IsoAir System

Maintenance Manual

REF 2941

EN

2941-109-002 Rev AB.0 2024-11

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Warning/Caution/Note Definition

The words **WARNING**, **CAUTION**, and **NOTE** carry special meanings and should be carefully reviewed.

WARNING

Alerts the reader about a situation which, if not avoided, could result in death or serious injury. It may also describe potential serious adverse reactions and safety hazards.

CAUTION

Alerts the reader of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or damage to the product or other property. This includes special care necessary for the safe and effective use of the device and the care necessary to avoid damage to a device that may occur as a result of use or misuse.

Note - Provides special information to make maintenance easier or important instructions clearer.

Summary of safety precautions

Always read and strictly follow the warnings and cautions listed on this page. Service only by qualified personnel.

WARNING

- Always plug the power cord into the bed auxiliary outlet or a grounded power receptacle. Do not use an extension cord.
- The IsoAir system may interfere with patient ECG measurements. You may need to disconnect the AST cable, turn off the IsoAir system, or move the patient to a non-powered system.
- The use of accessories, transducers, and cables, other than those specified or provided by the manufacturer, could result in increased electromagnetic emissions or decreased electromagnetic immunity and result in improper operation.
- Portable RF communications equipment, including peripherals such as antenna cables and external antennas, should be no closer than 12 inches (30 cm) to any part of the IsoAir system, that includes cables specified by the manufacturer.
- Avoid stacking or placing equipment adjacent with other equipment to prevent improper operation of the products. If such use is necessary, carefully observe stacked or adjacent equipment to make sure that they are operating properly.
- This equipment/system is intended for use by healthcare professionals only. This equipment/system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as reorienting or relocating IsoAir system or shielding the location.

CAUTION

- Do not modify the product or any components of the product. Modifying the product can cause unpredictable operation resulting in injury to patient or operator. Modifying the product also voids its warranty.
- Always use electrostatic discharge (ESD) protective equipment before you open antistatic bags and service electronic parts.
- Do not place unprotected circuit boards on the floor.

Introduction for service

This manual assists you with the service of your Stryker product. Read this manual to service this product. This manual does not address the operation of this product. See the Operations Manual for operating and use instructions. To view your Operations Manual online, see https://techweb.stryker.com/.

Expected service life

The **IsoAir** support surface has a three year expected service life under normal use conditions and with appropriate periodic maintenance.

The **IsoAir** pump has a five year expected service life under normal use conditions and with appropriate periodic maintenance.

Contact information

Contact Stryker Customer Service or Technical Support at: 1-800-327-0770.

Stryker Medical
3800 E. Centre Avenue
Portage, MI 49002
USA

Note - The user and/or the patient should report any serious product-related incident to both the manufacturer and the Competent authority of the European Member State where the user and/or patient is established.

To view your operations or maintenance manual online, see https://techweb.stryker.com/.

Have the serial number (A) of your Stryker product available when calling Stryker Customer Service or Technical Support. Include the serial number in all written communication.

Serial number location

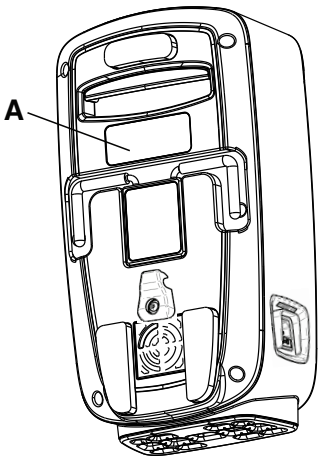


Figure 1 – Serial number - pump

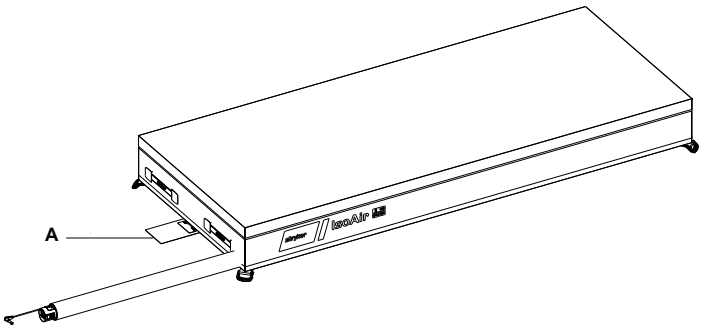


Figure 2 – Serial number - support surface

Preventive maintenance

Remove product from service before you perform preventive maintenance. At a minimum, check all items listed during annual preventive maintenance for all Stryker Medical products. You may need to perform preventive maintenance checks more often based on your level of product usage. Service only by qualified personnel.

CAUTION - Do not modify the product or any components of the product. Modifying the product can cause unpredictable operation resulting in injury to patient or operator. Modifying the product also voids its warranty.

Note

- Remove product from service before performing preventive maintenance.
- Clean and disinfect the exterior of the support surface before inspection, if applicable.
- Consult your local regulations to dispose of electronic equipment.

_____ Zipper and covers are free of tears, cuts, holes, or other openings

_____ Inside surface and core are free of signs of staining due to fluid ingress or contamination by fully unzipping the cover

_____ Air cells are free of excessive wear, cracks, tears, or other damage

_____ Fire barrier cover is free of excessive wear

_____ All connectors are free of damage

_____ AST cable is free of visible cracks or damage

_____ Pump housing or components (hoses, power cords, or case) are free of cracks, holes, or damage

_____ Pump hooks that hang the pump on the bed frame are free of damage

_____ Pump and attached connectors or hoses are free of air leaks

_____ Graphical user interface screen is free of cracks or damage

_____ Air filter (replace each year)

_____ Fuse

_____ AST function

_____ Max inflate function

_____ CPR release

_____ Run diagnostic test (all tests must pass)

Note - Replace worn or damaged components as necessary.

Pump serial number:
Completed by:
Date:

Support surface serial number:
Completed by:
Date:

Troubleshooting

Problem	Screen	Cause	Recommended action
AST malfunction alarm		AST cable is not plugged in	1. Make sure that the AST cable is connected. 2. Press the **Action** button next to the **Alarm off** icon. 3. You may continue to use the product. Turn off the AST mode within three seconds of canceling the alarm. 4. If the condition persists, contact a qualified service technician.
		AST cable is broken	Contact a qualified service technician.
		AST circuit inside the support surface is broken or shorted	Contact a qualified service technician.
Kinked air hose alarm		Bend or some obstruction in the air hose that may cause a compromise in the air flow	1. Make sure that the air hose is straight and air flow is not obstructed. 2. Make sure that the support surface is secure to the bed. 3. Route the pump and hose. 4. Press the **Action** button next to the **Alarm off** icon. 5. If the condition persists, contact a qualified service technician.
Disconnected air hose alarm		Air hose is disconnected from the pump or there is a leak in the system	1. Make sure that the air hoses are seated all the way into the air hose ports on the pump. 2. Press the **Action** button next to the **Alarm off** icon. 3. If the condition persists, contact a qualified service technician.
Remove from use alarm		Software or calibration data corruption error	Contact a qualified service technician.

Problem	Screen	Cause	Recommended action
Power loss, product does not turn on		Power cord not seated, power cord unplugged from outlet	1. Make sure that the power cord is plugged into the product and the outlet. 2. Secure the power cord to the flex grip. 3. If the condition persists, contact a qualified service technician.
Button not responsive		Lock may be on	1. Press the **Action** button next to the **Lock on** icon to unlock the screen. 2. If the condition persists, contact a qualified service technician.

Power cords

Part	Number
Power cord, type B, 1 meter	2874-007-001
Power cord, type B, 5 meter	2874-007-002
Power cord, type E/F, 1 meter	2874-007-003
Power cord, type E/F, 5 meter	2874-007-004
Power cord, type J, 1 meter	2874-007-007
Power cord, type J, 5 meter	2874-007-008
Power cord, type I, 1 meter	2874-007-009
Power cord, type I, 5 meter	2874-007-010
Power cord, type G, 1 meter	2874-007-011
Power cord, type G, 5 meter	2874-007-012
Power cord, type L, 1 meter	2874-007-013
Power cord, type L, 5 meter	2874-007-014
Power cord, type N, 1 meter	2874-007-015
Power cord, type N, 5 meter	2874-007-016
Power cord, type K, 1 meter	2941-700-008
Power cord, type K, 5 meter	2941-700-009

Product alarms

The alarms for this product are visual only. There are no audible alarms.

Icon	Priority alarm	Name	Delay	Therapy interrupted
	Low	Disconnected air hose alarm	Less than 16 minutes	Yes
	Low	Kinked air hose alarm	Less than five seconds	Yes
	Low	AST malfunction alarm	Less than five seconds	Yes
	Low	Remove from use alarm	Less than five seconds	Yes

Note

- Alarms display on the interface control panel of the pump.
- Alarms reset if there is power loss to the pump.
- Press the **Action** button next to the **Alarm off** icon to turn off active alarms and reset the alarm system.

Service

Protecting against electrostatic discharge (ESD)

CAUTION

- Always use electrostatic discharge (ESD) protective equipment before you open antistatic bags and service electronic parts.
- Do not place unprotected circuit boards on the floor.

Note - Always ship the circuit boards back to Stryker. Use the antistatic bag that the new board was originally shipped in.

The electronic circuits in the product are completely protected from static electricity damage when factory assembled. Always use adequate static protection when you service the electronic systems of the product. All service personnel must use static protection whenever they touch wires.

Sample antistatic protection equipment includes:

- Antistatic wrist strap
- Grounding plug
- Test lead with a banana plug on one end and an alligator clip on the other end

Make sure that you follow the ESD manufacturer's instructions for appropriate protection against static discharge.

Accessing the diagnostic mode

WARNING - Always plug the power cord into the bed auxiliary outlet or a grounded power receptacle. Do not use an extension cord.

1. Plug the support surface hoses into the pump. Remove all weight from the support surface.
2. Power on the pump.
3. As the software loads, press the **ON** button within five seconds (Figure 3). Press and hold the **Action** button next to the **Home** icon (Figure 4).

Figure 3 – Software loading

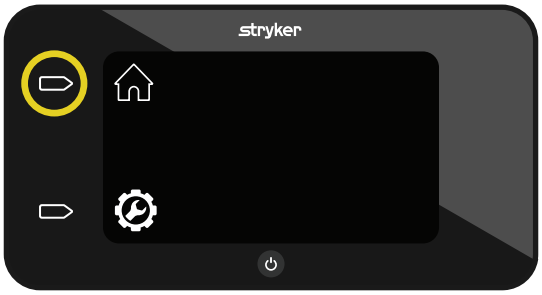


Figure 4 – Service screen home

4. Press the **Action** button next to the **Service** icon to start the diagnostic mode (Figure 5).

Figure 5 – Service screen entry

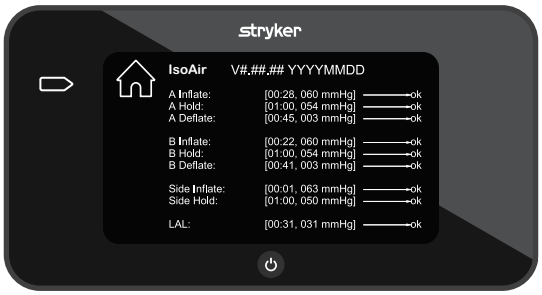


Figure 6 – Diagnostic mode and software version

Note - The software version is located on the service screen (Figure 6).

5. Review the diagnostic result.
   a. If the diagnostic result is OK, the test passes.
   b. If the diagnostic result is not OK, investigate the diagnostic test result.

Checking diagnostics

Procedure:

1. Plug in the support surface AST cable and CPR connector.
2. Plug the pump power cord into a wall outlet.
3. Access the diagnostic mode. See *Accessing the diagnostic mode* (page 10).
4. Complete the diagnostic tests.
5. Review the diagnostic results.
   a. If the diagnostic result is OK, the test passes.
   b. If the diagnostic result is not OK, investigate the diagnostic test result.
6. Power cycle the pump. Disconnect the AST cable. Verify that the AST alarm appears.
7. Plug in the AST cable. Acknowledge the alarm.
8. Verify that the pump indications on the front of the front housing are operational.
9. Verify proper operation before you return the product to service.

Electrical safety check

Tools required:

- Digital multi-meter
- T20 Torx driver

Procedure:

1. Unplug the power cord from the pump.
2. Unplug the AST cable and the CPR connector from the pump.
3. Place the pump face down on a work surface.
4. Using a T20 Torx driver, remove the screw (A), the washer (B), and the flex grip (C) that secure the air filter access door (D) (Figure 7). Save the screw, washer, and flex grip.

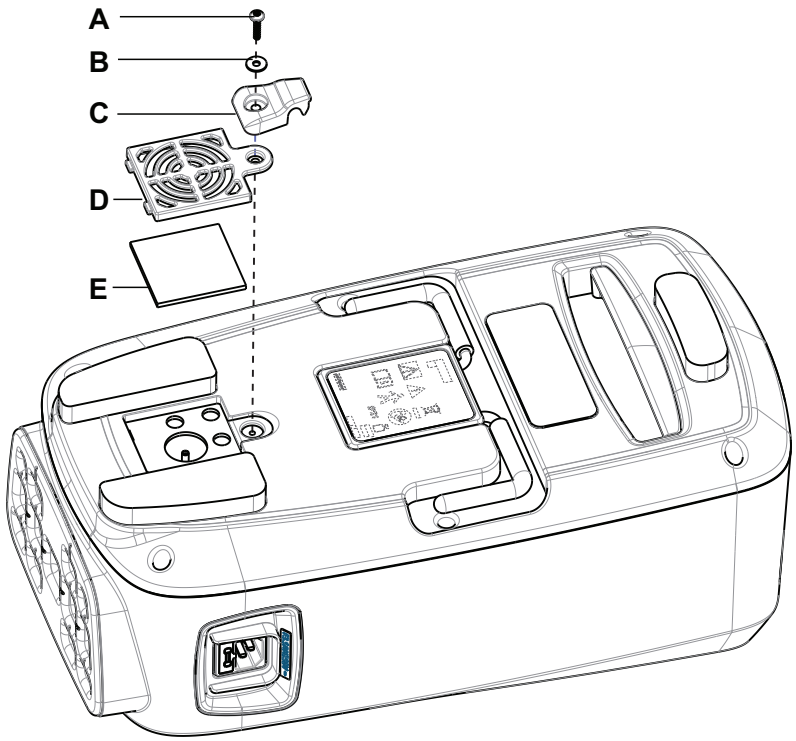


Figure 7 – Access the ground pin

5. Remove the air filter access door (D) and the air filter (E) (Figure 7). Save the air filter access door and the air filter.
6. Using a digital multi-meter, perform a ground continuity check. Use the meter leads between the power inlet ground pin and the metal screw behind the air filter (E) (Figure 7). This should measure ≤100 ohms.

   Note - This step is critical. Good continuity is necessary for proper function.
7. Reverse steps to reinstall the air filter.
8. Verify proper operation before you return the product to service.

Non-AST air cell replacement

Tools required:

- Diagonal pliers
- Rubbing alcohol

Procedure:

1. Unplug the AST cable and the CPR connector from the pump.
2. Raise the bed to the highest height position.
3. Place the litter surface in a flat, horizontal position.
4. Unzip and remove the support surface top cover.
5. Unclip the foot end center belt retainer from the bottom cover.
6. Unzip the fire barrier.
7. Move the fire barrier over the side bolsters and air cells to the head end to access the non-AST air cells to replace.
8. Using diagonal pliers, cut the nylon cable tie from the two-line manifold/non-AST air cell fitting (A).
9. Cut the fitting (B) lengthwise for the non-AST air cell being replaced (A) (Figure 8).

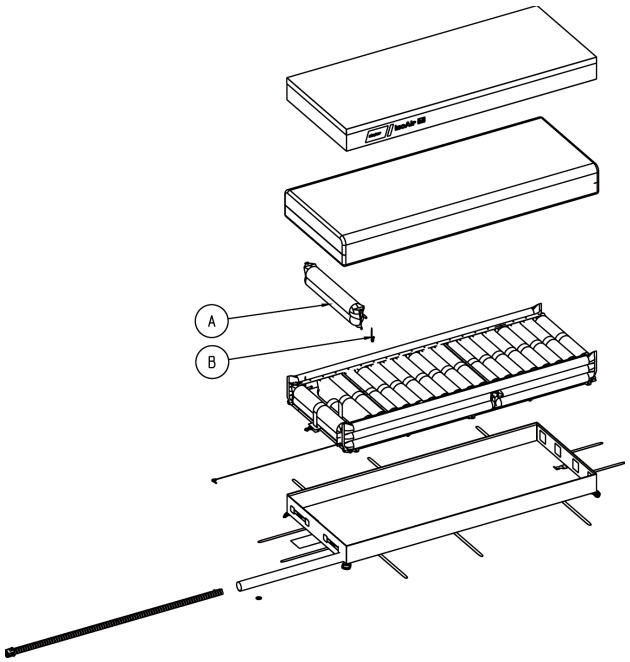


Figure 8 – Non-AST air cell replacement

10. Unbutton both sides of the non-AST air cell from the side bolsters.
11. Slide the non-AST air cell out of the center belt to remove.
12. Remove and discard the non-AST air cell.
13. Insert the supplied non-AST air cell through the center belt.
14. Using rubbing alcohol, lubricate the two-line manifold fitting and the non-AST air cell fitting.
15. Apply firm, constant force while you turn the air cell fitting back and forth to connect the non-AST air cell to the two-line manifold.
16. Install a nylon cable tie onto the two-line manifold/non-AST air cell fitting, 0.25 in. from the end of the hose.
17. Verify that the air cell inflates.
18. Button both sides of the non-AST air cell to the side bolsters.
19. Move the fire barrier over the air cells toward the foot end to install the fire barrier.
20. Clip the foot end center belt retainer to the bottom cover.
21. Zip the fire barrier.
22. Zip the support surface top cover onto the bottom cover.
23. Plug the AST cable and the CPR connector back into the pump.
24. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
25. Verify proper operation before you return the product to service.

AST four cell kit replacement

Tools required:

- Diagonal pliers
- Rubbing alcohol

Procedure:

1. Unplug the AST cable and the CPR connector from the pump.

2. Raise the bed to the highest height position.
3. Place the litter surface in a flat, horizontal position.
4. Unzip and remove the support surface top cover.
5. Unclip the foot end center belt retainer from the bottom cover.
6. Unzip the fire barrier.
7. Move the fire barrier over the side bolsters and air cells toward the head end to access the AST air cells to replace.
8. Using diagonal pliers, cut the four nylon cable ties (A) from the two-line manifold/AST air cell fittings (B) (Figure 9).
9. Unbutton both sides of the AST air cell from the side bolsters. Repeat for all four AST air cells.
10. Slide the AST air cell through the center belt (C) and remove. Repeat for all four AST air cells.

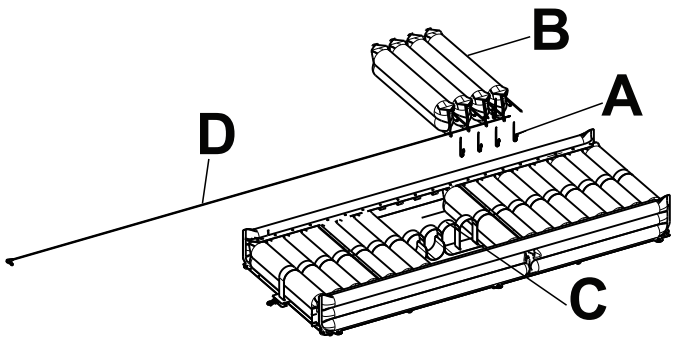


Figure 9 – AST air cells removed

11. Feed the AST cable plug through the bottom cover sleeve. Slide the sleeve toward the support surface to access the AST cable spiral wrap.

    Note - Make note of how the cable spiral wrap is secured.

12. Starting at the support surface side, unwrap the cable spiral wrap to remove the AST cable (D).

    Note - When you install the AST air cells, the distance from the edge of the CPR connector to the AST connector should be a minimum of 7 7/8 in. (200mm). There should be 2 in. (50mm) from the end of the cable spiral wrap to the end (Figure 10).

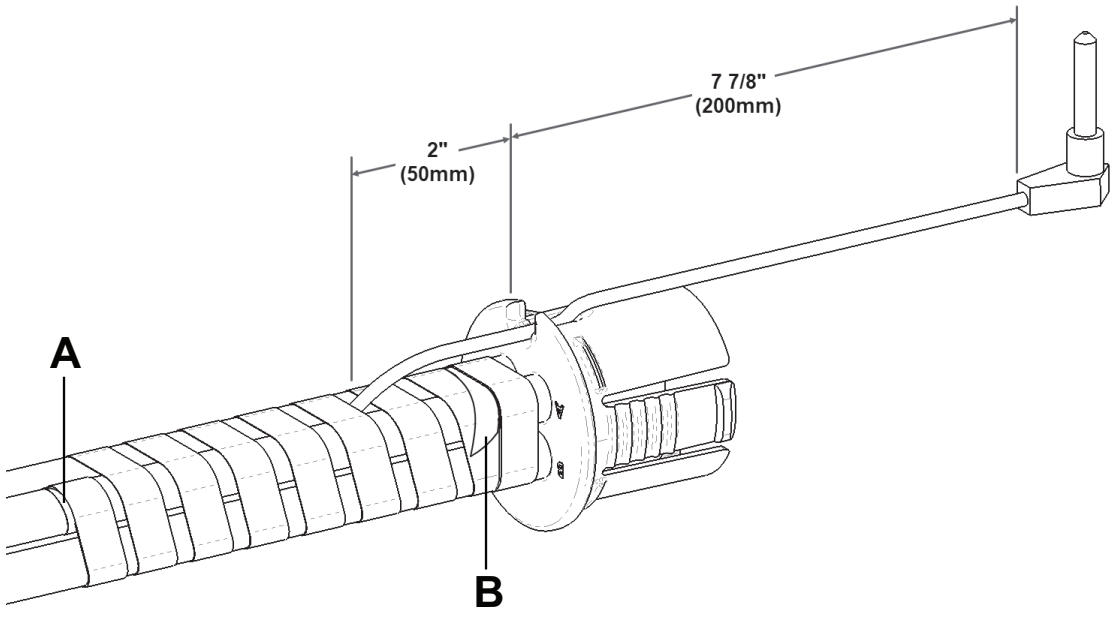


Figure 10 – Cable spiral wrap and AST cable

13. Feed the pump AST cable through the bottom cover.
14. Remove and discard the four AST air cells (B).
15. Install the supplied AST air cells through the center belt.
16. Feed the pump AST cable through the bottom cover out to the pump.
17. Using rubbing alcohol, lubricate the two-line manifold fitting and the AST air cell fittings.
18. Apply firm, constant force while you turn the AST air cell fitting back and forth to connect the AST air cell to the two-line manifold.
19. Install four nylon cable ties onto the two-line manifold/AST air cell fitting.
20. Verify that the AST air cells inflate.
21. Button both sides of the four AST air cells to the side bolsters.
22. Move the fire barrier over the air cells toward the foot end to install the fire barrier.
23. Clip the foot end center belt retainer from the bottom cover.
24. Zip the fire barrier.
25. Zip the support surface top cover onto the bottom cover.
26. Plug the AST cable and the CPR connector back into the pump.
27. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
28. Verify proper operation before you return the product to service.

Fire barrier replacement

Tools required:

- None

Procedure:

1. Raise the bed height to the highest position.
2. Place the litter surface in a flat, horizontal position.
3. Unzip and remove the support surface top cover.

4. Unclip the head end and foot end center belt retainers from the bottom cover.
5. Remove the CPR connector to allow the support surface to deflate.
6. Unzip the fire barrier.
7. Move the fire barrier over the side bolsters and air cells toward the head end to remove the fire barrier.
8. Reverse steps to reinstall.
9. Run the pump diagnostic test. All tests must pass.
10. Verify proper operation before you return the product to service.

Side bolster replacement, left and right

Tools required:

- Diagonal pliers

Procedure:

1. Unplug the AST cable and the CPR connector from the pump.
2. Raise the bed to the highest height position.
3. Place the litter surface in a flat, horizontal position.
4. Unzip and remove the support surface top cover.
5. Unclip the head end and foot end center belt retainers from the bottom cover.
6. Unzip the fire barrier.
7. Move the fire barrier over the side bolsters and air cells toward the head end to remove the fire barrier.
8. Unbutton the side bolster (E) from the bottom foam assembly (F) (Figure 11).

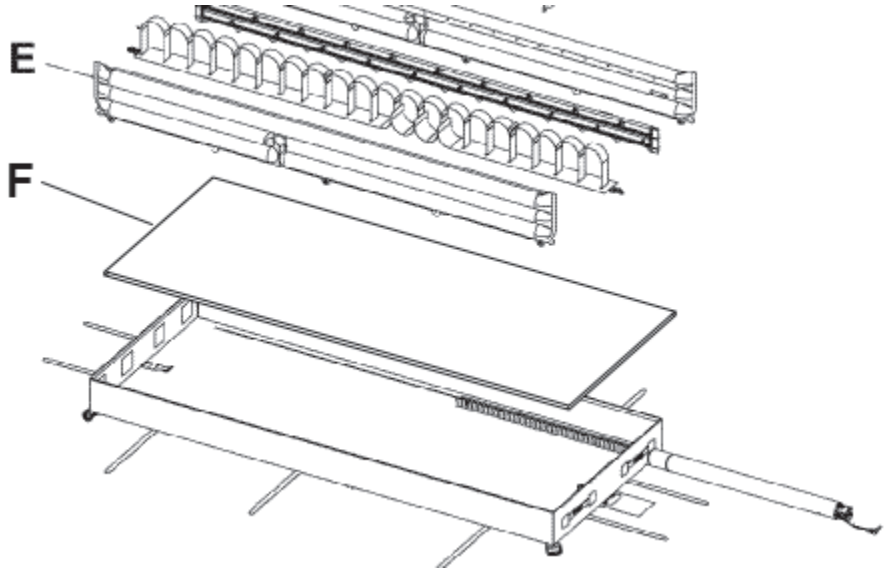


Figure 11 – Bolster

9. Using diagonal pliers, cut the nylon cable tie that connects the air hose fitting to the side bolster fitting.
10. Cut the fitting from the side bolster.
11. Unbutton the 20 air cells from the side bolster.
12. Remove and discard the side bolster.
13. Button the 20 air cells to the supplied side bolster.
14. Using rubbing alcohol, lubricate the side bolster fitting and the air hose fitting.

15. Apply firm, constant force while you turn the side bolster fitting back and forth to connect the side bolster to the air hose fitting.
16. Move the fire barrier over the air cells toward the foot end to install the fire barrier.
17. Install a new nylon cable tie onto the side bolster/air hose fitting 0.25 in. from the end of the hose.
18. Clip the head end and foot end center belt retainers to the bottom cover.
19. Zip the fire barrier.
20. Zip the support surface cover onto the bottom cover.
21. Plug the AST cable and the CPR connector back into the pump.
22. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
23. Verify proper operation before you return the product to service.

