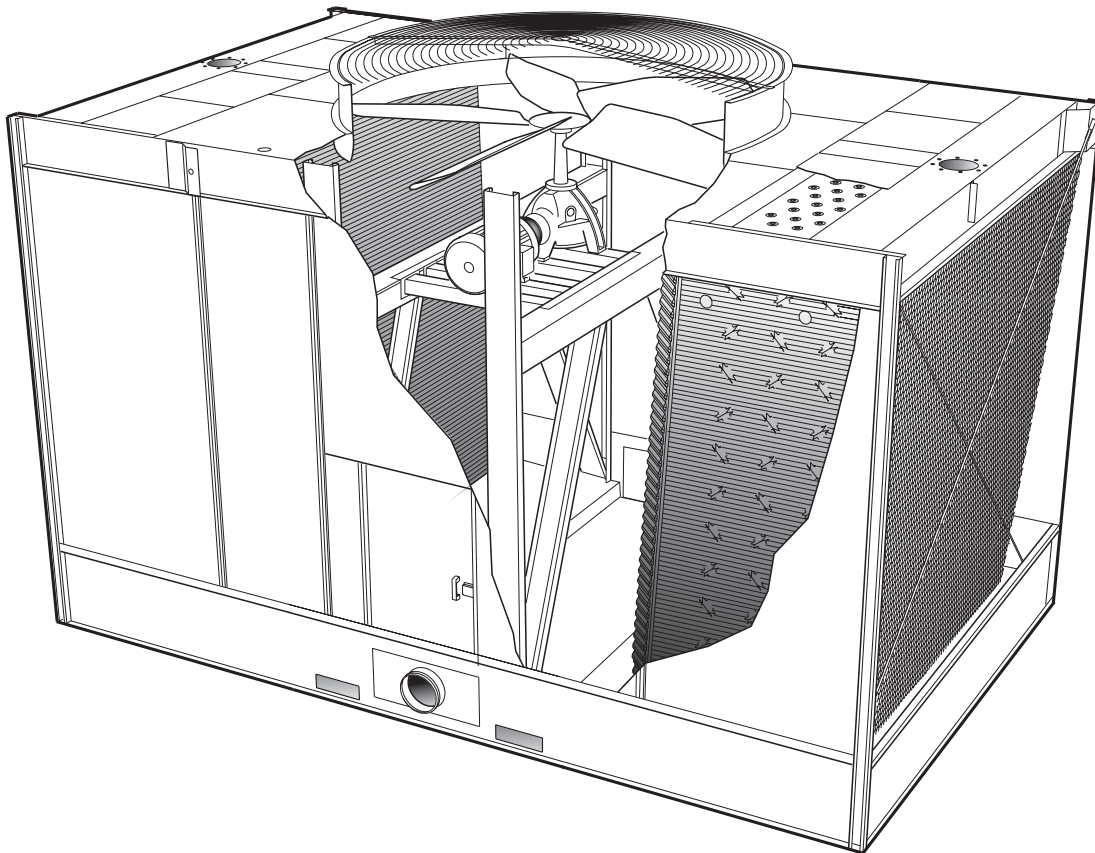


/ Marley NC Class Crossflow Cooling Tower /

Maintenance Options Manual 06-1222A



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WARNING

The location and orientation of the cooling tower can affect the safety of those responsible for installing, servicing or repairing the cooling tower. Since SPX does not dictate or determine where the tower is located or how it is oriented, SPX is not responsible for addressing the safety issues that are affected by the tower's location or orientation. The following safety issues should be considered by those responsible for designing and maintaining the tower installation. Failure to consider and address these issues may result in substantial personal injury or death to those involved in installing, servicing or repairing the cooling tower.

- * Access to and from the fan deck.
- * Access to and from maintenance access doors.
- * Access for cleaning and other service.
- * Potential access problems due to obstructions surrounding the tower.
- * The possible need for safety cages around ladders.

These are only some of the safety issues that may arise in the design process. SPX strongly recommends that you consult a safety engineer to be sure that all safety considerations have been addressed.

CONFIDENTIAL- The contents of this document are confidential and constitute the exclusive property of SPX Cooling Technologies and is intended for use in the construction (contractor) and maintenance (owner) of this cooling tower. This document and its contents may not be made public in any manner, distributed or loaned to others, or reproduced or copied either in whole or part without prior written consent of SPX Cooling Technologies.

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GETTING STARTED

ABOUT THIS MANUAL	i
MEASUREMENT SYSTEM	i
TOOLS AND SUPPLIES	ii
A FEW WORDS ABOUT FASTENERS	ii
WHO TO CALL	iii

MAINTENANCE OPTION DETAILS

FAN DECK EXTENSION	1-1
LADDER & HANDRAIL	2-1
LADDER EXTENSION	3-1
FAN DECK WALKWAY	4-1
ACCESS DOOR PLATFORM	5-1
MOA PLATFORM	6-1
SAFETY CAGE	7-1
INTERIOR MECHANICAL ACCESS PLATFORM FIELD INSTALL	8-1
FIND NUMBER INDEX	9-1

Note: Optional equipment not listed above is installed using separate installation drawings and bills of material. These documents are located within the literature package and should be reviewed prior to starting assembly. Optional equipment may affect assembly sequence.

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ABOUT THIS MANUAL

To obtain maximum efficiency, it is strongly recommended that this entire manual be read before starting assembly. This assembly manual illustrates the field installation of optional maintenance items that your tower may have. Due to shipping limitations these items cannot be installed in the factory. Review all manuals, drawings and bills of material prior to assembly. Contact your Marley sales representative if questions arise.

All steel parts are tagged for identification, as shown below.



Find Number: This is a three digit alpha/numeric number that ties everything together. Used throughout this manual, in the text it's the number in bold type **M35**, in the Figures, it's the number within the circle. It is also the first column in the BILL OF MATERIAL. In the bill of material, all tower components are listed in numerical order by this number.

Item Number: This number is used by SPX to manufacture and inventory the components of your cooling tower. Give this number to your Marley representative if an item is missing or a replacement item is required.

Drawing Number: (Reference only) This is the number of the drawing used to fabricate this item.

Description: (Reference only) All steel parts begin with SHEET, PLATE, or ASSEMBLY followed by the size of the sheet used to fabricate the item or a description of the assembly. Your tower may have a few fiberglass items which begin GRP.

Stainless Steel: This indicates when an item has been made from stainless steel. If the item is made from the standard galvanized material this will not be printed on the tag.

Bills of material (BOM) are separate from drawings and this manual. At the top of each bill there is a Drawing Number and the drawing description which indicates if the items on that bill will be installed per this assembly manual or per a special installation drawing. The find number, item number, description and quantity of items are all cross referenced on the bill of material. If a number is missing or hard to read, check the illustrations in this assembly manual first and then the bill of material to see if you can find it. As the tower is prepared for assembly, the quantities of each item should be checked against the bill of material. If anything is missing or damaged tell your Marley people as soon as possible.

MEASUREMENT SYSTEM

This manual uses both, the English System and the Système International d'Unités (S.I.) systems of measurement. Fasteners are denoted and supplied in conformance with the English System.

TOOLS AND SUPPLIES

- Socket wrench set.** You will be using 9/16" sockets a lot so it's a good idea to have more than one.
- Combination wrenches.** Mainly 9/16" up to 1 1/8". Adjustable wrenches are OK but not recommended.
- Screwdrivers.**
- Torque wrench.** 150 ft-lb (203 N-m) capacity
- Drift pins (*alignment tools*).** These are extremely important to help line up all the holes. You should have more than one.
- Scaffolding, portable stairs** or other means of temporary access and support.
- Electric impact wrench (*or air*).** Optional, really makes the job go fast. You can get by without one but if you can get one you should.
- Wear protective clothing, gloves, nonslip footwear, hard hat and safety glasses.** Cooling towers are constructed of steel and could have burrs that can cause cuts. The surface of steel material may be slick. Protection from thrown or falling objects should be used at all times around a construction site.

A FEW WORDS ABOUT FASTENERS

Stainless steel fasteners:

Stainless steel fasteners are sensitive to galling. This is when you notice a sudden increase in the force needed to turn a nut before parts are clamped. Apply anti-seize compound included with the tower to the threads of the bolt before installing the nut. If a nut does not easily spin on a bolt do not try to force it. Chances are it will seize. Some extra hardware is included to replace problem hardware.

Torque Requirements:

The idealized standard fastener torque values for galvanized and stainless steel fasteners are shown in the table below. These values may vary in actual practice. Note that the values shown for stainless steel fasteners are based on the fasteners being lubricated with anti-seize compound.

FASTENER TORQUE		
Bolt Diameter	Fastener Torque foot-lbs. (Newton-meters)	
	Galvanized	Stainless Steel*
3/8"	20 (27)	20 (27)
1/2"	45 (61)	27 (37)
3/4"	150 (203)	74 (100)

* Values based on fasteners lubricated with anti-seize compound. (Stainless steel only)

Notes

FAN DECK EXTENSION

The fan deck extension should be installed prior to the ladder and handrail and is intended to be installed on the cased face opposite the ladder.

Note: On stainless steel towers, hardware that attaches directly to the tower will be stainless steel. All remaining hardware will be galvanized. Stainless steel bolts are prone to galling. Generously apply thread lubricant Z21 to threads of bolts before torquing nuts.

Use *Figure 1-1* to begin assembly. On tower models NC8306 thru NC8309 and NC8312 only, support angle **L55** must be attached to the tower girt. (Support angle **L55** is not required on K/D towers.) The remaining installation procedure is the same for all models. Attach support channels **L11** and **L75**, and brace clips **L02** to tower. Connect braces **L08** to support channels and brace clips. Bolt deck supports **K47** and **L10** between support channels as shown.

Note: If the hoisting clip interferes with fan deck extension installation, the hoisting clip should be removed.

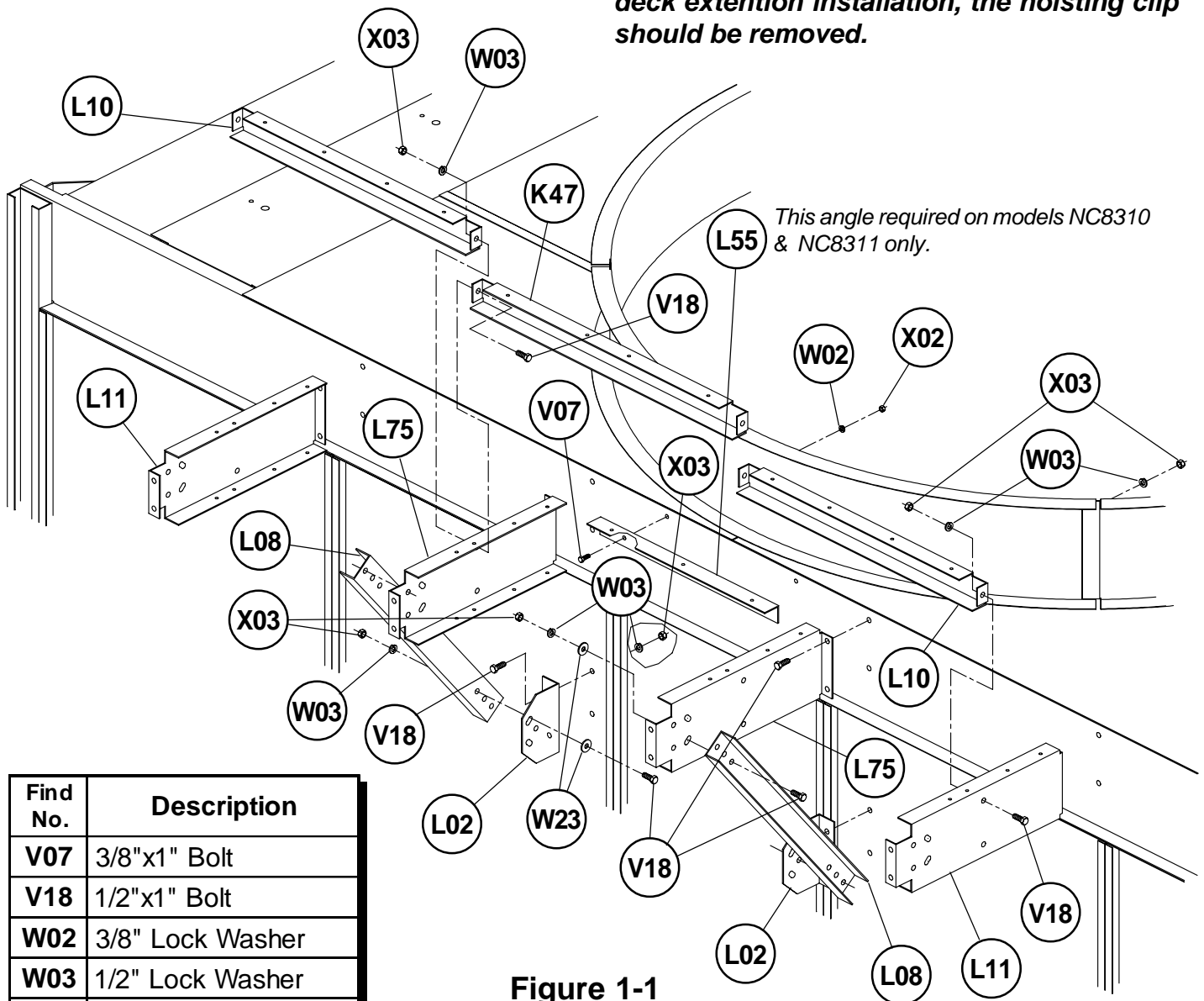


Figure 1-1

Find No.	Description
V07	3/8"x1" Bolt
V18	1/2"x1" Bolt
W02	3/8" Lock Washer
W03	1/2" Lock Washer
W23	1/2" Flat Washer
X02	3/8" Nut
X03	1/2" Nut

Finish fan deck extension installation by attaching extension end **K48** to support channels. Bolt post clips **L13** to extension end. Tap screw deck floor **L06** and **L07** in place as shown in *Figure 1-2*.

The handrail for the fan deck extension is installed in the Ladder and Handrail section of this manual.

Find No.	Description
T07	3/8"x1" Tap Screw
V07	3/8"x1" Bolt
V18	1/2"x1" Bolt
W02	3/8" Lock Washer
W03	1/2" Lock Washer
X02	3/8" Nut
X03	1/2" Nut

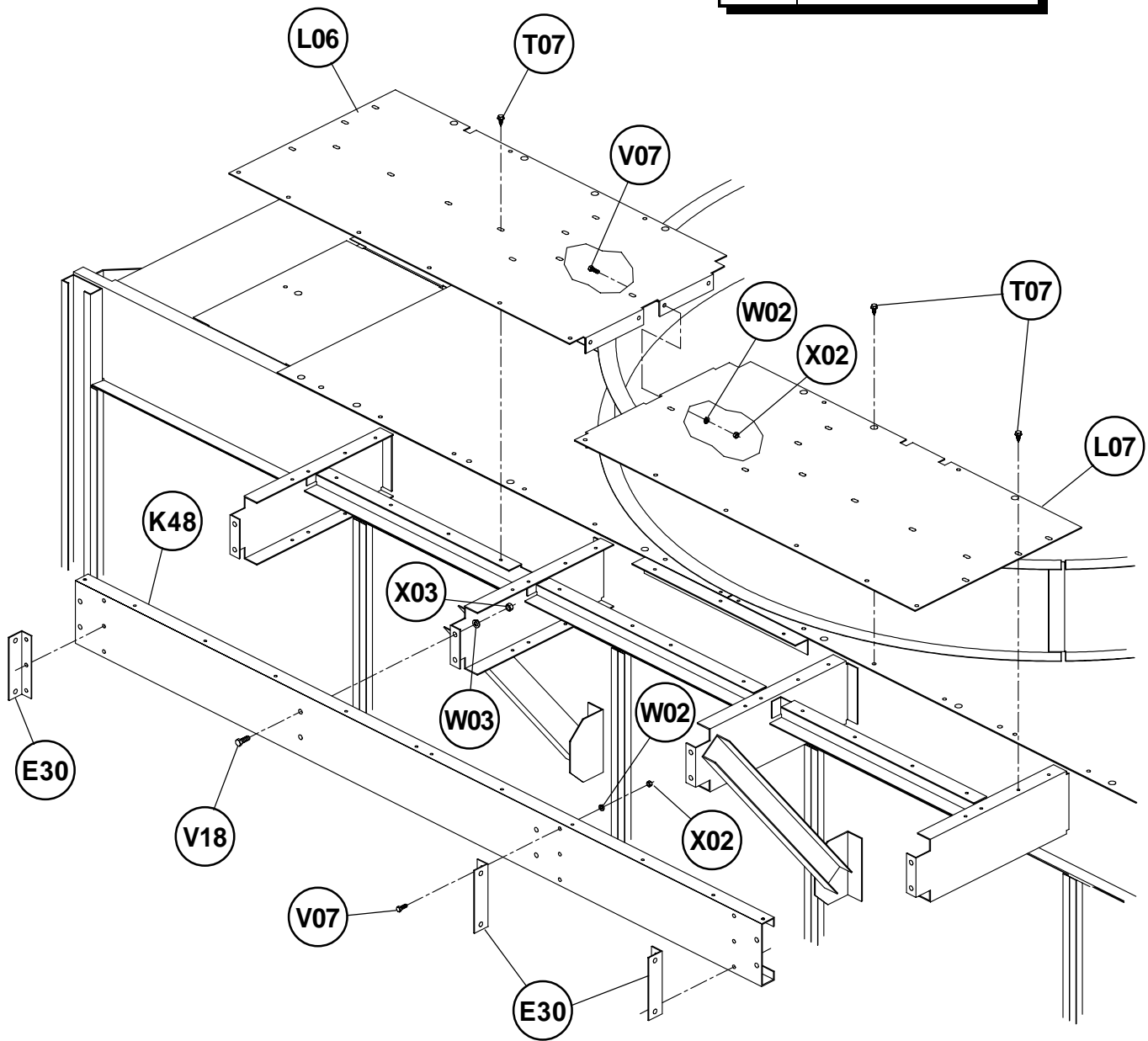


Figure 1-2

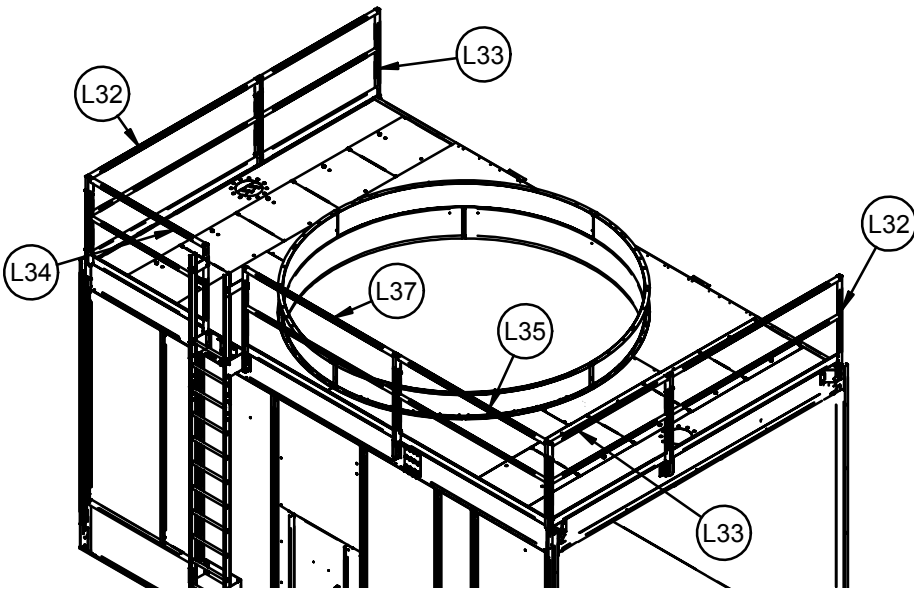
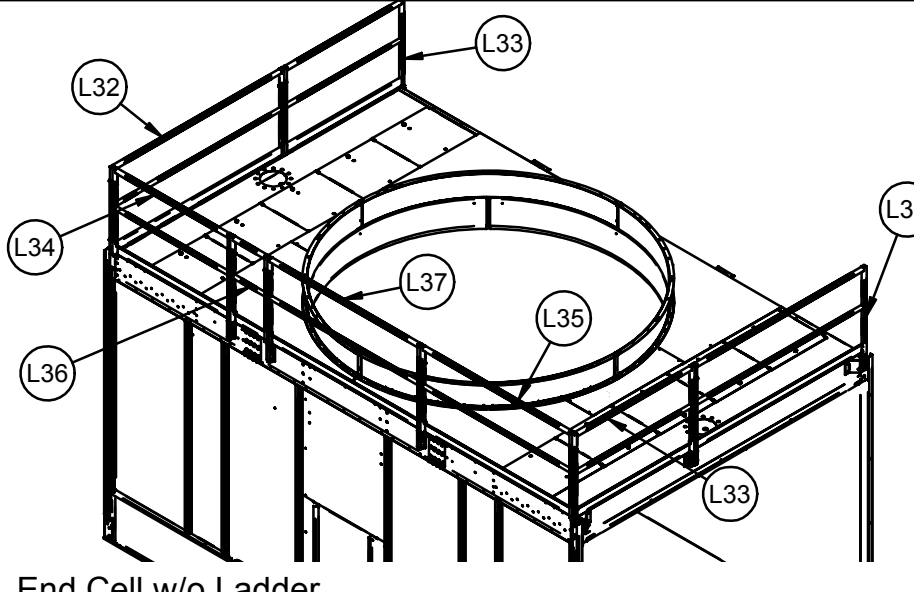
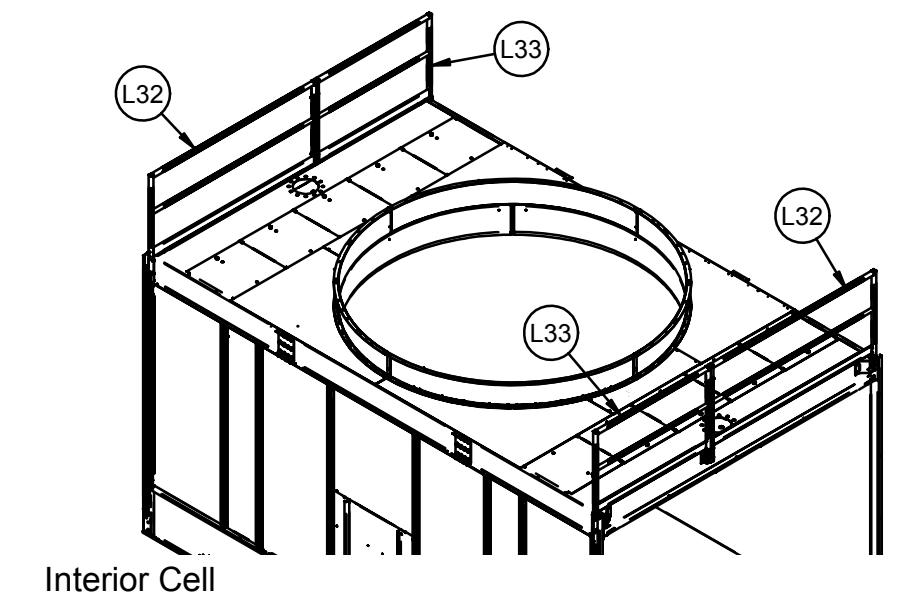
LADDER & GUARDRAIL

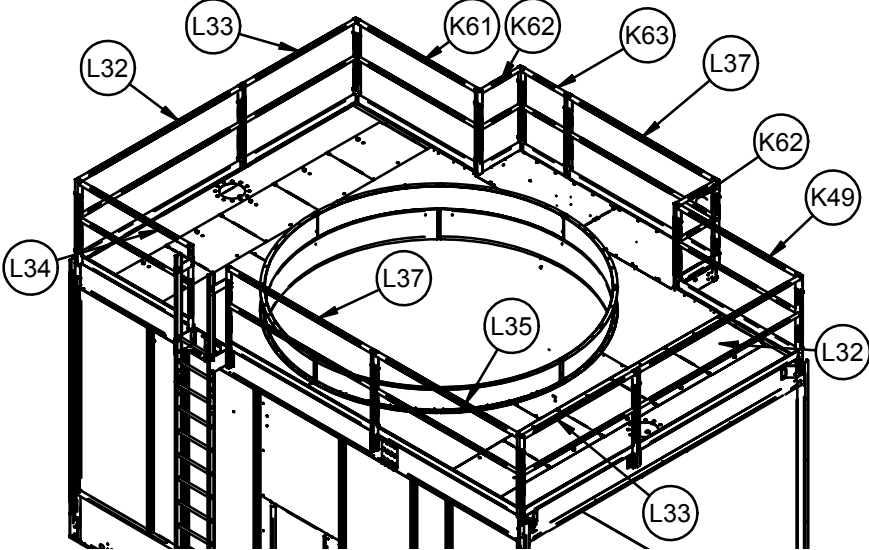
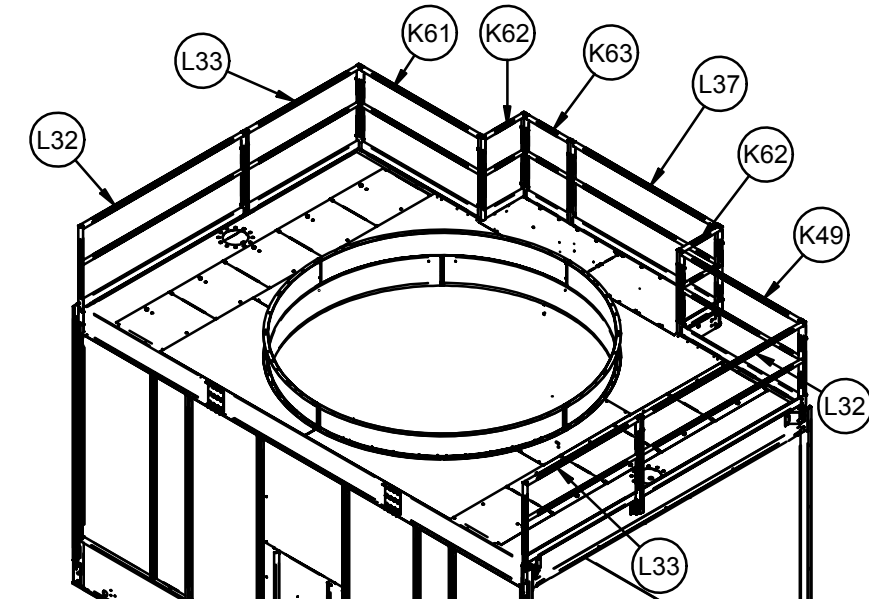
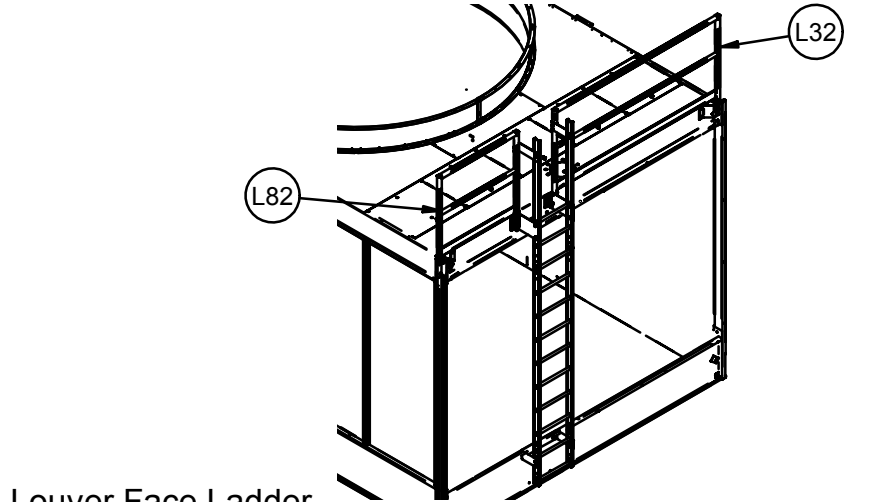
The ladder and guardrail installation required for your tower may vary depending on the optional equipment selected for the tower. Review the views in the following chart to determine which one(s) are required for your tower, note the corresponding figures, and use them to install the ladder and guardrail. The figure numbers are listed in the order that they are intended to be installed and are located on the corresponding page number. **Note: If there is a special op-**

tion required for the ladder and guardrail, there will be additional drawing(s) that will replace (or be used in conjunction with) the details in this manual.

Note: On stainless steel towers, hardware that attaches directly to the tower will be stainless steel. All remaining hardware will be galvanized. Stainless steel bolts are prone to galling. Generously apply thread lubricant Z21 to threads of bolts before torquing nuts.

Guardrail Package	Details required
<p data-bbox="261 1241 654 1276">Single Cell w/ One Ladder</p>	<p data-bbox="1203 884 1377 1031">Figure 2-4 Figure 2-8 Figure 2-9 Figure 2-10</p>
<p data-bbox="266 1898 675 1934">Single Cell w/ Two Ladders</p>	<p data-bbox="1203 1583 1377 1688">Figure 2-4 Figure 2-8 Figure 2-10</p>

Guardrail Package	Details Required
 <p>End Cell w/ Ladder</p>	<p>Figure 2-4 Figure 2-8 Figure 2-10</p>
 <p>End Cell w/o Ladder</p>	<p>Figure 2-4 Figure 2-9</p>
 <p>Interior Cell</p>	<p>Figure 2-4</p>

Guardrail Package	Details required
 <p data-bbox="261 722 773 758">Single Cell w/ Fan Deck Extension</p>	<p data-bbox="1214 369 1385 516">Figure 2-4 Figure 2-8 Figure 2-10 Figure 2-11</p>
 <p data-bbox="261 1383 740 1419">End Cell w/ Fan Deck Extension</p>	<p data-bbox="1214 1052 1385 1121">Figure 2-4 Figure 2-11</p>
 <p data-bbox="261 1944 561 1980">Louver Face Ladder</p>	<p data-bbox="1159 1463 1433 1969">Figure 2-5 & Figure 2-7 (NC8301) Figure 2-6 & Figure 2-7 (NC8302 thru NC8312) (These details are used in lieu of Figure 2-4 when louver face ladder is required)</p>

Install guardrail Assy **L32** to louver column and existing post clips. Next install guardrail Assy **L33** to louver column and guardrail Assy **L32**. After completion of installation install plug **L28** in the top of all vertical post.

