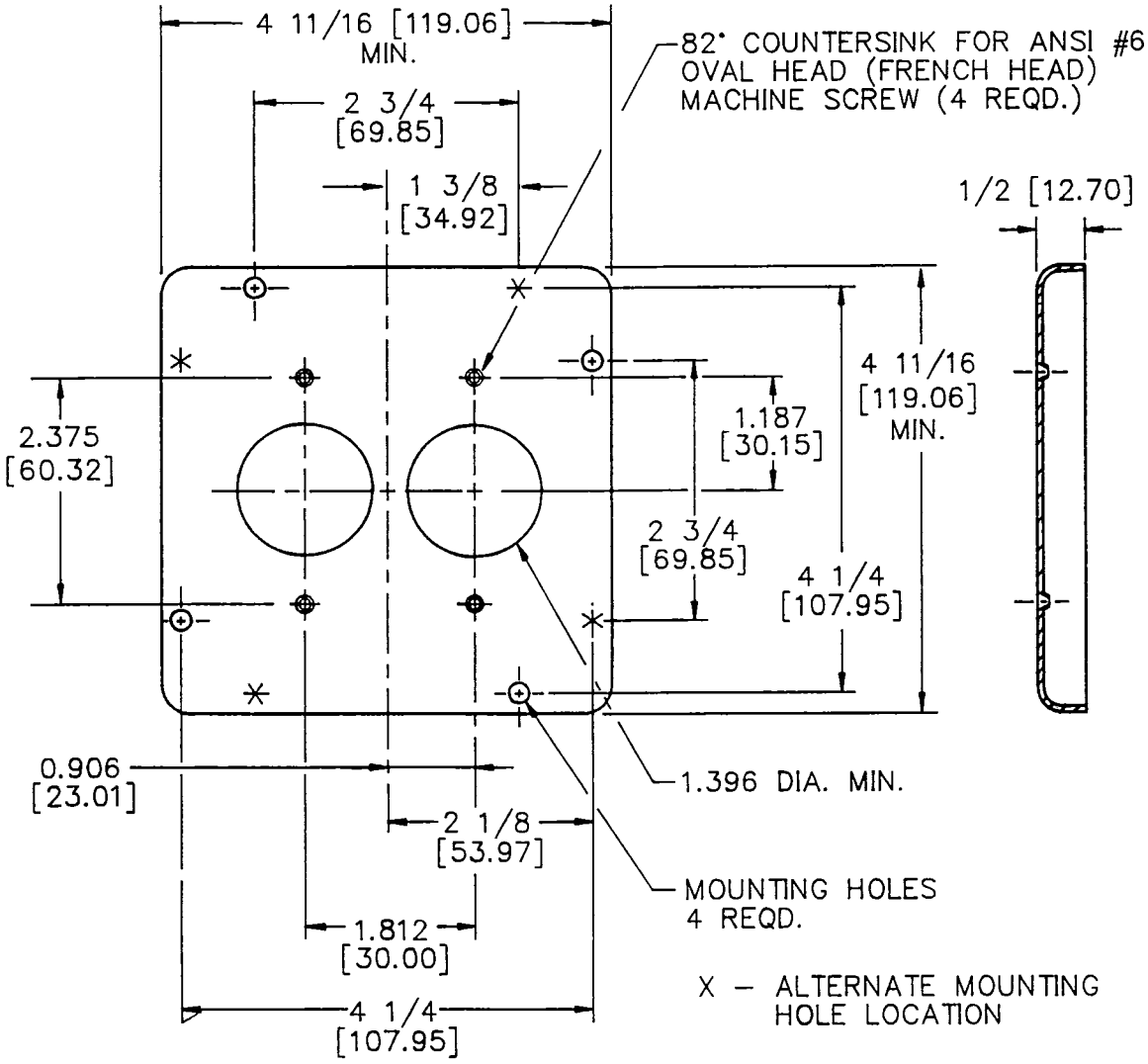
ITEM	A MIN.
1	2.140 [54.36]
2	2.452 [62.28]
3	2.625 [66.67]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 347