Central bladder assembly replacement

Tools required:

- Diagonal pliers

Procedure:

1. Unplug the AST cable and the CPR connector from the pump.
2. Raise the bed to the highest height position.
3. Place the litter surface in a flat, horizontal position.
4. Unzip and remove the support surface top cover.
5. Unclip the head end and foot end center belt retainers from the bottom cover.
6. Unzip the fire barrier.
7. Move the fire barrier over the side bolsters and air cells toward the head end to remove the fire barrier.
8. Using diagonal pliers, cut the two nylon cable ties that secure the two-line manifold hoses (labeled AS and BS) to the CPR connector.
9. Grasp the hose and connector on the support surface side and pull each hose from the pump connector to remove.

   Note
   - Each hose has a label near the end of the hose that indicates its function. Make sure that you note each hose connection before you remove the hose.
   - Use rubbing alcohol to make the hose fit easier when you reinstall.
10. Feed the AST cable plug through the bottom cover sleeve. Slide the sleeve toward the support surface to access the AST cable spiral wrap.

    Note - Make note of how the cable spiral wrap is secured.
11. Starting at the support surface side, unwrap the cable spiral wrap to remove the AST cable.

    Note - When you install the AST air cells, the distance from the edge of the CPR connector to the AST connector should be a minimum of 7 7/8 in. (200mm). There should be 2 in. (50mm) from the end of the cable spiral wrap to the end (Figure 12).

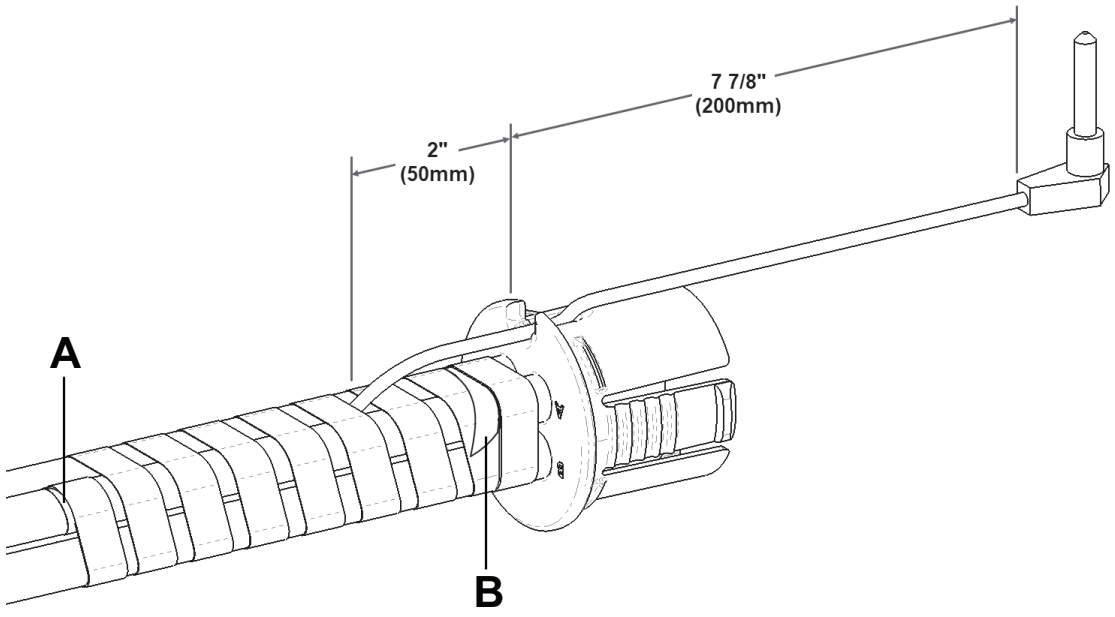


Figure 12 – Cable spiral wrap and AST cable

12. Unbutton both sides of each of the 20 air bladders from the side bolsters.
13. Remove and discard the center belt with all 20 air bladders, the AST cable, and the two-line manifold.
14. Reverse steps to reinstall.
15. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
16. Verify proper operation before you return the product to service.

Hose sleeve replacement

Tools required:

- None

Procedure:

1. Unplug the AST cable and the CPR connector from the pump.
2. Raise the bed to the highest height position.
3. Place the litter surface in a flat, horizontal position.
4. Unbutton the hose sleeve from the bottom cover.
5. Slide the hose sleeve (A) over the CPR connector and remove (Figure 13). Discard the hose sleeve.

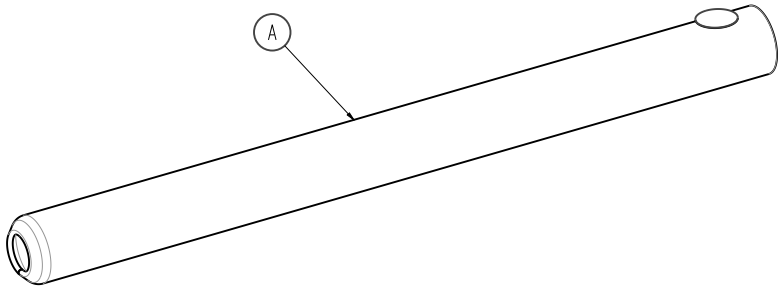


Figure 13 – Hose sleeve

6. Slide the hose sleeve over the CPR connector.

7. Button the hose sleeve to the bottom cover.
8. Plug the AST cable and the CPR connector back into the pump.
9. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
10. Verify proper operation before you return the product to service.

CPR connector and hose replacement

Tools required:

- Diagonal pliers
- Rubbing alcohol

Procedure:

1. Unplug the AST cable and the CPR connector from the pump.
2. Raise the bed to the highest height position.
3. Place the litter surface in a flat, horizontal position.
4. Unzip and remove the support surface top cover.
5. Unclip the foot end center belt retainers from the bottom cover.
6. Unzip the fire barrier.
7. Move the fire barrier over the side bolsters and air cells toward the head end to access the end of the tubing.
8. Using diagonal pliers, cut the four nylon cable ties that secure the hoses in the support surface to the CPR connector.
9. Grasp the hose and connector on the support surface side and pull each hose from the pump connector to remove.

   Note
   - Each hose has a label near the end of the hose that indicates the function. Make sure that you note each hose connection before removal.
   - Use rubbing alcohol to make the hose fit easier when you reinstall.
10. Remove the hose/CPR connector (A) and the four hoses (B) from the bottom support surface cover hose sleeve (C) (Figure 14).

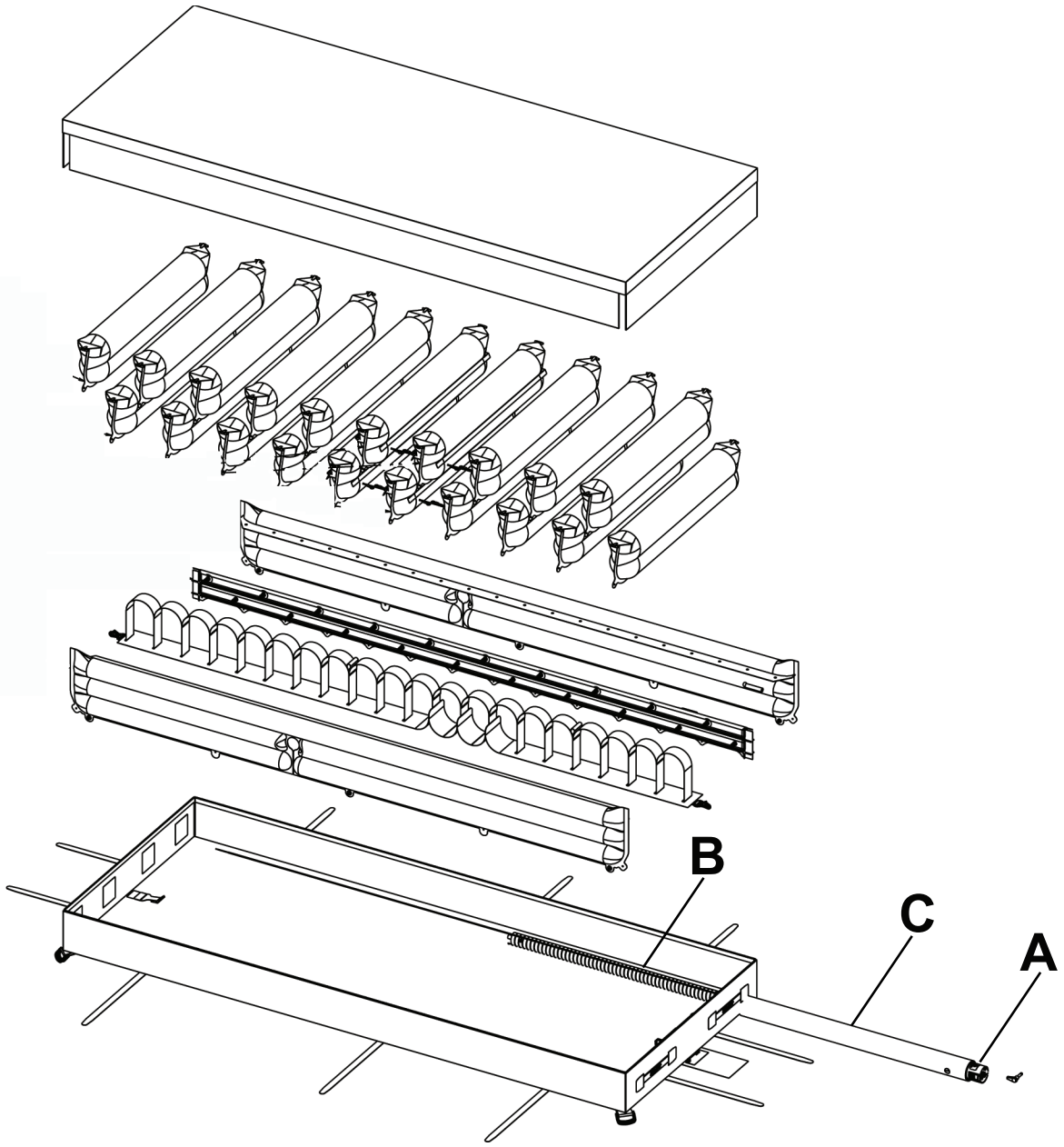


Figure 14 – Hose/CPR connector

11. Feed the AST cable plug through the bottom cover sleeve. Slide the sleeve toward the support surface to access the AST cable spiral wrap.

    Note - Make note of how the cable spiral wrap is secured.

12. Starting at the support surface side, unwrap the cable spiral wrap to remove the AST cable.

    Note - When you install the AST air cells, the distance from the edge of the CPR connector to the AST connector should be a minimum of 7 7/8 in. (200 mm). There should be 2 in. (50 mm) from the end of the cable spiral wrap to the end (Figure 15).

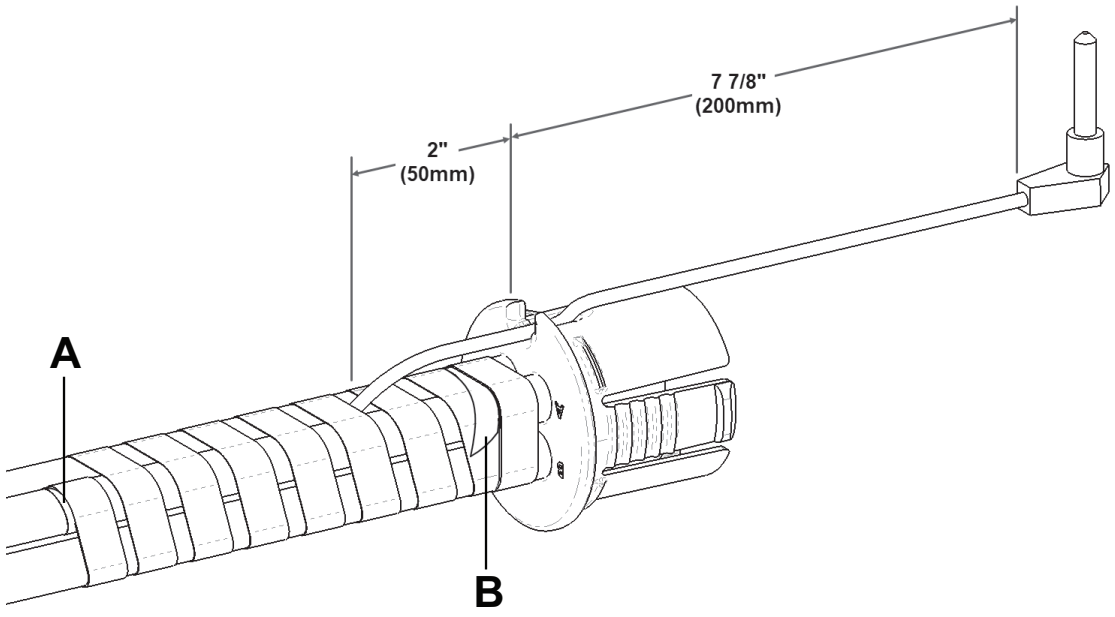


Figure 15 – Cable spiral wrap and AST cable

13. Discard the pump connector and four hoses.
14. Reverse steps to reinstall.
15. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.

    Note - Watch each test when you run the pump diagnostics. Confirm that the correct cell inflates the air hoses AS, BS, SBR, and LAL. The diagnostic test cannot identify if the connected lines are correct or incorrect.

Air hoses	Description
AS	A cell line
BS	B cell line
SBR	Side bolster line
LAL	LAL line

16. Verify proper operation before you return the product to service.

Support surface top cover replacement

Tools required:

- None

Procedure:

1. Raise the bed height to the highest height position.
2. Place the litter surface in a flat, horizontal position.
3. Unzip the top cover.
4. Remove and discard the top cover.
5. Attach the supplied top cover. Start the zipper at the head end and stop at the foot end.
6. Verify proper operation before you return the product to service.

Fuse replacement

Fuse: F3.5AH250V

Tools required:

- Slotted screwdriver
- Digital multimeter

Procedure:

1. Unplug the power cord from the pump.
2. Unplug the AST cable and the CPR connector from the pump.
3. Place the pump face down on a work surface.
4. Using a slotted screwdriver, remove the fuse cover located below the power inlet. Save the fuse cover.

   Note - If you need to check a fuse, use a digital multimeter.
5. Remove and discard the fuse.
6. Reverse steps to reinstall.
7. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
8. Verify proper operation before you return the product to service.

Bumper replacement

Tools required:

- Small slotted screwdriver
- **Goof Off®** Household Heavy Duty Remover
- Towels
- Alcohol prep wipes

Procedure:

1. Unplug the power cord from the pump.
2. Unplug the AST cable and the CPR connector from the pump.
3. Using a small slotted screwdriver, scrape under each bumper to remove. Start from the corner of each bumper to remove the top bumper (A), bottom left bumper (B), and bottom right bumper (C) from the back cover (D) (Figure 16). Discard the bumpers.

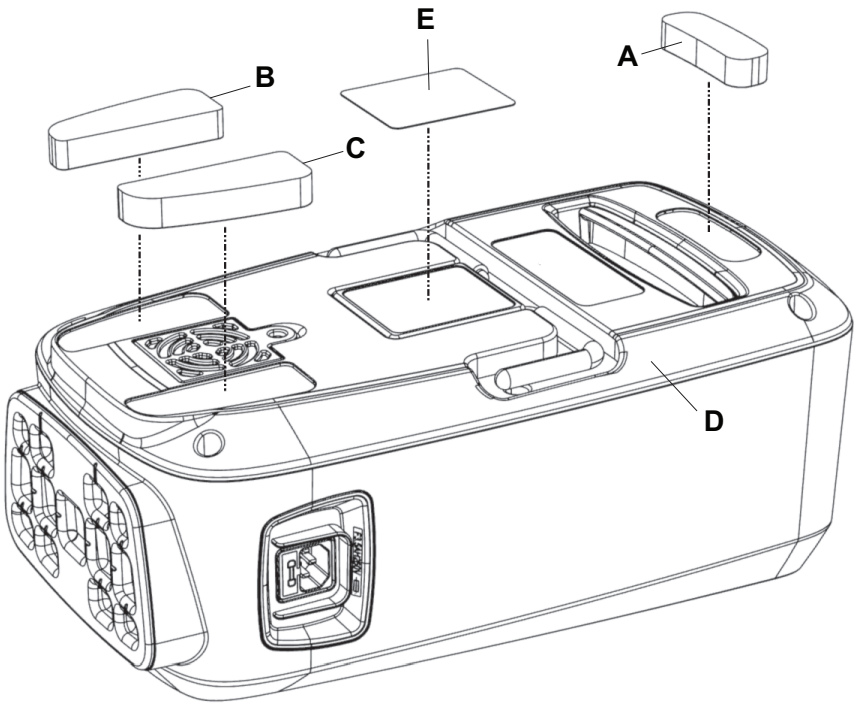


Figure 16 – Bumpers

4. Using **Goof Off®** Household Heavy Duty Remover, a small slotted screwdriver, and towels, remove the adhesive from the back cover.
5. Using alcohol prep wipes, clean the back cover bumper pad areas and current compliance label (E).
6. Install the supplied top bumper (A), bottom left bumper (B), and bottom right bumper (C) to the back cover (D).
7. Plug the AST cable and the CPR connector back into the pump.
8. Plug the power cord back into the pump.
9. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
10. Verify proper operation before you return the product to service.

Separating the front and back covers

Tools required:

- T20 Torx driver

Procedure

1. Unplug the power cord from the pump.
2. Unplug the AST cable and the CPR connector from the pump.
3. Place the pump face down on a work surface.
4. Using a T20 Torx driver, remove the six tapping screws (F) that secure the back cover (G) to the front cover (H) (Figure 17). Save the screws.

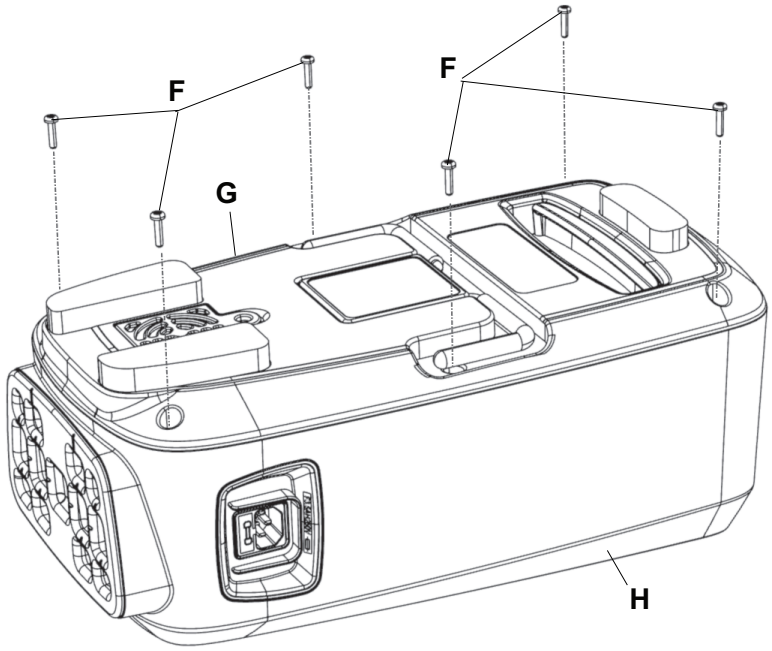


Figure 17 – Covers

5. Lay the pump on its right side to face away from you.
6. Separate the front and back covers so that the back cover is open and flat in front of you (Figure 18).

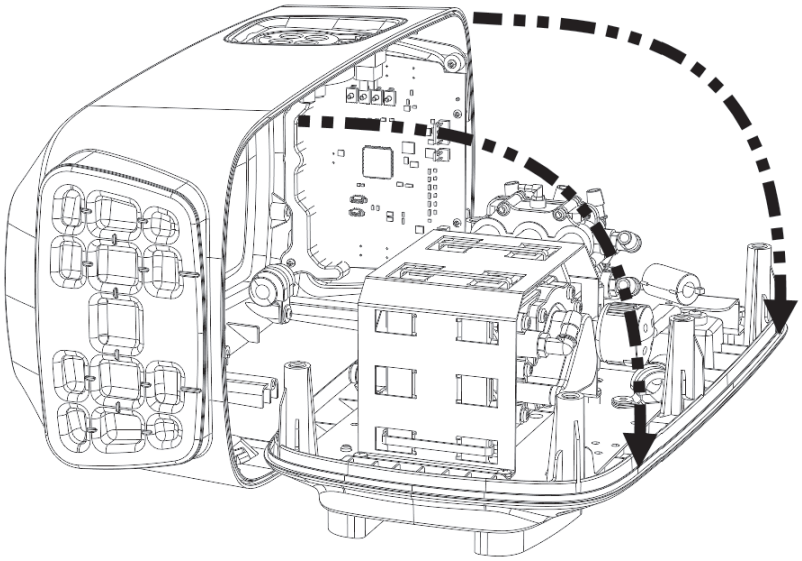


Figure 18 – Separate covers

Foot replacement

Tools required:

- 6 mm socket
- Ratchet

Procedure:

1. See *Separating the front and back covers* (page 23).

2. Using a ratchet and a 6 mm socket, remove the six nuts (A) that secure the foot (B) to the front pump housing (Figure 19). Save the nuts.

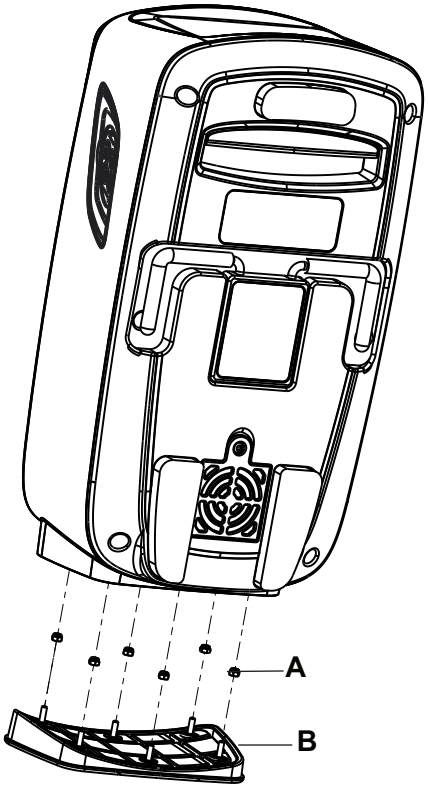


Figure 19 – Foot

3. Remove and discard the foot.
4. Reverse steps to reinstall.
5. Plug the pump power cord into a wall outlet.
6. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
7. Verify proper operation before you return the product to service.

Air filter replacement

Tools required:

- T20 Torx driver

Procedure:

1. Unplug the power cord from the pump.
2. Unplug the AST cable and the CPR connector from the pump.
3. Place the pump face down on a work surface.
4. Using a T20 Torx driver, remove the screw (A), washer (B), and flex grip (C) that secure the air filter access door (D) to the cover (Figure 20). Save the screw, washer, and flex grip.

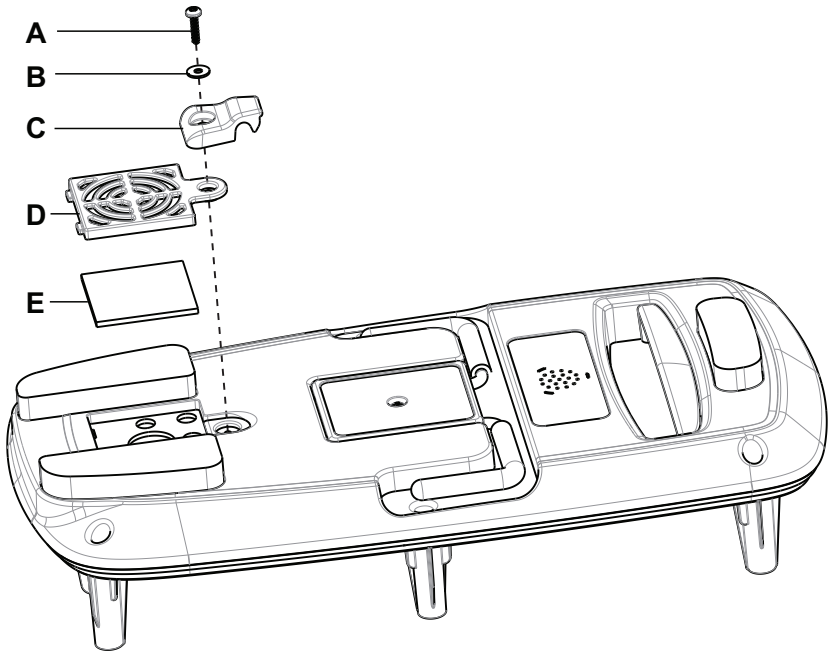


Figure 20 – Air filter

5. Remove and save the air filter access door (D).
6. Remove and discard the air filter (E).
7. Install the supplied air filter (E).
8. Reverse steps 3 - 5 to reinstall.
9. Insert the power cord under the power cord retention flex grip (F) (Figure 21).

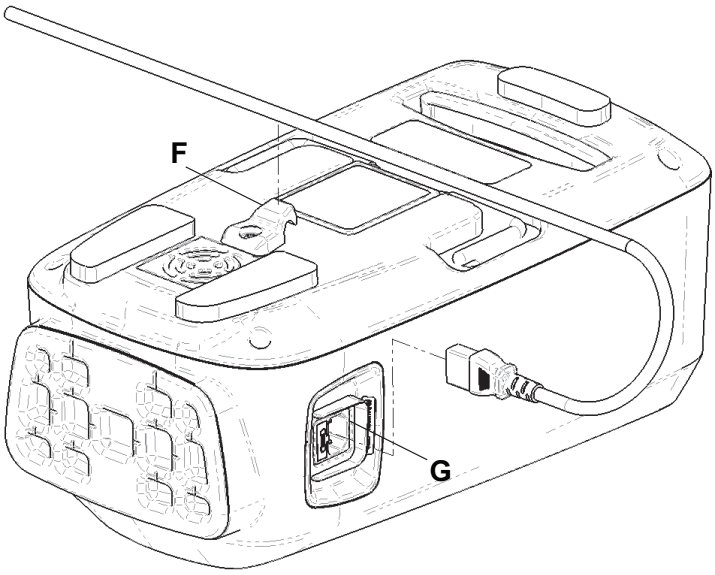


Figure 21 – Insert power cord

10. Plug the power cord back into the pump (G) (Figure 21).
11. Secure the power cord (Figure 22).

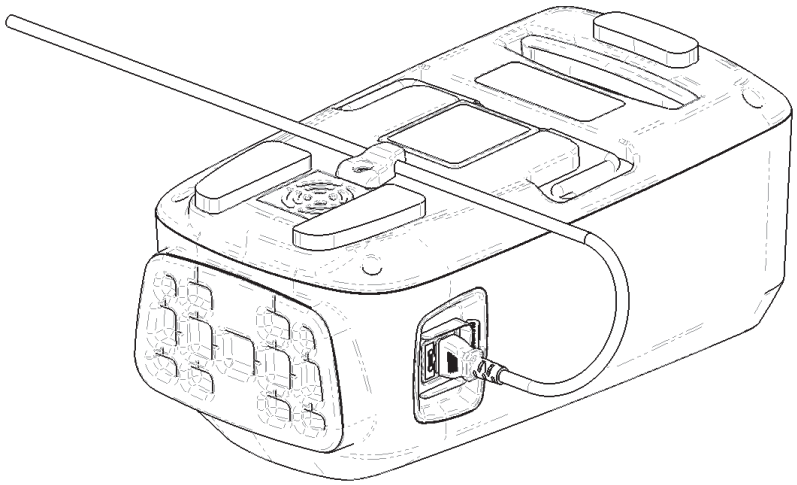


Figure 22 – Power cord secure

12. Plug the AST cable and the CPR connector back into the pump.
13. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
14. Verify proper operation before you return the product to service.