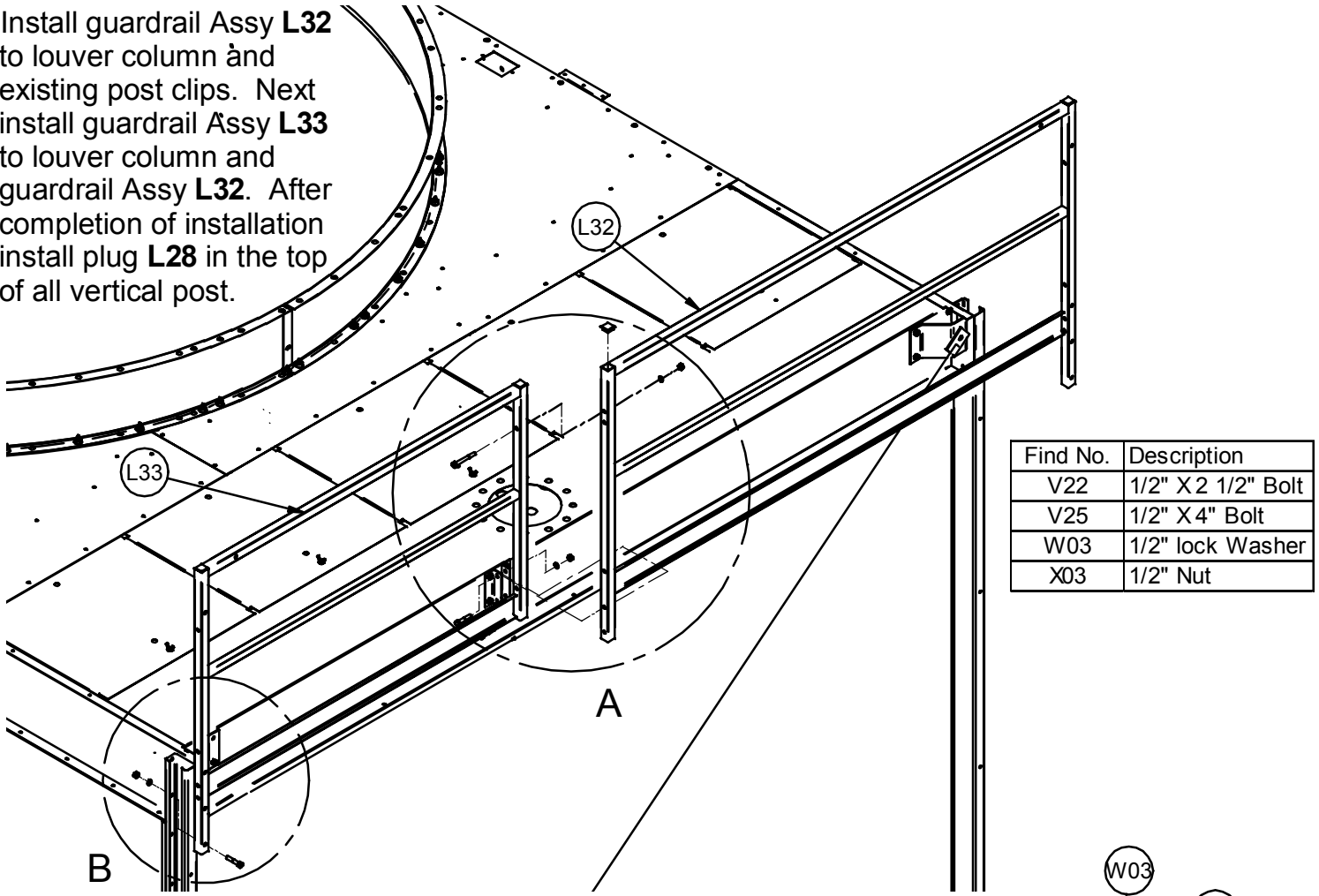
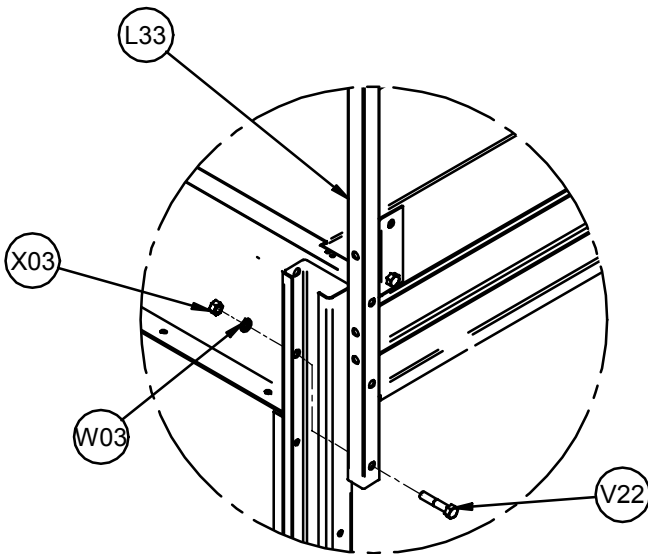
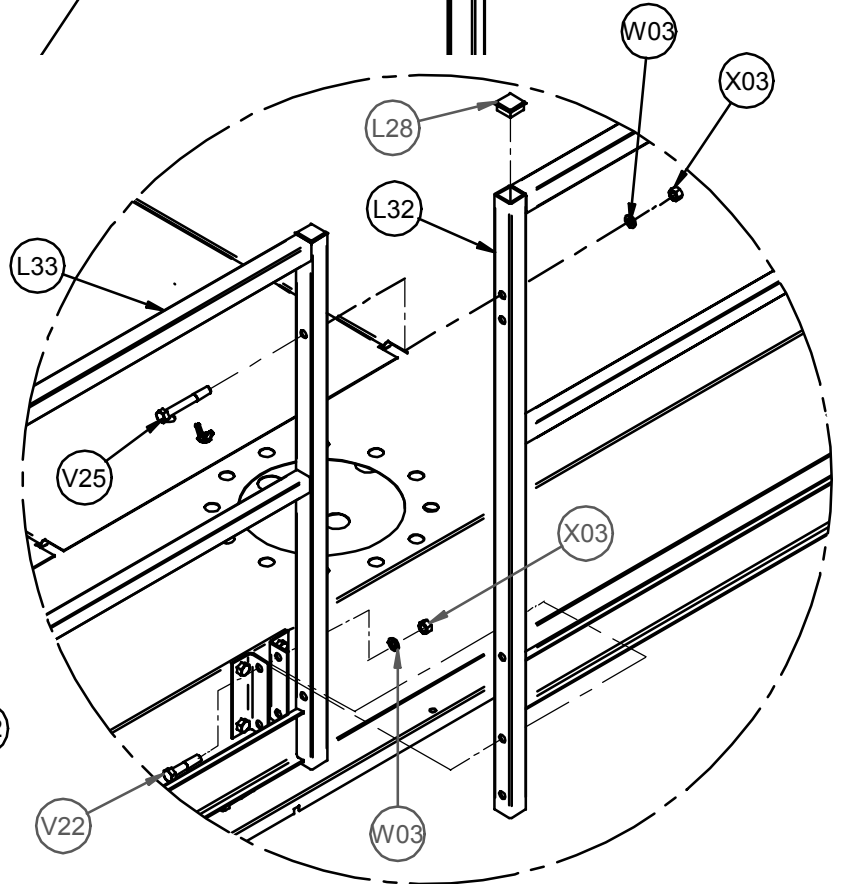


Figure 2-4
Louver Face Guardrail



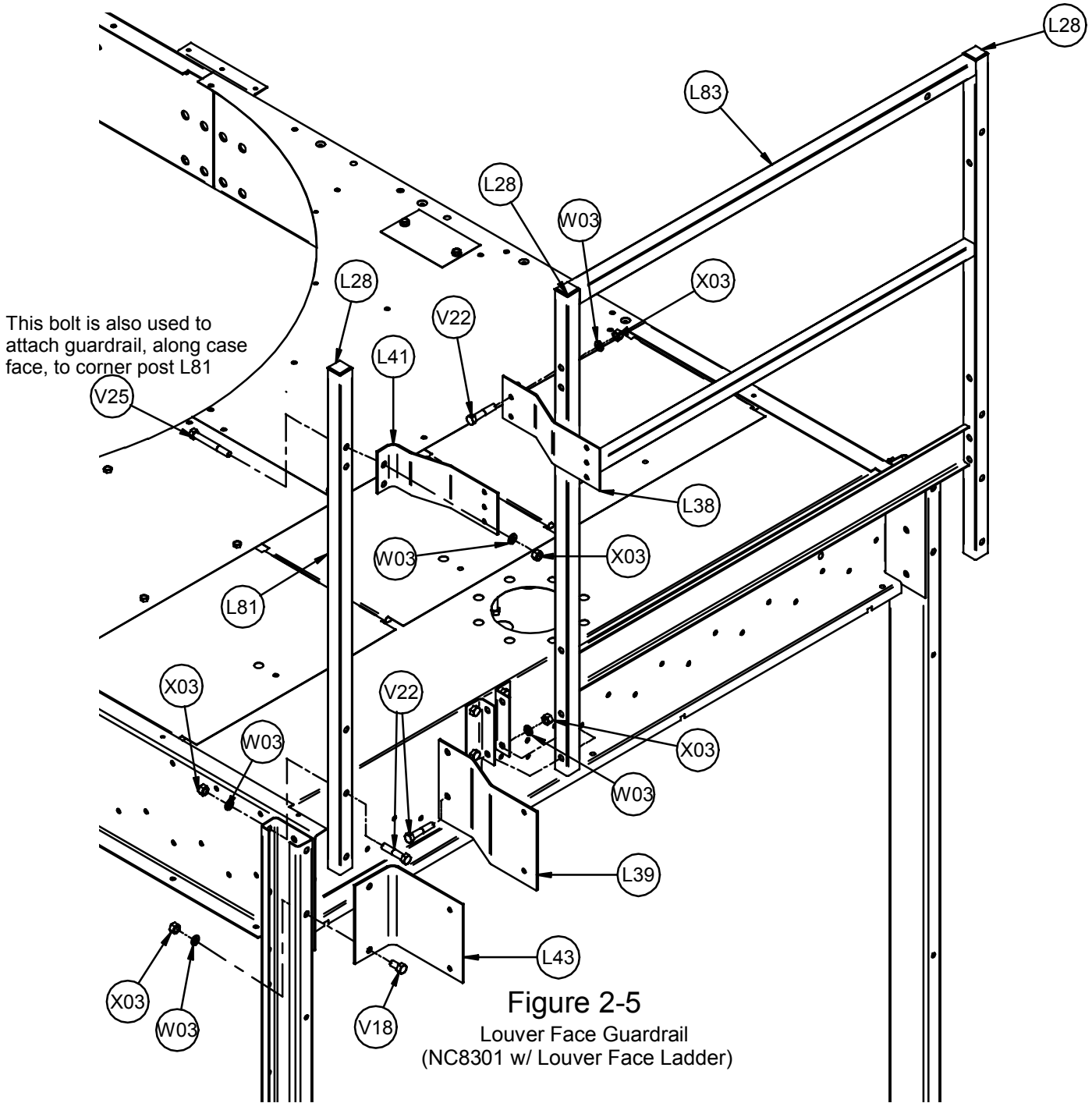
DETAIL B
(Typical all 4 corners)



DETAIL A

Install guardrail Assy **L83** to louver column as shown. Install Corner post **L81** to louver column as shown. Install ladder brace **L39** to existing post clips, ladder brace **L38** to guardrail Assy **L83**, ladder brace **L41** to corner post and ladder brace **L43** to louver column. After completion of installation, install plug **L28** in the top of all vertical posts.

Find No.	Description
V22	1/2" X 2 1/2" Bolt
W03	1/2" Lock Washer
X03	1/2" Nut



Install guardrail Assy's **L32** & **L82** to louver column as shown. Install ladder braces **L39** to existing post clips and guardrail Assy's **L32** & **L82**. Next install ladder braces **L38** to guardrail Assy's **L32** & **L82**. After completion of installation, install plug **L28** in the top of all vertical post.

Find No.	Description
V22	1/2" X 2 1/2" Bolt
W03	1/2" Lock Washer
X03	1/2" Nut

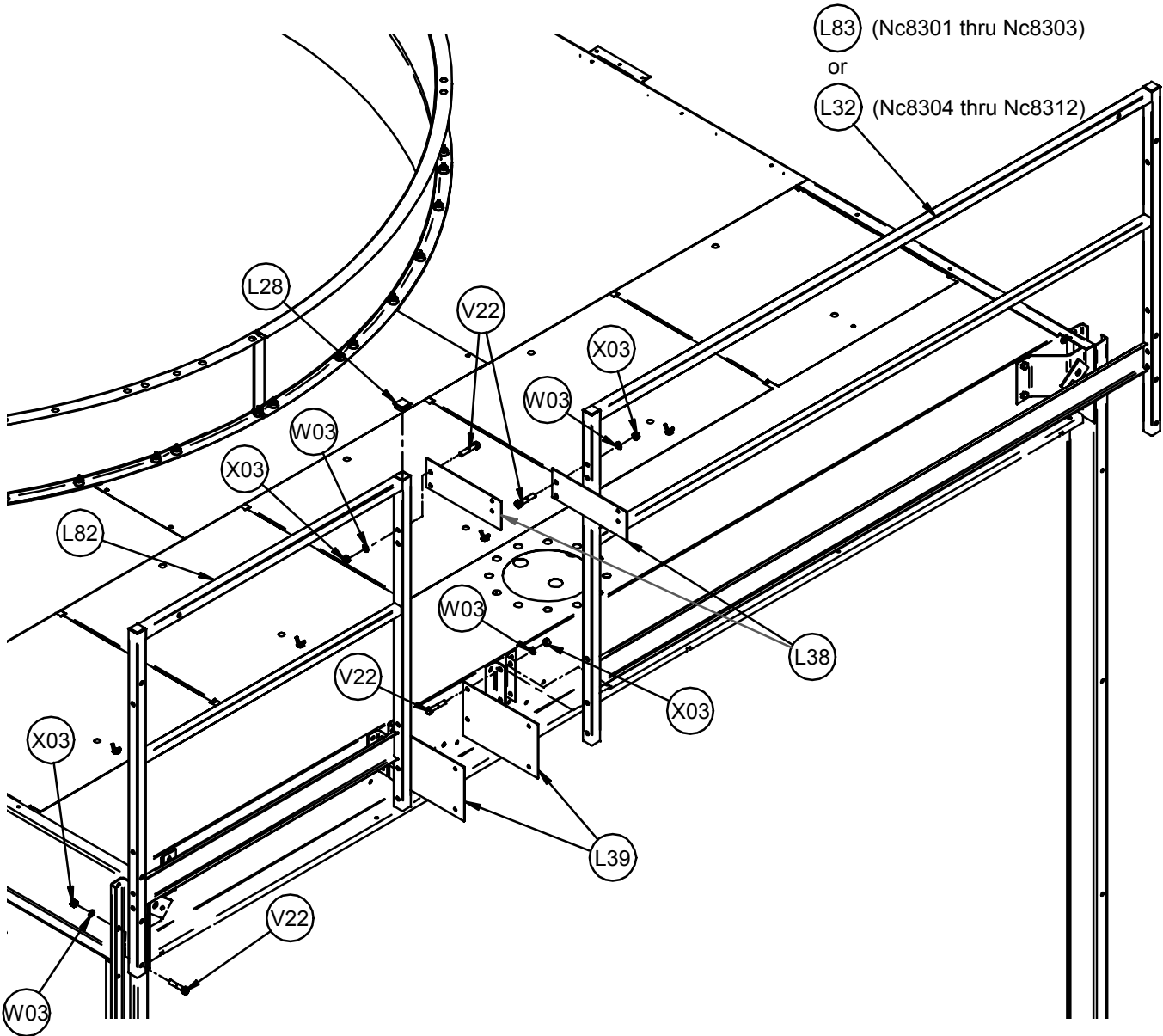


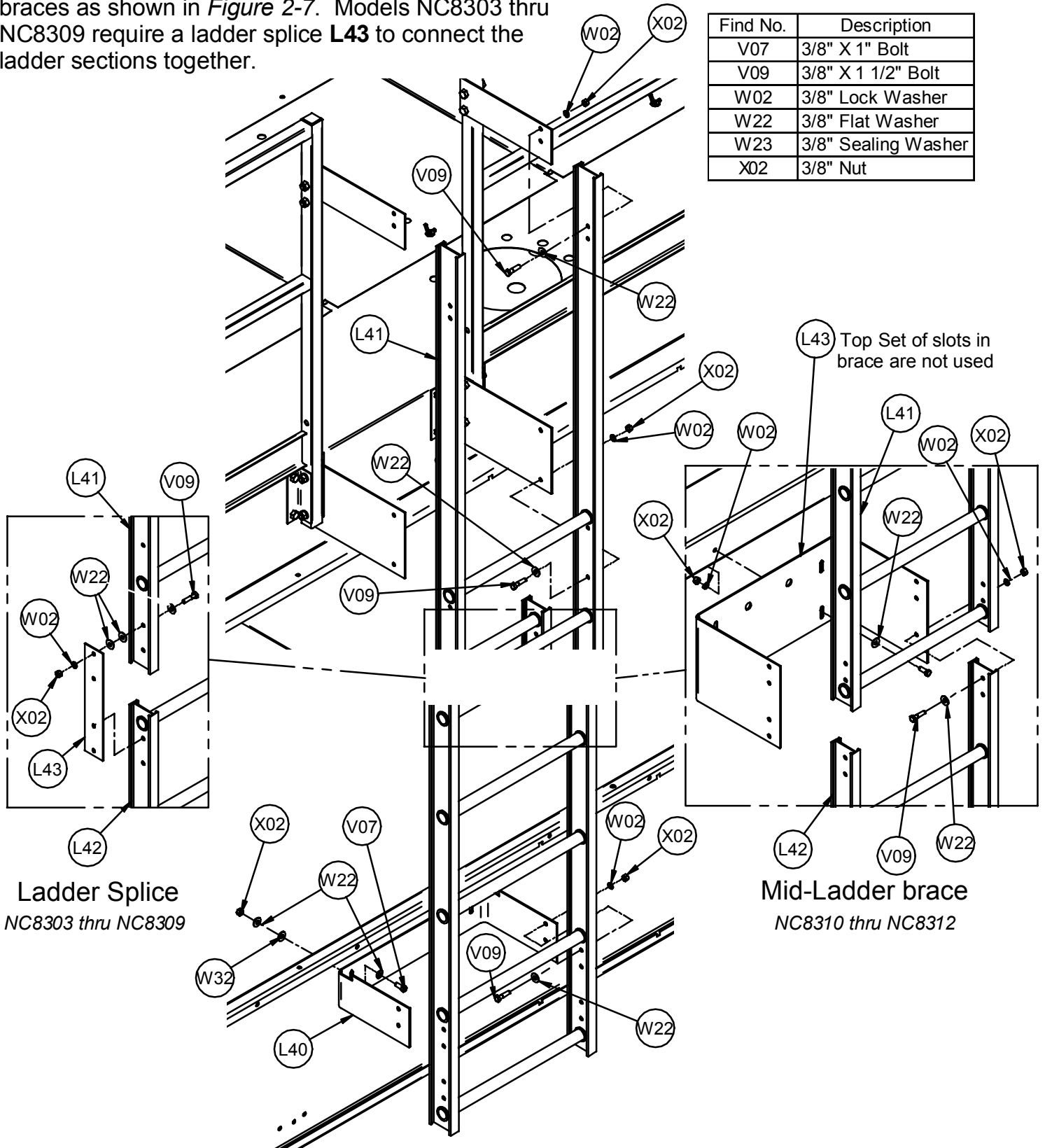
Figure 2-6

Louver Face Guardrail

(NC8302 thru NC8312 w/ Louver Face Ladder)

Connect lower ladder brace **L40** to collection basin end. Models NC8310 thru NC8312 require a mid-ladder brace **L43** to be attached to the top channel of the bottom module. Bolt ladder section(s) **L41** (and **L42** on models NC8303 thru NC8312) to ladder braces as shown in *Figure 2-7*. Models NC8303 thru NC8309 require a ladder splice **L43** to connect the ladder sections together.

Find No.	Description
V07	3/8" X 1" Bolt
V09	3/8" X 1 1/2" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
W23	3/8" Sealing Washer
X02	3/8" Nut



Ladder Splice
NC8303 thru NC8309

Mid-Ladder brace
NC8310 thru NC8312

Figure 2-7
Louver Face Ladder

Begin by installing guardrail Assy **L37** to existing post clips. Next install guardrail Assy **L35** to **L37** Assy and to existing louver face guardrail Assy. Install guardrail Assy **L34** to existing post clips and to existing louver face guardrail Assy. After completion of installation install plug **L28** into top of all vertical post.

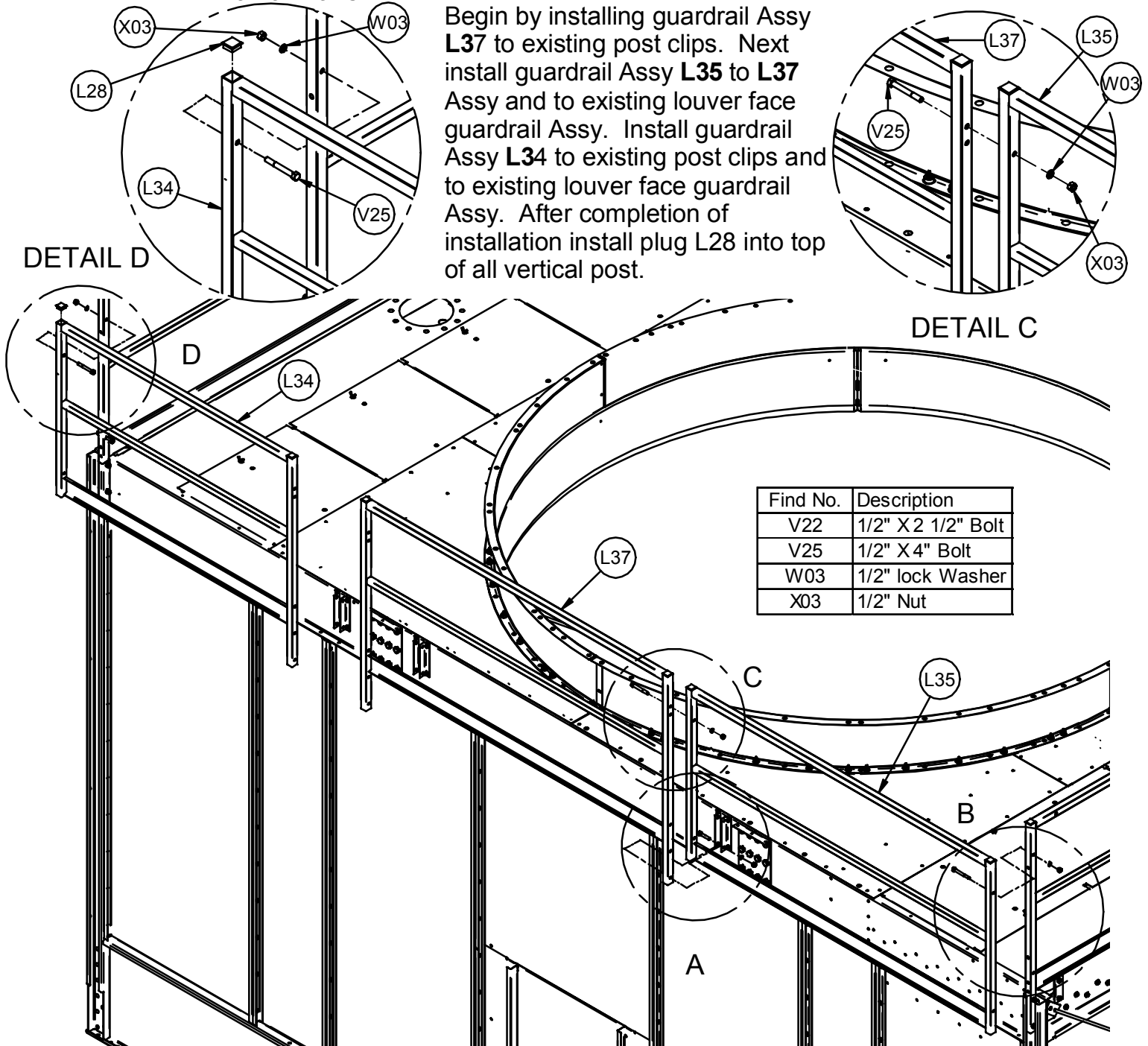
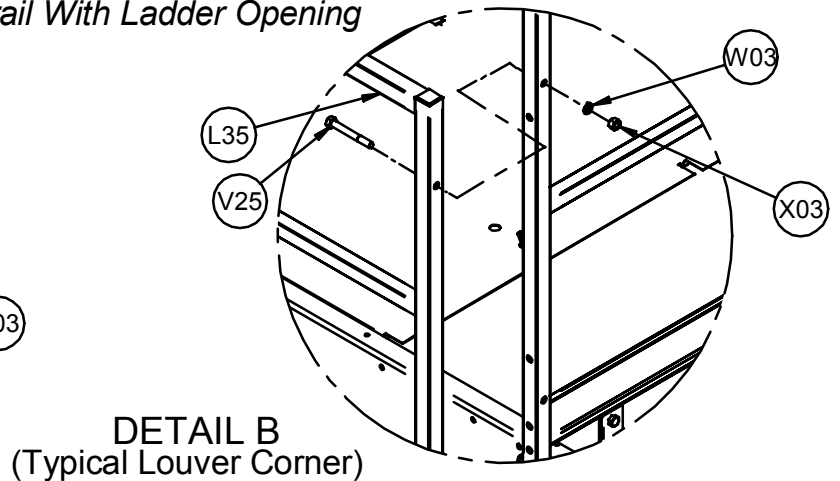
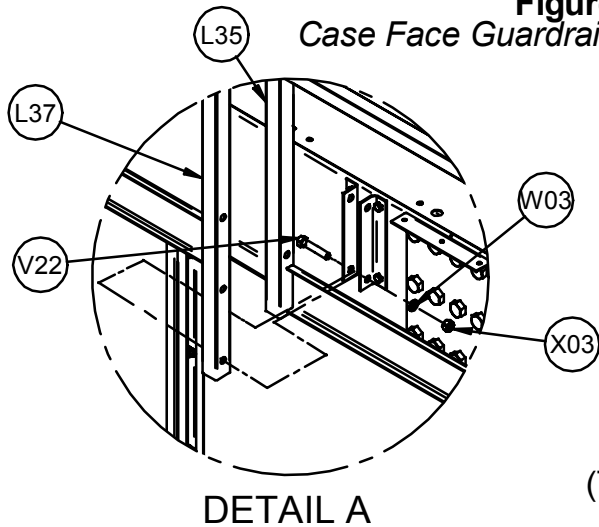
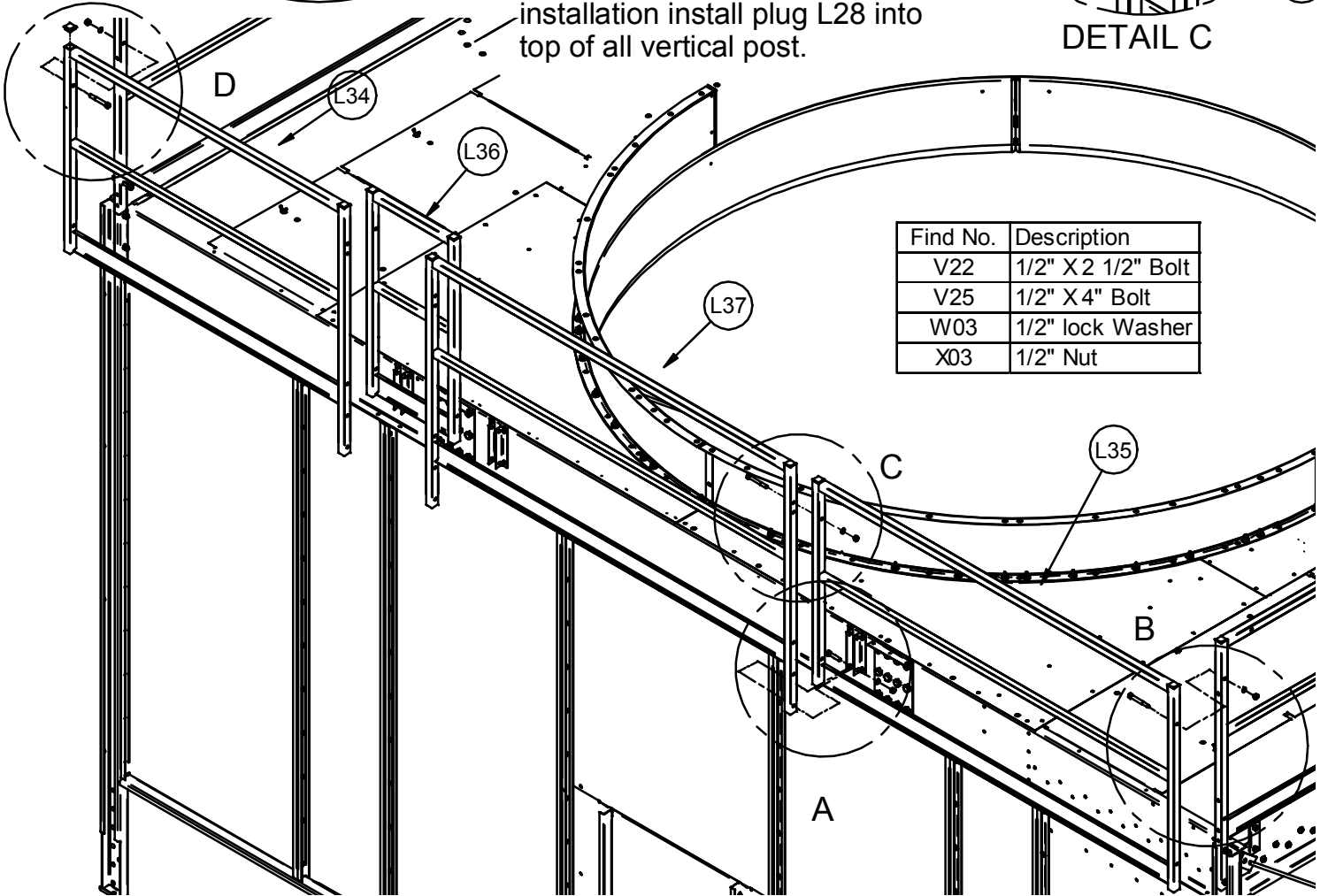
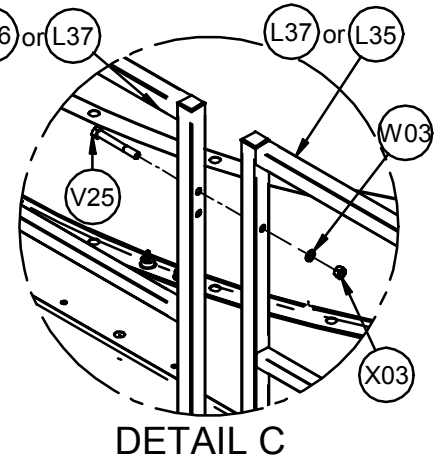
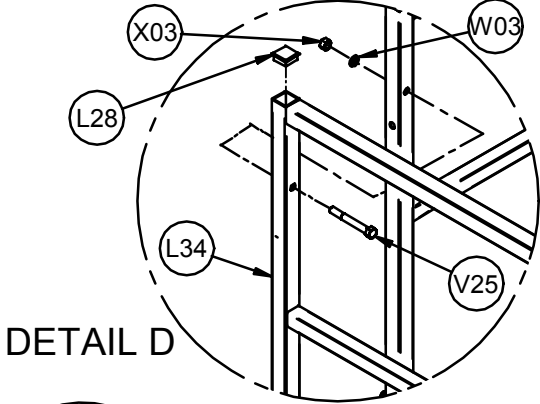


Figure 2-8
Case Face Guardrail With Ladder Opening



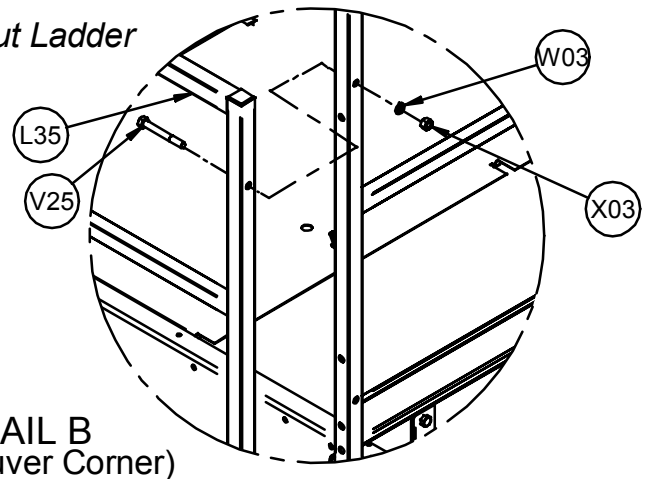
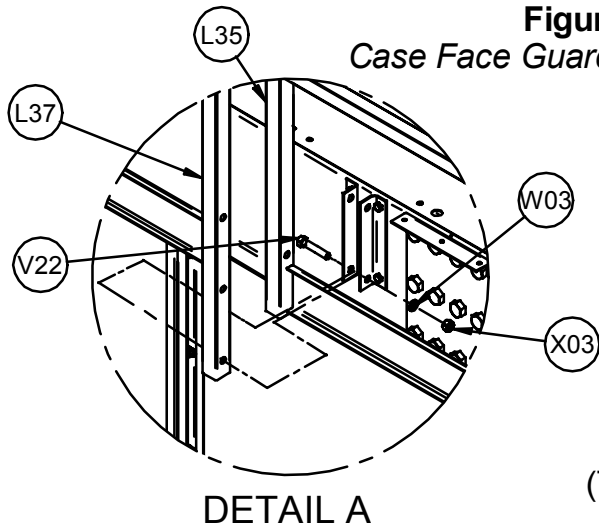
Begin by installing guardrail Assy **L37** to existing post clips. Next install guardrail Assys **L35** to **L37** Assy and to existing louver face guardrail Assy. Install guardrail Assy **L34** to existing post clips and to existing louver face guardrail Assy. Install guardrail Assy **L36** between **L34** & **L37**. After completion of installation install plug **L28** into top of all vertical post.



