

INSTALLATION GUIDE

1100M ENCLOSURE KIT

? LOOKING FOR A VIDEO?

Before you begin, select the image below to watch a walk-through video of this entire installation procedure.



1.1 PURPOSE

This document gives instructions on assembling and installing an enclosure on M and MX mills.

1.2 PRODUCT INFORMATION

Product: 1100M Enclosure Kit (PN 37549)

Note: If any items are missing, we can help. Email support@tormach.com to contact Tormach Technical Support for guidance on how to proceed.

1.3 BEFORE YOU BEGIN

1. Inspect the item(s):
 - Photograph any damage that may have occurred during shipping.
 - Verify the received goods against the packing list.If there is any damage or shortages, you must contact Tormach within 30 days of receipt. Email support@tormach.com to contact Tormach Technical Support for guidance on how to proceed.
2. Read the packing list and locate all items. During the installation, remove labels from the items as needed.
3. Clean all chips and swarf from the:
 - Chip basket
 - Chip pans
 - Machine



Note: The procedure to install the enclosure uses many screws. If you start with a clean machine, it's easier and safer to find and pick up any screws that might drop during the procedure.

4. Verify that the coolant tank and chip basket are under the Machine Stand.
5. If previously installed, you must first remove the stainless steel wear guard from the chip pans, and set it aside for later installation.

1.4 REQUIRED TOOLS

This procedure requires the following tools. Collect them before you begin.

- Metric hex wrench set
- Permanent marker
- Shears or knife

2.1 INSTALLATION

Complete the following steps in the order listed:

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2.1.1 Install the Enclosure Panels

To install the enclosure panels, work from the left to the right of the machine. To make it easier to install all components, don't install the side windows until later in the procedure.

Install the Left Rear Panel

1. Attach the column splice panel to the machine column with three M6 × 1.0 - 12 screws.
2. Attach the left rear panel to the column splice panel with three M5 × 0.8 - 10 screws.
3. Attach the left rear panel to the left chip pan with three M6 × 1.0 - 12 screws.

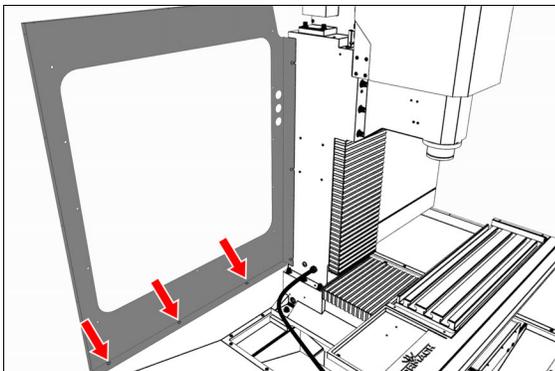


Figure 2-1: Left rear panel attached to the left chip pan.

Install the Left Side Panel

1. Attach the left side panel to the left rear panel with five M5 × 0.8 - 10 screws.

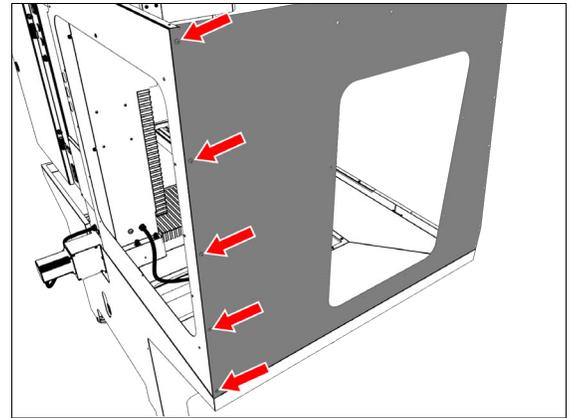


Figure 2-2: Left side panel attached to the left rear panel.

2. Attach the left side panel to the left chip pan with five M6 × 1.0 - 12 screws.

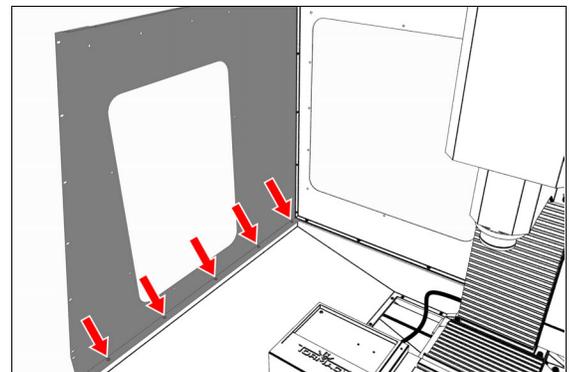


Figure 2-3: Left side panel attached to the left chip pan.

Install the Left Side Window Retainers

Note: To make it easier to install all components, don't install the side windows at this time. Wait until later in the procedure.

1. Push a strip of rubber trim on to the edges of:
 - Two light gray vertical window retainers
 - One light gray horizontal window retainer
 When finished, use shears or a knife to cut the excess trim.
2. Loosely install two vertical window retainers (light gray) on both sides of the left side panel's window opening with two sets of three M5 × 0.8 - 10 screws.
Don't fully tighten the screws. Leaving the window retainers loose makes it easier to install the side windows.

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- Loosely attach one horizontal window retainer (light gray) to the bottom of the left side panel's window opening with two M5 × 0.8 - 10 screws.

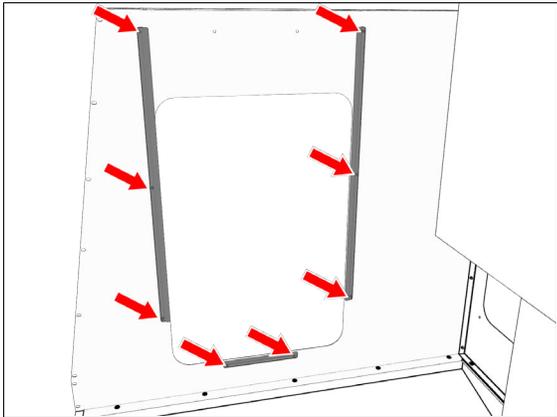


Figure 2-4: Side window retainers attached to the left side panel.

Install the Left Front Panel

- Attach the left front panel to the left chip pan with two M6 × 1.0 - 12 screws.