Transport handle replacement

Tools required:

- #2 Phillips screwdriver

Procedure:

1. See *Separating the front and back covers* (page 23).
2. Using a #2 Phillips screwdriver, remove the eight screws that secure the mounting plate to the back pump housing. Save the screws.
3. Using a #2 Phillips screwdriver, remove the screw that secures the p-clamp and compressor wires to the mounting plate. Save the screw.
4. Tip the mounting plate in toward the front pump housing to access the transport handle screws.
5. Remove and save the backboard.
6. Using a #2 Phillips screwdriver, remove the four screws (B) that secure the transport handle (A) to the back pump housing (Figure 23). Save the screws.

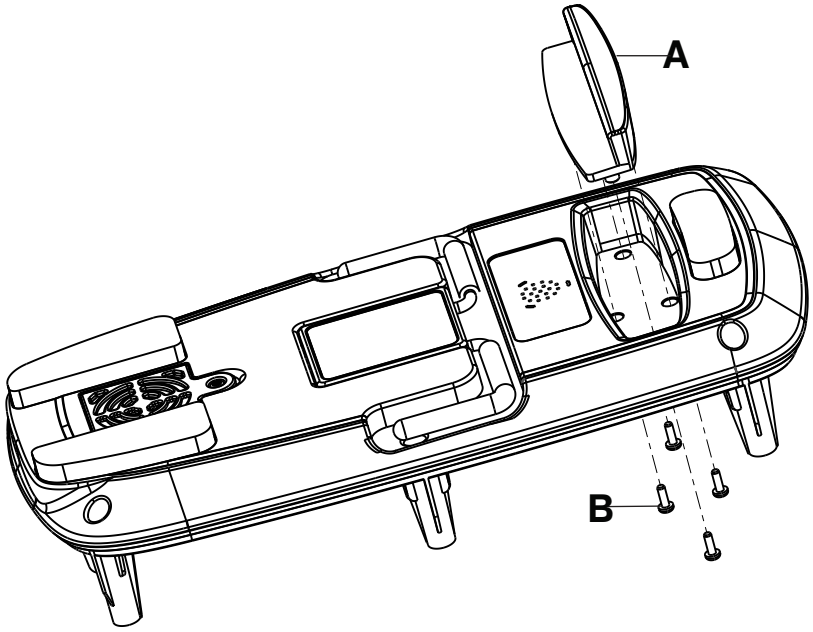


Figure 23 – Transport handle

7. Remove and discard the transport handle.
8. Reverse steps to reinstall.
9. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
10. Verify proper operation before you return the product to service.

Hook assembly replacement

Tools required:

- T20 Torx driver
- #2 Phillips screwdriver
- Pick

Procedure:

1. Unplug the power cord from the pump.
2. Unplug the AST cable and the CPR connector from the pump.
3. Place the pump face down on a work surface.
4. Using a pick, remove the information label (A) on the hook assembly (Figure 24). Discard the information label.

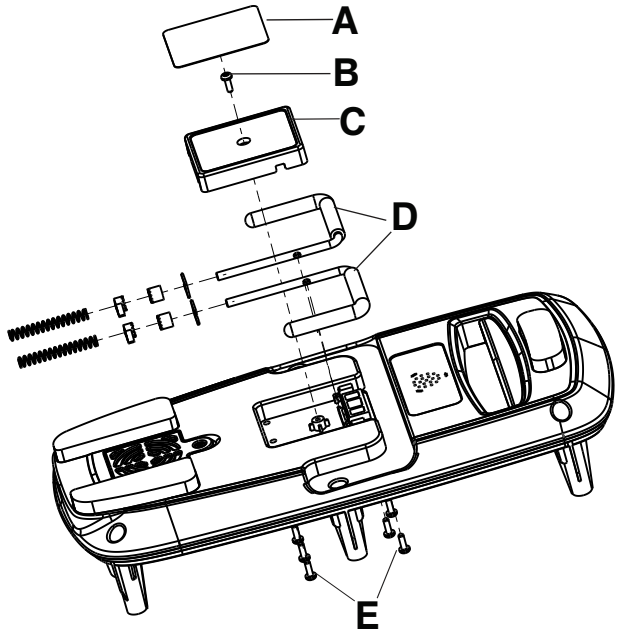


Figure 24 – Hook assembly

5. Using a #2 Phillips screwdriver, remove the screw (B) that secures the hook assembly to the back pump housing. Save the screw.
6. Using a T20 Torx driver, remove the six screws that secure the back pump housing to the front pump housing. Save the screws.
7. Using two hands, rotate the pump assembly to the right so the front is on your left.
8. Separate the front and back pump housing. Place the back of the pump down on the work surface.
9. Using a #2 Phillips screwdriver, remove the eight screws that secure the mounting plate to the back pump housing. Save the screws.
10. Using a #2 Phillips screwdriver, remove the one screw that secures the p-clamp and compressor wires to the mounting plate. Save the screw.
11. Tip the mounting plate in toward the front pump housing to access the transport handle screws.
12. Using a #2 Phillips screwdriver, remove the six screws (E) that secure the hook assembly (D) to the back pump housing. Save the screws.
13. Remove and discard the hook assembly.
14. Reverse steps to reinstall.
15. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
16. Verify proper operation before you return the product to service.

Front pump housing replacement

Tools required:

- T20 Torx driver
- #2 Phillips screwdriver
- Stubby #2 Phillips screwdriver
- ESD system

Procedure:

Note - Use ESD protection when necessary. See *Protecting against electrostatic discharge (ESD)* (page 10).

1. See *Separating the front and back covers* (page 23).
2. Unplug all cables from the PCBA assembly.

   Note - Make note of the cable connection locations for when you reinstall.
3. Unplug the four pressure transducer hoses.

   Note - The hoses are labeled to match the silk screen on the board for proper hose location.
4. Using a #2 Phillips screwdriver, remove the two screws that secure the support bracket. The support bracket holds the PCBA assembly and the screen to the front pump housing. Save the screws and support bracket.
5. Using a #2 Phillips screwdriver, remove the three screws that secure the PCBA assembly to the screen. Save the screws.
6. Grasp the air hoses, and pull out from the support surface hose connector to disconnect.

   Note - Make note of the air hose connection locations for when you reinstall.
7. Grasp the pressure transducer hoses, and pull out from the support surface hose connector to disconnect.

   Note - Make note of the pressure transducer hose connection locations for when you reinstall.
8. Using a stubby #2 Phillips screwdriver, remove the four screws that secure the light-emitting diode (LED) board assembly to the front pump housing assembly. Save the screws.
9. Remove the PCBA assembly.
10. Remove and discard the front pump housing (Figure 25).

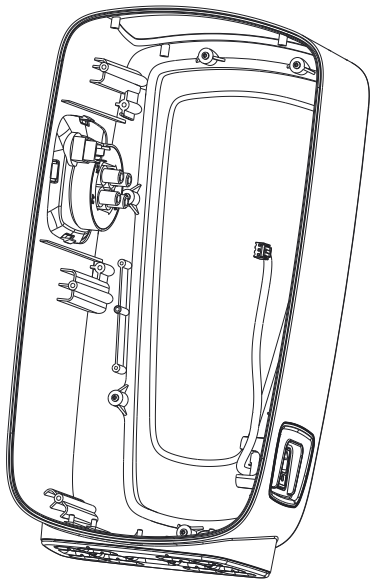


Figure 25 – Front pump housing

11. Reverse steps to reinstall.
12. Plug the pump power cord into a wall outlet.
13. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
14. Verify proper operation before you return the product to service.

Power supply replacement

Tools required:

- #2 Phillips screwdriver
- ESD system

Procedure:

Note - Use ESD protection when necessary. See *Protecting against electrostatic discharge (ESD)* (page 10).

1. See *Separating the front and back covers* (page 23).
2. Unplug the inlet power cord assembly from the power supply CN1 (two wire cable).
3. Using a #2 Phillips screwdriver, remove the four screws (S) that secure the power supply (N) to the main support plate (R) (Figure 26). Save the screws.

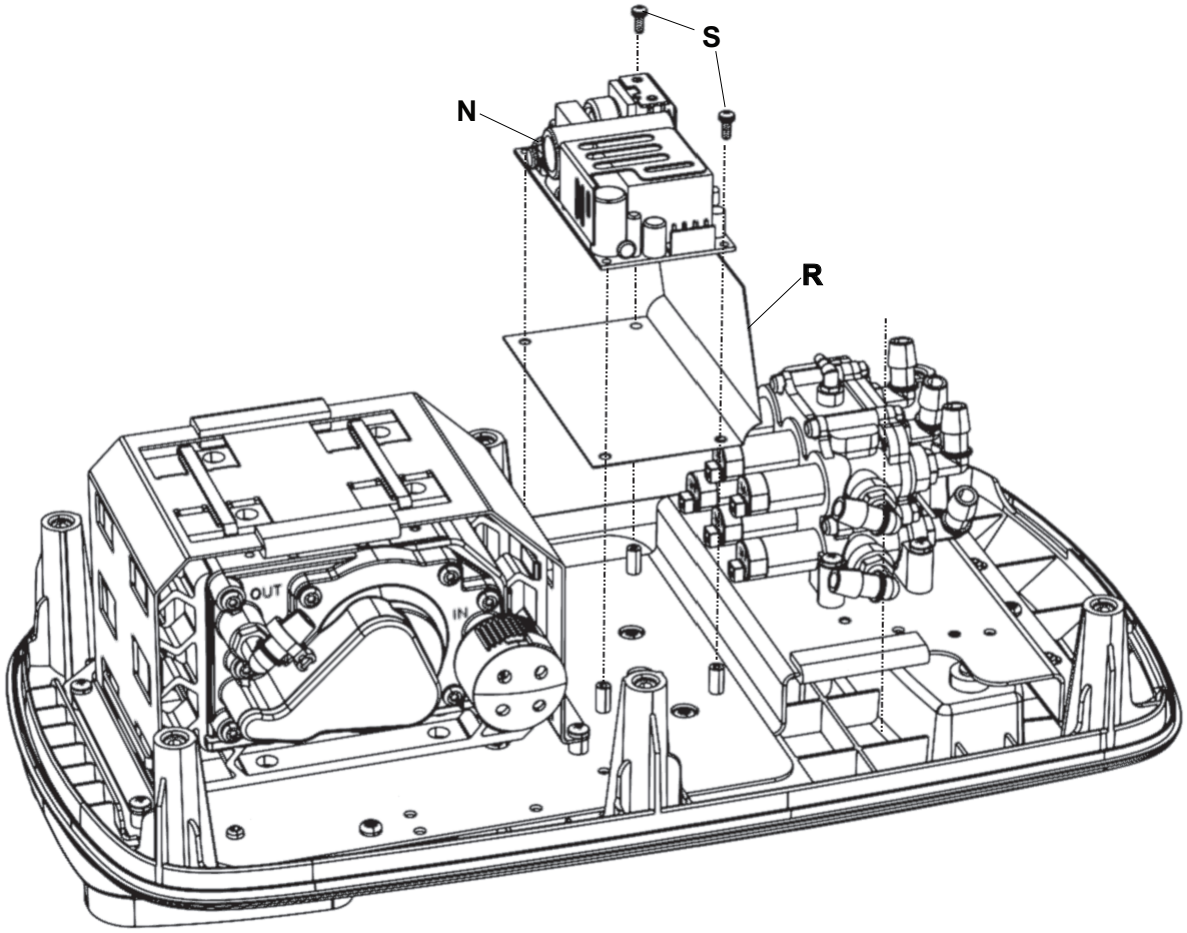


Figure 26 – Power supply to main

4. Remove and discard the power supply (N) (Figure 26).

   Note - Do not dispose of as unsorted municipal waste. Refer to your local distributor for return or collection systems available in your country.
5. Reverse steps to install the supplied power supply.
6. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
7. Verify proper operation before you return the product to service.

Inlet power cord replacement

Tools required:

- Small slotted screwdriver
- #2 Phillips screwdriver

Procedure:

1. See *Separating the front and back covers* (page 23).
2. Using a #2 Phillips screwdriver, remove the screw (I), washer (J), and p-clamp (K) that secure the inlet power cord assembly (K) to the main support plate (L) (Figure 27). Save the screw, washer, and p-clamp.

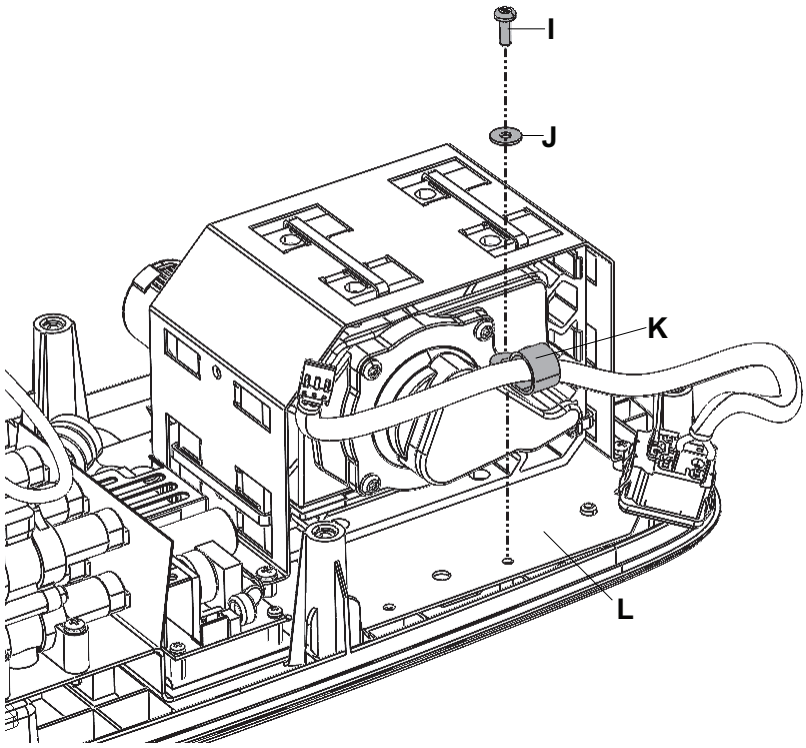


Figure 27 – Inlet power cord assembly

3. Unplug the inlet power cord assembly from the power supply CN1 (two wire cable).
4. Using a small slotted screwdriver, push in and down on the four locking tabs that hold the inlet to the front cover to remove the power inlet (Figure 28). Discard the power inlet.

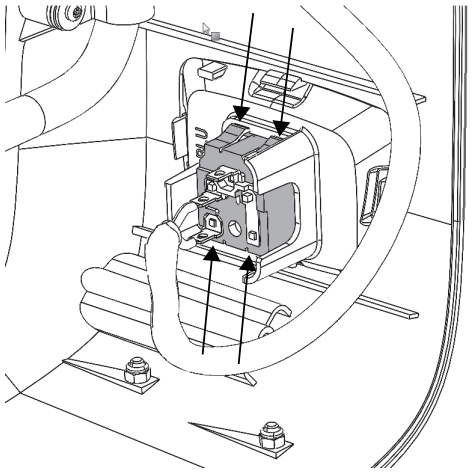


Figure 28 – Locking tabs

5. Route the new power inlet assembly. Feed the cable into the front cover and snap the inlet into place.
6. Using a #2 Phillips screwdriver, reinstall the screw, washer, and p-clamp that were removed in step 2.
7. Reverse steps to install the new power inlet.

8. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
9. Perform an *Electrical safety check* (page 11).
10. Verify proper operation before you return the product to service.

Pump manifold assembly replacement

Tools required:

- #2 Phillips screwdriver

Procedure:

1. See *Separating the front and back covers* (page 23).
2. Grasp both hoses from the muffler at the manifold and pull to disconnect each hose from the pump manifold.
3. Unplug all six solenoid wires from the solenoids.

   Note - Make note of each wire color and the solenoid location for when you reinstall.
4. Grasp the four surface port hoses at the support surface manifold, and pull to disconnect each hose from the pump manifold.

   Note - Make note of each hose label for when you reinstall.
5. Grasp the four pressure transducer hoses and pull to disconnect each hose from the manifold.

   Note - Make note of each hose label for when you reinstall.
6. Using a #2 Phillips screwdriver, remove the four screws (A) that secure the pump manifold assembly (B) to the back plate (C) (Figure 29). Save the screws.

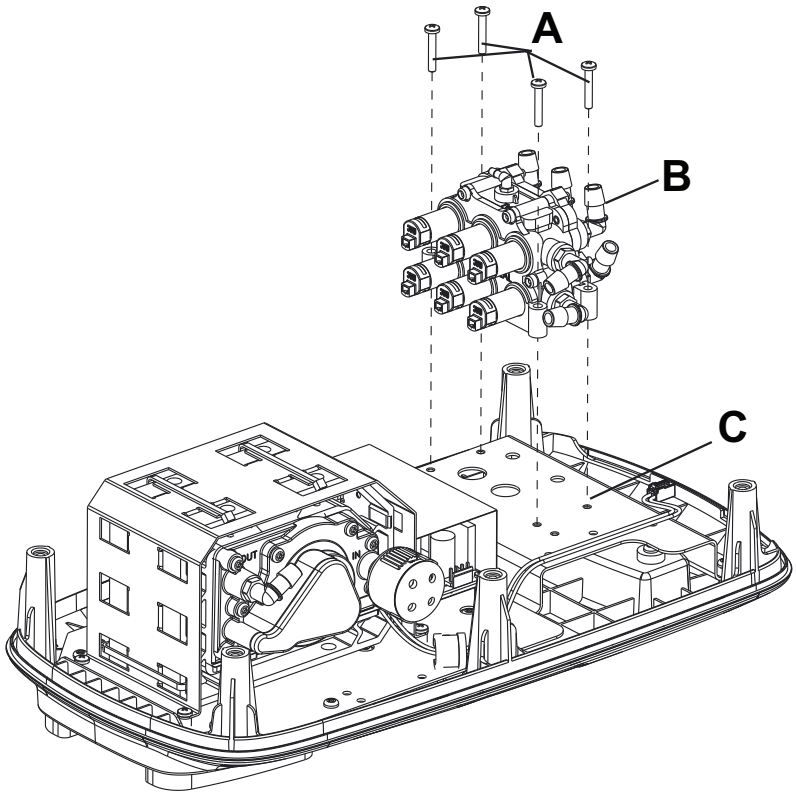


Figure 29 – Pump manifold assembly

Wire color	Solenoid
Brown	AS – fill
Red	AV - vent
Black	BS – fill
Yellow	BV - vent
Blue	Low air loss
Green	Side bolster

7. Remove and discard the pump manifold assembly.
8. Reverse steps to reinstall.
9. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
10. Verify proper operation before you return the product to service.

Solenoid valve replacement

Tools required:

- #2 Phillips screwdriver
- 3 mm hex driver

Procedure:

1. Remove the manifold. See steps 1-6 in *Pump manifold assembly replacement* (page 33).
2. Using a 3 mm hex driver, remove the six bolts (F) and nuts (G) that secure the six solenoid valves (D) to the pump manifold assembly (Figure 30). Each nut secures the pump manifold to keep the pump manifold from turning. Save the bolts and nuts.

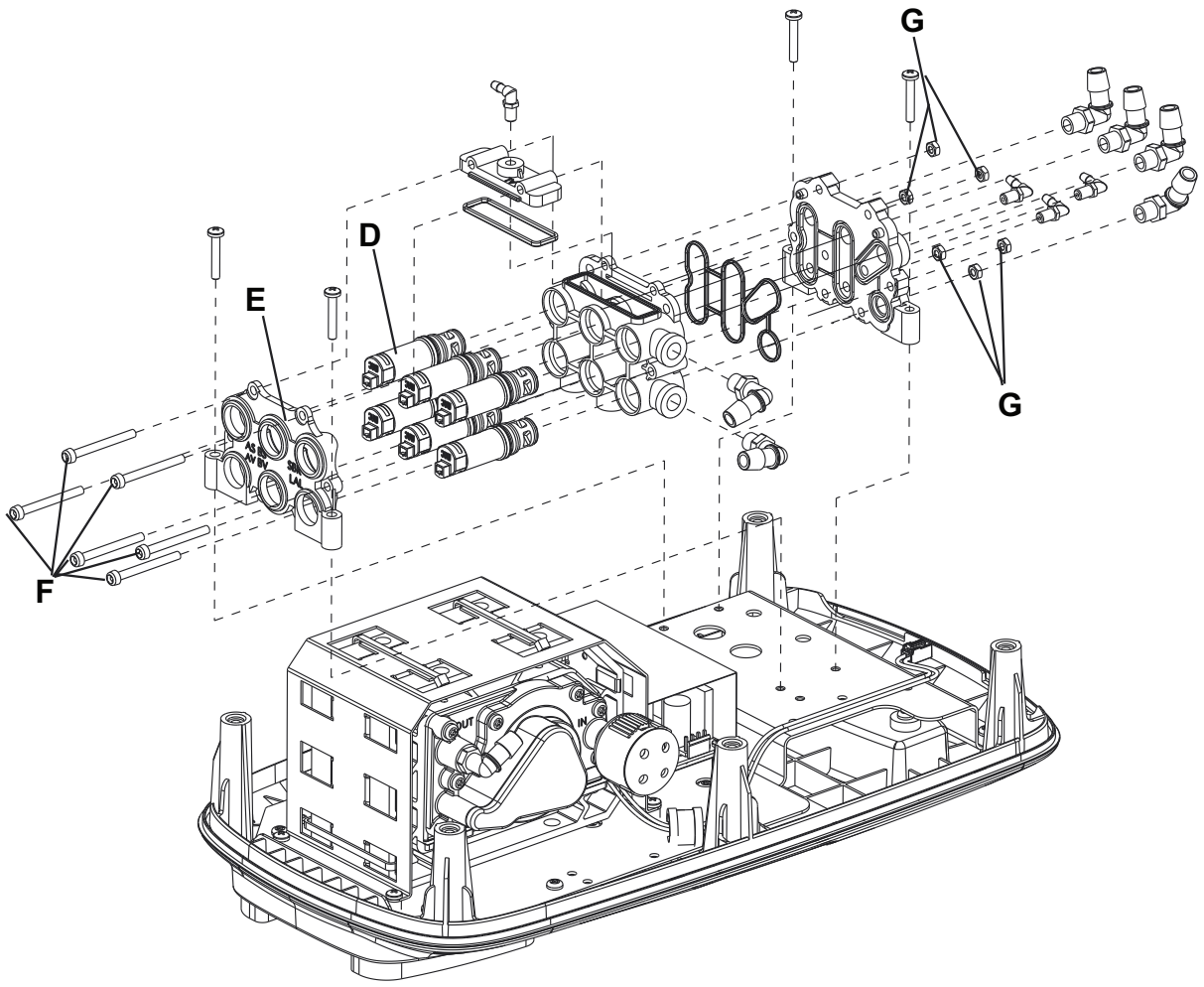


Figure 30 – Solenoid valve

Note - When you reinstall the bolts (G), tighten the bolts down in an X pattern.

3. Remove and save the solenoid retaining plate (E) from the pump manifold assembly.
4. Unscrew and remove the solenoid valve (D) you are replacing.

   Note - There are six solenoid valves. Five of the six solenoid valves are identical. The bottom right solenoid valve is for LAL and has a white cap for identification.
5. Reverse steps to reinstall.
6. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
7. Verify proper operation before you return the product to service.

PCBA assembly replacement

Tools required:

- #2 Phillips screwdriver
- ESD system

Procedure:

Note - Use ESD protection when necessary. See *Protecting against electrostatic discharge (ESD)* (page 10).

1. See *Separating the front and back covers* (page 23).

2. Unplug the four pressure transducer hoses from the PCBA.

   Note - Make note of each hose label for when you reinstall.

3. Unplug all of the cables from the PCBA.

   Note - All cables are keyed to specific connectors on the PCBA. Make note of the location of each cable for when you reinstall.

4. Using a #2 Phillips screwdriver, remove the two screws that secure the support bracket. The support bracket holds the PCBA assembly and the screen to the front pump housing. Save the screws and support bracket.
5. Using a #2 Phillips screwdriver, remove the three screws (B) that secure the molded PCBA holder (C) to the PCBA assembly (A) (Figure 31). Save the screws.

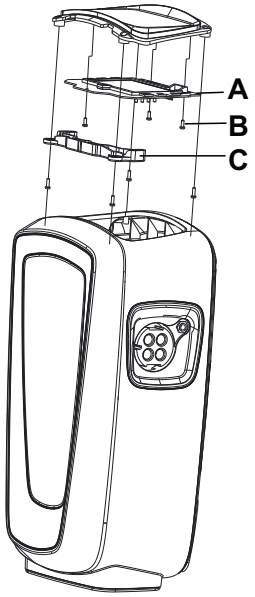


Figure 31 – PCBA assembly

6. Remove and discard the PCBA assembly.
7. Reverse steps to reinstall.
8. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
9. Perform an *Electrical safety check* (page 11).
10. Verify proper operation before you return the product to service.

LED board replacement

Tools required:

- Stubby #1 Phillips screwdriver
- ESD system

Procedure:

Note - Use ESD protection when necessary. See *Protecting against electrostatic discharge (ESD)* (page 10).

1. See *Separating the front and back covers* (page 23).
2. Using a stubby #1 Phillips screwdriver, remove the four screws (B) that secure the LED board (A) to the status LED assembly with muffler (Figure 32). Save the screws.

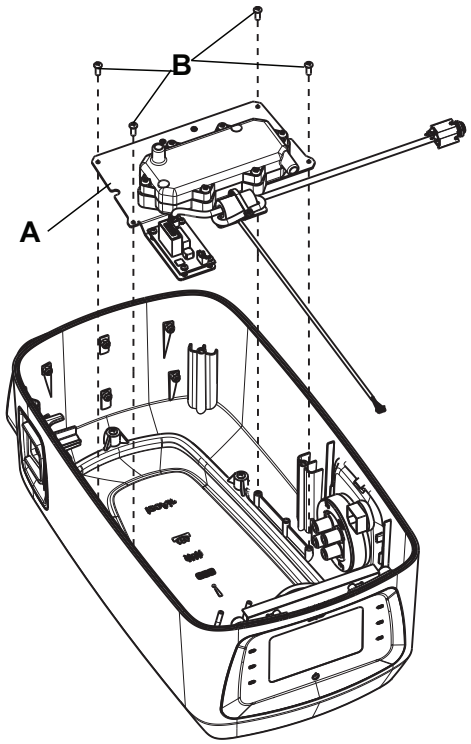


Figure 32 – LED board

3. Unplug the LED cable from the LED board. Save the cable.
4. Using a stubby #1 Phillips screwdriver, remove the four PB 3x1 fasteners that secure the LED board (A) to the front housing assembly. Discard the board.
5. Reverse steps to install the supplied LED board.
6. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
7. Verify proper operation before you return the product to service.

Pump replacement

Tools required:

- T20 Torx driver
- Wire cutters
- #2 Phillips screwdriver
- ESD system

Procedure:

Note - Use ESD protection when necessary. See *Protecting against electrostatic discharge (ESD)* (page 10).