Find No.	Description
V22	1/2" X 2 1/2" Bolt
V25	1/2" X 4" Bolt
W03	1/2" lock Washer
X03	1/2" Nut

Figure 2-9

Case Face Guardrail Without Ladder



Attach ladder braces **L39** to existing guardrail Assy and post clip reusing existing fasteners. *Note that on model NC8301 the brace should be inserted between the post and the post clip.* Connect top ladder braces **L38** to existing Assy and lower ladder brace **L40** to collection basin side. When attaching lower ladder brace to tower, use bottom slots in brace on models NC8301 thru NC8309 middle slots on models NC8310 thru NC8312. Models NC8310 thru NC8312 require

a mid-ladder brace **L44** be attached to the bottom channel of the top module. Bolt ladder section(s) **L41** (and **L42** on models NC8303 thru NC8312) to ladder braces as shown in *Figure 2-10*. Models NC8303 thru NC8309 require a ladder splice **L43** to connect the ladder sections together.

Find No.	Description
V07	3/8" X 1" Bolt
V09	3/8" X 1 1/2" Bolt
V22	1/2" X 2 1/2" Bolt
W02	3/8" Lock Washer
W03	1/2" Lock Washer
X02	3/8" Nut
X03	1/2" Nut

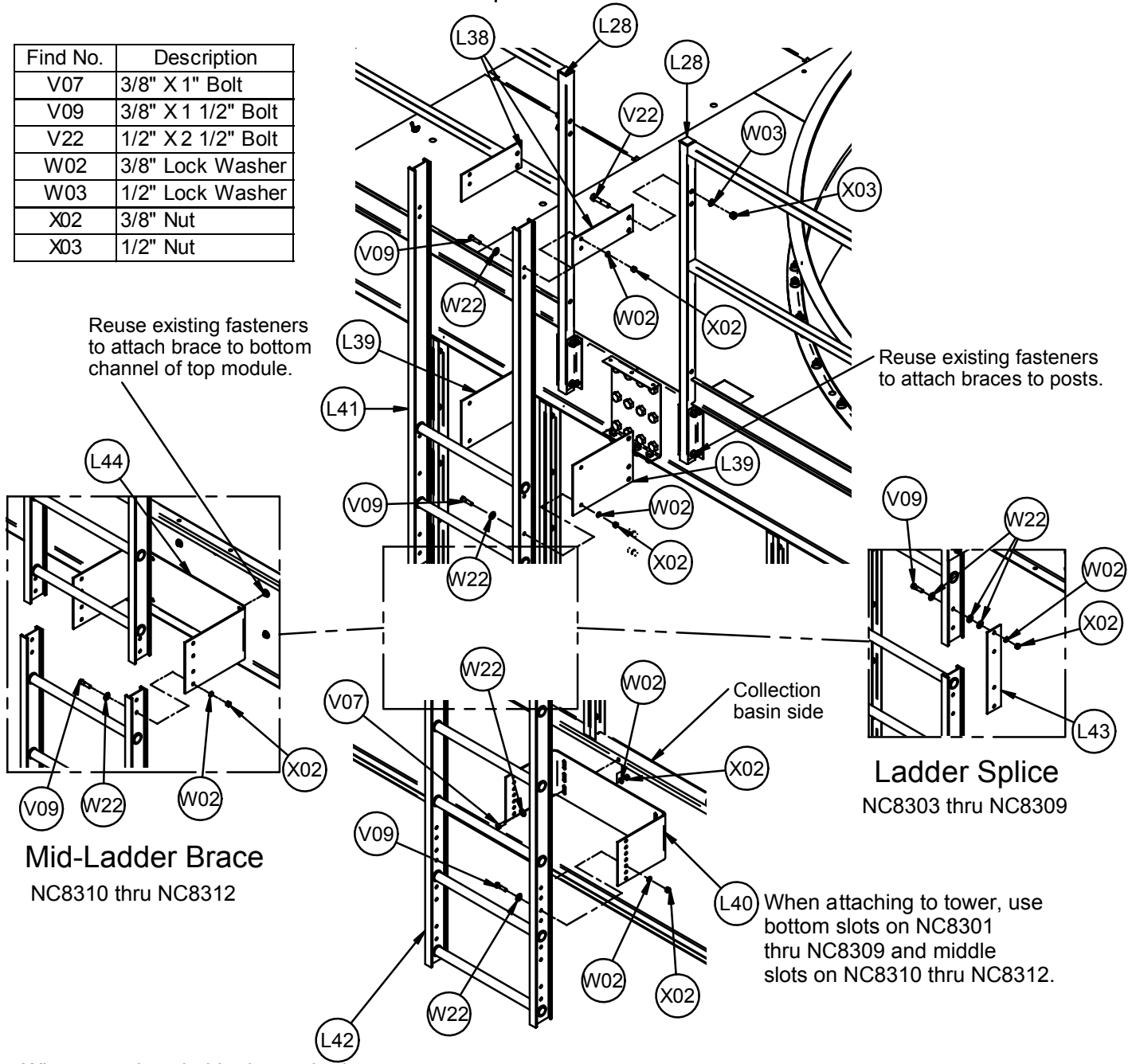
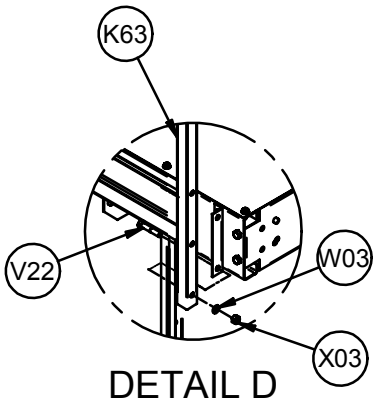
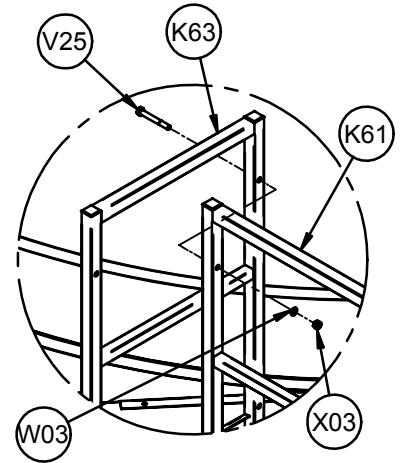
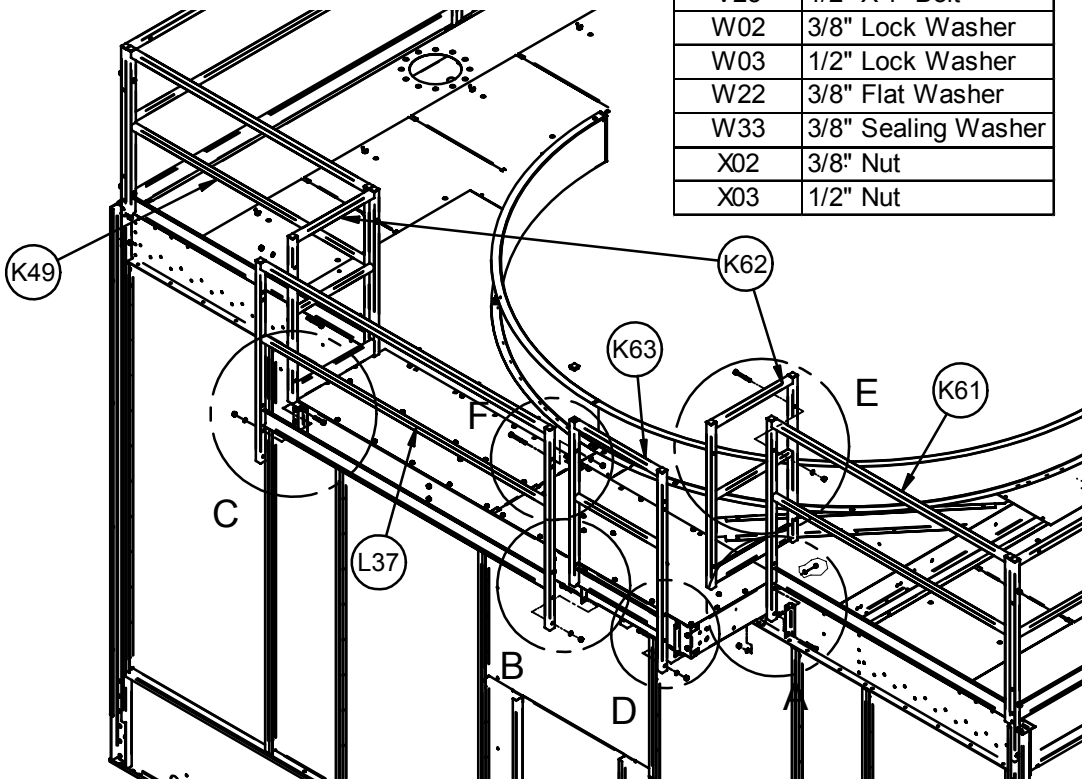


Figure 2-10
Cased Face Ladder

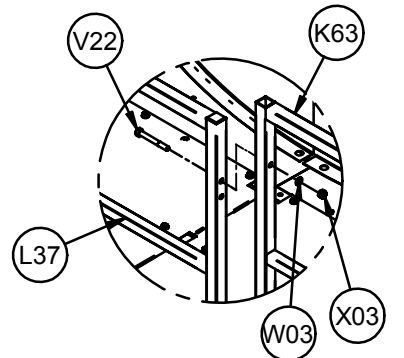


Attach post clips E30 to tower girt (Detail A). **Note: On model NC8301 this connection is in the hot water basin area and requires sealing washers.** Bolt handrail Assy K61 & K49 to existing louver guardrail Assy and to post clip E30. Next install guardrail Assy L37 to fan deck extension post clips. Guardrail Assy K63 attaches to Assy L37 and fan deck extension post clip. Last install guardrail Assy's K62 to adjoining guardrail Assy's as shown. After completion of installation, install plug L28 in all vertical posts.

Find No.	Description
V07	3/8" X 1" Bolt
V22	1/2" X 2 1/2" Bolt
V25	1/2" X 4" Bolt
W02	3/8" Lock Washer
W03	1/2" Lock Washer
W22	3/8" Flat Washer
W33	3/8" Sealing Washer
X02	3/8" Nut
X03	1/2" Nut

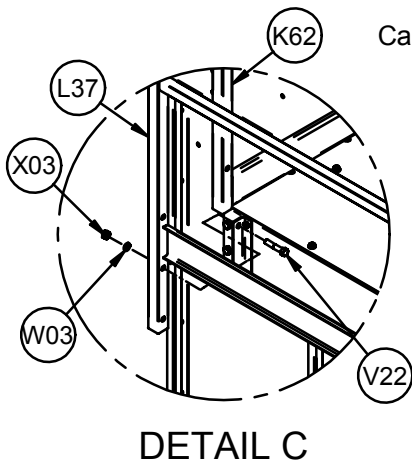


DETAIL E

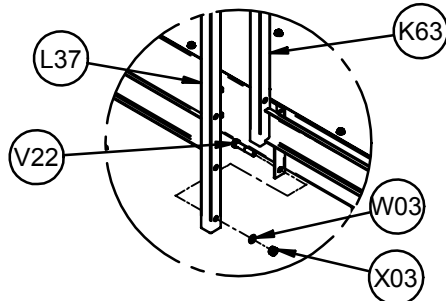


DETAIL F

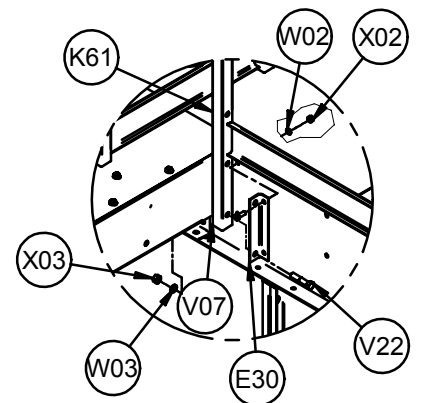
Figure 2-11
Cased face with Fan Deck Extension



DETAIL C



DETAIL B



DETAIL A

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LADDER EXTENSION

Ladder extensions are provided in either 5'-0" (1.52 M) or 11'-0" (3.35 M) lengths and must be field cut to a shorter length if required. Install ladder extension **L99** by attaching to existing ladder using splices **L98** as shown in *Figure 3-1*.

Note: Bracing or anchorage of ladder extension must be provided by the customer to prevent bending of ladder extension.

Find No.	Description
V09	3/8"x1 1/2" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

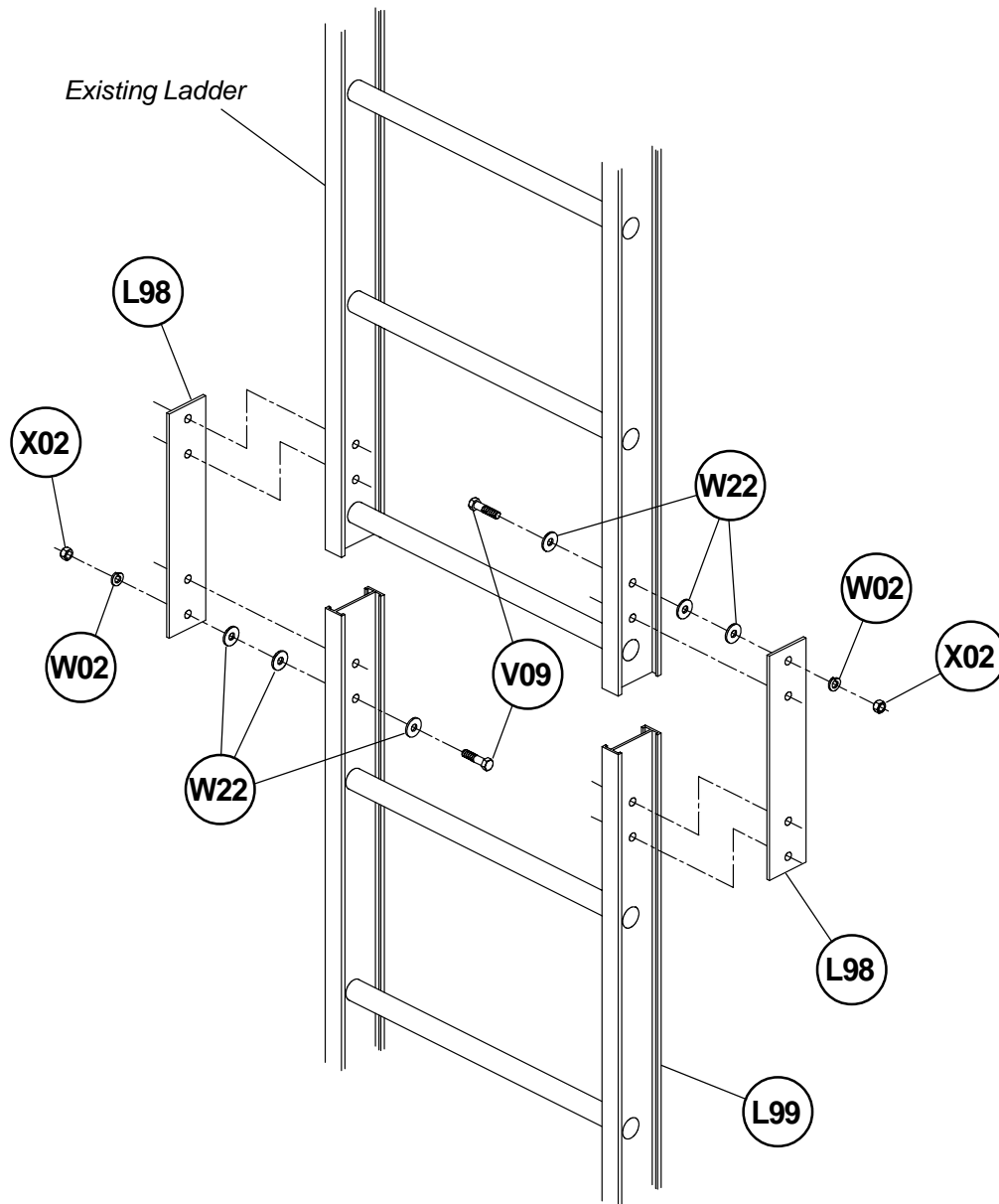
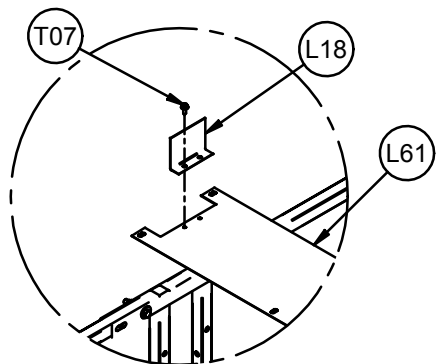


Figure 3-1

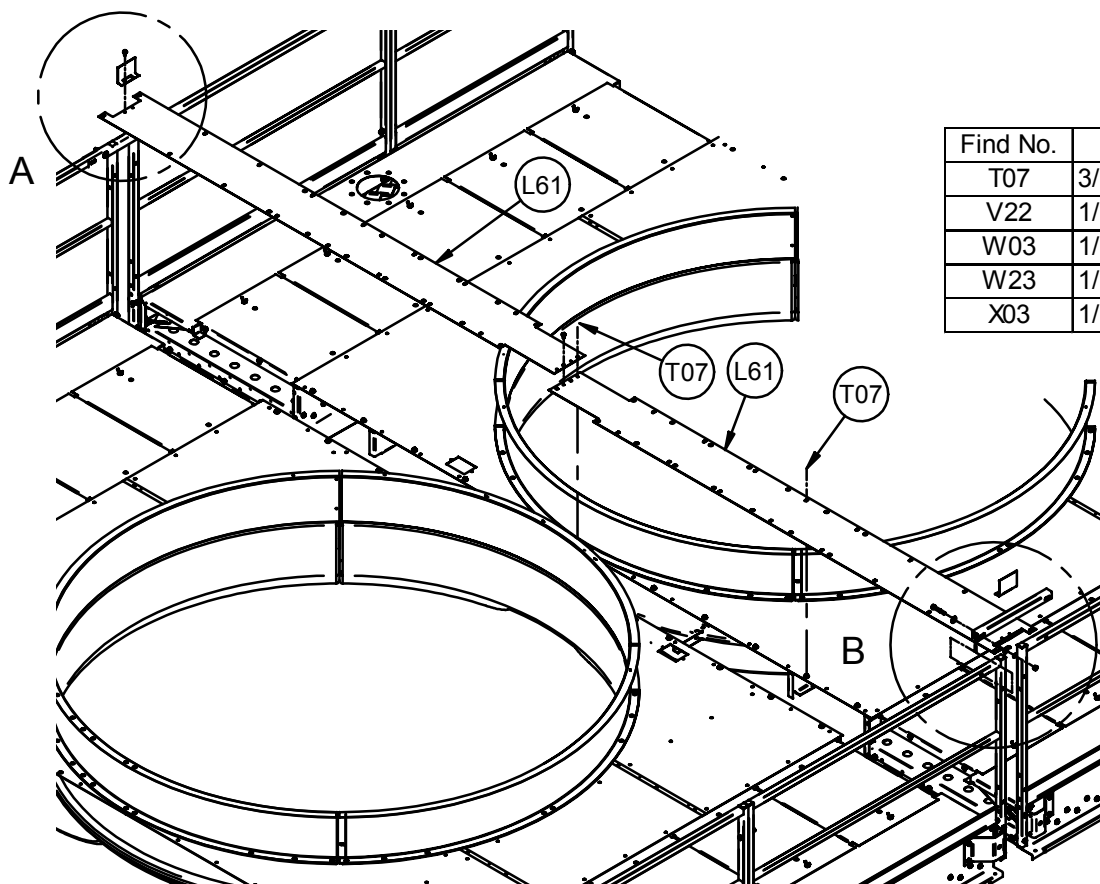


DETAIL A

FAN DECK WALKWAY

The fan deck walkway should be installed after the ladder and guardrail.

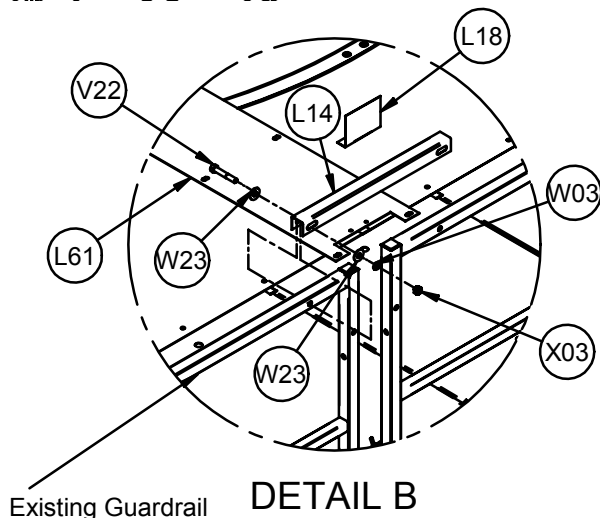
Use Figure 4-1 to install the walkway between cells when towers are 5 1/2" (14 cm) apart.



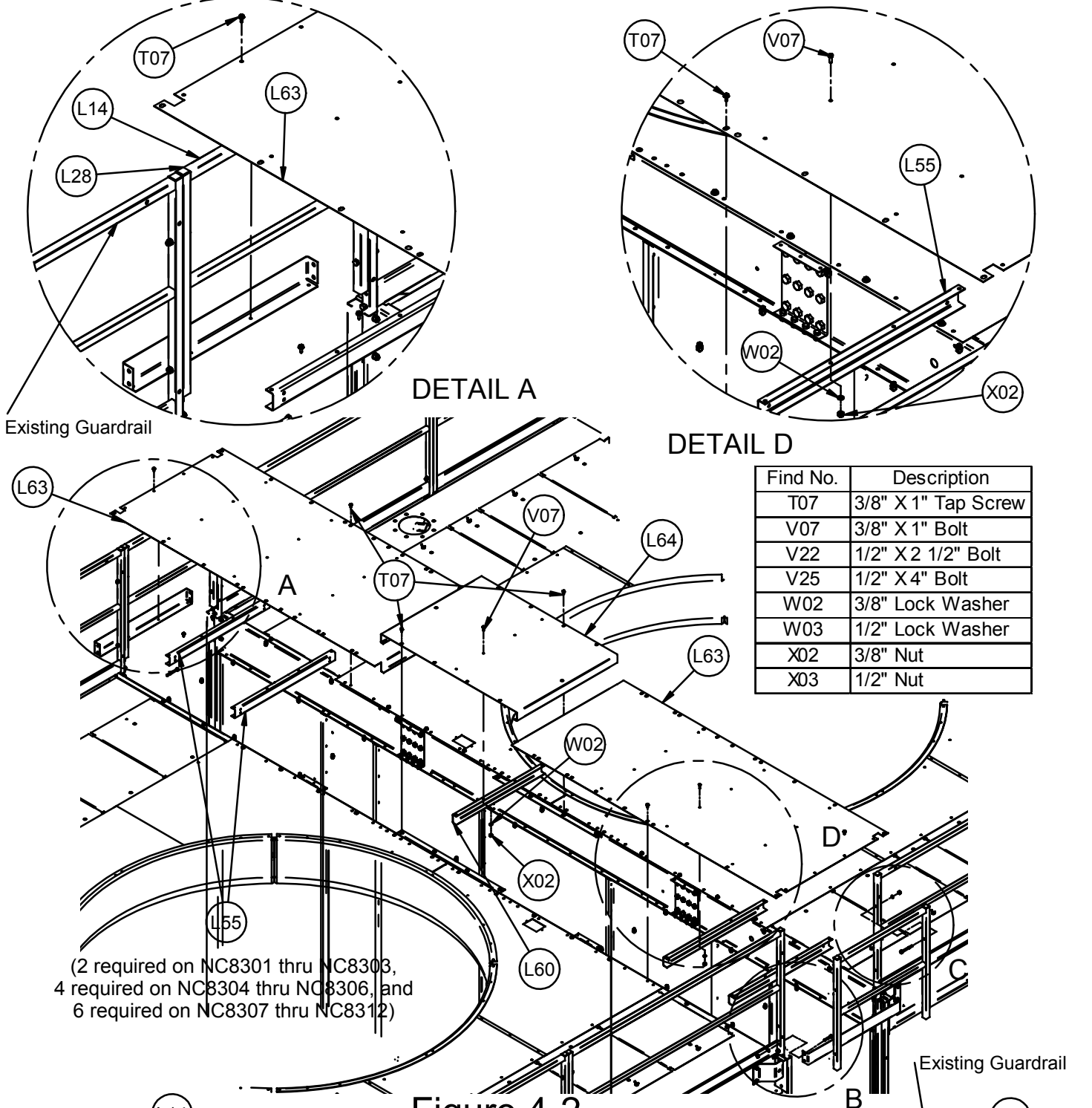
Find No.	Description
T07	3/8" X 1" Tap Screw
V22	1/2" X 2 1/2" Bolt
W03	1/2" Lock Washer
W23	1/2" Flat Washer
X03	1/2" Nut

Figure 4-1
Towers 5 1/2" (14 cm) Apart
At Tower Anchor Bolts

Determine where outside walkways **L61** will attach to tower and remove existing tap screws in fan deck and girt at those locations. The larger Dia. holes in the walkway are clearance holes, do not remove fasteners at these location. Set walkways in place and install. Attach toeboards **L18** to walkways as shown.



Existing Guardrail
DETAIL B

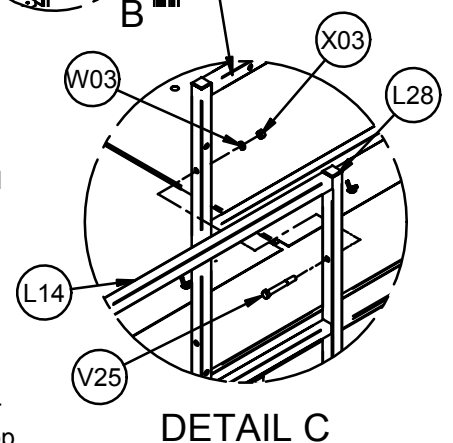
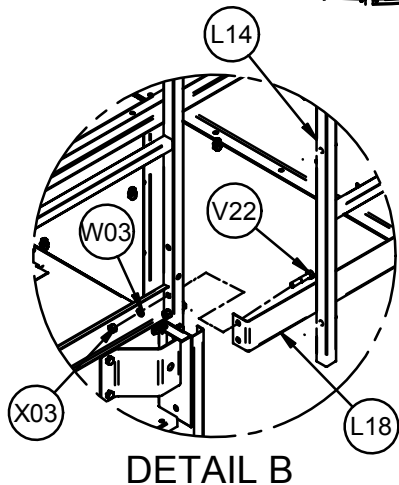


Find No.	Description
T07	3/8" X 1" Tap Screw
V07	3/8" X 1" Bolt
V22	1/2" X 2 1/2" Bolt
V25	1/2" X 4" Bolt
W02	3/8" Lock Washer
W03	1/2" Lock Washer
X02	3/8" Nut
X03	1/2" Nut

Figure 4-2

1'-0" (30 cm) thru 3'-0" (91 cm) Wide Walkways
 Figure 4-2 should be used to install walkways from 1'-0" (30 cm) to 3'-0" (91 cm) wide on all tower models.

Attach toeboards **L18** to existing louver guardrail Assy's. Determine where outside walkways **L63** and center walkway **L64** will attach to tower and remove existing tap screws in fan deck and girt at those locations. Bolt walkway supports **L55** to outside walkway. Set outside walkway Assy's in place and attach to tower. Attach center walkway support **L60** to center walkway **L64**, set in place and attach to tower. After completing guardrail installation install plug **L28** in top of all vertical posts.



ACCESS DOOR PLATFORM

The access door platform should be installed next to the ladder. Access to underside of tower is required for installation. Use *Figure 5-1* to begin assembly on tower models NC8301, NC8302, NC8307 and NC8309, refer to *Figure 5-3* for the remaining models. **Note: On stainless steel towers, hardware that attaches directly to the tower will be stainless steel. All remaining hardware will be galvanized. Stainless steel bolts are prone to galling. Gener-**

ously apply thread lubricant Z21 to threads of bolts before torquing nuts.

Attach the forklift braces **L01** inside the forklift beam using clips **L02**. Insert platform support beams **L03** thru forklift openings in collection basin side and attach to forklift brace. Connect beam clips **L04**, **L05**, **L53** & **L54** to basin side and support beams. Attach grating support channels **L07** to support beams as shown.

Find No.	Description
V19	1/2"x1 1/2" Bolt
W03	1/2" Lock Washer
W23	1/2" Flat Washer
W33	1/2" Sealing Washer
X03	1/2" Nut

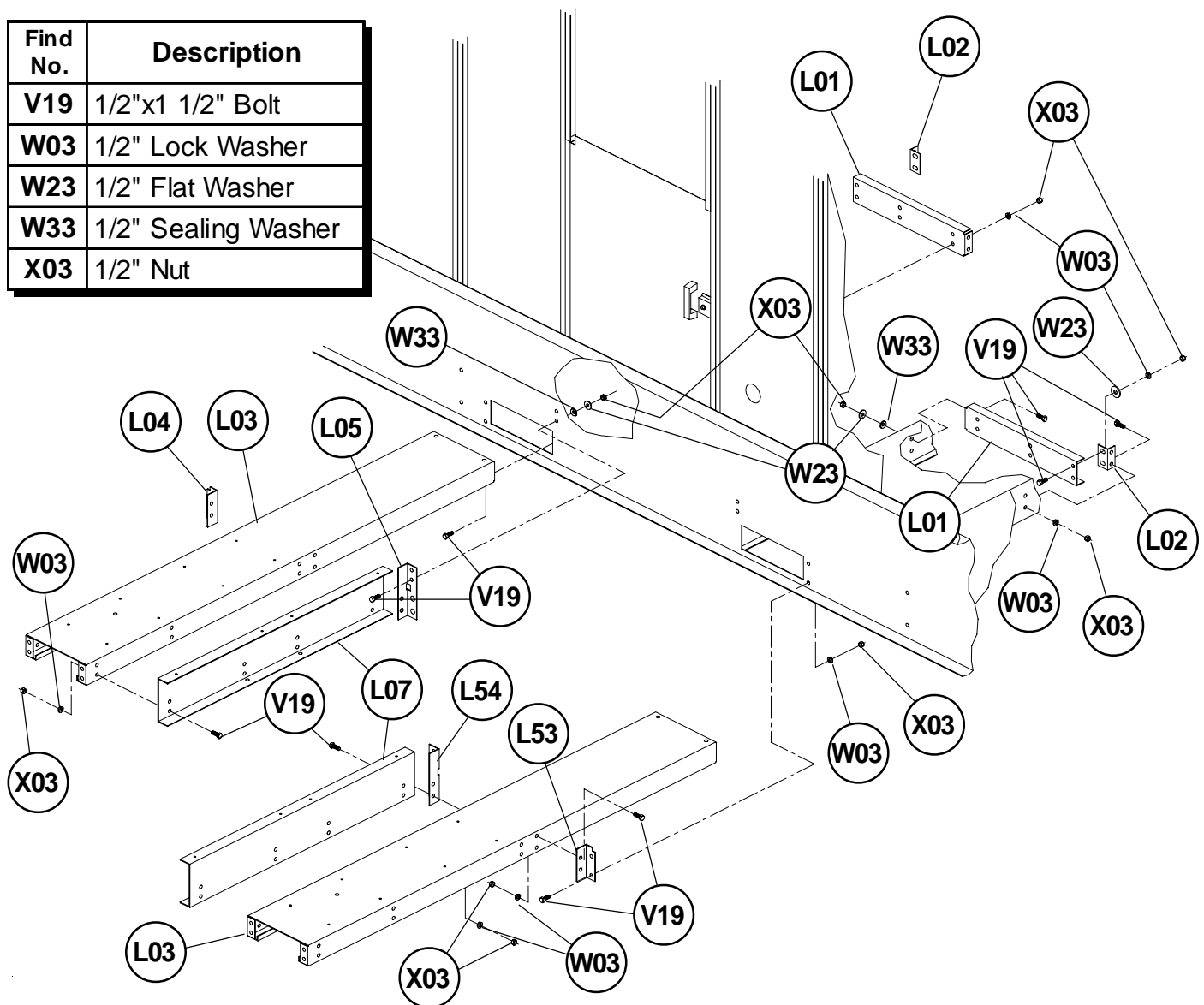


Figure 5-1
(NC8301, NC8302, NC8307 & NC8309 only)

Continue access door platform assembly on tower models NC8301, NC8302, NC8307 and NC8309 as indicated in *Figure 5-2*.

