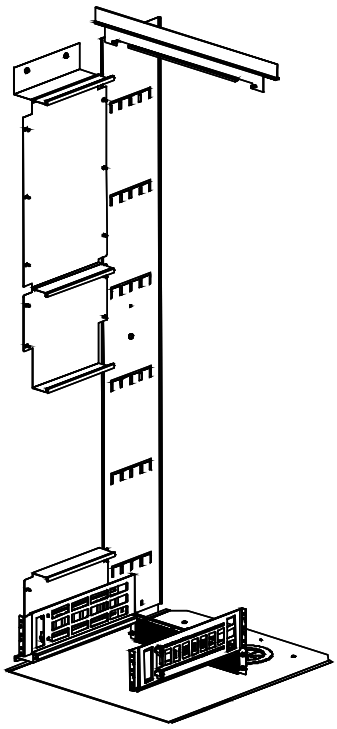
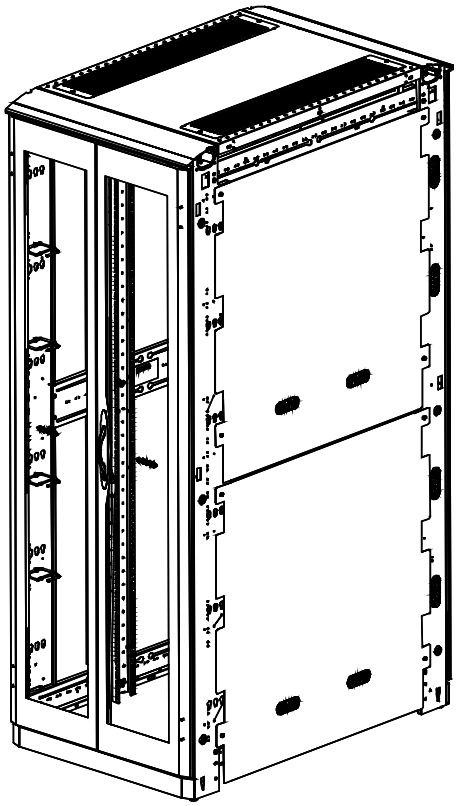
Installation Guide 7-Dec-12

Airflow Conversion Kits for Cisco Switches in Paramount PMT Series Enclosures



Cisco Switch Conversion Kit



Paramount Enclosure

Powering Business Worldwide

Table of Contents

About this Guide

This document describes how to install airflow conversion kits for Cisco switches housed within an Eaton Paramount enclosure.

The step by step installation procedure found within this document describes how to install an Eaton 6513 airflow conversion kit within an Eaton Paramount enclosure. Although a specific kit is cited in the procedure, the procedure is generic in that the same steps can be followed to install other Cisco switch airflow conversion kits in an Eaton Paramount enclosure.

NOTE: Several conversion kits are supported and the components found within each vary. As a result, some of the installation steps are not applicable to all conversion kits. The steps that do not apply to a specific kit type are clearly marked within the procedure and should be omitted-skipped by the installer when instructed to do so.

Intended Audience

This document is intended for personnel responsible for the installation of equipment and conversion kits within racks and rack enclosures in an IT data center environment.

Technical Support

If you encounter any problems with this installation, send an email and detailed description of the problem as well as contact information to Technical Support at dc.support@eaton.com.

Sales Representative and Contact Information

Contact your Eaton Sales representative using one of the methods below:

Phone	Call us toll free at 800.225.7348 (US Only) or 508.852.4300
Mail	Eaton 160 Gold Star Boulevard Worcester, MA 01606
Email	InfoESWorcesterMA@Eaton.com.
Web	Visit us at www.eaton.com/wrightline and click on "Contact Us." Simply complete and submit the form as directed on our website.

Before You Begin

Before installing a Cisco switch airflow conversion kit within an Eaton Paramount enclosure, it is recommended that you familiarize yourself with the components found within your conversion kit. For a schematic diagram and list of the components within each conversion kit, see page 14, Schematic Diagrams: Cisco Conversion Kits for Paramount Enclosures.

Tools Required

The following tools are required to install a Cisco switch airflow conversion kit in an Eaton Paramount enclosure:

- Ratchet, short extension, and 3/8" socket;
- #2 Phillips head screwdriver.

Related Documentation

The following document has additional information that may be helpful when installing Cisco airflow conversion kits within an Eaton Paramount enclosure:

- Paramount Enclosure Installation Guide

Introduction to Eaton Airflow Conversion Kits for Cisco Switches

This section provides an overview of the various airflow conversion kits Eaton manufactures to support the operation of Cisco switches within a Paramount enclosure.

In regards to providing nominal operational temperature control, some Cisco switches support side-to-side airflow designs, while others support front-to-back airflow designs.

Cisco switches that fall into the side-to-side airflow category include:

- Cisco Catalyst 6509-E
- Cisco Catalyst 6513
- Cisco MDS 9513

Cisco switches that support front-to-back airflow design include:

- Cisco 7000 series switches; in particular, the Cisco 7010 switch

Eaton's airflow management system (AMS) operates most efficiently when enclosures, such as the Paramount enclosure, channel airflow movement from the front of the cabinet to the back, and into the AMS airflow stream. As such, when equipment supporting side-to-side airflow is installed within a Paramount enclosure, airflow conversion kits are required to help redirect and funnel side-to-side airflow into front-to-back airflow.

The table below identifies the airflow conversion kits Eaton manufactures for the Paramount enclosure and the associated Cisco switch the kit supports:

Eaton Paramount Conversion Kit	**Cisco Switch**	**Switch Airflow Design**
6509CVK*nn*UPM	Cisco Catalyst 6509-E	Side-to-Side
6513CVK*nn*UPM	Cisco Catalyst 6513	Side-to-Side
9513CVK*nn*UPM	Cisco MDS 9513	Side-to-Side
7010CVK*nn*UPM	Cisco Nexus 7010	Front-to-Back

***NOTE:** *nn* value; all conversion kits listed above are supported in 42U, 44U, 48U, and 51U height enclosures.

****NOTE:** The switch conversion kits listed above are only supported in Paramount PMT series enclosures, not JW series enclosures.

Airflow Conversion Kit Component Descriptions

This section provides basic descriptions of the various components found within an Eaton airflow conversion kit.

Air Seal Panels/Plates

Top, side, and bottom air seal panels and plates block airflow in unwanted directions, while channeling airflow to follow a front to back stream.

Bottom air seal plates also support grommets for sub-enclosure cable entry and exit.

***NOTE:** Conversion kits for switches supporting front-to-back airflow designs do not include side air seal panels; for example, the Cisco Nexus 7010.

Lacing Bar

Vertical lacing bars provide support for managing large bundles of data and power cables.

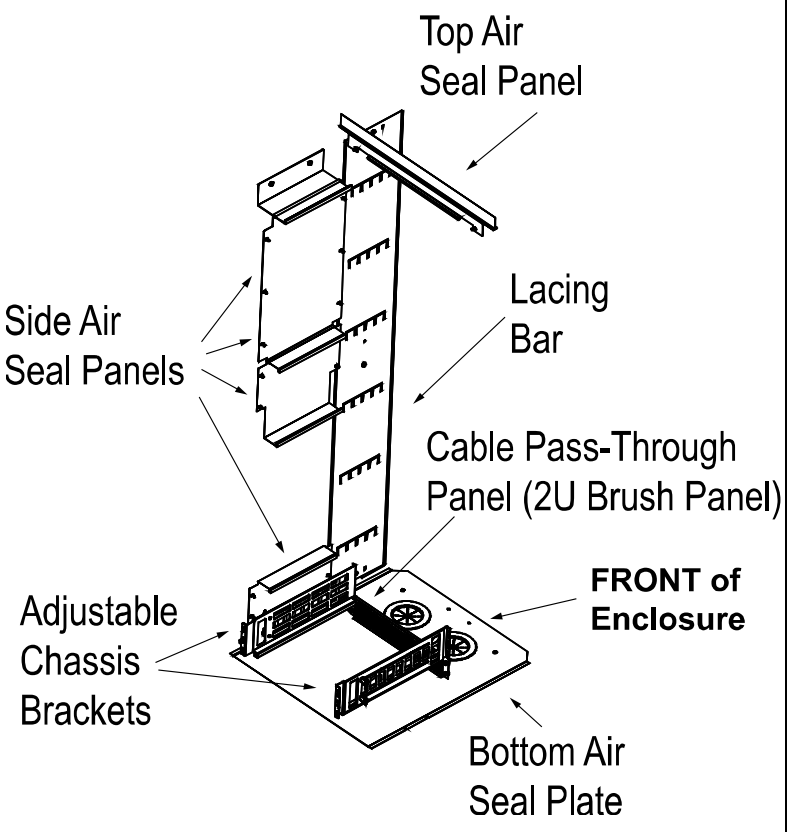
Cable Pass-Through Panel (2U Brush Panel)

Panel constructed of brush material allowing cables to be passed through while maintaining airflow control.

Adjustable Chassis Brackets

Adjustable brackets slide horizontally from front to back and are easily adjusted to match the depth of the switch being installed.

Bracket adjustments are accomplished by loosening T-knob fasteners on the outside of each bracket, sliding the inside portion of the bracket to the desired depth, then re-tightening each knob.



Procedure: Installing Cisco Airflow Conversion Kits in a Paramount Enclosure (Recommended)

The following series of steps are recommended when installing a Cisco airflow conversion kit within an Eaton Paramount PMT series enclosure.

Step 1: Remove Vertical Blanking Panels

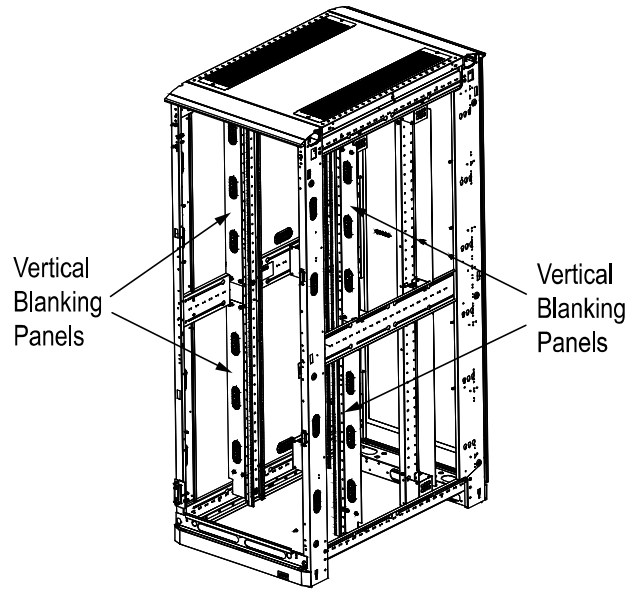
Important! DO NOT perform this step if installing a conversion kit for a Nexus 7010 (7000 series switches) or any Cisco switch that operates using front-to-back airflow cooling. Skip this step and go directly to the step 2.

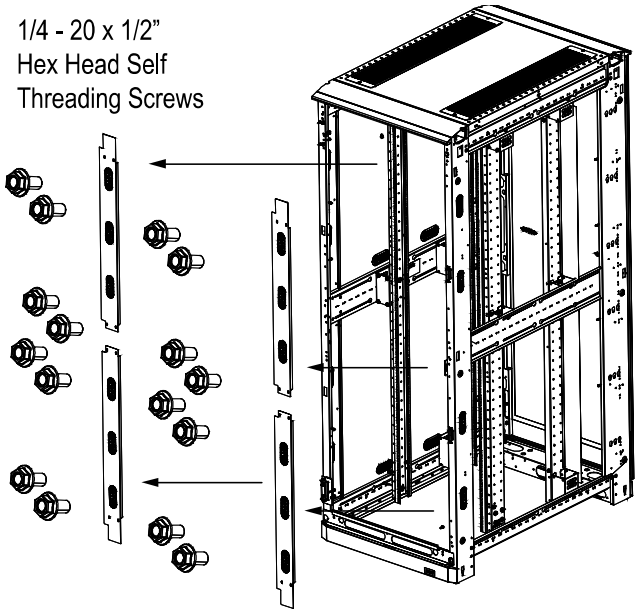
IF installing a conversion kit for a Cisco Catalyst 6509-E, 6513, MDS 9513, or any Cisco switch that operates using side-to-side airflow cooling, do the following:

a) On the inside of the enclosure, locate the four vertical blanking panels attached to the front vertical rails. Refer to top diagram.

b) As shown in the lower diagram, using a ratchet and 3/8" socket, remove all four vertical blanking panels attached to the left and right front vertical rails.