1. See *Separating the front and back covers* (page 23).
2. Using wire cutters, cut the two cable ties that secure the air hose to the muffler. Discard the cable ties.
3. Grasp the hose on the pump that goes to the muffler and pull to remove.
4. Using wire cutters, cut the four nylon cable ties that secure the pump power cable to the rest of the cables.

   Note
   - When you cut the nylon cable ties, do not cut or damage the cables.
   - Replace the nylon cable ties when you reinstall.

5. Unplug the pump power cable (A) from the PCBA assembly (Figure 33).

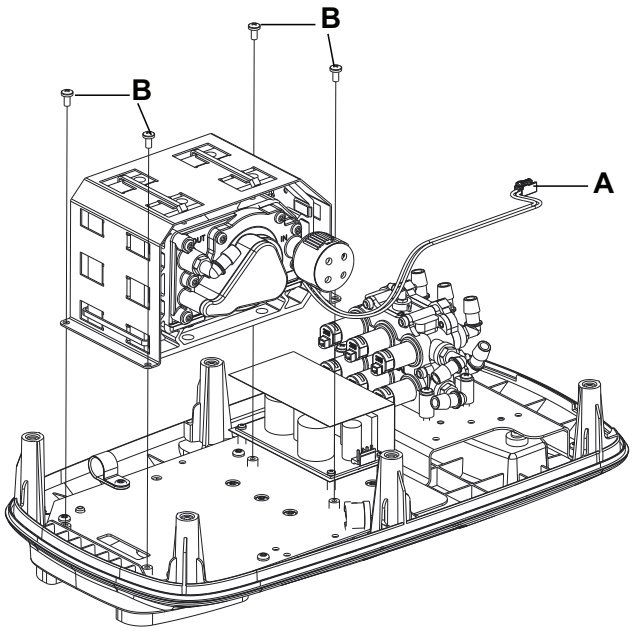
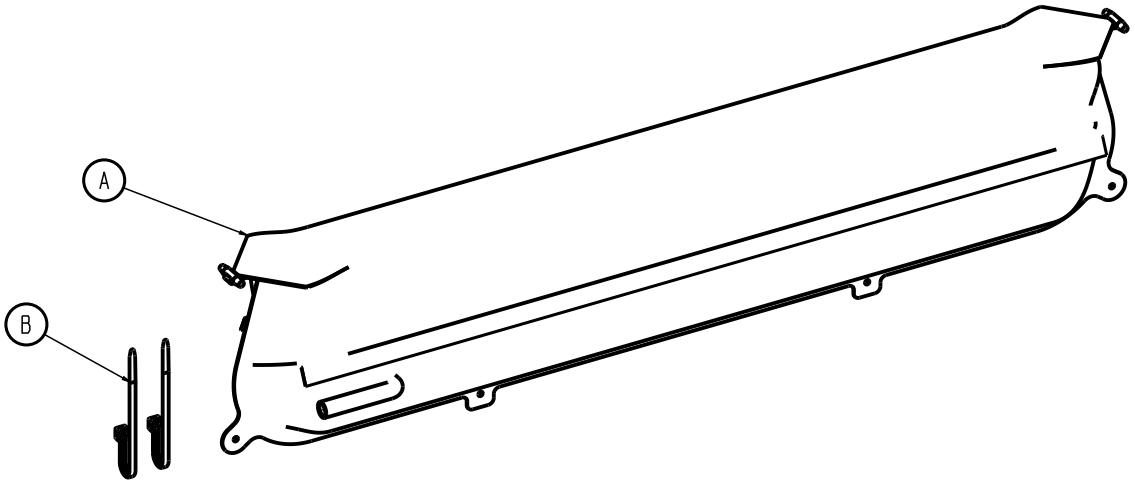


Figure 33 – Pump

6. Using a #2 Phillips screwdriver, remove the screw that secures the pump cable p-clamp to the mainframe. Remove and save the p-clamp. Save the screw.
7. Using a T20 Torx driver, remove the four screws (B) that secure the pump frame to the mainframe. Save the screws.
8. Remove and discard the pump assembly.
9. Reverse steps to reinstall.
10. Run the pump diagnostic test. See *Checking diagnostics* (page 11). All tests must pass.
11. Perform an *Electrical safety check* (page 11).
12. Verify proper operation before you return the product to service.

Non-AST air cell - 2941-700-001

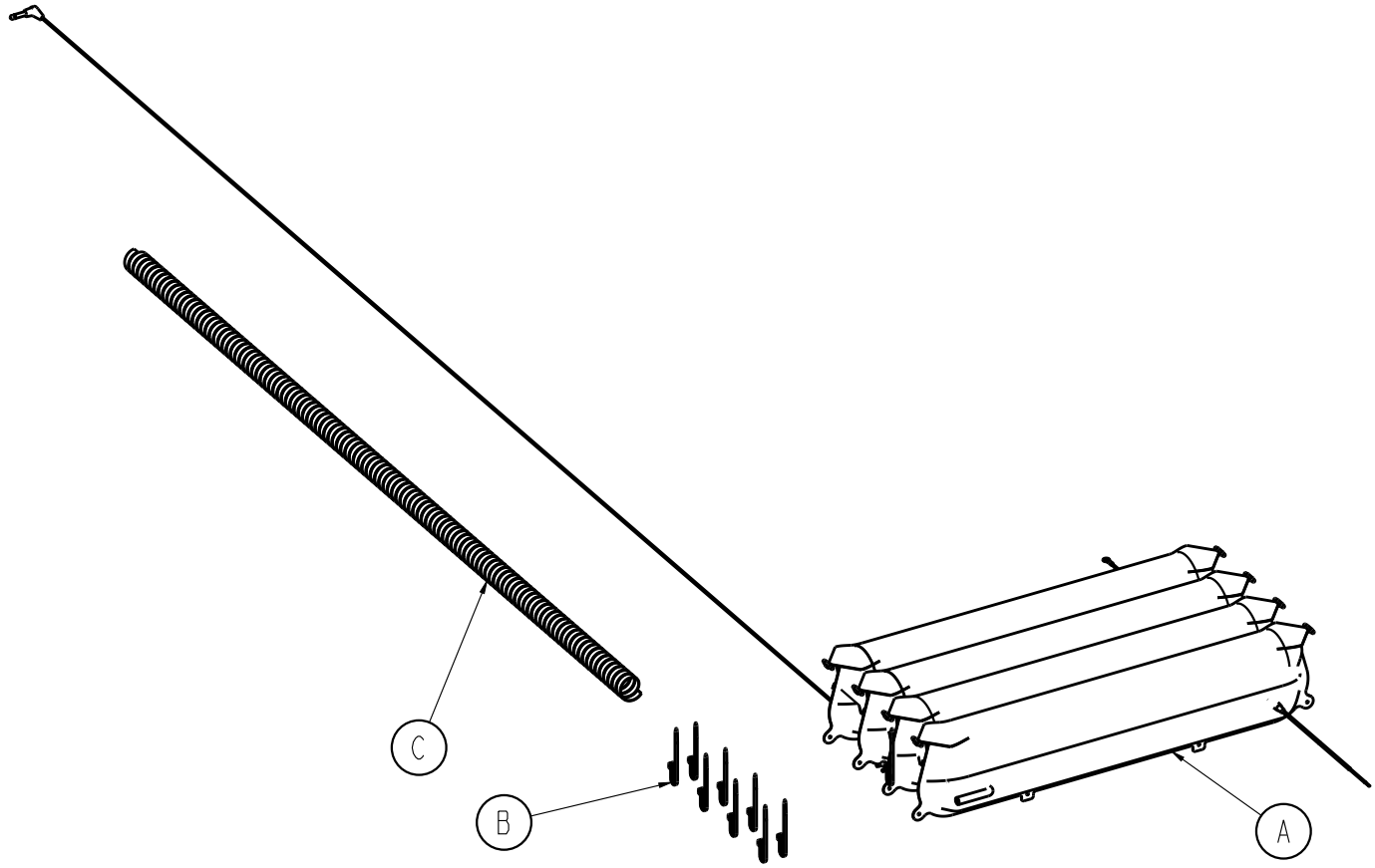
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104204	A/B CIC cell assembly	1
B	555000009	Nylon cable tie	2

AST four cell kit - 2941-700-002

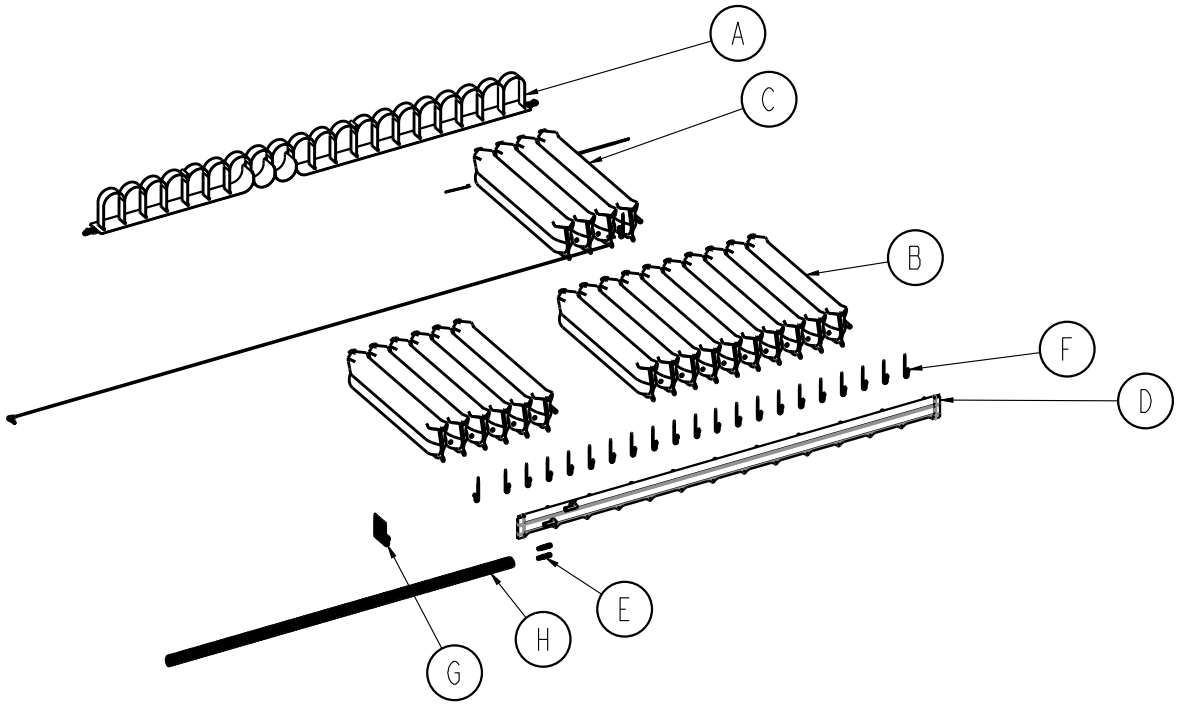
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104207	AST four deep cell CIC assembly	1
B	555000009	Nylon cable tie	8
C	518P006003	Tube, spiral wrap	1

Central bladder assembly kit - 2941-700-003

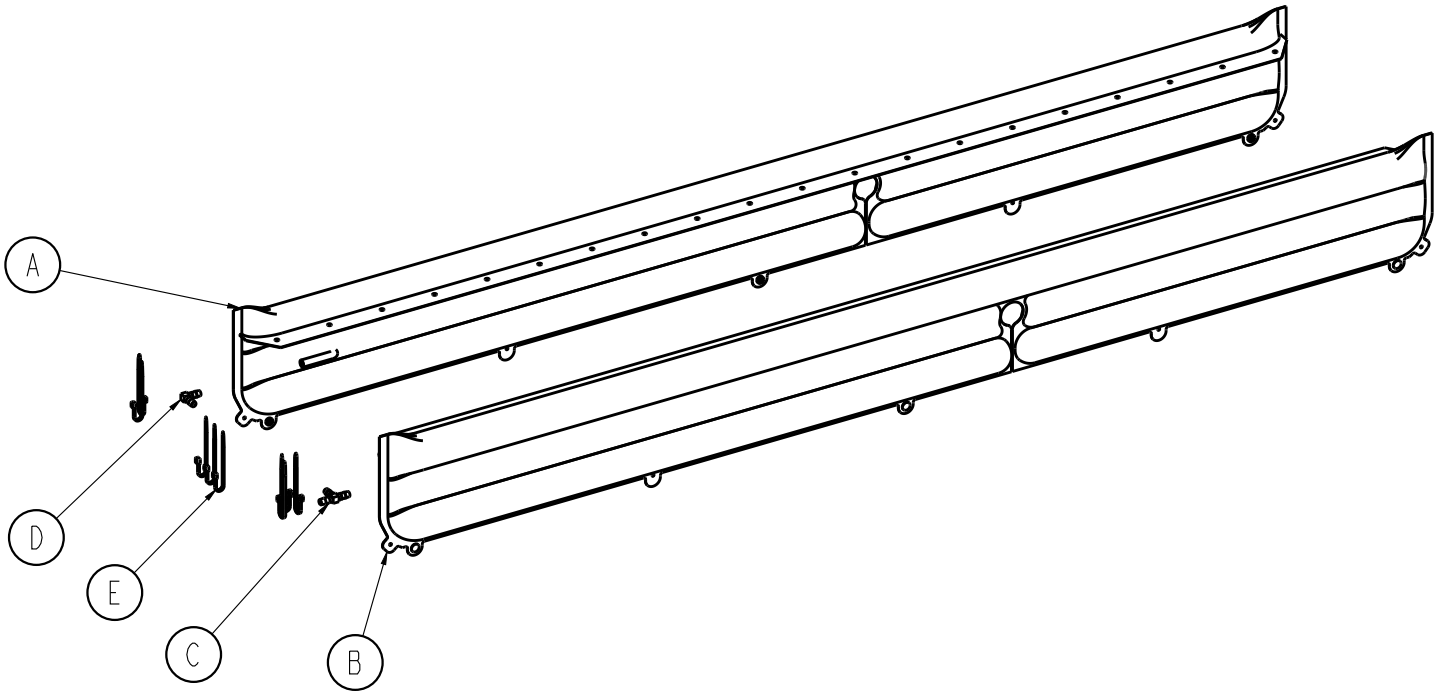
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104106	Cell binding stitch assembly	1
B	3M01M104204	A/B CIC cell assembly	16
C	3M01M104207	AST 4 deep cell CIC assembly	1
D	3M01M104301	Piping welded 2 zone-20 cell	1
E	511P006006	Connector, 2-way	2
F	555000009	Nylon cable tie	20
G	555000009	Nylon cable tie	8
H	518P006003	Tube, spiral wrap	1

Side bolsters, left and right - 2941-700-004

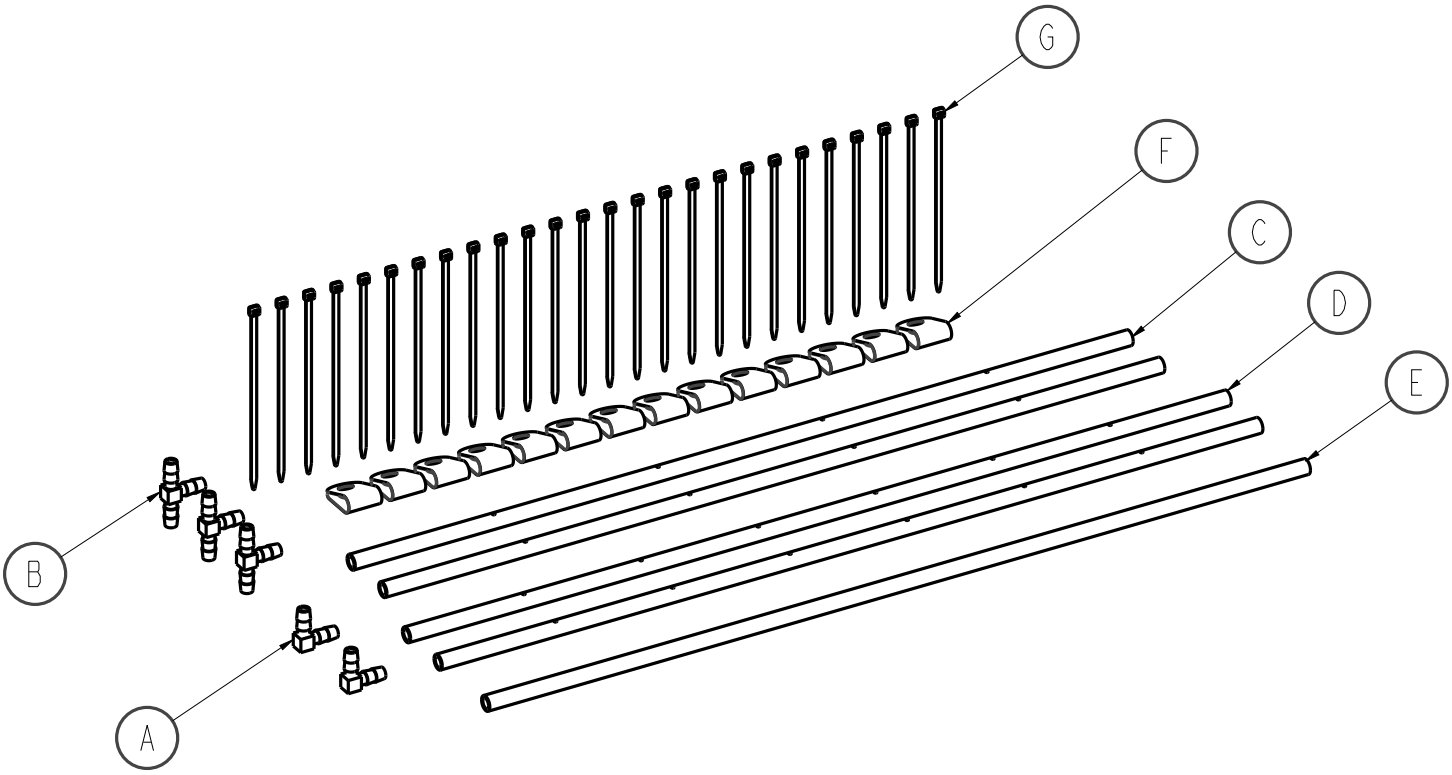
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104206	Side bolster assembly, left	1
B	3M01M104205	Side bolster assembly, right	1
C	511098003	Connector, 3-way, t-type	1
D	511098002	Connector, 2-way, l-type	1
E	555000009	Nylon cable tie	8

LAL and side bolster tubing - 2941-700-035

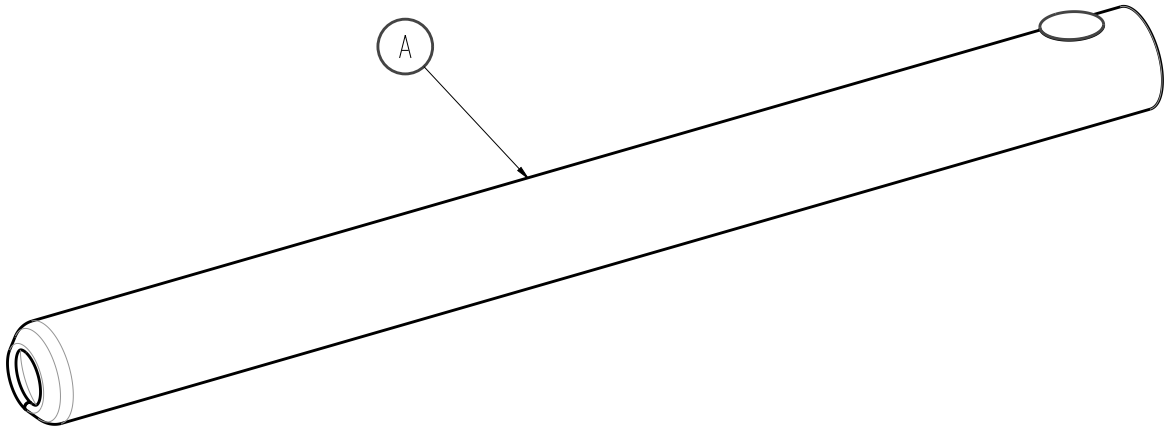
Rev AB (Reference only)



Item	Number	Name	Quantity
A	511098002	Connector, 2-way, l-type	2
B	511098003	Connector, 3-way, t-type	3
C	4M01M104255	Silicone tubing with vents	2
D	4M01M104256	Silicone tubing with vents	2
E	4M01M104257	Silicone tubing with no vents	1
F	4M01M104259	Hanger strap tubing weldment	14
G	555000009	Nylon cable Tie	26

CPR hose sleeve with button - 2941-700-026

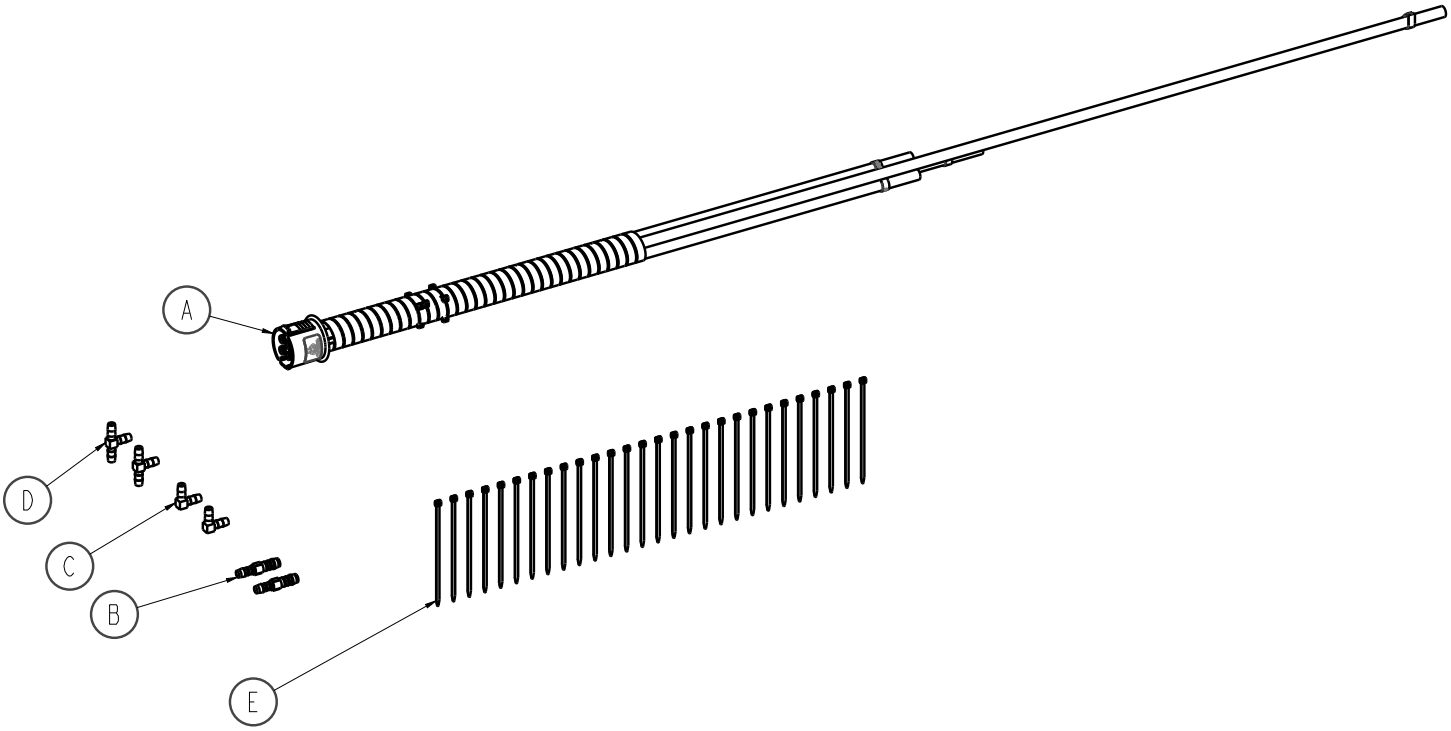
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104311	CPR hose sleeve with button	1

CPR connector assembly - 2941-700-027

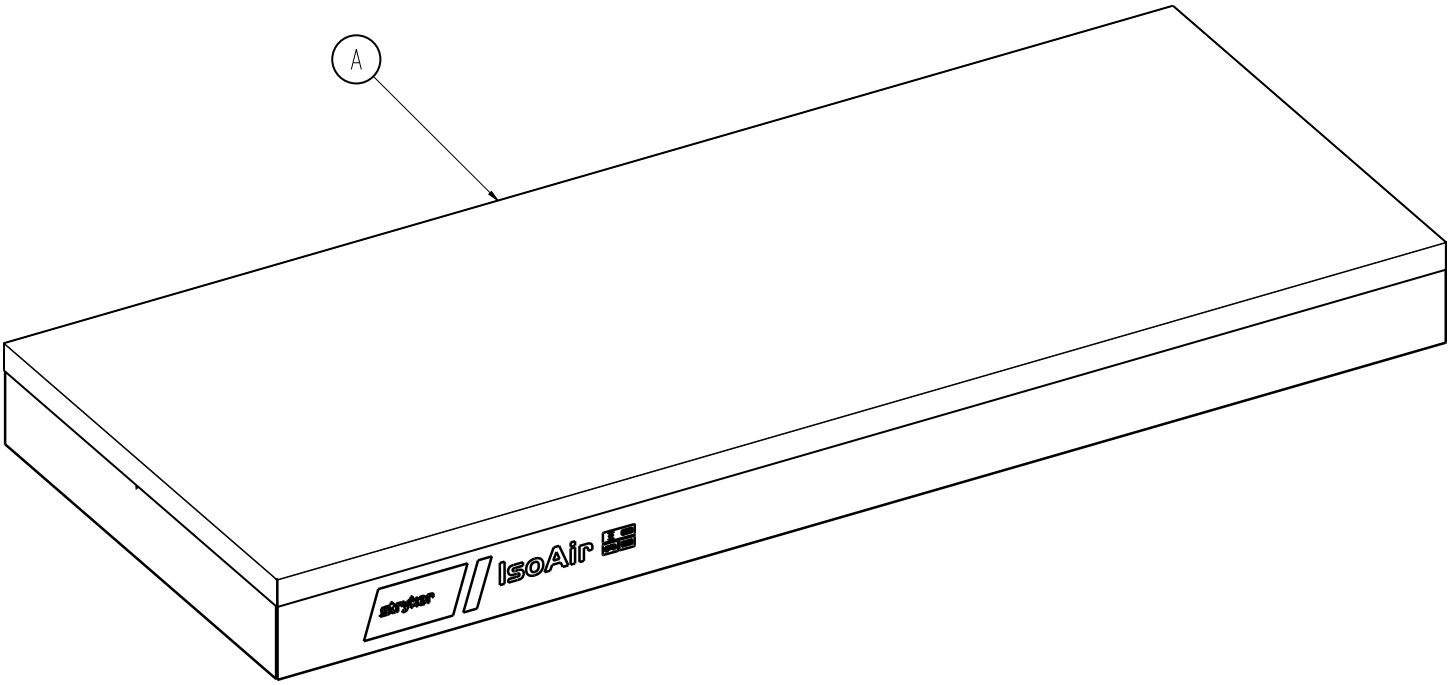
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104302	Piping 4 zone with CPR	1
B	511P006006	Connector, 2-way	2
C	511098002	Connector, 2-way, l-type	2
D	511098003	Connector, 3-way, t-type	2
E	555000009	Nylon cable tie	28

