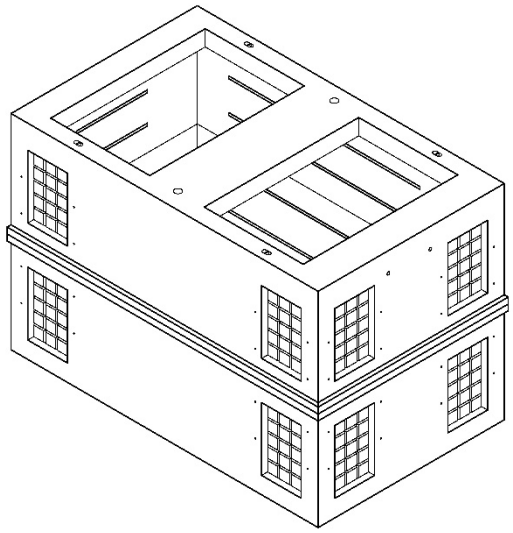
712 Electric Vault, Primary Service



1. Table of Contents

2. Scope

This standard covers the requirements for the 712 electrical vault components (vault base and top sections) and the assembled 712 electric vaults.

The 712 vault is considered a ring vault by Seattle City Light (SCL) crews.

Most of the basic components can be ordered separately or they can be ordered as assembled vaults with covers.

This standard applies to the SCL stock numbers listed in Section 10.

Standard Coordinator
Sunny Kim

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3. Application

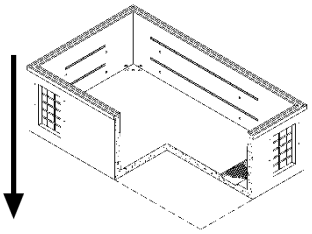
712 vaults are intended for use in the construction of underground electric systems. The precast concrete structure may be used to house medium-sized transformers up to 300 kVA (3 -100 kVA), three-phase load break junction boxes, or service connections and splices for the distribution system.

The standard 712-vault assembly consists of the 712 base [A], a 712 top with two 78-inch by 50-inch block-outs [B1], various risers to bring access opening to grade, a cover with two 3- by 3-foot non-slip, solid hatches and a 42-inch entry access.

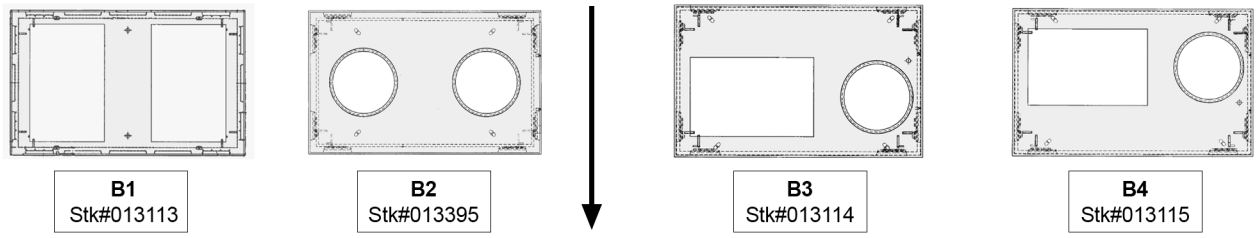
Due to different applications, the vault may need to be customized with different block-out configurations; various risers and access openings (see Figure 3).

Figure 3. Steps for selecting the proper vault assembly for your application:

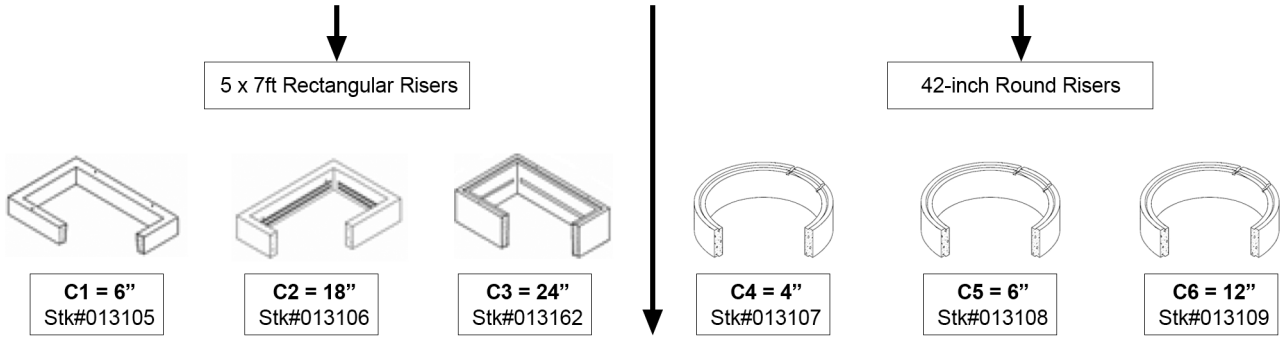
Step 1. *Select standard 712-vault base, [A] (Stock No. 013112, see section 5).*



