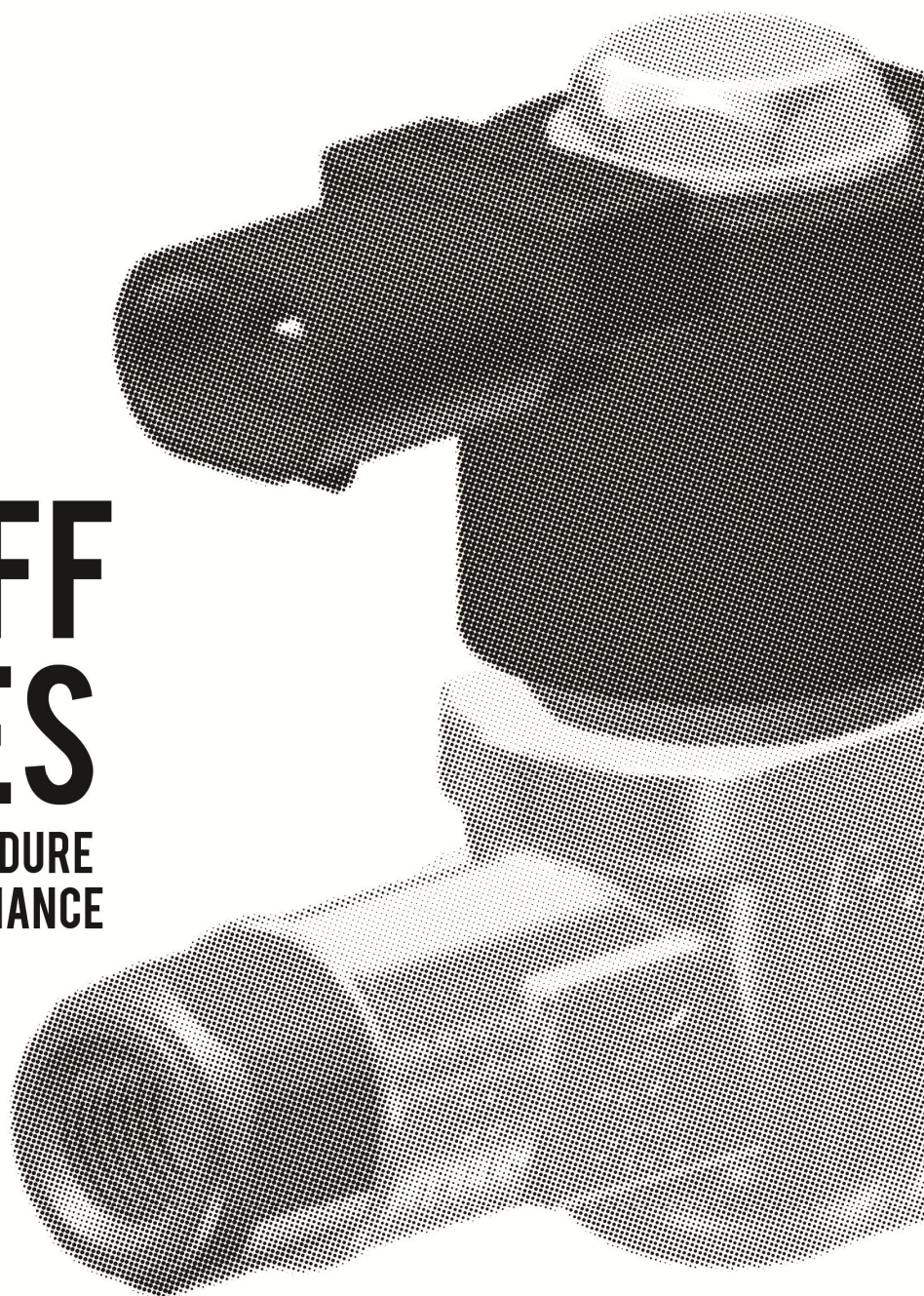


# CNG CUT OFF VALVES

ASSEMBLING PROCEDURE  
AND VALVE MAINTENANCE  
ACCORDING TO  
ECE R 110



## **ASSEMBLING PROCEDURE AND VALVE MAINTENANCE**

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Max Working Pressure: 26.0 MPa (260 bar)

Temperature Range: -40°C to 120°C

Certified to: ECE R110

Fuel: Compressed Natural Gas per Recommended Practice for Compressed Natural Gas Vehicle Fuel, SAE J1616

**⚠ DANGER** Read this entire manual before proceeding with the installation of any OMB CNG Valve. Installation of compressed natural gas (CNG) Valve should only be performed by qualified system installers. Failure to do so may cause death, serious injury, and property damage. Retain these Instructions for future reference.

**⚠ DANGER** OMB CNG Valves that appear to be damaged during shipping must not be install. Contact OMB for further instructions. Failure to do so may result in death or serious injury and property damage.