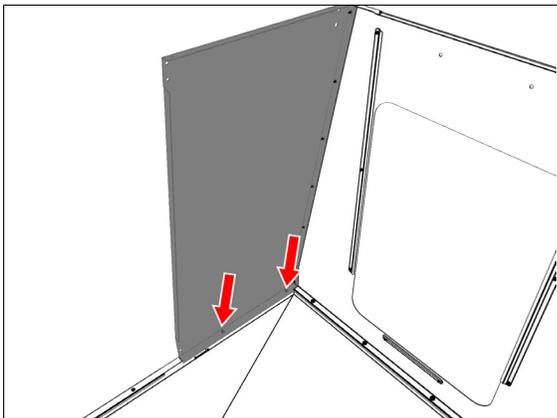


Figure 2-5: Left front panel attached to the left chip pan.

- Attach the left front panel to the left side panel with eight M5 × 0.8 - 10 screws.

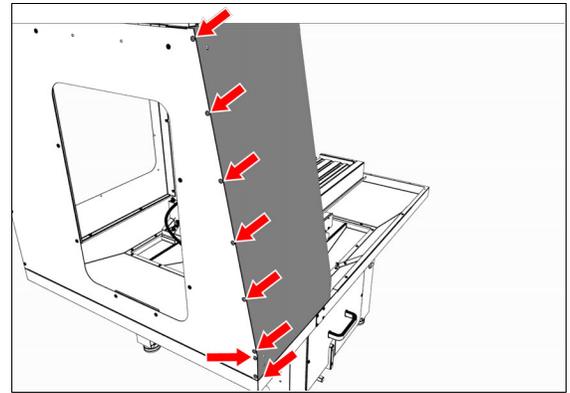


Figure 2-6: Left front panel attached to the left side panel.

Install the Right Rear Side Panel

- Find the three installed M5 × 0.8 - 10 screws on the right side of the electrical cabinet.
- Remove and set aside the three M5 × 0.8 - 10 screws.
- Attach the right rear side panel to the electrical cabinet with the three M5 × 0.8 - 10 screws that you set aside in Step 2.

Install the Right Rear Top Panel

- Find the three installed M5 × 0.8 - 10 screws along the top of the electrical cabinet.
- Remove and set aside the three M5 × 0.8 - 10 screws.
- Attach the right rear top panel to the electrical cabinet with the three M5 × 0.8 - 10 screws that you set aside in Step 2.

Install the Right Side Panel

- Attach the right side panel to the right rear panel with three M5 × 0.8 - 10 screws.
- Attach the right side panel to the right chip pan with four M6 × 1.0 - 12 screws.

Install the Right Side Window Retainers

Note: To make it easier to install all components, don't install the side windows at this time. Wait until later in the procedure.

- Push a strip of rubber trim on to the edges of:
 - Two light gray vertical window retainers
 - One light gray horizontal window retainerWhen finished, use shears or a knife to cut the excess trim.

TECHNICAL DOCUMENT

- Loosely install two vertical window retainers (light gray) on both sides of the right side panel's window opening with two sets of three M5 × 0.8 - 10 screws.
Don't fully tighten the screws. Leaving the window retainers loose makes it easier to install the side windows.
- Loosely attach one horizontal window retainer (light gray) to the bottom of the right side panel's window opening with two M5 × 0.8 - 10 screws.

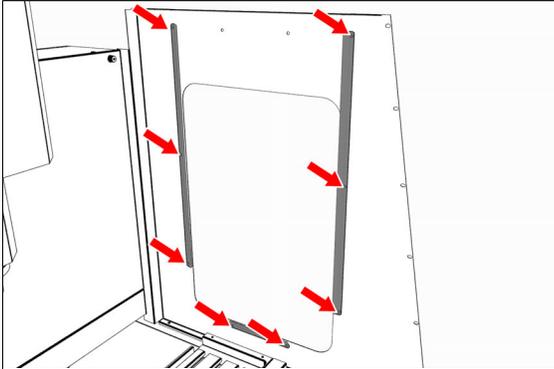


Figure 2-7: Side window retainers attached to the right side panel.

Install the Right Front Panel

- Attach the right front panel to the right chip pan with two M6 × 1.0 - 12 screws.

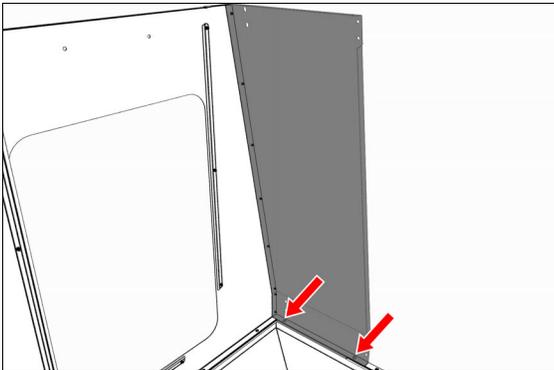


Figure 2-8: Right front panel attached to the right chip pan.

- Attach the right front panel to the right side panel with eight M5 × 0.8 - 10 screws.

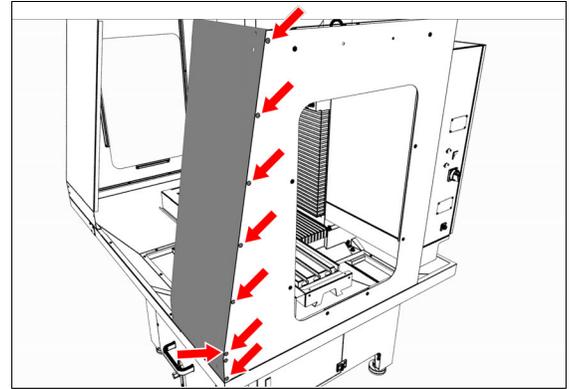


Figure 2-9: Right front panel attached to the right side panel.

Install the Left Top Panel

- Attach the left top panel to the panels on the left side of the enclosure with 12 M5 × 0.8 - 10 screws.

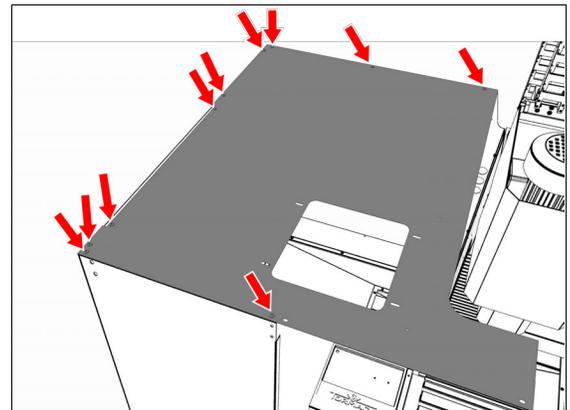


Figure 2-10: Left top panel attached to the left side of the enclosure.

