W-J-800E
25 April 1984
SUPERSEDING
W-J-800D
January 31, 1978

FEDERAL SPECIFICATION

JUNCTION BOX: EXTENSION, JUNCTION BOX; COVER, JUNCTION BOX (STEEL, CADMIUM, OR ZINC-COATED)

This specification was approved by the Assistant Administrator, Office of Federal Supply and Services, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers sheet-steel junction boxes, junction box extensions, and junction box covers for use with rigid metallic, intermediate metallic conduit, electrical metallic tubing, flexible metallic conduit, armored cable, nonmetallic sheathed cable and nonmetallic tubing when installed in accordance with the National Electric Code. It does not cover nonmetallic junction boxes, cast metal boxes, conduit bodies or hinged covered boxes.

1.2 Classification

1.2.1 Types. Junction boxes, extensions, and covers furnished under this specification shall be of the following types, as specified (see 6.2):

Type I - Octagon junction box
Type II - Square junction box
Type III - Junction box
Type IV - Device box, sectional type (gangable)
Type V - Octagon junction box extension ring
Type VI - Square junction box extension ring
Type VII - Junction box ring
Type VIII - Covers
Type IX - Device box, welded type (nongangable)

1.2.2 Sizes. Junction boxes, extensions, and covers furnished under this specification shall comply with NEMA OS-1 and be of standard commercial sizes listed in table I and as specified (see 6.2).

1.2.3 Styles. Junction boxes, extensions, and covers furnished under this specification shall comply with NEMA OS-1 and be of the styles listed in table I and as specified (see 6.2).

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

PPP-B-601 - Boxes, Wood, Cleated-Plywood
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner
PPP-B-636 - Boxes, Shipping, Fiberboard
PPP-B-640 - Boxes, Fiberboard, Corrugated Triple-Wall

Federal Standards:

FED-STD-H28 - Screw Threads for Federal Services
FED-STD-123 - Marking for Shipment (Civil Agencies)

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal specification documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specifications

MIL-P-116 - Preservation, Methods of
MIL-E-17555 - Electronic and Electrical Equipment Accessories, and Repair Parts, Packaging and Packing of

Military Standards

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-147 - Palletized Unit Loads

(Copies of military specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on the date of invitation for bids or request for proposal shall apply.

National Electrical Manufacturers Association (NEMA):

NEMA OS-1 - Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports

(Application for copies should be addressed to the National Electrical Manufacturers Association, 2101 L Street, N.W., Washington, DC 20037.)

American Society for Testing and Materials (ASTM):

D3951 - Commercial Packaging, Practice for

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

Underwriters' Laboratories, Inc. (UL):

UL 514A - Metallic Outlet Boxes
UL 514B - Fittings for Conduit and Outlet Boxes

(Application for copies should be addressed to the Underwriters' Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Description. The junction boxes, extensions, and covers specified in this document shall be constructed of steel, coated with a UL approved coating, usually zinc or cadium, as specified (see 6.2). Their dimensions and design shall conform to the requirements of UL-514A, UL-514B, NEMA OS-1, and Table I. All bolts and screws shall have standard screw threads in accordance with FED-STD-H28.

3.2 First article. When specified (see 6.2), the contractor shall furnish one junction box, extension, and cover of each type included under a specific contract for first article inspection and approval (see 4.2.1 and 6.4).

3.2.1 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and

reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.2.2 Knockouts. Knockouts shall be provided. Where applicable, location of knockouts shall be in accordance with standards of NEMA OS-1.

3.2.3 Steel fabrication. The steel used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the steel to a value less than intended by the design. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to insure uniformity of size and shape.

3.3 Codes and standards. The boxes, extensions, and covers shall conform to the requirements of UL-514A and 514B as applicable.

3.3.1 Compliance. Prior to approval of the first shipment, the contractor shall submit to the contracting officer, or his authorized representative, satisfactory evidence that the boxes, extensions, and covers he proposes to furnish under this specification meets the requirements of UL-514A and 514B as applicable.

3.3.2 UL 514 standard. Acceptable evidence of meeting the requirements of UL 514A and 514B shall be the UL certification symbol or label, listing in the UL Electrical Construction Materials List or a certified test report from a nationally recognized independent testing laboratory.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.1.2 Standards compliance. The contractor shall make available to the contracting officer or his authorized representative evidence of compliance with the applicable standard(s) cited in 3.3.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.2.1)
b. Quality conformance inspection (see 4.2.2)

4.2.1 First article inspection. The first article inspection shall be performed on junction boxes, extensions, or cover plates of each type or style when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.4, the tests of 4.5, and, when specified, the first article pack inspection of 4.6. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.4, the tests of 4.5, and the packaging inspection of 4.6. This inspection shall be performed on the samples selected in accordance with 4.3.