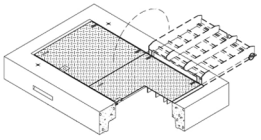
Step 2. *Determine and select the type of blockout configuration needed for the vault top section [B#]. There are 4 possible options for the 712 top sections; each allowing a different set of access openings. (Stock Nos. 013113, 013114, 013395, or 013115, see section 6).*



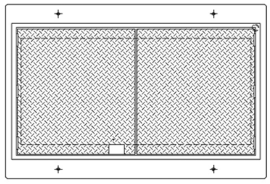
Step 3. *Select appropriate risers [C#] to bring access opening up to grade. Each riser section for the 712 covers half of the top section. (Stock Nos. 013105, 013106, 013162, 013107, 013108, and 013109)*



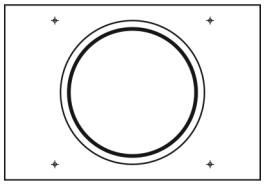
Step 4. Determine the appropriate type of covers and lids or hatches [D#]



D2 = H20 Hatch
Stock No.013111



D3 = H30 Hatch
Stock No.013153



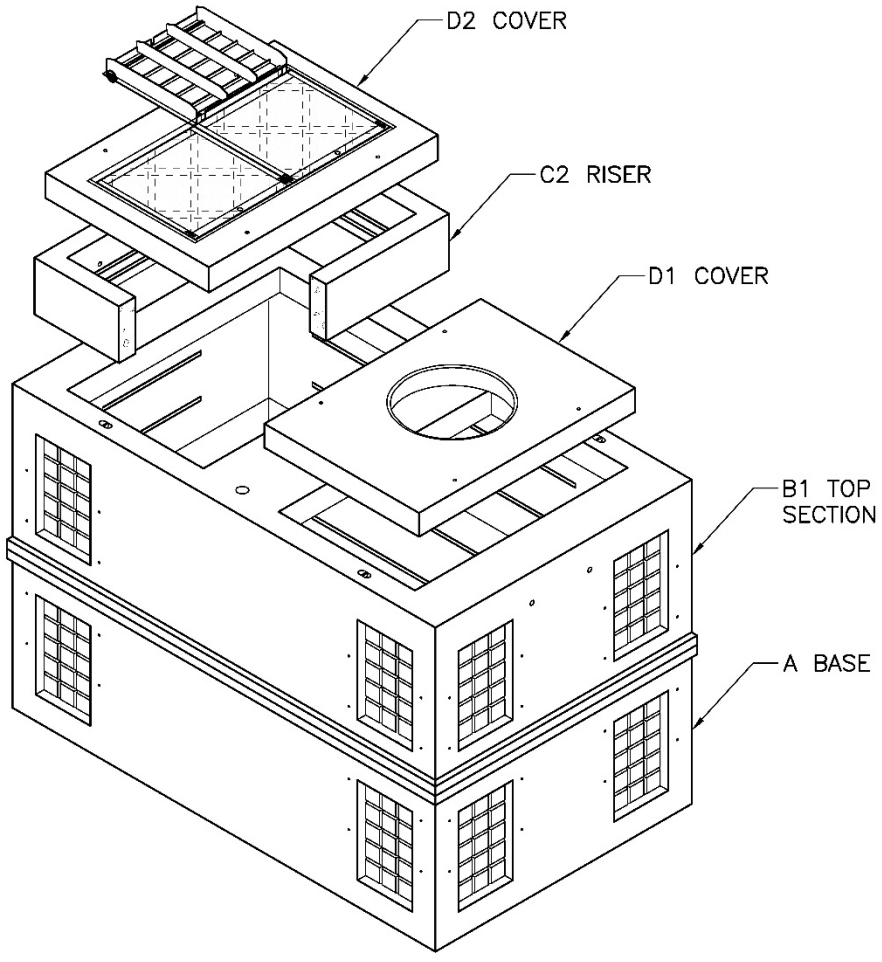
D1 = 42" Round Blockout; use with B1 only
Stock No.013110

