

FORMING GAS CART TECHNICAL MANUAL

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REVISION OF THE MANUAL

This document is the technical manual for the product: Forming Gas Cart

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INTRODUCTION

Dear Customer,

We would like to thank you for choosing a TEXA product for your workshop.

We are certain that you will get the greatest satisfaction from it and receive a great deal of help in your work.

Please read through the instructions in this manual carefully and keep it for future reference.

Reading and understanding the following manual will help you to avoid damage or personal injury caused by improper use of the product to which it refers.

TEXA S.p.A reserves the right to make any changes deemed necessary to improve the manual for any technical or marketing requirement; the company may do so at any time without prior notice.

This product is intended for use by technicians specialised in the automotive field only. Reading and understanding the information in this manual cannot replace adequate specialised training in this field.

The sole purpose of the manual is to illustrate the operation of the product sold. It is not intended to offer technical training of any kind and technicians will therefore carry out any interventions under their own responsibility and will be accountable for any damage or personal injury caused by negligence, carelessness, or inexperience, regardless of the fact that a TEXA S.p.A. tool has been used based on the information within this manual.

Any additions to this manual, useful in describing the new versions of the program and new functions associated to it, may be sent to you through our TEXA technical bulletin service.

This manual should be considered an integral part of the product to which it refers. In the case it is resold the original buyer is therefore required to forward the manual to the new owner.





















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The original manual was written in Italian, every other language is a translation of the original manual.

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1 LEGEND OF THE SYMBOLS USED

Some of the symbols indicated below may not be used in the manual.

	Toxic material hazard		Floor level obstacle warning
	Explosive material hazard		Laser beam hazard
	Electric shock hazard		Low temperature danger - freezing
	Electromagnetic field hazard		General Risk
	Flammable material hazard		Obligation to read the instructions
	Hot surface hazard		Safety glasses required
	Corrosive substance hazard		Protective gloves required
	Risk of noise level above 80 dB(A)		Protective clothing required
	Moving Parts Risk		Respiratory protection required
	Risk of crushing hands		Disconnect mains plug from electrical outlet

 DANGER	This is not a safety symbol. It indicates a hazardous situation which, if not avoided, will result in serious permanent injury or death.
 WARNING	This is not a safety symbol. It indicates a hazardous situation which, if not avoided, may result in serious permanent injury or death.
 CAUTION	This is not a safety symbol. It indicates a hazardous situation which, if not avoided, may result in minor injury.
NOTICE	This is not a safety symbol. It indicates a hazardous situation which, if not avoided, may result in material damage.

INFORMATION

This is not a safety symbol.

It indicates important information.

2 SPECIFIC SAFETY RULES FOR USING THE FORMING GAS CART

The technology used for the design and production control of the **FORMING GAS CARTS** makes them simple, reliable and safe to use.

The personnel in charge of using the **FORMING GAS CART** is required to follow the general safety rules, use the **FORMING GAS CART** for its intended use only and to keep it properly, as described in this manual.

All the requirements based on the following must be assessed and applied:

- *Labour inspectorate.*
- *Trade associations.*
- *Vehicle manufacturers.*
- *Anti-pollution regulations.*

2.1 Glossary

- **Equipment:** *any FORMING GAS CART.*
- **Tank:** *Forming Gas tank.*
- **Operator:** *qualified and properly trained individual, in charge of servicing air conditioning systems.*
- **Refrigerant:** *coolant liquid (R134a, R1234yf or R744).*
- **A/C system:** *vehicle air conditioning or climate control system.*

INFORMATION

The definition of "operator" cannot be applied to minors or to people with reduced physical, sensory or mental capabilities or without any experience or knowledge required.

2.2 General Rules



The operator must have carefully read and fully understood all the information and instructions in the technical documents provided with the equipment.

If the operator is not able to read this manual, the operating instructions and safety indications must be read and discussed in the operator's native language.