- Attach two cable tie anchors to the left top panel with two M5 × 0.8 - 10 screws.

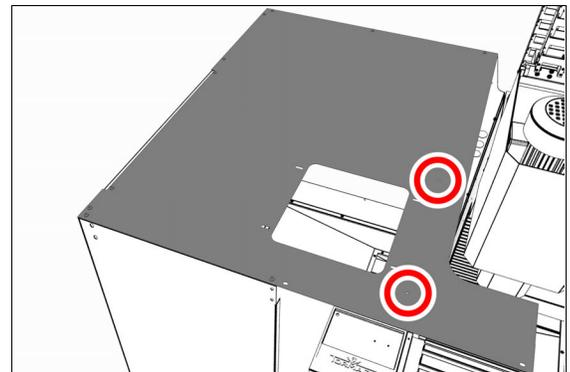


Figure 2-11: Location to attach two cable tie anchors.

Install the Right Top Panel

1. Attach the right top panel to the panels on the right side of the enclosure with 11 M5 × 0.8 - 10 screws.

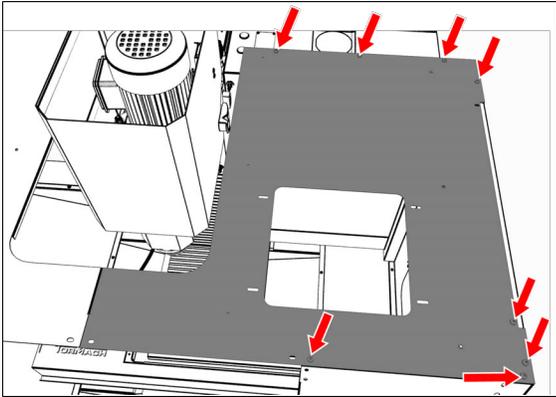


Figure 2-12: Right top panel attached to the right side of the enclosure.

2. Connect the left and right top panels with two M5 × 0.8 - 10 screws.

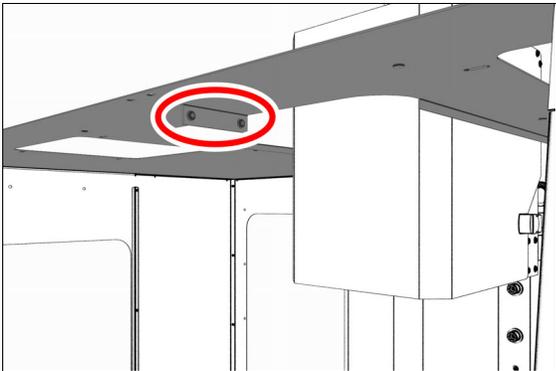


Figure 2-13: Left and right top panels connected.

3. Attach three cable tie anchors to the right top panel with three M5 × 0.8 - 10 screws.

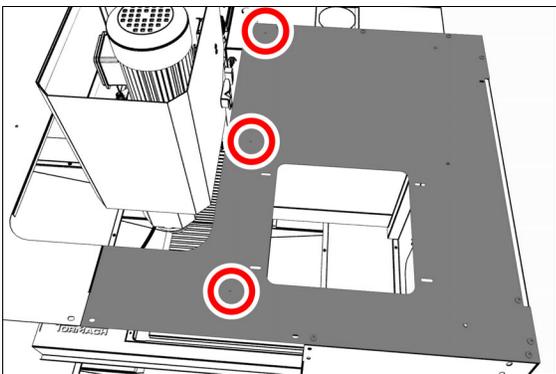


Figure 2-14: Location to attach three cable tie anchors.

Install the Front Upper Panel

1. Attach the front upper panel to the right and left front panels with two sets of two M5 × 0.8 - 10 screws.

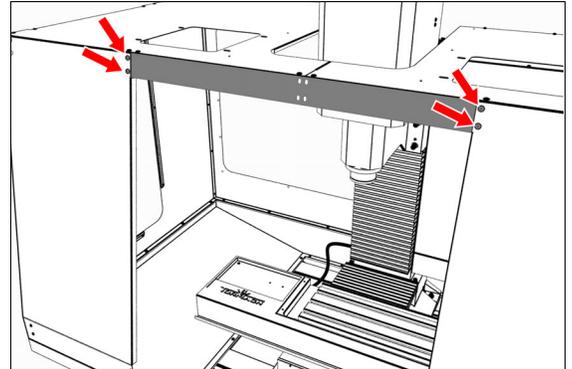


Figure 2-15: Front upper panel attached to the right and left front panels.

2. Attach the front upper panel to the right and left top panels with four M5 × 0.8 - 10 screws.

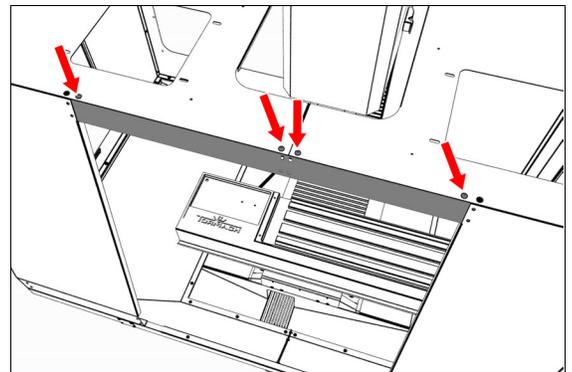


Figure 2-16: Front upper panel attached to the right and left top panels.

Install the Front Lower Panel

1. Attach the front lower panel to the right and left front panels with two sets of two M5 × 0.8 - 10 screws.

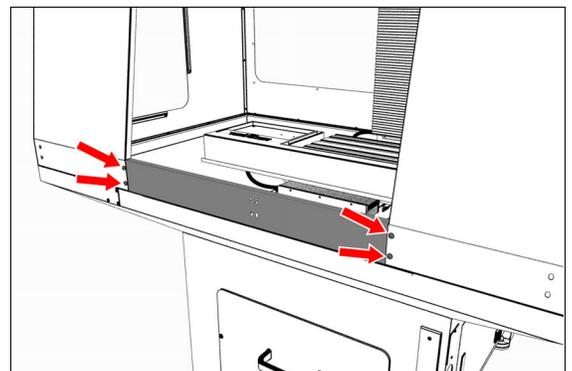


Figure 2-17: Front lower panel attached to the right and left front panels.