Endurance top cover - 2941-700-006

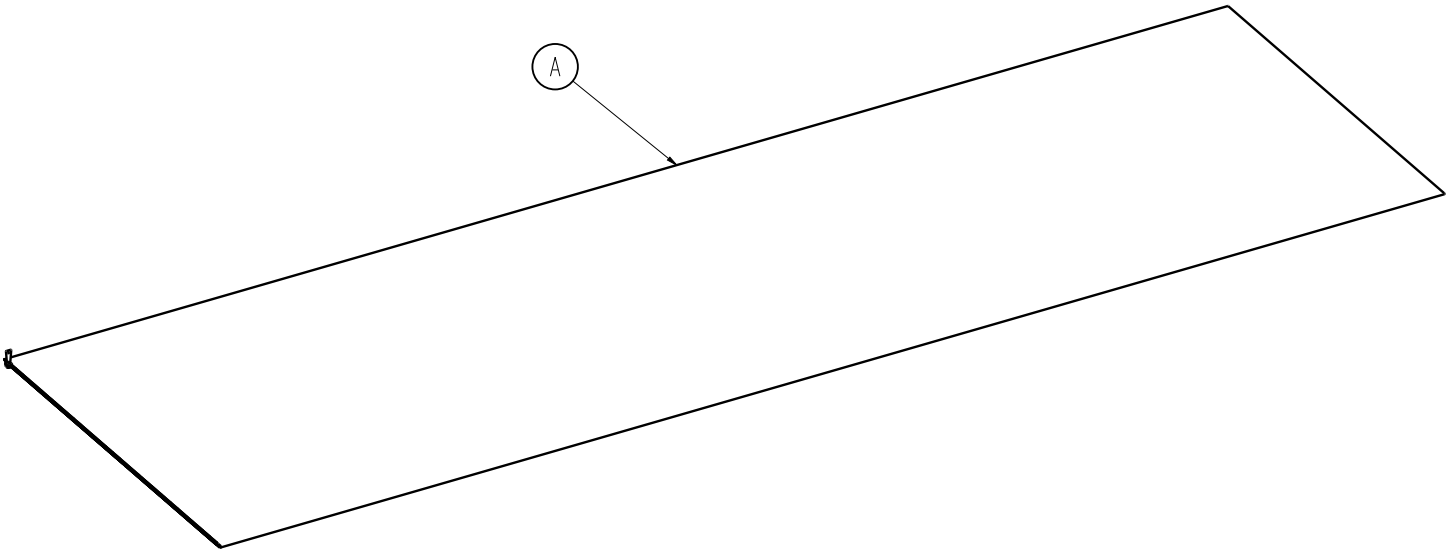
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104401	Top cover	1

Fire barrier - 2941-700-007

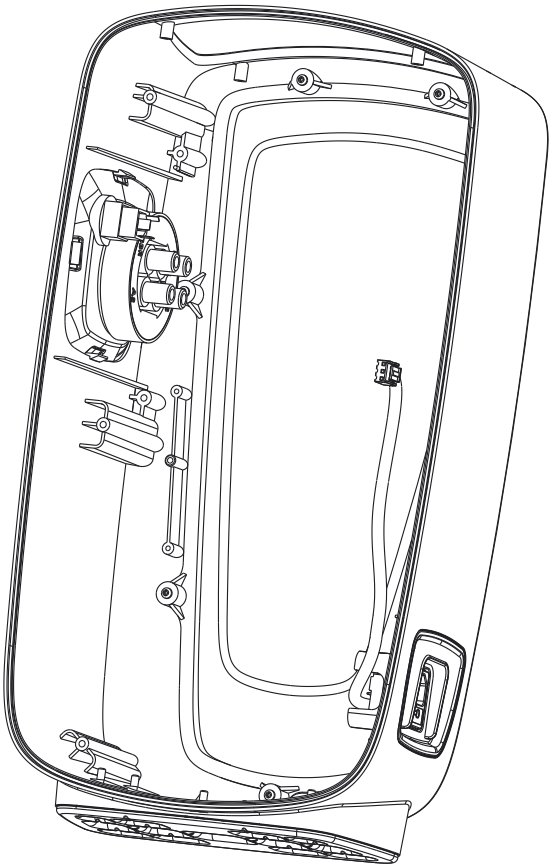
Rev AA (Reference only)



Item	Number	Name	Quantity
A	3M01M104104	Base fireproof barrier	1

Pump front panel assembly - 2941-700-013

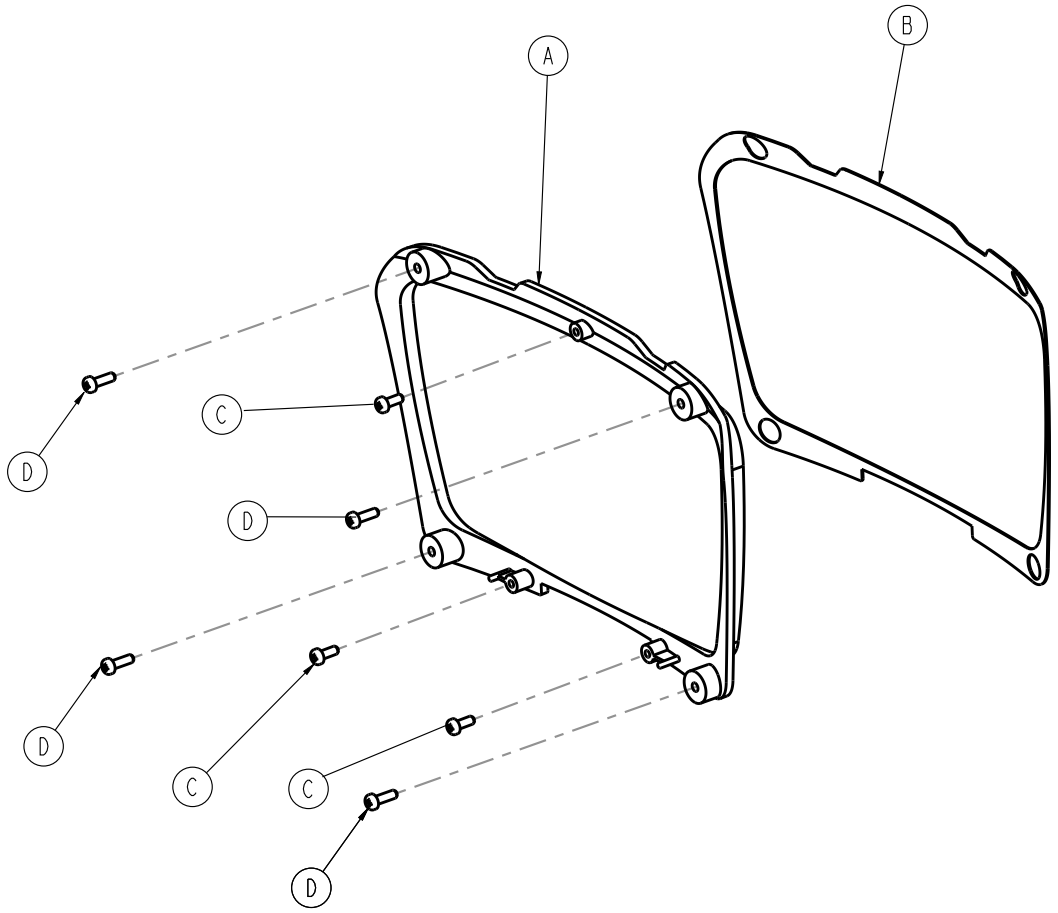
Rev AB (Reference only)



Item	Number	Name	Quantity
Shown	1S01M104031	Pump front panel assembly	1

Pump top panel assembly - 2941-700-014

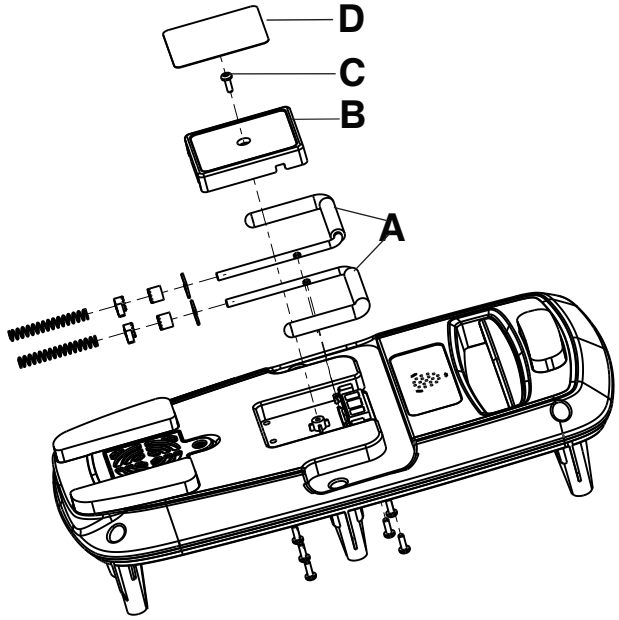
Rev AC (Reference only)



Item	Number	Name	Quantity
A	511M104012	Top panel	1
B	517M064022	Top panel gasket	1
C	521096S05	Screw	3
D	521M064051	Screw	4

Hook assembly - 2941-700-023

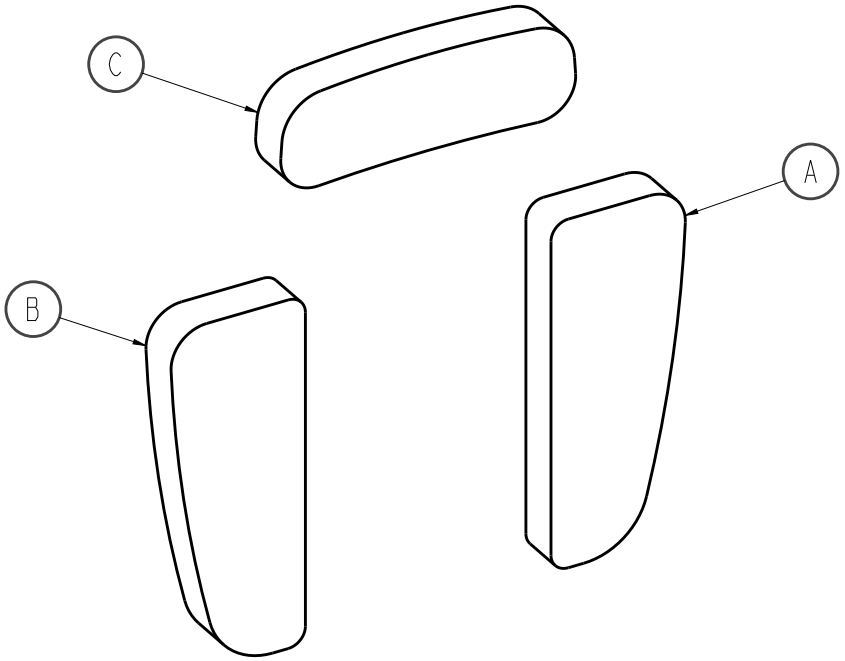
Rev AA (Reference only)



Item	Number	Name	Quantity
A	4M01M104053	Hook sub-assembly	2
B	511M104016	Hook cover	1
C	521M064005	Phillips pan head screw	7
D	622M104005	Label, compliance	1

Bumper pack - 2941-700-030

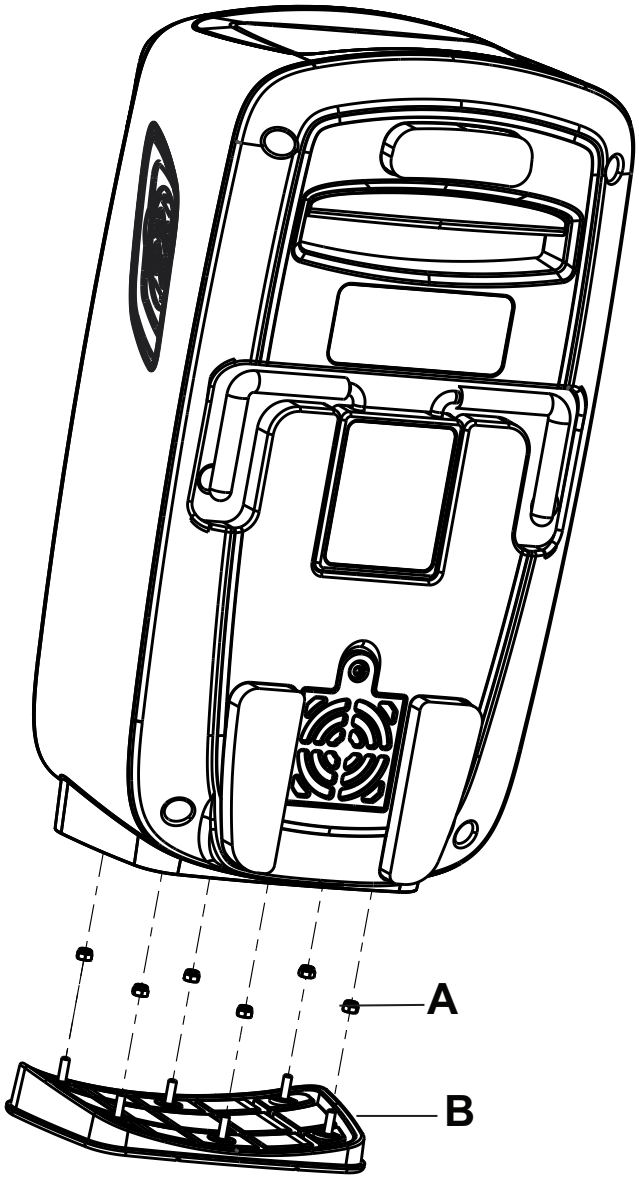
Rev AA (Reference only)



Item	Number	Name	Quantity
A	517M064069	Foam bumper, left	1
B	517M064068	Foam bumper, right	1
C	517M064067	Foam bumper, top	1

Pump housing rubber foot assembly - 2874-007-022

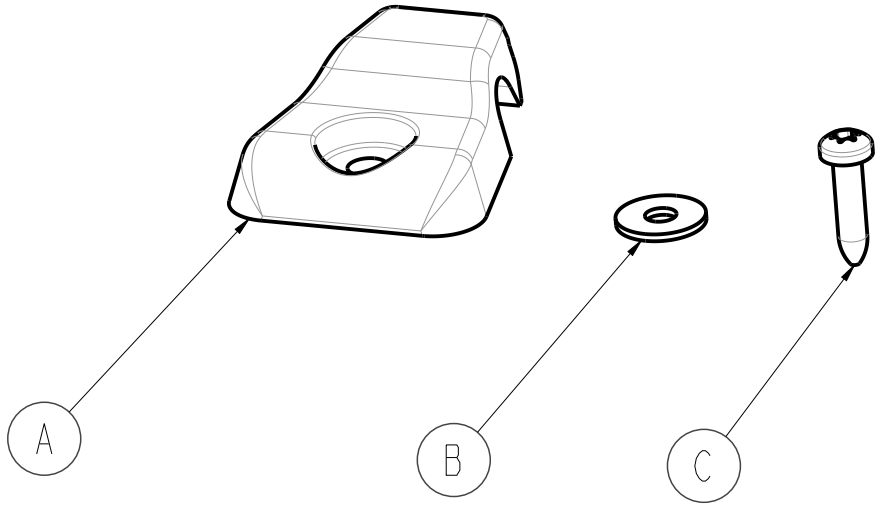
Rev AA (Reference only)



Item	Number	Name	Quantity
A	517M104001	Molded rubber foot	1
B	521096N01	Nut fastener	6

Pump power cord flex grip kit - 2941-700-024

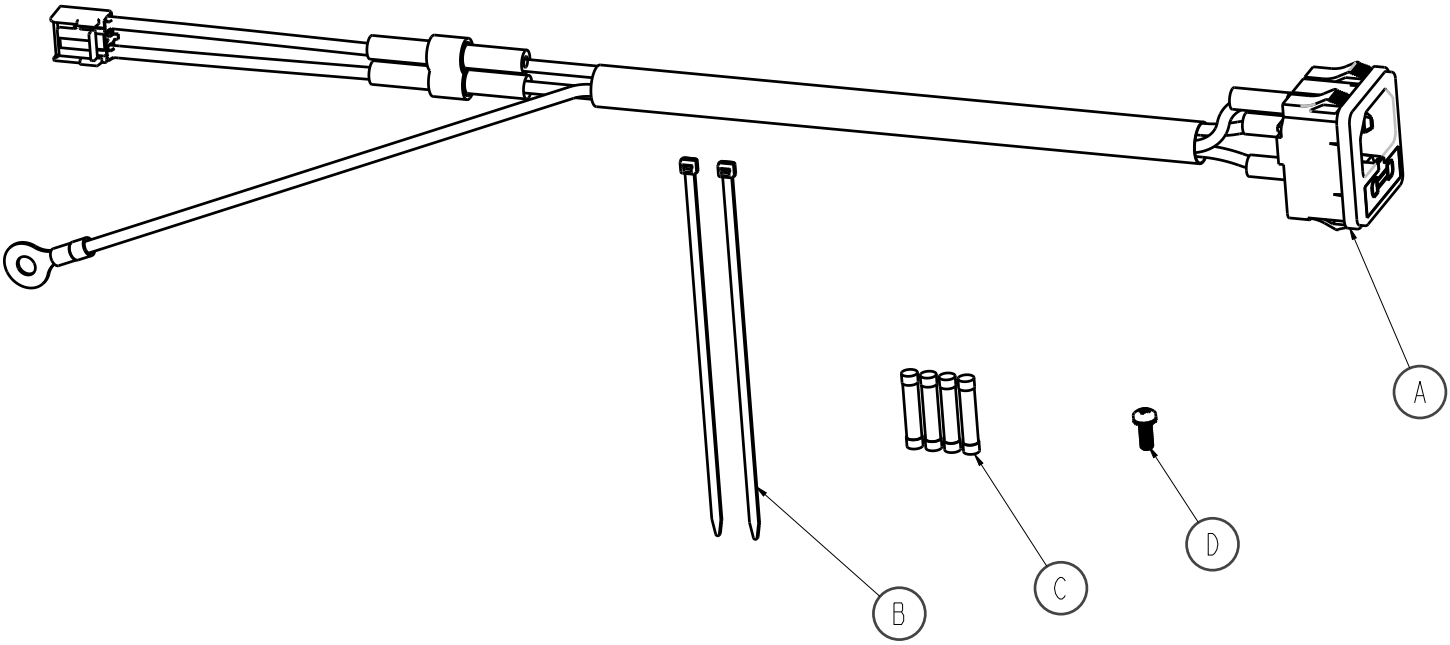
Rev AA (Reference only)



Item	Number	Name	Quantity
A	517M064063	Flex grip power cord retainer	1
B	517M064064	Flat washer	1
C	521M064028	Phillips head screw	1

Pump power socket - 2941-700-028

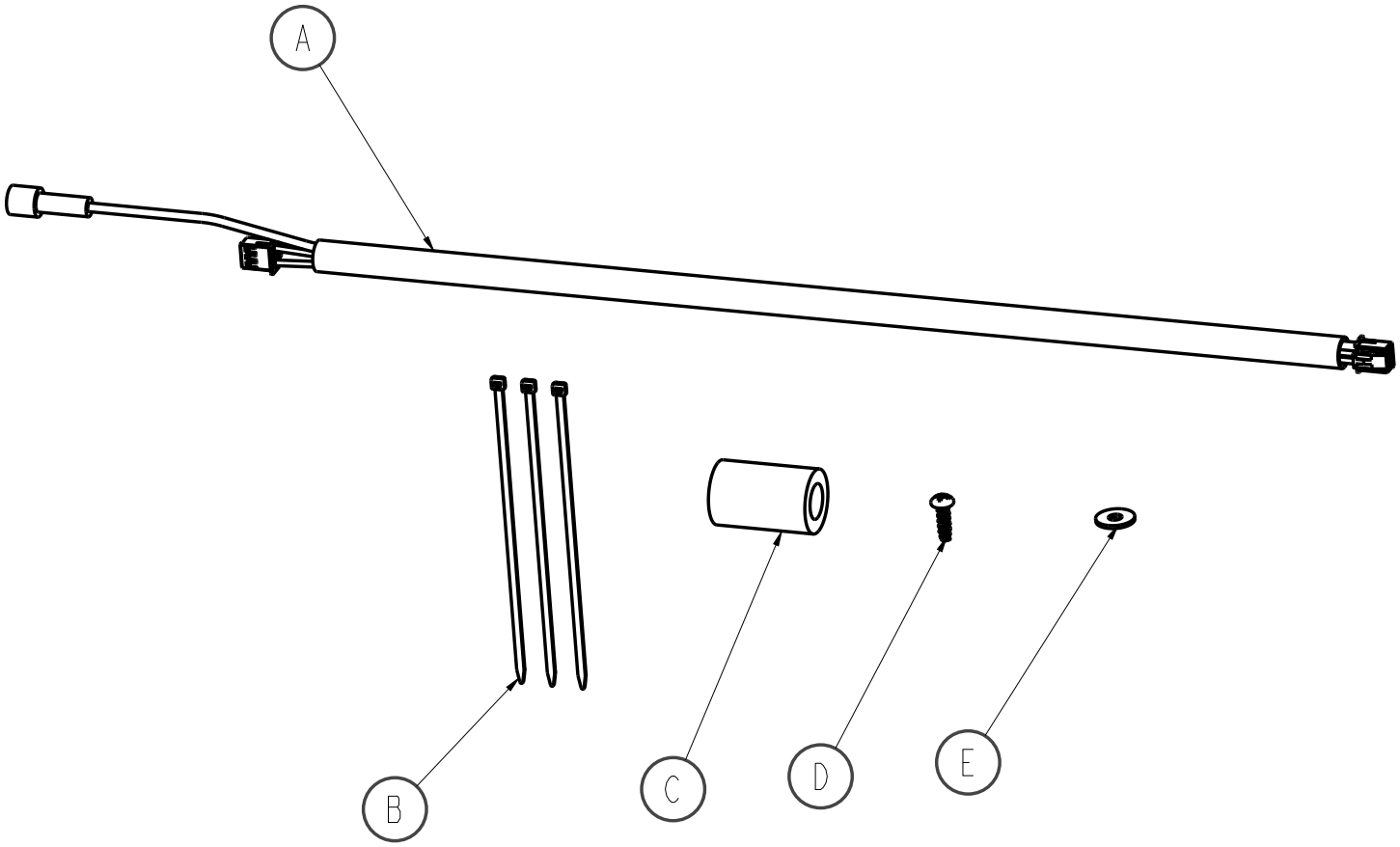
Rev AA (Reference only)



Item	Number	Name	Quantity
A	4M01M104266	Grounded female power socket assembly	1
B	555096016	Nylon cable tie	2
C	551M064173	Fuse	4
D	521M064071	Phillips pan head SEMS screw	1

Pump cable main PCBA to Isolation PCBA - 2941-700-029

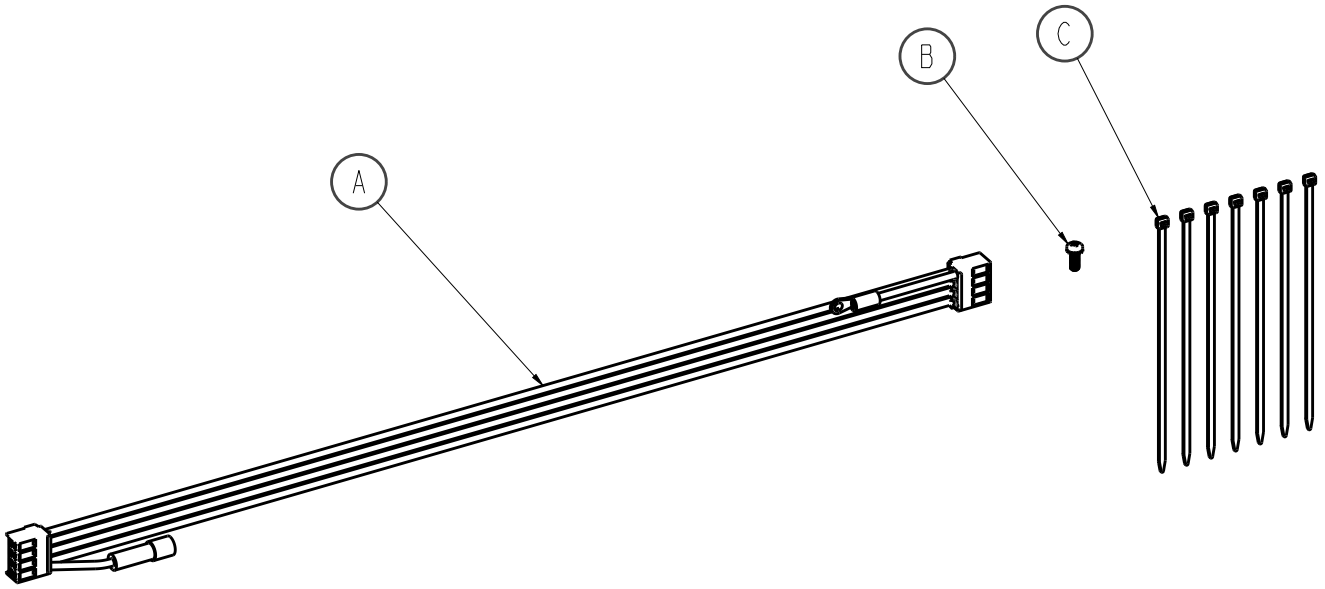
Rev AA (Reference only)



Item	Number	Name	Quantity
A	555M064069	Cable main PCBA to Isolation PCBA	1
B	555096016	Nylon cable tie	3
C	551M064056	Ferrite loop	1
D	521M064005	Phillips pan head screw	1
E	517M064064	Flat washer	1