- *The operator must have basic knowledge of refrigeration, the refrigeration system, refrigerants and the potential hazards that equipment under extreme pressure can cause.*
- *The operator that works on vehicles must have basic qualifications and knowledge of mechanics, automotive engineering, vehicle repairing and of the potential dangers that may arise during self-diagnosis operations.*
- *The operator must be completely clear-headed and sober and not take drugs nor drink alcohol before or when using the equipment.*
- *The operator must follow all the instructions provided in the technical documents.*
- *The operator is required to wear adequate personal protective equipment (PPE) at all times when using the equipment.*
- *The operator must monitor the equipment during the operating phases wherever this is possible in compliance with the safety measures indicated below.*
- *The operator must periodically check the parts that are subject to wear and replace them if necessary, using only original spare parts or spare parts approved by the manufacturer.*
- *The operator must stop using the equipment immediately should any failure occur, and promptly contact the technical assistance.*
- *Contact your retailer for any non-scheduled maintenance.*
- *Do not remove or damage the labels/tags and the warnings on the equipment; do not in any case make them illegible.*
- *Do not remove or tamper with any safety devices the equipment is provided with.*

2.3 Operator Safety

CAUTION



The gas mixture contained in the tanks is not classified as dangerous for the operator.

However, in high concentration it may cause asphyxiation.

For information on hazards, personal protective equipment, first aid measures, and storage, please refer to the safety sheet provided with the gas tank.

Safety measures:

- *Use the equipment in well-ventilated environments only.*
- *Avoid inhaling the Forming Gas; use suitable protective equipment, such as masks, when necessary.*

CAUTION



The equipment has been designed to be steady both when being moved and once it is positioned.

However, you must pay attention while moving it.

Safety measures:

- *The operator is required to wear adequate personal protective equipment, i.e. safety glasses and gloves, steel toe safety shoes.*
- *Do not tilt the equipment in any way.*
- *Do not step on the equipment.*
- *Do not hang loads that may compromise the stability of the equipment, causing it to tip over.*
- *To move the equipment, use the specific handle only and balance the station on its wheels.*

2.4 Equipment Safety

NOTICE



The equipment was designed in accordance with the regulations about pressure equipment and assemblies, evaluating and reducing the risk where present and making appropriate considerations.

However, vibrations, pressure variations or excessive temperatures, especially if cyclic, should be avoided.

Safety measures:

- Only use on A/C systems that use R134a, R1234yf or R744 refrigerant gas.
- Connect the hoses correctly by following the colours indicated: Blue hose - LP coupler, Red hose - HP coupler.
- Only use the service hoses for the type of gas indicated.
- Make sure all the valves are closed before connecting the equipment to the A/C system.
- Do not smoke near the equipment or during the operating phases.
- Do not use the equipment close to open flames, sparks or hot surfaces.
- Disconnect the service hoses with extreme caution as they may contain gas under high pressure.
- Make sure the couplers are not open when the hoses are placed back around the service hose holder.

NOTICE



The equipment was designed to be used in specific environmental conditions.

Using the equipment in environments with temperatures and humidity that differ from those specified may impair its efficiency.

Safety measures:

- Place the equipment in a dry area.
- Do not expose or use the equipment near heat sources.
- Do not expose the equipment to direct sunlight, rain and bad weather conditions.
- Do not use corrosive chemicals, solvents or harsh detergents to clean the equipment.

NOTICE



The equipment was designed to be mechanically sturdy and suitable for use in the workshop.

Careless use and excessive mechanical strain may impair its efficiency.

Safety measures:

- Do not drop, shake or bump the equipment.
- Do not place any objects on the cables or service hoses.
- Do not perform any kind of intervention that may damage the equipment.
- Do not perform any kind of intervention on the equipment, unless explicitly requested by specific maintenance operations indicated in this manual.

2.5 Guidelines for handling the Forming Gas tanks

WARNING



The tanks contain a pressurised mixture of hydrogen and nitrogen, therefore they must always be handled very carefully.

This mixture is potentially hazardous and can cause fires and explosions, causing personal injuries and damage to objects.

