



## How to refill “Cartridge Refillable 207 bar Alu/empty”



# Instructions for refilling Mammut/Highmark Snowpulse Inflation System 2.0 airbag cartridge 207 Bar Alu

## **Introduction:**

The “Cartridge Refillable 207 Bar Alu” can be refilled after use. It can also be exchanged/refilled at various retail outlets such as specialty retailers, dive shops or paintball stores

in the US and Canada. You can find official Refill Locations listed on our website [www.mammut.ch/airbags](http://www.mammut.ch/airbags)

The cartridge was developed to match the American standards, but can also be sold and used in Europe.

## **Information for European Customers**

The cartridge can also be refilled in Europe at paintball farms or dive shops. The adapter between pressure source and cartridge is most likely to be available at paintball farms. The necessary adapter is not always available in European dive shops, but can be ordered at your Mammut dealer.



## The following tools are needed for the refill operation:

**A** Adapter Scuba Tank to Cartridge (US-Version or EU-Version). The “Adapter Scuba Tank to Cartridge” is the adaptor between a scuba tank and the “Cartridge Refillable 207 Bar Alu” to allow refill from a scuba tank.

The US-Version is compatible with scuba tanks from the US/CA. The EU-Version is compatible with scuba tanks from EU.

**B** Compressed air source (scuba tank or compressor). If scuba tanks are used, typically 2 or 3 tanks will be used in succession to allow refill to a full 3000 psi.

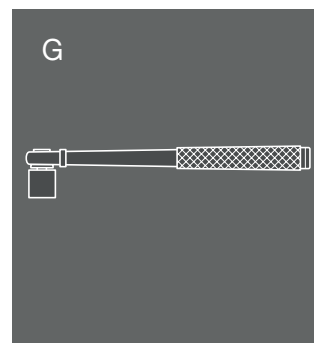
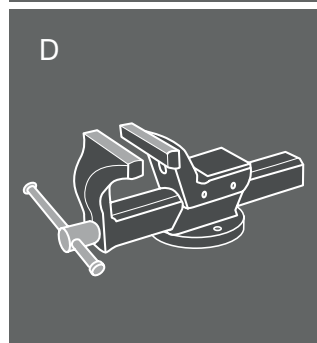
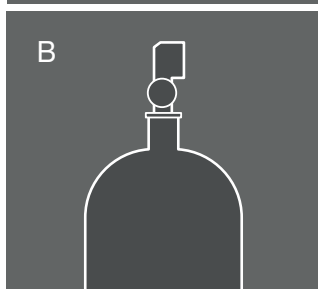
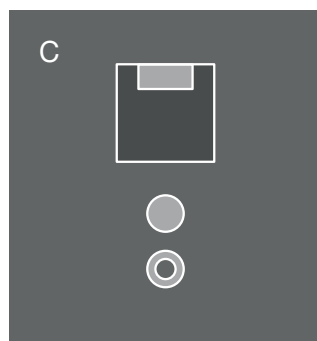
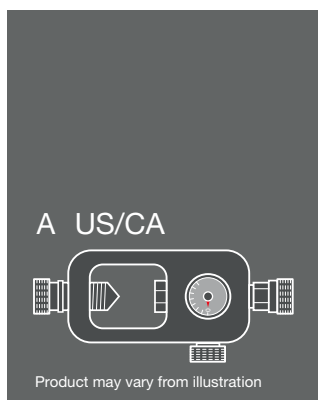
**C** Refill Kit (1× gasket ring and 1× burst disc)

**D** Bench vise

**E** Clear vessel full of water, large enough to submerge the entire air cartridge, and a soft brush.

**F** Huskey HVS-100 Silicon grease

**G** A torque wrench capable of measuring 24 newton-meters or the equivalent (17.7 foot-pounds or 212.4 inch-pounds) with a 13/16" or 20 mm socket



## Important Notes

- The cartridge has to be empty.
- Empty the cartridge only with the trigger mechanism of the airbag system.
- Don't release the contents any other way (safety hazard).
- Make sure that you refill the correct cartridge. Only the "Cartridge Refillable 207 Bar Alu" can be refilled.
- The "Cartridge Non-Refillable 300 Bar Steel" & "Carbon Cartridge Non-Refillable 300 Bar" are EU-standard cartridges and can only be refilled at the manufacturer.
- The cartridge must be filled to no more than 207 bar / 3000 psi at 20 °C / 67 °F.
- Always use a second pressure gauge to check the working pressure when filling.
- Only refill the cartridge with dry breathable air. Don't refill using any other type of air or compressed gas.
- Check the pressure of the cartridge before EVERY use.