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

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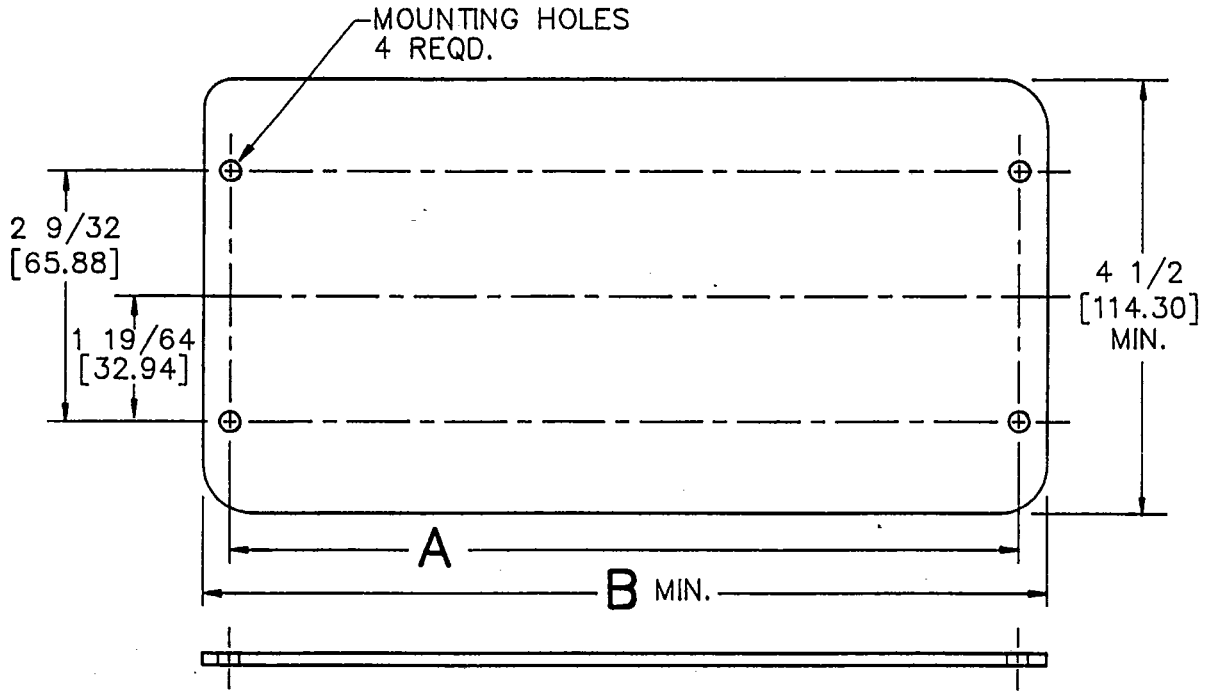


