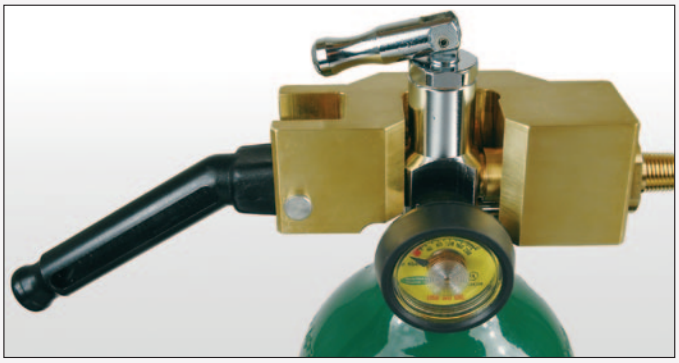
Operating Instructions

for Bail Handle Compressed Gas Connectors

FasTest® Compressed Gas Products

reliably
RATERMANN

INDEX



Operation

Step 1

At the start of each shift

- Check main seal condition
- Check for smooth operation of the handle before the first fill.
- Check seal-face/piston movement.

Step 2

Safety Features

- If the handle is accidentally disconnected under pressure, the sealing piston will travel with the valve to retain a seal. The piston will retract and return to its original position once the pressure has dropped below 250 psig.

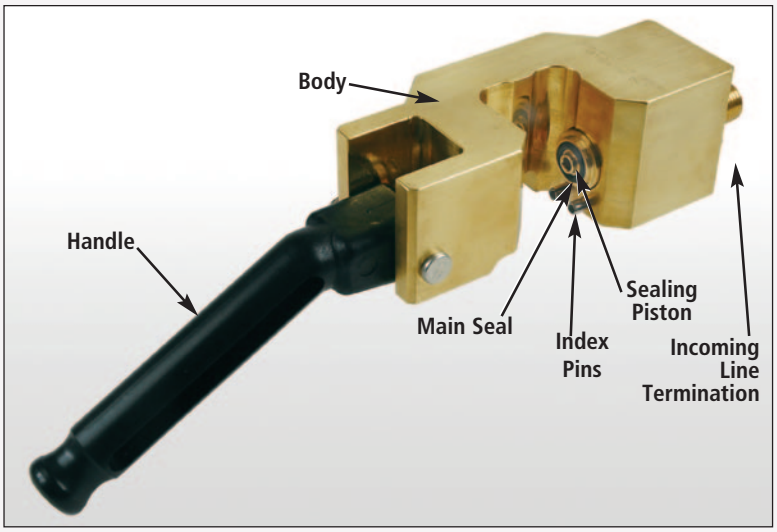


Figure 5. MediMate CGA 870.

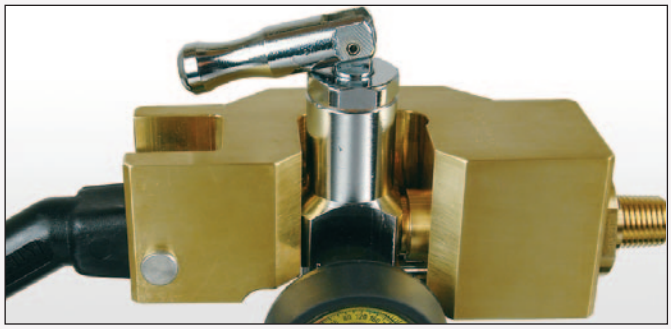


Figure 6 and 7. The piston retains position against valve during accidental disconnection.

Step 3

Connecting to the cylinder.

- A three-step process locks the valve in place.

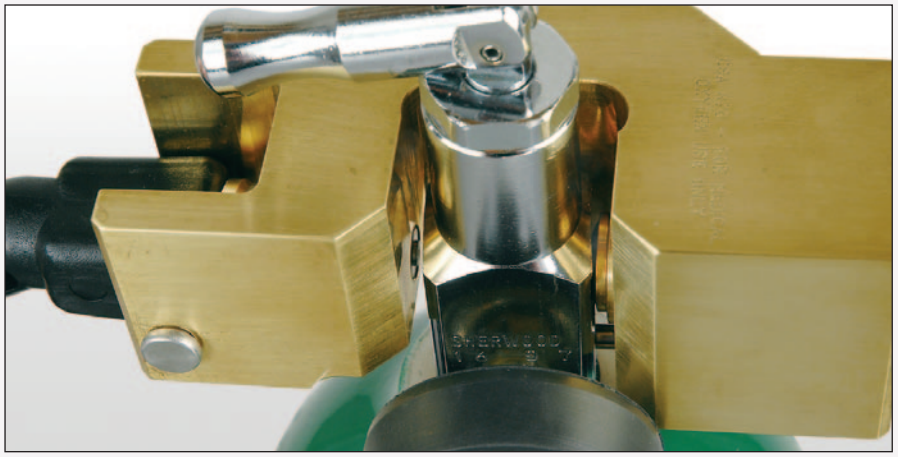


Figure 8. Valve properly aligned.

