

Switch & outlet boxes – technical data

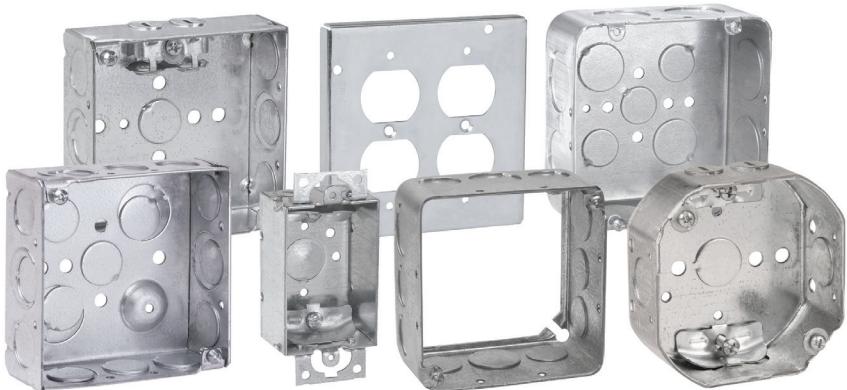
Outlet boxes and covers

Eaton's has assembled one of the most complete outlet box product lines in the business. We've been leading in quality and selection for decades and throughout the Crouse-Hinds series steel outlet box offering, you will find innovative products and solutions that save labor, cut material costs and increase productivity.

We have a complete offering of:

- 4" and $4\frac{1}{16}$ " square drawn and welded boxes with raised cover plate screws for ease of attaching covers
- 4" square and $4\frac{1}{16}$ ", switch, masonry, utility, outlet, ceiling, fan and gangable boxes
- Drawn boxes available with concentric knockouts, combining $\frac{1}{2}$ " and $\frac{3}{4}$ " knockout
- Complete line of covers, partitions, extension rings and accessories
- Uni-Mount™ covers
- Quick-Lok™ outlet boxes and assemblies

- PRE-formance™ products
- Pre-assembled boxes which includes Uni-Mount cover attached to 4" square box
- Pre-fabricated boxes which includes Uni-Mount cover attached to 4" square box with ground screw and lead installed
- Fire alarm boxes and covers
- **Boxes available with various means of grounding including**
 - **Tapped ground holes**
 - **Pre-installed ground screw, add "G" suffix to box catalog number**
 - **Pre-installed ground pigtail, add "PF" suffix to box catalog number**



Switch & outlet boxes – technical data

General information

Compliances:

Article 314 of the National Electrical Code® (NEC®) covers the installation and use of boxes. The article includes table references that guide the electrician in the selection of the proper size box necessary to safely accommodate electrical service requirements. The box capacity table is reproduced in part from NEC as a quick reference and guide. The NEC should be consulted for complete details.

Outlet boxes for fixture or fan support:

A box, with or without a bracket or bar hanger, intended for support of a fixture/luminaire weighing 50 lbs. or less is marked "FOR FIXTURE/LUMINAIRE SUPPORT" on the carton to indicate that the box is intended for fixture/luminaire support. A box, with or without a bracket or bar hanger, intended for support of a fixture/luminaire weighing more than 50 lbs. is marked with the weight of the fixture/luminaire to be supported. Metallic device boxes and device plaster rings have not been investigated for support of a ceiling fixture/luminaire unless marked for use in ceilings, walls and with the weight of the product to be supported. Metallic device boxes intended to be installed in an existing structure have been investigated for the support of utilization equipment weighing not more than 6 lbs.

Knockouts:

Under File No. E-23156, Eaton's Crouse-Hinds Series concentric and "moon" KO style boxes, the following is stated "Suitable for bonding without any additional bonding means around concentric (or eccentric) knockouts where used in circuits above or below 250V."