42" Round Frame
Stock No.012753

H20 – 42" Round Solid
Stock No.720466

H20 – 42" Round Vented
Stock No.720226

Step 5. *Check the assembled vault configurations in section 8 for vaults that can be ordered configured with base, top section, and cover. Assembled option will still require choices for risers and hatches or lids.*



4. General Requirements

This detailed standard is to be used in conjunction with SCL Material Standard 7203.21, “Precast Reinforced Concrete Structures – General”.

Vault grounding shall conform to SCL Material Standard 7203.21, Section 9, Grounding.

5. Vault Base Requirements [A]

All 712 vault bases shall conform to the dimensions cited in Figure 5 and Table 5a.

Figure 5. Standard 712 vault base [A]

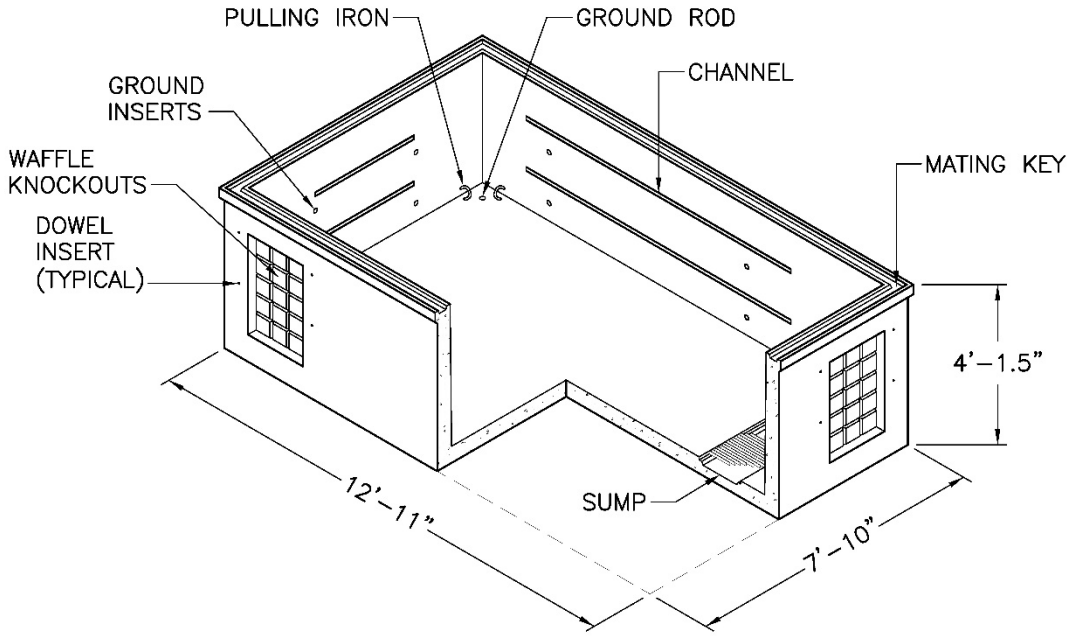


Table 5a. Base Dimensions, Nominal

	Outside (ft-in)		Inside (ft-in)		Height (ft-in)		
Stock No.	**Length**	**Width**	**Length**	**Width**	**Outside**	**Inside**	**Figure No.**
013112	12-11	7-10	12-3	7-2	4-1.5	3-7.5	5

Table 5b. Vault Base Attributes

All standard 712 vault bases shall have the following features:

	Size, Nominal (in)	Location	Per Location	Total Number
Knockouts				
Waffle, 15 6-inch squares	18 x 30	All 4 walls	2 ea side	8
Ground rod	2 dia	4 corners of floor	1 ea	4
Channels				
Galvanized “C” channel, horizontal,embedded in walls	36 length	End walls, 9 inches above floor, between knockouts, 22.5 inches on center between channels.	2 ea side	4
	96 length	Side walls, 9 inches above floor between knockouts, 22.5 inches on center between channel	2 ea side	4
Sump with galvanized grate	12 x 60	Floor, about 1 foot from and parallel to short wall	1	1
Pulling irons	7/8 dia	2 each corner of floor (typical)	2 ea corner	8
Ground inserts, bronze	1/2 dia	Side walls, 4 inches below top channel, internal and external	2 ea side	4
Dowel inserts	1/2 dia	12 inches on center; around the perimeter of duct knockout		
Ladder		Not required		

6. Top Section Requirements [B1, B2, B3, B4]

All 712 top sections shall conform to the dimensions cited in Table 6a and Figure 6a.

Table 6a. Top Section Dimensions, Nominal

	Outside (ft-in)		Inside (ft-in)		Height (ft-in)			
Stock No.	**Length**	**Width**	**Length**	**Width**	**Outside**	**Inside**	**Blockout Configurations**	**Figure**
013113	12-11	7-10	12-3	7-2	4-5.25	3-9	Two 78-in by 50-in blockouts	6b, **[B1]**
013395	12-11	7-10	12-3	7-2	4-5.25	3-9	Two 42-in round blockouts	6b, **[B2]**
013114	12-11	7-10	12-3	7-2	4-5.25	3-9	One 78-in by 50-in blockout and one 42-in round blockout, offset to left (Type 1) **[B3]**	6b, **[B3]**
013115	12-11	7-10	12-3	7-2	4-5.25	3-9	One 78-in by 50-in blockout and one 42-in round blockout, offset to right (Type 2) **[B4]**	6b, **[B4]**

Notes:
Type 1 refers to a left-offset rectangular blockout from point-of-view of round blockout end.
Type 2 refers to a right-offset rectangular blockout from point-of-view of round blockout end.

Figure 6a. Vault top section [B1]

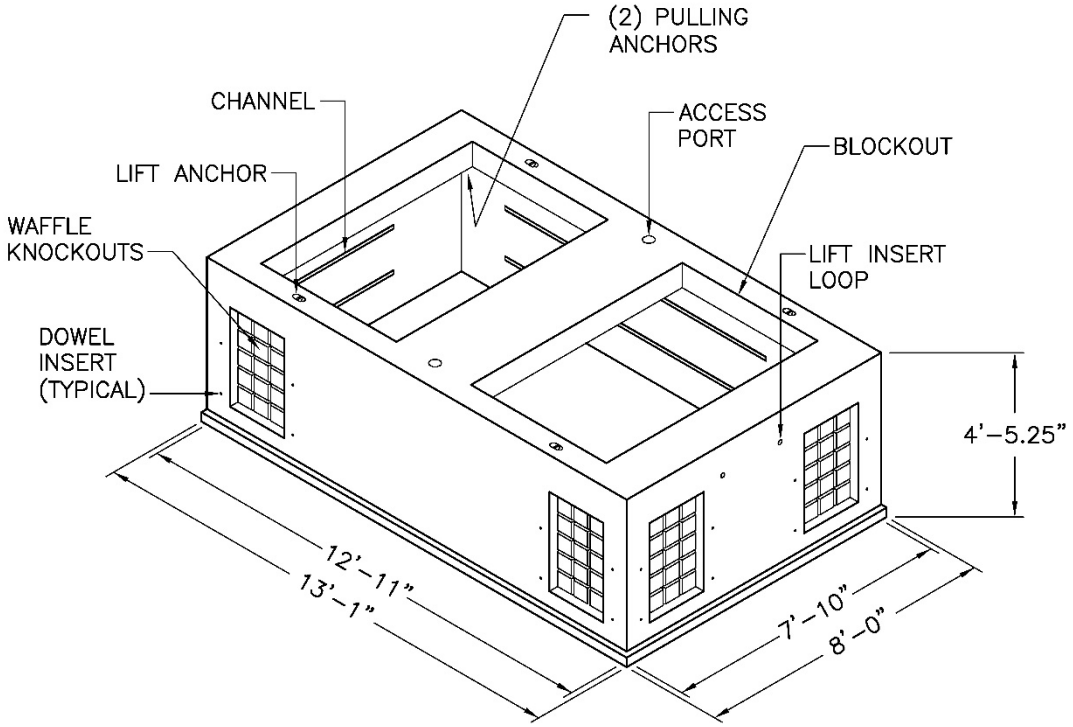
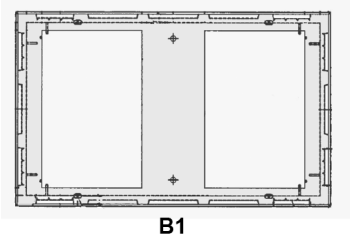
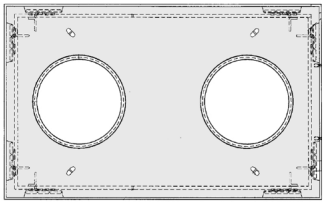