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 348

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

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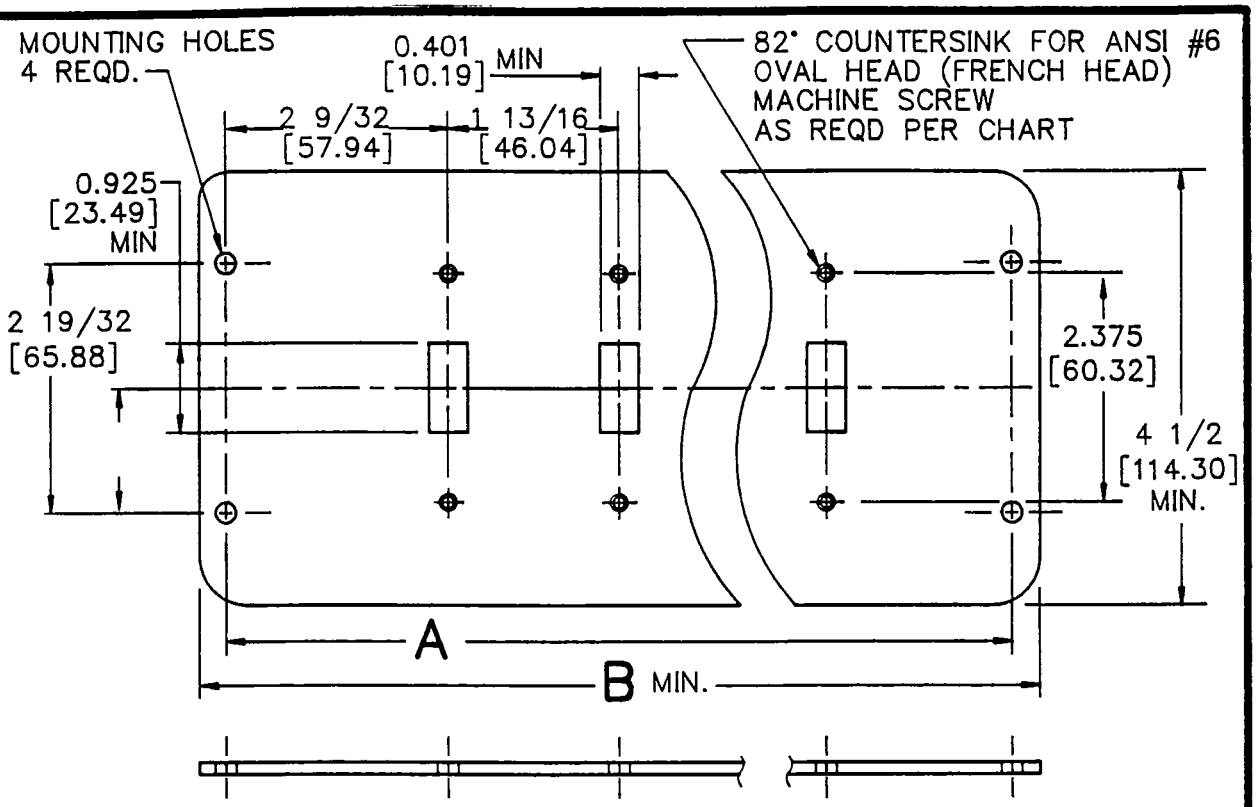


ITEM	NO. OF GANGS	A	B MIN.
1	2	6 3/8 [161.92]	6 13/16 [173.04]
2	3	8 3/16 [207.96]	8 5/8 [219.07]
3	4	10 [2540]	10 7/16 [265.11]
4	5	11 13/16 [300.04]	12 1/4 [311.15]
5	6	13 5/8 [346.07]	14 1/16 [357.19]
6	7	15 7/16 [392.11]	15 7/8 [403.22]
7	8	17 1/4 [438.15]	17 11/16 [449.26]
8	9	19 1/16 [484.19]	19 1/2 [495.30]
9	10	20 7/8 [530.23]	21 5/16 [541.34]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 350
FLAT BLANK COVERS FOR GANG BOXES