Safety measures:

- *Make sure all the tanks are provided with the specific safety valve cap or another appropriate protection.*
- *Do not remove, tamper with or modify in any way the tank safety valve guard or any other related safety device, nor during transportation, nor while handling, nor while using the tanks themselves.*
- *Do not change, modify, tamper with or block the safety devices.*
- *Do not perform repair operations on the tanks or the valves.*
- *Do not lift the tanks by the safety valve guard, do not drag them, make them roll or slide on the floor.*
- *Do not use magnetic lifts, ropes or chains to lift the tanks.*
- *Do not handle the tanks with hands or gloves with oil, grease or any substance that does not allow a safe grasp.*
- *Move the tanks only by means of the equipment.*
- *If it is necessary to move the tanks manually, they must be kept in an upright position, slightly tilted, and must be rolled on the edge of their base.*
- *Make sure the tanks are always firmly secured to the equipment before any operation and throughout the entire duration of the tests.*
- *Avoid severe impacts, falls and any type of mechanical stress that may compromise the integrity and resistance of the tanks.*
- *Do not use the tank for different purposes than containing the specific gas for which they were built and tested.*
- *When using the gas through a rubber hose, this must be secured with appropriate means to prevent it from coming off; makeshift fastening must be avoided.*

2.6 Precautions for Storing the Tanks

The tanks must be perfectly clean and clearly marked in order to identify their contents easily, from the moment they arrive in the workshop until they are eventually returned to the supplier.

For treatment and storage, please refer to the gas safety sheet.

- *Do not remove, alter, delete any of the devices (tag, label, sticker, etc.) placed by the gas supplier to identify the tank's contents.*
- *Store the unused tanks:*
 - *in appropriate environments, adequately ventilated;*
 - *away from direct sunlight and bad weather;*
 - *with the valve firmly closed;*
 - *anchored in order to prevent impacts and falls.*

2.7 Safety Devices

The equipment is provided with the following safety devices:

- **Safety valve:** *it opens completely if the operating value (20 bar) is reached and operates exclusively on the LP circuit.*

CAUTION



Tampering with the above mentioned safety devices in any way is strictly forbidden.

TEXA S.p.A. declines any liability for damages to people or things caused by unapproved changes, even partial, made to the equipment.

2.8 Workplace Safety.

CAUTION



The equipment has a specific intended use and was designed and manufactured for a specific method of use.

Any other different use from the ones indicated in this manual exposes to the risk of damages and injuries.

Safety measures:

- *Never, under any circumstance, use the equipment in an environment where there is a risk of explosion.*
- *Only use the device in open or well-ventilated environments (at least 4 air changes per hour).*
- *Work in well-lit environments (the average operating illuminance value for mechanic workshops and assembly on work benches for precision work is 500-750-1000 lux).*

3 ENVIRONMENTAL INFORMATION




Do not dispose of this product with other undifferentiated solid waste.
For information regarding the disposal of this product please see the pamphlet supplied.

4 REGULATORY INFORMATION

Simplified EU Declaration of Conformity

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	<p>Texa S.p.A. hereby declares that this unit FORMING GAS CART complies with the essential requirements and with all further provisions defined by directives:</p> <ul style="list-style-type: none">• <i>RoHS 2011/65/EU</i> <p>The complete text of the EU declaration of conformity is available at the following Internet address http://www.texa.com/download.</p>
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5 TROLLEY FORMING CART

The **FORMING GAS CART** allows searching for leaks using Forming Gas on A/C systems that use R134a, R1234yf or R744 (carbon dioxide, CO2) as refrigerant gas.



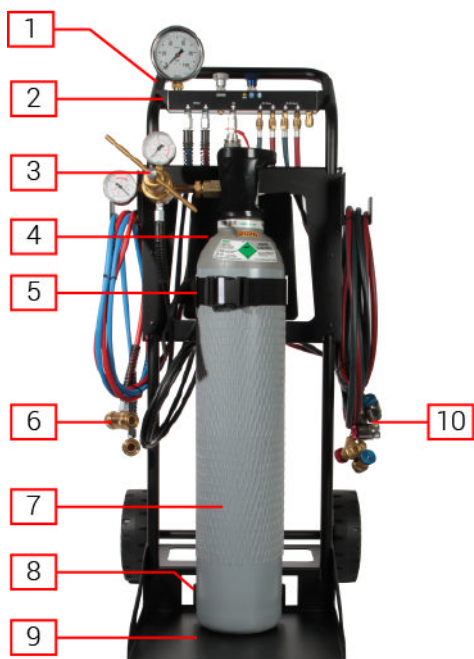
Other than the cart, to search for leaks you need:

- **FORMING GAS KIT**
- **H2 Detect** *electronic leak detector*

Both the products are sold separately.