**⚠ DANGER** Valves must be assembled in such a way to assure gas tightness and to prevent accidental removal of the valve during normal operation. Failure to do so may result in death or serious injury and property damage.

**⚠ DANGER** Screwing Torque must be conform to the one indicated on the Table A. Dynamometric wrench must be pre-calibrated. Failure to do so may result in death or serious injury and property damage

**⚠ DANGER** Do not attempt to service or remove any valves from pressurized CNG system. Failure to do so may result in death or serious injury and property damage. See important safety information in Section 1.0

## CONTACT INFORMATION

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## 1.0 Safety Information

**⚠ DANGER**: Read, understand, and follow all safety information contained in these instructions prior to the installation and use of the CNG Valve. Failure to do so can result in death, serious injury and property damage. Retain these instructions for future reference.

### 1.1 Intended Use

**⚠ DANGER**: OMB CNG Valves are designed to be installed on CNG (compressed natural gas) fuel system for vehicles used for transportation. OMB CNG Valve are designed and manufactured per the ECE R110 Standard for Compressed Natural Gas Vehicle Fuel, and must only be used within the conditions and applications for which they were designed. Use in any other application or condition has not been evaluated by OMB and may lead to an unsafe condition. It is expected that all users will be fully trained in the safe handling, installation and operation of OMB CNG Valves.

### Explanation of Signal Word Consequences

**⚠ DANGER**: Indicates a hazardous situation which, if not avoided, **will result in death or serious injury**

**⚠ WARNING**: Indicates a hazardous situation which, if not avoided, **could result in death or serious injury**

**⚠ CAUTION**: Indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury or property damage.**

**⚠ DANGER**: Proper matching of Valves to system is critical for safe function. This is the responsibility of the tank manufacturer or the system integrator. After-market integrators shall consult with the appropriate tank manufacturer for approved Valve tank combinations. Mismatch Valve and Tank can result in death or serious injury.

**⚠ DANGER** Do not drop Valve. Do not drill the valve. Do not modify delivery system in any way. Never expose Valve to temperatures exceeding 120°C.

**⚠ DANGER** Do not attempt to disassemble from pressurized system the Valve. The valve contain no user serviceable parts

**⚠ DANGER** Never use an open flame or ignition source to test for gas leaks.

**⚠ WARNING** To reduce the risk of impact and fire, which if not avoided may result in death or serious injury and property damage:

- Installation of Compressed Natural Gas (CNG) Valve should be performed only by qualified Natural Gas Vehicle (NGV) system installers following applicable federal, state, and local codes and regulations.
- Store Valves only in a clean, dry, location, out of sunlight, at temperatures between -40°C to 120°C
- When connecting a high pressure line to the valve, only use approved hoses and fittings.
- Tools used to screw the valve to the cylinder must perfectly adapt to the valve and prevent the cylinder from rotating during tightening. Tools must not damage the valve and the system. Small dents on valve body may be acceptable.
- Do not use pipe wrenches on the valve. Do not allow any type of tool damage the valve.
- The Valve fittings must be torqued on pipe line to a specific setting. Do not over-tighten or loosen. Do this could result in gas leakage and associated fire hazards.
- Always ensure that the Valve installed on the CNG system, when mounted on vehicle, is properly enclosed to prevent exposure to damaging road debris, cargo, and sunlight.
- Allow the valve, fuel tank and all mounting hardware to acclimate to ambient indoor workspace temperature, prior to installation and pressurization.
- Reject and remove from service any Valve on which mandatory information are illegible.

**⚠ CAUTION** To reduce the risk of impact, which if not avoided may result in minor or moderate injury:

- Always wear appropriate personal protective equipment according to your local workplace practices when handling, storing, installing, or inspecting OMB CNG Valves

## 2.0 INTRODUCTION

This manual describes the operation of OMB CNG Valve, which are designed to be installed on CNG (compressed natural gas) fuel system for vehicles used for transportation.

These high pressure Valves are designed to withstand the normal usage they will receive. However, like all compressed gas equipment they must be properly installed, and used. This manual is intended to support trained personnel in installing, and using, CNG Fuel Valves. Refer to Safety Instructions in Sect. 1.0.

The vehicle operator must be familiar with the equipment, and with all applicable guidelines, requirements, regulations, and laws of all appropriate federal, state and local authorities. The CNG fuel system installer must be trained and employ competent personnel who are familiar with and will comply with the applicable laws, codes and standards, including but not limited to ANSI/NFPA 52 Vehicular Gaseous Fuel Systems Code, U.S. Federal Motor Vehicle Safety Standard 49 CFR 571.303 Fuel System Integrity of Compressed Natural Gas Vehicles, ECE R110 Fuel System Components for Natural Gas Powered Vehicles, and any other applicable federal, state and local codes and standards.