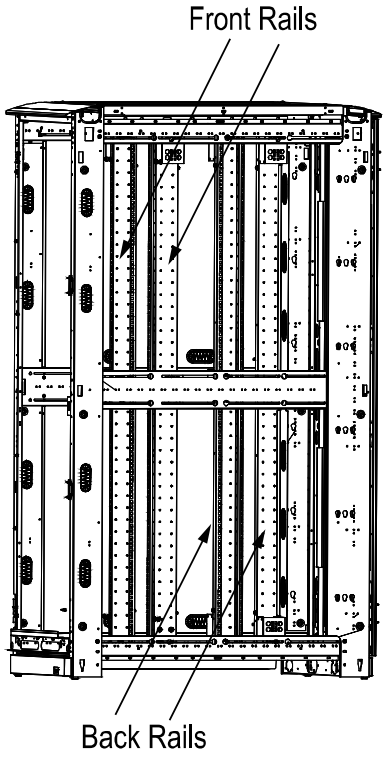
c) Retain all four vertical blanking panels and the sixteen 1/4 – 20 x 1/2" screws for relocation in a later step.



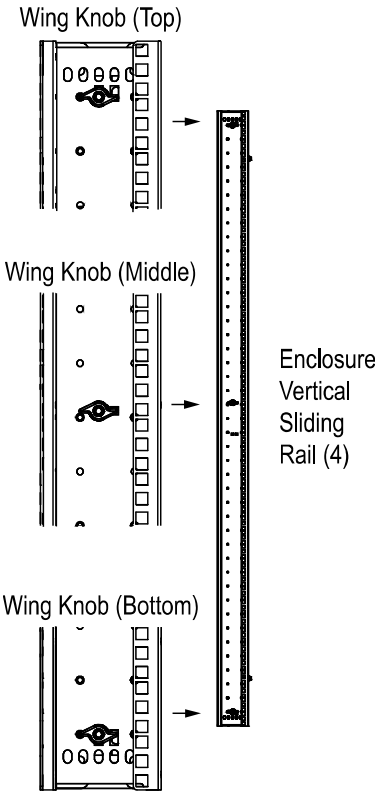


Step 2: Move Sliding Rails to Rear of Enclosure

a) Inside the enclosure, locate the two front and two back vertical sliding rails.



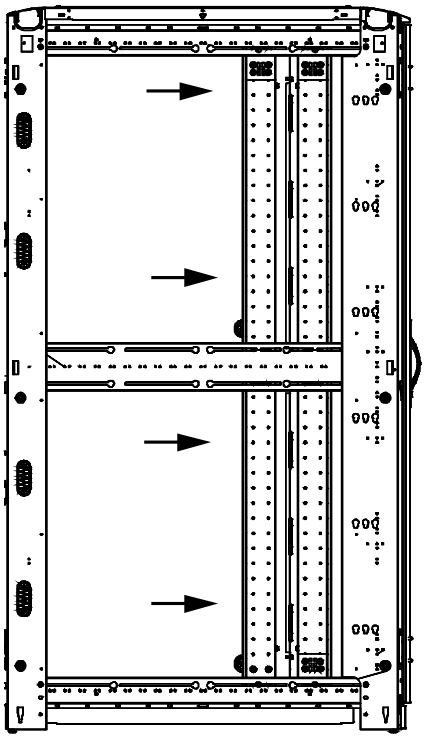
b) Loosen the three wing knobs on each vertical sliding rail (top, middle, and bottom).



c) Slide all four rails towards the back of the enclosure.

Note: Position front rails approximately 24" from front of enclosure.

All Four Vertical Rails Moved to Back of Enclosure

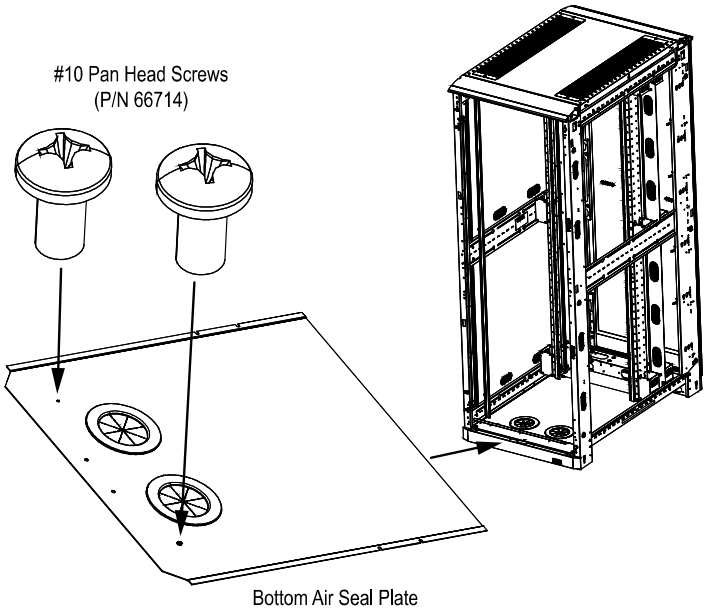


Step 3: Install Bottom Air Seal Plate

Insert bottom air seal plate with angular corners facing the front of the enclosure as shown.

Make sure the offset flanges on the sides face up and are sitting on the side bottom rail mounts.

Align the two holes in the bottom air seal with two cross-member holes. Using a #2 Phillips screwdriver, attach using two #10 pan head screws as shown.



Step 4: Relocate Front and Back Vertical Rails

Relocate the front and back rails according to the switch type/size to be installed.

Minimum Front Rail Depth

6509, 6513, 9513 switch	13.10"
7010 (7000 series)	8.0"

NOTE: Minimum settings are suggested depths, and if used, will provide more room in the rear of the enclosure for additional PDUs and components.

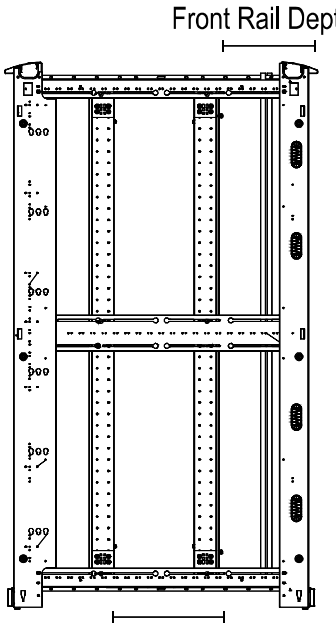
Front rail depth is measured from the front of the enclosure to the front of the rail.

Back Rail Depth*

6509, 6513	20.00"
9513	26.56"
7010 (7000 series)	32.00"

***Back rail depth is measured from the front of front rails to the front of back rails.

Front Rails MIN Depth from Front of Enclosure
6509, 6513, 9513 switches = 13.10"
7010 (7000 series) switches = 8.0"



Back Rail Settings Depend on Switch Type
Measured from Front of Front Rail to Front of Back Rail
6509, 6513 switches = 20.00"
9513 switch = 26.56"
7010 (7000 series) = 32.00"

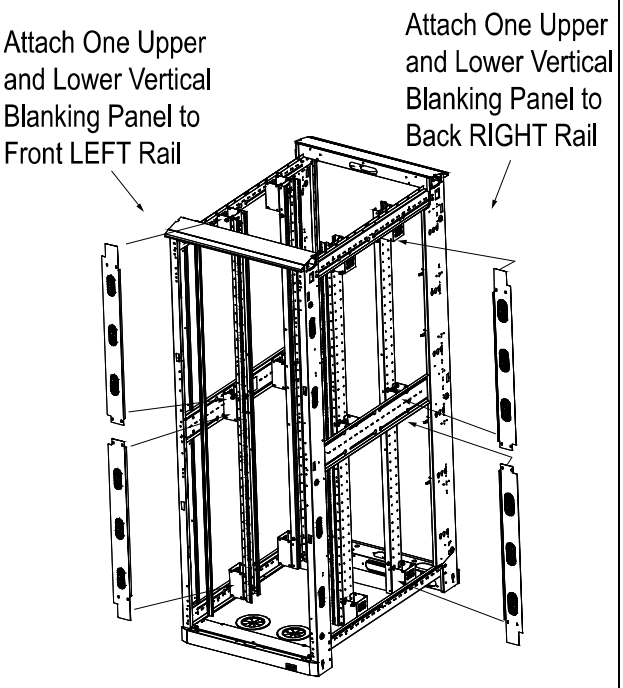
Step 5: Reinstall Vertical Blanking Panels

NOTE: Perform this step if installing Cisco side-to-side airflow kits. If installing front-to-back airflow kits, go to the next step.

If vertical blanking panels were removed in step 1, they must be re-installed at this time.

As shown, one upper and one lower vertical blanking panel must be attached to the front left vertical rail as well as the back right vertical rail.

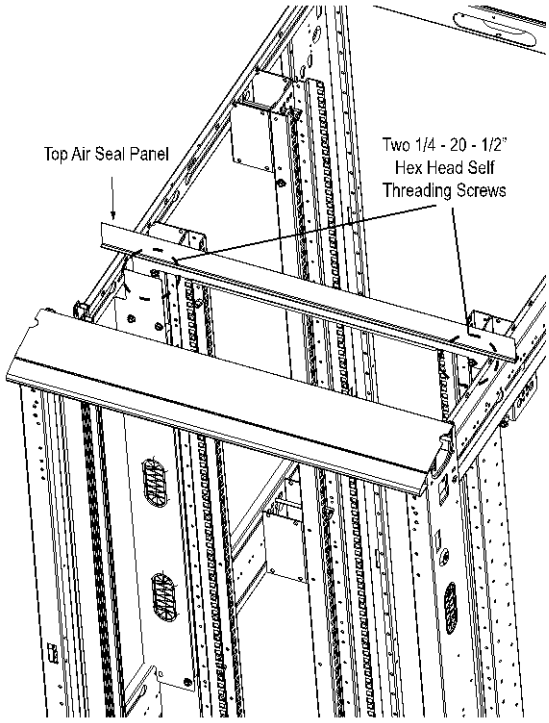
Using a ratchet, short extension, and 3/8" socket, attach each blanking panel using four 1/4 - 20 x 1/2" hex head self-threading screws.



Step 6: Install Top Air Seal Panel

As shown to the right, attach the top air seal panel to the front vertical rails, using two 1/4 - 20 x 1/2" hex head self-threading screws.

To tighten, use a ratchet, short extension, and 3/8" socket.



Step 7: Install Side Air Seal Panels

All side-to-side conversion kits have side air panels, whereas, front-to-back conversion kits do not

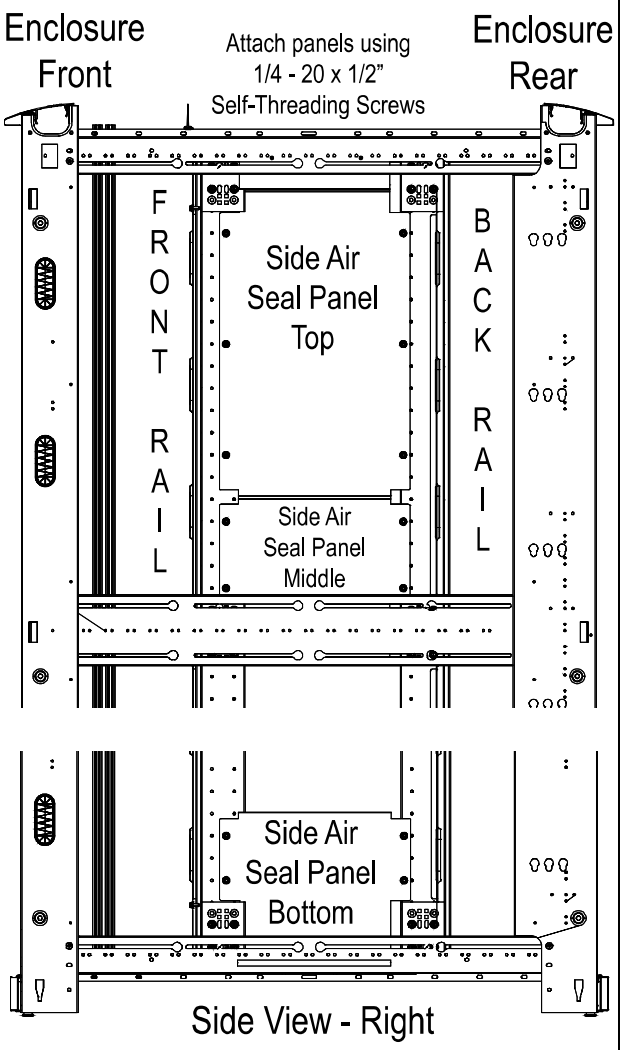
For side-to-side conversion kits, the size, shape, and quantity of side air seal panels vary between conversion kits. Some kits have three panels, others have four or more.