6 DESCRIPTION

CART

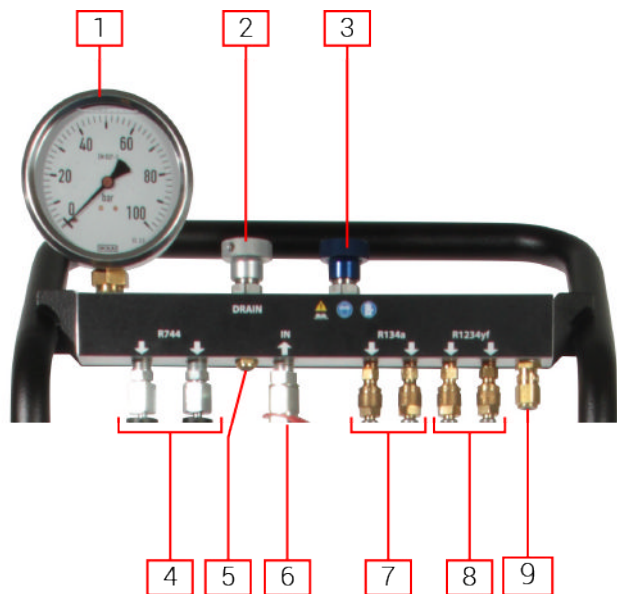


- 1. Handle
- 2. Manifold
- 3. Forming Gas Kit *
- 4. Upper seat
- 5. Safety belt
- 6. Quick couplers and service hoses for R744
- 7. Tank **
- 8. Lower seat
- 9. Tank support base
- 10. Quick couplers and service hoses for R134a and R1234yf

(*) Sold separately

(**) Not supplied

MANIFOLD



- 1. Pressure gauge
- 2. Manual **DRAIN** valve
- 3. Manual **Low Pressure Side** valve
- 4. Quick LP/HP couplers for **R744**
- 5. Breather
- 6. Quick coupler for Forming Gas **IN**
- 7. Quick LP/HP couplers for **R134a**
- 8. Quick LP/HP couplers for **R1234yf**
- 9. Overpressure valve

7 TECHNICAL FEATURES

Manufacturer	TEXA S.p.A.
Model	Forming Gas Cart
GENERAL FEATURES	
Dimensions	H: 1180 mm L: 590 mm W: 668 mm
Weight	24.5 kg
Maximum flow	35 kg
Operating / storage temperature	consult the gas safety sheet
Suitable for A/C systems	R134a R1234yf R744
Forming Gas Tanks supported	up to 20 l
Maximum pressure on systems using R744	100 bar
Maximum pressure on systems using R134a	20 bar
Maximum pressure on systems using R1234yf	20 bar
Low pressure safety device calibration	20 bar
Pressure gauge	100 bar, 100 mm CL1
Quick couplers	SAE J639
SERVICE HOSES	
R744 (LP/HP)	2,5 m
R134a (LP/HP)	3 m
R1234yf (LP/HP)	2,5 m
Forming Gas Tank	2,5 m
FORMING GAS TANK PRESSURE REDUCER	
Input operating pressure	max 300 bar
Output pressure	max 100 bar

8 PREPARING FOR USE

Before proceeding with the test, install the Forming Gas kit and the tank onto the cart.

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NOTICE

We recommend using tanks with a capacity of 10 L and in any case not above 20 L.

Proceed as follows:

- 1. Place the cart on a flat surface.*
- 2. Place the tank on its support base making sure it leans against both the lower and the upper seat properly.*
- 3. Close the safety belt around the tank.*
- 4. Pull the belt's flap until the tank is firmly secured to the cart.*
- 5. Connect the Forming Gas Kit's regulator to the tank following the instructions provided with the kit.*
- 6. Connect the Forming Gas Kit regulator's output hose to the quick coupler for the manifold's Forming Gas **IN**.*

INFORMATION

Close manually until completely tightened in order to avoid leaks.