Fire resistance rating wall penetrations:

Eaton's Crouse-Hinds series products are produced in accordance with the requirements of UL514A, UL514B and UL514C, and are classified for fire resistance according to the standard, Fire Tests of Building Construction and Materials, ANSI/UL263, ASTM E 119 and NFPA 251. This listing is based on products when used in a fire rated (2 HR) wall or ceiling. Eaton's Crouse-Hinds series steel boxes are listed with UL File No. E-23156 and non-metallic boxes are listed with UL File No. E-102328 and UL (2 HR fire rated) File No. R9933.

NEMA standards:

Eaton's Crouse-Hinds series switch and outlet boxes comply with the requirements of NEMA Standard OS-1 and Federal Spec. W-J-800F.

Grounding hole:

The majority of Crouse-Hinds outlet boxes have at least one tapped #10-32 grounding hole.

Combination screw heads:

Cover and clamp screws have combination slotted/Phillips screw heads. Self-tapping screws provide for 100% thread engagement.



Third party certification information:

Third party certification documents can be found on the product detail page of the Eaton website. Just click on the resource tab and click on the link to view the third party document. Document can then be saved or printed.

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Outlet boxes

Standard materials – steel covers, outlet and switch boxes:

- Steel boxes and covers are made of .0625 inch thick pre-galvanized sheet steel
- Handy box covers are made of .030 inch thick galvanized sheet steel

Switch & outlet boxes – technical data

Calculating box size and wire fill

Calculate the minimum box size:

NEC® 314.16 (A) and (B) describes the detailed way of counting wires, as well as clamps, fittings or devices (i.e., switches, receptacles, combination devices) – by establishing an equivalent conductor value for each. Those values are added together to get a total number of conductors. The minimum size box is the smallest one in Table 314.16(A) that can accommodate that number of conductors.

1. No matter how many ground wires come into a box, they only count as one conductor within the box.
2. Any wire running unbroken through the box counts as one wire.
3. Each wire coming into a splice device (crimp or twist-on type) is counted as one wire.
4. Each wire coming into the box and connecting to a device counts as one wire of that size.
5. Fixture studs, cable clamps and hiccups are to be counted as one regardless of how many there may be. If a box contains two cable clamps, the total is only to be increased by one.
6. Where devices are mounted in the box, the total conductor count must be increased by two for each mounting strap.

Example #1:

Conduit Boxes: Supply power to a switch that will control a remote light with #14 conductors. Metal conduit and fittings will be used as the wire way. You must provide space for four conductors and one switch, totaling 6. Read across the line "Allowances" in the Box Fill table to column 6, then read down to the minimum cubic inches required for #14 conductor. This example requires a minimum of 12.0 cubic inches.

Example #2:

Cable Boxes: This example will illustrate how the minimum size is determined for a box with cable clamps fed by two #12-2 nonmetallic sheathed cables and supplying a 15A duplex receptacle. After supplying the receptacle, the conductors are extended to other outlets.

Circuit conductors	4
Ground conductors	1
Cable clamps	1
Device (receptacle)	2
Total	8

Using the Box Fill table from the next page, read across the line "Allowances" to column 8, then down to the minimum cubic inches required for #12 conductor. This example requires a minimum of 18.0 cubic inches.