Regardless of differences in quantity and shape, all side air seal panels are attached to the front and back vertical rails, (on the right side of the enclosure ONLY) during installation.

All panels are attached to the front and back vertical rails using 1/4 - 20 x 1/2" hex head self-threading screws.

The diagram to the right shows the location where side air seal panels are installed for the 44U / 6513 conversion kit. As shown, there are three panels in the kit; a top panel, middle panel, and bottom panel. The top and middle panels abut one another, with the bottom panel located at the very bottom of the enclosure.

For detailed drawings showing the quantity, shapes, and installation locations of side air seal panels for other conversion kits, see Schematic Diagrams: Cisco Conversion Kits for Paramount Enclosure, on page 14.



Side View - Right

(This view shows panels for 44U / 6513 Kit)

*See Appendix A for views of other kits.

Step 8: Install Lacing Bar

Side-to-side conversion kits (6509, 6513, and 9513) have a single lacing bar that is installed at the front right of the enclosure.

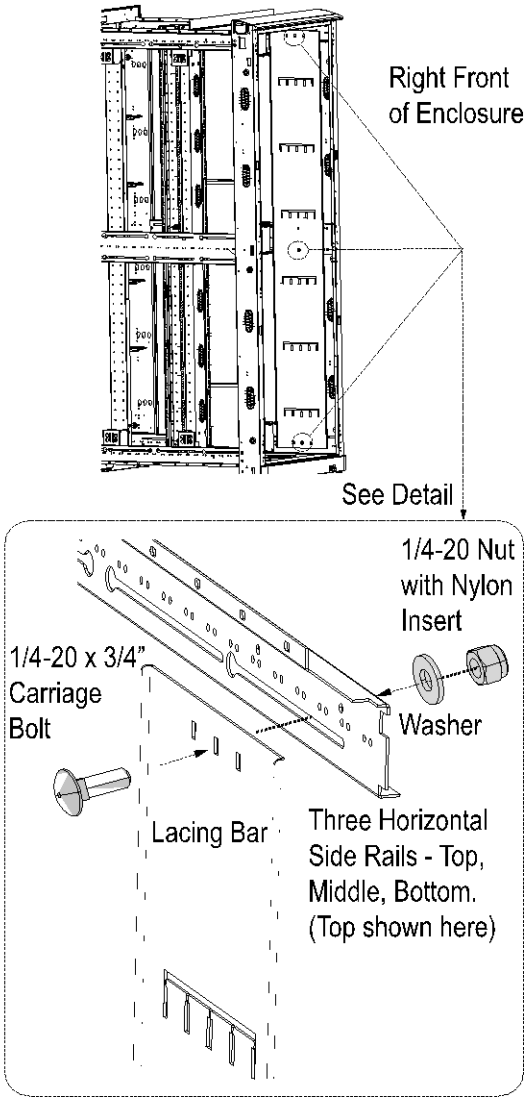
Back-to-front conversion kits (7000 series) come with two lacing bars. One lacing bar is installed at the front right of the enclosure, and the other at the front left.

Depending on the kit type, different hardware and methods are used when attaching lacing bars to the inside of the enclosure. The following topics and diagrams outline the subtle differences for each.

Lacing Bar Install for Side-to-Side Kits

For side-to-side kits (6509, 6513, and 9513) the lacing bar is attached to the front right of the enclosure using the slits found on each horizontal side rail; top, middle, and bottom.

As shown to the right, one 1/4 - 20 x 3/4" carriage bolt is inserted from the inside of the enclosure, through each center hole located at the top, middle, and bottom of the lacing bar. The bolt is then pushed through the front slits on each of the three horizontal side rails. With the three carriage bolts inserted (top, middle, bottom) the lacing bar is secured to the horizontal rails using a washer followed by a 1/4 - 20 nut, with nylon insert.



Lacing Bar Install for Front-to-Back Kits

For front-to-back kits (7000 series) the two lacing bars within the kit are attached to the left and right front of the enclosure using predrilled holes located at the front of each horizontal side rail; top, middle, and bottom.

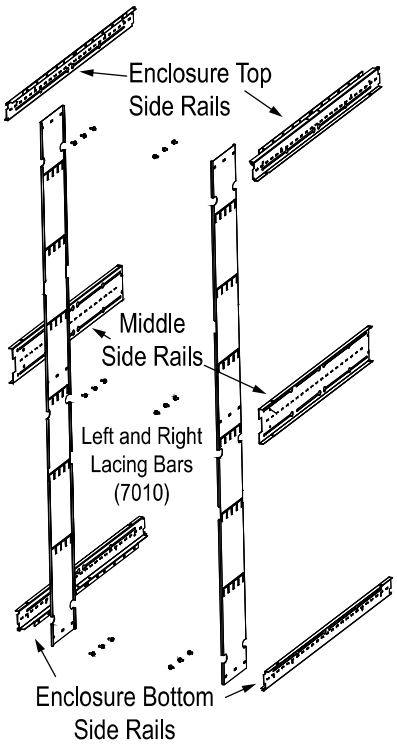
As shown in the diagram to the right, nine 1/4 - 20 x 1/2" hex head self-threading screws are used for securing each lacing bar to the front of the top, middle, and bottom horizontal side rails.

Referring to the detailed diagram (bottom right) each set of three self-threading screws are inserted from the inside of the enclosure, through the holes in the lacing bar (top, middle, and bottom), and into predrilled holes located at the front of each horizontal rail.

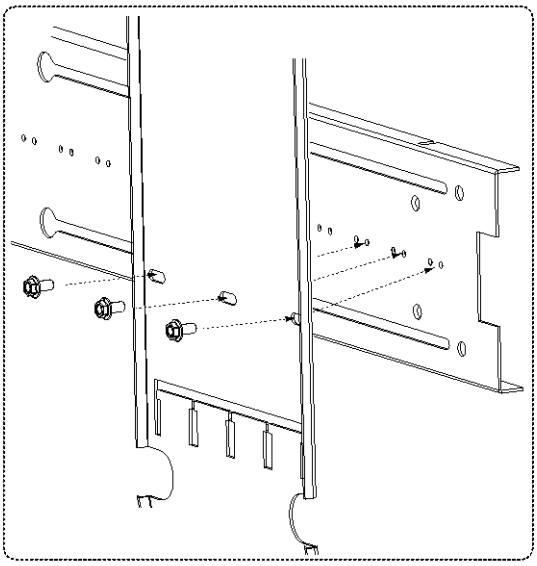
The detailed view shows the lacing bar on the right side of the enclosure as it is attached to the front of the middle horizontal side rail. Aside from the location (top, middle, bottom) the same view and installation instructions applies to all other fastening points on each of the two lacing bars.

To tighten, use a ratchet, short extension, and 3/8" socket.

To identify and view lacing panel component(s) found within each conversion kit, see Schematic Diagrams: Cisco Conversion Kits for Paramount Enclosure, on page 14.



All screws are 1/4 - 20 x 1/2" self-threading screws. Each fastening point requires 3 screws, for a total of 18 screws, 9 per side. SEE DETAIL DRAWING BELOW.



Step 9: Install Adjustable Chassis Brackets

Adjustable chassis brackets can be installed at any height within an enclosure. Where adjustable brackets are placed depends upon each user's enclosure and equipment requirements, switch type and dimensions.

In the example to the right, the adjustable chassis brackets (left and right) are installed at the bottom of the enclosure.

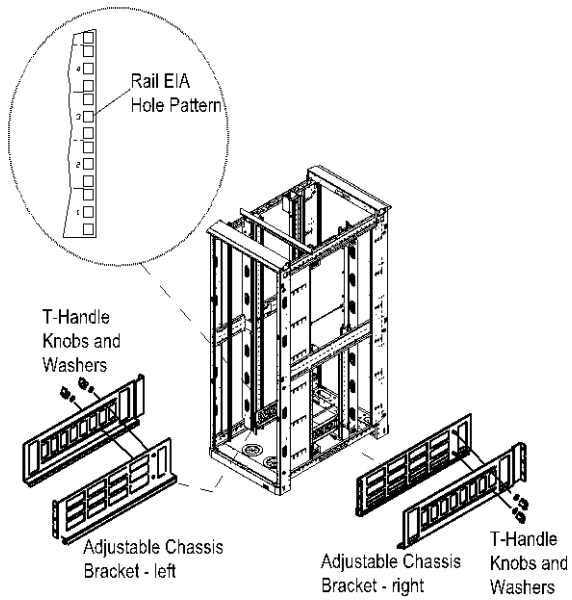
As shown, each adjustable chassis bracket consists of two interconnecting sliding brackets, fastened together by two T-handle knobs and two washers.

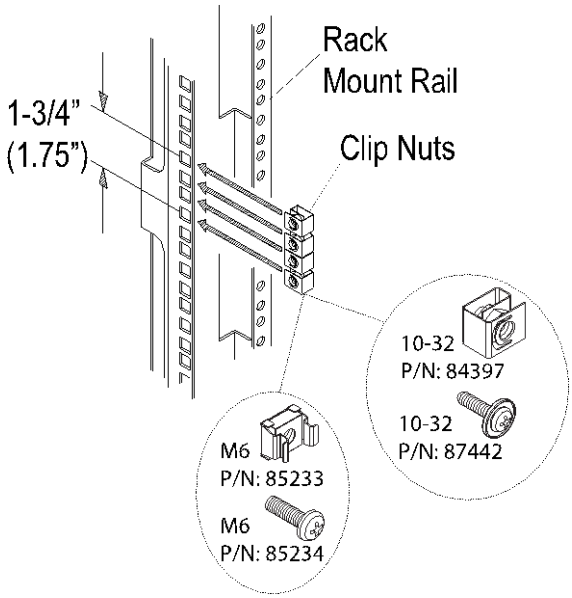
Each adjustable chassis bracket (left and right) attaches to front and back vertical rails using clip nuts and screws as shown in the lower diagram to the right.

For enclosure rails with a 3/8" square hole pattern, use the #10-32 clip nuts and screws. M6 clip nuts and screws are provided for metric rails.

NOTE: Clip nuts are not required on rails with pre-threaded EIA holes.

Once adjustable chassis brackets are secured to the rails loosen the T-handle knobs for each bracket and adjust the length to match the depth of the switch to be installed. Tighten the knobs once the proper depth is reached.

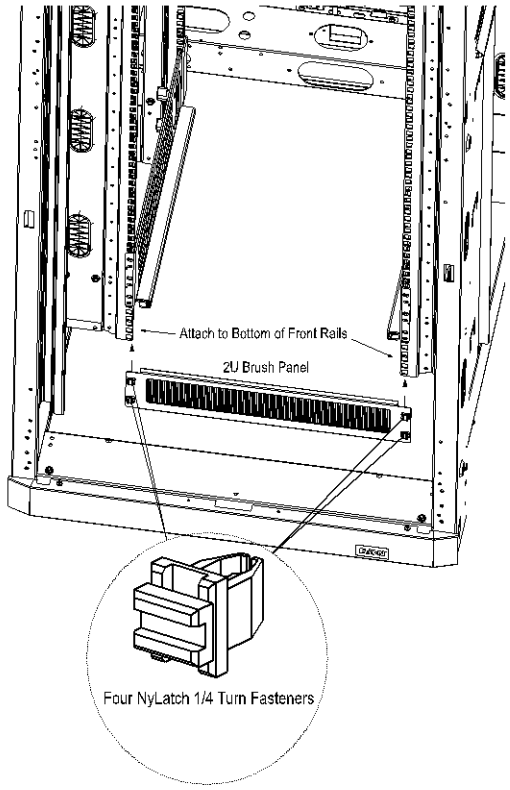




Step 10: Install Cable Pass-Through Panel (2U Brush Panel)

As shown to the right, the 2U cable pass through panel attaches to the bottom of the front left and right vertical rails using four pre-installed NyLatch fasteners.

To attach the panel, insert the tip of each NyLatch fastener into the square holes on the rails, then turn each latch a 1/4 turn in either direction to secure the panel to the rails.