9 LEAK SEARCH ON A/C SYSTEMS WITH R744 GAS

Following is the procedure for searching for leaks on an A/C system that uses **R744** (CO₂) gas. Proceed as follows:

1. *Locate the set of quick couplers and service hoses for the gas used by the A/C system.*
2. *Connect the service hoses to the vehicle's A/C system.*
3. *Make sure the pressure regulator's handwheel is in rest condition (completely unscrewed counter-clockwise).*
4. *Make sure the manual **DRAIN** and **Low Pressure Side** valves are tightly closed (screwed clockwise).*
5. *Open the tank's valve.*
6. *Increase the pressure using the regulator's handwheel, verifying if the desired test pressure is reached, max 100 bar, through the pressure gauge located on the manifold.*
7. *Use the **H2 Detect** leak detector to verify if there are leaks in the system.*

In case of a bad adjustment in overpressure or to discharge the vehicle's A/C system, proceed as follows:

1. *Close the tank's valve.*
2. *Use the manual **DRAIN** valve to decrease the pressure until reaching the desired value or to discharge the system completely.*

10 LEAK SEARCH ON A/C SYSTEMS WITH R134a or R1234yf GAS

Following is the procedure for searching for leaks on an A/C system that uses R134a / R1234yf gas.

On the side of the manifold dedicated to the R134a and R1234yf gases (low pressure side) there is an overpressure valve that intervenes at 20 bar to avoid excessive pressure that may damage the A/C system.

Proceed as follows:

1. *Locate the set of quick couplers and service hoses for the gas used by the A/C system.*
2. *Connect the service hoses to the vehicle's A/C system.*
3. *Make sure the pressure regulator's handwheel is in rest condition (completely unscrewed counter-clockwise).*
4. *Make sure the manual **DRAIN** and **Low Pressure Side** valves are tightly closed (screwed clockwise).*
5. *Open the tank's valve.*
6. *Increase the pressure using the regulator's handwheel, verifying if the desired test pressure is reached, max 20 bar, through the pressure gauge located on the manifold.*
7. *Open the manual **Low Pressure Side** valve.*
8. *Use the **H2 Detect** leak detector to verify if there are leaks in the system.*

In case of a bad adjustment in overpressure or to discharge the vehicle's A/C system, proceed as follows:

1. *Close the tank's valve.*
2. *Use the manual **DRAIN** valve to decrease the pressure until reaching the desired value or to discharge the system completely.*

11 MAINTENANCE

This chapter describes the maintenance operations required for the device.

CAUTION

Perform the operations indicated below without the tank installed.

Carefully follow the instructions provided in this manual.

Only use original spare parts or approved by TEXA.

INFORMATION

For more information contact the after-sales assistance service.

11.1 Periodical Checks

In order to guarantee a correct operation of the device we recommend you check the parts that are the most subject to wear on a regular basis.

Parts subject to wear	Check
Service hoses	Make sure there are no cuts, scratches or bulges.
Safety belt	Check that the belt and the clip are intact.
Quick fittings	Make sure there are no signs of wear and that the hoses do not harden during use. Make sure the service hoses are connected properly. Make sure there are no cuts or scratches on the O-rings.

11.2 Periodical Safety Checks

In order to guarantee the correction operation of the device, carry out periodical checks on the safety devices.

Perform visual checks on the safety valve to verify that it is not damaged, in order to guarantee its proper operation.

INFORMATION

A periodic inspection of the operation of the safety devices must be carried out at intervals defined by the national regulations in force in the country in which the equipment is being used.

12 LEGAL NOTICES

TEXA S.p.A.

Via 1 Maggio, 9 - 31050 Monastier di Treviso - ITALY

Tax Code - Company Register of Treviso ID No. - VAT No.: 02413550266

Single-shareholder company subject to the direction and coordination activities of Opera Holding S.r.l.

Paid-up share capital 1,000,000 € - R.E.A. (Economic Administrative Index) No. 208102

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For information regarding the legal notices, please refer to the **International Warranty Booklet** provided with the product.