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Table 314.16(A) metal boxes

Box dimension (in.)	Cap.	Maximum number of conductors (arranged by AWG size)						
		Cu. in.	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8
4 X 1 $\frac{1}{4}$ round or octagonal	12.5	8	7	6	5	5	5	2
4 X 1 $\frac{1}{2}$ round or octagonal	15.5	10	8	7	6	6	5	3
4 X 2 $\frac{1}{8}$ round or octagonal	21.5	14	12	10	9	8	7	4
4 X 1 $\frac{1}{4}$ square	18.0	12	10	9	8	7	6	3
4 X 1 $\frac{1}{2}$ square	21.0	14	12	10	9	8	7	4
4 X 2 $\frac{1}{8}$ square	30.3	20	17	15	13	12	10	6
4 $\frac{1}{16}$ X 1 $\frac{1}{4}$ square	25.5	17	14	12	11	10	8	5
4 $\frac{1}{16}$ X 1 $\frac{1}{2}$ square	29.5	19	16	14	13	11	9	5
4 $\frac{1}{16}$ X 2 $\frac{1}{8}$ square	42.0	28	24	21	18	16	14	8
3 X 2 x 1 $\frac{1}{2}$ device	7.5	5	4	3	3	3	2	1
3 X 2 x 2 device	10.0	6	5	5	4	4	3	2
3 X 2 x 2 $\frac{1}{4}$ device	10.5	7	6	5	4	4	3	2
3 X 2 x 2 $\frac{1}{2}$ device	12.5	8	7	6	5	5	4	2
3 X 2 x 2 $\frac{3}{4}$ device	14.0	9	8	7	6	5	4	2
3 X 2 x 3 $\frac{1}{2}$ device	18.0	12	10	9	8	7	6	3
4 X 2 $\frac{1}{8}$ x 1 $\frac{1}{2}$ device	10.3	6	5	5	4	4	3	2
4 X 2 $\frac{1}{8}$ x 1 $\frac{1}{8}$ device	13.0	8	7	6	5	5	4	2
4 X 2 $\frac{1}{8}$ x 2 $\frac{1}{8}$ device	14.5	9	8	7	6	5	4	2
3 $\frac{1}{4}$ X 2 x 2 $\frac{1}{2}$ masonry box/gang	14.0	9	8	7	6	5	4	2
3 $\frac{1}{4}$ X 2 x 3 $\frac{1}{2}$ masonry box/gang	21.0	14	12	10	9	8	7	4
FS - 1 $\frac{1}{4}$ single cover gang	13.5	9	7	6	6	5	4	2
FD - 2 $\frac{1}{8}$ single cover gang	18.0	12	10	9	8	7	6	3
FS - 1 $\frac{1}{4}$ multiple cover gang	18.0	12	10	9	8	7	6	3
FD - 2 $\frac{1}{8}$ multiple cover gang	24.0	16	13	12	10	9	8	4

Table 314.16(B) volume required per conductor

Size of conductor	Free space within box for each conductor
No. 18	1.5 cubic inches
No. 16	1.75 cubic inches
No. 14	2 cubic inches
No. 12	2.25 cubic inches
No. 10	2.5 cubic inches
No. 8	3 cubic inches
No. 6	5 cubic inches

For SI units: one cubic inch = 16.4 cm³.

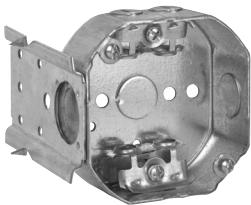
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Switch & outlet boxes – technical data

Outlet box brackets

Bracket technical data

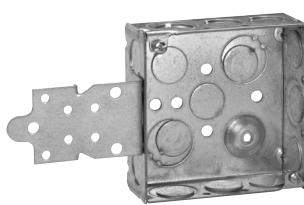
Bracket type	C	D	F	S	SD	VP	VS	H	M	MSB	SSB	VMS
Length	3 ⁵ / ₈	5 ¹³ / ₁₆	2 ⁷ / ₈	5 ¹³ / ₁₆	5 ³ / ₁₆	6 ⁶¹ / ₆₄	6 ⁵⁹ / ₆₄	2 ¹ / ₂	2 ¹ / ₂	2 ¹ / ₂	1 ¹ / ₄	6 ¹³ / ₁₆
Width	2 ¹ / ₂	7/ ₈	1 ³ / ₄	7/ ₈	1 ⁵ / ₁₆	1 ⁹ / ₁₆	1 ⁹ / ₁₆	1 ³ / ₃₂	1 ³ / ₃₂	1 ⁹ / ₈	2 ¹ / ₈	1 ³ / ₈
Set back	1/ ₄	5/ ₈		5/ ₈	5/ ₈	3/ ₈	7/ ₈					5/ ₁₆
For metal		✓	✓		✓		✓	✓	✓	✓	✓	✓
For wood	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
Stud mount	side/ceiling	side	face	side	side	side	side	face	face	face	face	side