Cable SMPS to main - 2941-700-031

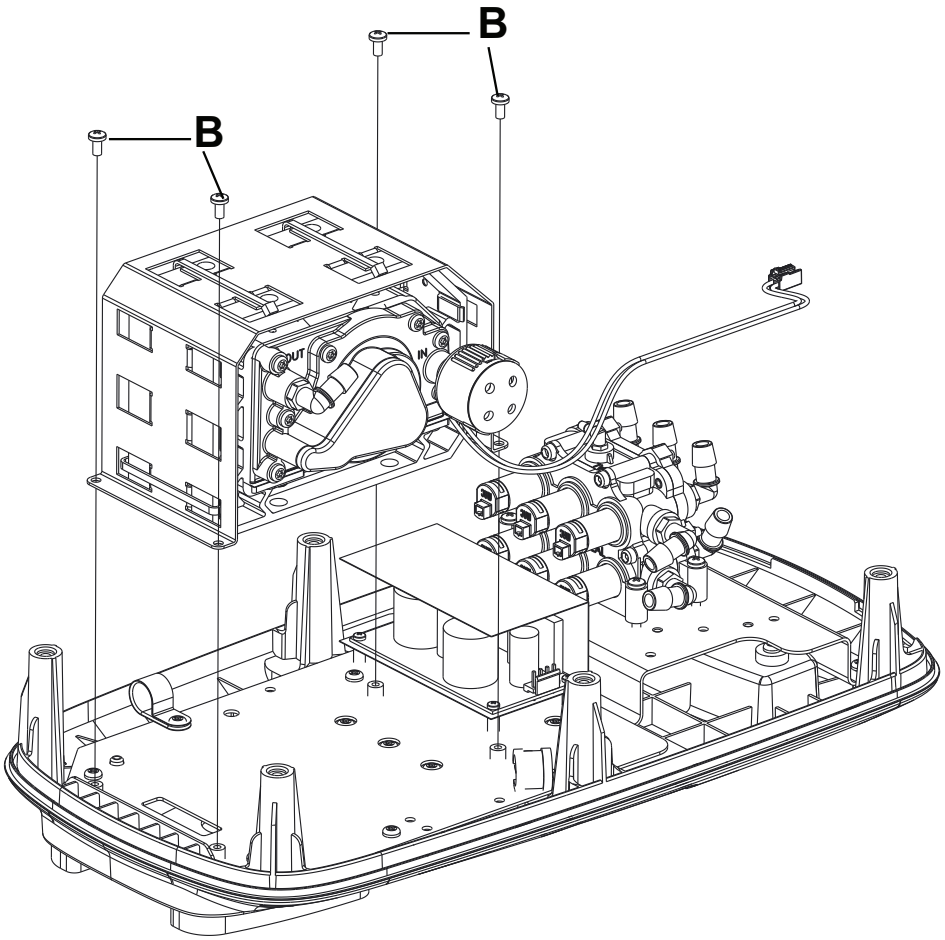
Rev AA (Reference only)



Item	Number	Name	Quantity
A	555M064070	Cable SMPS to main PCBA	1
B	521M064071	Phillips pan head SEMS screw	1
C	555096016	Nylon cable tie	7

Compressor assembly - 2874-007-023

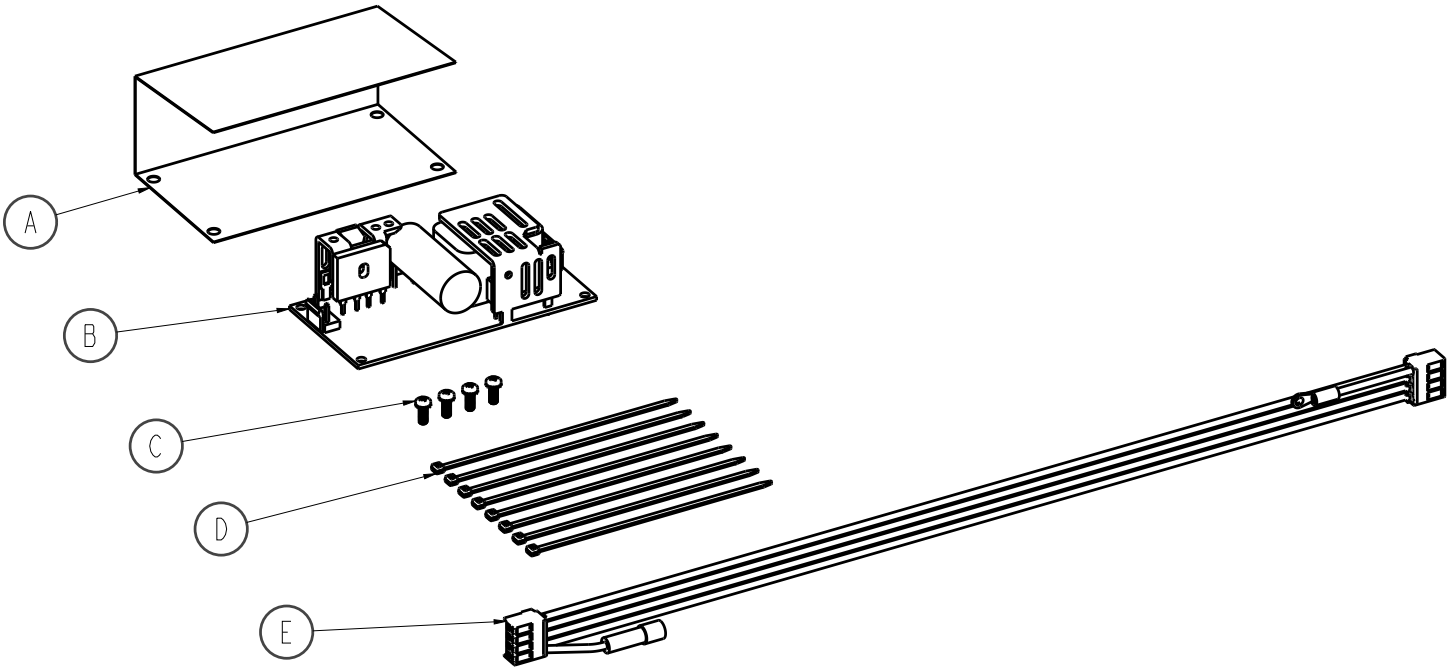
Rev AA (Reference only)



Item	Number	Name	Quantity
A	Reference only	Compressor subassembly	1
B	521M064026	Screw	4
C	511M092013	Nylon cable tie (not shown)	6

Power supply - 2941-700-036

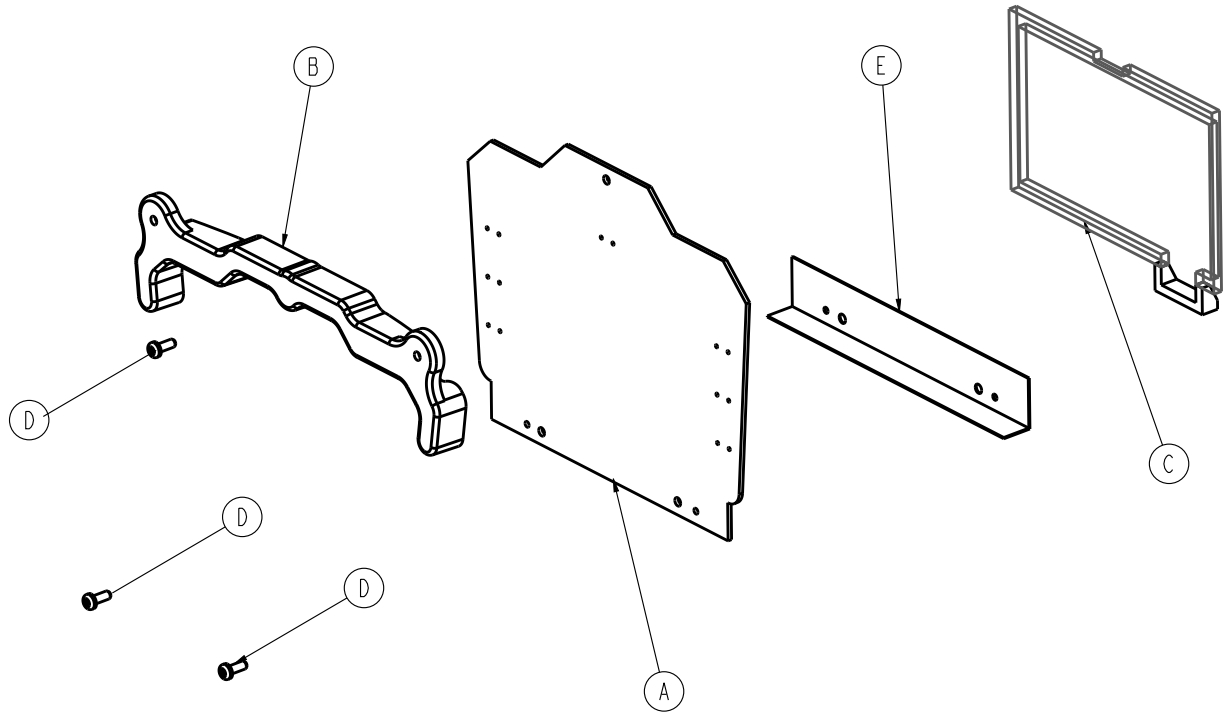
Rev AA (Reference only)



Item	Number	Name	Quantity
A	521M064024	Isolation paper	1
B	553M104003	PCB main power 120-24V assembly	1
C	521M064071	Phillips pan head SEMS screw	4
D	555096016	Nylon cable tie	8
E	555M064070	Cable SMPS to main PCBA	1

Pump PCBA assembly - 2941-700-015

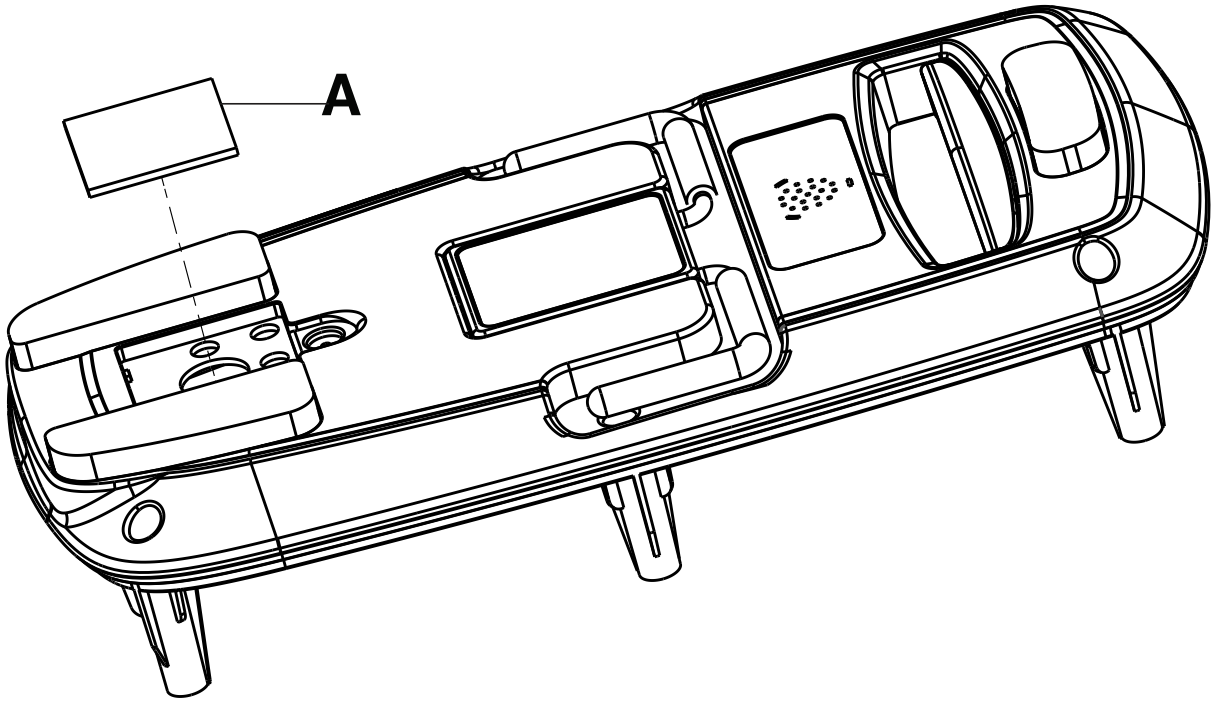
Rev AC (Reference only)



Item	Number	Name	Quantity
A	4M01M104047	Programmed PCBA assembly	1
B	511M104013	PCBA holder	1
C	517M104002	LCD foam	1
D	521096S05	Screw	3
E	511M064126	Main PCBA isolation sheet	1

Air filter - 2874-007-026

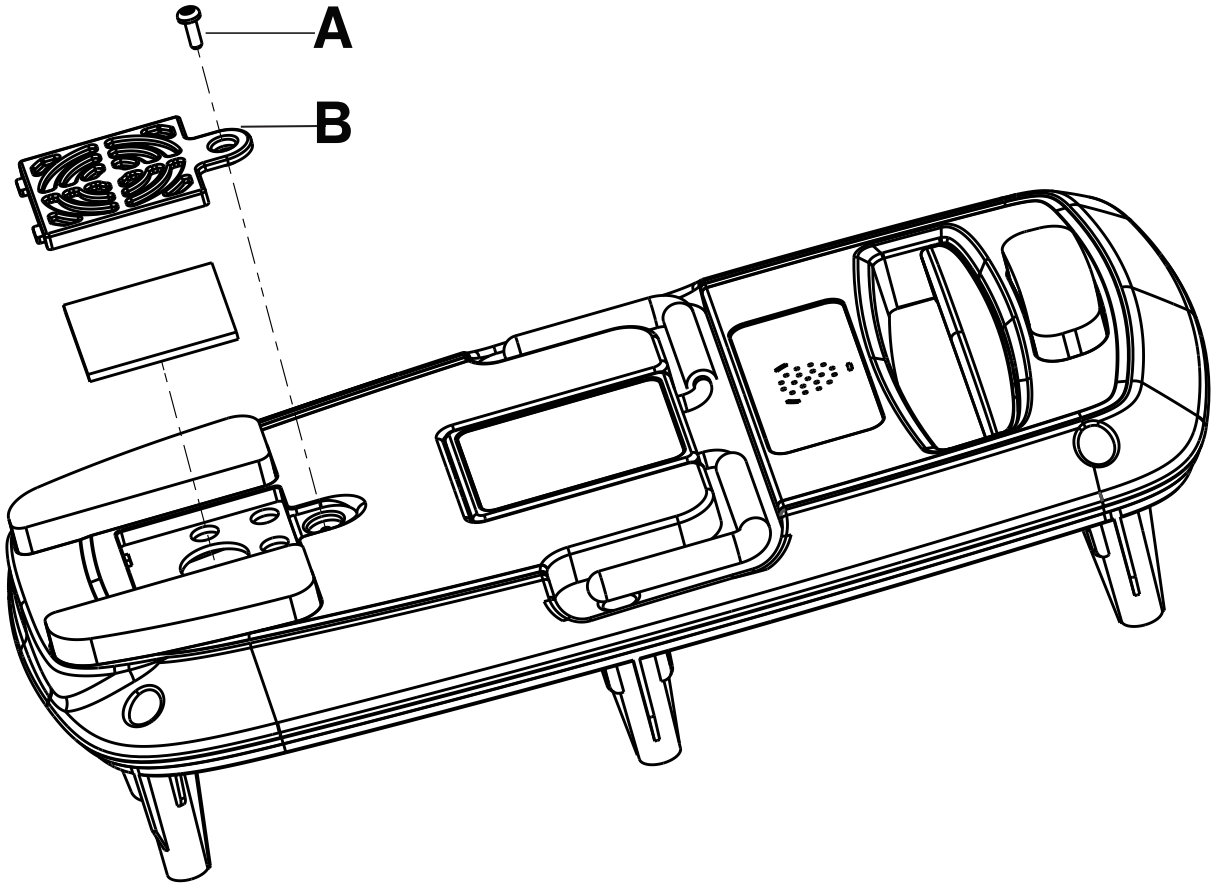
Rev AB (Reference only)



Item	Number	Name	Quantity
A	517M104015	Air filter	1

Air filter guard - 2874-007-027

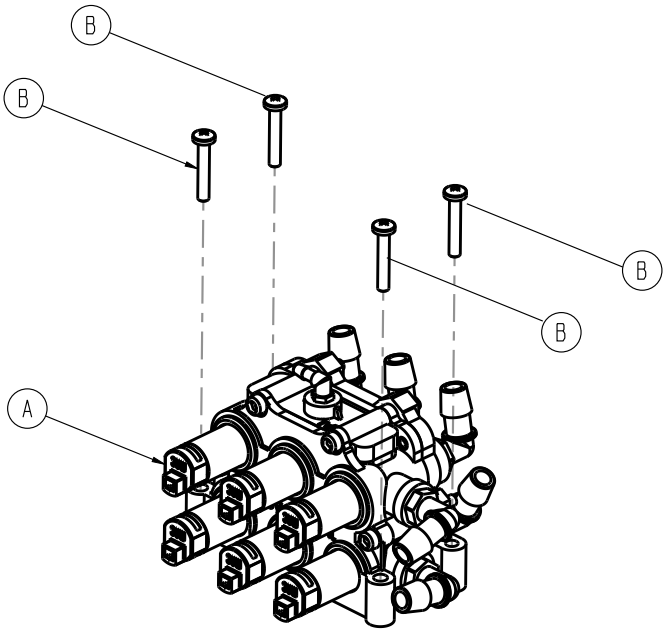
Rev AB (Reference only)



Item	Number	Name	Quantity
A	511M104015	Molded air filter guard	1
B	521M064029	Screw	1

Pump manifold assembly - 2941-700-016

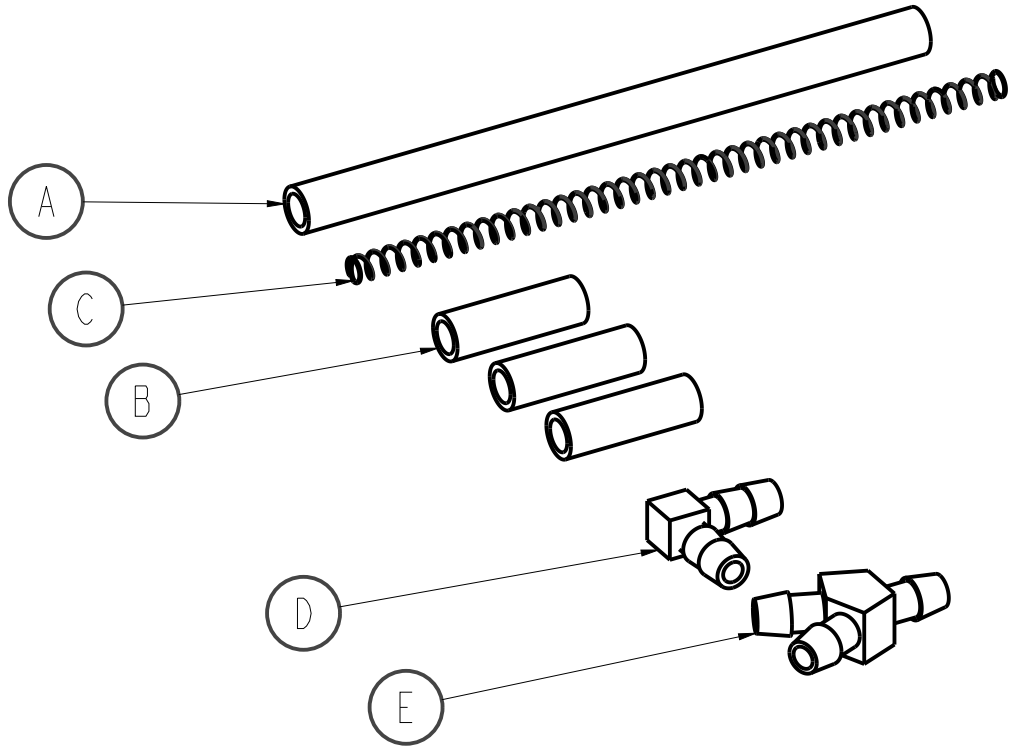
Rev AC (Reference only)



Item	Number	Name	Quantity
A	4M01M104050	Manifold assembly	1
B	521M064025	Screw	4
C	555M064029	Cable for manifold (not shown)	1

Hose kit, muffler to manifold - 2941-700-032

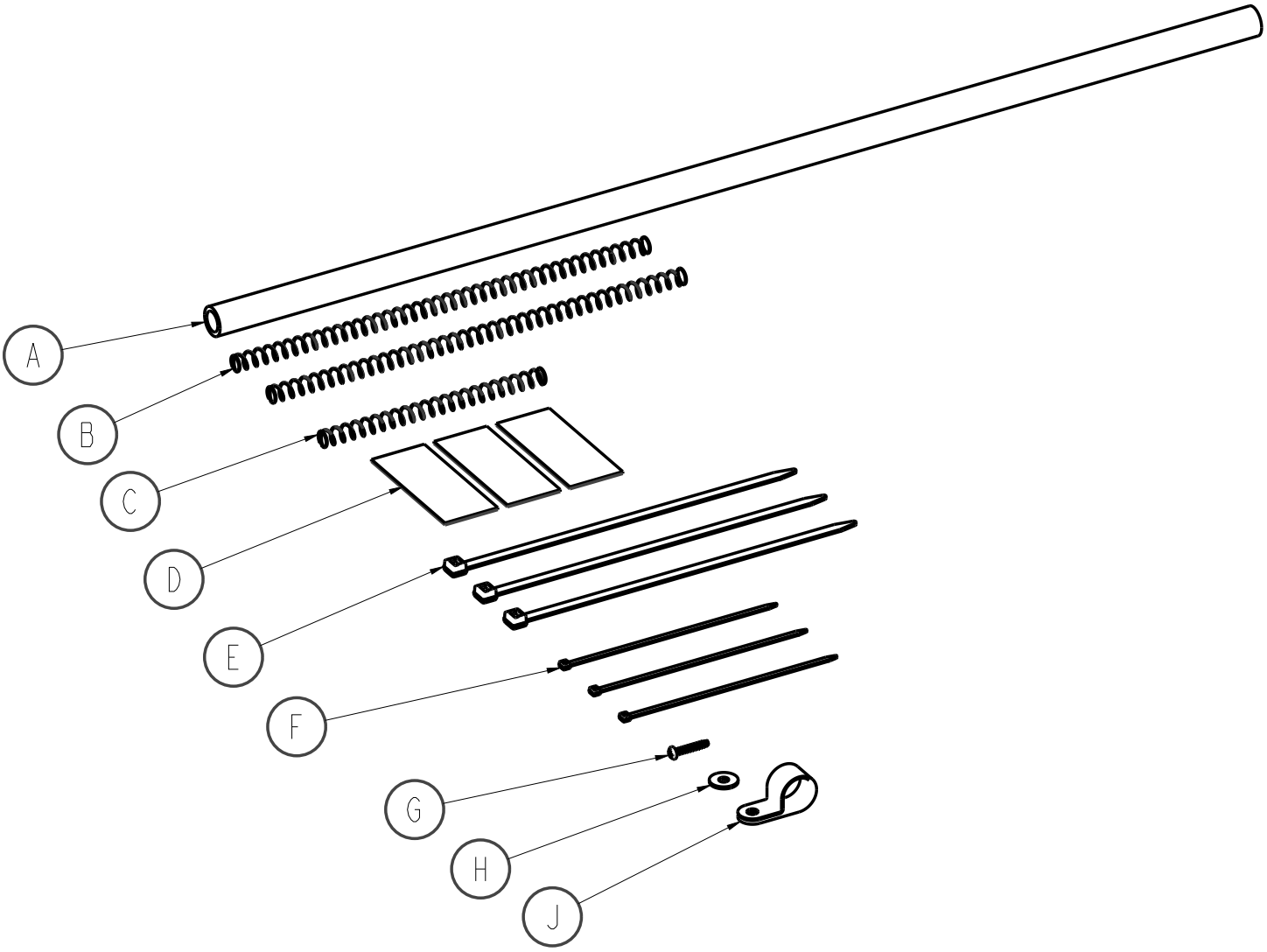
Rev AA (Reference only)



Item	Number	Name	Quantity
A	4M01M104563	Muffler to manifold tubing	1
B	4M01M104560	Intermediate tubing	3
C	523M064002	Spring segment	1
D	511098002	Connector, 2-way, l-type	1
E	511P006014	Connector, 3-way, t-type	1

Hose kit, compressor to muffler - 2941-700-033

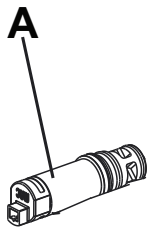
Rev AA (Reference only)



Item	Number	Name	Quantity
A	4M01M064559	Hose segment	1
B	523M064002	Spring segment	2
C	523M064006	Spring segment	1
D	517M064070	Foam	3
E	555000009	Nylon cable tie	3
F	555096016	Nylon cable tie	3
G	521096S02	Phillips pan head thread form screw	1
H	517M064064	Flat washer	1
I	511M064108	Plastic cable clamp	1

Normally closed solenoid valve - 2941-700-018

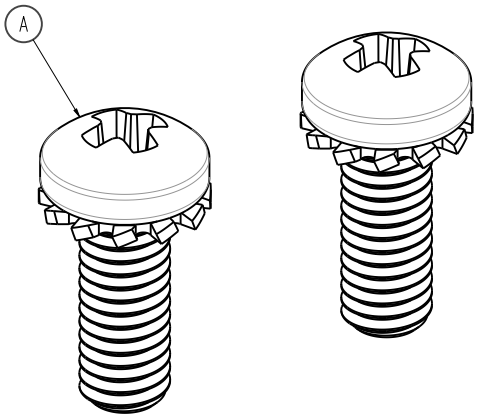
Rev AA (Reference only)



Item	Number	Name	Quantity
A	551M064169	Digital valve MAC MOD 169 BVP214A 24 V (NC)	1

SEMS fastener kit, SMPS - 2941-700-034

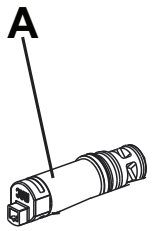
Rev AA (Reference only)



Item	Number	Name	Quantity
A	521M064071	Phillips pan head SEMS screw	2

Normally open solenoid - 2941-700-019

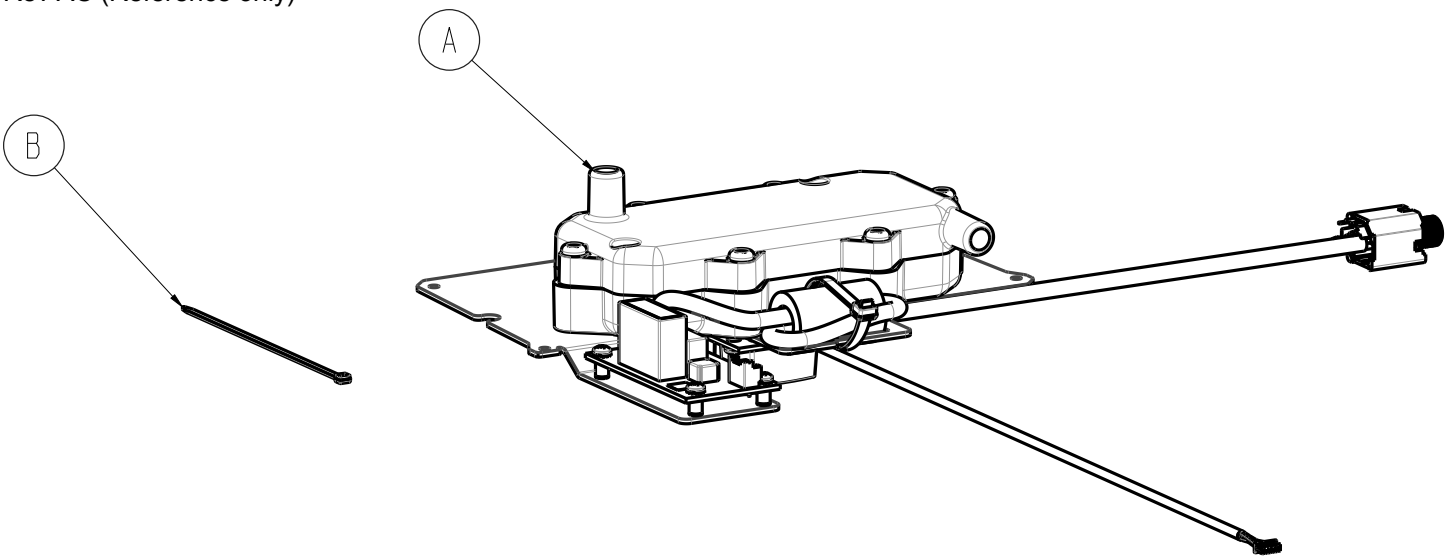
Rev AA (Reference only)