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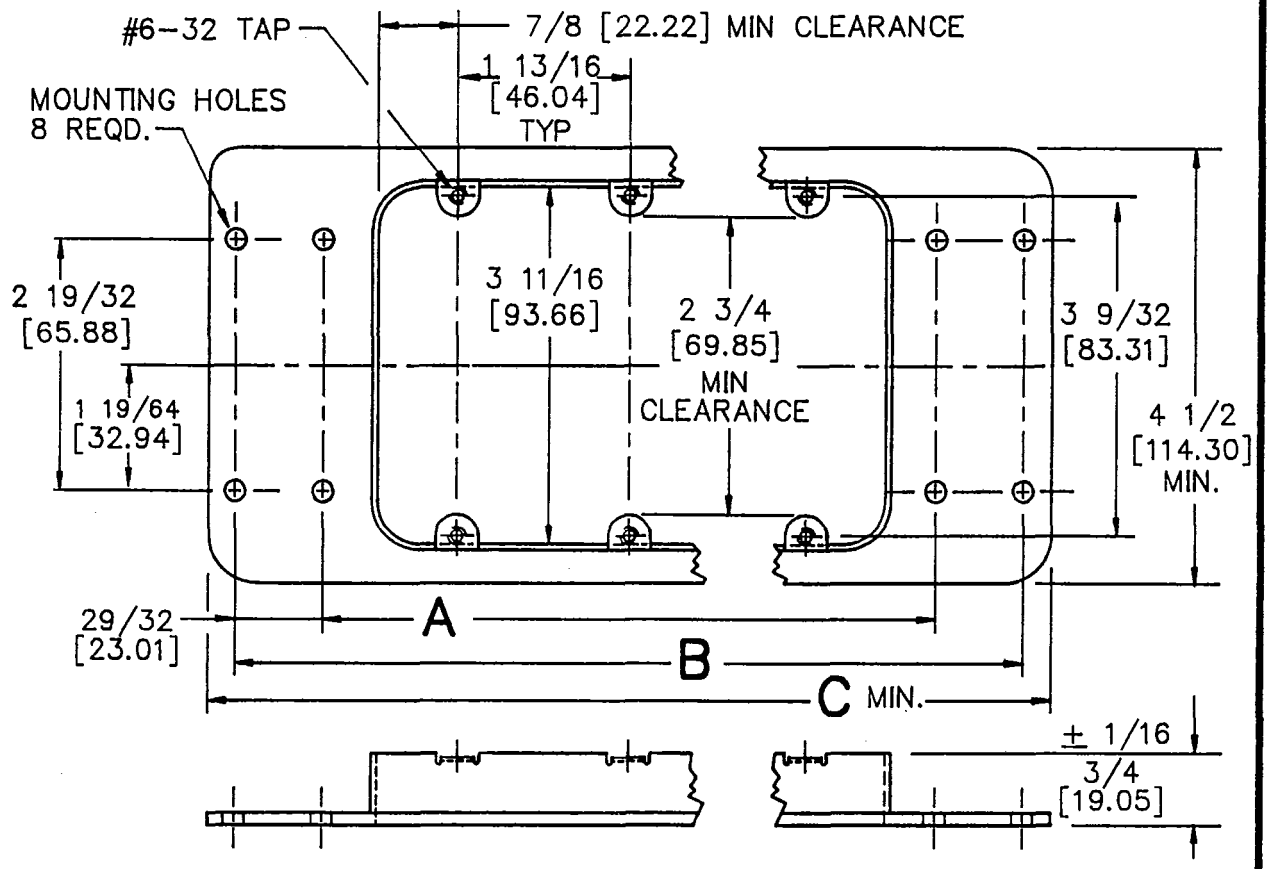


ITEM	NO. OF GANGS	A	B MIN.
1	2	6 3/8 [161.92]	6 13/16 [173.04]
2	3	8 3/16 [207.96]	8 5/8 [219.07]
3	4	10 [254.00]	10 7/16 [265.11]
4	5	11 13/16 [300.04]	12 1/4 [311.15]
5	6	13 5/8 [346.07]	14 1/16 [357.19]
6	7	15 7/16 [392.11]	15 7/8 [403.22]
7	8	17 1/4 [438.15]	17 11/16 [449.26]
8	9	19 1/16 [484.19]	19 1/2 [495.30]
9	10	20 7/8 [530.23]	21 5/16 [541.34]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 351
FLAT TOGGLE SWITCH COVERS FOR GANG BOXES