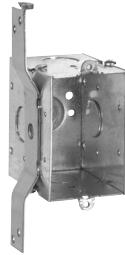
"C" bracket



"D" bracket



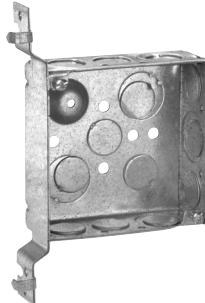
"F" bracket



"S" bracket



"SD" bracket



"VP" bracket



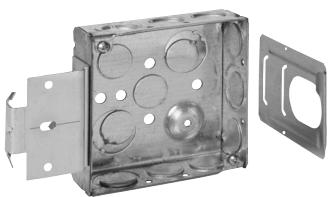
"VS" bracket



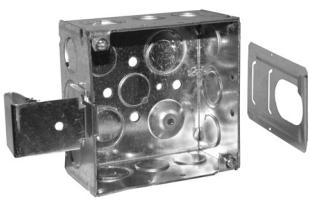
"H" bracket



"M" bracket



"MSB" bracket



"SSB" bracket



"VMS" bracket

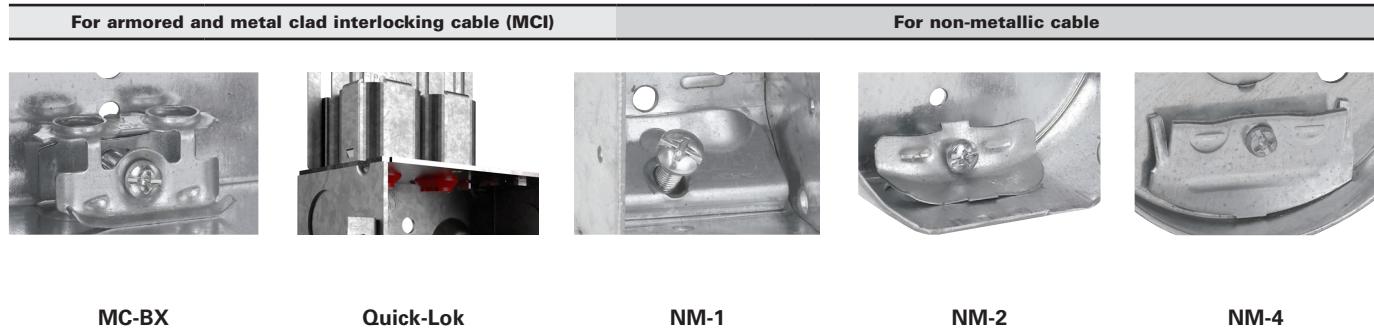
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Outlet box clamps

Clamp technical data

Clamp type	Raceway type						Non-metallic sheathed cable	Flexible metallic conduit
	Armored cable (BX)		Metal clad interlocking cable (MCI)		Steel (MC-PCS)	Aluminum (MC-PCS)		
Steel	Aluminum	Steel	Aluminum	Steel (MC-PCS)	Aluminum (MC-PCS)	—	—	—
Quick-Lok boxes	#14-2 to 10-4	#14-2 to 10-4	#14-2 to 10-3	#14-2 to 10-3	#12-2 to 10-2	#12-2 to 12-3	—	—
MC-BX	#14-2 to 12-3	#14-2 to 10-2	#14-2 to 10-2	#14-2 to 10-2	—	—	—	7/32" trade size
NM-1	—	—	—	—	—	—	#14-2 to #12-3 w/ground	—
NM-2	—	—	—	—	—	—	#14-2 to #12-3 w/ground	—
NM-4	—	—	—	—	—	—	#14-2 to #12-3 w/ground	—

Note: Applicable and listed Southwire Armorlite™ all purpose type MC cable and all purpose hospital care facility type HCF MC cable



MC-BX

Quick-Lok

NM-1

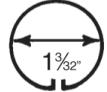
NM-2

NM-4

Outlet box entry knockout and pryouts



1/2" Conduit KO



3/4" Conduit KO



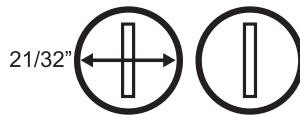
1" Conduit KO



Concentric 1/2" and 3/4" KO



Eccentric 1/2" and 3/4" KO



Cable pry-outs always in pairs

Conduit KOs have standard trade size dimensions. KOs are uniform and true for attachment of cable or conduit connectors. Pry-outs for cable entrance are slotted – a twist with screwdriver removes them. KOs and pry-outs are precision stamped to permit easy removal, but remain sufficiently strong and sturdy when not removed.