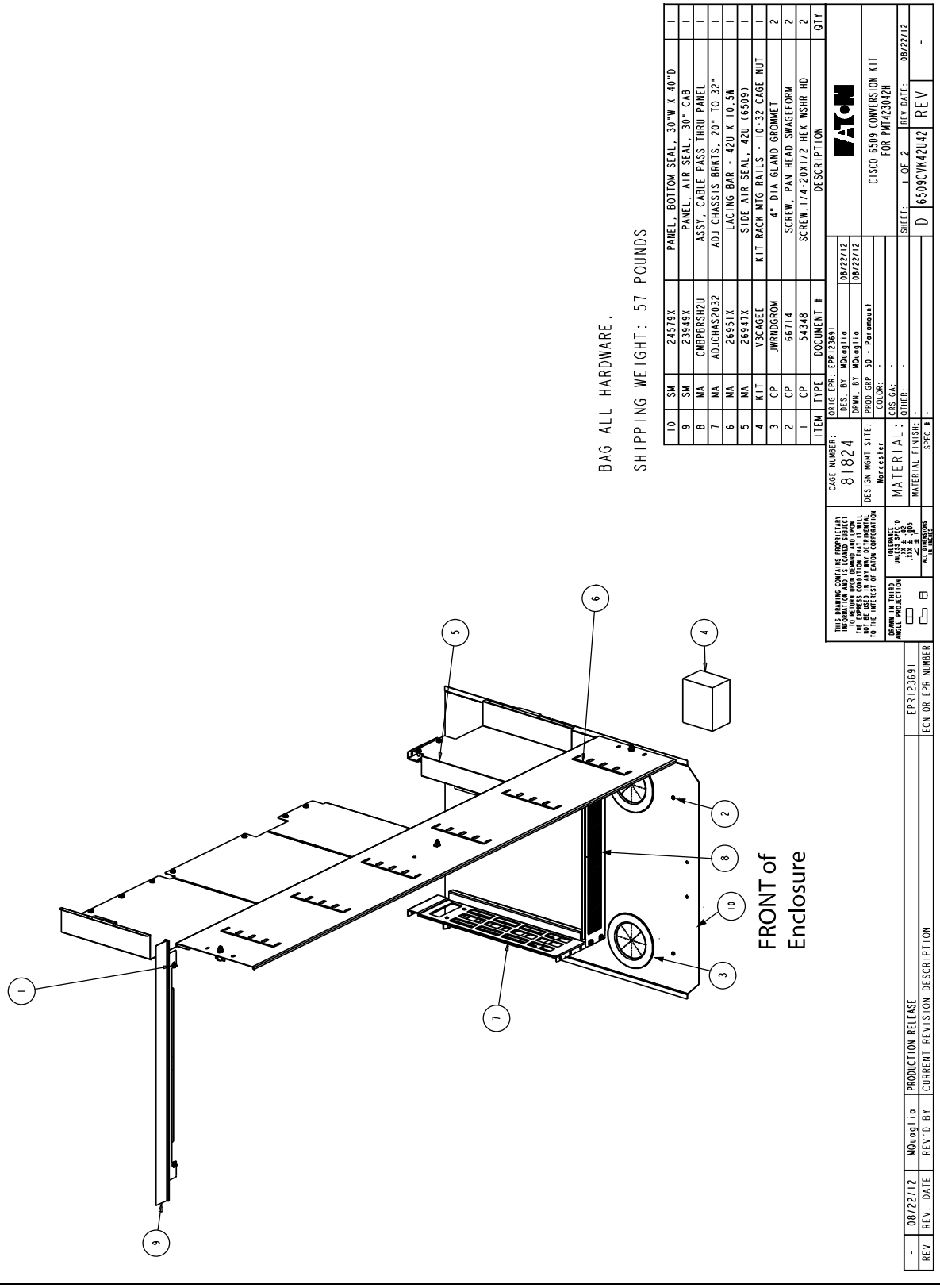


Schematic Diagrams: Cisco Conversion Kits for Paramount Enclosures

This section contains schematic diagrams for all Cisco Switch Conversion Kits available for Eaton's Paramount PMT series enclosures.

- 6509CVK42UPM, 6509CVK44UPM, 6509CVK48UPM, 6509CVK51UPM
- 6513CVK42UPM, 6513CVK44UPM, 6513CVK48UPM, 6513CVK51UPM
- 9513CVK42UPM, 9513CVK44UPM, 9513CVK48UPM, 9513CVK51UPM
- 7010CVK42UPM, 7010CVK44UPM, 7010CVK48UPM, 7010CVK48UPM

6509CVK42UPM



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9	SM	23949X	PANEL, AIR SEAL, 30" CAB	1
8	MA	CMBPBRSH2U	ASSY, CABLE PASS THRU PANEL	1
7	MA	ADJCHAS2032	ADJ CHASSIS BRKTS, 20" TO 32"	1
6	MA	26951X	LACING BAR - 42U X 10.5W	1
5	MA	26947X	SIDE AIR SEAL, 42U (65091)	1
4	KIT	V3CAGEE	KIT RACK MTG RAILS - 10-32 CAGE NUT	1
3	CP	JWRNDGROM	4" DIA GLAND GROMMET	2
2	CP	66714	SCREW, PAN HEAD SWAGEFORM	2
1	CP	54348	SCREW,1/4-20X1/2 HEX WSHR HD	2

ORIG EPR: EPR123691
DES. BY MDuoglio 08/22/12
DRWN. BY MDuoglio 08/22/12
PROD GRP 50 - Paramount
COLOR: -
CRS GA: -
OTHER: -
MATERIAL FINISH: -
SPEC #: -

CAGE NUMBER: 81824
DESIGN MGMT SITE: Worcester
MATERIAL: -

CISCO 6509 CONVERSION KIT FOR PMT423042H

SHEET: 1 OF 2 REV DATE: 08/22/12
D 6509CVK42U42 REV -

THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON THE EXPRESS CONDITION THAT NEITHER IT NOR THE INFORMATION IT DISCLOSES WILL BE USED OR REPRODUCED IN ANY MANNER TO THE INTEREST OF EATON CORPORATION

DRAWN IN THIRD ANGLE PROJECTION

TOLERANCE UNLESS SPEC'D .XX ± .01 .XXX ± .005 ∠ ± 1°
MACHINED SURFACES 63 MICRO INCHES

REV	REV. DATE	REV'D BY	CURRENT REVISION DESCRIPTION	ECN OR EPR NUMBER
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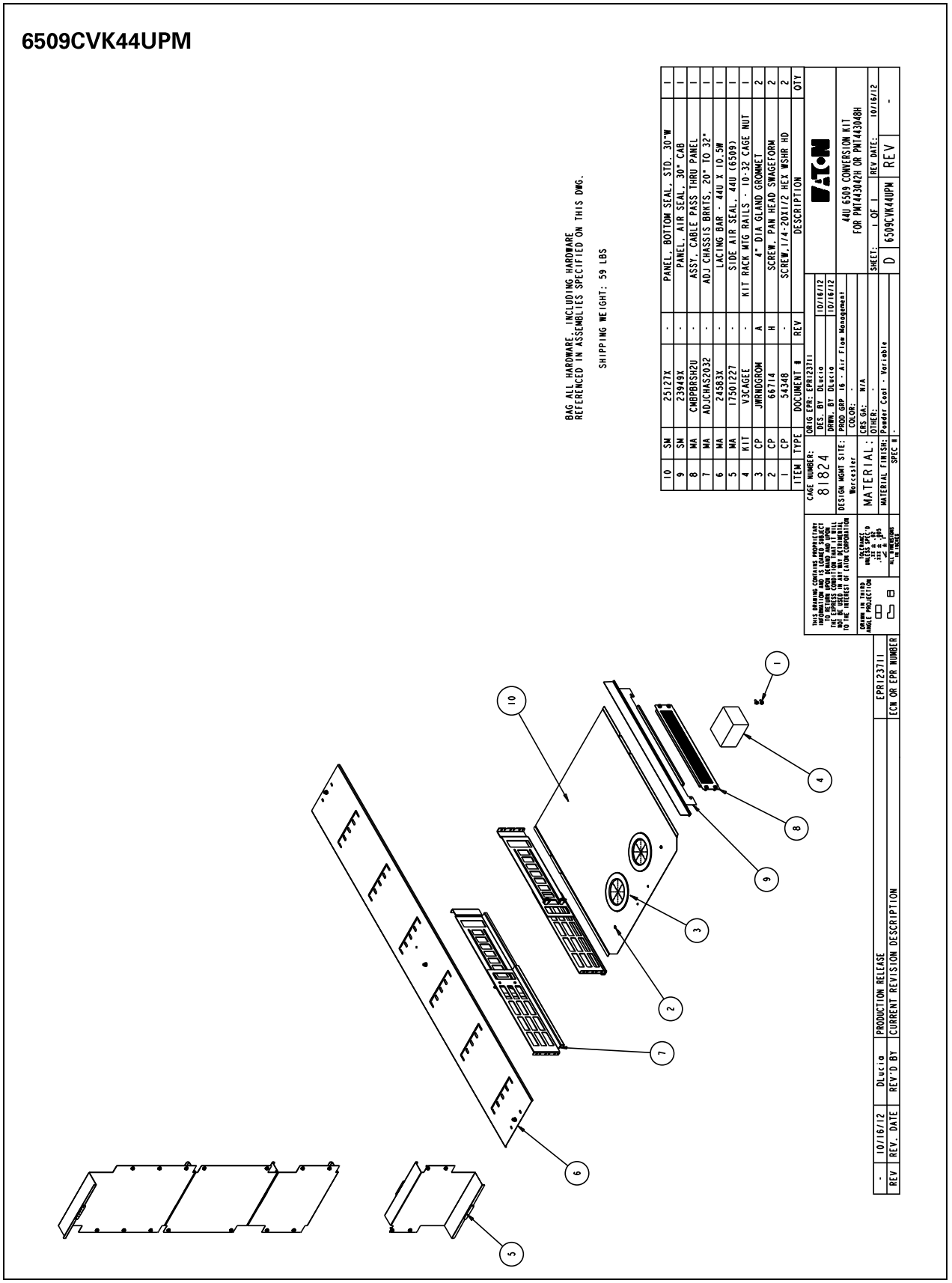
6509CVK44UPM



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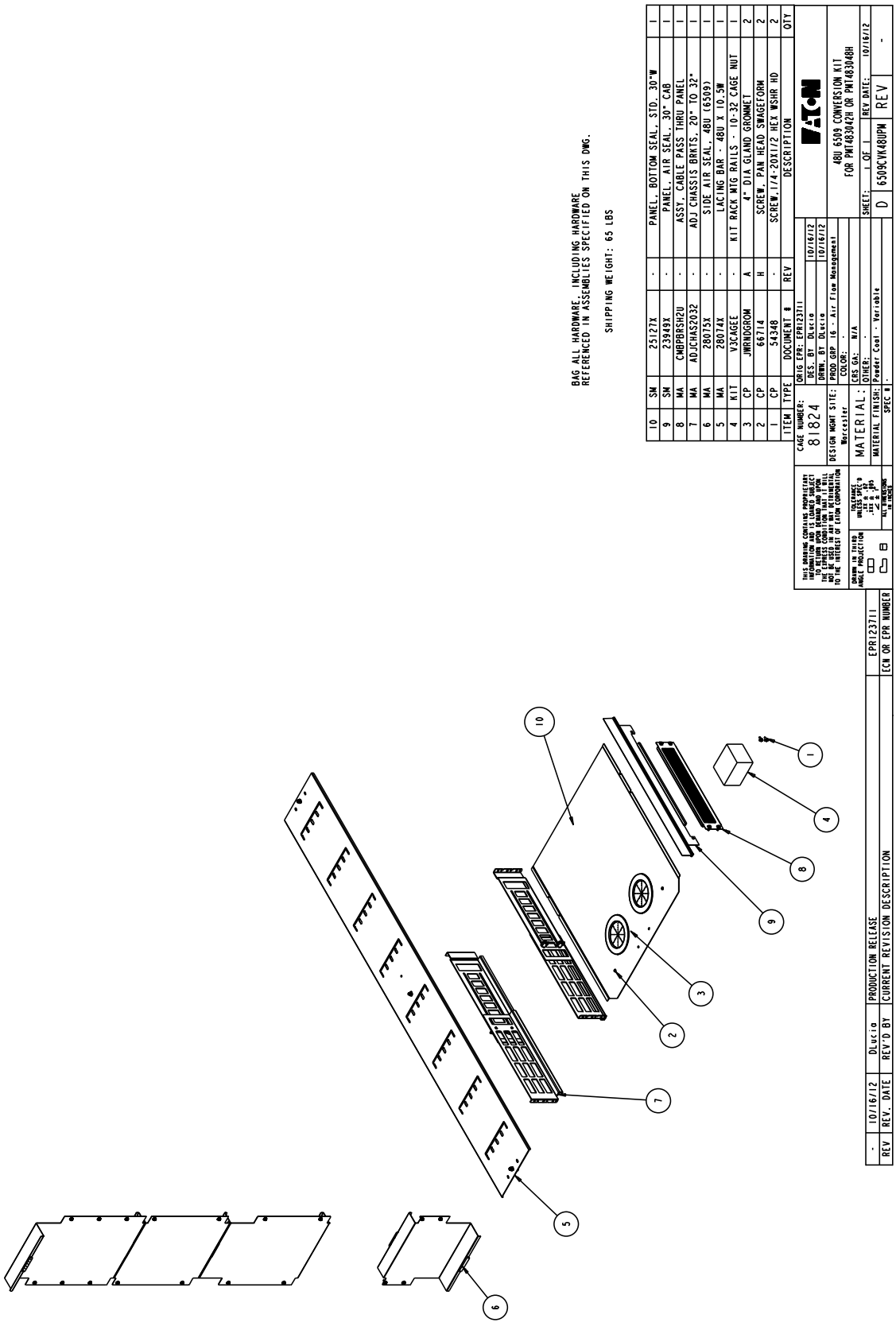