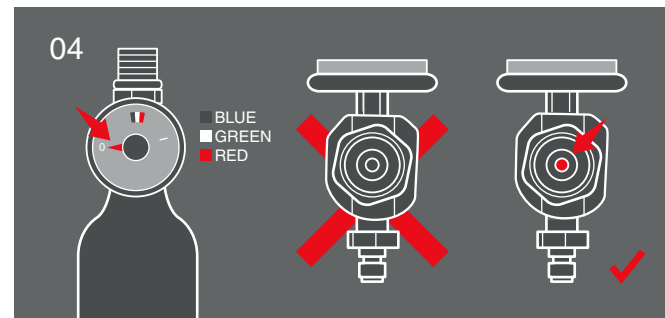
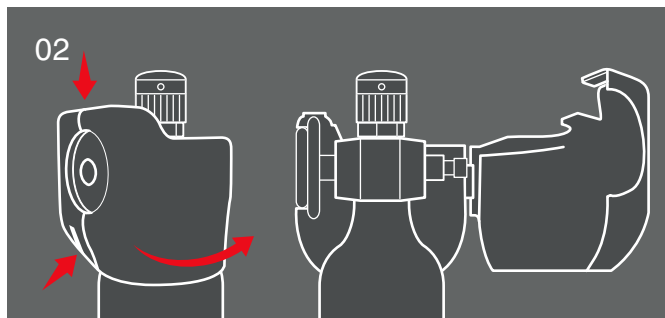
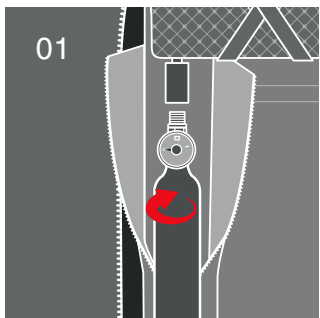
## 1. Prepare the Cartridge for Refilling

**01** Unscrew the cartridge from the airbag system.

**02** If your cartridge has a “Protective Housing” remove it from cartridge.

**03** Check that the cartridge is in good condition. Visually inspect for obvious corrosion or missing/broken parts.

**04** Make sure the cartridge is empty. It is empty when the pressure gauge indicates 0 psi (= 0 bar). If the cartridge has been used the burst disc has a hole. If the cartridge is a new “empty” version the burst disc will not have a hole in it and the gauge must be verified to be at 0 psi (0 bar).



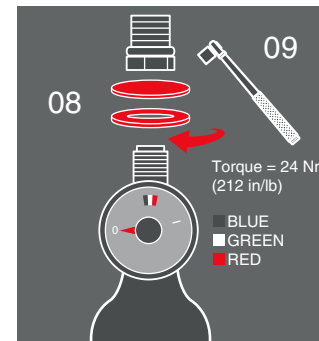
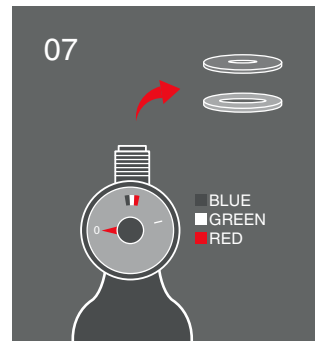
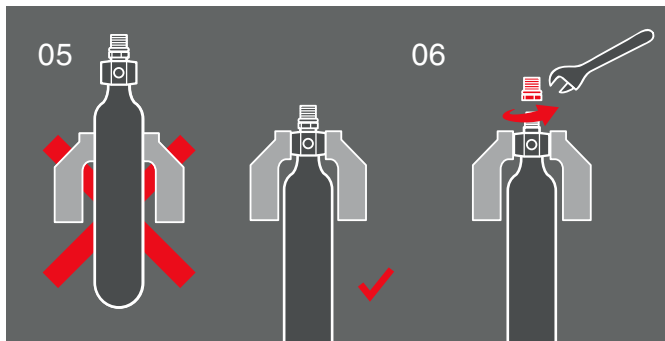
**05** Carefully place the valve body of the cartridge in a bench vise. Use rubber or aluminum vise jaws to protect the cartridge from damage. Ensure that you clamp the cartridge at the Valve Body and not by the cartridge body or the gauge.

**06** Remove the protective cap and connector. The connector can be removed using a wrench (20 mm or 13/16 inch). *There are two different size connectors that may be encountered. Both versions will fit a 13/16" spark plug socket, but the fit is often very snug.*

**07** Once the connector is removed you will find two items on the valve (1× gasket ring and 1× burst disc). Discard both items, making sure that none are stuck inside the connector.

**08** Replace these two items (see illustration). On top of the threaded Valve End, place a gasket ring and then a burst disc. Always install these items in the correct order (burst disc on top of gasket ring as shown). **Mistaken use of two burst discs could result in the airbag not inflation, so take extra care!**

**09** Screw the connector onto the Cartridge. If using a torque wrench the connector must be tightened to the proper torque setting (see illustration). The correct torque to tighten the connector is 24 Nm (17 ft-pd or 212.4 in-lb). Less torque can lead to leakage, excessive torque can damage the cartridge. If a torque wrench is not used a submersion leak-test must be performed after filling.