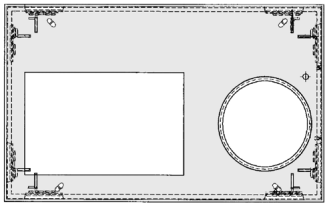
Figure 6b. Vault top section blockout options (top view)



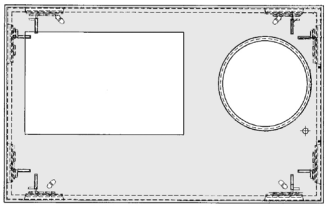
B1
Stock No. 013113



B2
Stock No. 013395
(not available on separate order)



B3
Stock No. 013114



B4
Stock No. 013115

Table 6b. Top Section Attributes Required

	Size, Nominal (in)	Location	Per Location	Total Number
Knockouts				
Waffle, 15 6-inch squares	18 x 30	All 4 walls, below round knockouts	2 ea side	8 waffles
Channels				
Galvanized “C” channel, horizontal, embedded in walls	36 length	End walls, 11.25-inches from ceiling, between knockouts, 22.5-inches on center between channels	2 ea side	4
	96 length	Side walls, 11.25-inches from ceiling, between knockouts, 22.5-inches on center between channels	2 ea side	4
Access Port				
[B1]	3 dia	1 each side on top, centered along length of top	1 ea side	2
[B2]	3 dia	1 each side on top, centered along length of top	1 ea side	2
[B3]	3 dia	1, right of 42-inch blockout	1 side	1
[B4]	3 dia	1, left of 42-inch blockout	1 side	1
Pulling irons	7/8 dia	2 ea corner of ceiling (typical)	2 ea corner	8
Lift anchor	6-1/4	4-ton anchor, 1 each corner on top	1 ea corner	4
Lift insert loop	3/4 dia	2 each on outside of one end wall, above knockouts	2, one side	2
Ground inserts, bronze	1/2 dia	side walls, 4 inches below top channel, internal and external	2 ea side	4
Dowel Inserts	1/2 dia	12-Inch on center; around the perimeter of duct knockout		

7. Covers, Risers, and Hatches

For the detailed material standard of covers and risers used with the 712 vault, refer to the latest version of SCL 7204.15, “Covers and Risers for Electric Vaults."

All hinged hatches shall open 180 degrees, or flat.

For the detailed material standard of 42-inch round cover and frames, refer to the latest version of SCL 7204.70, “Frame and Covers, 42-Inch Round, Iron."

Table 7. Covers, Risers, and Hatches

Stock No.	Description	Mtl. Std.	References to Figure 3
013105	5- by 7-foot by 6-inch riser without galvanized “C” channel	7204.15	**C1**
013106	5- by 7-foot by 18-inch riser with galvanized “C” channels	7204.15	**C2**
013362	5- by 7-foot by 24-inch riser with galvanized “C” channels	7204.15	**C3**
013107	42-inch diameter by 4-inch high round riser	7204.15	**C4**
013108	42-inch diameter by 6-inch high round riser	7204.15	**C5**
013109	42-inch diameter by 12-inch high round riser	7204.15	**C6**
013110	5- by 7-foot cover with one 42-inch round access opening	7204.15	**D1**
013111	5- by 7-foot adjustable cover with two 3- by 3-foot non-slip solid hatches	7204.15	**D2**
012753 and 720466	42-inch frame with 42-inch solid cover	7204.70	
012753 and 720226	42-inch frame with 42-inch grated vent cover	7204.70	

8. Vault Assembly and Packaging

Vault bases and top sections shall have keyways for proper assembly.