The rights, obligations, and/or duties of the upfitter, installer and/or customer are set forth in the original purchase agreement and warranty. OMB assumes no liability for errors or for any damage that results from the use of this instruction manual. OMB reserves the right to cancel, change, or alter any parts and assemblies, described in this manual, without prior notice.

### 2.1 Distribution and proper use of this manual

It is intended that this manual be provided to all parties involved in the handling, installation, and inspection of OMB CNG Valves. The manual may be reproduced to provide enough copies for this purpose, but its contents must not be altered in any way. OMB accepts neither responsibility nor liability for consequences resulting from unauthorized alterations to this manual or for failure to follow the instructions herein.

## 3.0 VARIATIONS

Table A

Female Connection thread	Min torque force	Max torque force
M12X1	20	30
M14X1	25	35
¼" NPT	30	40
G ¼"	25	35

## 4.0 ASSEMBLING PROCEDURE FOR VALVE IN CNG SYSTEM

### 4.1 GENERAL REQUIREMENTS AND RECOMMENDATIONS

**⚠ DANGER**: Proper matching of Valves to CNG system is critical for safe function. This is the responsibility of the system integrator. Mismatch Valve and other system components can result in death or serious injury.

**⚠ DANGER**: Valves must be assembled in such a way to assure gas tightness and to prevent accidental removal of the valve during normal operation. Failure to do so may result in death or serious injury and property damage.

**⚠ DANGER** Tools used to screw the fittings to the valve must perfectly adapt to the fittings and prevent the valve from rotating during tightening. Tools must not damage the valve and the fittings. Failure to do so may result in death or serious injury and property damage. Small dents on valve body may be acceptable.

**⚠ DANGER** The applied driving torque must not exceed the values given in Table A, not even to align the valve with the protection cap

**⚠ WARNING** Gauging of all tools and equipment used for valve and fittings tightening must be periodically checked and measurement must be compared with reference standard sample.

**⚠ WARNING** Sealing materials used between valve and fittings must be compatible with the gas stored in the cylinder.

**⚠ WARNING** Installation of Compressed Natural Gas (CNG) fuel Valve should be performed only by qualified Natural Gas Vehicle (NGV) system installers following applicable federal, state, and local codes and regulations. In case of any doubt about installation contact OMB Saleri Spa.

#### 4.2 PREPARATION

The solenoid valve model APUS and APUS BST are automatic cut off valve “usually closed” functioning with an electric action for CNG for uses in the automatic field.

The solenoid valve activates on the gas flow in the direction indicated by an arrow on the body. In the opposite direction the gas flow is free. For the possible types of installation connections and corresponding tightening torques, one has to refer to the indication mentioned in the table A.

Check valve and fittings threads in order to verify that they are of the same size and comply with the same reference standard.

Visually check the state of valves, fittings and of O-ring surface. Check that connections threads on valve and on fittings are perfectly shaped and free from irregular edges or burrs. Verify that all thread connections are clean.

## 5.0 ASSEMBLING PROCEDURE FOR INLET/OUTLET CONNECTIONS

### 5.1 GENERAL REQUIREMENTS AND RECOMMENDATIONS

**⚠ DANGER**: Proper matching of fittings on valve connections is critical for safe function. This is the responsibility of the system integrator. After-market integrators shall consult with the appropriate fittings manufacturer for approved Valve combinations. Mismatch Valve and fittings can result in death or serious injury.

**⚠ DANGER** Fittings and valves must be assembled in such a way to assure gas tightness and to prevent accidental removal of the connections and safety devices during normal operation. Failure to do so may result in death or serious injury and property damage.

**⚠ DANGER** Tools used to screw the connections to the valve must perfectly adapt to the valve. Tools must not damage the valve and the fittings. Failure to do so may result in death or serious injury and property damage. Small dents on valve body may be acceptable.

**⚠ DANGER** The applied driving torque must not exceed the values given in Table A.

**⚠ WARNING** Gauging of all tools and equipment used for fittings tightening must be periodically checked and measurement must be compared with reference standard sample.

**⚠ WARNING** Sealing materials used between fittings and valve must be compatible with the gas stored in the cylinder.

**⚠ WARNING** Installation of Compressed Natural Gas (CNG) fuel Valve should be performed only by qualified Natural Gas Vehicle (NGV) system installers following applicable federal, state, and local codes and regulations. In case of any doubt about installation contact OMB Saleri Spa.

The installation must be assembled in such a way to assure gas tightness and to prevent accidental removal of the safety device during normal operation.

Tools used to screw the connections must perfectly adapt to the valve. Tools must not damage the connections.

Any sealing materials used between the outlet connections and the plant connection must be compatible with the gas stored in the cylinder. The applied driving torque must not exceed the values shown in Table A. Gauging of all tools and equipment used for valve tightening must be periodically controlled and compared with reference standard sample.