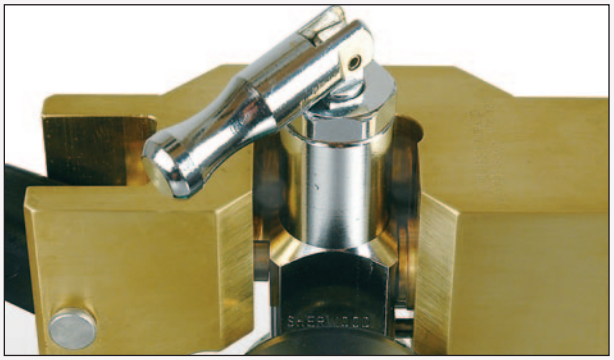


Figure 9. Connector in transition.

Figure 10. Fully connected.

Good Connections

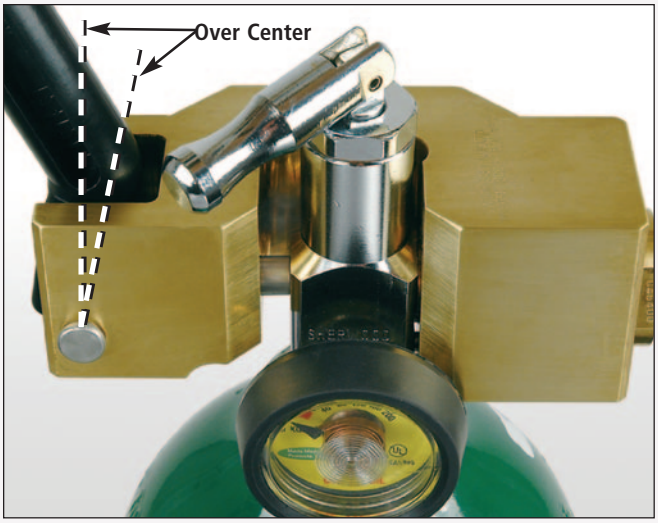


Figure 11. Handle camed beyond center. Note angle of handle.

Bad Connections

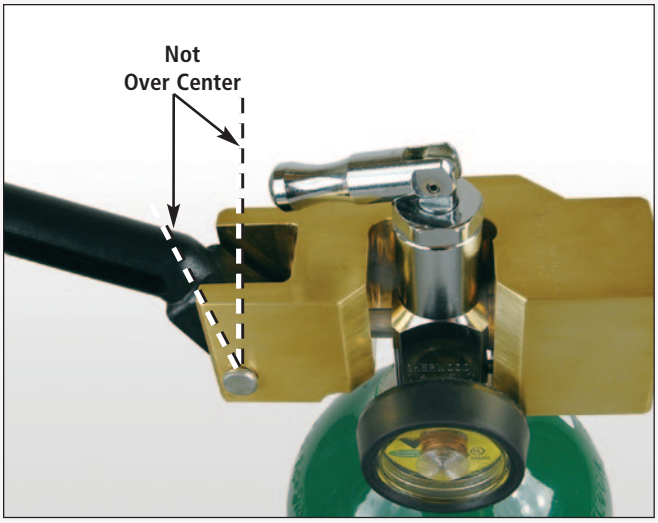


Figure 13. Handle is not camed beyond center. Note angle of handle.

Figure 12. Valve is tight to the body.

Step 4

Disconnect

- Once pressure is relieved, move handle and release valve.

Operation

Step 1

At the start of each shift

- Check main seal condition
- Check for smooth operation of the sleeve and collets before the first fill.

Step 2

Safety Features

- The Medical CGA 540 connector has internal locking pistons. Once the pressure exceeds 150 psig, the connector will lock the sleeve in place.