4.3 Sampling. Sampling and inspection procedures shall be in accordance with MIL-STD-105. All junction boxes, extensions, and cover plates of the same type, style, and size offered for delivery at one time shall be considered a lot for the purpose of inspection. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for a complete reinspection. Resubmitted lots shall be reinspected using tightened inspection. If the rejected lot was screened, reinspection shall be limited to the defect causing rejection. If the lot was reprocessed, reinspection shall be performed for all defects. Rejected lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.3.1 Sampling for examination. Examination shall be based on inspection level S-4 and an Acceptable Quality Level (AQL) of 4.0 percent defective.

4.3.2 Sampling for tests. Test shall be based on inspection level S-2 and AQL of 1.5 percent defective.

4.4 Examination. Each of the samples selected shall be visually and dimensionally examined to determine conformance with all the requirements of this specification not involving tests.

4.5 Tests. Each sample selected shall be tested to determine conformance to the applicable requirements of UL 514A and NEMA OS-1. Where requirements specified herein differ from or duplicate those of the UL Standard and NEMA Standard, the applicable test need not be performed.

4.6 Preparation for delivery inspection. The inspection of the preservation, packing, and marking shall be in accordance with the requirements of section 4 of MIL-E-17555. The inspection shall consist of the quality conformance inspection; and, when specified (see 6.2), a first article pack shall be furnished for examination and test within the time frame required (see 6.2).

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Unit protection. Each junction box, extension, and cover shall be cleaned, dried, and preserved method III in accordance with MIL-P-116.

5.1.1.1.2 Intermediate pack. The intermediate container quantity shall be as specified (see 6.2). Intermediate containers shall conform to PPP-B-636; class weather-resistant; type, grade, and style shall be at the contractor's option. Intermediate containers shall be uniform in size and shape, and shall contain equal unit pack quanitites within the weight limitations of the container.

5.1.2 Level C. Junction boxes, extensions, and covers shall be packaged in accordance with ASTM D3951.

5.2 Packing. Packing shall be level A, B, or C as specified (see 6.2).

5.2.1 Level A. Items shall be packed in containers conforming to PPP-B-601, overseas type or PPP-B-621, class 2. Assembly, closure, and strapping shall be in accordance with the appendix of the applicable box specification. Contents shall be cushioned, blocked, or braced to prevent movement within containers.

5.2.2 Level B. Items shall be packed in containers conforming to PPP-B-601, domestic type; PPP-B-621, class 1; PPP-B-636, class weather-resistant; or PPP-B-640, class 2. Assembly, closure, and strapping shall be in accordance with the appendix of the applicable box specification. Strapping of individual containers is not required when a load is palletized in accordance with 5.3. Contents shall be cushioned, blocked, or braced to prevent movement within continers.

5.2.3 Level C. Items shall be packed in accordance with ASTM D3951.

5.3 Palletization. When specified (see 6.2), material shall be palletized in accordance with MIL-STD-147.

5.4 Marking.

5.4.1 Military agencies. Shipments to military agencies shall be marked in accordance with MIL-STD-129.

5.4.2 Civil agencies. Shipments to civil agencies shall be marked in accordance with FED-STD-123.

6. NOTES

6.1 Intended use. Junction boxes, junction box extensions, and junction box covers are intended for use with rigid metallic, intermediate metallic conduit, electrical metallic tubing, flexible metallic conduit, and armored cable.

6.2 Ordering data. Procurement documents shall specify the following:

a. Title, number and date of this specification
b. Type of junction box, extension, or cover required (see 1.2.1)
c. Size of junction box, extension, or cover required (see 1.2.2)
d. Style of junction box, extension, or cover required (see 1.2.3)
e. Material finish desired (see 3.1)
f. When a first article is required for inspection and approval (see 3.2, 4.2.1, and 6.4)

g. When a first article pack inspection is required and time frame required for submission (see 4.2.1 and 4.6)
h. Level of preservation and packaging and level of packing required (see 5.1 and 5.2)
i. The number of unit packs required for the intermediate container (see 5.1.1.1)
j. When palletization is required (see 5.3)

6.3 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423 Contract Data Requirements List (CDRL) and invokes the provisions of paragraph 7-104.9(n) of the Defense Acquisition Regulations (DAR), the data requirements will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL (DD Form 1423) incorporated into the contract. When the provisions of DAR 7-104.9(n) are not invoked, the data shall be delivered in accordance with the contract requirements.