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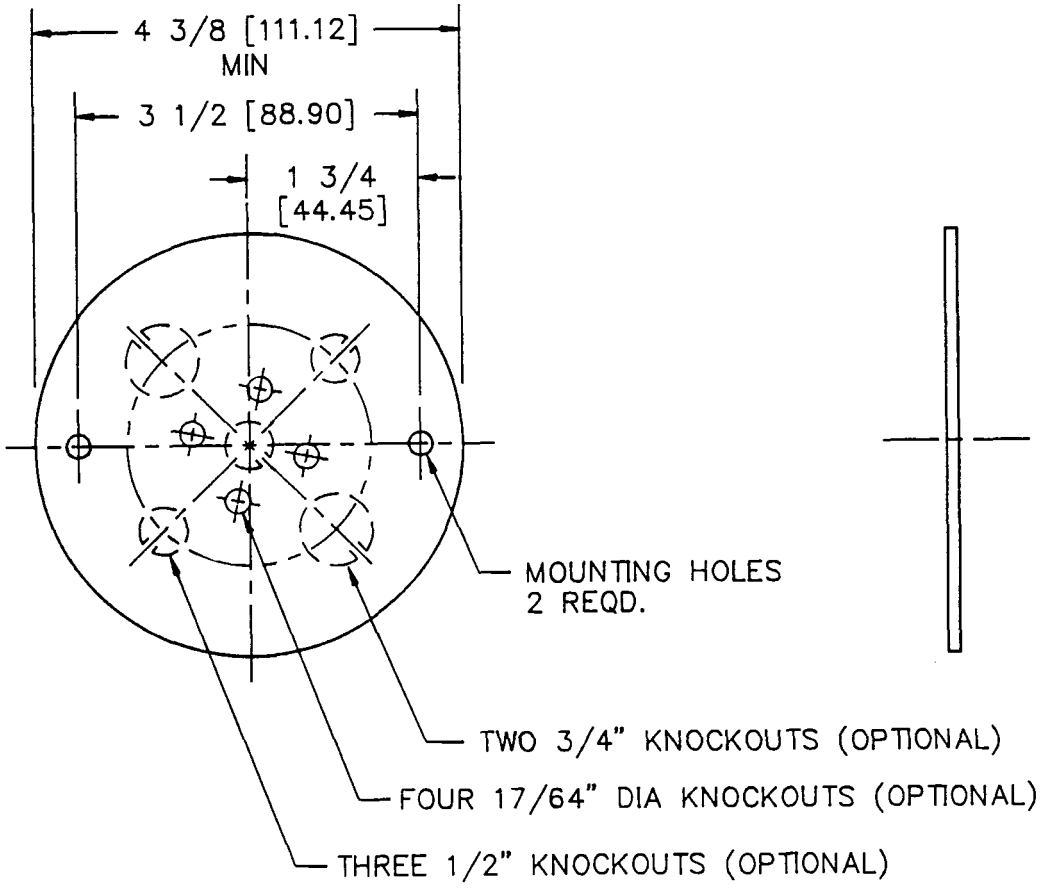


ITEM	NO. OF GANGS	A	B	C MIN.
1	2	4 9/16 [115.89]	6 3/8 [161.92]	6 13/16 [173.04]
2	3	6 3/8 [161.92]	8 3/16 [207.96]	8 5/8 [219.07]
3	4	8 3/16 [207.96]	10 [254.00]	10 7/16 [265.11]
4	5	10 [254.00]	11 13/16 [300.04]	12 1/4 [311.15]
5	6	11 13/16 [300.04]	13 5/8 [346.07]	14 1/16 [357.19]
6	7	13 5/8 [346.07]	15 7/16 [392.11]	15 7/8 [403.22]
7	8	15 7/16 [392.11]	17 1/4 [438.15]	17 11/16 [449.26]
8	9	17 1/4 [438.15]	19 1/16 [484.19]	19 1/2 [495.30]
9	10	19 1/16 [484.19]	20 7/8 [530.23]	21 5/16 [541.34]

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 352
RAISED COVERS FOR GANG BOXES