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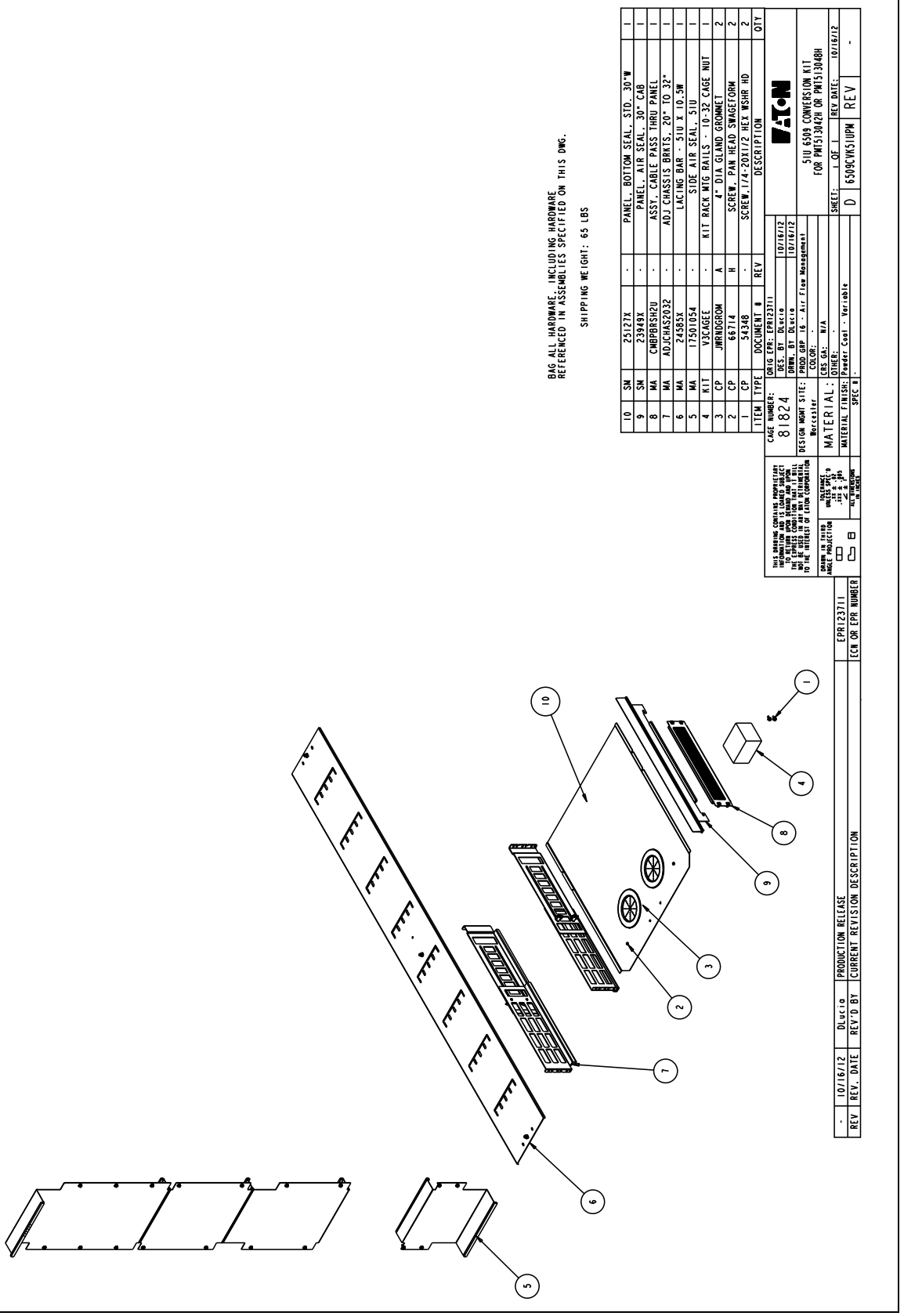
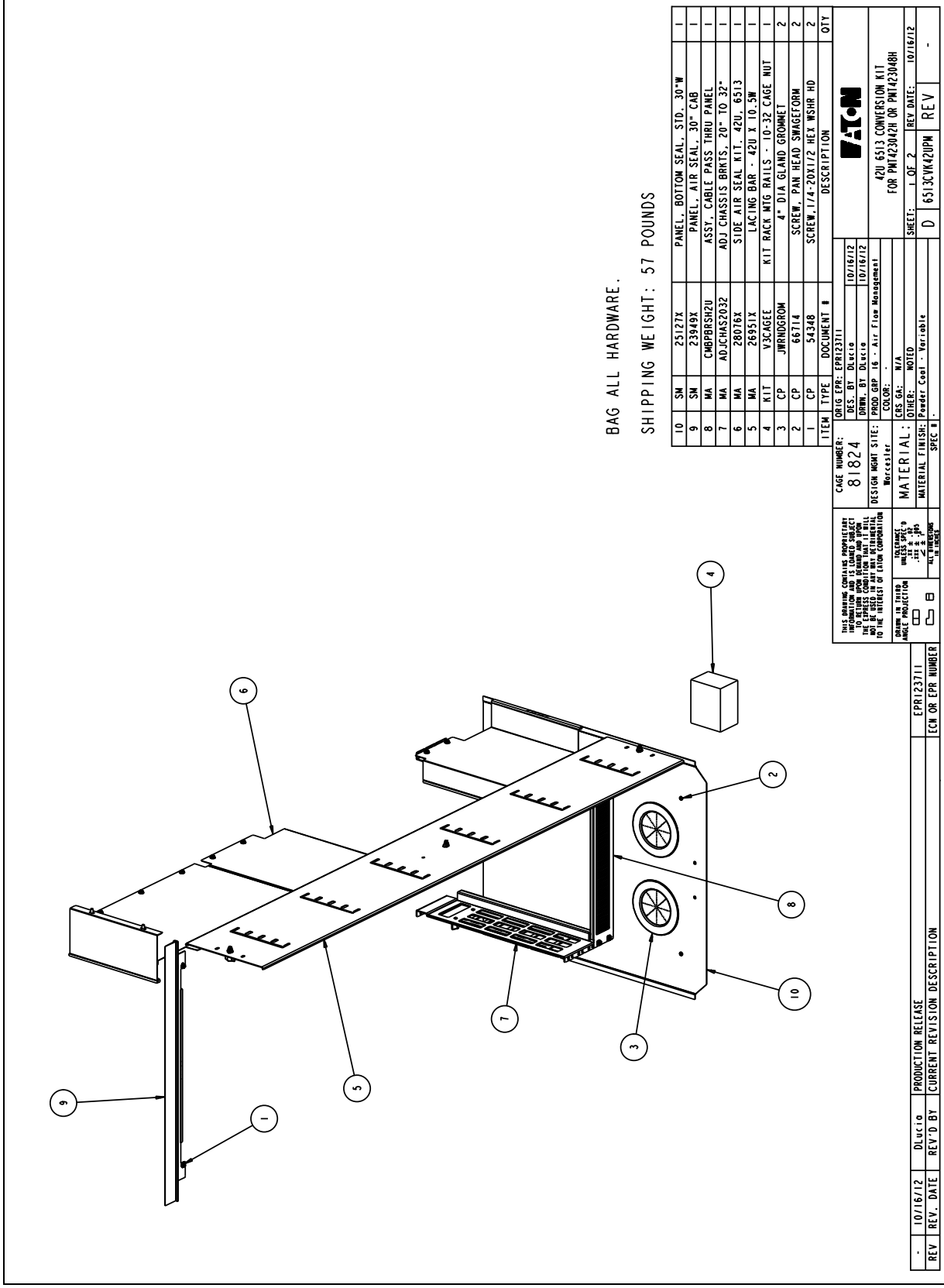


6513CVK42UPM



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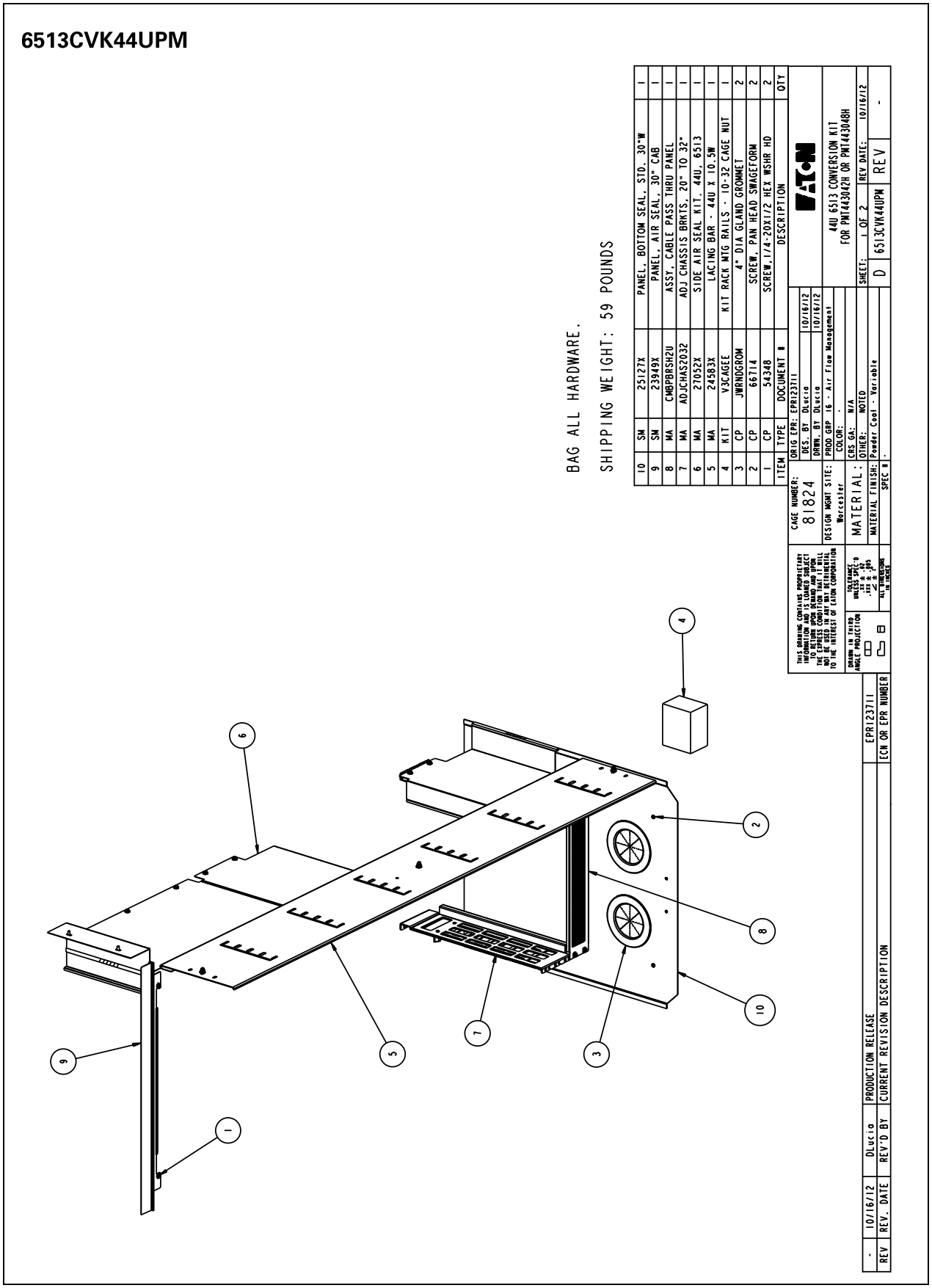
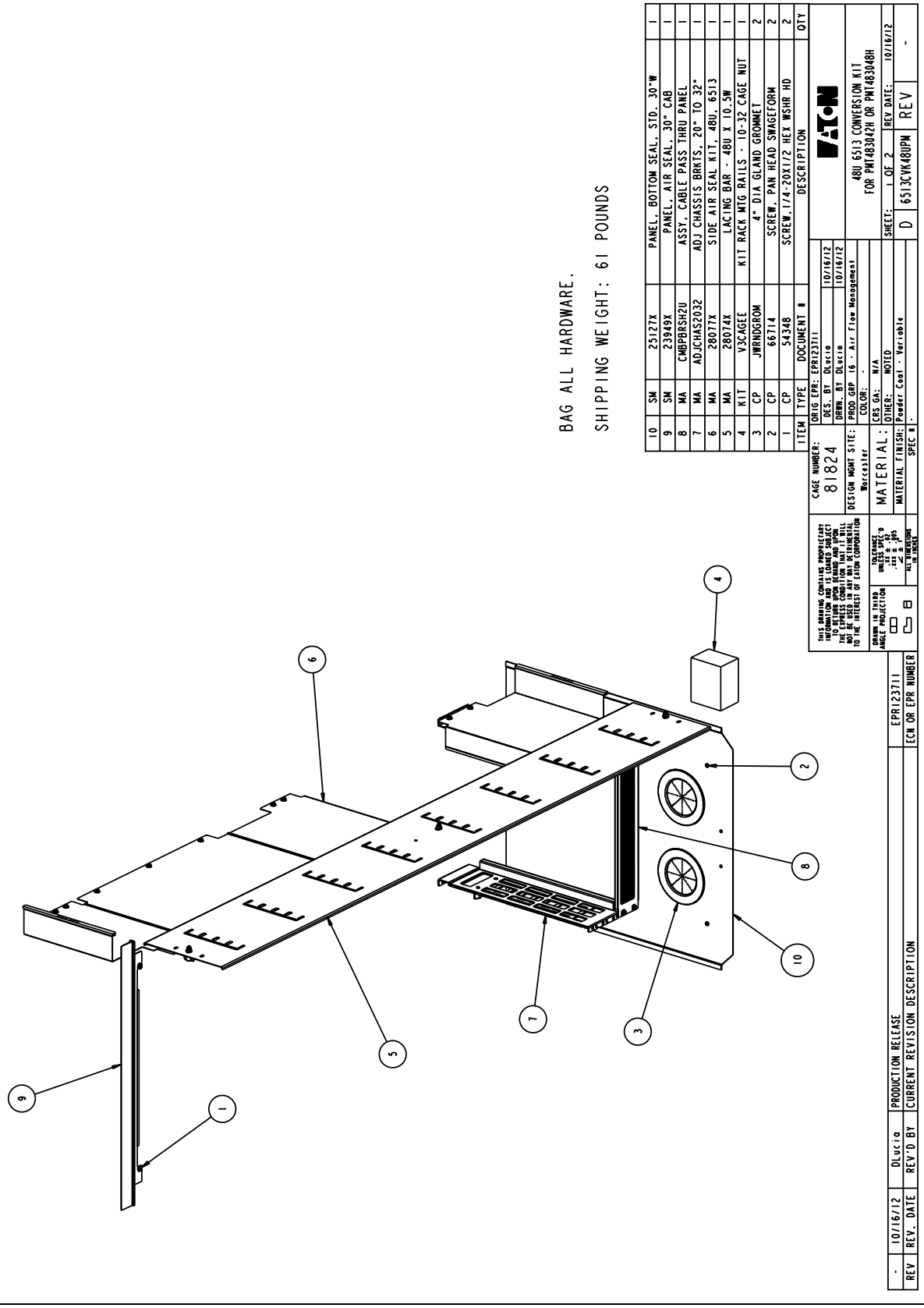