6.4 First article. When a first article inspection is required (see 3.2 and 6.2), the item will be tested and should be a first production item or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.5 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

MILITARY INTERESTS:

Custodians

Army - ME
Navy - YD
Air Force - 85

Review Activities

DLA - GS
Air Force - 99

User Activities

Navy - SH
Army - ER, CE

CIVIL AGENCY COORDINATING ACTIVITIES:

DC - DCG
Interior - BPA
DOT - ACO
GSA - FSS, PCD

PREPARING ACTIVITY:

Navy - YD

DoD project 5975-0559

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.

TABLE I. Types, sizes, and styles of junction boxes, extension rings, and covers.

Type	Description		Size inches	Style no	Bottom		Side knockouts			
					1/2 inch	3/4 inch	1/2 inch	3/4 inch	1 inch	Cable Bx
I	Octagon junction box	A	3-1/4 x 1-1/2	2	1		4			
				3	1			4		
				4	1		2	2		
				5	1		2			4
		B	3-1/2 x 1-1/2	6	1		4			
				7	1		2			4
		C	4 x 1-1/2	8	1		2			4
				9	3	2		4		
				10	5		4			
				11	3	2	2	2		
				12	1		2			4
		D	4 x 2-1/8	13	3	2		4		
				14	5		4			
				15	3	2	2	2		

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					1/2 inch	3/4 inch	1/2 inch	3/4 inch	1 inch	Cable Bx
I	Octagon junction box	D	4 x 2-1/8	16	3	2			4	
				17	1		2			4
				18	3	2	4			
II	Square junction box	A	4 x 1-1/2	2	5		12			
				3	1	4		8		
				4	3	2	8	4		
				5	3	2		8		4
				6	5		10			
		B	4 x 2-1/8	7	5		12			
				8	1	4		8		
				9	3	2	8	4		
				10	3	2			8	
				11	3	2		8		
				12	3	2	12			

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Type	Description		Size inches	Style no	Bottom		Side knockouts			
					1/2 inch	3/4 inch	1/2 inch	3/4 inch	1 inch	Cable Bx
II	Square junction box	B	4 x 2-1/8	13	1		6			4
		C		14	3	2	12			
				15	1	4		10		
				16	3	2	8	4		
				17	3	2		10		
		D	4-11/16 x 2-1/8	18	3	2	12			
				19	3	2	8	4		
				20	3	2			8	
				21	3	2		4	4	
				22	3	2		8		
				23	3	2		12		
III	Junction box (nongangable)	A	4 x 2-1/8 x 1-1/2	2	3		8			
				3	1		2			
	Nongangable device box	B B	4 x 2-1/8 x 1-7/8	4	3		8			

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Type	Description		Size inches	Style no	Bottom		Side knockouts			
					1/2 inch	3/4 inch	1/2 inch	3/4 inch	1 inch	Cable Bx
III	Handy junction box (nongangable)	B	4 x 2-1/8 x 7-1/8	5		2		6		
				6	3			6		
	Nongangable device box	C	4 x 2-1/8 x 2-1/8	7	3		8			
				8		2		6		
IV	Device box sectional type (gangable)	A	3 x 2 x 2	2	2		6			
				3	1		6			
				4	1					4
		B	3 x 2 x 2-1/2	5	2		6			
				6	1		2			8
				7	2		4			
				8	1		2			4
	Lateral bracket			9	1		1			8
		C	3 x 2 x 2-3/4	10	2		6			
				11	1		6			4

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Type	Description		Size inches	Style no	Bottom		Side knockouts			
					1/2 inch	3/4 inch	1/2 inch	3/4 inch	1 inch	Cable Bx
IV	Device box sectional type gangable	C	3 x 2 x 2-1/4	12	1		2			4
				13	1		4			
				14		1		4		
				15	2		4	2		
		D	3 x 2 x 3-1/2	16	1		8			
				17	1			8		
				18	1		6	2		
				19	1		6			4
V	Octagon box	A	3-1/4 x 1-1/2	2			4			
	Extension ring	B	4 x 1-1/2	3			4			
				4				4		
				5			2	2		
		C	4 x 2-1/8	6			2	2		

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Type	Description		Size inches	Style no	Bottom		Side knockouts			
					1/2 inch	3/4 inch	1/2 inch	3/4 inch	1 inch	Cable Bx
VI	Square junction box extension ring	A	4 x 1-1/2	2			12			
				3				8		
				4			8	4		
		B	4 x 2-1/8	5			8	4		
				6					8	
		C	4-11/16 x 1-1/2	7			8	4		
			4-11/16 x 2-1/8	8			8	4		
				9					8	
VII	Handy junction box extension ring	A	4 x 2-1/8 x 1-1/2	2			8			
		B	4 x 2-1/8 x 1-7/8	3			8			
				4				6		

TABLE I. Types, sizes, and styles of junction boxes, extension rings, and covers - continued.