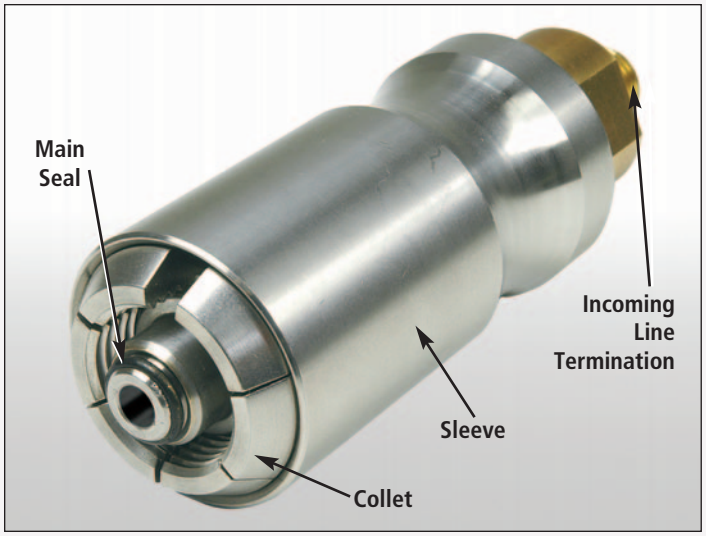


Figure 14. Medical CGA 540.

Step 3

Connecting to the cylinder.

- Make the proper connection in three steps.

Figure 15. Valve properly aligned with connector.

Figure 16. Connector in transition.

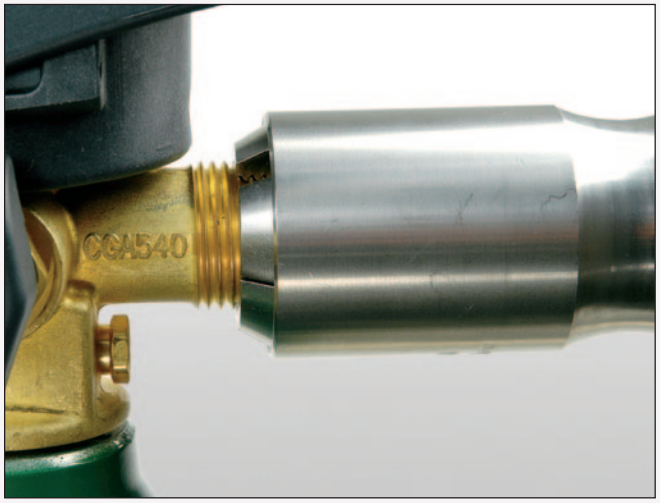


Figure 17. Fully connected.

Good Connections

Figure 18. Connector tight to valve.

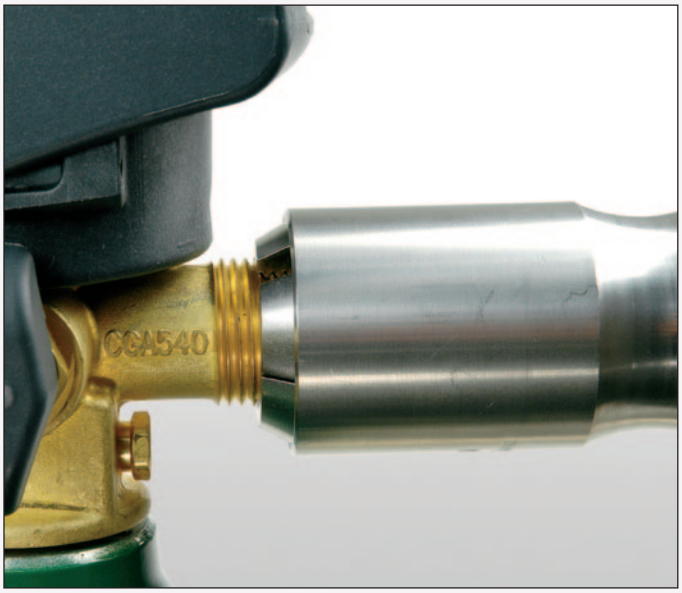


Figure 19. Sleeve is forward.

Bad Connections

Figure 20. Note excess threads.

Figure 21. Connector loose. Sleeve not forward.

Step 4

Disconnect

- Once pressure is relieved, pull back on sleeve and remove connector.

Application Guidelines

- FasTest gas series connectors are designed to connect to specific CGA gas valves
- Do not connect to a damaged cylinder valve
- Contact Ratermann if the product is damaged, or if you have inquiries on the proper function of the connector
- Do not use the connector until clarification is sought
- Connectors may only be dismantled by FasTest or trained personnel
- Do not use excessive force when connecting. See Operating Instructions outlined in this manual
- Filling gas cylinders is potentially dangerous. Appropriate safety measures must be taken. FasTest is not liable for injuries to persons or property arising from incorrect use
- Connectors for respiratory air/oxygen must be kept free from oil and grease
- Connectors without an operating loop require additional security by means of safety wire, safety cage, etc
- When using a quick connector with filling hose, please ensure that the cylinders to be filled are secure

Installation

Step 1

Protect the connector from damage and dirt by keeping it in the original packaging until you are ready to use it.