2. Attach the front lower panel to the right and left chip pans with four M5 × 0.8 - 10 screws.

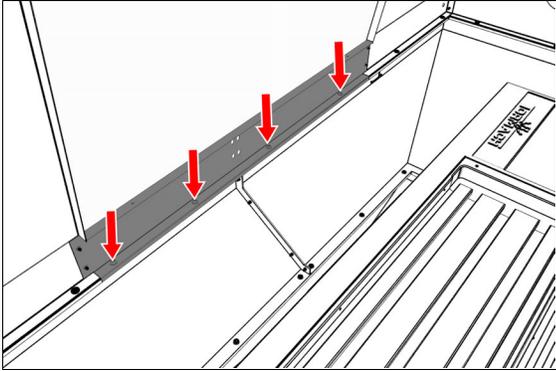


Figure 2-18: Front lower panel attached to the right and left chip pans.

Install the Rear Splash Shield

- Attach the rear splash shield to the right chip pan with four M6 × 1.0 - 12 screws.

2.1.2 Install the Linear Rails

Complete the following steps in the order listed:

Assemble the Linear Rails	7
Install the Linear Assemblies	7

Assemble the Linear Rails

1. Find the four linear rails provided: use the two shorter linear rails on the right side of the enclosure. Use the two longer linear rails on the left side of the enclosure.
2. Assemble each linear rail in the following order:
 - a. Slide one linear rail mount onto the linear rail. Don't completely tighten the clamping screw on the linear rail mount. It's easier to install and align the linear rails with loose clamping screws.
 - b. Slide one bumper onto the linear rail.
 - c. Slide two linear bearings to meet the bumper on the linear rail.
 - d. Slide one bumper onto the opposite end of the linear rail.
 - e. Slide one linear rail mount onto the opposite end of the linear rail. Make sure that the linear rail mount's clamping screw faces the same direction as the linear rail mount that you installed in Step A.

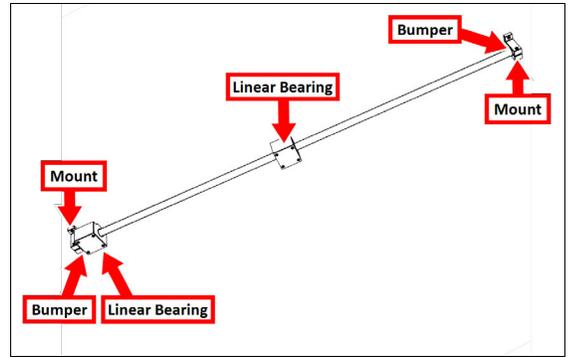


Figure 2-19: Linear rail assembly.

3. Repeat Step 2 for the remaining three linear rails.

Install the Linear Assemblies

1. Align one short linear rail assembly to the two holes on the inside of both the right front panel and the front lower panel. The linear rail mount's clamping screws must face up.

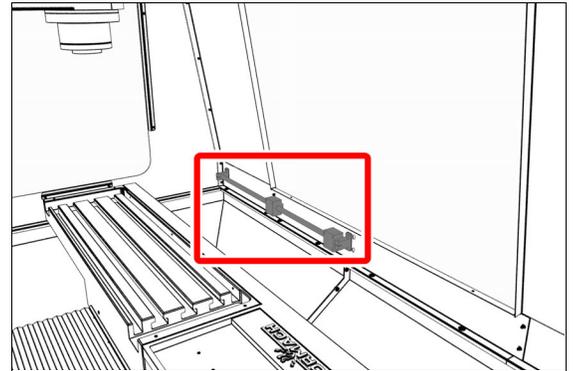


Figure 2-20: Right lower linear assembly attached to the inside of the enclosure's lower right side.

2. Attach the short linear rail assembly to the outside of both the right front panel and the front lower panel with two sets of two M6 × 1.0 - 12 screws.

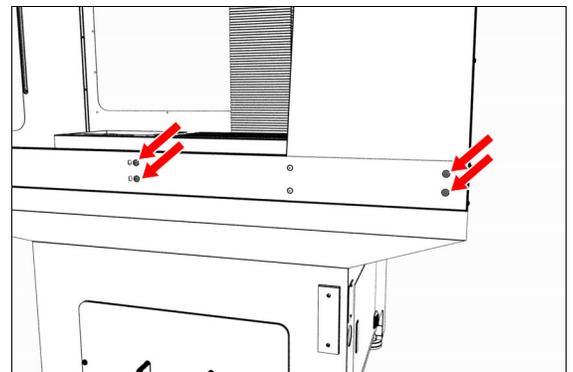


Figure 2-21: Right lower linear assembly attached to the outside of the enclosure's lower right side.

- Repeat Steps 1 to 2 for the remaining three linear rails, with the linear rail mount's clamping screws face in the following directions:
 - Up on the lower linear assemblies
 - Down on the upper linear assemblies

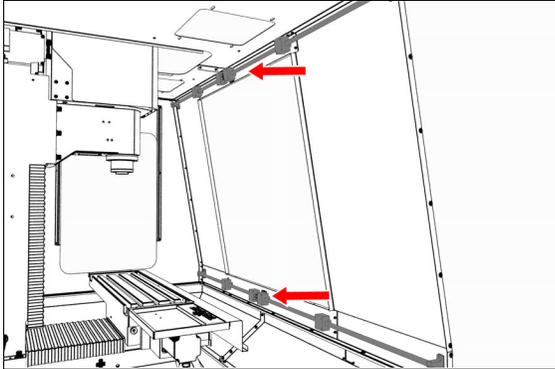


Figure 2-22: Four linear assemblies attached to the enclosure.

- Remove and discard the protective plastic film from each window.
- On the inside of one front door, put one window on top of the rubber trim.
- Attach one dark gray, vertical window retainer to both sides of the front door's window opening with two sets of three M5 × 0.8 - 10 screws.

NOTICE! To prevent window damage from over-tightening, use your fingers to tighten the screws.

- Attach one dark gray, horizontal window retainer to the top and bottom of the front door's window opening with two sets of two M5 × 0.8 - 10 screws.

NOTICE! To prevent window damage from over-tightening, use your fingers to tighten the screws.