Item	Number	Name	Quantity
A	551M064179	Digital valve MAC MOD A295 BVP214A 24 V (NO)	1

Pump status LED assembly with muffler - 2941-700-017

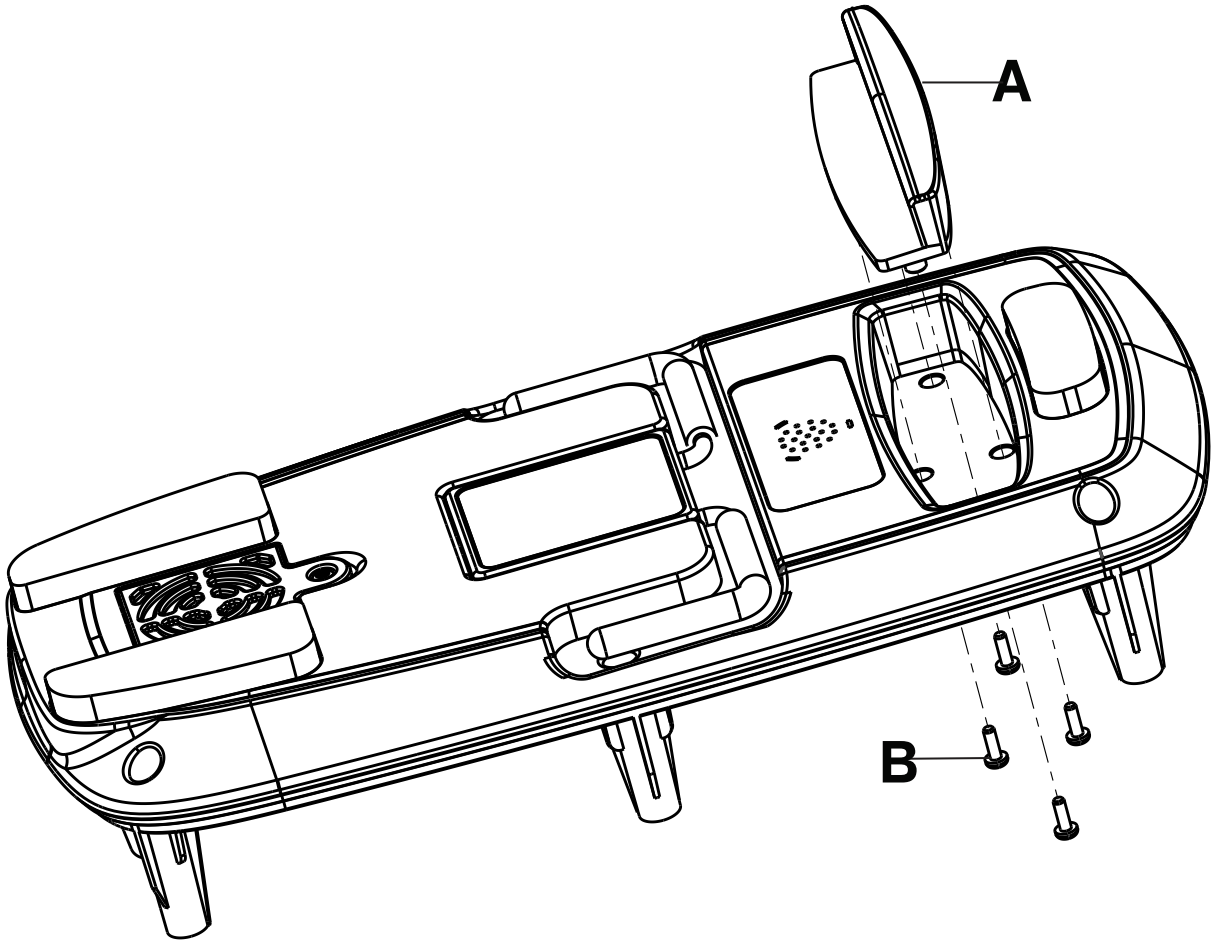
Rev AC (Reference only)



Item	Number	Name	Quantity
A	4M01M104044	**IsoAir** pump LED status assembly	1
B	555096016	Nylon cable tie	1

Handle assembly - 2874-007-031

Rev AB (Reference only)



Item	Number	Name	Quantity
A	511M104017	Molded handle	1
B	521M064005	Phillips pan head screw	4

EMC information

WARNING

- The IsoAir system may interfere with patient ECG measurements. You may need to disconnect the AST cable, turn off the IsoAir system, or move the patient to a non-powered system.
- The use of accessories, transducers, and cables, other than those specified or provided by the manufacturer, could result in increased electromagnetic emissions or decreased electromagnetic immunity and result in improper operation.
- Portable RF communications equipment, including peripherals such as antenna cables and external antennas, should be no closer than 12 inches (30 cm) to any part of the IsoAir system, that includes cables specified by the manufacturer.
- Avoid stacking or placing equipment adjacent with other equipment to prevent improper operation of the products. If such use is necessary, carefully observe stacked or adjacent equipment to make sure that they are operating properly.
- This equipment/system is intended for use by healthcare professionals only. This equipment/system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as reorienting or relocating IsoAir system or shielding the location.

Note

- The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.
- This equipment is suitable for use in hospitals except for near active HF surgical equipment and the RF shielded room of an ME system for magnetic resonance imaging, where the intensity of EM disturbances is high.

Guidance and Manufacturer's declaration - Electromagnetic Immunity

The IsoAir system is suitable for use in the electromagnetic environment specified below. The customer or the user of the IsoAir system should make sure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment Guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrostatic fast transient/ burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/ output lines	±2 kV for power supply lines ±1 kV for input/ output lines	Main power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	+1 kV lines to lines +2 kV lines to earth	+1 kV lines to lines +2 kV lines to earth	Main power quality should be that of a typical commercial or hospital environment.
Voltage dips, voltage variations and short interruptions on power supply input lines IEC 61000-4-11	0% U_T for 0.5 cycle at 0°, 45, 90, 135, 180, 225, 270, and 315 0% U_T for 1 cycle 70% U_T (30% dip in U_T) for 25 cycles 0% U_T for 250 cycles	0% U_T for 0.5 cycle at 0°, 45, 90, 135, 180, 225, 270, and 315 0% U_T for 1 cycle 70% U_T (30% dip in U_T) for 25 cycles 0% U_T for 250 cycles	Main power quality should be that of a typical commercial or hospital environment. If the user of the IsoAir system requires continued operation during power main interruptions, it is recommended that the device be powered from an uninterrupted power supply or a battery.

Guidance and Manufacturer's declaration - Electromagnetic Immunity			
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Note - U_T is the AC mains voltage before applications of the test level.

Recommended separation distances between portable and mobile RF communications equipment and IsoAir System.

The **IsoAir** system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the **IsoAir** system can help prevent electromagnetic interferences by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the **IsoAir** system as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter **W**	**Separation distance according to frequency of transmitter** **m**		
	150 kHz to 80 MHz $d=[3.5/V1]\sqrt{P}$	80 MHz to 800 MHz $d=[3.5/E1]\sqrt{P}$	800 MHz to 2.5 GHz $d=[7/E1]\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note - At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note - These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

IsoAir system is suited for use in the electromagnetic environment specified below. The customer or the user of IsoAir system should make sure that it is used in such an environment.			
Immunity Test	**IEC 60601 Test Level**	**Compliance Level**	**Electromagnetic Environment - Guidance**
Conducted RF IEC 61000- 4-6 Radiated RF IEC 61000-4-3	3 Vrms 6 Vrms in ISM bands 150 kHz to 80 MHz 10 V/m 80 MHz to 2.7 GHz	3 V 6 V in ISM bands 10 V/m	Portable and mobile RF communications equipment should be used no closer to any part of **IsoAir**, including cables, than the recommended separation distance calculated from the equation appropriate for the frequency of the transmitter. Recommended Separation Distance $d=(0.35)\sqrt{P}$ 80 MHz to 800 MHz $d=(0.70)\sqrt{P}$ 800 MHz to 2.7 GHz where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of equipment marked with the following symbol: 

Note - At 80 MHz and 800 MHz, the higher frequency range applies.

Note - These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

[a]Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which **IsoAir** is used exceeds the applicable RF compliance level above, **IsoAir** should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating **IsoAir**.

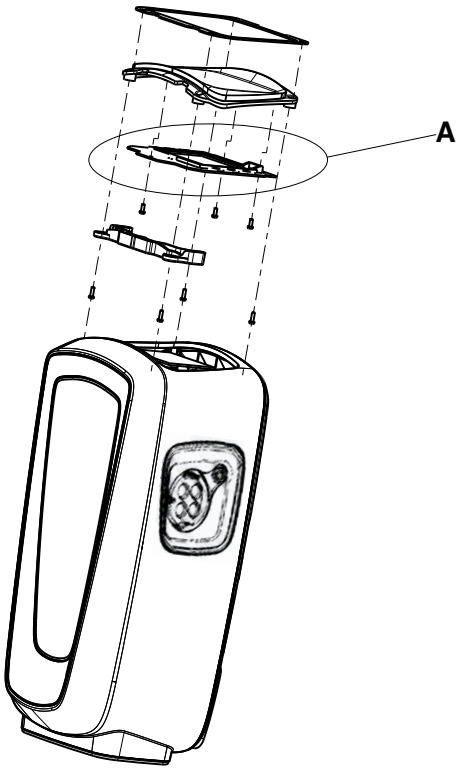
[b]Over the frequency range 150 kHz to 80 MHz, field strengths are less than 3 V/m.

Guidance and Manufacturer's declaration - Electromagnetic Emissions		
IsoAir is intended for use in an electromagnetic environment specified below. The customer or the user of **IsoAir** should make sure that it is used in such an environment.		
Emissions Test	**Compliance**	**Electromagnetic Environment**
RF Emissions CISPR 11	Group 1	**IsoAir** uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class A	**IsoAir** is suitable for use in all establishments other than domestic and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage Fluctuations Flicker Emissions IEC 61000-3-3	Complies	

Recycling passport

4M01M104034

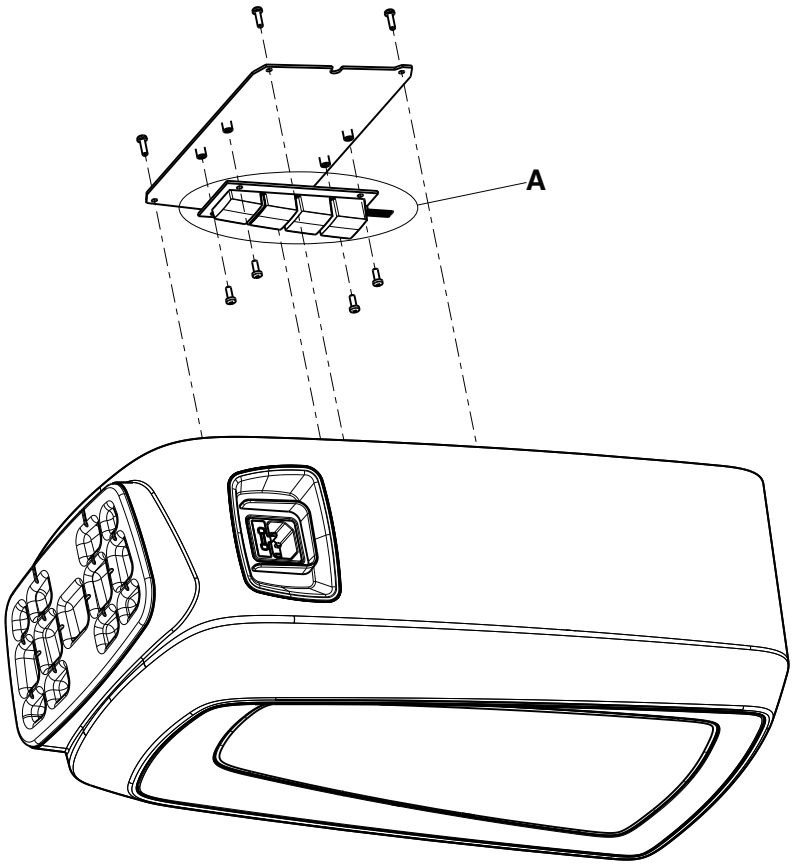
Rev A



Item	Recyclable part number	Material code	Important information	Quantity
A	4M01M104034	Circuit board with surface > 10cm2	Main control PCBA and LCD	1

4M01M104033

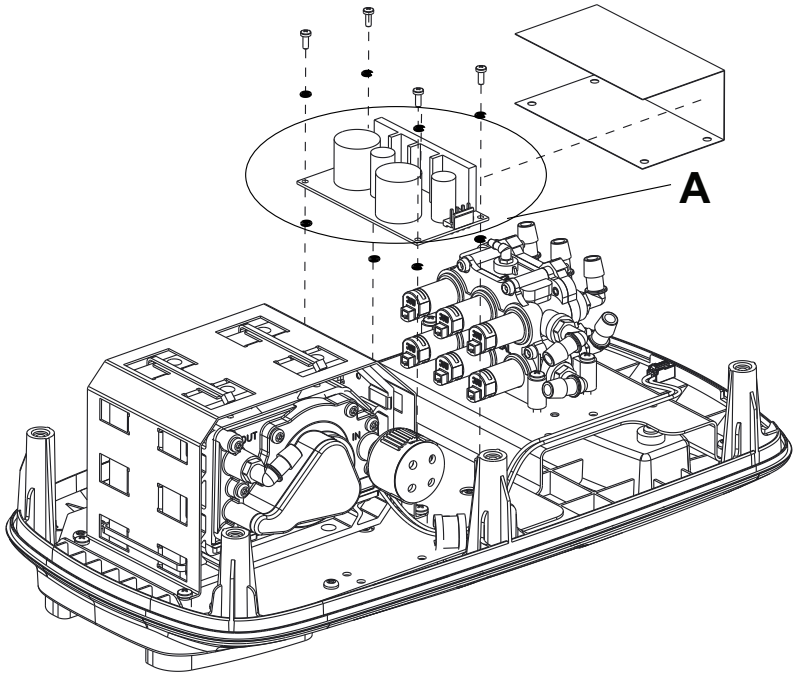
Rev A



Item	Recyclable part number	Material code	Important information	Quantity
A	4M01M104033	Circuit board with surface > 10cm2	LED Status PCBA	1

553M104003

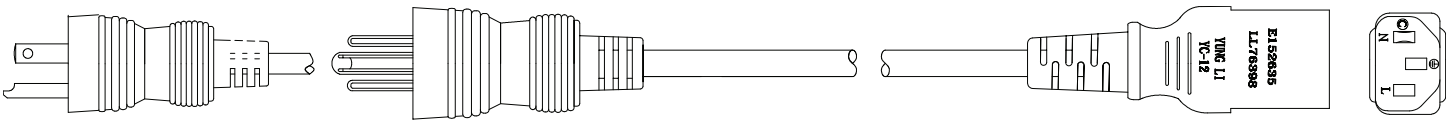
Rev A



Item	Recyclable part number	Material code	Important information	Quantity
A	553M104003	Circuit board with surface > 10cm2	SMPS power supply	1
		Capacitors > 25mm in height or diameter		

2874-007-001

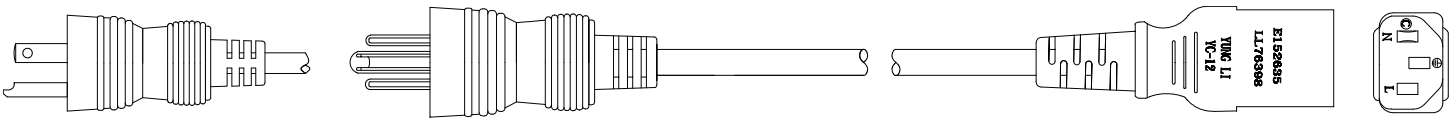
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	511M064099	External cable	Power cord, type B, 1 meter	1

2874-007-002

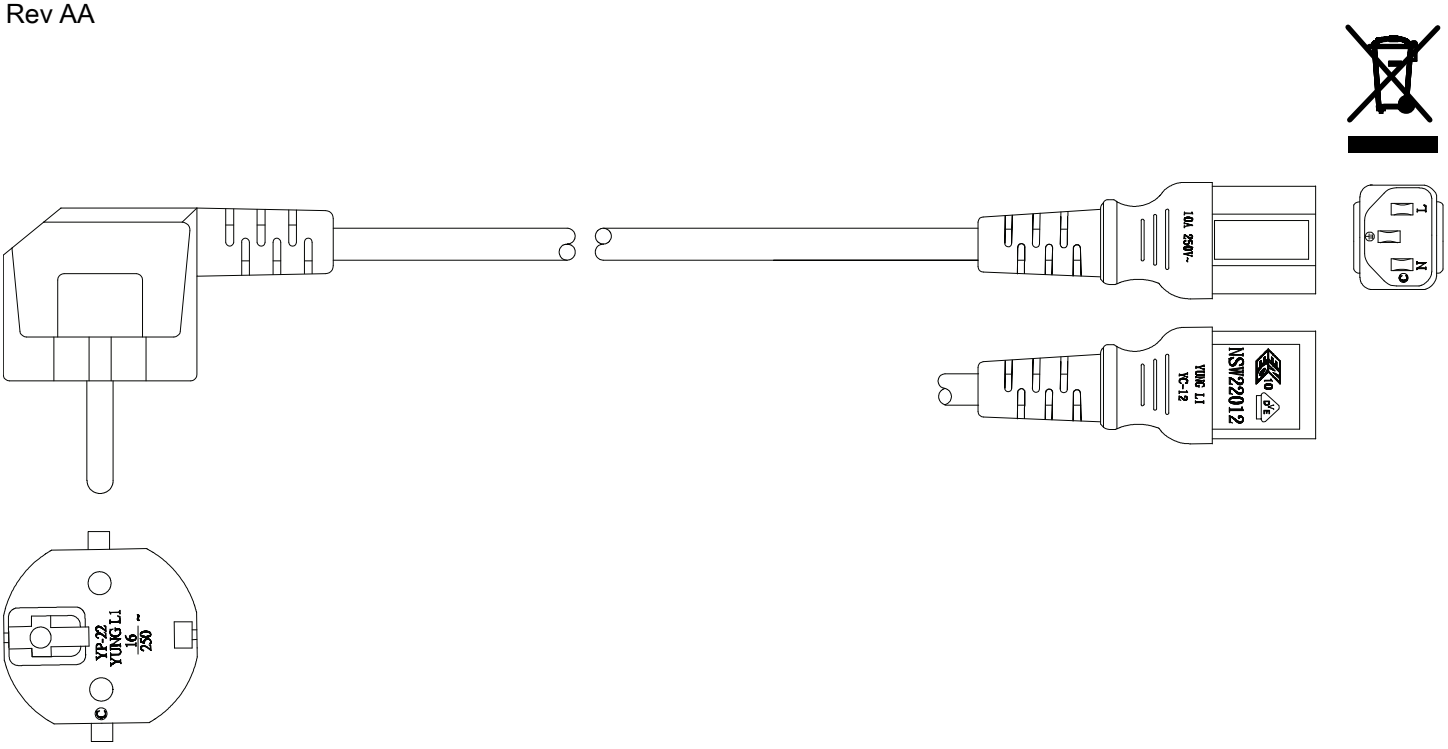
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	511M064098	External cable	Power cord, type B, 5 meter	1

2874-007-003

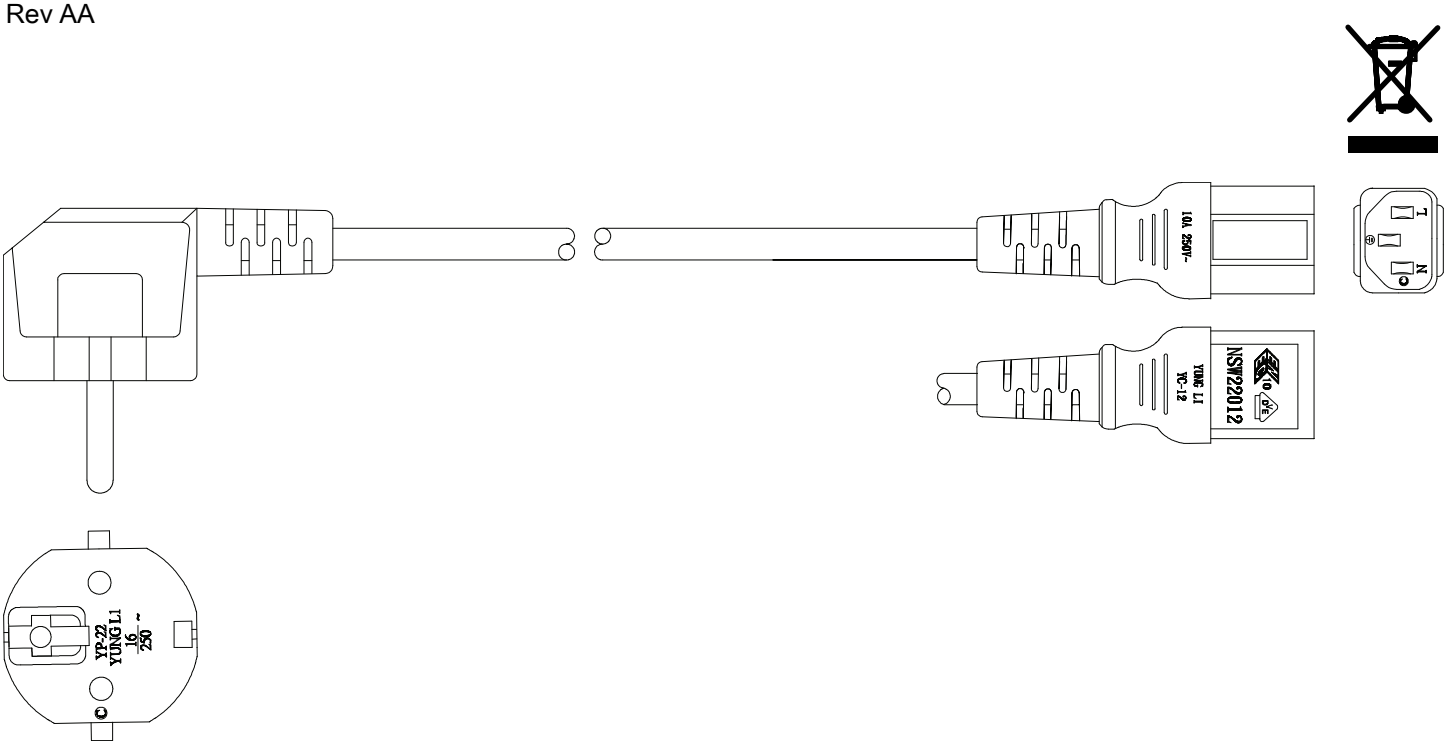
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	511M064049	External cable	Power cord, type E/F, 1 meter	1

2874-007-004

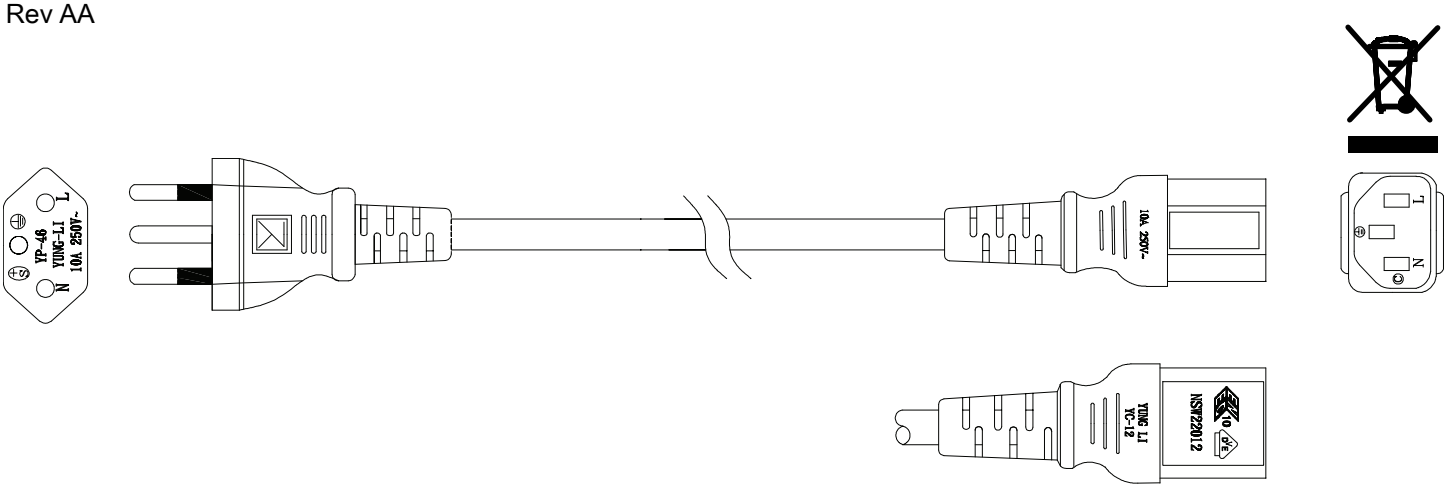
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	511M064050	External cable	Power cord, type E/F, 5 meter	1

2874-007-007

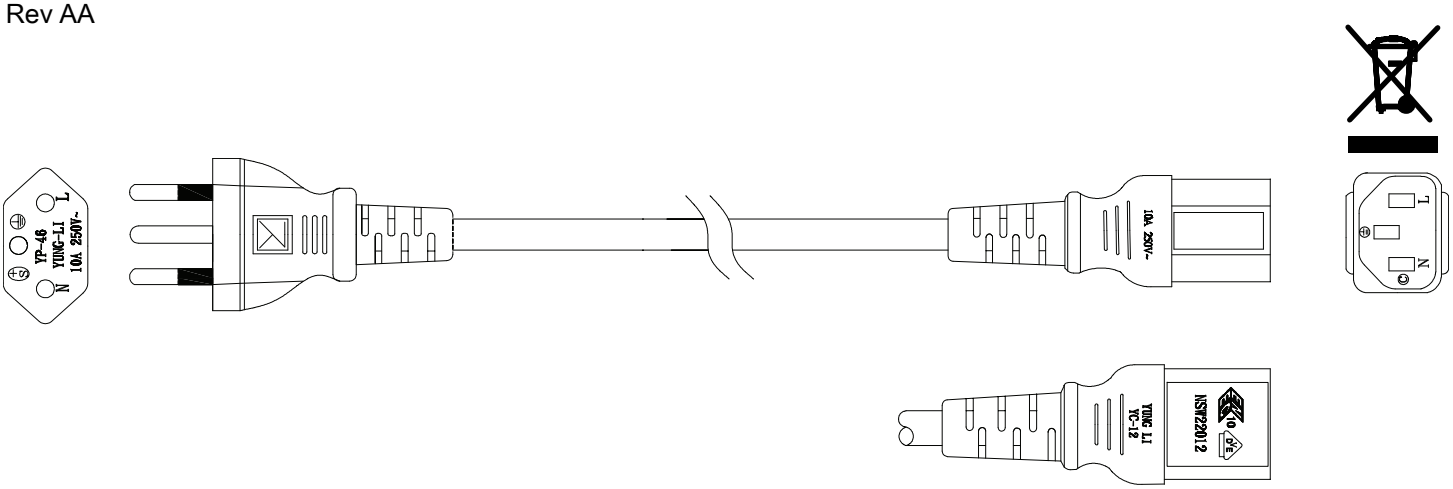
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	2874-007-007	External cable	Power cord, type J, 1 meter	1