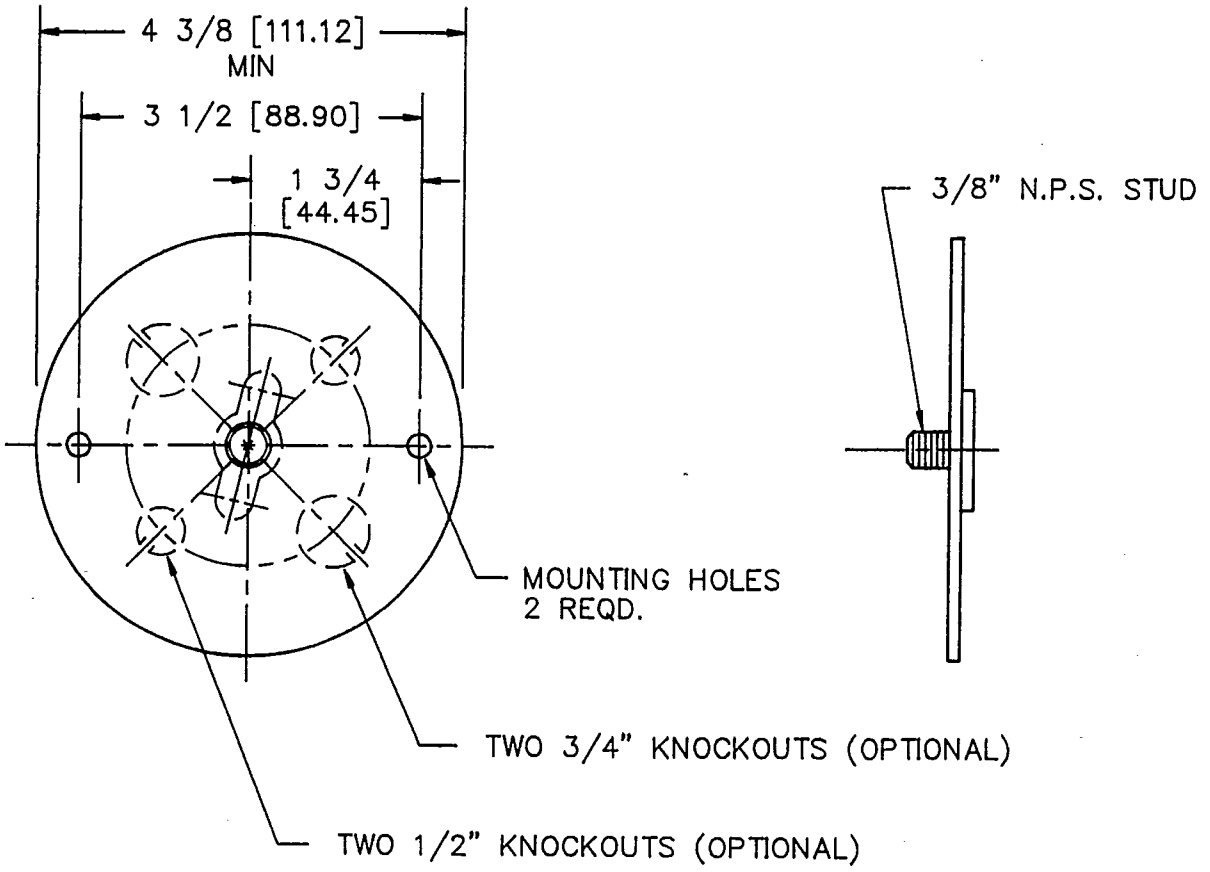
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ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 360
CONCRETE BACKPLATE COMBINATION 1/2" AND 3/4" KNOCKOUTS (OPTIONAL)

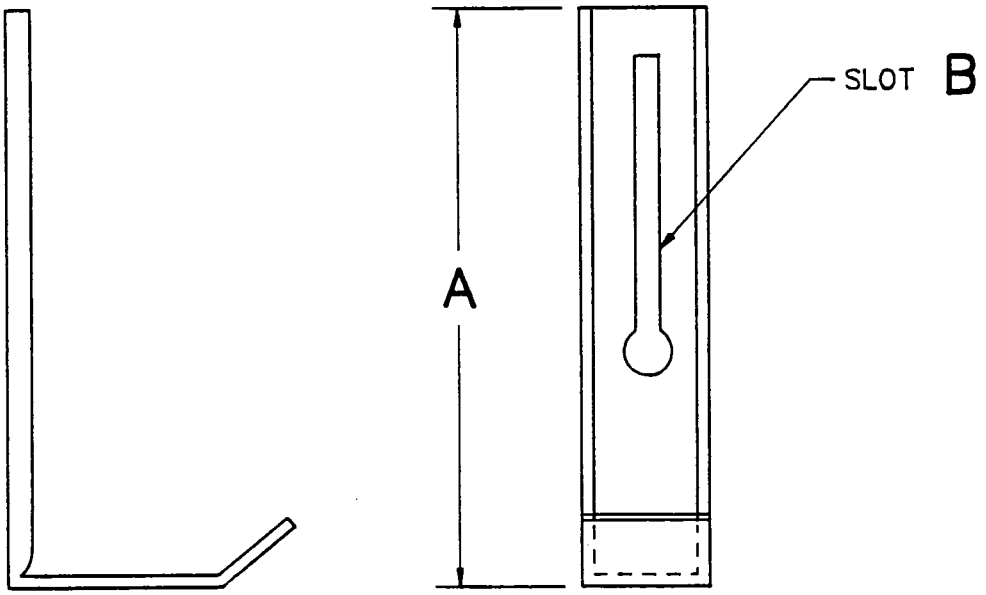
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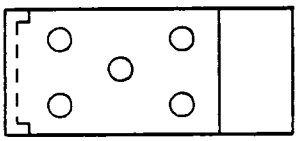


ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 361
CONCRETE BACKPLATE WITH STUD, 1/2" AND 3/4" KNOCKOUTS (OPTIONAL)

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ITEM	A	B
1	12 [304.80]	YES
2	12 [304.80]	NONE
3	20 [508]	YES
4	20 [508]	NONE
5	30 [762]	YES

ALL DIMENSIONS IN INCHES AND [MILLIMETERS].
SEE 2.1 THROUGH 2.9 FOR ADDITIONAL DETAILS AND VARIATIONS

Figure 400
BOX AND CONDUIT SUPPORT

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NEMA STANDARDIZATION

The purpose of NEMA Standards, their classification and status, are set forth in certain clauses of the NEMA *Standardization Policies and Procedures* manual and are referenced below.

Purpose of Standards

National Electrical Manufacturers Association standards are adopted in the public interest and are designed to eliminate misunderstandings between the manufacturer and the purchaser and to assist purchasers in selecting and obtaining the proper product for their particular needs. Existence of a National Electrical Manufacturers Association standard does not in any respect preclude any member or nonmember from manufacturing or selling products not conforming to the standard. *(Standardization Policies and Procedures, p. 1)*

Definition of a Standard

A standard of the National Electrical Manufacturers Association defines a product, process, or procedure with reference to one or more of the following: nomenclature, composition, construction, dimensions, tolerances, safety, operating characteristics, performance, rating, testing, and the service for which they are designed.

(Standardization Policies and Procedures, p. 2)

Dimensions

Where dimensions are given for interchangeability purposes, alternate dimensions satisfying the other provisions of the Standards Publication may be capable of otherwise equivalent performance.

(Standardization Policies and Procedures, p.8)

Categories of Standards

National Electrical Manufacturers Association Standards are of two classes:

1. NEMA Standard, which relates to a product, process, or procedure commercially standardized and subject to repetitive manufacture, which standard has been approved by at least 90 percent of the members of the Subdivision eligible to vote thereon;
2. Suggested Standard for Future Design, which may not have been regularly applied to a commercial product, but which suggests a sound engineering approach to future development, which standard has been approved by at least two-thirds of the members of the Subdivision eligible to vote thereon.

(Standardization Policies and Procedures, pp. 7 & 16)

Authorized Engineering Information

Authorized Engineering Information consists of explanatory data and other engineering information of an informative character not falling within the classification of NEMA Standard or Suggested Standard for Future Design, which standard has been approved by at least two-thirds of the members of the Subdivision eligible to vote on the standard.

(Standardization Policies and Procedures, pp. 7 & 16)

Official Standards Proposal

An Official Standards Proposal is an official draft of a proposed standard which is formally recommended to an outside organization(s) for consideration, comment, and/or approval, and which has been approved by at least 90 percent of the members of the Subdivision eligible to vote thereon.

(Standardization Policies and Procedures, pp. 7 & 16)

Identification of Status

Standards in NEMA Standards Publications are identified in the foreword or following each standard as "NEMA Standard" or "Suggested Standard for Future Design." These indicate the status of the standard. These words are followed by a date which indicates when the standard was adopted in its present form by the Association.

The material identified as "Authorized Engineering Information" and "Official Standards Proposal" is designated similarly.

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