4" square drawn boxes feature a 1/2" and 3/4" "inverted" concentric KO – easily removed. Our 4" square welded boxes feature our 1/2" eccentric KO which also features easy removability of both the 1/2" and 3/4" KOs.

Note: These KOs are suitable for bonding without bonding jumpers around concentric (or eccentric) knockouts where used in circuits above or below 250V.

Steel square boxes

4^{11/16}" SQUARE OUTLET BOXES & COVERS

Applications:

- For use with conduit
- For use in commercial and industrial applications, where larger sized conductor or wiring devices are needed and additional volume is required
- Available in red for fire alarm applications

Features:

- Ideal for exposed work applications, providing an easy method for the installation of electrical devices (switches, receptacles, fans, lights, etc.)
- Raised ground screw location in the welded boxes saves time in installation
- Concentric knockouts have a $1/2"$ and $3/4"$ knockout in the same location for customer flexibility
- Knockouts are suitable for use without a bonding jumper in circuits above or below 250 volts
- Available in two depths for differing cubic capacity requirements
- Welded or drawn construction to match customer preference
- Extensive cover offering to meet various customer applications and needs



Certifications and compliances:

- UL Listed

4^{11/16}" SQUARE OUTLET BOXES – 29.5 CUBIC INCH CAPACITY

1 $1/2$ " DEEP WITH CONDUIT KOs

UL LISTED



TP548



TP549

Cat. #	Description	Grounding method	Knockouts		Unit qty.	Wt. lbs. per 100
			Sides	Bottom		
TP548	Drawn	-	8 - $1/8"$, 4 - $3/4"$	3 - $1/2"$, 2 - $3/4"$	25	84
TP549C	Drawn	Ground bump	8 - $1/2"$, 4 - $1/2"$ + $3/4"$ C	3 - $1/2"$, 2 - $3/4"$	25	75

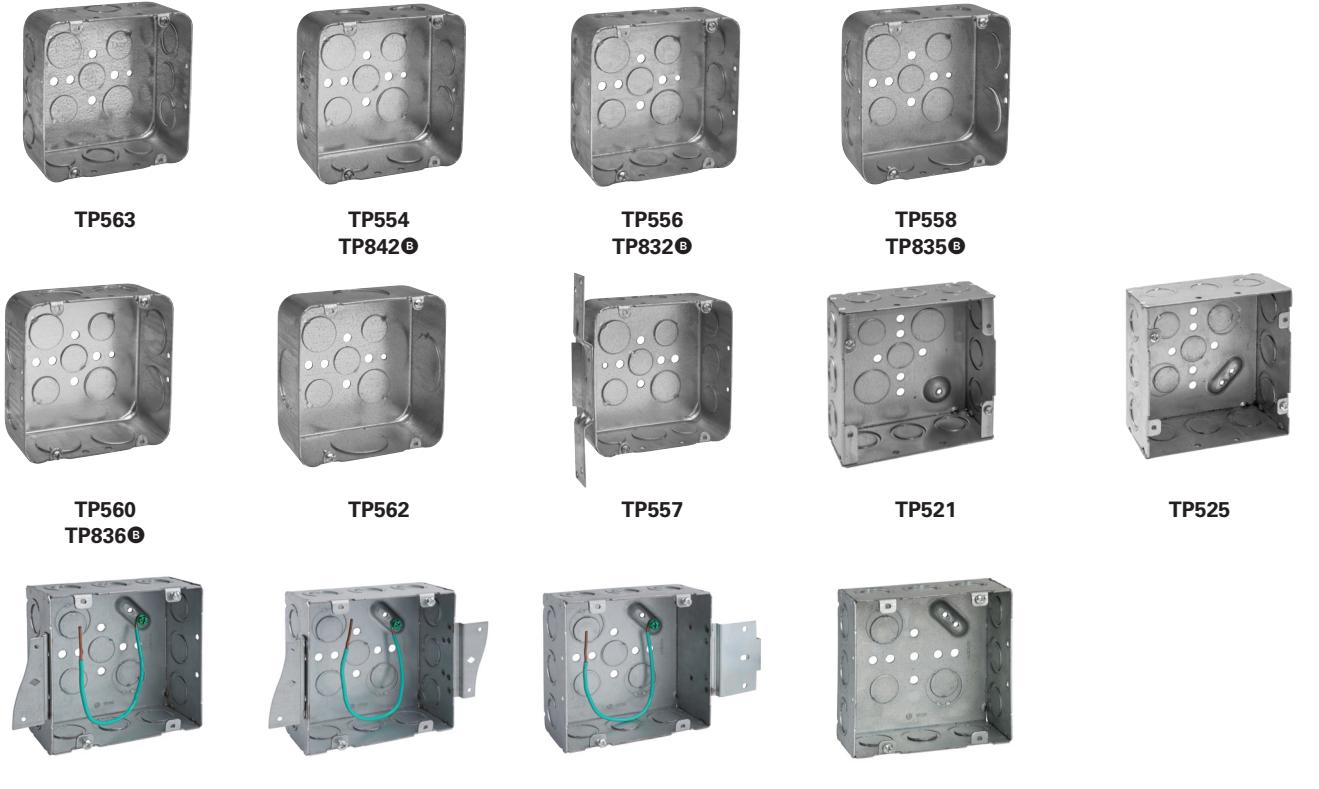
CUL Listed.