## 5.2 PREPARATION

Check outlet connections and connection plant installation threads in order to verify that they are of the same size and comply with the same reference standard.

Visually check the state of threads and, if necessary, of O-ring surfaces. Check that lower threads of installation connections and valve connections grooves are perfectly shaped and free from irregular edges or burrs. Verify that threads are clean. Completely remove any residues of previous sealing materials.

## 5.3 ASSEMBLING INSTRUCTIONS

- 1) Remove thread protection caps (when present); pay attention not to damage the sealing seats
- 2) Screw the connector by hand, as tight as possible. Then tighten it up by an appropriate tightening tool.
- 3) The torque applied to the connector must comply with the values shown in Table C. Use an appropriate gauged dynamometric wrench.
- 4) In order to verify the torque applied during assembling, torque measurement must be taken while unscrewing the connector. The minimum torque force needed to start unscrewing the connector must be within the limits specified in Table A. Use an appropriate gauged dynamometric wrench. If hardening sealants are used, the torque must be measured before the sealant hardens.

Table A – Torque to be applied when assembling the connectors to the outlet connections of the valve

<b>Female Connection thread</b>	<b>Min torque force</b>	<b>Max torque force</b>
M12X1	20	30
M14X1	25	35
¼" NPT	30	40
G ¼"	25	35

## 6.0 PROCEDURE TO APPLY IN CASE OF VALVE MAINTENANCE

### 6.1 PROCEDURE TO CONNECT THE COIL TO THE ELECTRIC PLANT AND TO SUBSTITUTE THE COIL IN CASE OF NEGATIVE EVENT

The coil has a AMP Superseal series 1.5 female connection and requires a suitable male connector. No preferred polarity is needed for the pin. In case of coil failure, it is possible to substitute the coil (USE ONLY OMB COIL AS SPARE PART).

**⚠ DANGER** Please in case of coil substitution, request specific valve instruction at OMB. Failure to do so may result in death or serious injury and property damage.

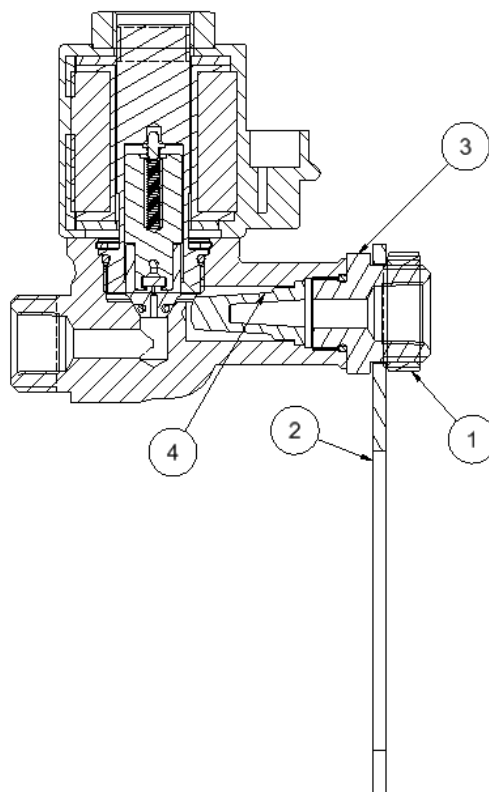
### 6.2 PROCEDURE TO FILTER SUBSTITUTION

In the APUS and APUS BST valve it is necessary to change the inlet filter each 50.000 Km.

The procedure for the substitution of the filter is indicated as below:

Taking into reference the enclosed drawing, one has to proceed in the following way:

- 1) Verify that there is no gas in the installation where the solenoid valve is connected ;
- 2) In the versions where the valve is present , unscrew the fixing nut (1) on the inlet fitting ;
- 3) In the versions where the valve is present, remove the fixing bridge (2) of the filling unit;
- 4) Unscrew the inlet fitting (3) ;
- 5) Remove the inlet filter and change it;
- 6) Visually control the integrity of the threads;
- 7) Visually control the integrity of the surfaces of the tightness o-rings and if damaged change with OR D13,29 x 1,78 Viton GLT 70Sh;
- 8) Verify that the threads are clean, remove any residue of old tightness material;
- 9) Apply on 3 or 4 threads- the ones which are farers from the tightness ring – the threads-brake LOXEAL 85-21 using the minimum quantity necessary and removing the eventual excess;
- 10) Screw the inlet fitting on the solenoid valve body tightening it up with a dynamometric key with a torsional moment equal to 28Nm (3)
- 11) In the versions where the valve is present, screw the fixing nut (1) on the inlet fitting in order to tighten up the fixing bridge.



**⚠ WARNING**

OMB Saleri SpA declines any responsibility over the incorrect use or application of the maintenance procedures of its products.