Attach platform sides **L06** (and **K07** on model NC8309) to collection basin side. Connect braces **L08** and **L10** to beams and grating support channels. Bolt platform end **L11** and platform side **L09** in place as shown.

Find No.	Description
V19	1/2"x1 1/2" Bolt
W03	1/2" Lock Washer
W23	1/2" Flat Washer
W33	1/2" Sealing Washer
X03	1/2" Nut

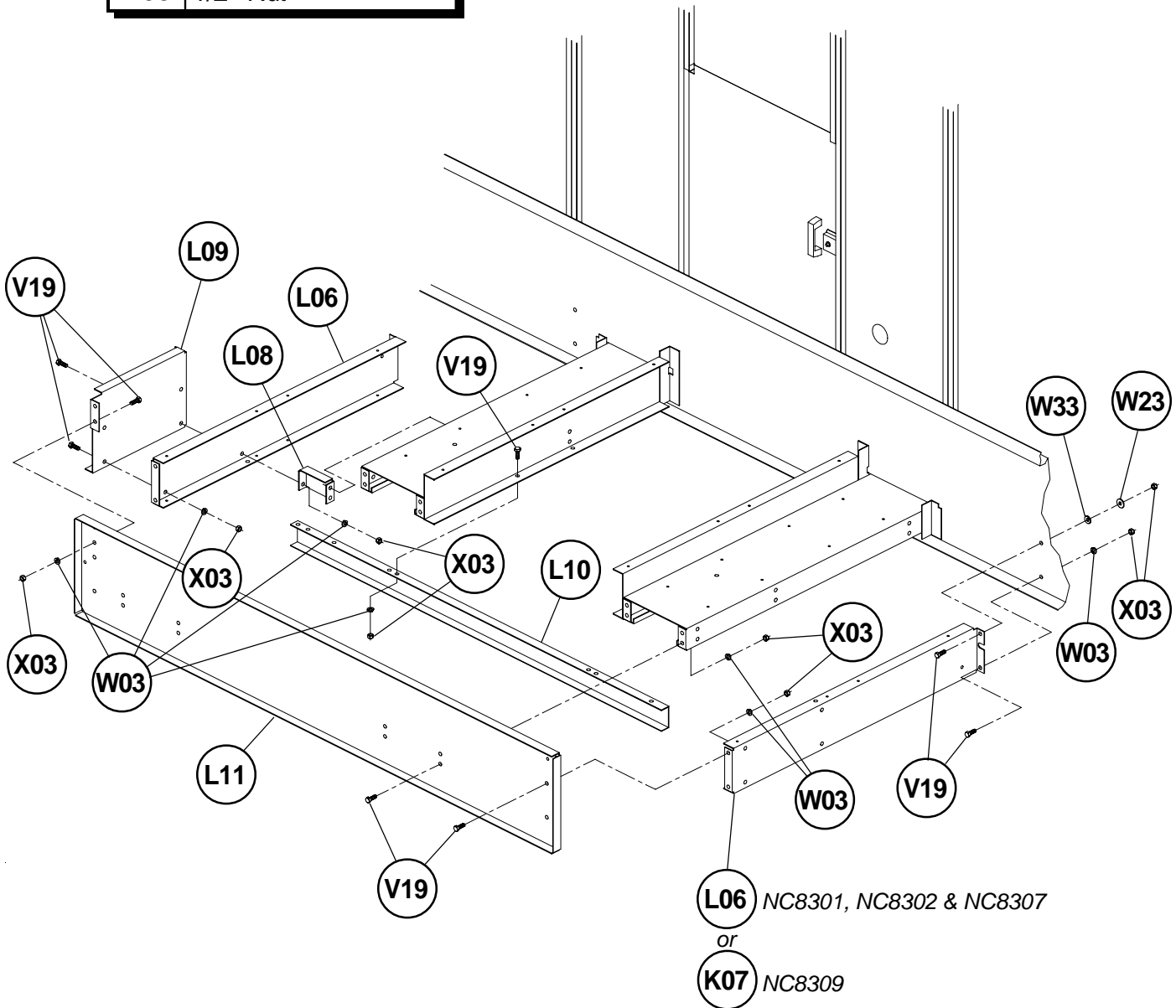


Figure 5-2
(NC8301, NC8302, NC8307 & NC8309 only)

Use *Figure 5-3* to begin access door platform assembly on tower models NC8303 thru NC8306 and NC8310 thru NC8312.

Attach the forklift braces **L01** inside the forklift beam using clips **L02**. Insert platform support beams **L03** thru forklift openings in collection basin side and attach to forklift brace. Connect beam clips **L04**, **L05**, **L53** & **L54** to basin side and support beams.

Find No.	Description
V19	1/2"x1 1/2" Bolt
W03	1/2" Lock Washer
W23	1/2" Flat Washer
W33	1/2" Sealing Washer
X03	1/2" Nut

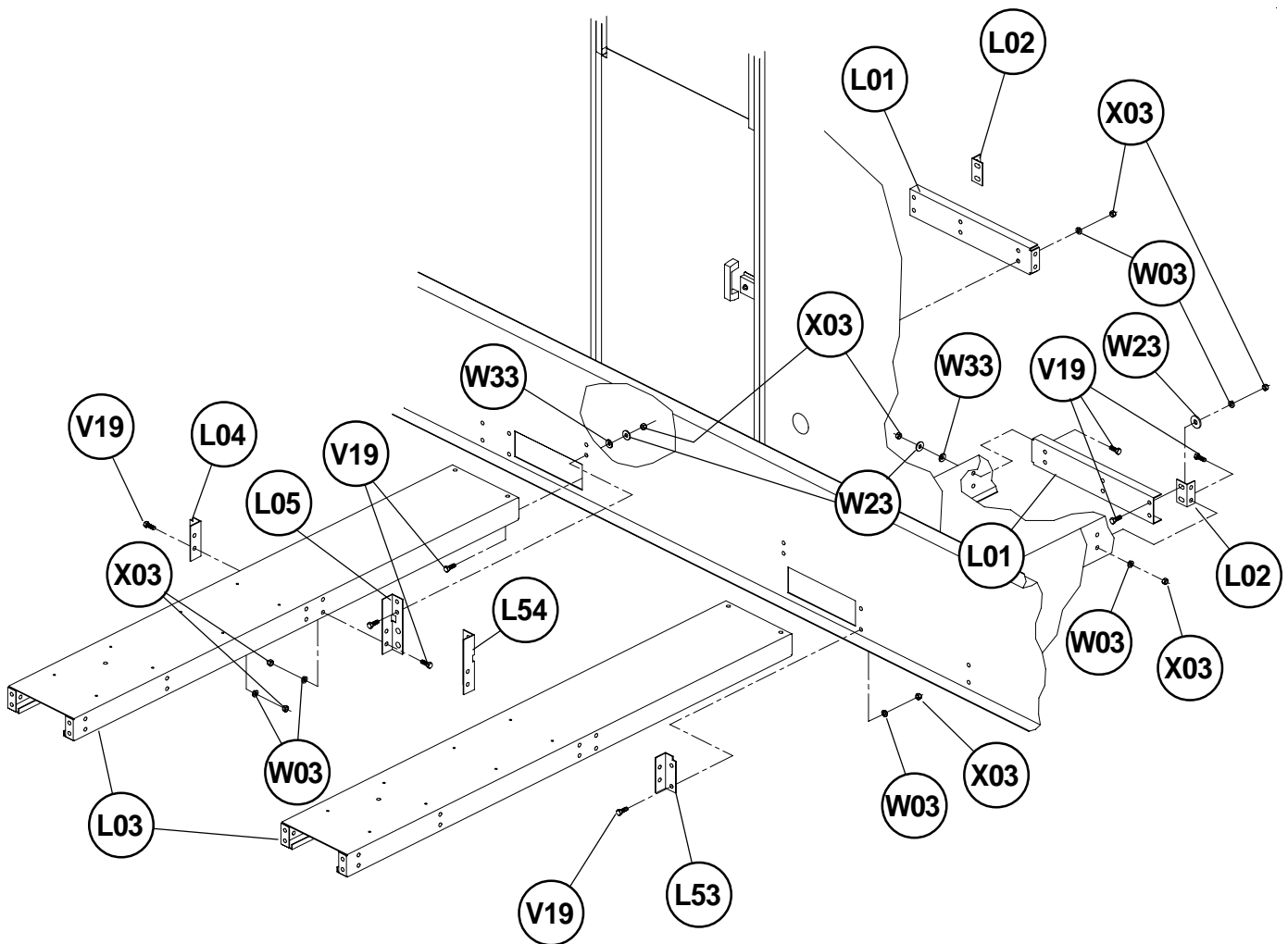


Figure 5-3
 (NC8303 thru NC8306 &
 NC8310 thru NC8312 only)

Continue access door platform assembly on tower models NC8303 thru NC8306 and NC8310 thru NC8312 as shown in *Figure 5-4*.

Attach platform sides **L06** (and **K07** on models NC8308 and NC8312) to collection basin side. Connect braces **L08** and **L10** to beams. Bolt platform end **L11** and platform side **L09** in place as shown.

Find No.	Description
V19	1/2"x1 1/2" Bolt
W03	1/2" Lock Washer
X03	1/2" Nut

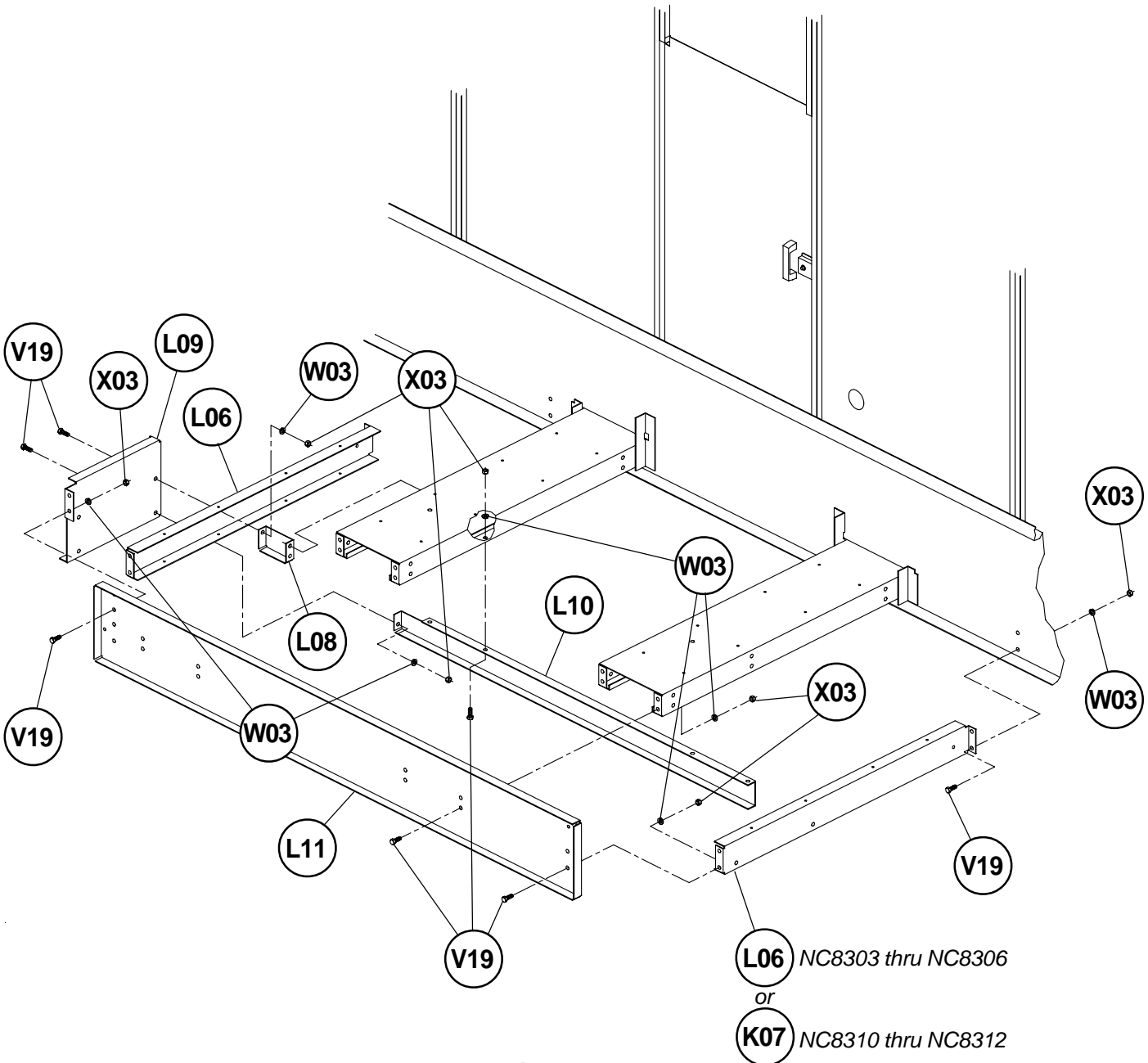


Figure 5-4
(NC8303 thru NC8306 &
NC8310 thru NC8312 only)

Find No.	Description
V04	1/4"x1 1/2" Bolt (All Thd.)
W01	1/4" Lock Washer
X01	1/4" Nut

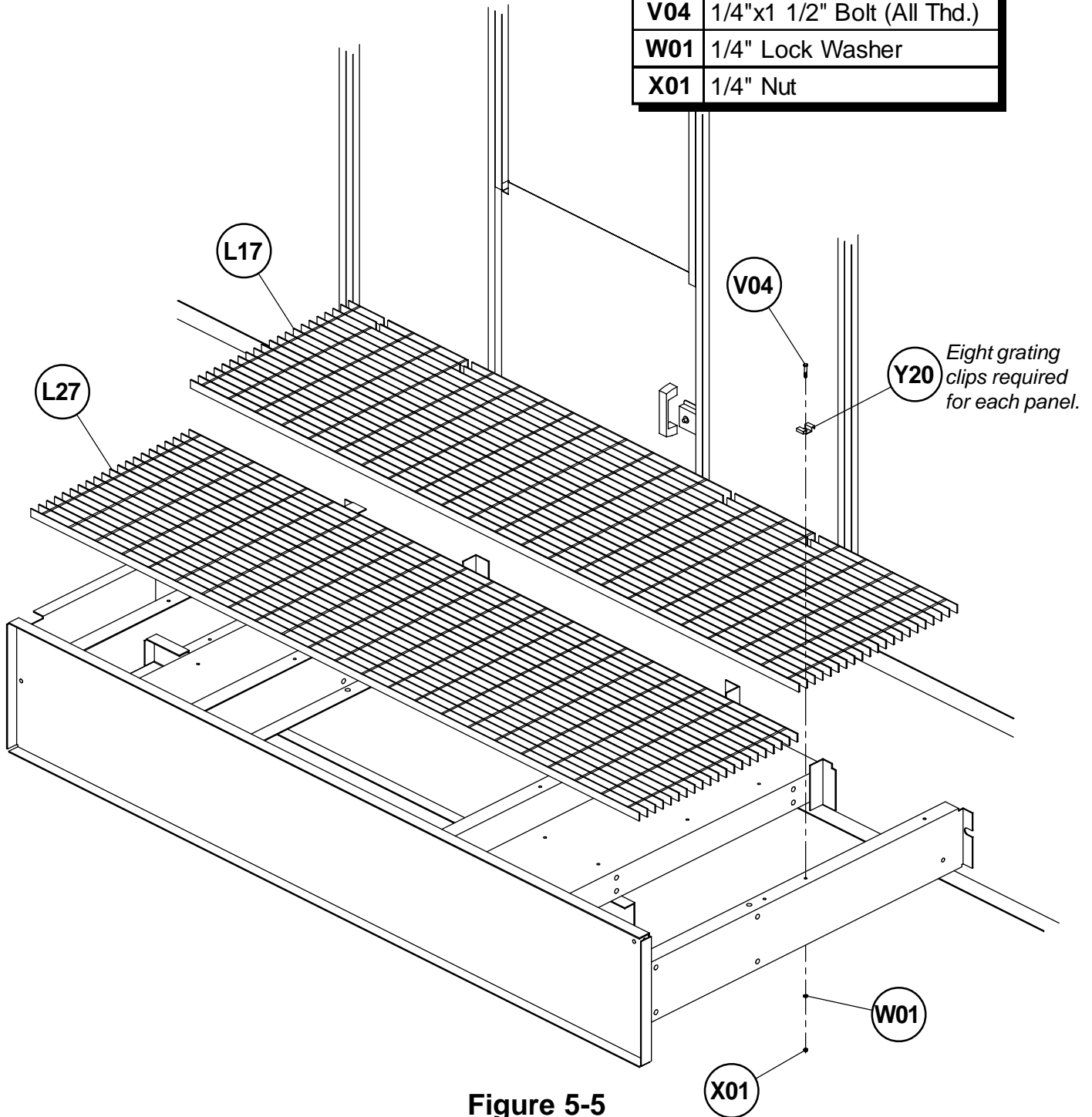


Figure 5-5

Continue access door platform assembly for all models by setting platform grating panels **L17** and **L27** in place as shown in *Figure 5-5*. Use grating clips **Y20** to attach each panel at eight locations.

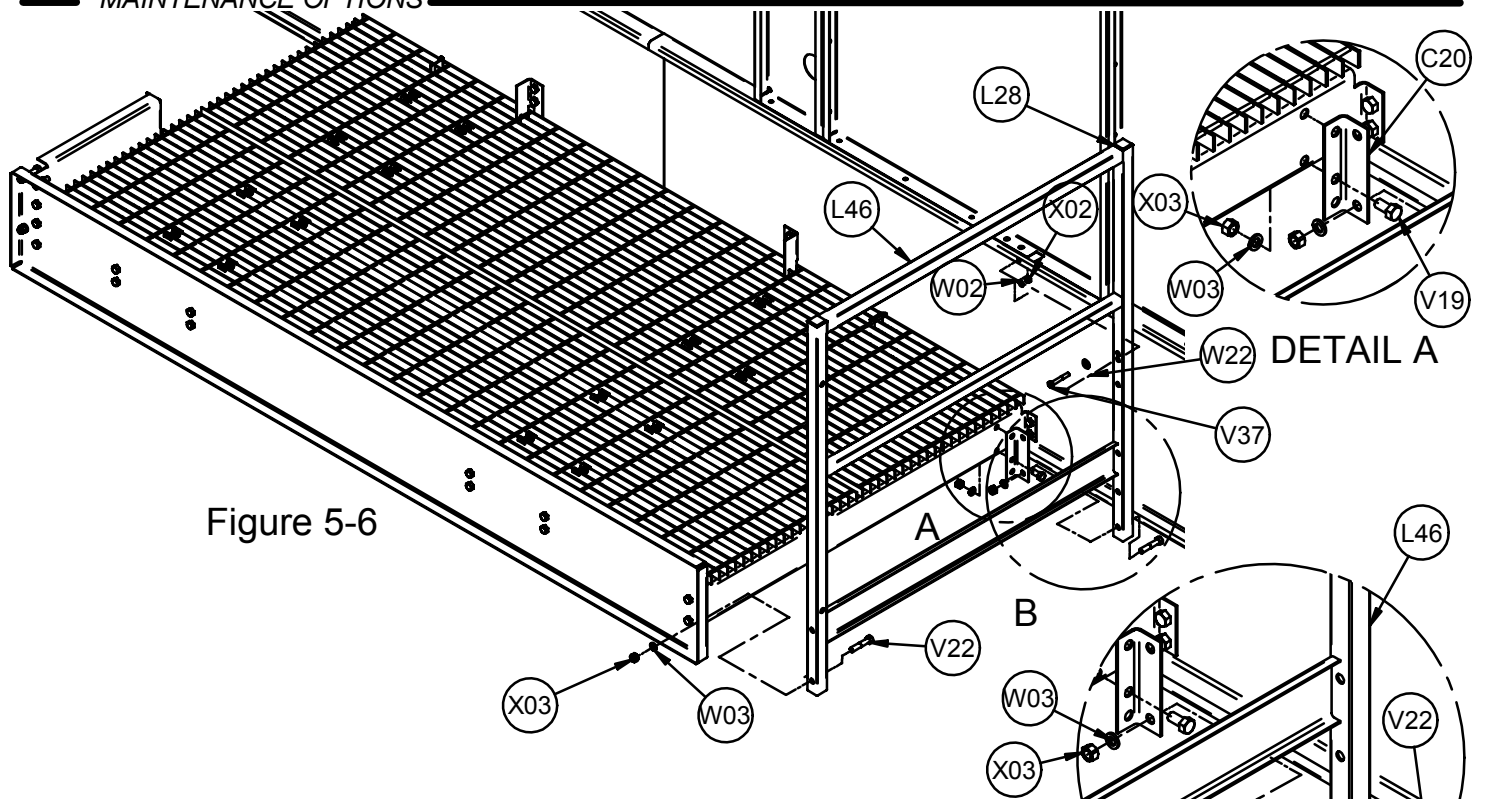


Figure 5-6

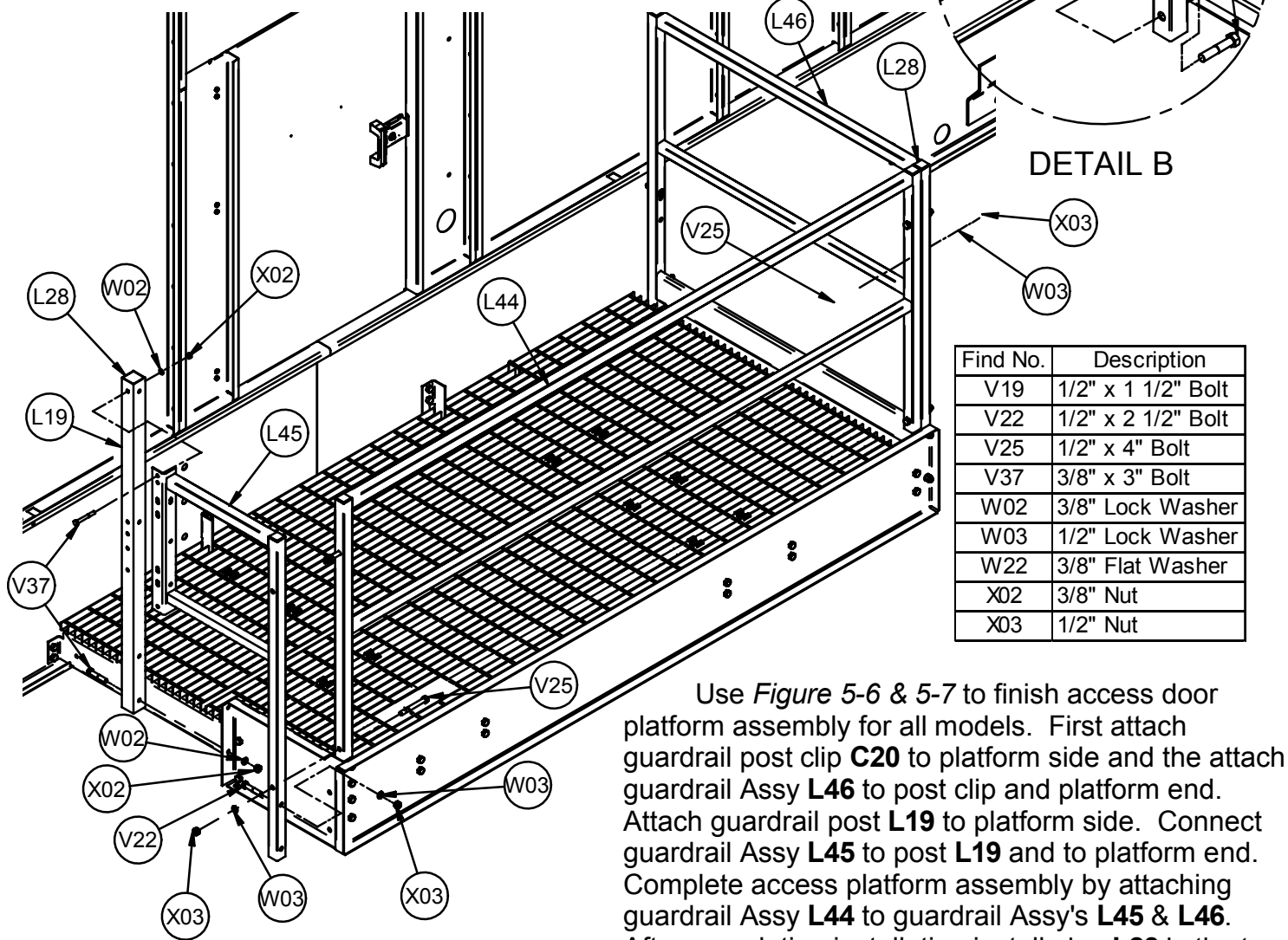


Figure 5-7

Use Figure 5-6 & 5-7 to finish access door platform assembly for all models. First attach guardrail post clip **C20** to platform side and the attach guardrail Assy **L46** to post clip and platform end. Attach guardrail post **L19** to platform side. Connect guardrail Assy **L45** to post **L19** and to platform end. Complete access platform assembly by attaching guardrail Assy **L44** to guardrail Assy's **L45** & **L46**. After completing installation install plug **L28** in the top of all vertical posts.

MOA PLATFORM

The MOA platform is available only on tower models NC8310 thru NC8312 and is to be located directly under the motor. **Note: On stainless steel towers, hardware that attaches directly to the tower will be stainless steel. All remaining hardware will be galvanized. Stainless steel bolts are prone to galling. Generously apply thread lubricant Z21 to threads of bolts before torquing nuts.**

Remove the existing forklift covers and discard, if present. Insert platform support beams **L03** thru forklift openings in side of tower and attach to forklift beams. Connect beam clips **L04**, **L05** and **L08** to tower side and support beams as shown in *Figure 6-1*.

Find No.	Description
V19	1/2"x1 1/2" Bolt
W03	1/2" Lock Washer
X03	1/2" Nut

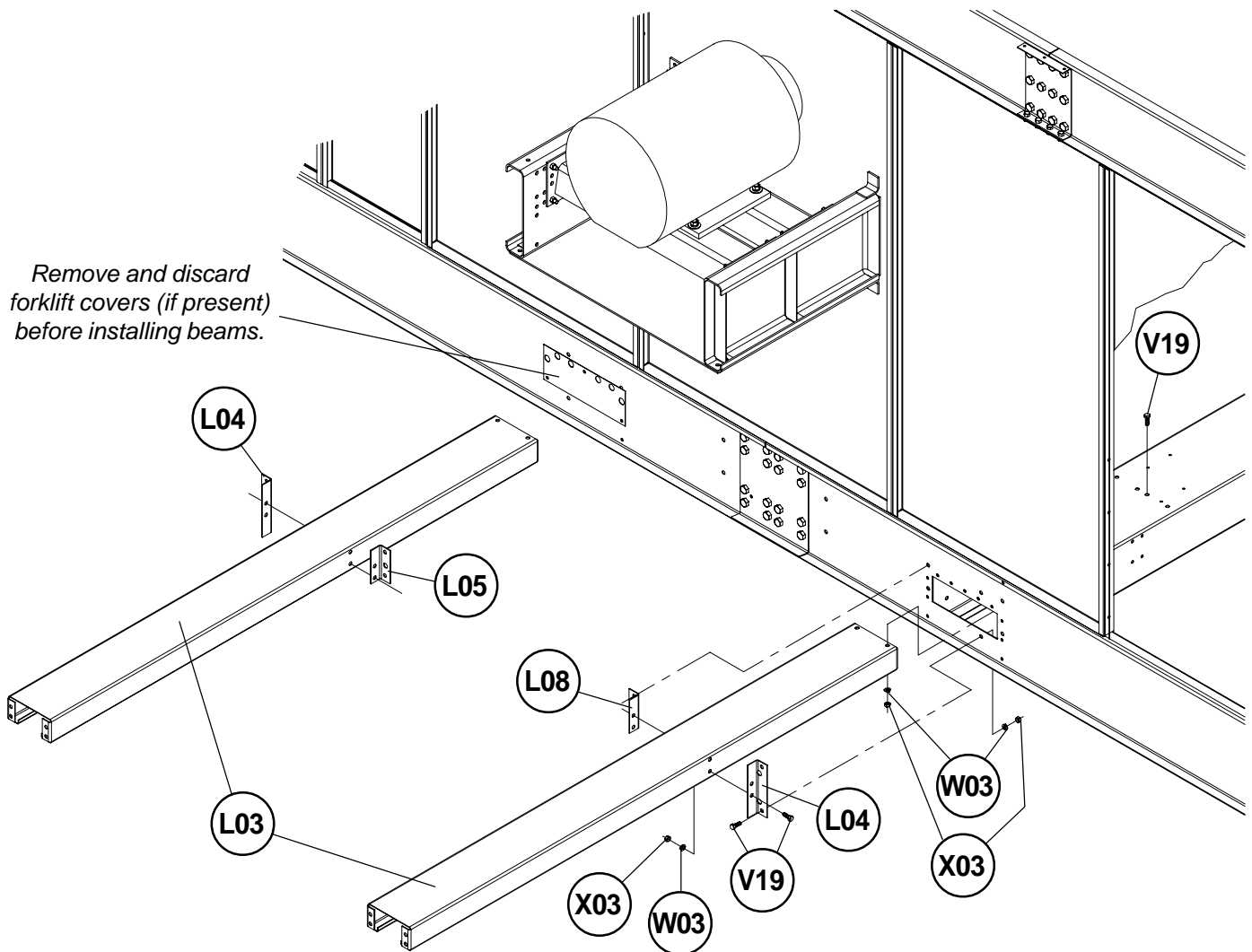


Figure 6-1

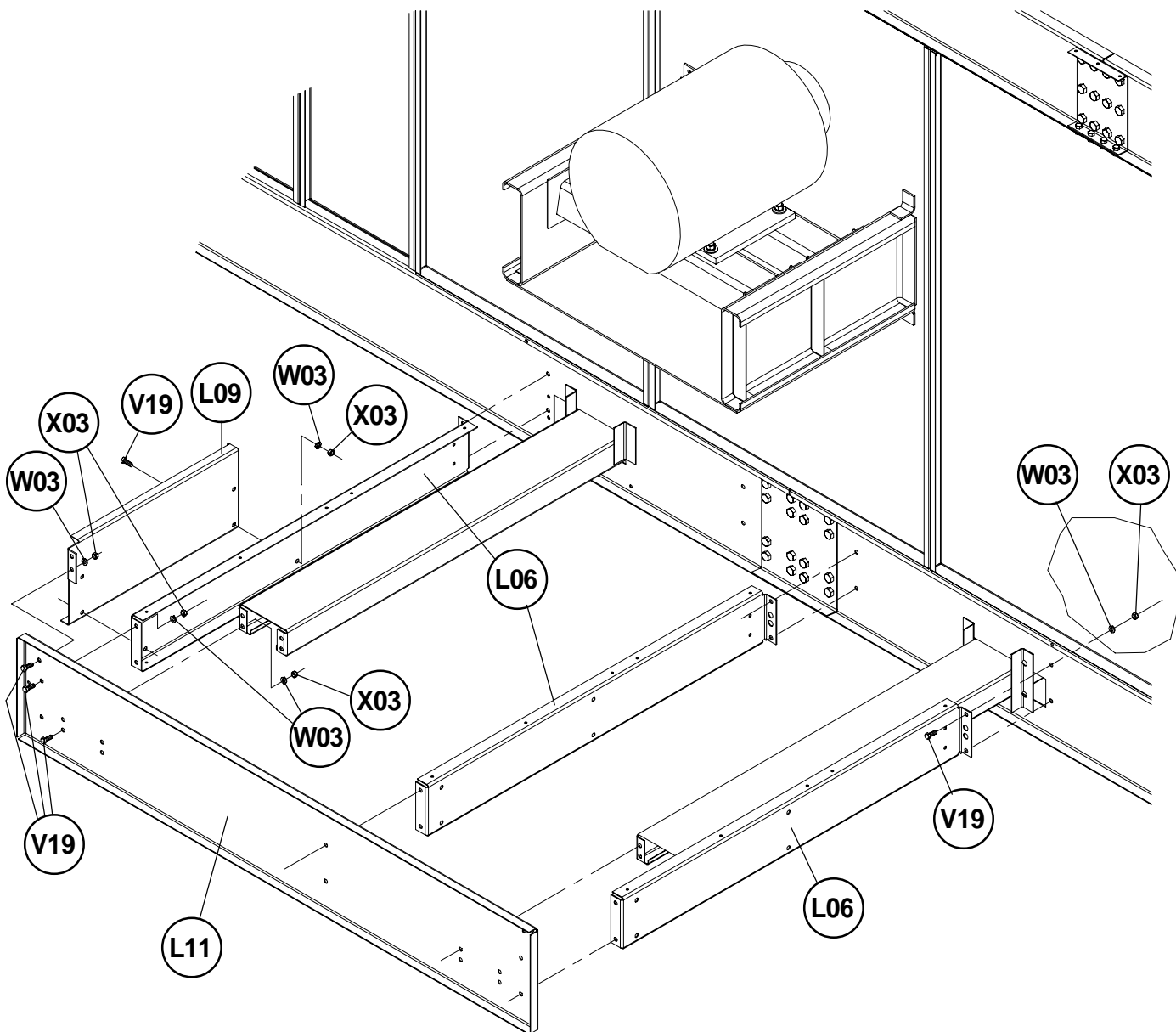


Figure 6-2

Find No.	Description
V19	1/2"x1 1/2" Bolt
W03	1/2" Lock Washer
X03	1/2" Nut

Continue assembling MOA platform by attaching platform support beams **L06** to the tower side. Connect platform side **L09** to support beam. Bolt platform end **L11** and in place as shown in *Figure 6-2*.