## 2. Refill the “Cartridge Refillable 207 Bar Alu”

**10** Connect the “Adapter Scuba Tank to Cartridge” to your compressed air source.

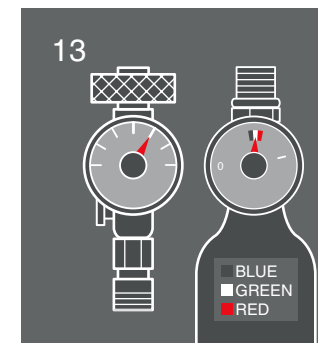
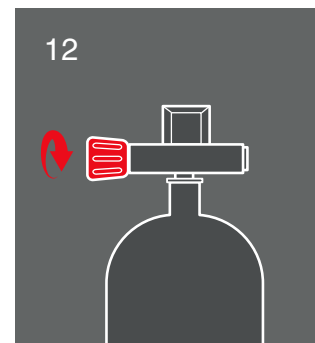
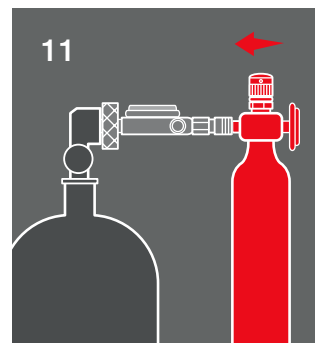
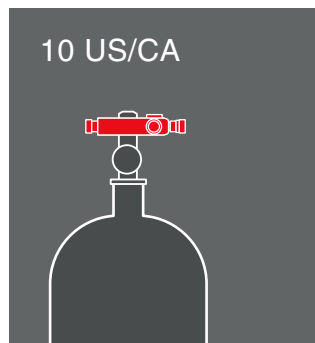
**11** Connect your cartridge to the “Adapter Scuba Tank to Cartridge”. The protective cap must be screwed in place on the cartridge during the filling operation.

**12** *Slowly* open the valve of your compressed air source.

**13** Fill the cartridge until the pressure gauge on the adapter indicates the correct working pressure of 207 bar / 3000 psi (cartridge gauge should indicate green). Filling should take around 1–2 minutes.

Note: During filling always additionally check the pressure from the gauge on the “Adapter Scuba Tank to Cartridge” as well as from the cartridge gauge.

**14** You will notice that the cartridge warms up as it fills. This is normal. Let it cool down to room temperature (20 °C / 68 °F) before checking the pressure again. The pressure gauge of the cartridge has to be in the green zone at room temperature (20 °C / 68 °F). Pressure is OK if the cartridge gauge needle is on the black line above or below the green zone when the adaptor gauge reads 3000 psi. Fill again if the correct pressure is not reached after cooling down to room temperature.



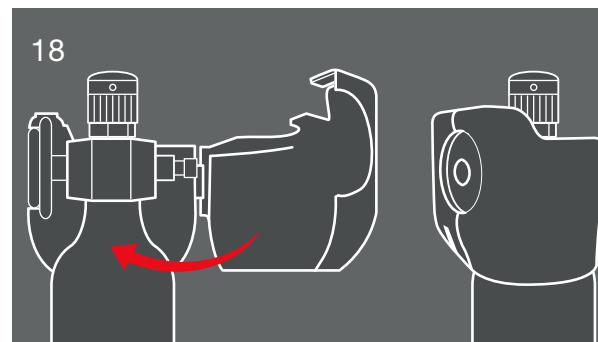
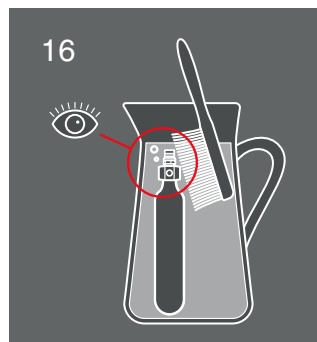
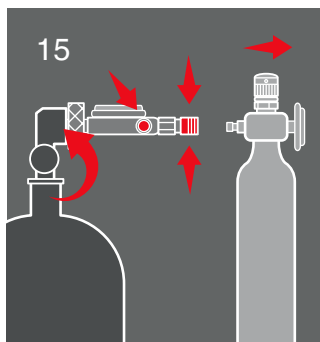
**15** To separate the cartridge from the adaptor, press the vent button or open the pressure release valve on the adaptor.

**16** Remove the protective cap, and submerge the full cartridge in water. Use a soft brush to remove all air bubbles. After 5 minutes, without removing the cartridge from the water check for any air bubbles that have developed – they may be quite small. If any are present, wipe them off and submerge again. If, after another 5 minutes, there are new air bubbles present, the cartridge should not be used. If there are no air bubbles the cartridge is good to use.