Vault assemblies shall be delivered fully assembled, unless otherwise requested in purchase order.

Vaults shall be delivered to the job site, unless otherwise requested in purchase order.

Refer to tables 8a, 8b, 8c, and 8d for the various components included in each vault assembly.

Table 8a. 712 Vault Assembly 013116: With 1 Equip. (72 in x 36 in) and 1 Personnel (42-in Round Hatch)[A-B1]

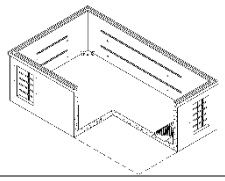
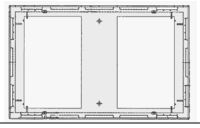
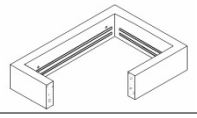
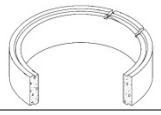
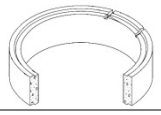
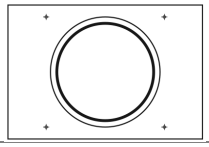
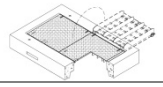
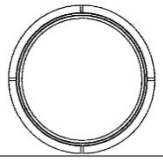
Component	Description	Label	Stock No.	Quantity	Figure
Base		A	013112	1	
Top Section	712 with 2 rectangular blockout	B1	013113	1	
Rectangular Riser	18 in	C2	013106		
42-in Round Riser	4 in	C4	013197	1	
42-in Round Riser	12 in	C6	013109	1	
42-in Round Blockout		D1	013110	1	
Cover with H20 Hatch		D2	013111		
42-in H25 8-Lug Frame			012753	1	
42-in Solid			720466	1	

Table 8b. 712 Vault Assembly 013117, With 2 Personnel (42-in Round Hatch) [A-B2]

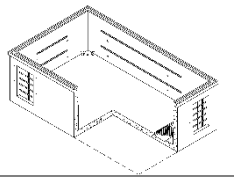
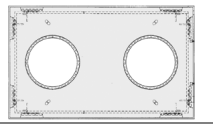
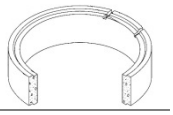
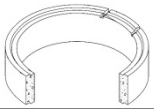
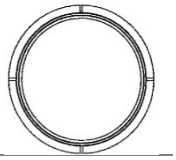
Component	Description	Label	Stock No.	Quantity	Figure
Base		A	013112	1	
Top Section	712 with 2 42-in round blockout	B2	013395	1	
42-in Round Riser	4 in	C4	013107	2	
42-in Round Riser	12 in	C6	013109	2	
42-in H25 8-Lug Frame			012753	2	
42-in Solid			720466	2	

Table 8c. 712 Vault Assembly 013118, With 1 Equip. (72 in by 36 in) and 1 Personnel (42-in Round) Hatch, Offset Left (Type 1); [A-B3]