Find No.	Description
V04	1/4"x1 1/2" Bolt (All Thd.)
W01	1/4" Lock Washer
X01	1/4" Nut

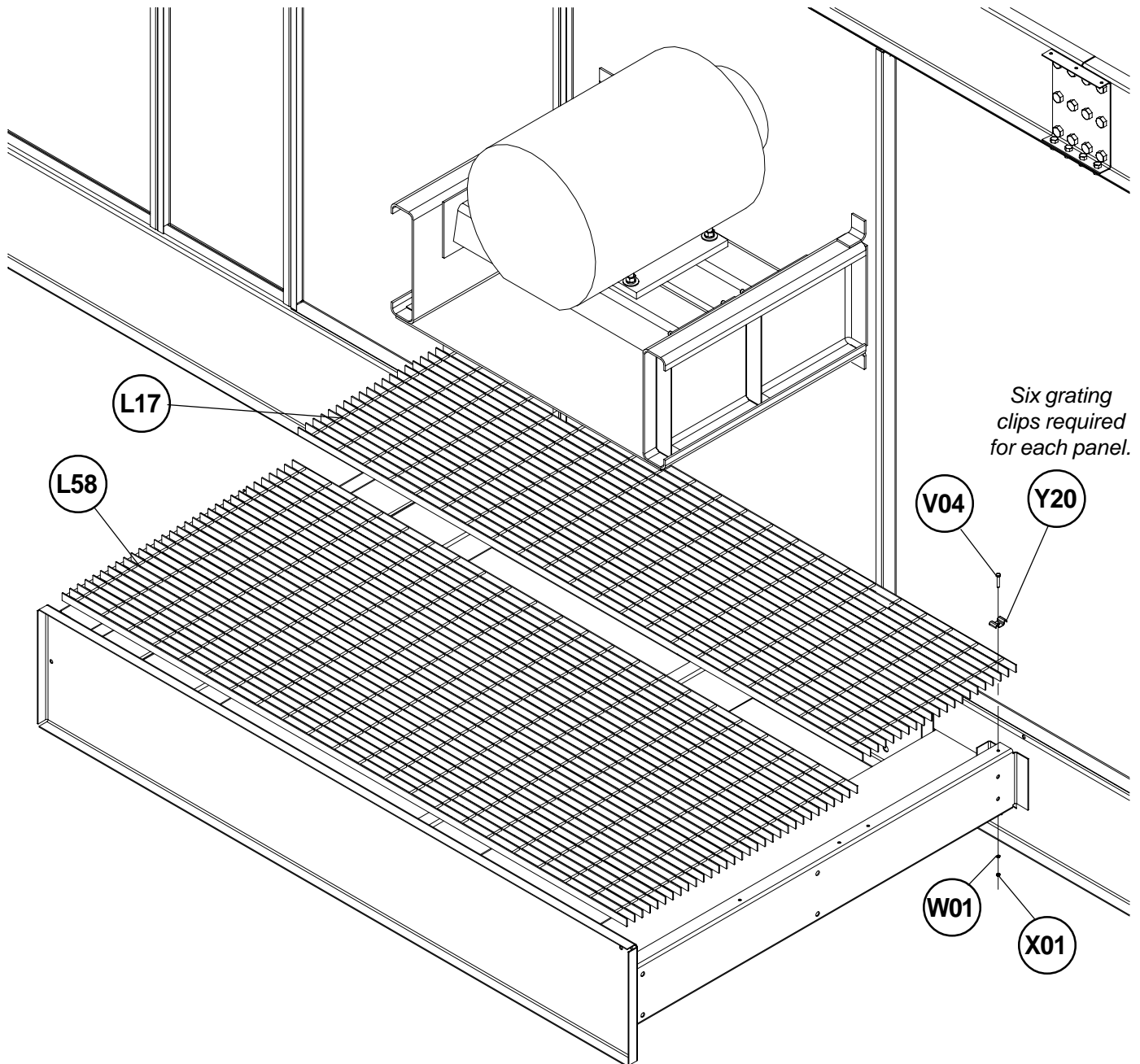
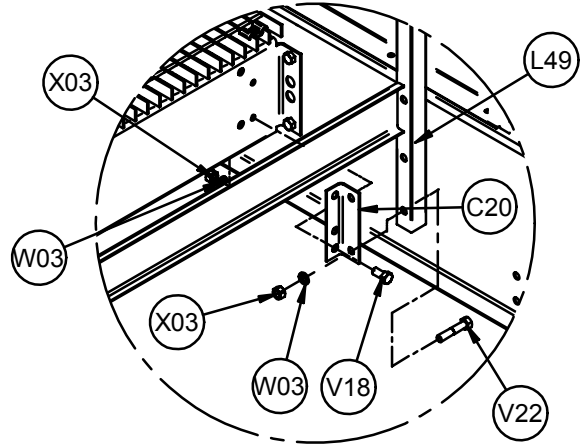
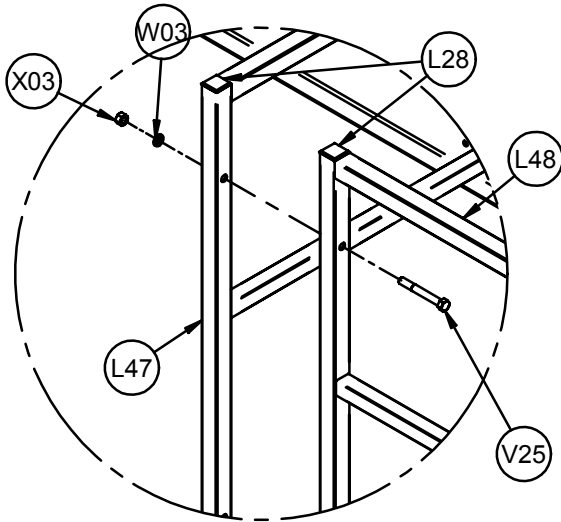


Figure 6-3

Set platform grating panels **L17** and **L58** in place as shown in *Figure 6-3*. Use grating clips **Y20** to attach each panel at six locations.



DETAIL D

Install guardrail Assy L47 to platform end and to platform side as shown in detail B. Next install guardrail Assy L49 to platform end and to post clip. Last install guardrail Assy L48 to guardrail Assy's L47 & L49. After completing installation install plug L28 in the top of all vertical posts.

Find No.	Description
V18	1/2" X 1" Bolt
V22	1/2" X 2 1/2" Bolt
V25	1/2" X 4" Bolt
W03	1/2" Lock Washer
X03	1/2" Nut

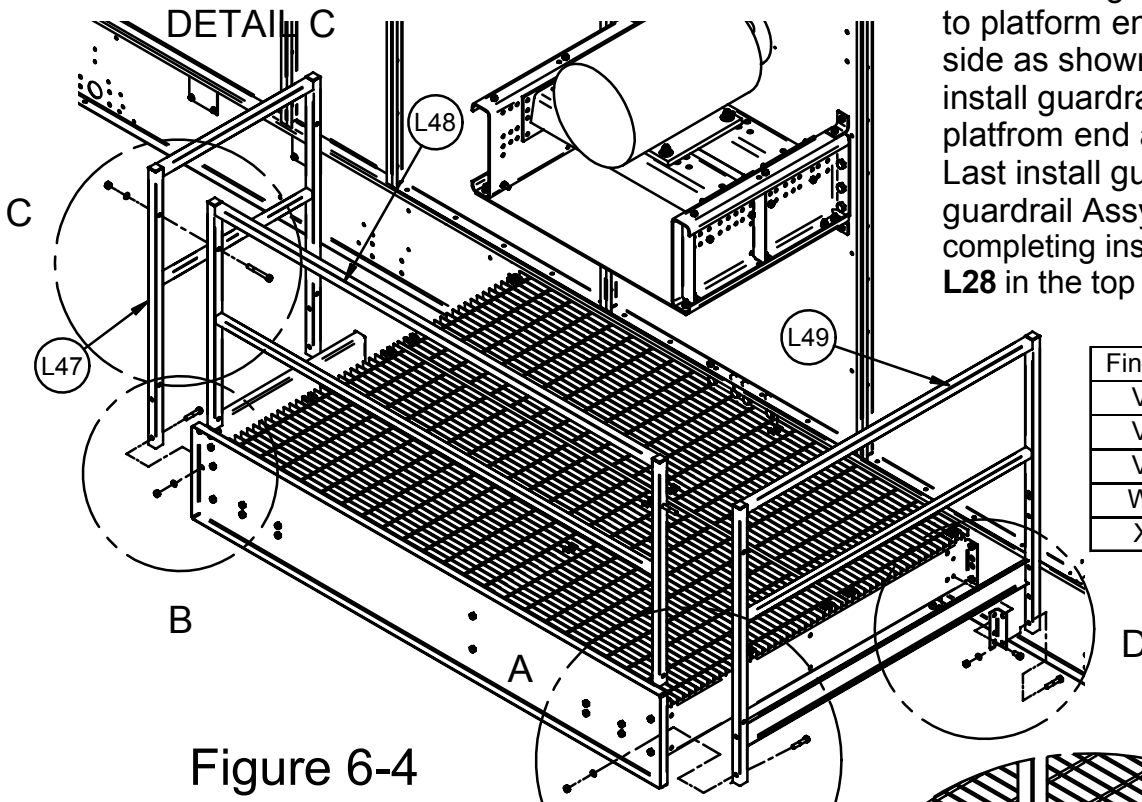
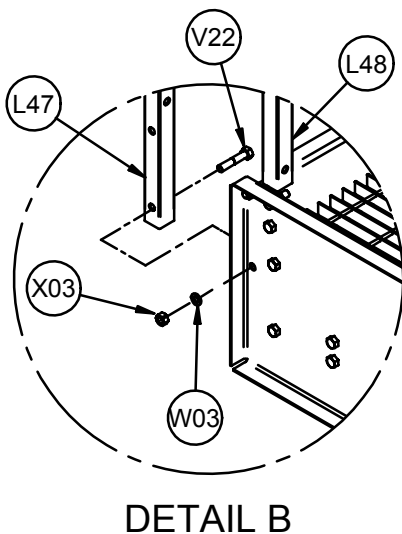
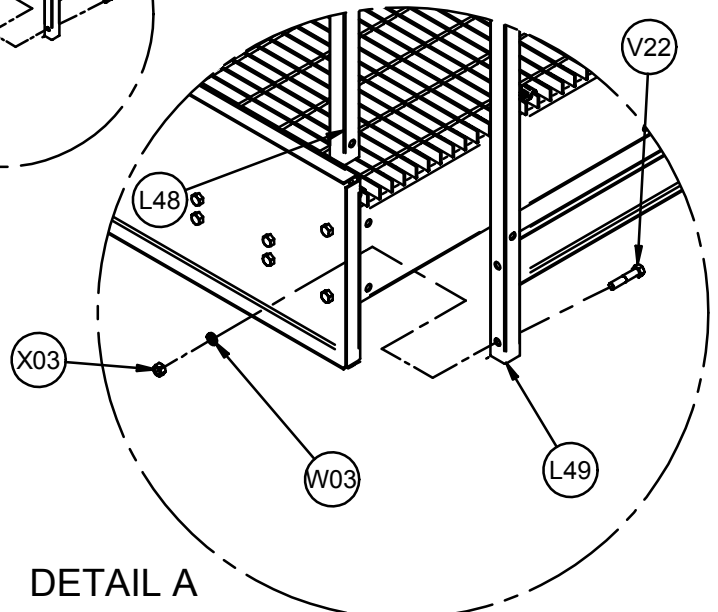


Figure 6-4



DETAIL B



DETAIL A

SAFETY CAGE

The safety cage is intended to be installed after the ladder, handrail and platforms (if applicable) are in place. See the details in those sections for items not shown in this section.

The installation required for your tower will depend upon the ladder extension length (if equipped with a ladder extension) and if an access or MOA platform (or both) are installed on the tower. **Only safety cages at standard ladder locations are covered by this manual.** Refer to the chart on this page to determine the installation figure required for your tower and use that to determine the parts that are required. If your tower has a ladder extension, it should be installed prior to the safety cage installation. Refer to page 3-1 for ladder extension installation.

If your tower is equipped with an access or MOA platform, the installation detail may instruct you to replace an existing post on the platform in the vicinity of the safety cage. This should be done prior to installing safety cage hoops. Begin safety cage installation by attaching top hoop **L65** and bottom hoop **L67**. Depending on safety cage length, mid hoops **L66**, **L77**, and **L78** may be required and should be installed next. After the hoops are in place, install bar(s) **L68** thru **L74** (as required). Refer to *Figure 7-2* for typical bar installation. **Note: Stainless steel bolts are prone to galling. Before torquing nuts, generously apply thread lubricant Z21 to threads of bolts.**

Installation Figure Required											
Tower Model	Ladder Extension Length										
	None	2'-0" (.6M)	3'-0" (.8M)	4'-0" (1.2M)	5'-0" (1.5M)	6'-0" (1.8M)	7'-0" (2.1M)	8'-0" (2.4M)	9'-0" (2.7M)	10'-0" (3M)	11'-0" (3.4M)
Tower without Platform											
NC8301 & NC8302	7-3	7-4	7-4	7-4	7-5	7-5	7-5	7-5	7-6	7-6	7-6
NC8303	7-4	7-4	7-5	7-5	7-5	7-5	7-6	7-6	7-6	7-7	7-7
NC8304 thru NC8309	7-4	7-5	7-5	7-5	7-5	7-6	7-6	7-6	7-6	7-7	7-7
NC8310 thru NC8312	7-6	7-6	7-7	7-7	7-7	7-7	7-8	7-8	7-8	7-9	7-9
Tower with Access Platform											
NC8301 & NC8302	7-3	7-10	7-10	7-10	7-11	7-11	7-11	7-11	7-12	7-13	7-13
NC8303 thru 8309	7-4	7-14	7-14	7-14	7-15	7-15	7-15	7-15	7-16	7-17	7-17
NC8310 thru NC8312	7-6	7-18	7-18	7-18	7-19	7-19	7-19	7-19	7-20	7-21	7-21
Tower with MOA Platform											
NC8310 thru NC8312	7-22	7-22	7-23	7-23	7-24	7-24	7-24	7-24	7-25	7-25	7-25
Tower with MOA and Access Platforms											
NC8310 thru NC8312	7-22	7-26	7-26	7-26	7-27	7-27	7-28	7-28	7-29	7-30	7-30

Find No.	Description
T08	3/8"x1 1/2" Machine Screw (Rd Hd)
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

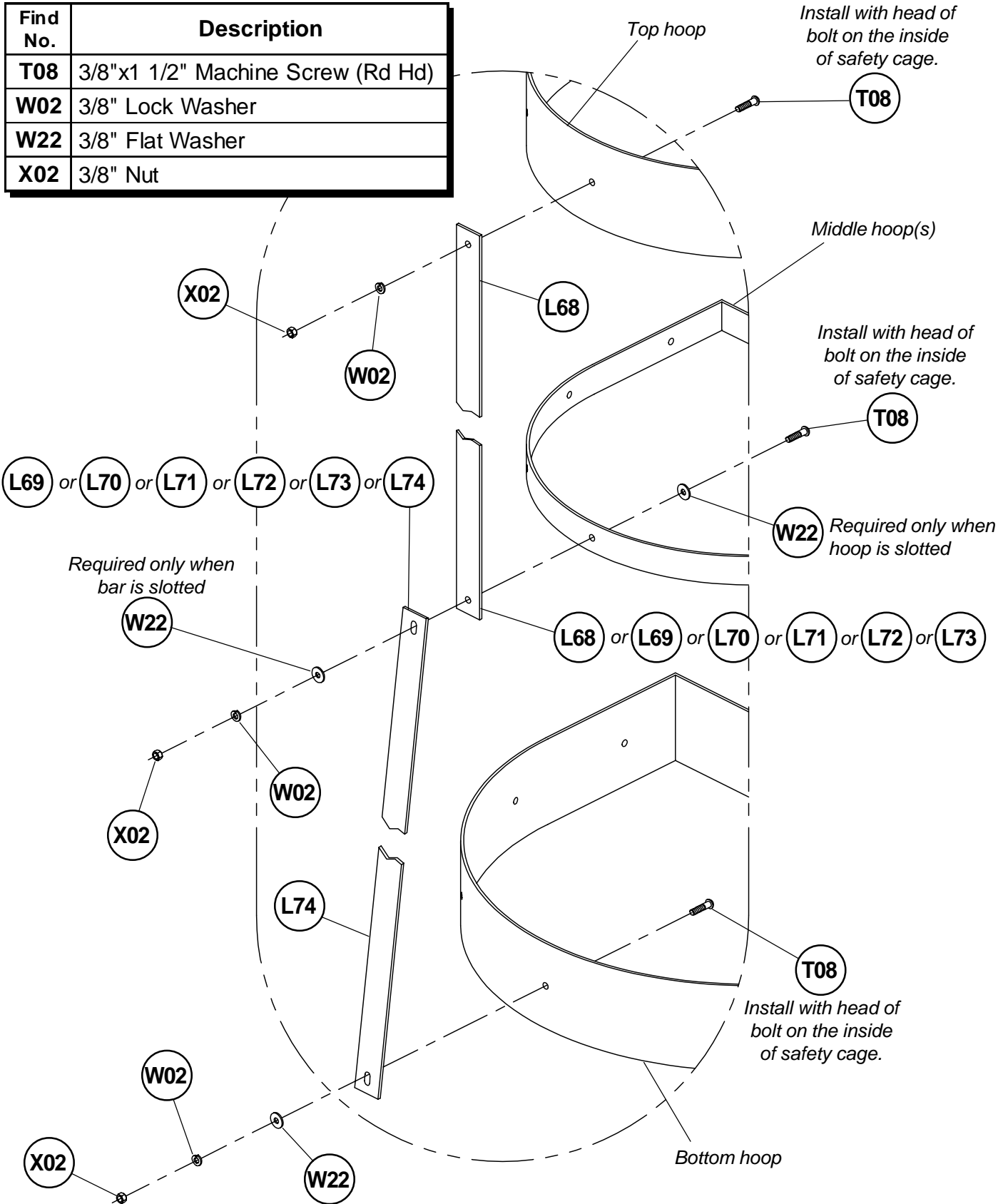
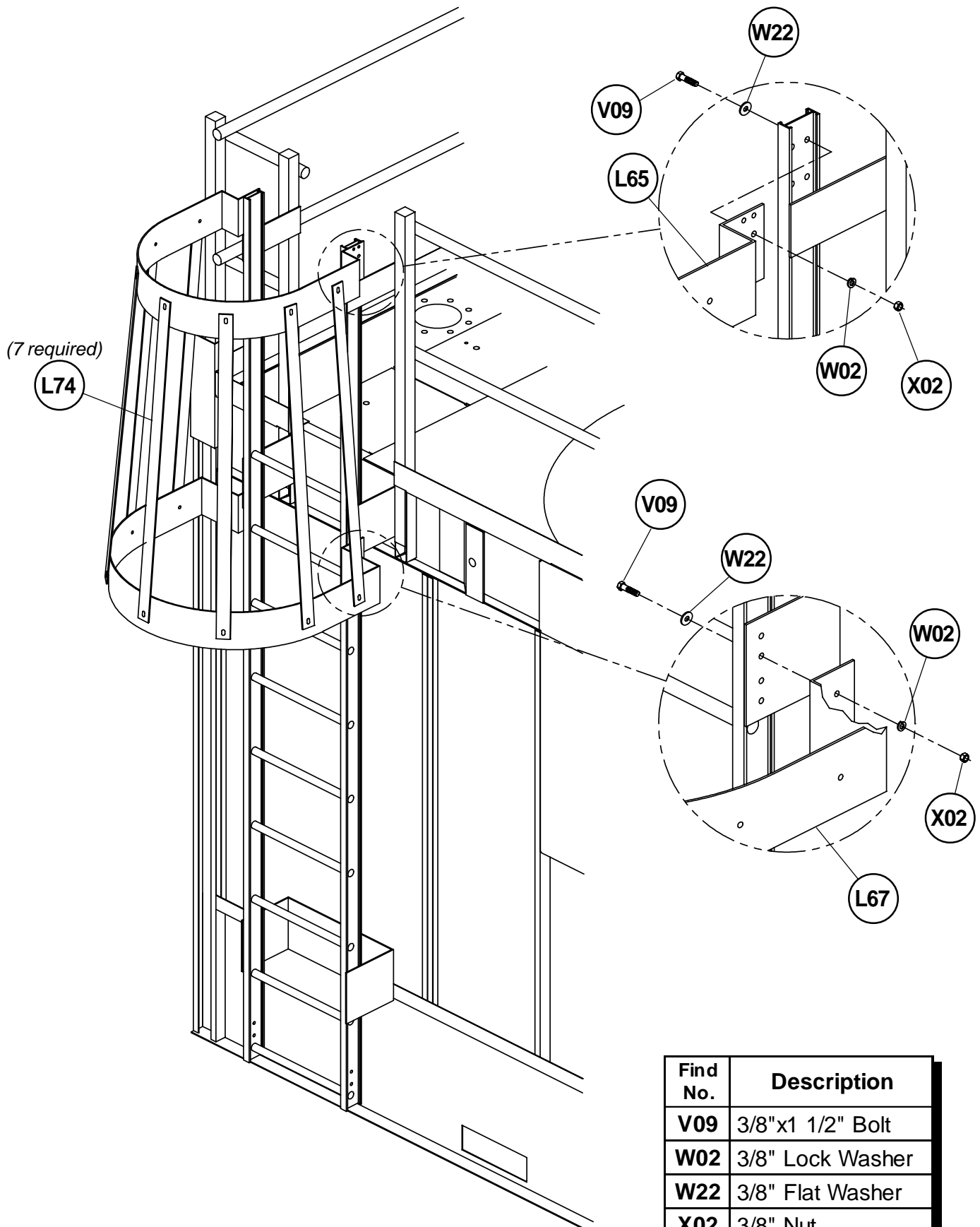


Figure 7-2
Typical Bar Attachment Details



Find No.	Description
V09	3/8"x1 1/2" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Figure 7-3

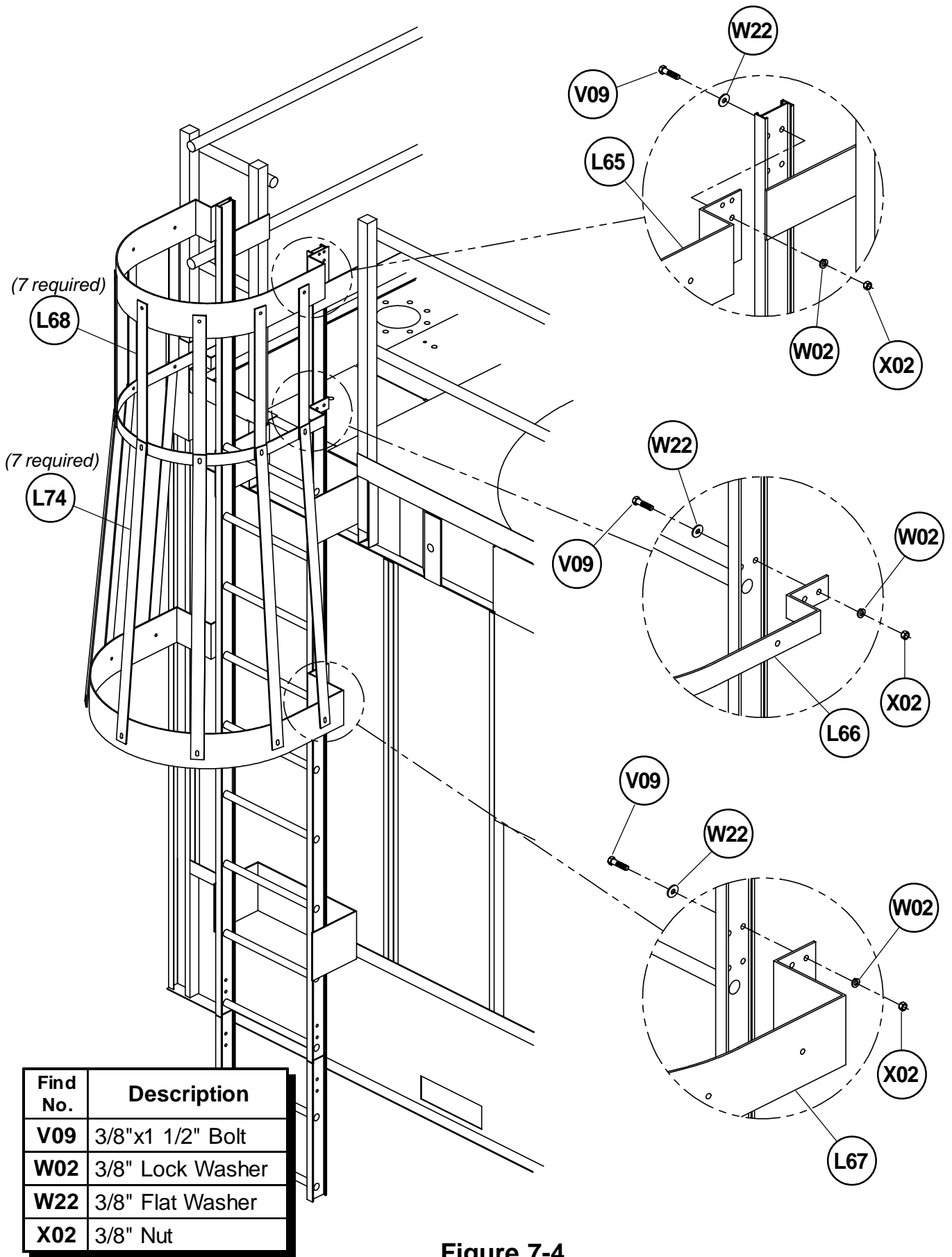


Figure 7-4

Find No.	Description
V09	3/8"x1 1/2" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

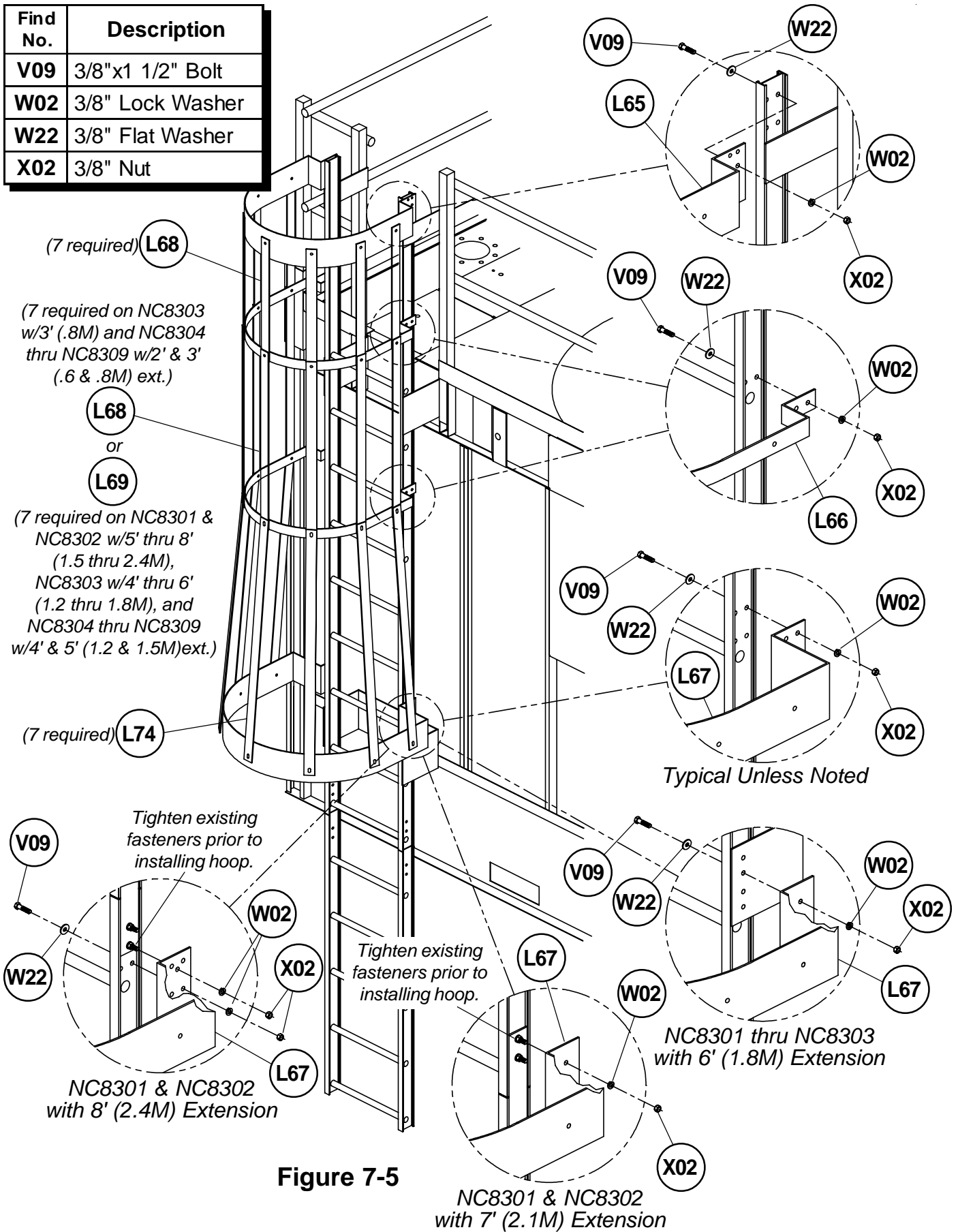


Figure 7-5

Find No.	Description
V09	3/8"x1 1/2" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