Type	Description		Size inches	Style no	Other description
VIII	Covers	A	3-1/4 inch Octagon box	2	Flat Blank
				3	Flat with 1/2 inch knockout in center
		B	4 inch Octagon Junction Box	4	Flat blank
				5	Flat with 1/2 inch knockout in center
				6	Raised 5/8 inch with 1/2 inch knockout in center
				7	Raised 1/2 inch with 2-3/4 inch opening
				8	Raised 5/8 inch with 2-3/4 inch opening
				9	Raised 3/4 inch with 2-3/4 inch opening
				10	Raised 1 inch with 2-3/4 inch opening
				11	Raised 1-1/4 inch with 2-3/4 inch opening
				12	Raised 5/8 inch, center blanked for single device
				13	Flat center blanked for single device
				14	Flat, single receptacle 1-13/32 blanked hole
				15	Flat center blanked for duplex receptacle

TABLE I. Types, sizes, and styles of junction boxes, extension rings, and covers - continued.

Type	Description		Size inches	Style no	Other description
VIII	Covers	C	4-11/16 inch Square junction box	16	Flat blank
				17	For 1 inch flush device
				18	Flat with 1/2 knockout in center
				19	Raised 1/2 inch, with 2-3/4 inch opening
				20	Raised 5/8 inch, with 2-3/4 inch opening
				21	Raised 3/4 inch, with 2-3/4 inch opening
				22	Raised 1 inch, with 2-3/4 inch opening
				23	Raised 1-1/4 inch, with 2-3/4 inch opening
		D	4 inch Square junction box surface	24	Raised 1/4 inch for toggle switch
				25	Raised 1/4 inch for duples receptacle
				26	Raised 1/2 inch for toggle switch
				27	Raised 1/2 inch for single receptacle
				28	Raised 1/2 inch for duplex receptacle
				29	Raised 1/2 inch for two toggle switches

TABLE I. Types, sizes, and styles of junction boxes, extension rings, and covers - continued.

Type	Description		Size inches	Style no	Other description
VIII	Covers	D	4 inch Square junction box surface mounted	30	Raised 1/2 inch for two duplex receptacles
				31	Raised 1/2 inch for toggle switch and single receptacle
				32	Raised 1/2 inch for toggle switch and duplex receptacle
				33	Raised 1/2 inch three gang despard device
				34	Raised 1/2 inch six gang despard device
				35	Raised 1/2 inch 30-50 amp single receptacle
				36	Raised 1/2 inch 30 amp twist lock single receptacle
				37	Raised 1/2 inch 20 amp receptacle
				38	Raised 1/2 inch 30-50-60 amp receptacle
		E	4 inch Square junction box flush mounted	39	Flat blank
				40	Flat with 1/2 inch knockout in center
				41	Raised 1/2 inch with 2-3/4 inch opening
				42	Raised 5/8 inch with 2-3/4 inch opening
				43	Raised 3/4 inch with 2-3/4 inch opening

TABLE I. Types, sizes, and styles of junction boxes, extension rings, and covers - continued.

Type	Description		Size inches	Style no	Other description
VIII	Covers	E	4 inch Square junction box flush mounted	44	Raised 1 inch with 2-3/4 inch opening
				45	Raised 1-1/4 inch with 2-3/4 inch opening
				46	Raised 1/4 inch for one flush device
				47	Raised 1/2 inch for one flush device
				48	Raised 1/2 inch for two flush devices
				49	Raised 5/8 inch for one flush device
				50	Raised 5/8 inch for two flush devices
				51	Raised 3/4 inch for one flush device
				52	Raised 3/4 inch for two flush devices
				53	Raised 1 inch for one flush device
				54	Raised 1 inch for two flush devices
				55	Raised 1-1/4 inch for one flush device
				56	Raised 1-1/4 inch for two flush devices

TABLE I. Types, sizes, and styles of junction boxes, extension rings, and covers - continued.

Type	Description		Size inches	Style no	Other description
VIII	Covers	F	Handy junction box	57	Blank cover
				58	For single receptacle
				59	For duplex receptacle
				60	For toggle switch
				61	Multiple wiring device

Type	Description		Size inches	Style no	Bottom knockouts		Side knockouts			
					1/2 inch	3/4 inch	1/2 inch	3/4 inch	1 inch	Cable Bx
IX	Device box welded type (nongangable)	A	3 x 2 x 2-1/2	2	2		6			
				3	1		2			4
		B	3 x 2-9/64 x 2-27/32	4	1		2			4