6513CVK48UPM



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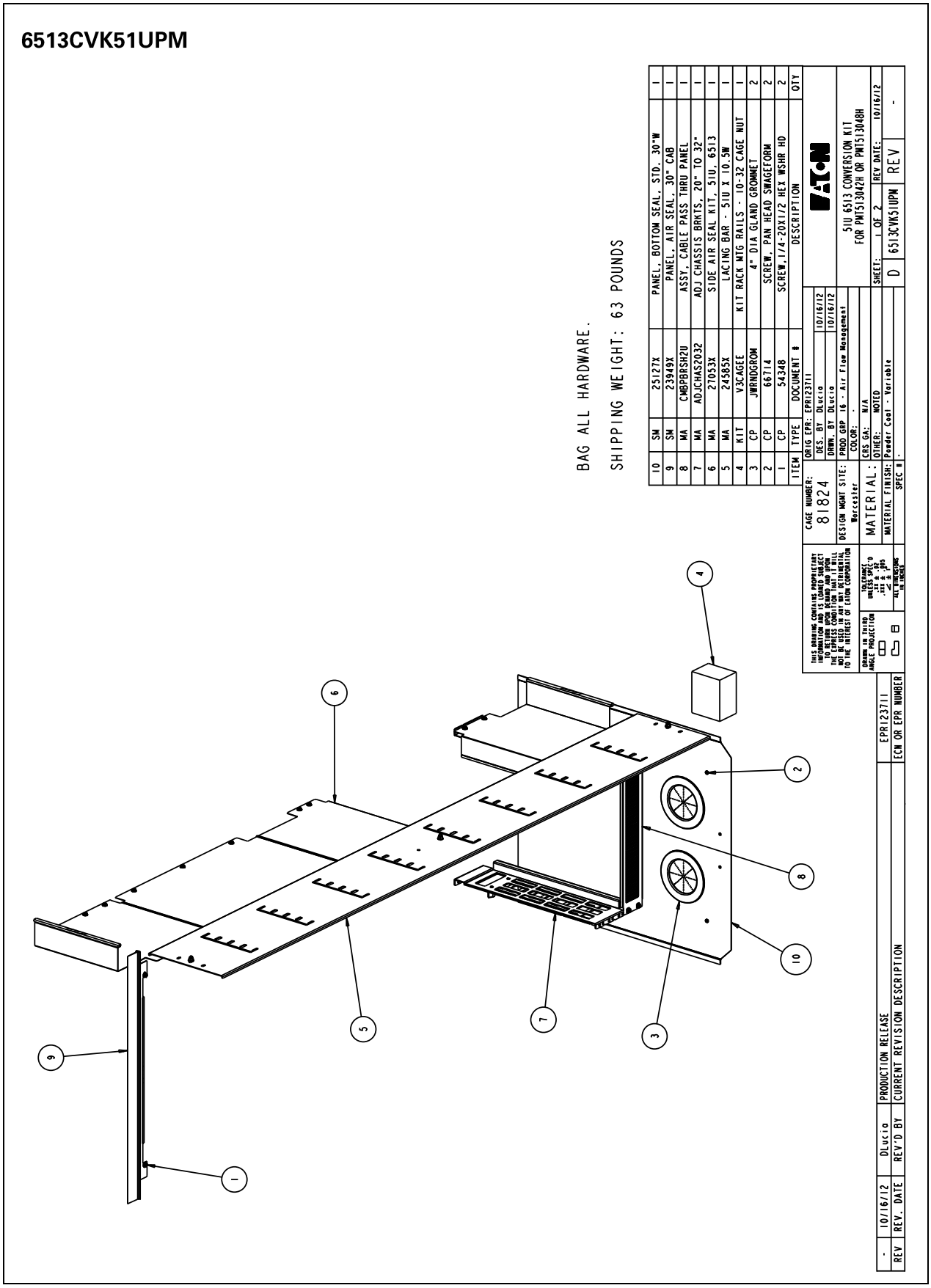

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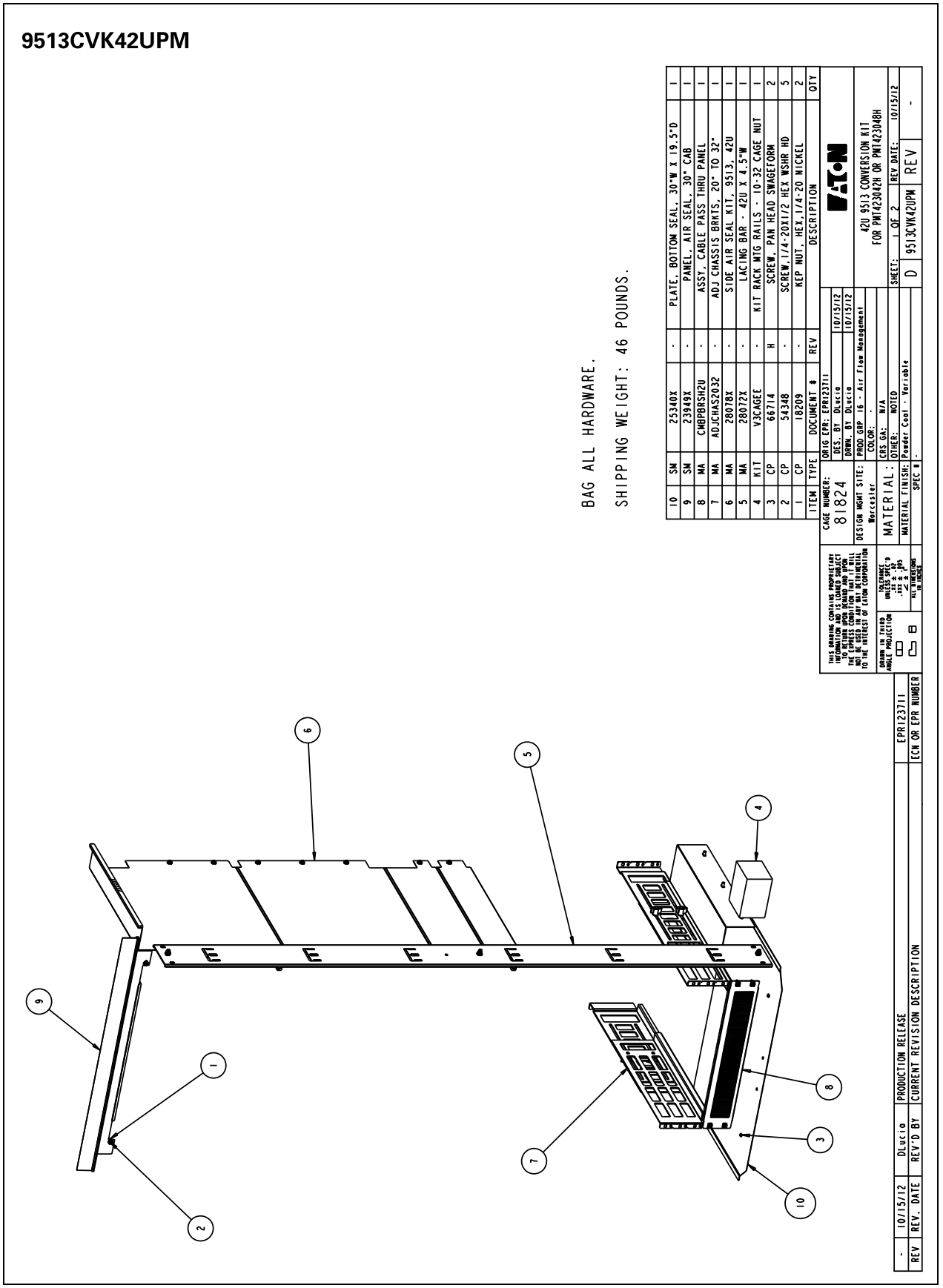