2.1.3 Install the Front Doors

Complete the following steps in the order listed:

Assemble the Front Doors.....	8
Install the Front Door Assemblies.....	8
Install the Door Latch.....	9

Assemble the Front Doors

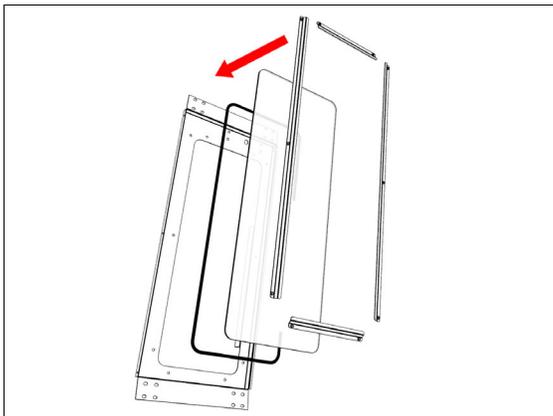


Figure 2-23: Rubber trim, window, and window retainers layered to assemble the front door.

- Push a strip of rubber trim onto the edge of the window opening on each front door. Make sure that the trim starts at one end of the door handle mount, continues around the perimeter of the window, and ends at the opposite side of the door handle mount. When finished, use shears or a knife to cut the excess trim.

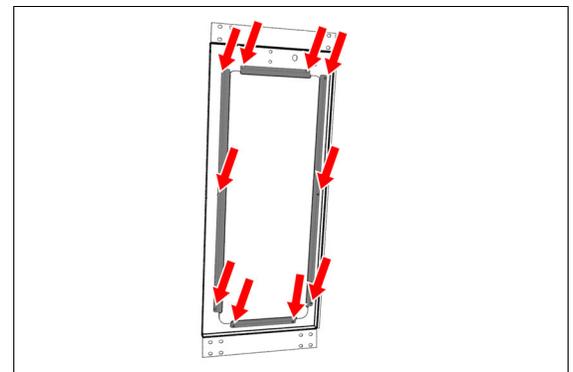


Figure 2-24: Window retainers attached to the front door.

- Repeat Steps 1 through 5 to assemble the remaining front door.

Install the Front Door Assemblies

Each front door is attached to the enclosure by securing it to the linear bearings: the wider door is mounted on the left side of the enclosure, and the narrower door is mounted on the right side of the enclosure.

To install the front doors:

- Starting with the top linear assembly, attach the narrow door to the two upper linear bearings with two sets of four M5 × 0.8 - 10 screws.

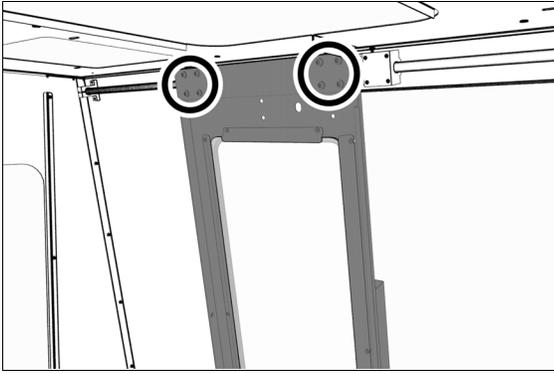


Figure 2-25: Narrow door attached to the top linear assembly.

2. Move the bottom of the narrow door into alignment with the bottom linear assembly. Then, attach the narrow door to the two bottom linear bearings with two sets of four M5 × 0.8 - 10 screws.
3. Repeat Steps 1 to 2 to attach the wide door to the top and bottom linear rail assemblies on the remaining side of the enclosure.

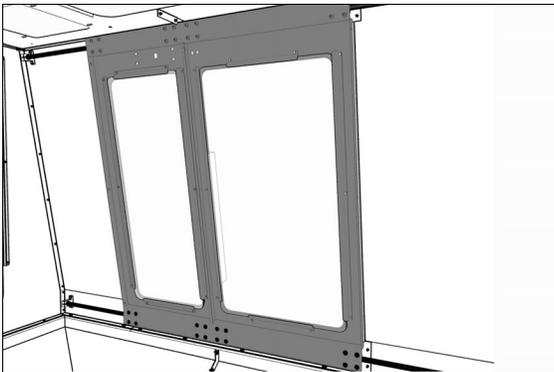


Figure 2-26: Both front doors attached to the enclosure.

4. To the edge of the front door that's closest to the left side of the enclosure, attach one door seal with three M5 × 0.8 - 10 screws.

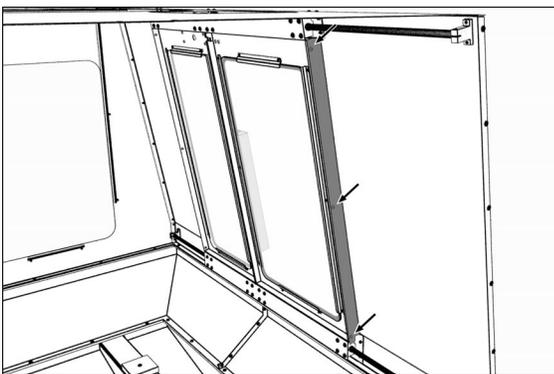


Figure 2-27: Door seal attached to the edge of the front door.

5. Repeat Step 4 for the remaining front door.
6. Attach the handles to both front doors with two sets of two M8 x 1.25 - 20 screws and two sets of two M8 flat washers.

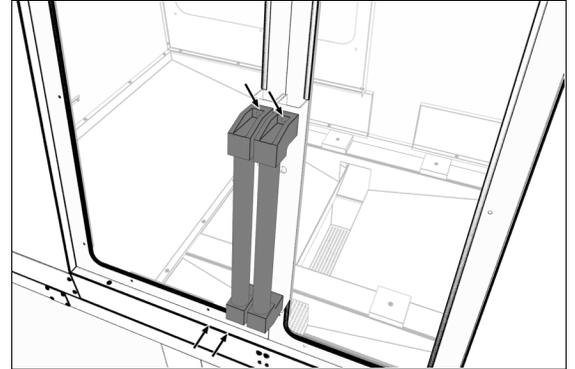


Figure 2-28: Both front door handles attached to the enclosure.

7. Push one square tube plug into the top of each door handle.

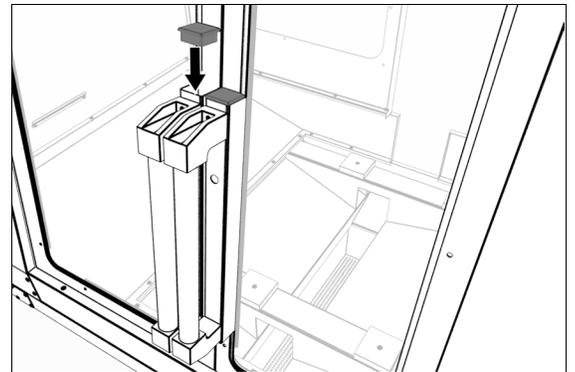


Figure 2-29: Square tube plugs pushed into the door handles.