2874-007-008

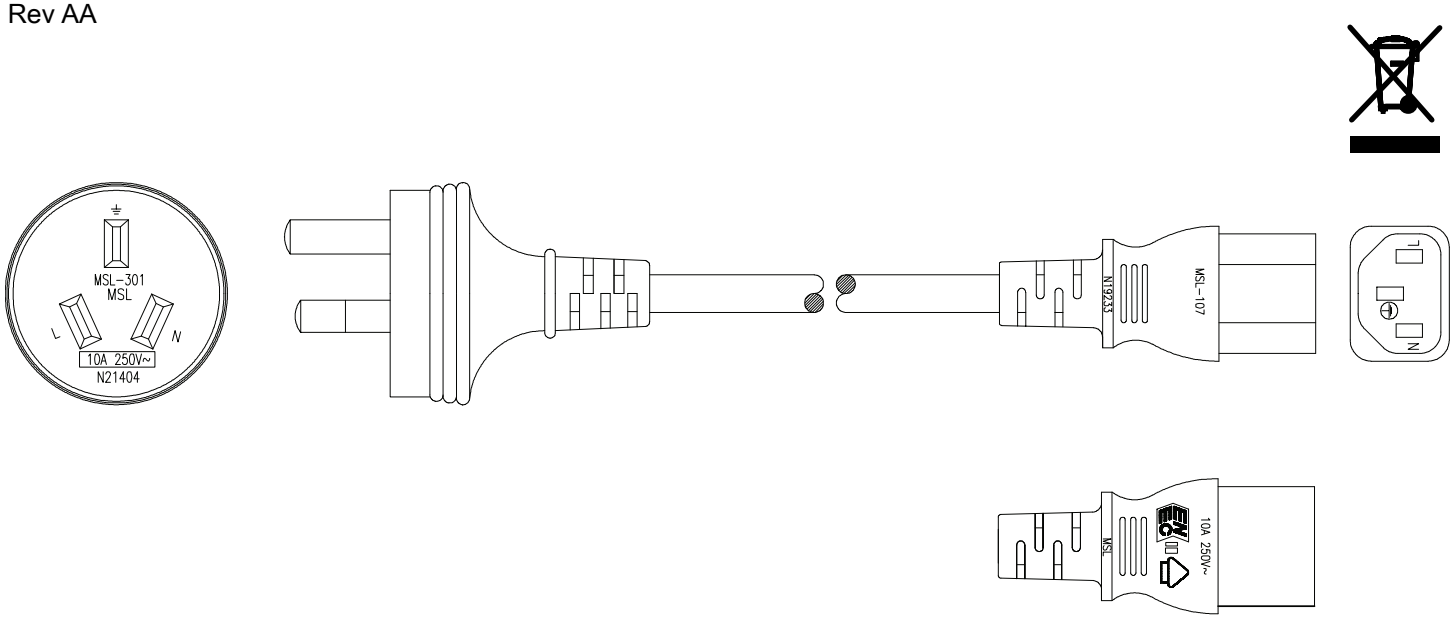
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	2874-007-008	External cable	Power cord, type J, 5 meter	1

2874-007-009

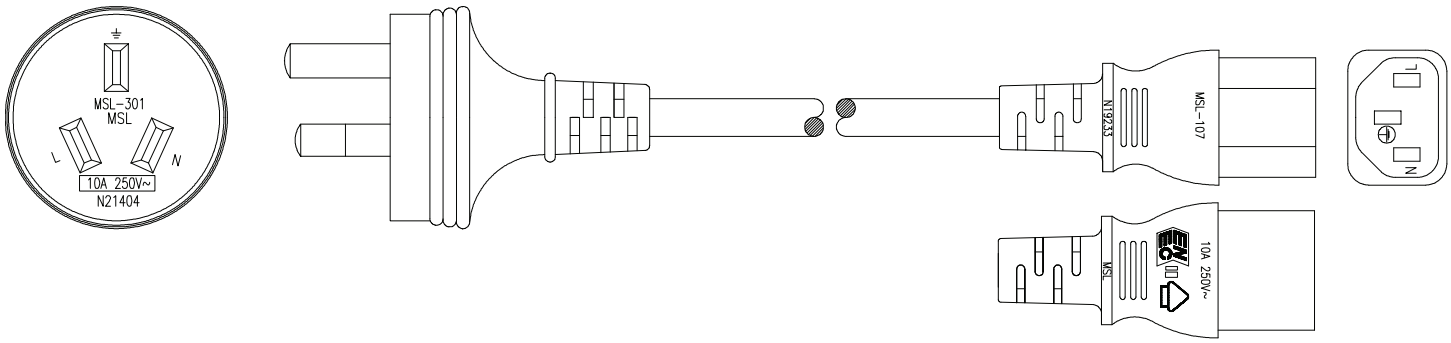
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064033	External cable	Power cord, type I, 1 meter	1

2874-007-010

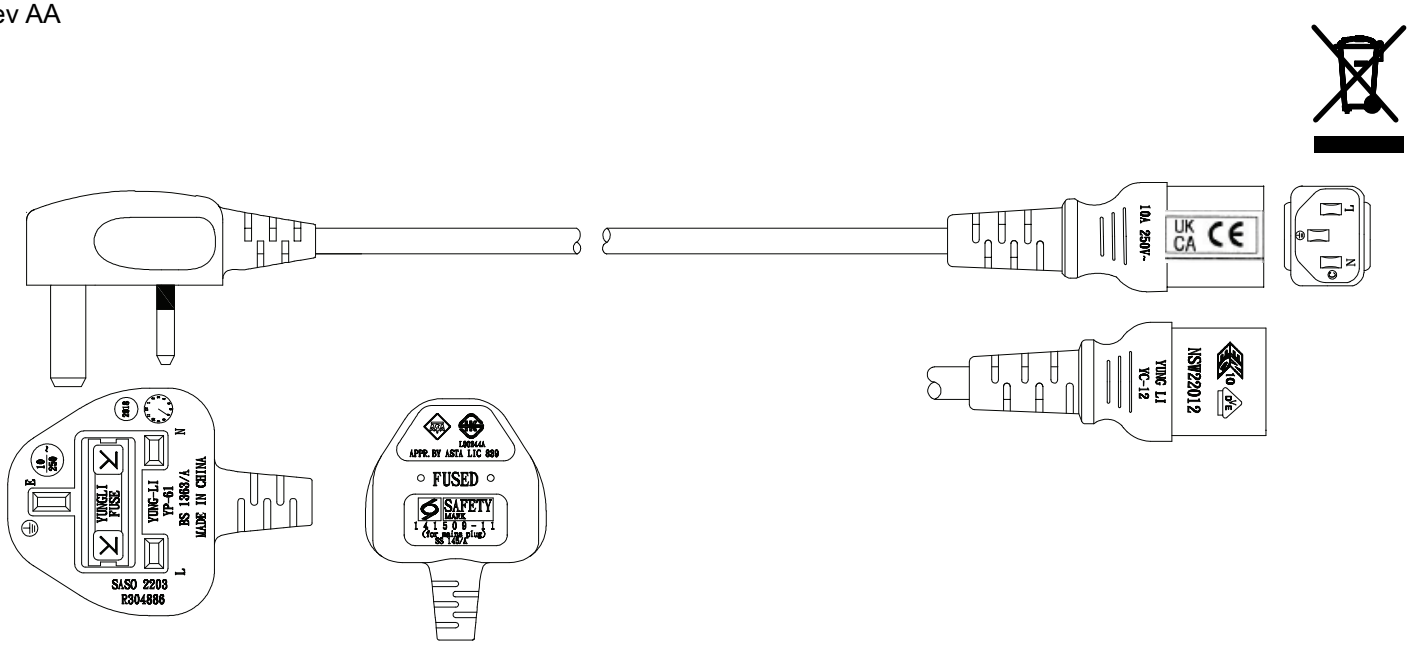
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064034	External cable	Power cord, type I, 5 meter	1

2874-007-011

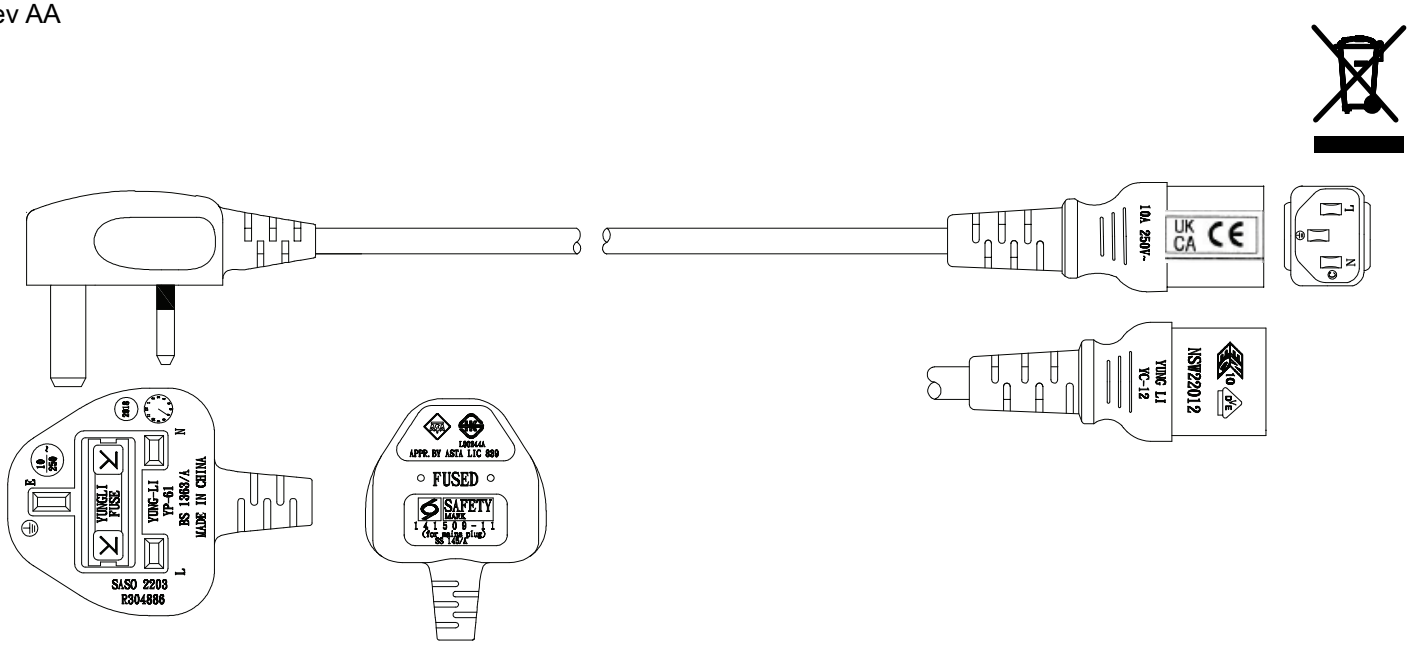
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064039	External cable	Power cord, type G, 1 meter	1

2874-007-012

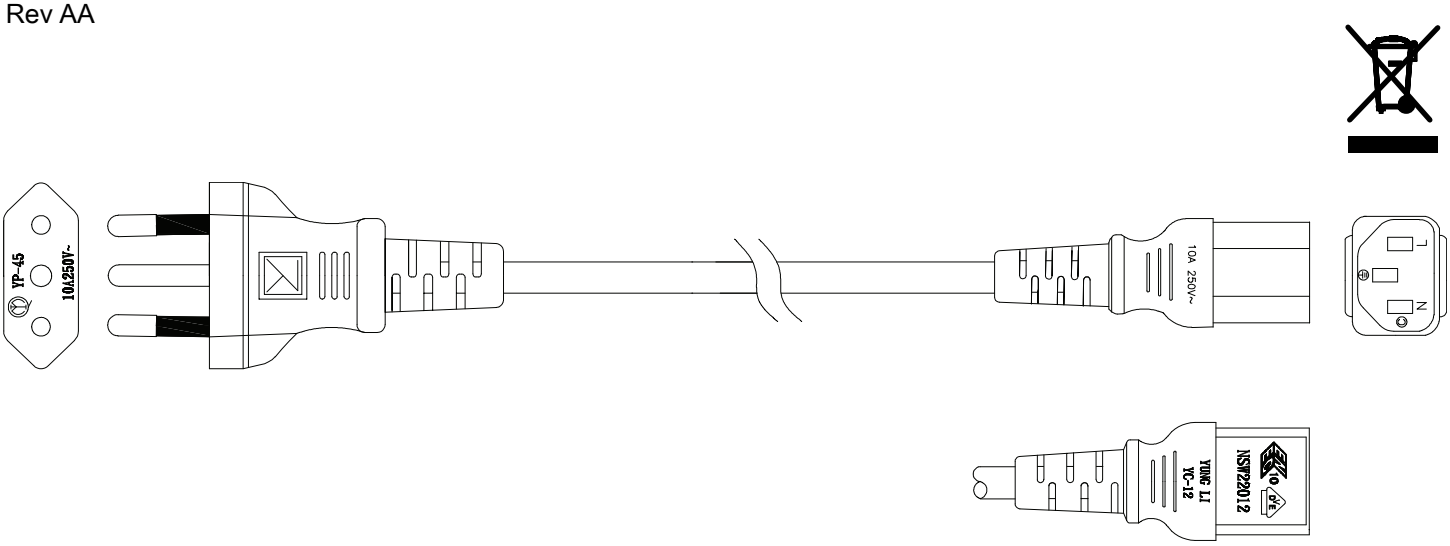
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064040	External cable	Power cord, type G, 5 meter	1

2874-007-013

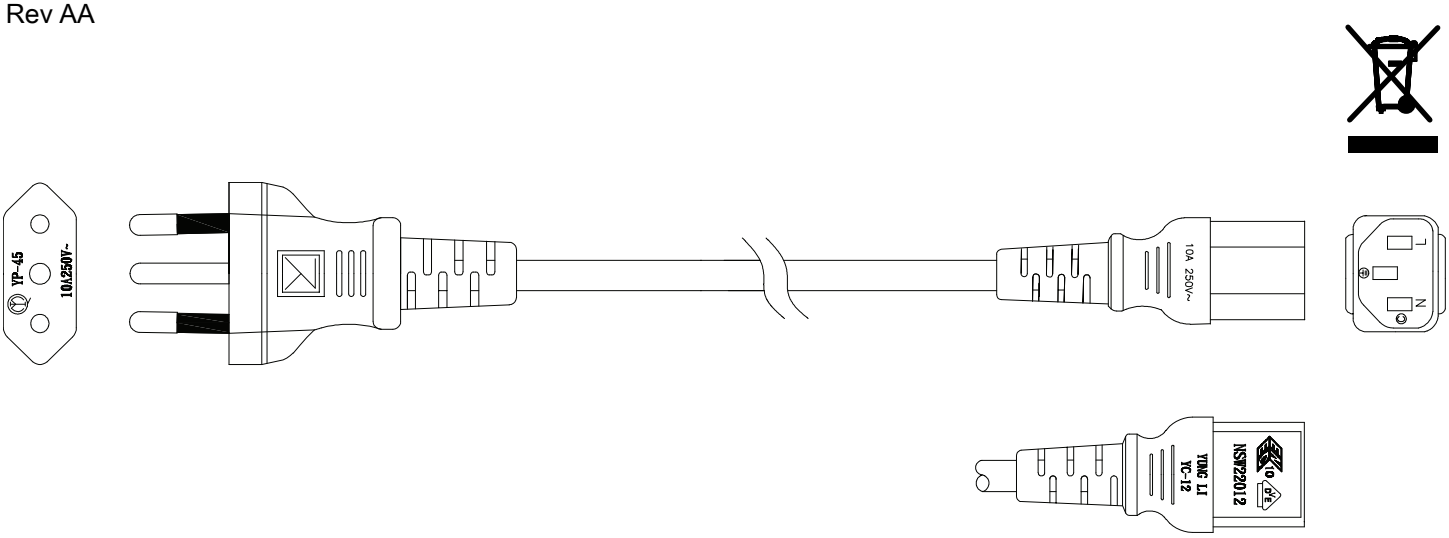
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064053	External cable	Power cord, type L, 1 meter	1

2874-007-014

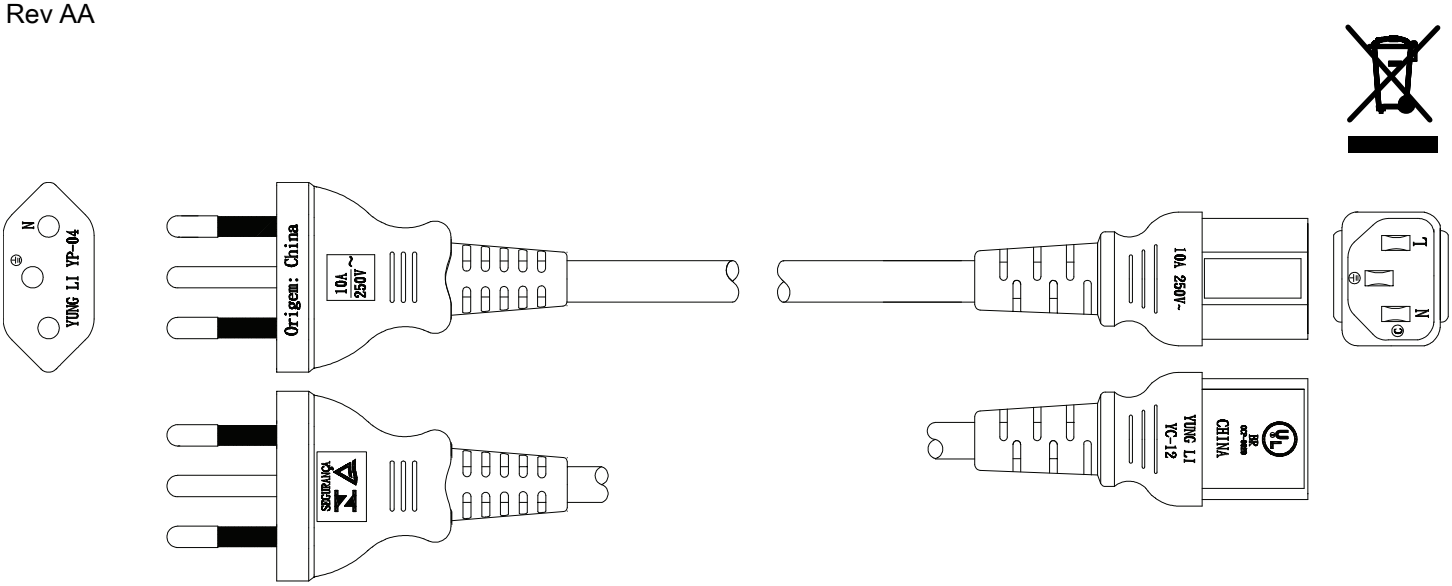
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064054	External cable	Power cord, type L, 5 meter	1

2874-007-015

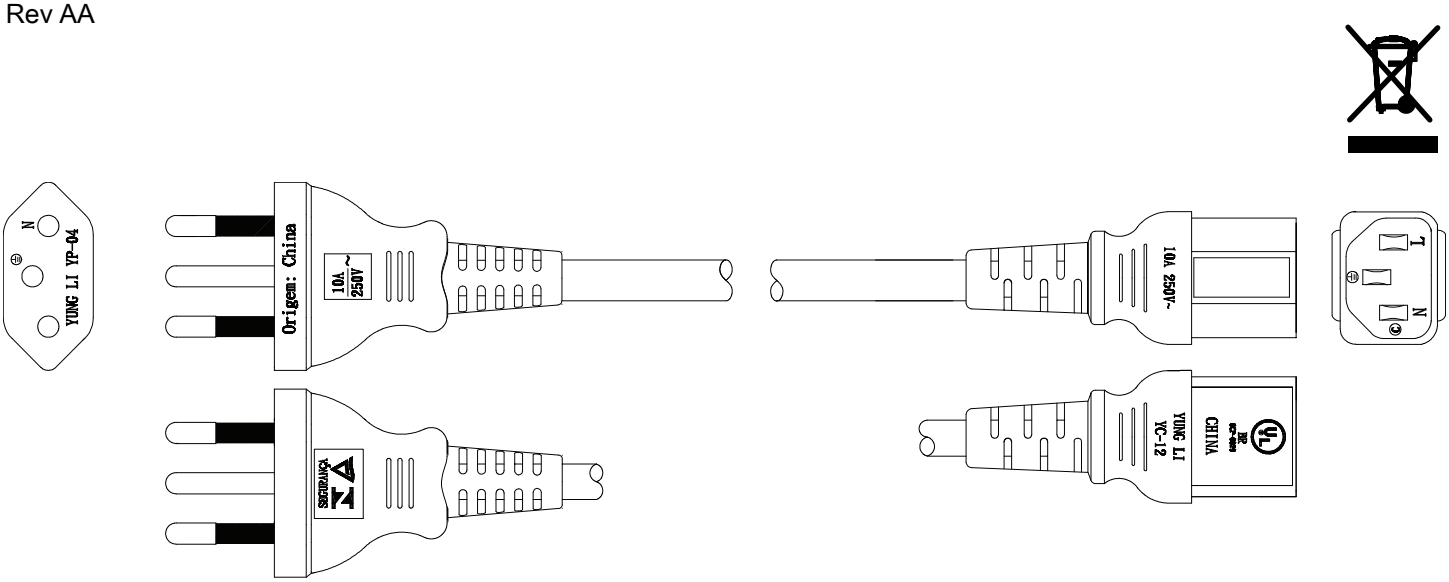
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064047	External cable	Power cord, type N, 1 meter	1

2874-007-016

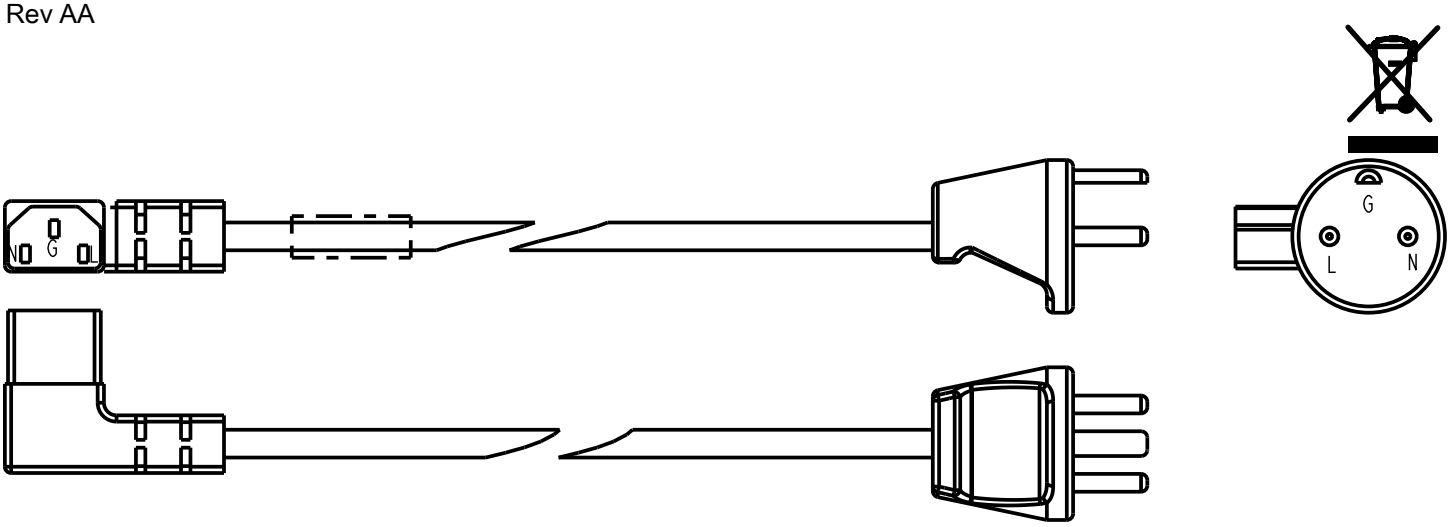
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	555M064048	External cable	Power cord, type N, 5 meter	1

2941-700-008

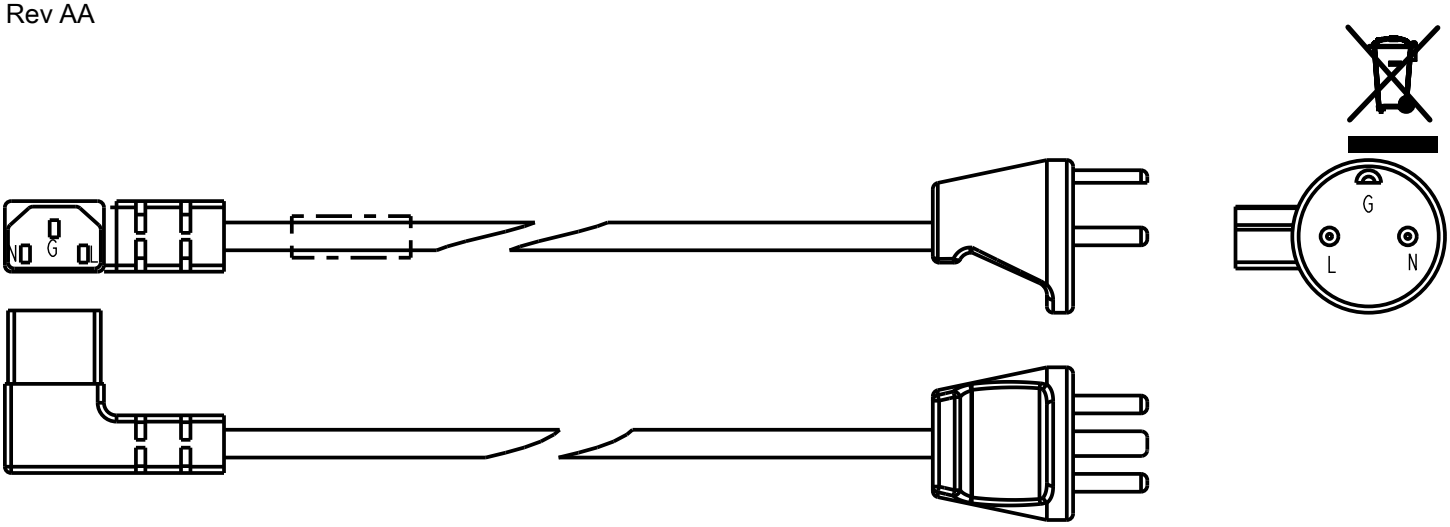
Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	2941-700-008	External cable	Power cord, type K, 1 meter	1

2941-700-009

Rev AA



Item	Recyclable part number	Material code	Important information	Quantity
Shown	2941-700-009	External cable	Power cord, type K, 5 meter	1

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