**17** Thoroughly dry the cartridge. Use a small amount of Huskey HVS-100 silicone grease on a rag, and wipe this on the threads and all exposed surfaces of the connector, including in the recess and on the burst disc, making sure to wipe off any excess grease.

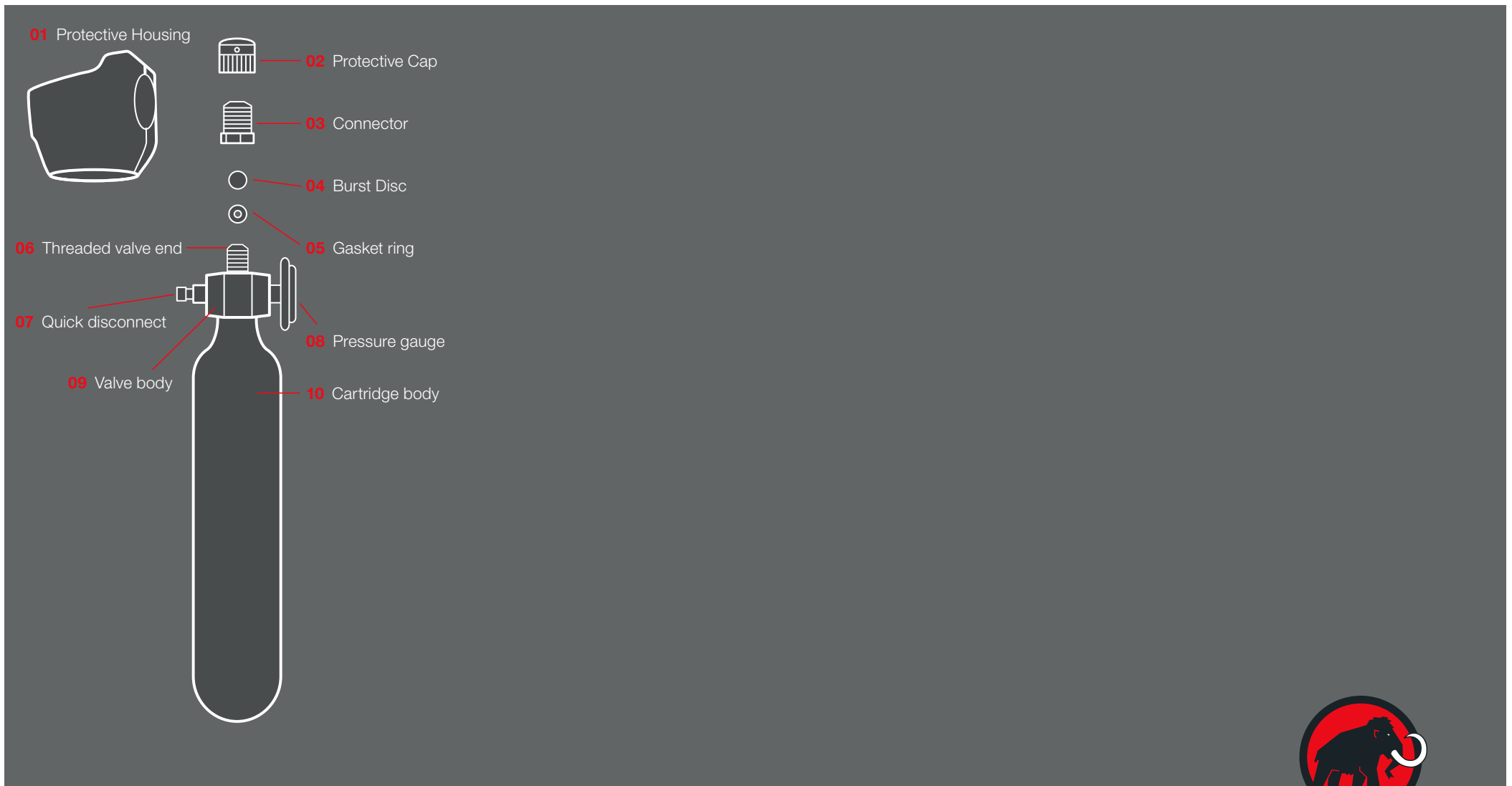
**18** Put “Protective Housing” back on cartridge

**19** Be sure to check the pressure-level on the cartridge gauge before EVERY use.





### 3. Parts Diagram for “Cartridge Refillable 207 Bar Alu”



**Mammut Sports Group AG**

Birren 5 | CH-5703 Seon

Phone +41 (0)62 769 81 81

info@mammut.ch | [www.mammut.ch](http://www.mammut.ch)



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