Steel square boxes

4^{11/16}" SQUARE OUTLET BOXES – 42.0 & 44.0 CUBIC INCH CAPACITY

2^{1/8}" DEEP WITH CONDUIT KOs

UL LISTED



Steel boxes

Cat. #	Bracket	Description	Grounding method	Knockouts		Unit qty.	Wt. lbs. per 100
				Sides	Bottom		
42.0 cubic inch capacity							
TP563	-	Drawn	-	6 - 1/2", 6 - 1/2" + 3/4" C	3 - 1/2", 2 - 3/4"	25	104
TP554	-	Drawn	-	8 - 3/4"	3 - 1/2", 2 - 3/4"	25	104
TP556 ^P	-	Drawn	-	8 - 1/2", 4 - 3/4"	3 - 1/2", 2 - 3/4"	25	104
TP558 ^P	-	Drawn	-	4 - 3/4", 4 - 1"	3 - 1/2", 2 - 3/4"	25	104
TP560	-	Drawn	-	8 - 1"	3 - 1/2", 2 - 3/4"	25	104
TP562 ^G	-	Drawn	-	4 - 1 1/4"	3 - 1/2", 2 - 3/4"	25	104
TP557	"VS"	Drawn	-	5 - 1/2", 4 - 1/2" + 3/4" C	3 - 1/2", 2 - 3/4"	25	120
TP5H	"S"	Welded	Ground bump	12 - 1/2" + 3/4" C	2 - 1/2", 2 - 1/2" + 3/4" E	25	111
TP5MPF ^G	"S"	Welded	Ground bump	12 - 1/2" + 3/4" C	2 - 1/2", 2 - 1/2" + 3/4" E	25	115
TP5MSB	MSB	Welded	Ground bump	9 - 1/2" + 3/4" C	2 - 1/2", 2 - 1/2" + 3/4" E	25	120
TP5HS	-	Welded	Ground bump	12 - 1/2" + 3/4" E	1 - 1/2", 2 - 1/2" + 3/4" E	25	109
44.0 cubic inch capacity							
TP521	-	Welded	Ground bump	12 - 1/2" + 3/4" C	2 - 1/2", 2 - 3/4"	25	115
TP525 ^{R P}	-	Welded	Ground bump	12 - 1/2" + 3/4" E	2 - 1/2", 2 - 1/2" + 3/4" E	25	115
Air plenum - 42.0 cubic inch capacity							
TP835 ^B	-	Drawn	-	4 - 3/4", 4 - 1"	3 - 1/2", 2 - 3/4"	25	115
TP836 ^B	-	Drawn	-	8 - 1"	3 - 1/2", 2 - 3/4"	25	115
TP842 ^B	-	Drawn	-	12 - 3/4"	3 - 1/2", 2 - 3/4"	25	115
TP832 ^B	-	Drawn	-	8 - 1/2", 4 - 3/4"	3 - 1/2", 2 - 3/4"	25	115