Step 2

Check that the connector part number and delivery notes (if applicable) comply with the application.

Step 3

Connect the hose securely and leak-tight to inlet B (Figure 1). Tighten to a max torque of 15 ft-lbs.

A higher torque can result in damage causing leaks when the system is pressurized.

Ensure that the connectors cannot be damaged when loading and removing the cylinder.

CAUTION:
Do not over tighten.
Over tightening could break connector and cause injury to operator.

Step 4

Review total function:

- Check leak-tight seal
- Check if collets open and close properly by actuating the connector several times
- Check if connector marking complies with the application
- The FasTest connector is ready to operate

Note

Avoid lateral forces like short connecting hoses because this could cause leakage.

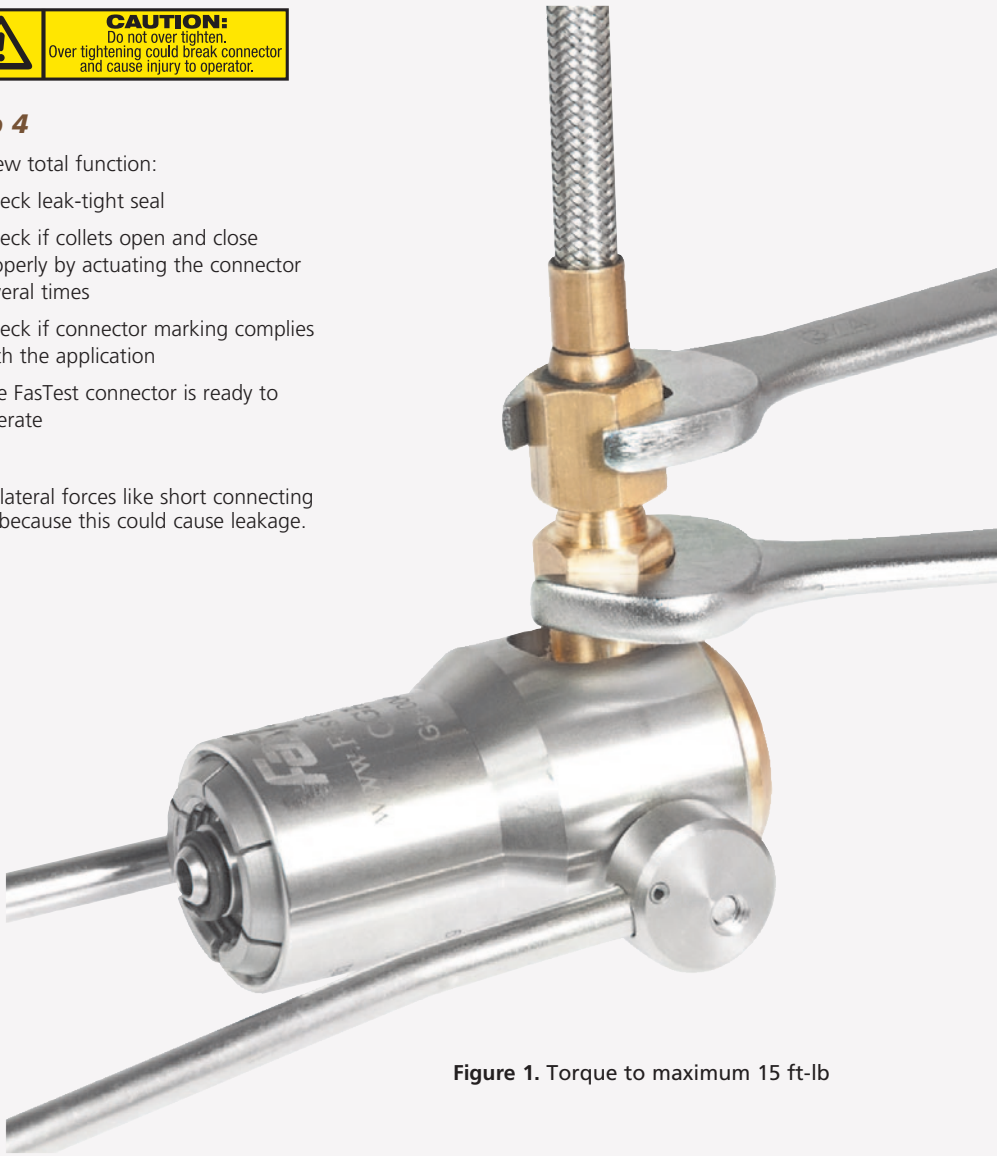


Figure 1. Torque to maximum 15 ft-lb

Operation

Step 1

At the start of each shift

- Check all connectors for main seal condition
- Check for smooth operation of the actuating loop before the first fill