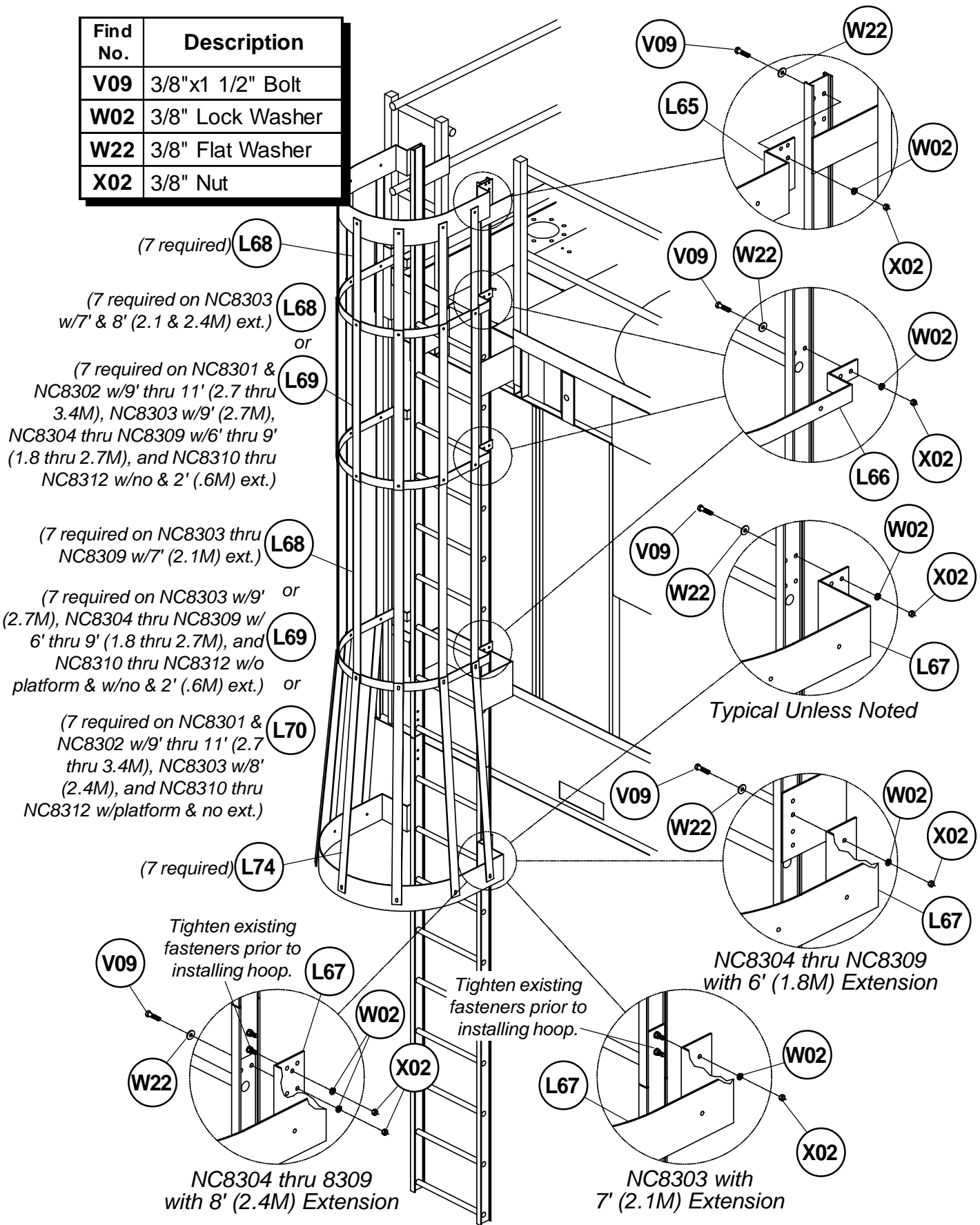


Figure 7-6

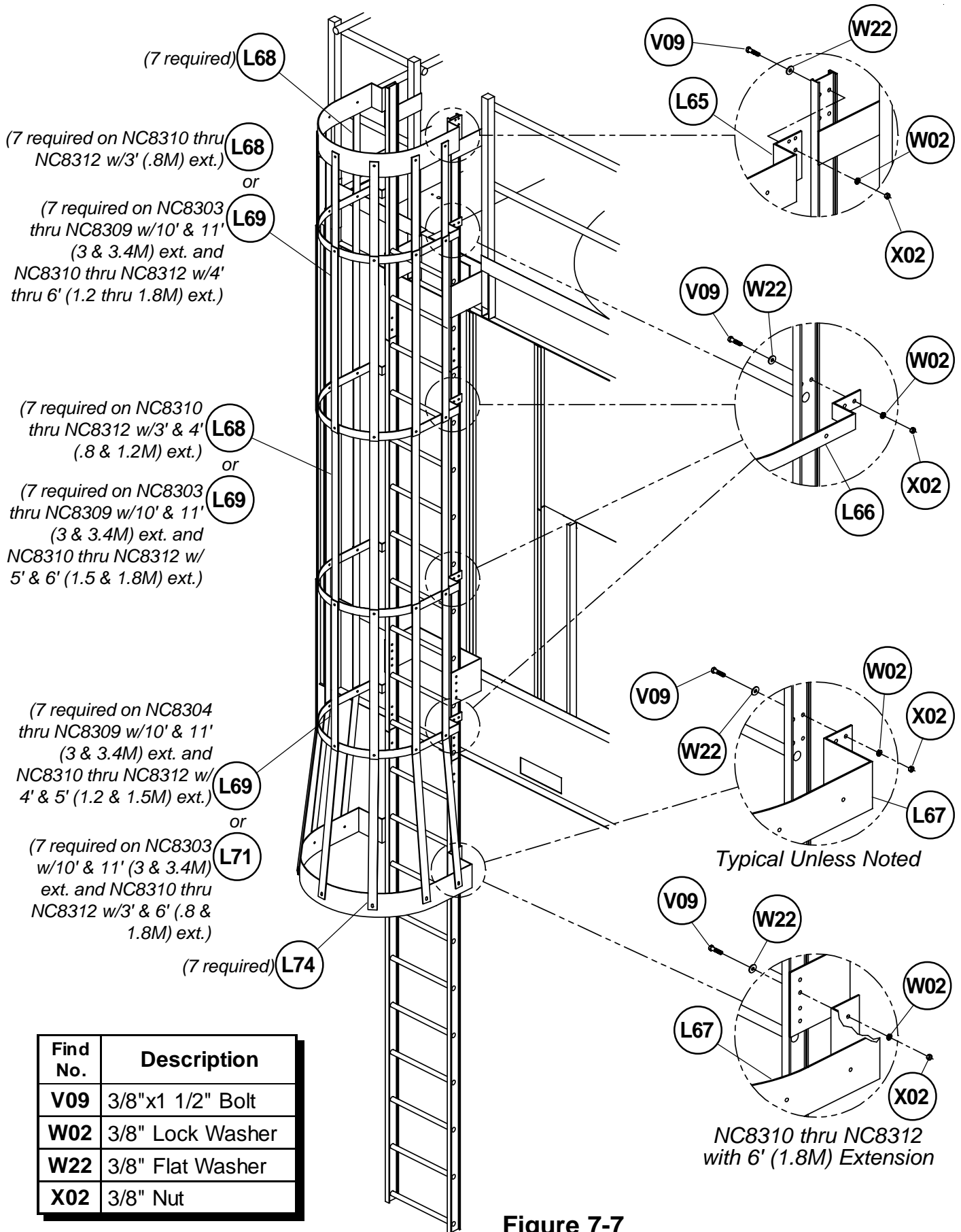
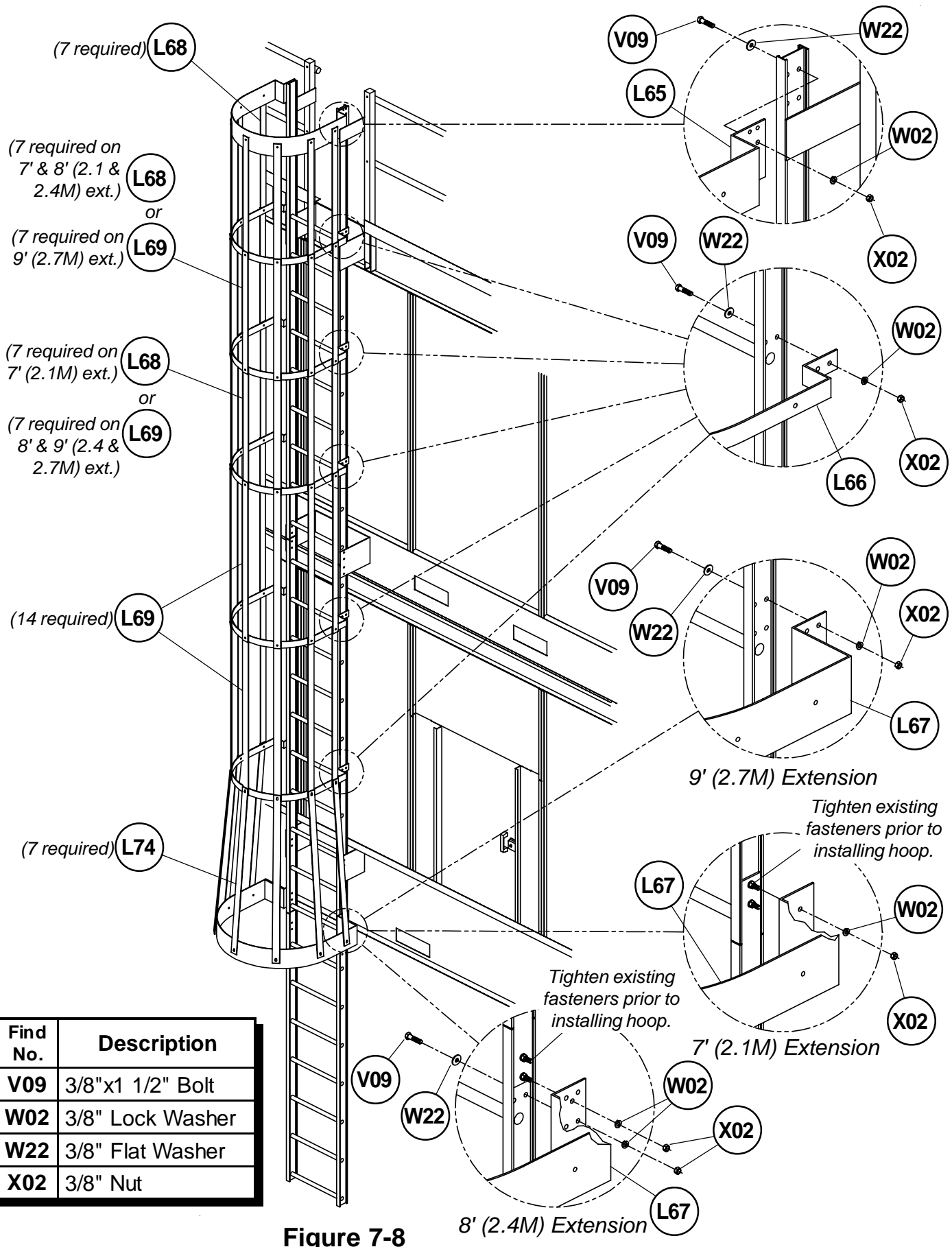


Figure 7-7



Find No.	Description
V09	3/8"x1 1/2" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Figure 7-8

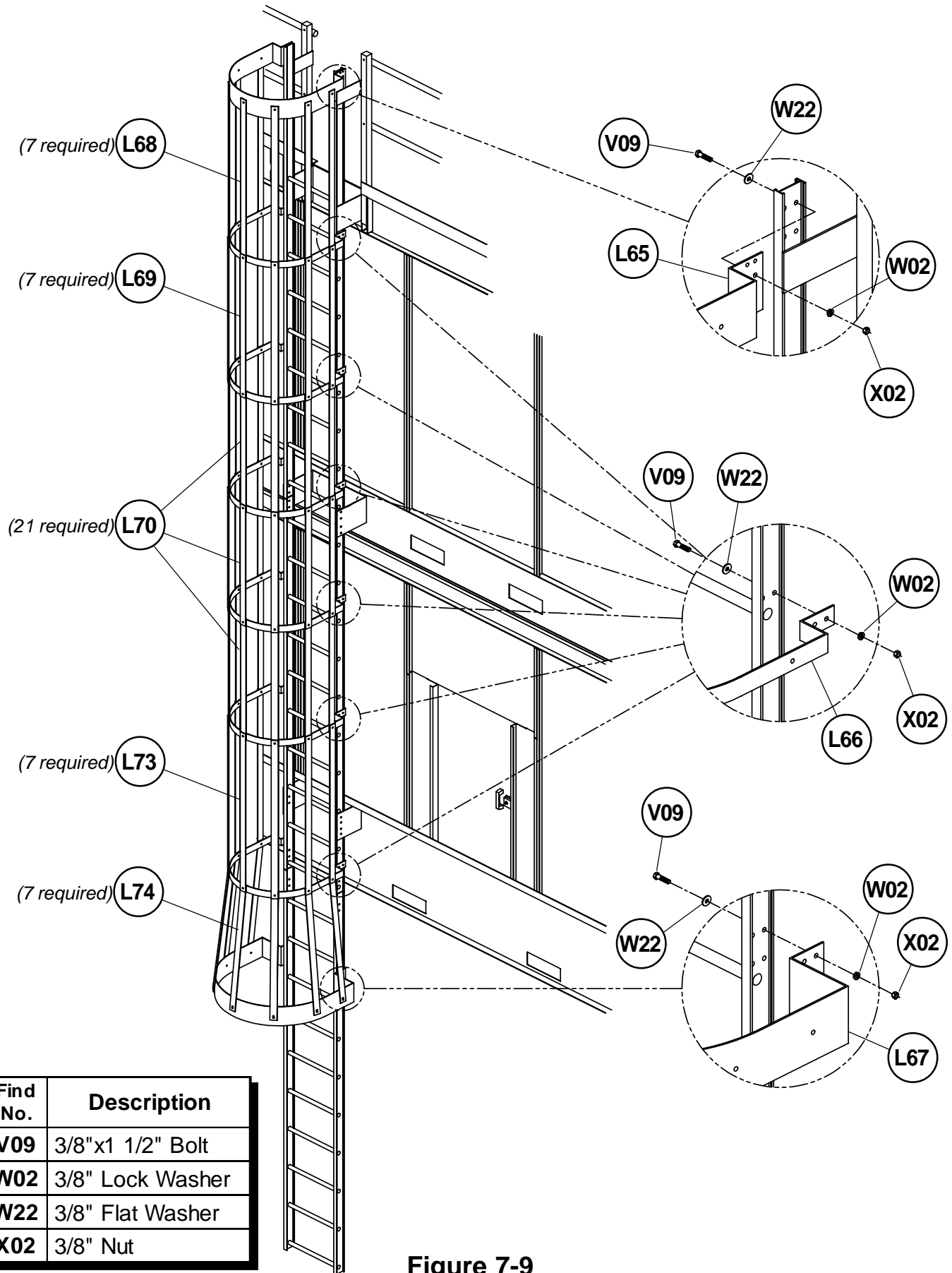


Figure 7-9

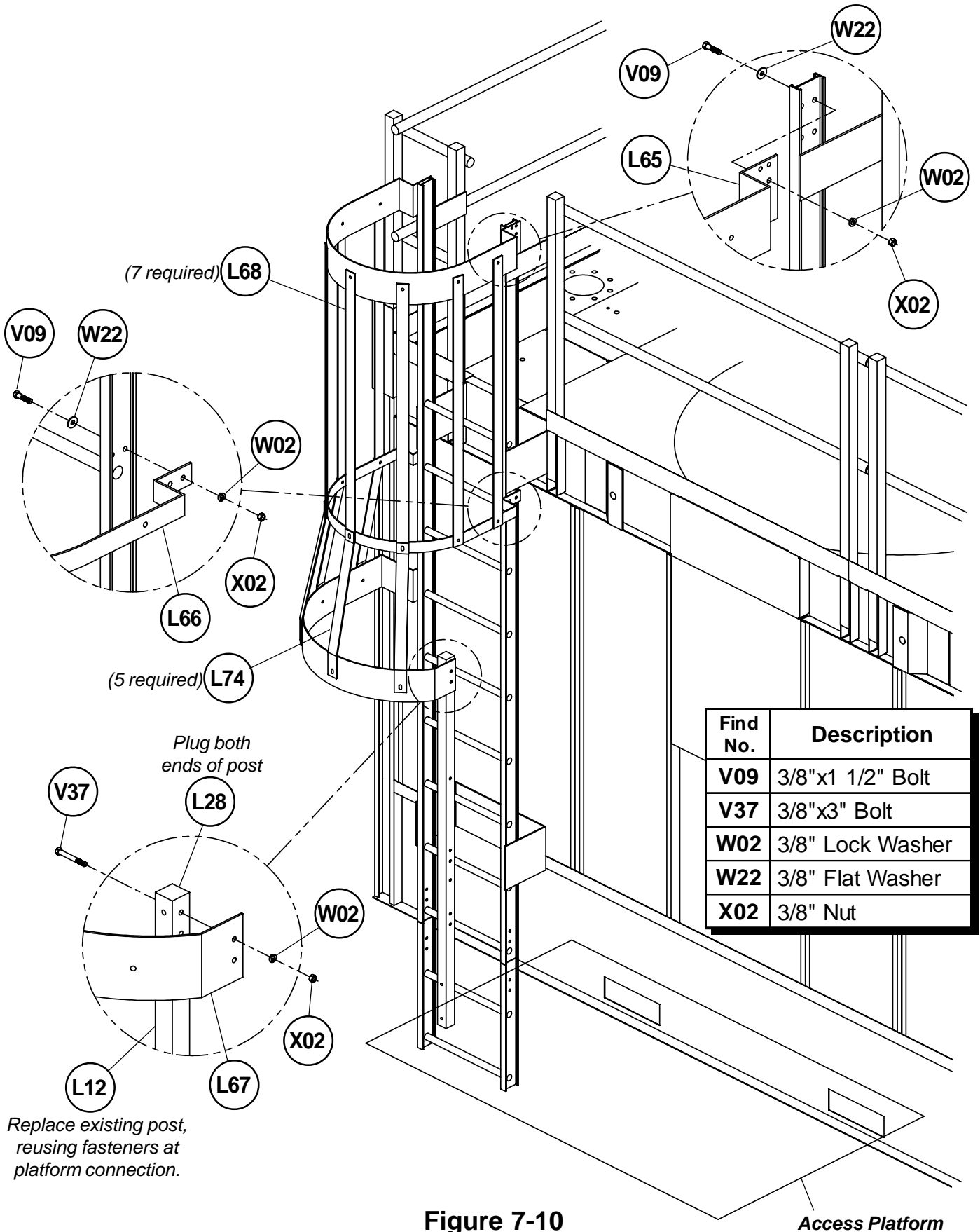
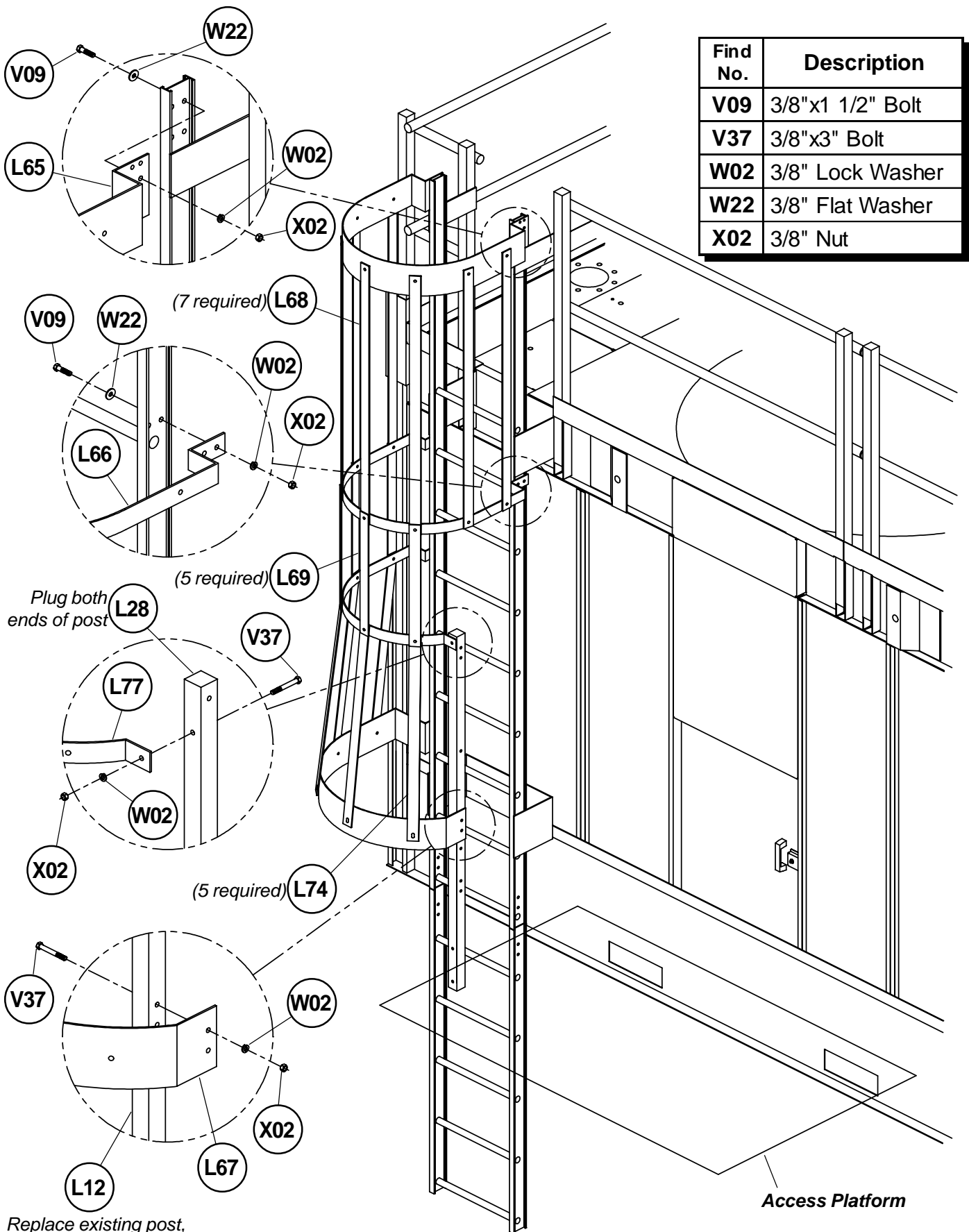


Figure 7-10



Replace existing post, reusing fasteners at platform connection.

Figure 7-11

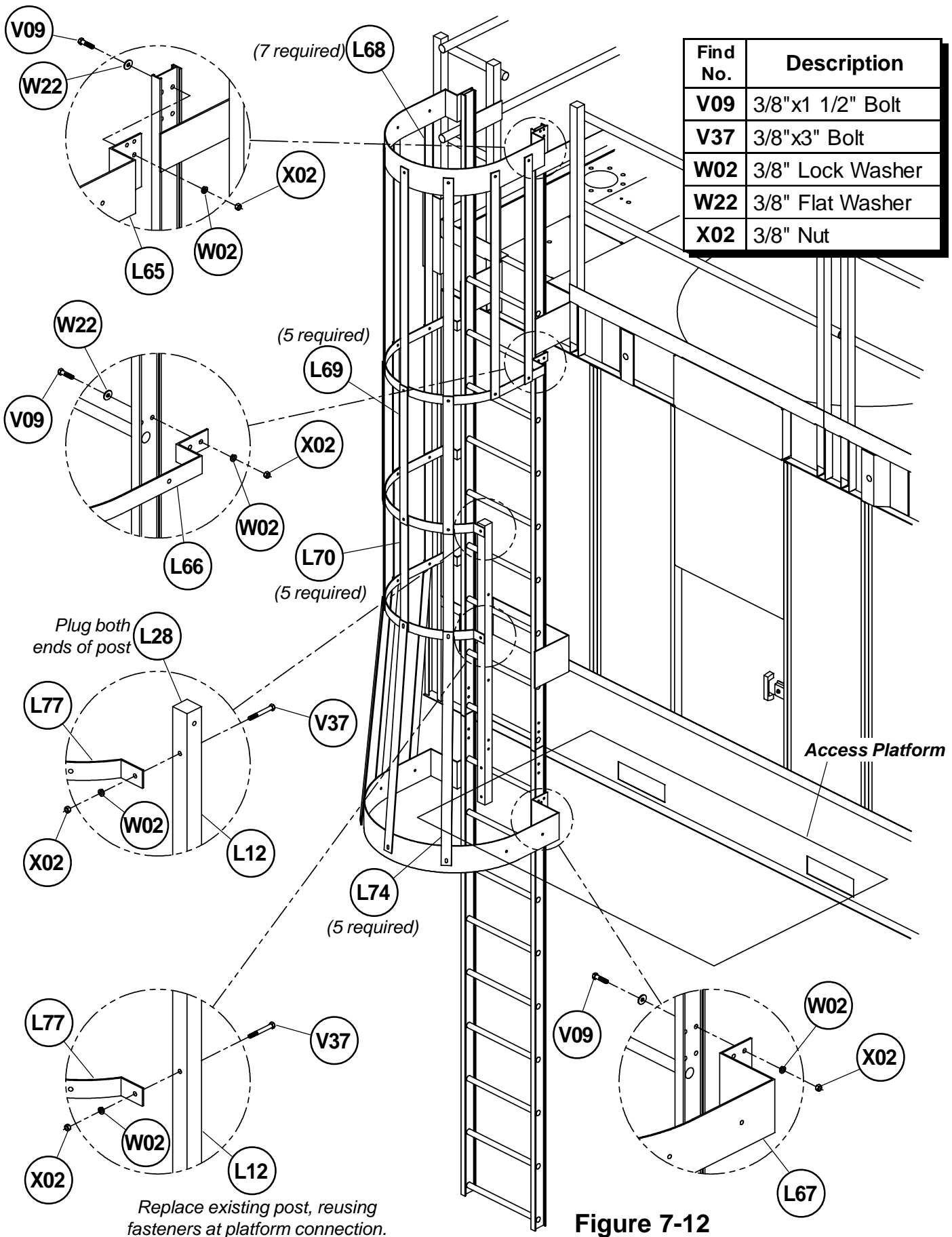
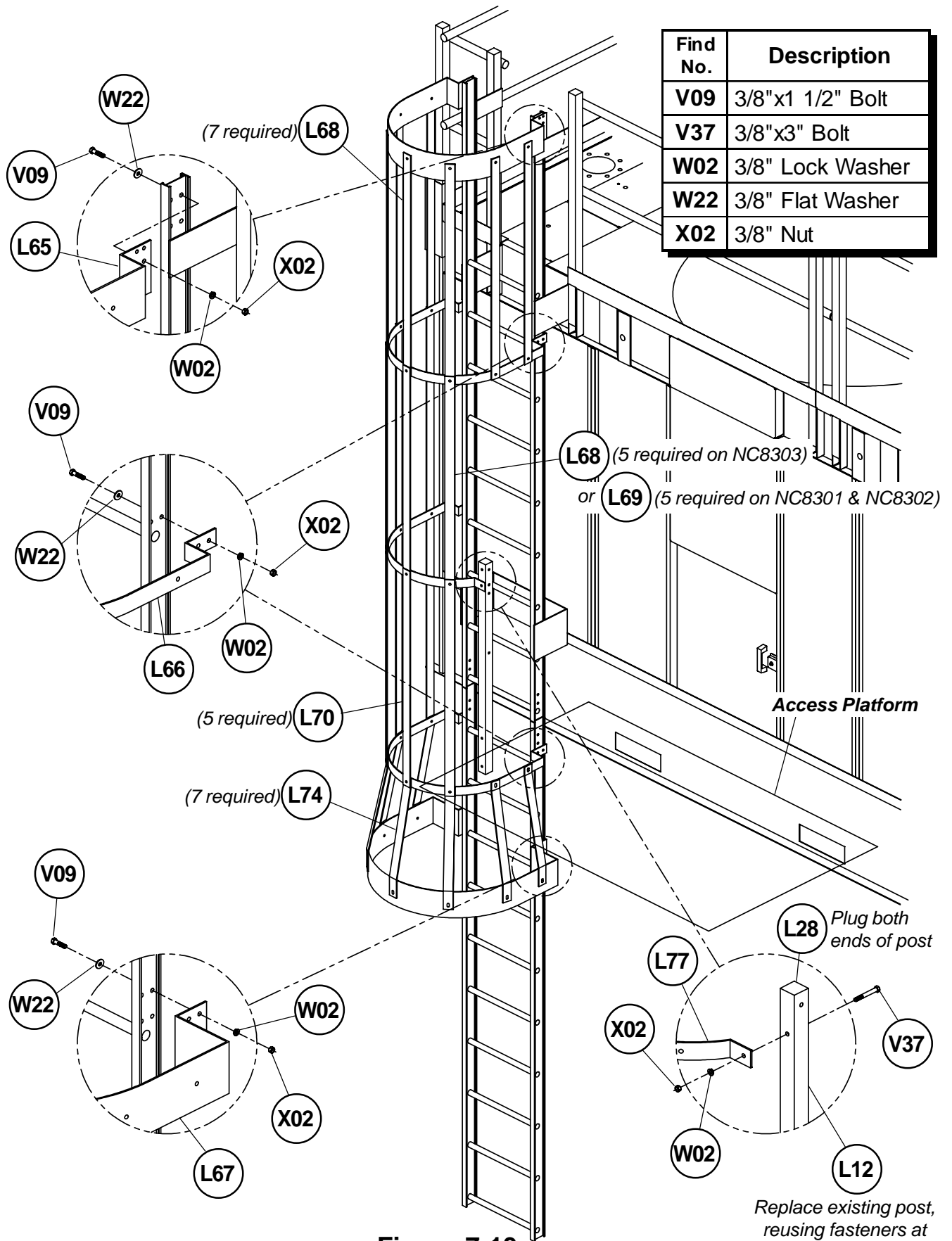


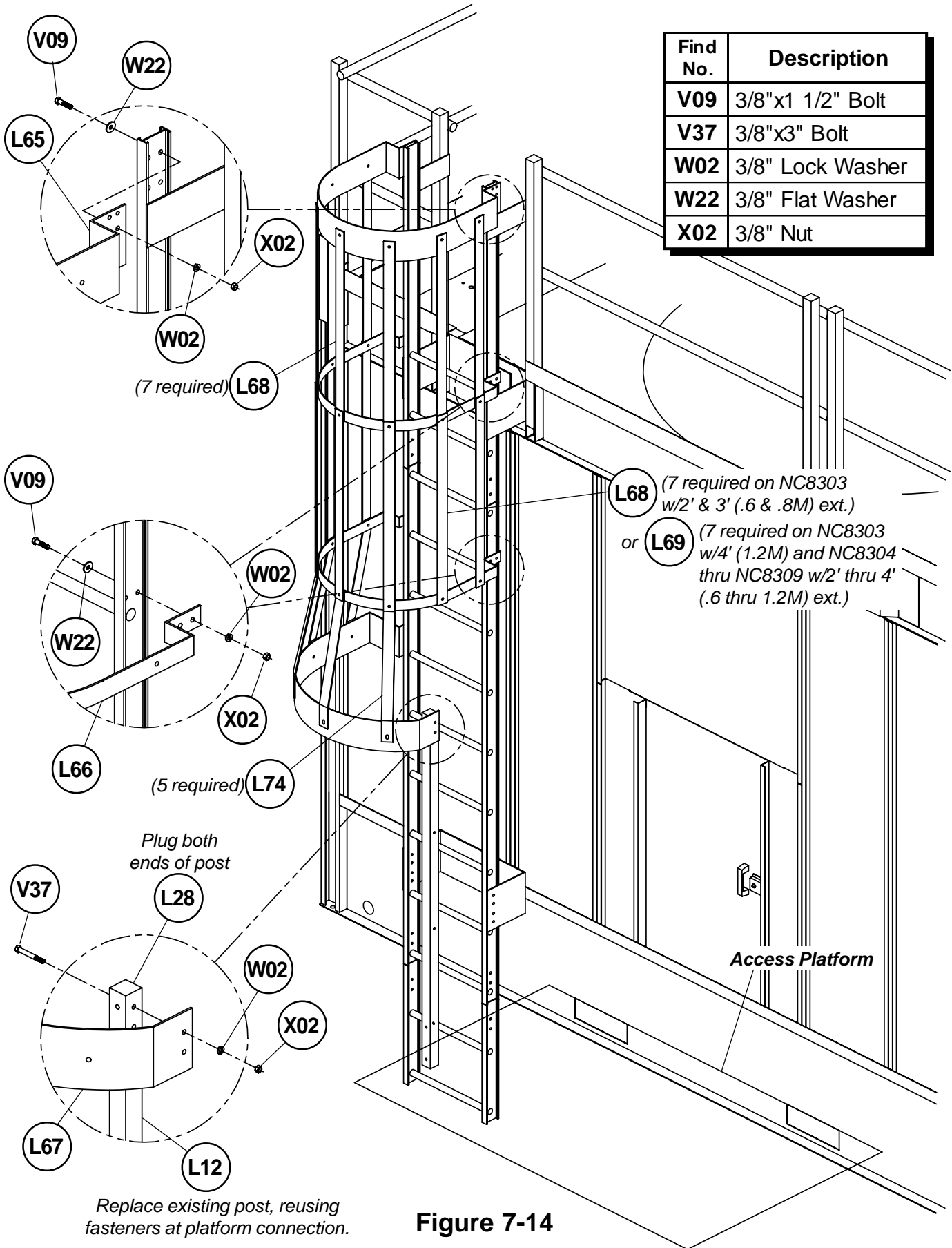
Figure 7-12



Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Figure 7-13

Replace existing post, reusing fasteners at platform connection.



Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

(7 required)

(7 required on NC8303 w/2' & 3' (.6 & .8M) ext.)

or (7 required on NC8303 w/4' (1.2M) and NC8304 thru NC8309 w/2' thru 4' (.6 thru 1.2M) ext.)

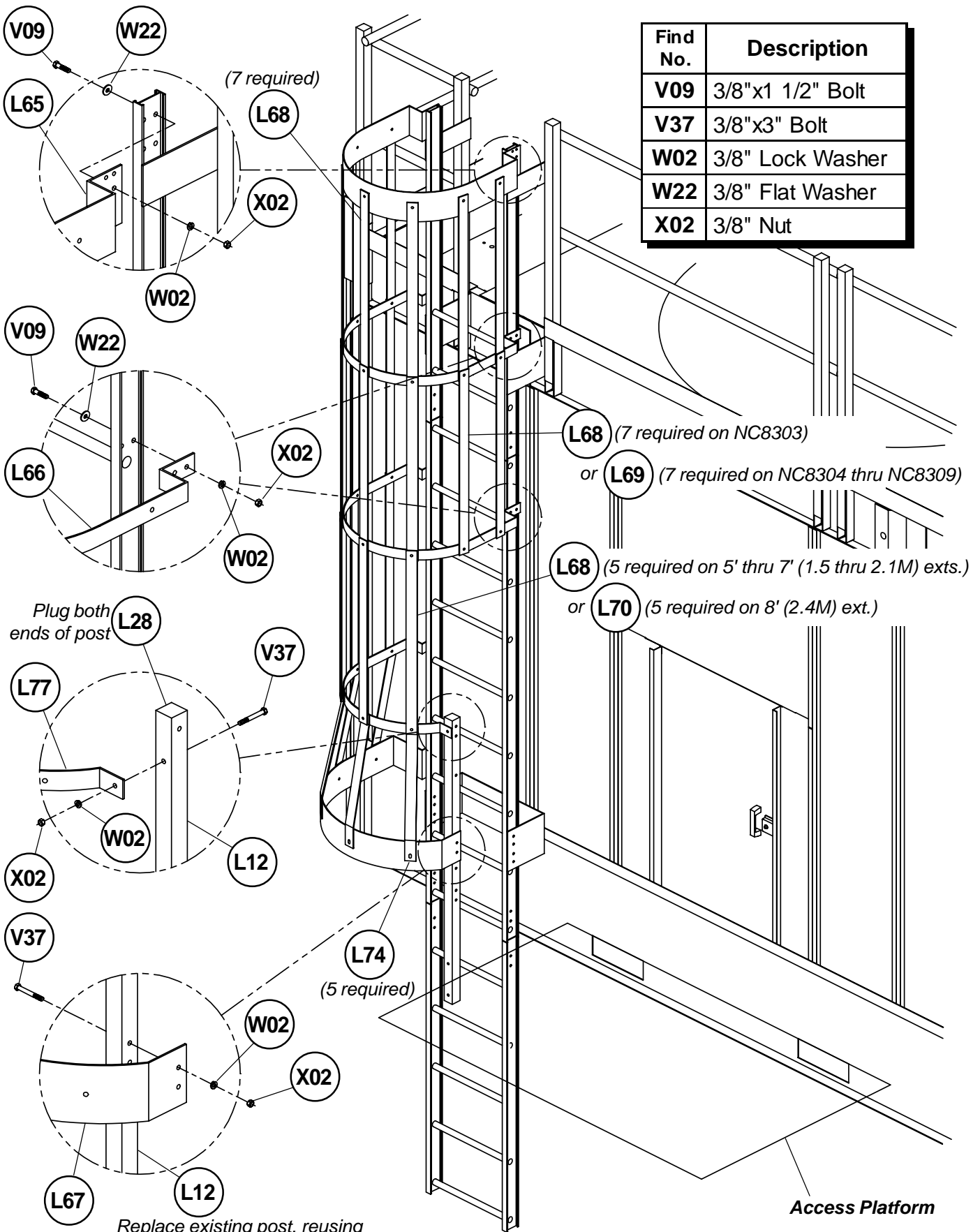
(5 required)

Plug both ends of post

Replace existing post, reusing fasteners at platform connection.

Access Platform

Figure 7-14



Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Plug both ends of post

Replace existing post, reusing fasteners at platform connection.

Access Platform

Figure 7-15

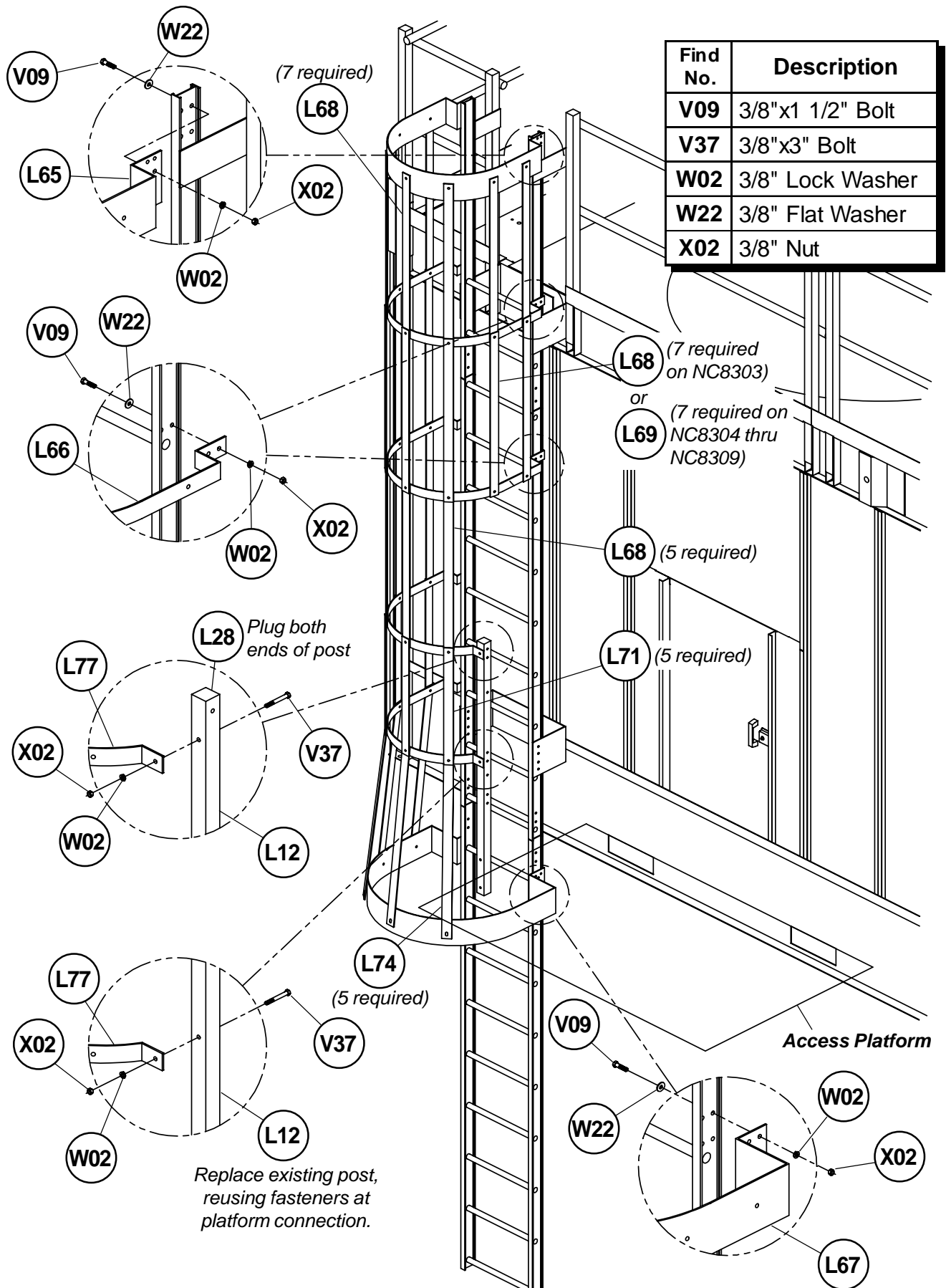


Figure 7-16

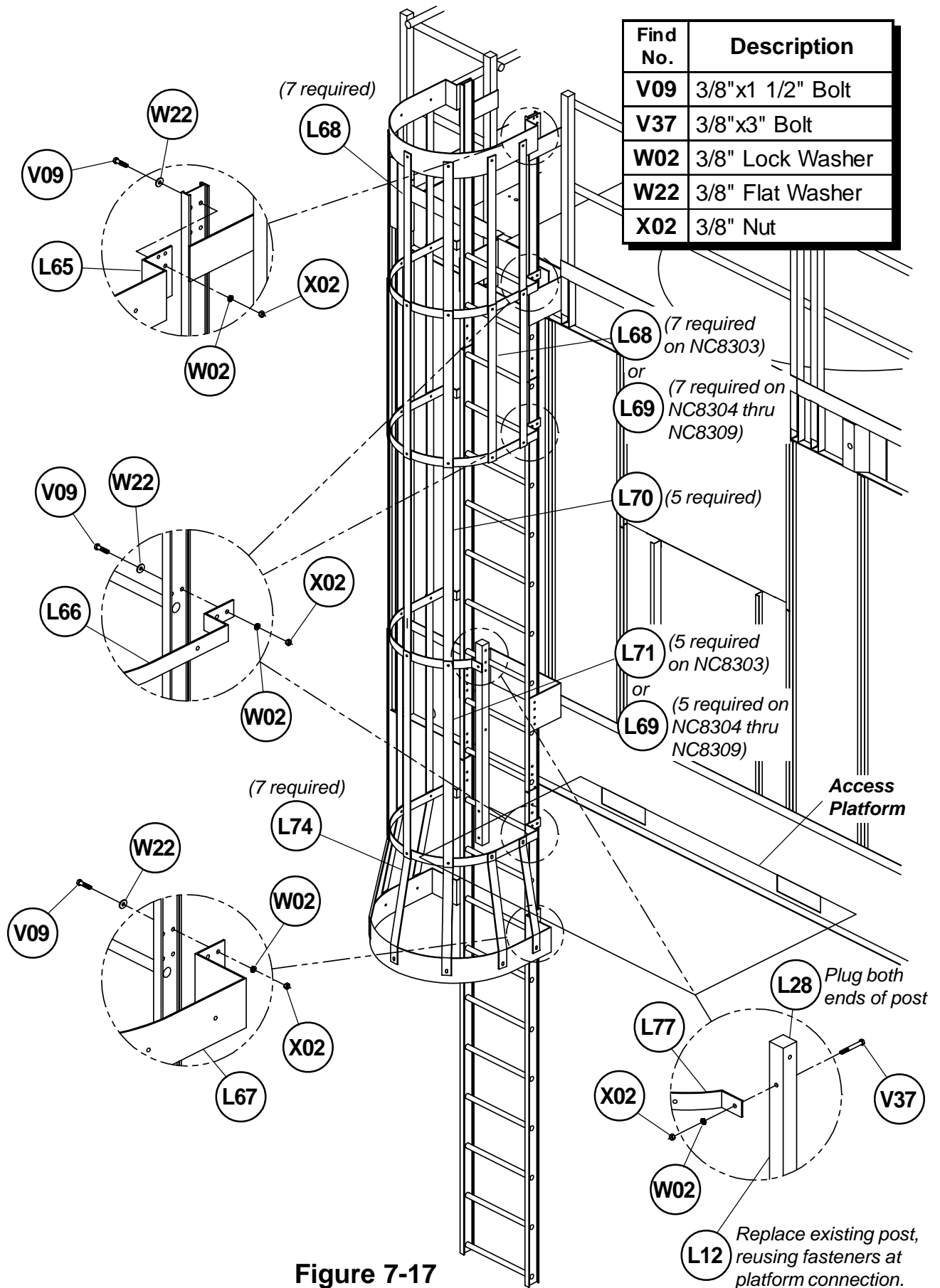


Figure 7-17

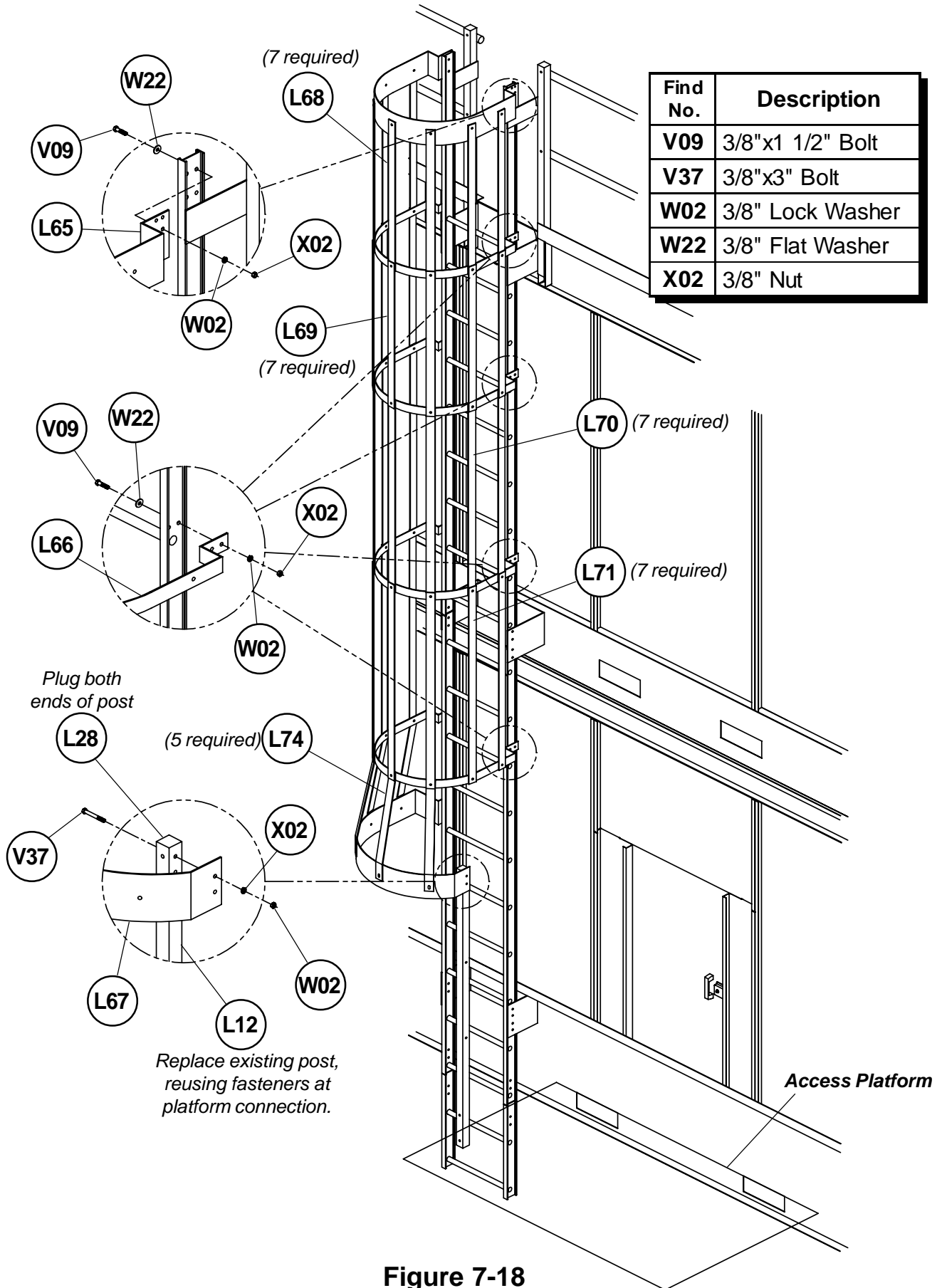


Figure 7-18

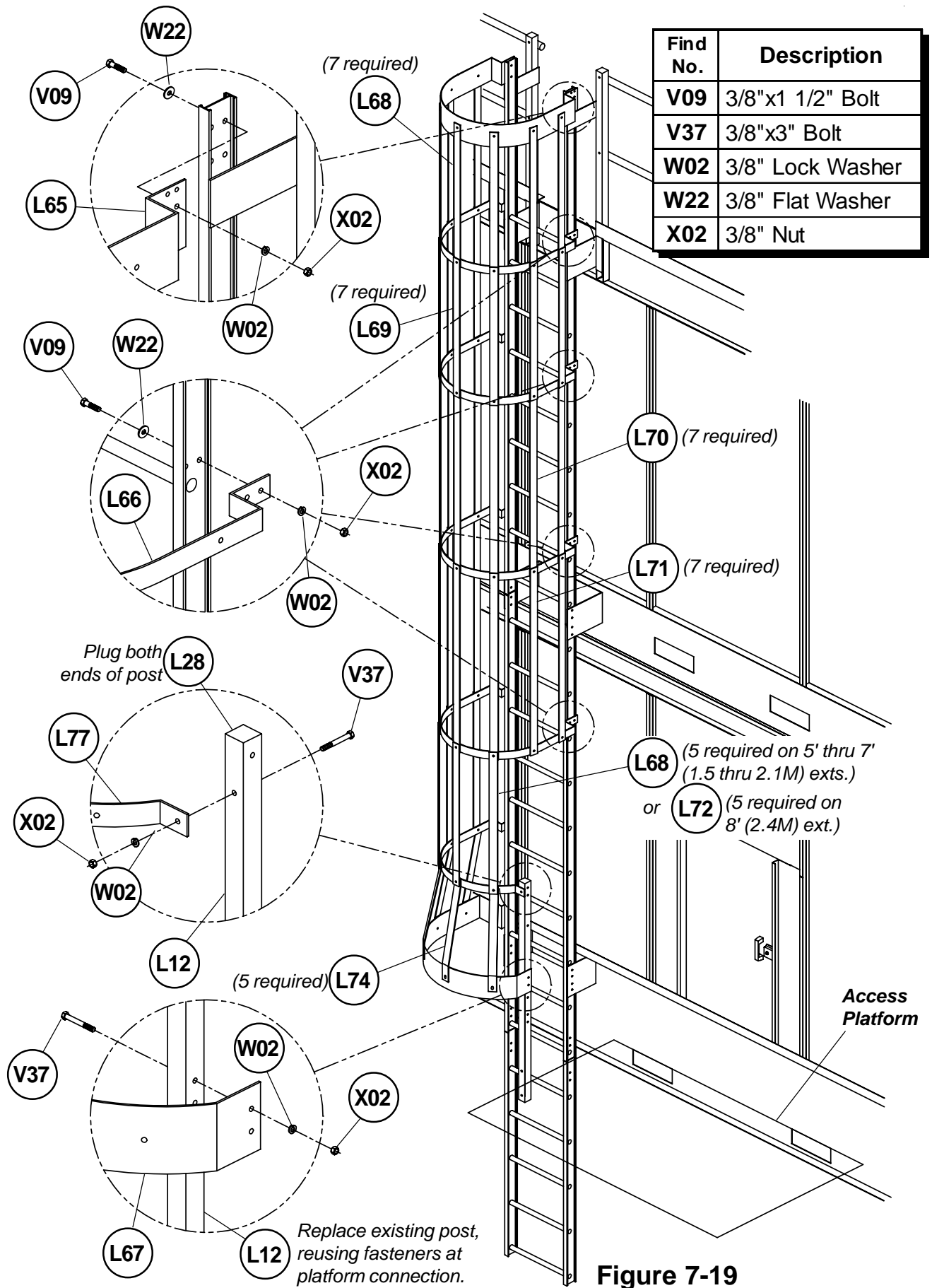
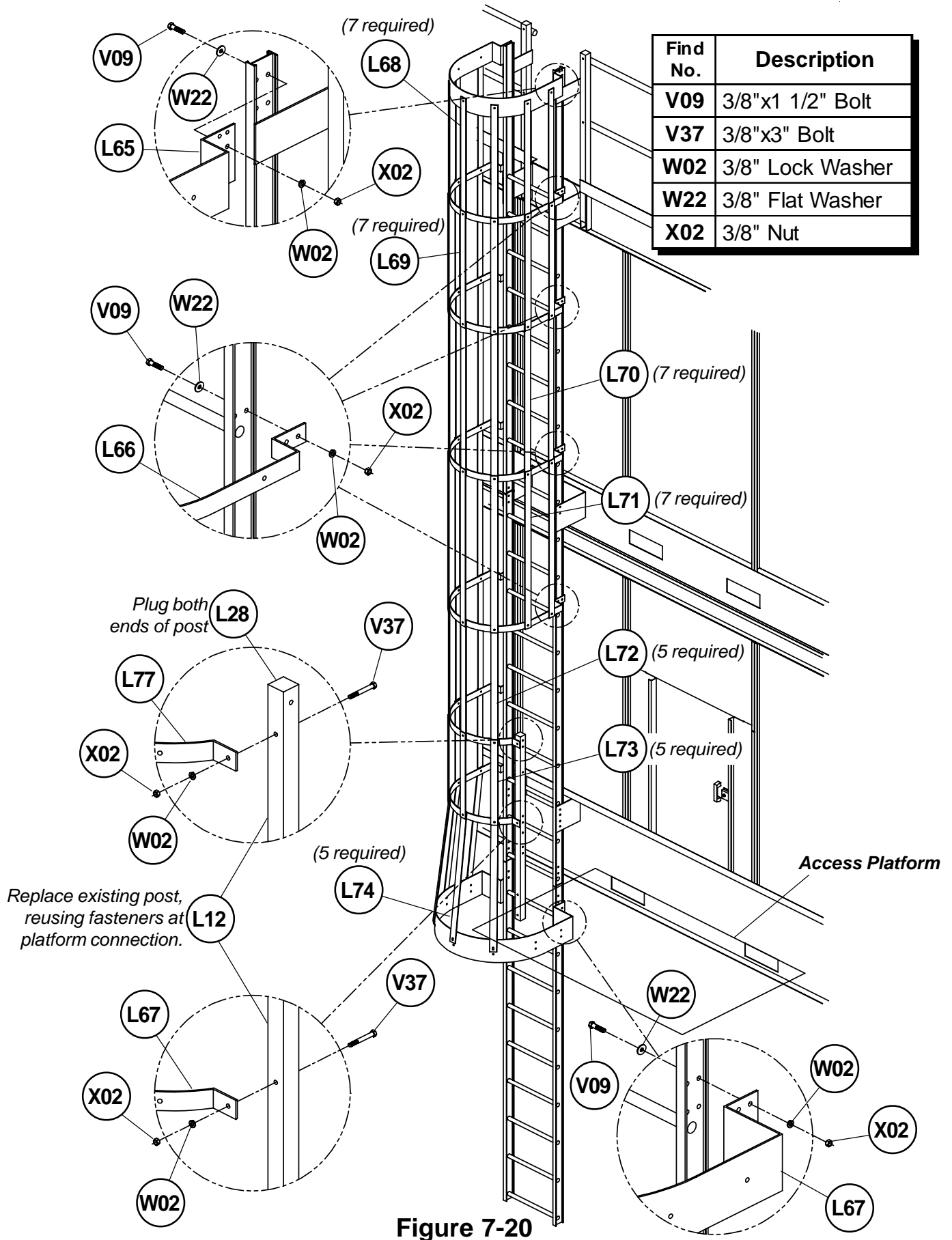