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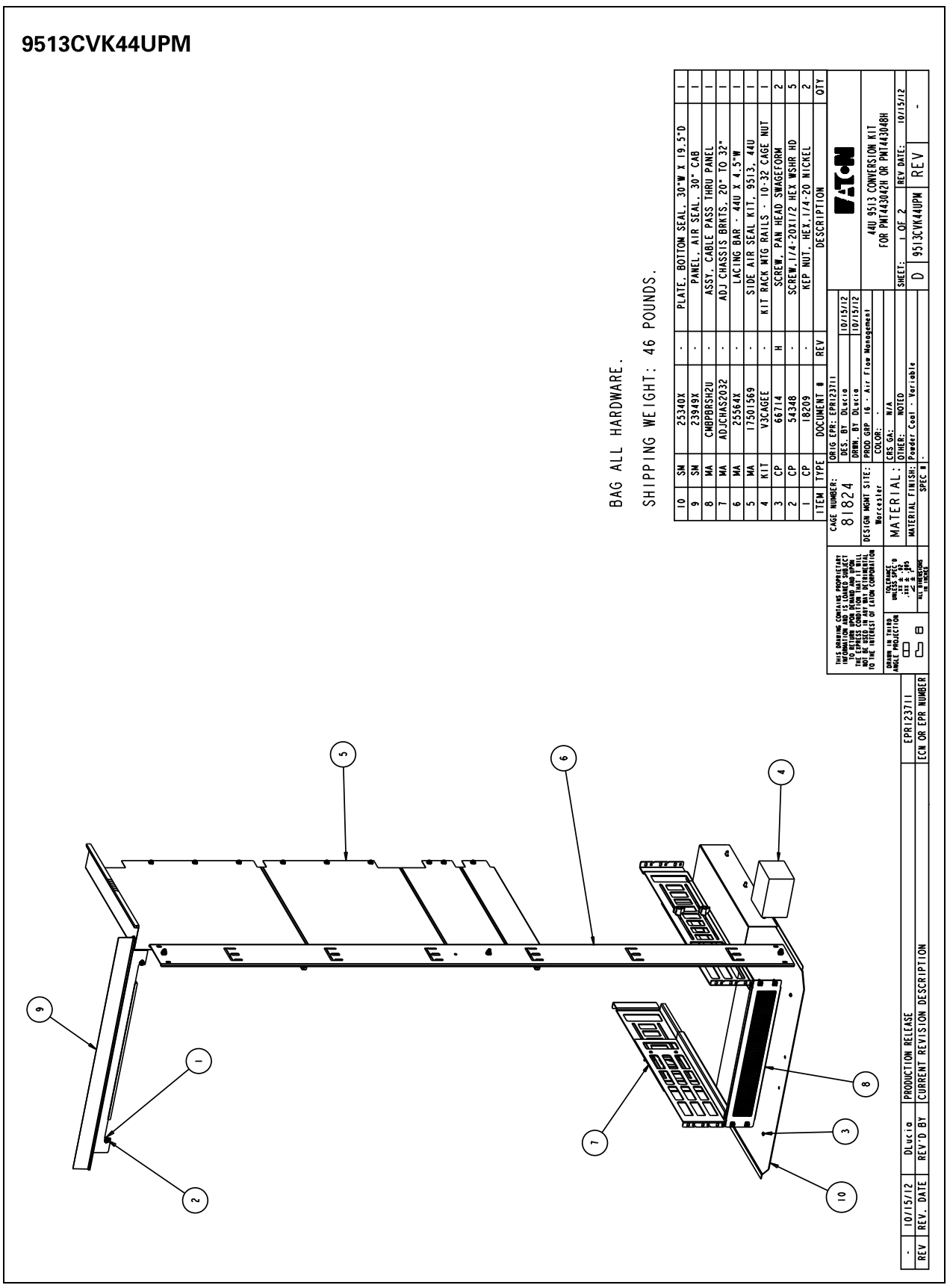

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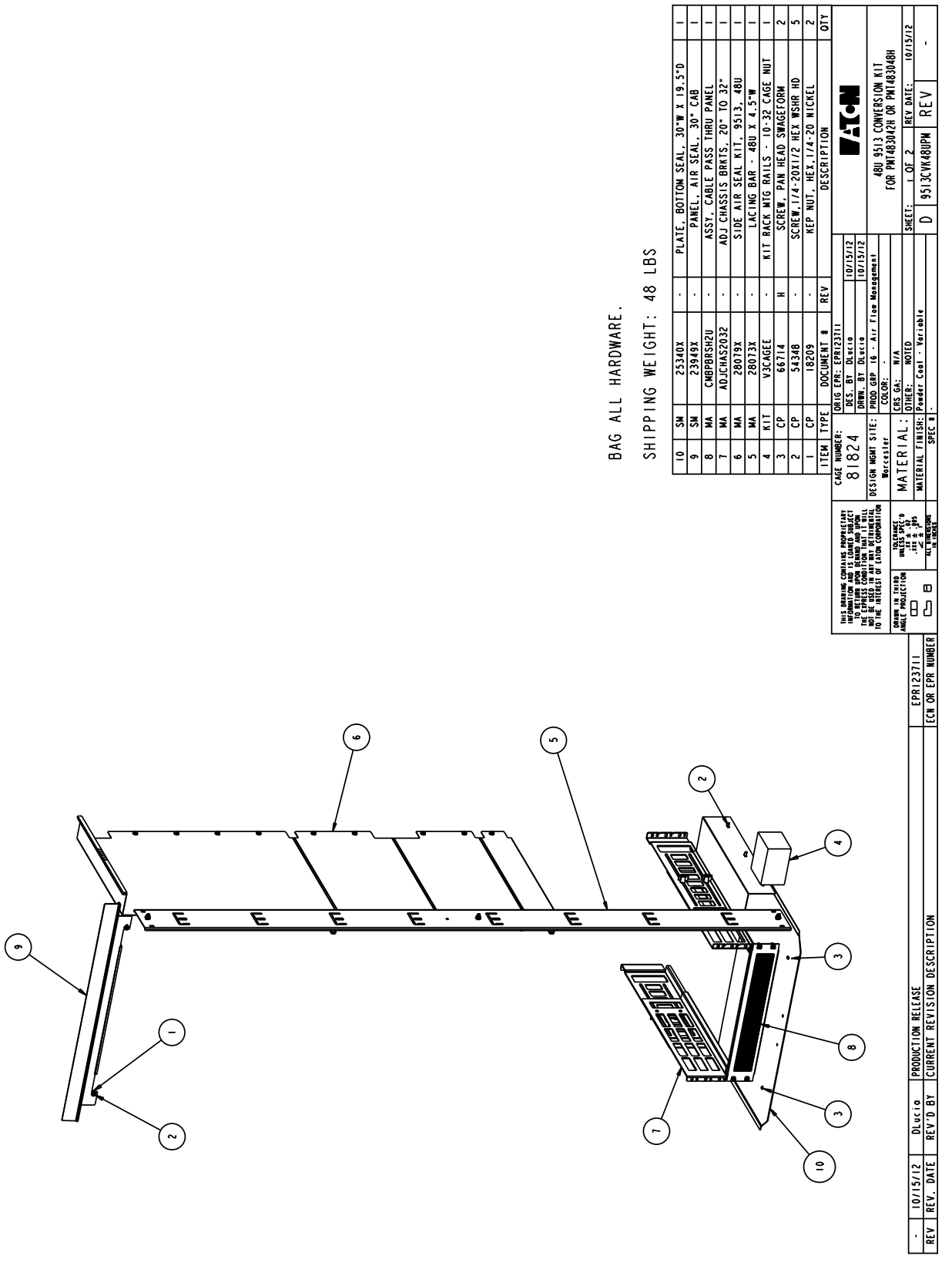

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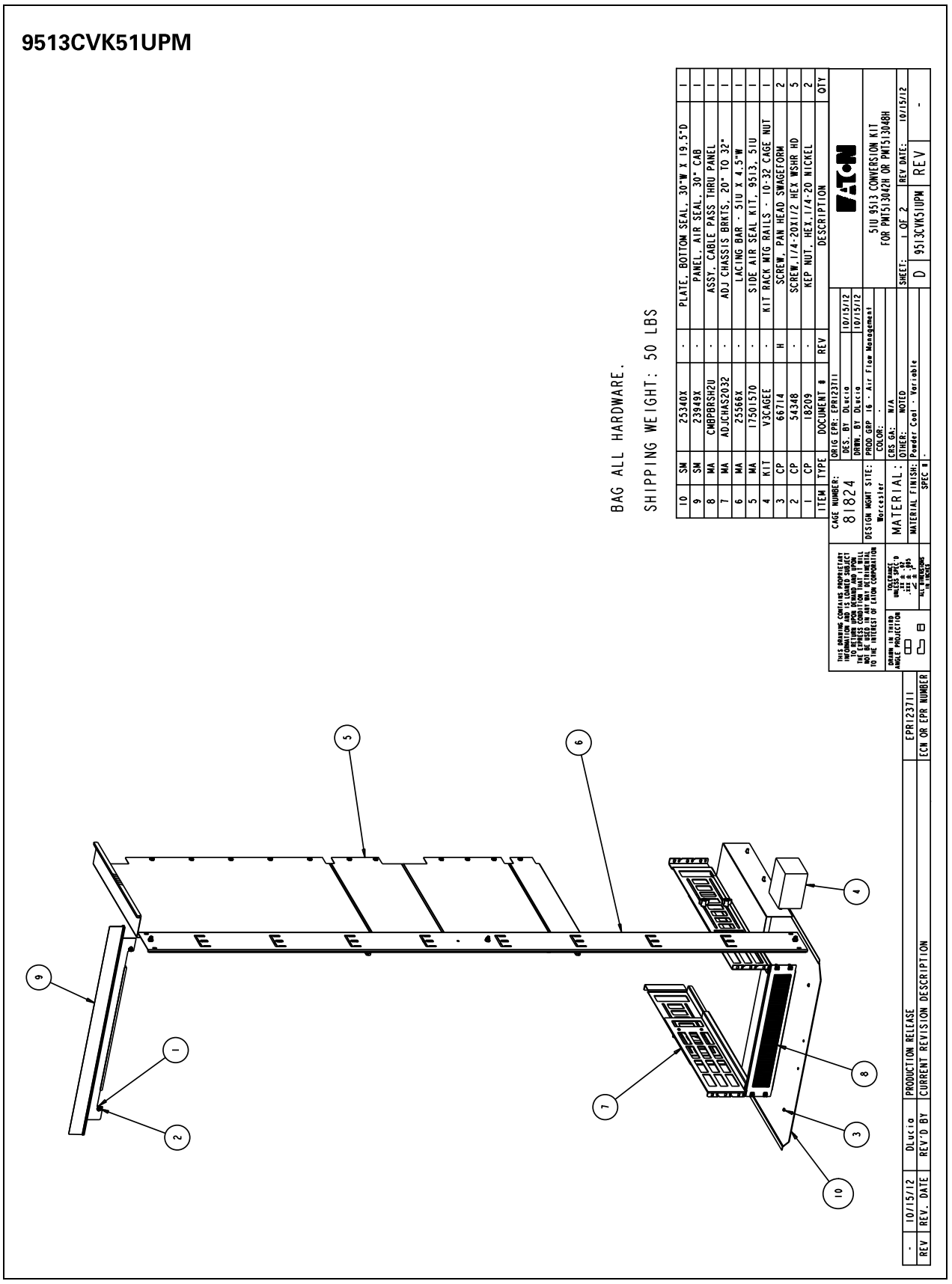

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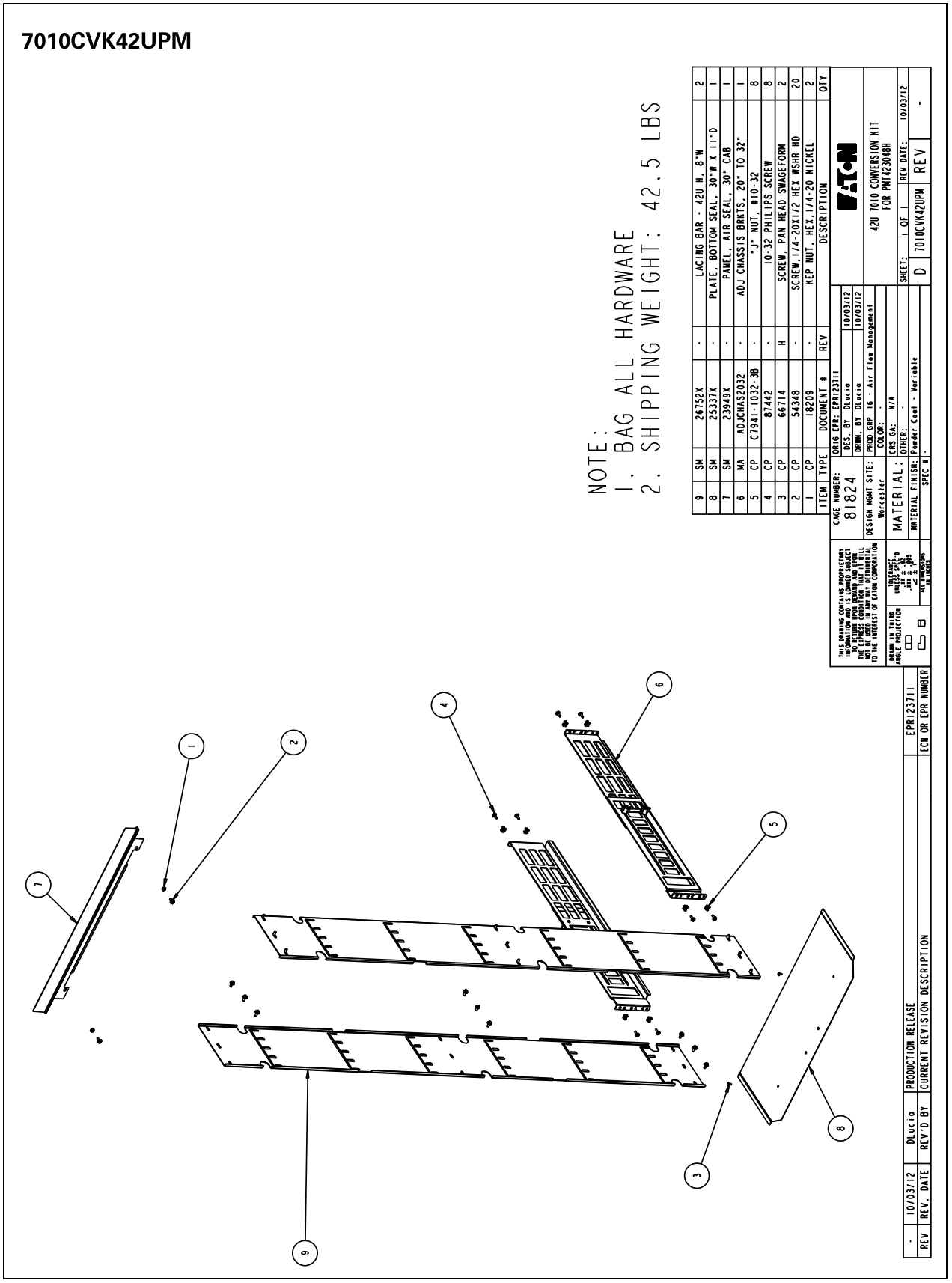