^BFor air plenum (no mounting holes) - not UL Listed.

^CcUL Listed.

^GNot UL Listed.

^RRaised ground bump contains holes for two ground screws.

^PAvailable in painted options.

Steel square covers

4^{11/16}" SQUARE OUTLET BOXES

3" DEEP WITH CONDUIT KOs – 60.0 CUBIC INCH CAPACITY
3^{1/4}" DEEP WITH CONDUIT KOs – 66.0 CUBIC INCH CAPACITY

UL LISTED



TP72181-DTA-BLUE

Cat. #	Box size	Box depth	Brkt.	Descrip.	Grounding method	Cap. cu. in.	Knockouts		Bottom
							Sides	Bottom	
Standard unpainted boxes									
TP72181-1-1/4	4 ^{11/16} " sq.	3"	-	Welded	Ground bump	60.0	8 - 1 ^{1/4} "		2 - 1/2", 2 - 3/4"
TP72181-1-1-2	4 ^{11/16} " sq.	3"	-	Welded	Ground bump	60.0	4 - 1 ^{1/2} "		2 - 1/2", 2 - 3/4"
TP72181-DTA	4 ^{11/16} " sq.	3 ^{1/4} "	-	Welded	Ground screw	66.0	2 - 1/2" + 3/4" C, 2 - 1" + 1 ^{1/4} " C, 2 - 1" + 1 ^{1/4} " + 1 ^{1/2} " + 2" C	2 - 1/2", 2 - 3/4" + 1" C	
TP72181-DTAB	4 ^{11/16} " sq.	3 ^{1/4} "	AB	Welded	Ground screw	66.0	2 - 1/2" + 3/4" C, 2 - 1" + 1 ^{1/4} " C, 2 - 1" + 1 ^{1/4} " + 1 ^{1/2} " + 2" C	2 - 1/2", 2 - 3/4" + 1" C	

CUL Listed.

P Available in painted options.

4^{11/16}" SQUARE EXTENSION RINGS

1^{1/2}" DEEP WITH CONDUIT KOs – 29.5 CUBIC INCH CAPACITY
2^{1/8}" DEEP WITH CONDUIT KOs – 42.0 CUBIC INCH CAPACITY

UL LISTED



TP550



TP564



TP837

Cat. #	Description	Knockouts		Unit qty.	Wt. lbs. per 100
		Sides	Bottom		
1^{1/2}" deep – 29.5 cubic inch capacity					
TP550		8 - 1/2", 4 - 3/4"	-	25	66
2^{1/8}" deep – 42.0 cubic inch capacity					
TP564		8 - 1/2", 4 - 3/4"	-	25	84
TP565		6 - 1/2", 6 - 1/2" + 3/4"	-	25	84
TP566		8 - 1"	-	25	84
Air Plenum					
TP837	2 ^{1/8} " deep	8 - 1/2", 4 - 3/4"	-	25	84

B For air plenum (no mounting holes) - not UL Listed. TP837 requires the use of TP852, purchased separately.

H CSA certified.

P Available in painted options.