Install the Door Latch

1. Attach the door latch strike plate on the left front door with a 2.5 mm hex wrench and two M3 screws.
2. Attach the door latch in the pocket on the right door with two M3 screws.

2.1.4 Install the Floodlights

1. Use a multimeter to verify the ground connection of both floodlights:
 - a. Measure the resistance between the floodlight's power connector ground pin and the floodlight's bracket screw.

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- b. Read the OHMS value that displays. The value should be less than 5 OHMS. If the value is greater than 5 OHMS, don't install the floodlight. Email support@tormach.com to contact Tormach Technical Support for guidance on how to proceed.
2. Position one floodlight over the opening on the right top panel. Take care not to drop the light through the opening into the enclosure.
3. Attach one floodlight retainer to both sides of the light with two sets of two M5 × 0.8 - 10 screws. Verify that the floodlight is centered over the opening before hand-tightening the floodlight retainers.

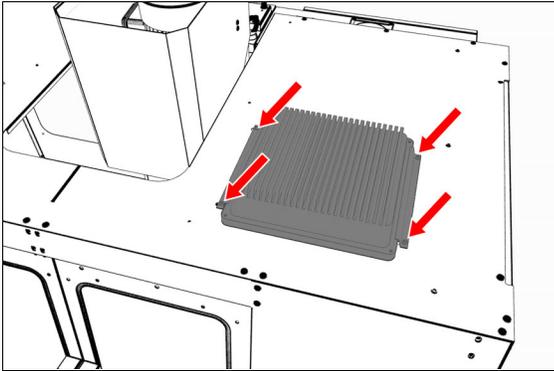


Figure 2-30: Floodlight attached to the top panel.

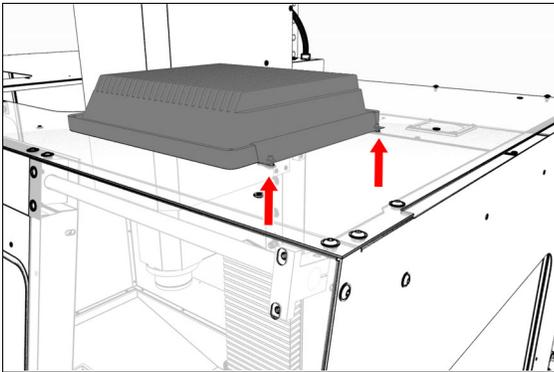


Figure 2-31: Attached floodlight from the inside of the enclosure.

4. Repeat Steps 1 to 3 to install the floodlight on the left side.
5. Connect the Right Light Power cable to the plug on the right floodlight.
6. Connect the Left Light Power cable to the plug on the left floodlight.
7. Route the power cables from the floodlights to the electrical cabinet.
8. Plug the floodlights into the Enclosure Lights outlet on the back of the electrical cabinet.

9. Attach the floodlights' power cables to the five wire tie anchors on the left and right top panels with five wire ties.

2.1.5 Install the Side Windows

1. Rubber trim is required to prevent leaks around the window openings: push a strip of rubber trim to the edge of the window opening on each side panel. Verify that the trim covers the entire perimeter of the window. When finished, use shears or a knife to cut the excess trim.

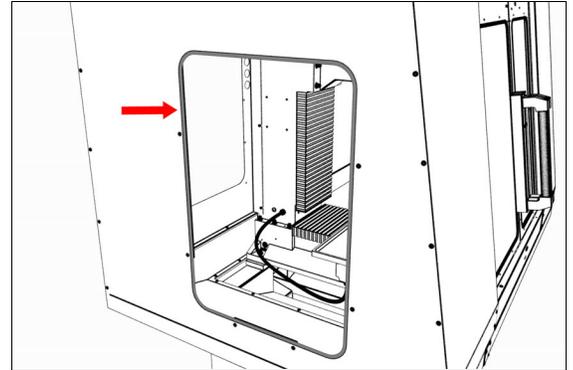


Figure 2-32: Rubber trim pushed onto the window opening.

2. Remove and discard the protective plastic film from the windows.
3. Slowly slide one window through the left side panel's window opening and into the two installed vertical window retainers. Take care to not scratch the window. When finished, verify that the window rests on the bottom horizontal window retainer.

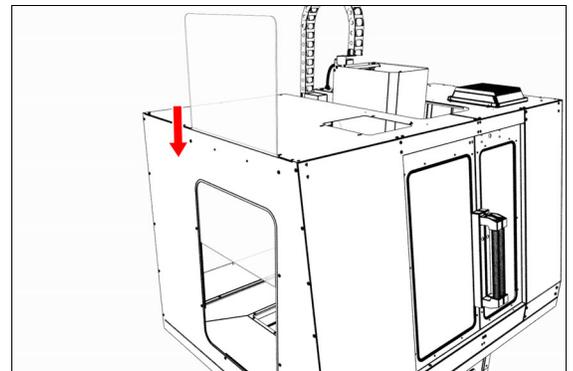


Figure 2-33: Window sliding into the window opening.

4. Push a strip of rubber trim onto the edge of one horizontal window retainer. When finished, use shears or a knife to cut the excess trim.

- Attach one horizontal window retainer above the window on the left side panel with two M5 × 0.8 - 10 screws.

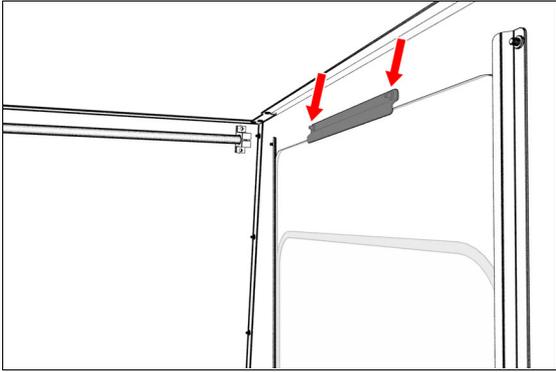


Figure 2-34: Horizontal window retainer attached above the window.

- Tighten all screws on the window retainers to secure the window.

NOTICE! To prevent window damage from over-tightening, use your fingers to tighten the screws.

- Repeat Steps 1 through 6 for the window on the right side panel.