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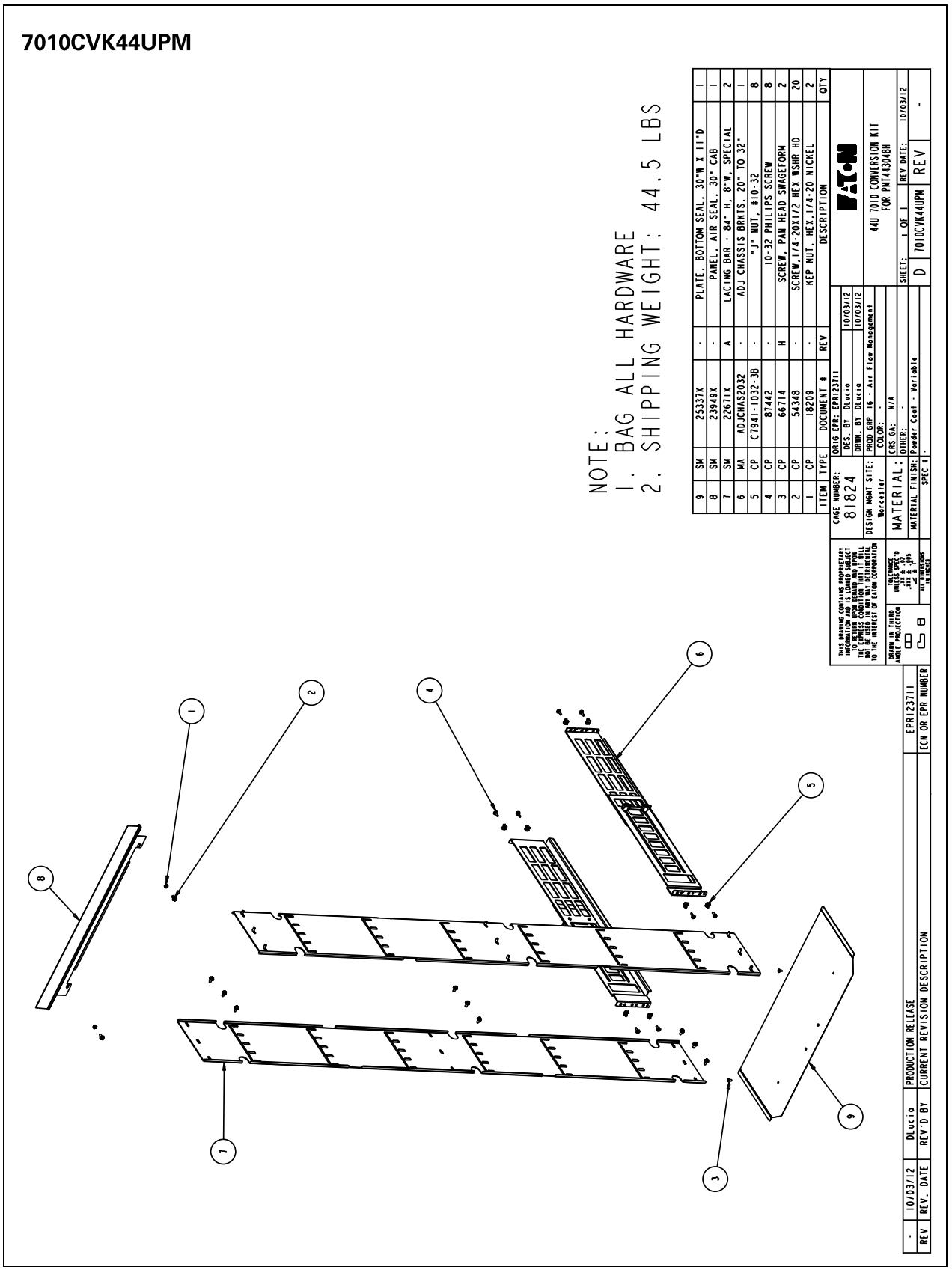

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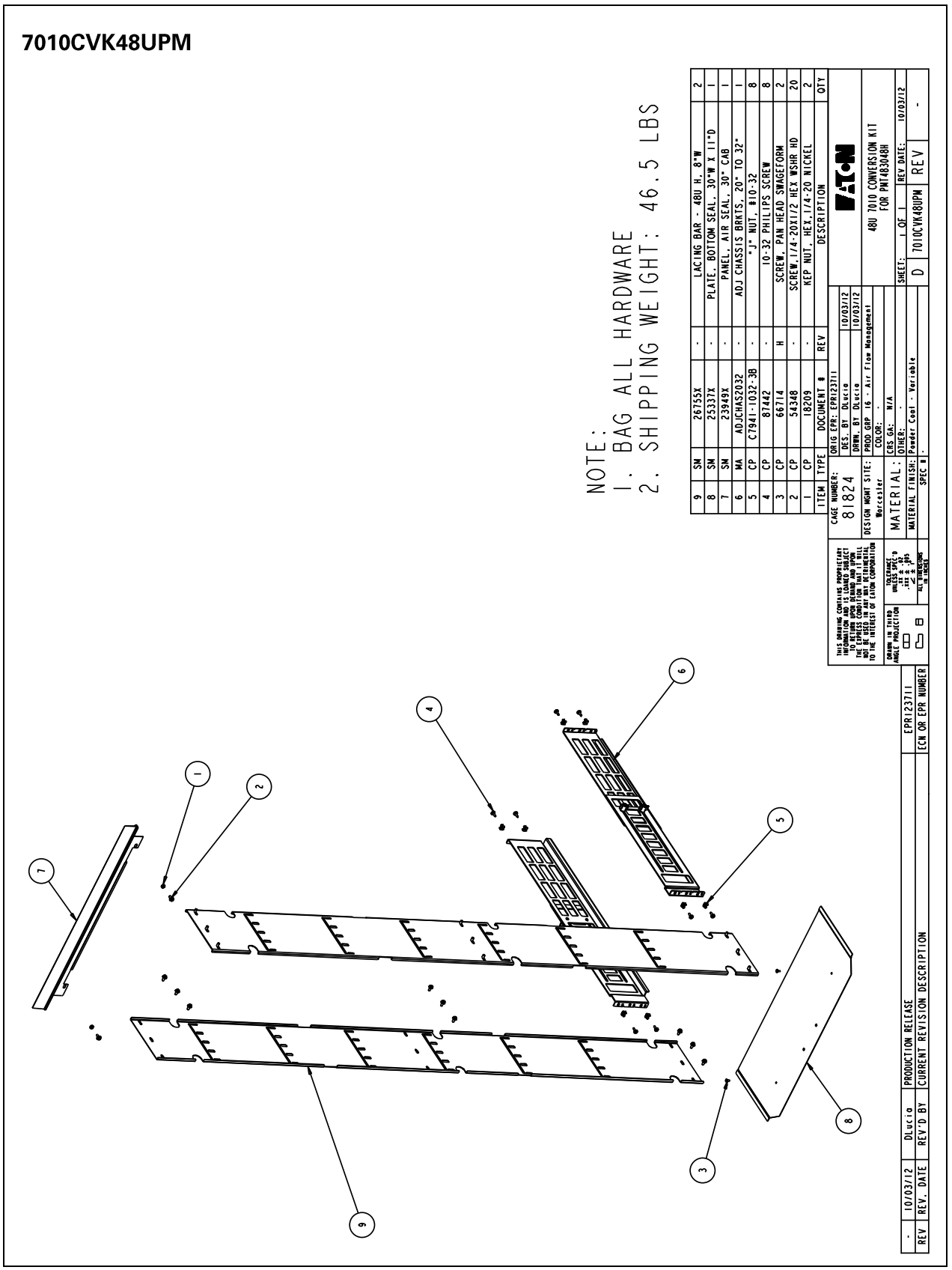

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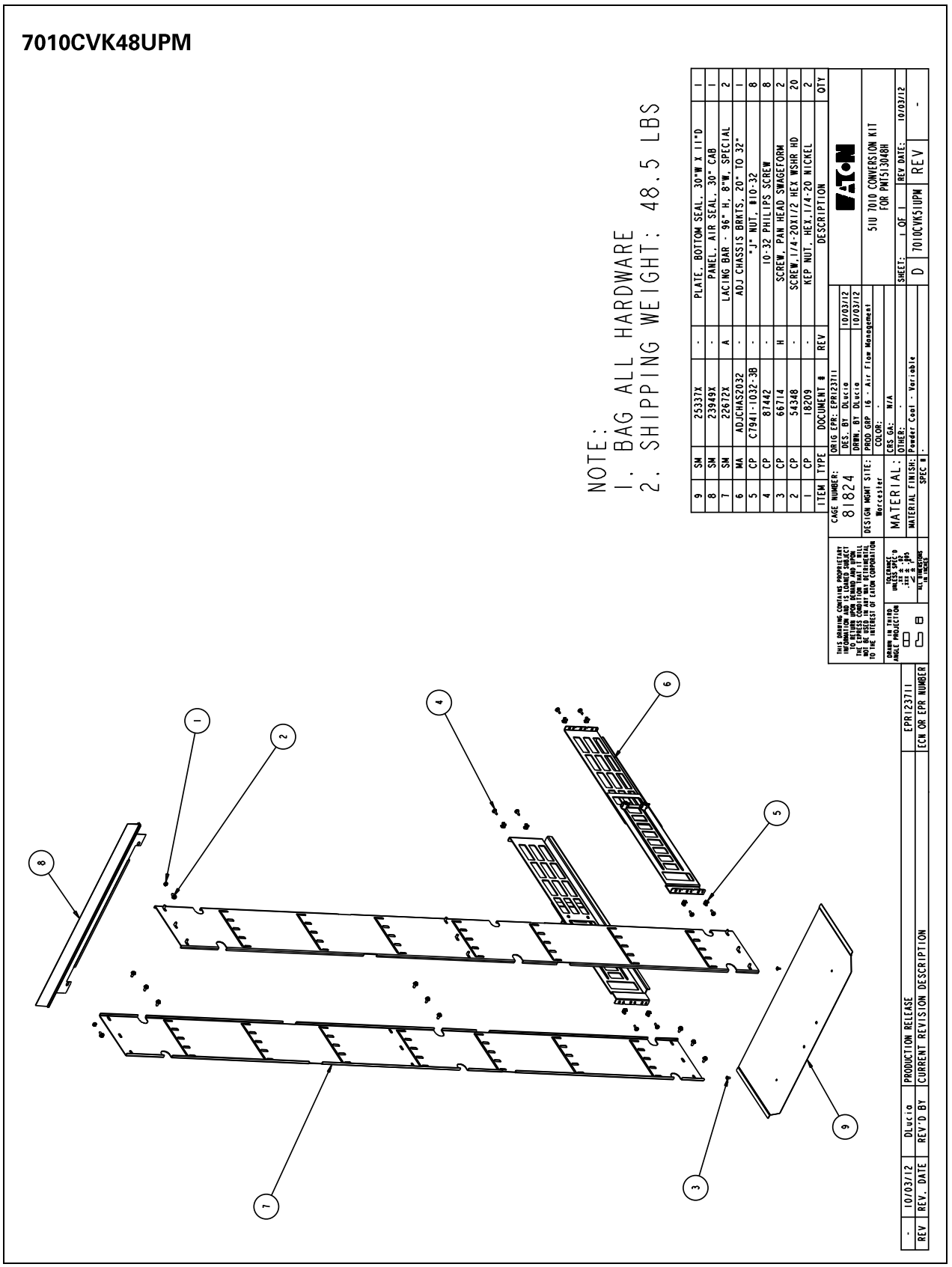

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