Steel square covers

4^{11/16}" SQUARE COVERS – CUBIC INCH CAPACITY (SEE BELOW)

UL LISTED



TP568



TP569, TP570, TP571,
TP573, TP575



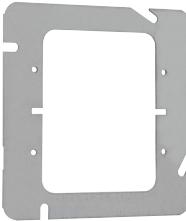
TP572



TP574 - TP582,
TP529, TP531



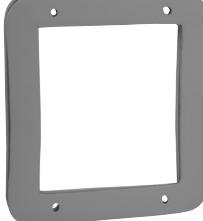
TP584, TP586, TP589,
TP593, TP541, TP543



TP590



TP851^B



TP852^B



TP72C62A



TP72C4S-1/2,
TP72C4S-3/4

Steel boxes

Cat. #	Description	Capacity cu. in.	Unit qty.	Wt. lbs. per 100
Flat and raised				
TP568 ^H ^P	Flat blank	-	25	40
TP569 ^C	1/2" raised, with ears 2 1/4"	3.5	25	25
TP570 ^C	5/8" raised, with ears 2 1/4"	4.8	25	31
TP571 ^C	3/4" raised, with ears 2 1/4"	5.4	25	40
TP572 ^H ^P	Flat, with 1/2" KO	-	25	40
TP573 ^C	1" raised, with ears 2 1/4"	6.5	25	40
TP575 ^C	1 1/4" raised, with ears 2 1/4"	9.5	25	45
TP72C4S-1/2 ^G ^P	4 ^{11/16} to 4" adapter, 1/2" raised	-	25	30
TP72C4S-3/4 ^G ^P	4 ^{11/16} to 4" adapter, 3/4" raised	-	25	30
Air plenum				
TP851 ^B	Flat blank gasketed with captive screws	-	50	42
TP852 ^B	Flat ring double gasketed	-	25	20
One device				
TP72C62A ^C	Flat	-	50	30
TP574 ^H	1/4" raised	1.8	25	32
TP576 ^C	1/2" raised	3.5	50	31
TP579 ^H	5/8" raised	4.5	25	39
TP578 ^C	3/4" raised	5.5	25	31
TP580 ^H	1" raised	6.8	25	46
TP582 ^H	1 1/4" raised	8.5	25	52
TP529 ^H	1 1/2" raised	11.3	25	64
TP531 ^H	2" raised	15.0	25	76
Two device				
TP590 ^C	Flat	-	50	19
TP583 ^H ^C	1/4" raised	3.0	25	26
TP584 ^H	1/2" raised	6.0	25	30
TP587 ^C	5/8" raised	7.3	25	25
TP586 ^H	3/4" raised	8.8	25	34
TP589 ^C	1" raised	11.5	25	38
TP593 ^C	1 1/4" raised	15.0	25	38
TP541 ^H	1 1/2" raised	18.8	25	63
TP543 ^H	2" raised	24.5	25	79

^BFor air plenum (no mounting holes) - not UL Listed.

^CCUL Listed.

^HHCSA certified.

^GNot UL Listed.

^PAvailable in painted options.

Steel square covers

4^{11/16}" SQUARE SURFACE COVERS – 9.0 CUBIC INCH CAPACITY

UL LISTED

CSA LISTED

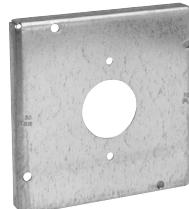
1/2" RAISED



TP720



TP722



TP724, TP730,
TP736



TP726



TP72C51



TP728



TP732



TP734



TP738



TP740

Cat. #	Description	Unit qty.	Wt. lbs. per 100
TP720	For one toggle switch	10	52
TP722	For one duplex receptacle	10	49
TP724	For one single receptacle 1 ^{13/32} " (1.406") dia.	10	53
TP730	For one single receptacle 1 ^{21/32} " (1.656") dia.	10	50
TP736	For one power outlet 1 ^{47/64} " (1.734") dia.	10	51
TP726	For two toggle switches	10	52
TP728	For two duplex receptacles	10	44
TP732	For one power outlet 2 ^{9/64} " (2.141") dia.	10	48
TP734	For one power outlet 2 ^{15/32} " (2.469") dia.	10	45
TP738	For one ground fault interrupter	10	45
TP740	For one GFI receptacle and one toggle	25	45
TP741	For two GFI receptacles	10	43
TP72C51	For one duplex receptacle and one GFI receptacle	25	50

Listed.