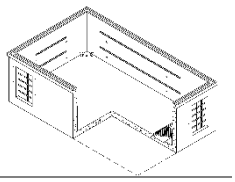
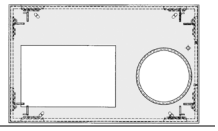
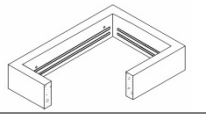
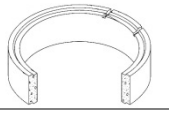
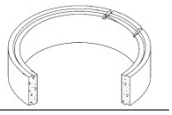
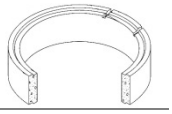
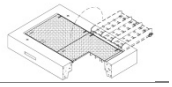
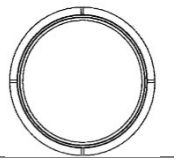
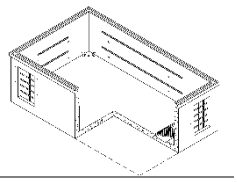
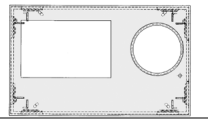
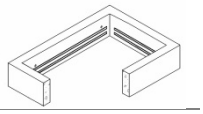
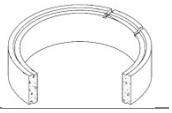
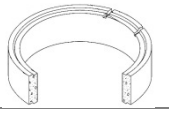
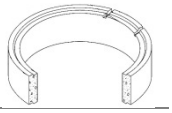
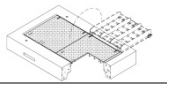
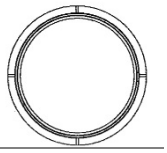
Component	Description	Label	Stock No.	Quantity	Figure
Base		A	013112	1	
Top section	712 with rectangular and 42-inch round blockout	B3	013114	1	
Rectangular Riser	18 in	C2	013106	1	
42-in Round Riser	4 in	C4	013107	1	
42-in Round Riser	6 in	C5	013108	1	
42-in Round Riser	12 in	C6	013109	1	
Cover with H20 Hatch		D2	013111	1	
42-in H25 8-Lug Frame			012753	2	
42-in Solid			720466	2	

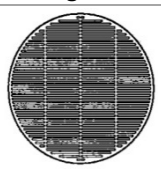
Table 8d. 712 Vault Assembly 013119 with 1 Equip. (72 in by 36 in) and 1 Personnel (42-in Round) Hatch, Offset Right (Type 2); [A-B4]

Component	Description	Label	Stock No.	Quantity	Figure
Base		A	013112	1	
Top Section	712 with rectangular and 42-in blockout	B4	013115	1	
Rectangular Riser	18 in	C2	013106	1	
42-in Round Riser	4 in	C4	013107	1	
42-in Round Riser	6 in	C5	013108	1	
42-in Round Riser	12 in	C6	013109	1	
Cover with H20 Hatch		D2	013111	1	
42-in H25 8-Lug Frame			012753	2	
42-in Solid			720466	2	

Notes:

Re: Stock No. 013117, if having the flexibility to convert the access cover from equipment to personnel is desirable, use top section Stock No. 013113 with 2 each of Stock No. 013110 instead of top section Stock No. 013395.

Re: Stock No 720226, if vault contains more than 75 kVA of transformer capacity, a vented (grate) cover is required, per below:

Stock No.	Description	Figure
720226	42-in H20 vented cover	

9. Issuance

Stock Unit: EA

10. Approved Manufacturers

			Catalog Number
Stock No.	**Components**	**Label**	**Old Castle/Utility Vault**
013116	712 vault with one 72-inch by 36-inch and one 42-inch round entry access	**[A-B1]**	712 CLX Vault Assembly
013117	712 vault with two 42-inch round entry access	**[A-B2]**	712 TEE CLX Assembly w/ (2) 57-CLX-42C covers
013118	712 vault with one 72-inch by 36-inch and one 42-inch round entry access, offset to left (Type 1)	**[A-B3]**	712-CLX Type 1 Vault Assembly
013119	712 vault with one 72-inch by 36-inch and one 42-inch round entry access, offset to right (Type 2)	**[A-B4]**	712-CLX Type 2 Vault Assembly
013112	712 vault base	**[A]**	712 Vault Base
013113	712 top with two 78-inch by 50-inch blockouts	**[B1]**	712-TEE-CLX
013395	712 top with two 42-inch blockouts	**[B2]**	712-TL-42EE
013114	712 top with one 78-inch by 50-inch blockout and one 42-inch round blockout, offset to left (Type 1)	**[B3]**	712 TEE CLX Top – Type 1
013115	712 top with one 78-inch by 50-inch blockout and one 42-inch round blockout, offset to right (Type 2)	**[B4]**	712 TEE CLX Top – Type 2

11. References

SCL Material Standard 7203.21; “Precast Reinforced Concrete Structure, General”

SCL Material Standard 7204.15; “Covers and Risers for Electric Vaults”

SCL Material Standard 7204.70; “Frames and Covers, 42-Inch Round, Iron”

Wang, Quan; SCL Standards Engineer and originator of 7203.46