Figure 7-19



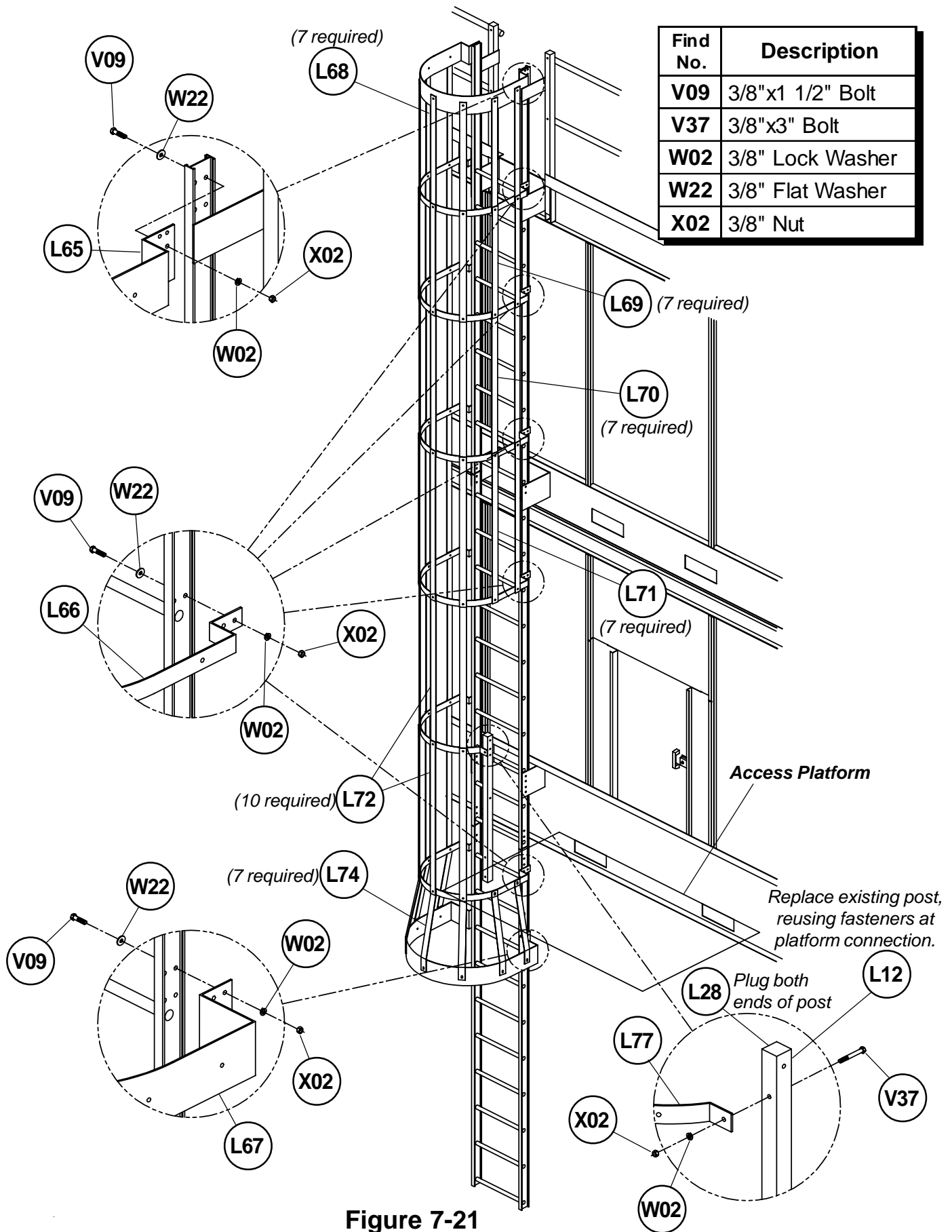


Figure 7-21

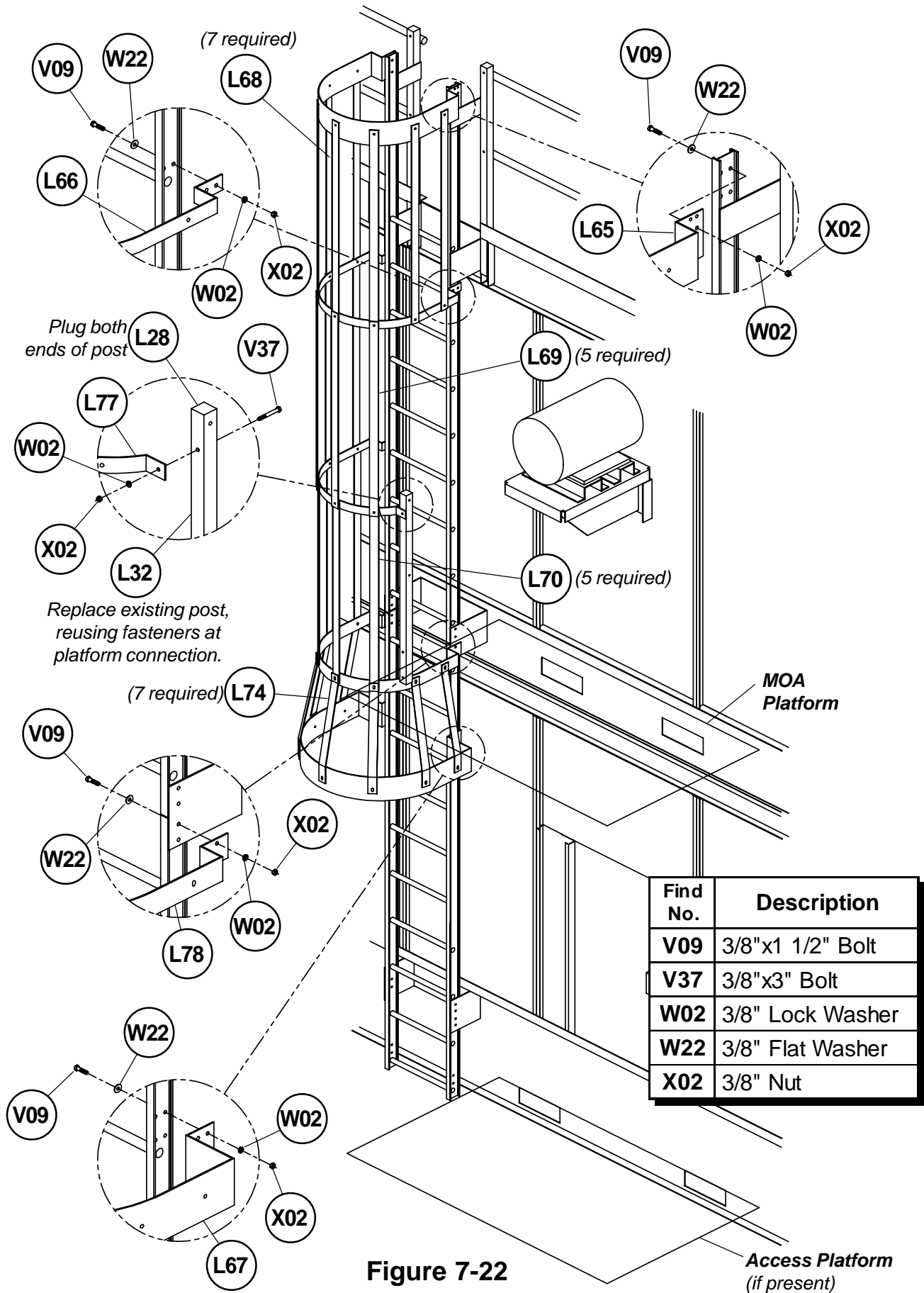
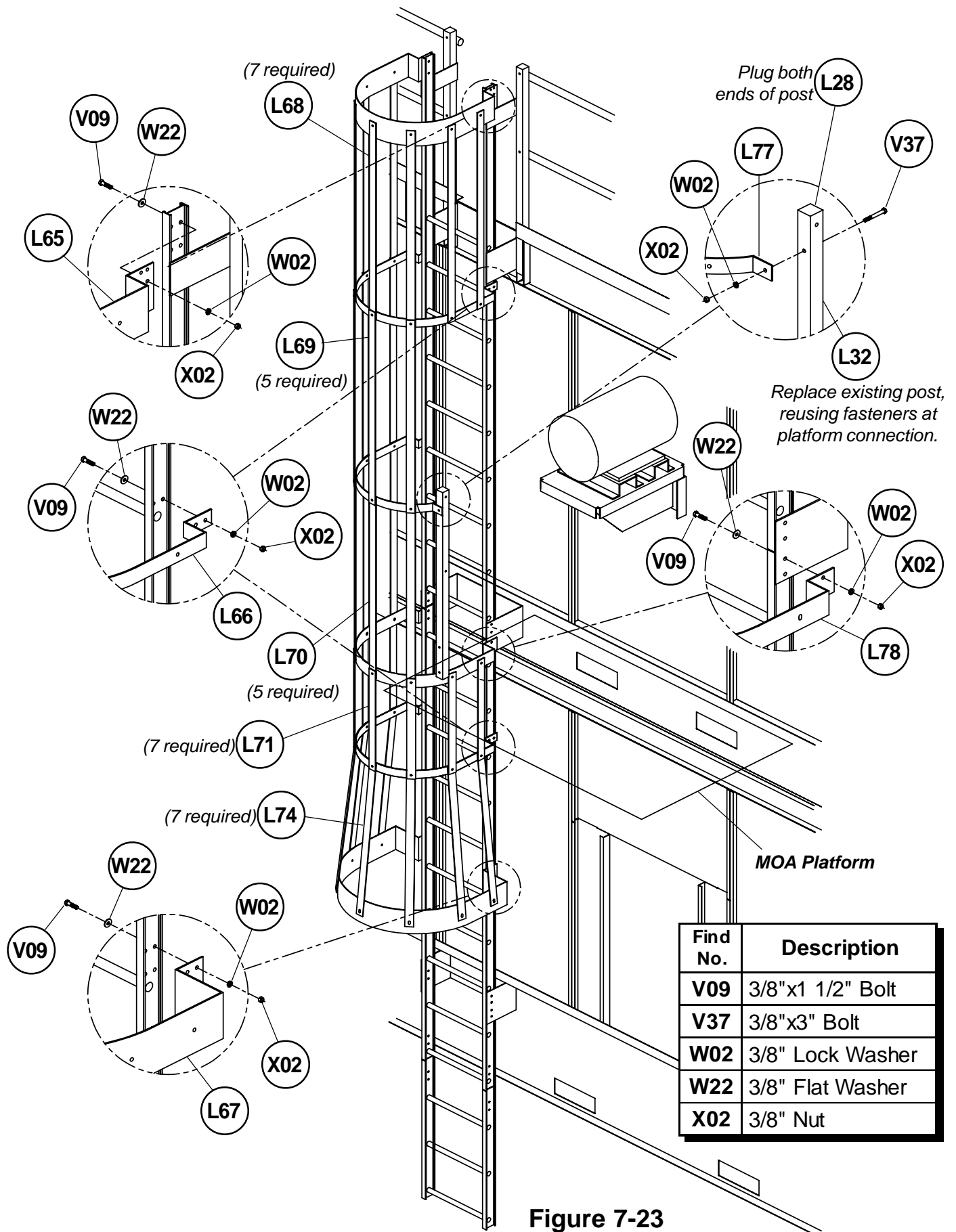
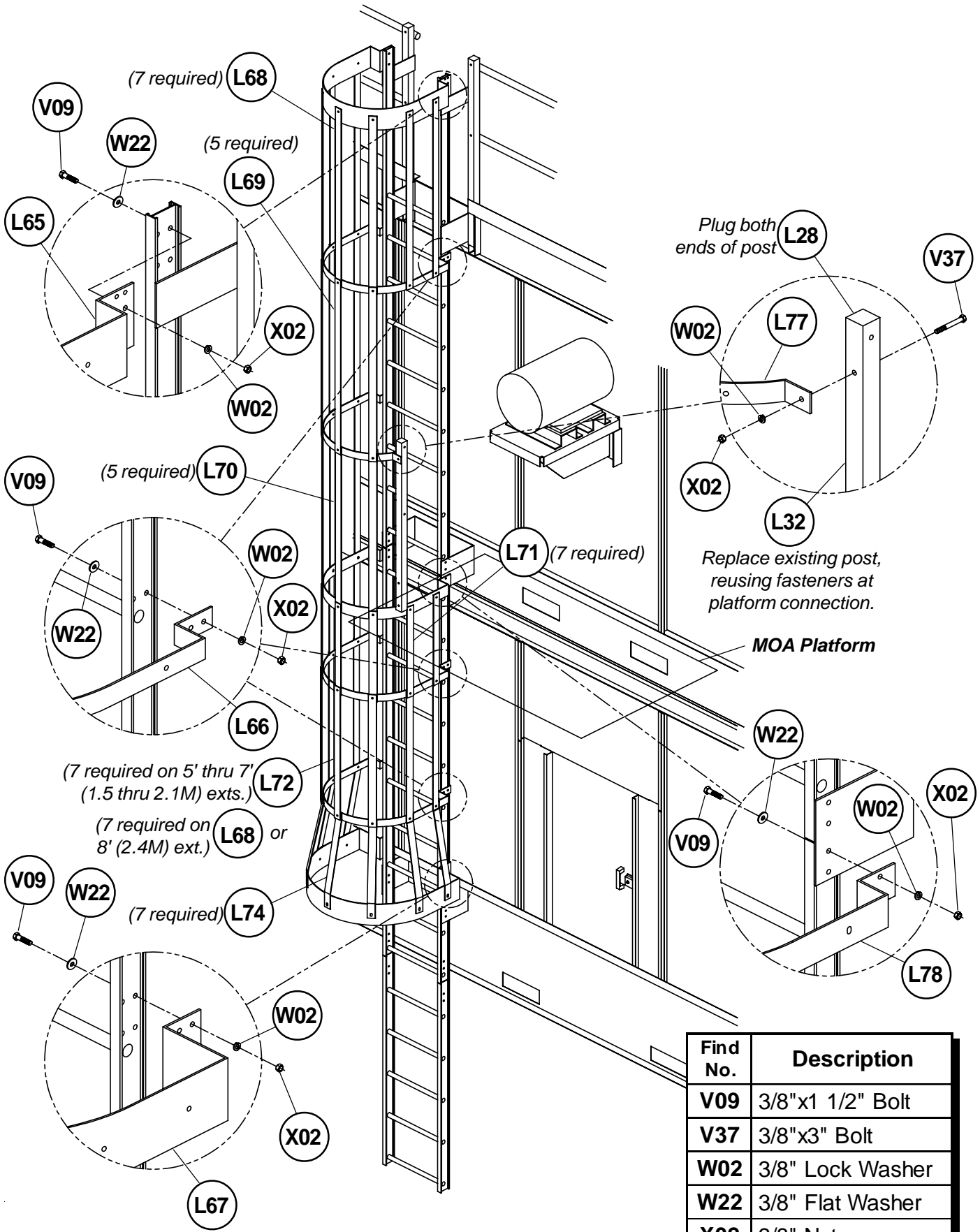


Figure 7-22



Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Figure 7-23



Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Figure 7-24

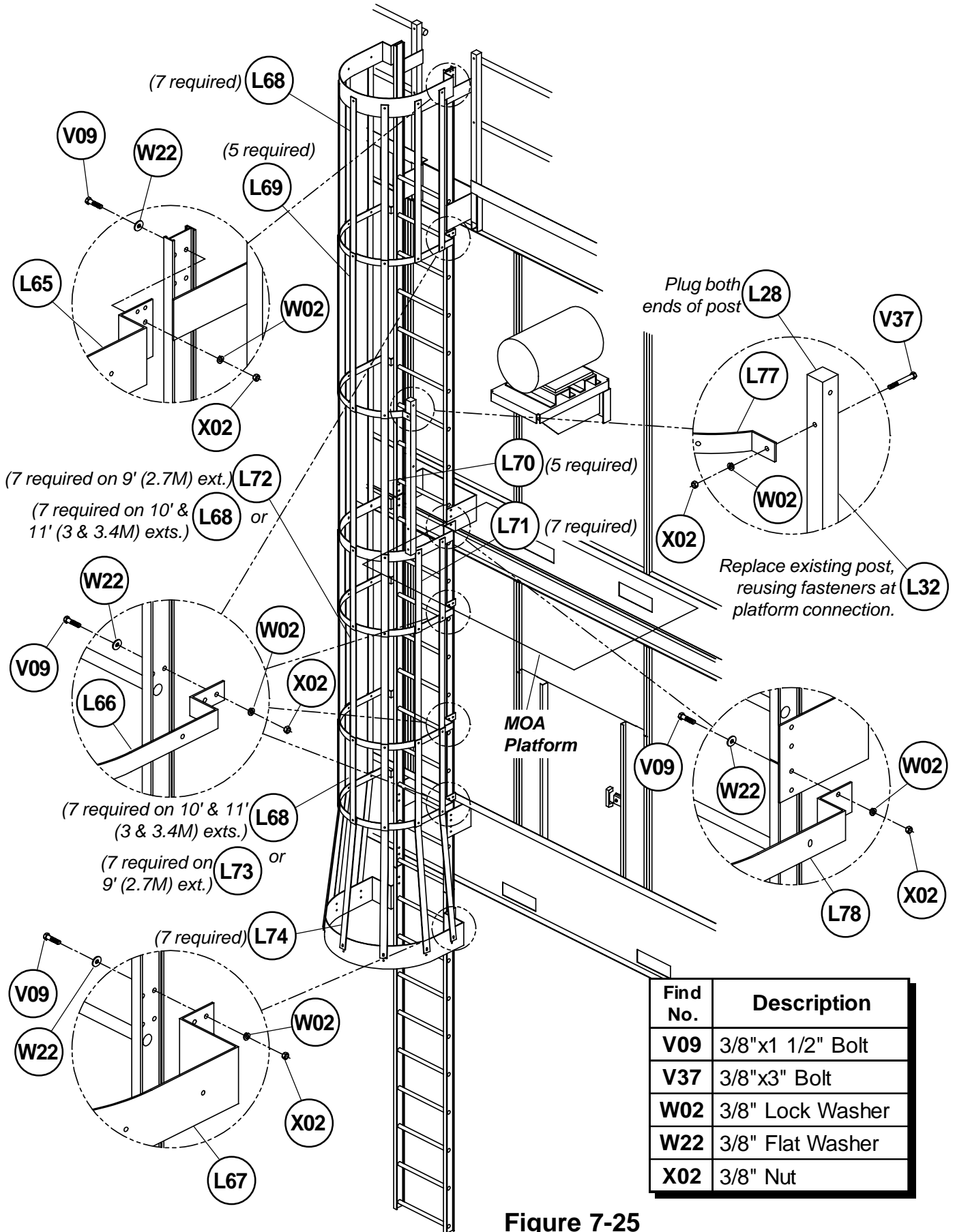
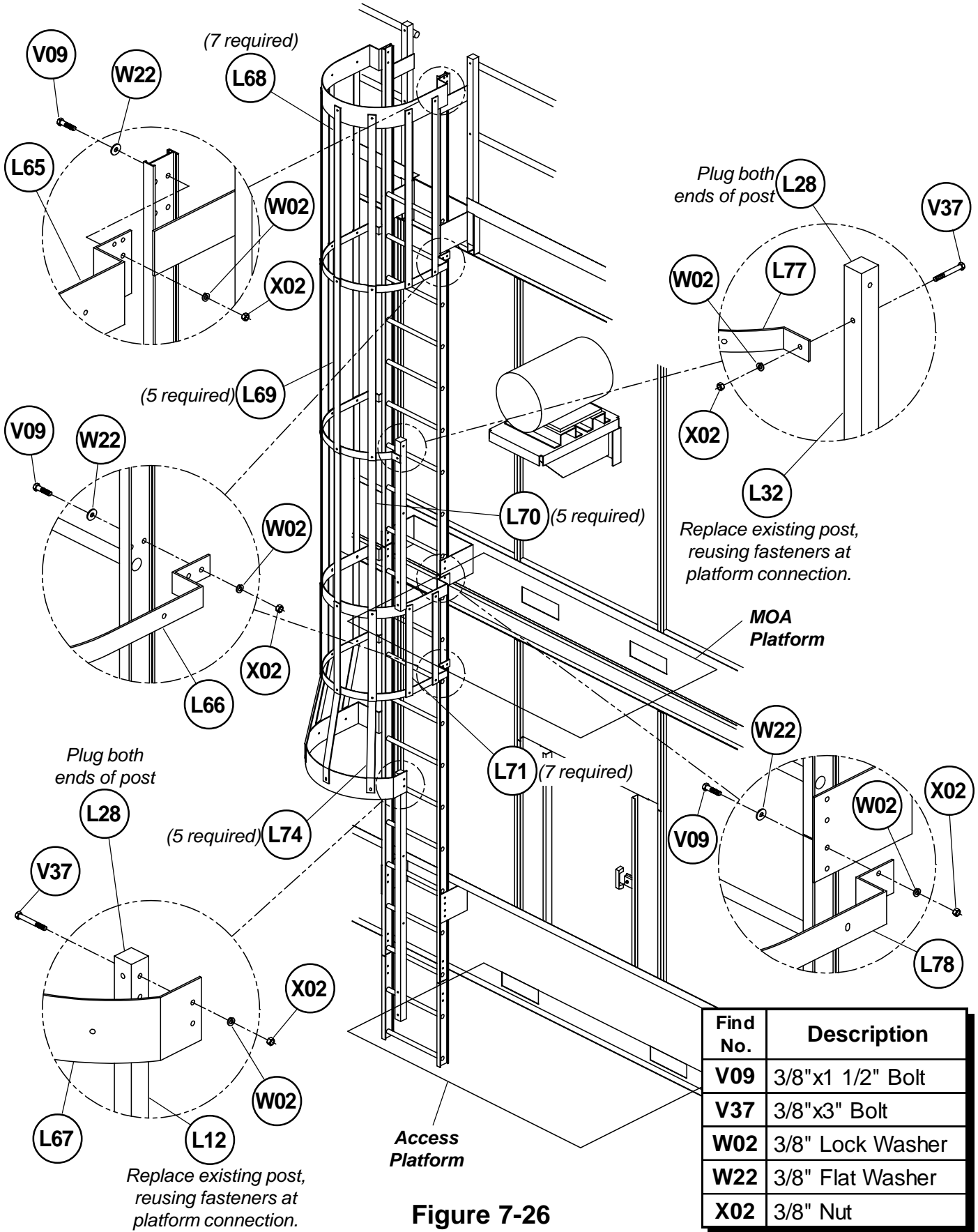
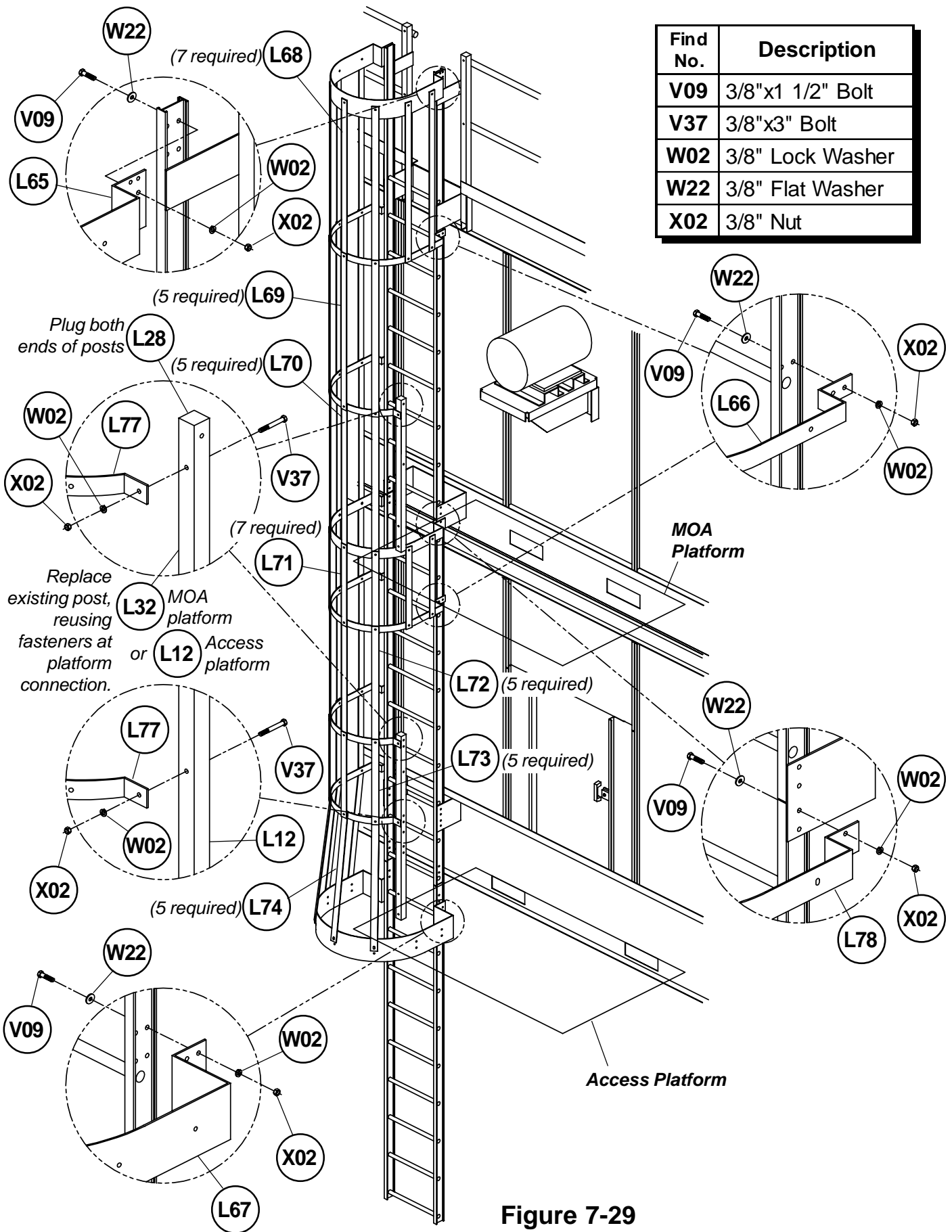


Figure 7-25



Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Figure 7-26



Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

Plug both ends of posts

Replace existing post, reusing fasteners at platform connection.

MOA Platform

Access Platform

Figure 7-29

Find No.	Description
V09	3/8"x1 1/2" Bolt
V37	3/8"x3" Bolt
W02	3/8" Lock Washer
W22	3/8" Flat Washer
X02	3/8" Nut

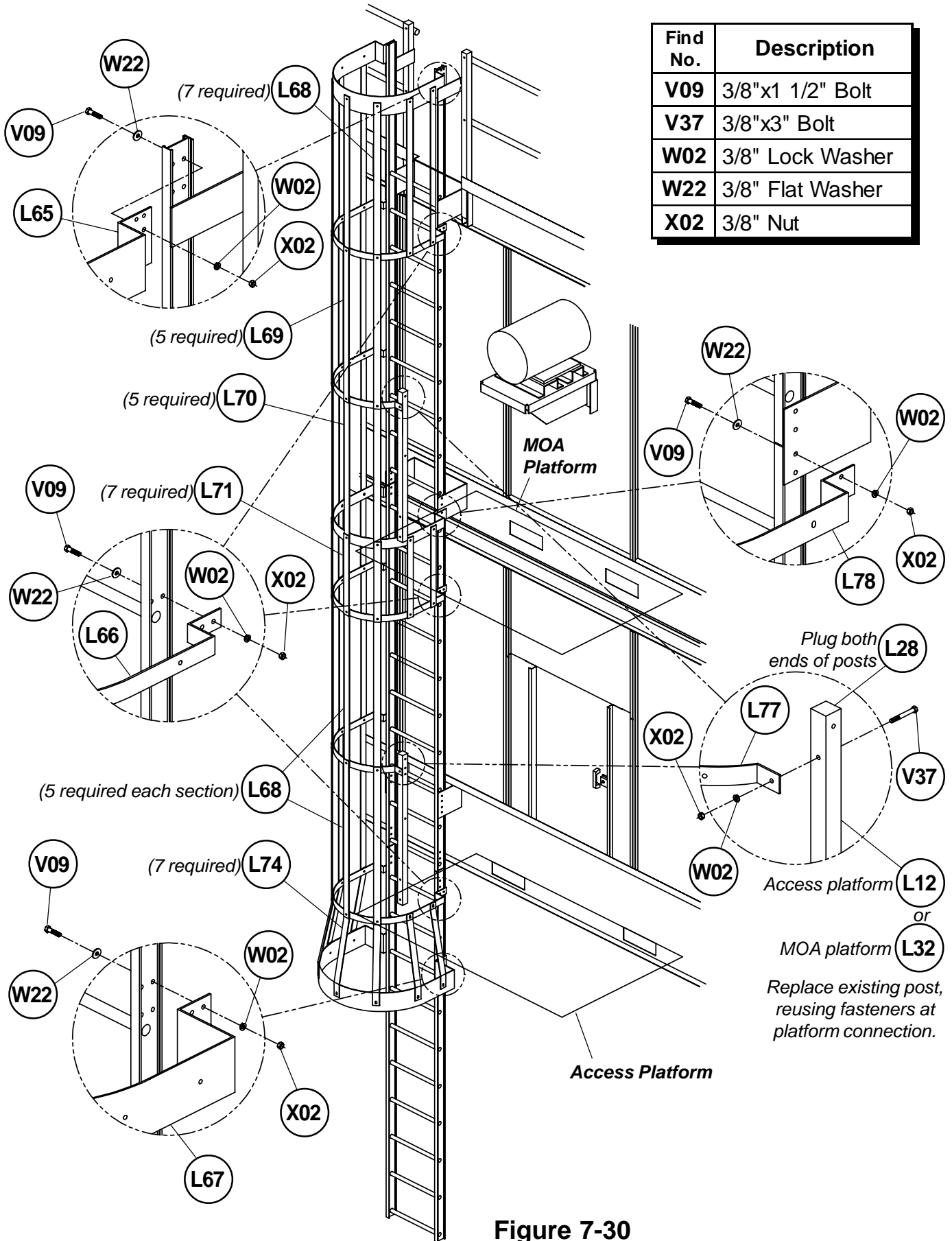
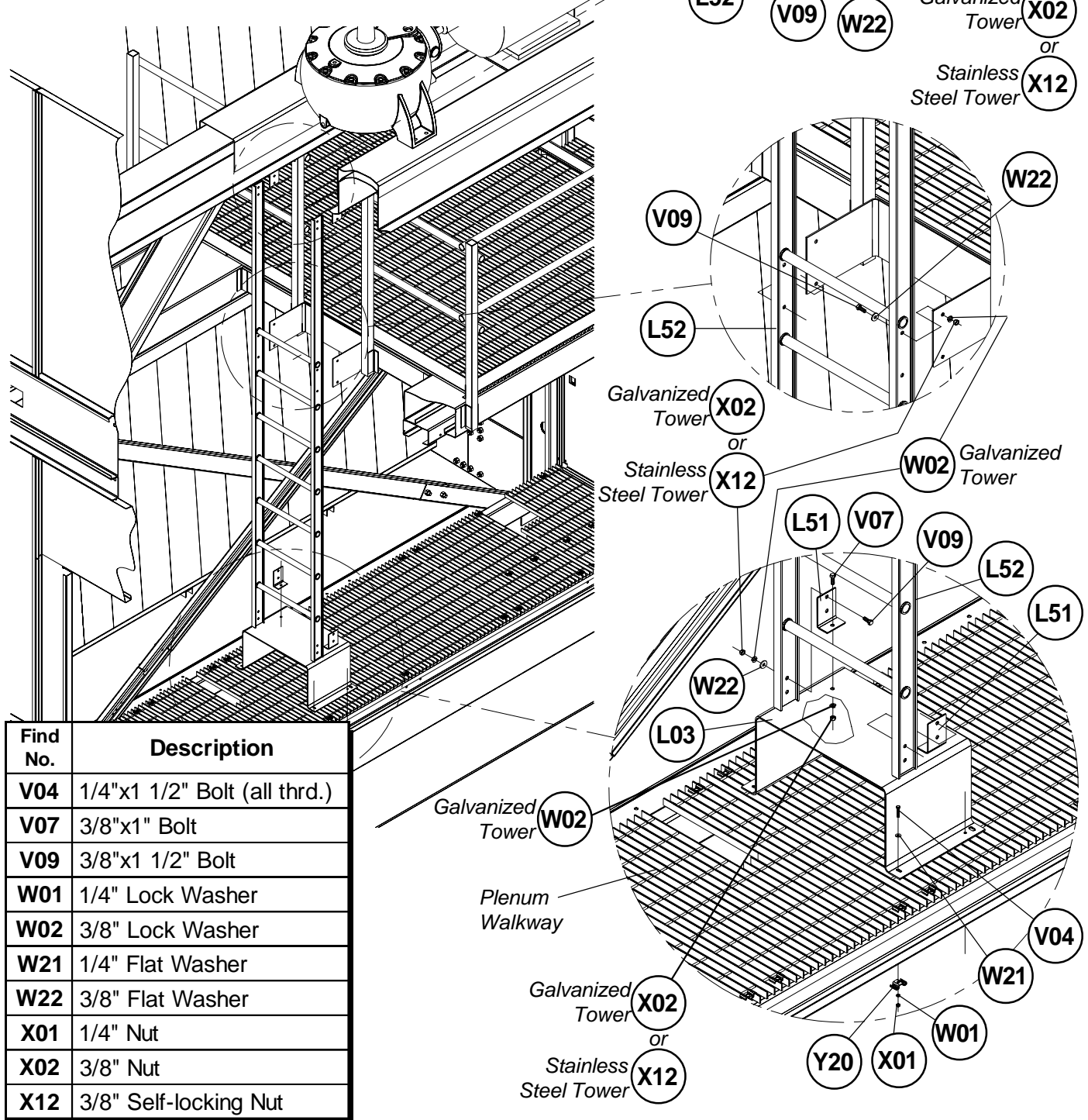


Figure 7-30

INTERIOR MECHANICAL ACCESS PLATFORM FIELD INSTALL

Shop Assembled Towers equipped with an Interior Mechanical Access Platform and the Series 3000 Geareducer must have the ladder field installed.

Begin installation by attaching clips **L51** to ladder base **L03**. Attach ladder **L52** to clips **L51** and brackets already installed on the platform and beams in the top module as shown. Secure base **L03** to the Plenum Walkway with clips **Y20**.



Find No.	Description
V04	1/4"x1 1/2" Bolt (all thrd.)
V07	3/8"x1" Bolt
V09	3/8"x1 1/2" Bolt
W01	1/4" Lock Washer
W02	3/8" Lock Washer
W21	1/4" Flat Washer
W22	3/8" Flat Washer
X01	1/4" Nut
X02	3/8" Nut
X12	3/8" Self-locking Nut

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Find Number Index

K

K07 5-2, 5-4

L

L01 5-1, 5-3

L02 5-1, 5-3

L03 5-1, 5-3, 6-1, 8-1

L04 5-1, 5-3, 6-1

L05 5-1, 5-3, 6-1

L06 5-2, 5-4, 6-2

L07 5-1

L08 5-2, 5-4

L09 5-2, 5-4, 6-2

L10 5-2, 5-4

L11 5-2, 5-4, 6-2

L12 5-6, 6-4, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-21, 7-26, 7-27, 7-28, 7-29, 7-30

L13 1-2, 7-28

L14 4-2, 5-6, 6-4

L15 5-6, 6-4

L16 5-6, 6-4

L17 5-5, 6-3

L18 4-1, 4-2, 5-6, 6-4

L19 5-6, 6-4

L25 4-2, 5-6, 6-4

L27 5-5

L28 5-6, 6-4, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L32 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L51 8-1

L52 8-1

L53 5-1, 5-3

L54 5-1, 5-3

L55 4-2

L58 6-3

L60 4-2

L61 4-1

L63 4-2

L64 4-2

L65 7-1, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 7-9, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L66 7-1, 7-4, 7-5, 7-6, 7-7, 7-8, 7-9, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L67 7-1, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 7-9, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L68 7-1, 7-2, 7-4, 7-5, 7-6, 7-7, 7-8, 7-9, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L69 7-2, 7-5, 7-6, 7-7, 7-8, 7-9, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L70 7-2, 7-6, 7-9, 7-12, 7-13, 7-15, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L71 7-2, 7-7, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L72 7-2, 7-19, 7-20, 7-21, 7-24, 7-25, 7-27, 7-28, 7-29

L73 7-2, 7-9, 7-20, 7-25, 7-29

L74 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 7-9, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-17, 7-18, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L75 1-1

L77 7-1, 7-11, 7-12, 7-13, 7-15, 7-16, 7-17, 7-19, 7-20, 7-21, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

L78 7-1, 7-22, 7-23, 7-24, 7-25, 7-26, 7-27, 7-28, 7-29, 7-30

Y

Y20 5-5, 6-3, 8-1

Z

Z21 1-1, 4-1, 5-1, 6-1, 7-1