2.1.6 Install the Access Panel

- Push three round hole plugs into the three holes on the left rear panel.

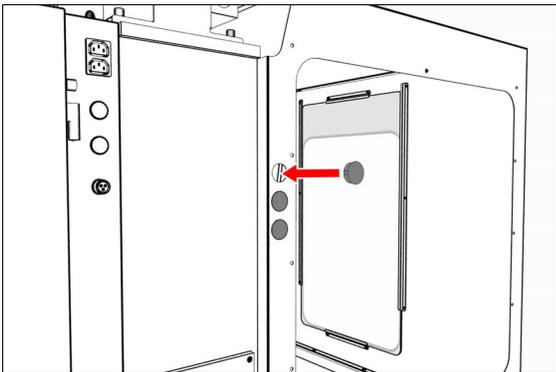


Figure 2-35: Round hole plugs pushed into the left rear panel.

- Push a strip of rubber trim to the edge of the access panel opening on the left rear panel. Verify that the trim covers the entire perimeter of the opening. When finished, use shears or a knife to cut the excess trim.
- Find the threaded hole toward the top center of the left rear panel. Then, loosely install one M5 × 0.8 - 10 screw from the inside of the enclosure.

This screw supports the access panel while you install the remaining fasteners.

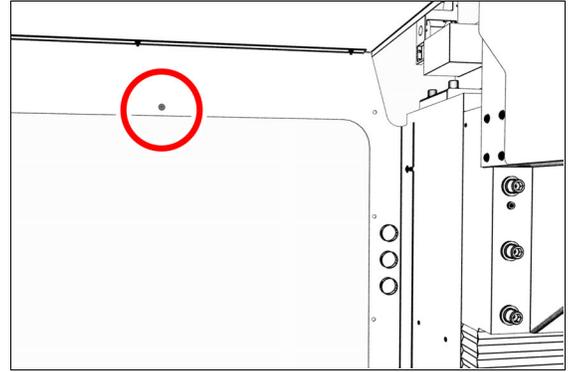


Figure 2-36: Supporting screw inside the left rear panel.

- Tilt the access panel and put it through the opening on the left rear panel. Then, hang it inside the enclosure on the installed M5 × 0.8 - 10 screw.

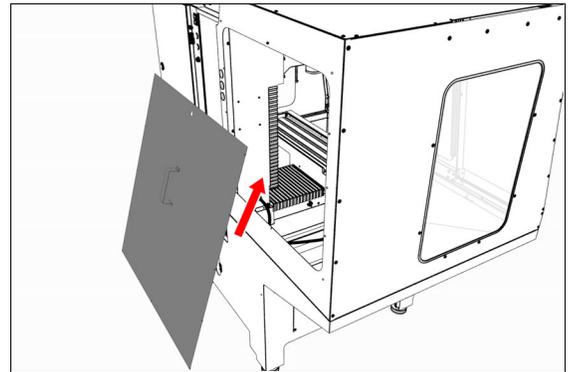


Figure 2-37: Access panel moving inside the enclosure.

- Attach the access panel to the left rear panel from the outside of the enclosure with 11 M5 × 0.8 - 10 screws.

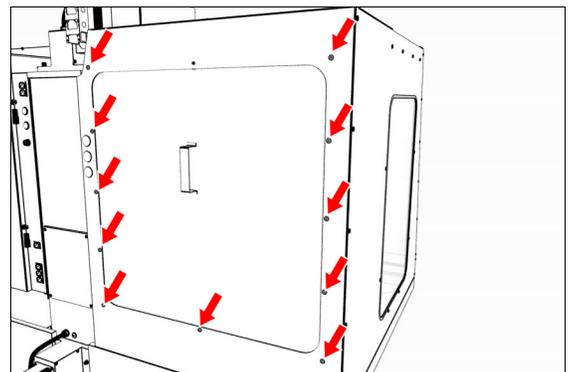


Figure 2-38: Access panel attached to the left rear panel.

2.1.7 Install the Stainless Steel Wear Guard

- Find the stainless steel wear guard that you set aside earlier. Attach it to the lower front panel with two M5 × 0.8 - 10 screws.

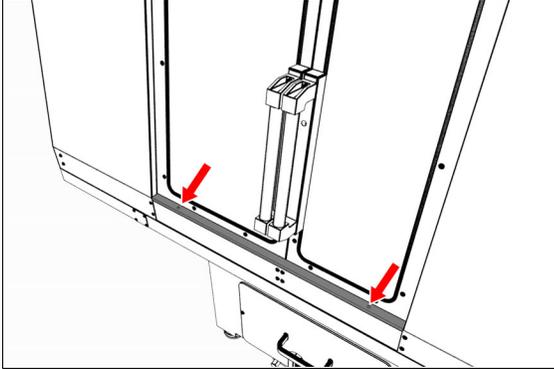


Figure 2-39: Stainless steel wear guard attached to the lower front panel.

2.1.8 Use the Maintenance Labels

About the Maintenance Labels

The machine has one maintenance label on each window.



Figure 2-40: Window maintenance label.

Write the Date on the Maintenance Labels

- Write down today's date on each label with a permanent marker.
You have completed assembling and installing the 1100M Enclosure.

Replace the Windows

When required, replace the windows with the following parts:

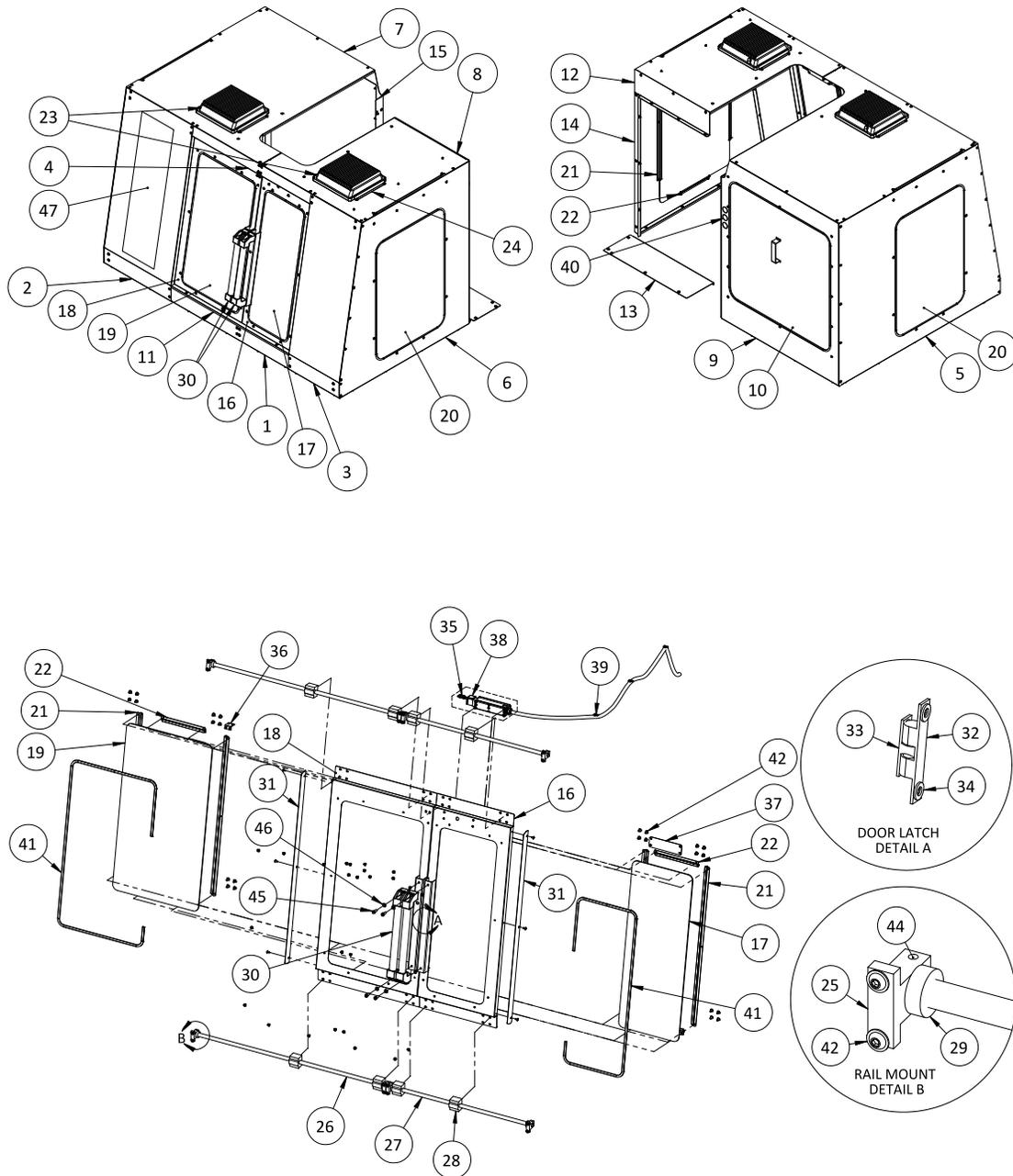
- Window, 1100, Side (PN 37648)
- Window, 1100, Left Door (PN 37649)
- Window, 1100, Right Door (PN 37650)

3.1 EXPLODED VIEWS AND PARTS LISTS

Read the following sections for reference:

3.1.1 Enclosure Exploded View.....	13
3.1.2 Enclosure Parts List.....	14

3.1.1 Enclosure Exploded View



TECHNICAL DOCUMENT

3.1.2 Enclosure Parts List

ID	Description	Quantity
1	Enclosure Panel, 1100, Lower Front (PN 37630)	1
2	Enclosure Panel, 1100M, Left Front (PN 37635)	1
3	Enclosure Panel, 1100M, Right Front (PN 37634)	1
4	Enclosure Panel, 1100, Upper Front (PN 37633)	1
5	Enclosure Panel, 1100M, Left Side (PN 37632)	1
6	Enclosure Panel, 1100M, Right Side (PN 37631)	1
7	Enclosure Panel, 1100, Left Top (PN 37636)	1
8	Enclosure Panel, 1100, Right Top (PN 37637)	1
9	Enclosure Panel, 1100, Left Rear (PN 37638)	1
10	Enclosure Panel, 1100, ATC (PN 37645)	1
11	Chip Tray Rail, 1100 (PN 37657)	1
12	Enclosure Panel, 1100, Right Rear (PN 37639)	1
13	Enclosure Panel, 1100, Splash Shield (PN 38691)	1
14	Enclosure Panel, 1100, Splice Plate (PN 38695)	1
15	Enclosure Panel, 1100, Column Splice (PN 37663)	1
16	Enclosure Door, 1100, Right (PN 37640)	1
17	Window, 1100, Right Door (PN 37650)	1
18	Enclosure Door, 1100, Left (PN 37641)	1
19	Window, 1100, Left Door (PN 37649)	1
20	Window, 1100, Side (PN 37648)	2
21	Enclosure Window Retainer, 1100, Vertical (PN 37646)	8
22	Enclosure Window Retainer, 1100, Horizontal (PN 37647)	8
23	LED Floodlight, 50 W (PN 37341)	2
24	Flood Light Retainer (PN 38222)	4
25	Linear Rail Mount (PN 37622)	8
26	Left Door Rail, 1100 (PN 37642)	2
27	Right Door Rail, 1100 (PN 37643)	2
28	Linear Bearing (PN 37610)	8
29	Door Bumper (PN 38357)	8
30	Handle, 400 mm (PN 37611)	2

TECHNICAL DOCUMENT

ID	Description	Quantity
31	Door Seal (PN 37644)	2
32	Enclosure Ball Latch, Female (PN 38482)	1
33	Enclosure Ball Latch, Male (PN 38483)	1
34	Washer, Flat, M5, Stainless Steel (PN 37939)	2
35	Nut Bar (PN 37585)	1
36	Switch Key Bracket (PN 37586)	1
37	Locking Door Switch Installation/Cover Plate (PN 38272)	1
38	<u>Door Lock Switch Kit (PN 38283)</u>	1
39	Cable Tie Anchor, Screw Mount, M5 (PN 31460)	3
40	Round Plug, 32 mm (PN 37598)	3
41	Rubber Window Trim (PN 38356)	21
42	Screw, Button Head Cap (Flanged), M6 × 1 - 12, Stainless Steel (PN 38206)	76
43	Screw, Button Head Cap (Flanged), M5 × 0.8 - 10, Stainless Steel (PN 38205)	151
44	Screw, Socket Head Cap, M5 × 0.8 - 20 (PN 30357)	8
45	Screw, Socket Head Cap, M8 × 1.25 - 22 (PN 37190)	4
46	Washer, Flat, M8 (PN 30531)	4
47	Decal, Enclosure, 1100M, Front Left Panel (PN 38746)	1