Step 2

When making a connection (Figure 4):

- Ensure that the connector is in the fully open position and in direct contact with the front of the valve before moving the actuator
- Align the connector to the thread to prevent damage to the front seal from sharp edges of the valve
- Place the connector onto/into the valve until it stops. **DO NOT USE FORCE!**
- Rotate the bail to engage the connector. Do not actuate the loop with excessive force. If the connection is made correctly, it will connect with relative ease
- Ensure that the actuating loop has traveled to a position below parallel to the connector body. Check to make sure the collets are fully engaged.

(See good vs. bad connection photos, pages 14B 8-9)

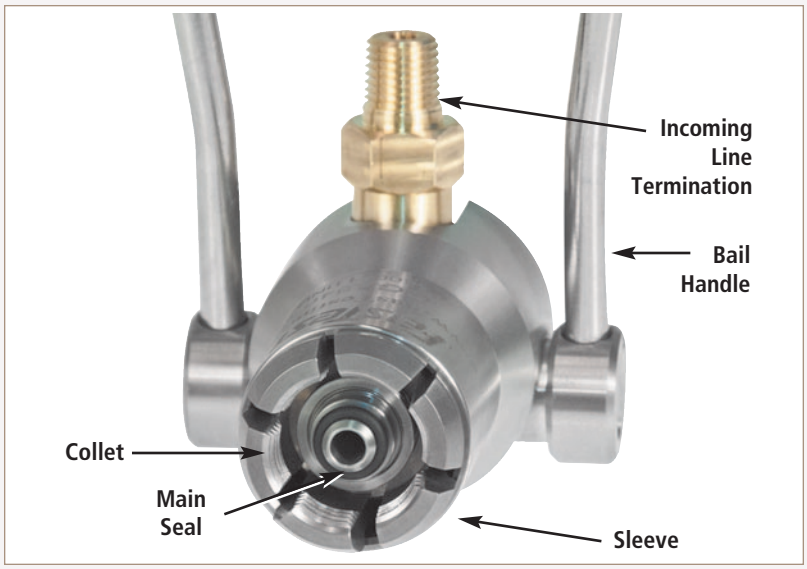


Figure 2. CGA 540

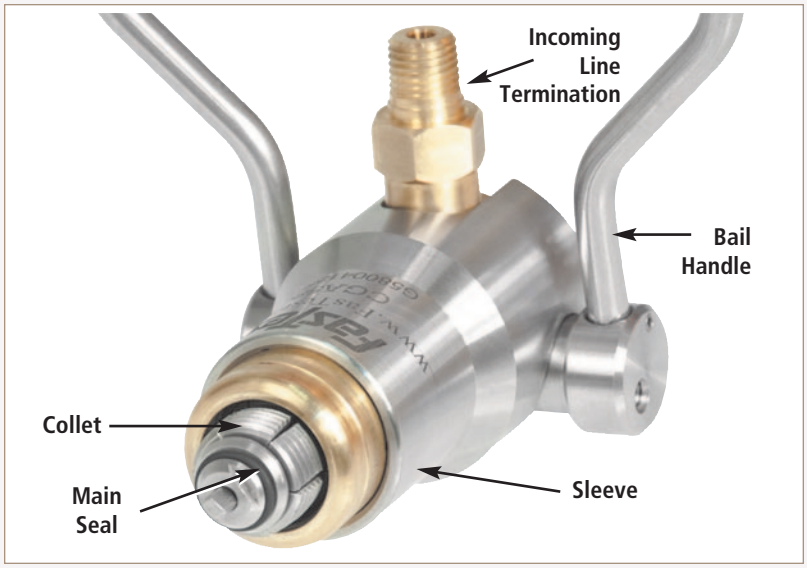


Figure 3. CGA 580RPV

Figure 4a - 4b. CGA 540 connection and alignment

Figure 4c - 4d. Align the CGA 580 RPV tight and square against valve with no visible gap to avoid damage to the sealing surface

Operation

580 RPV Pin Retraction

Note

Pin retraction is shown using tool Part # QFT-RPV-580-RT. Retraction may also be done using standard pliers

Figure 5a. Note how the pin is extended

Figure 5b. Push down

Figure 5c. Rotate 90°

Figure 5d. Retracted

Step 3 Connecting to the Cylinder/Good Connections

Figure 6a. Use minimal force on bail

Figure 6b. Demonstrates good connection using CGA 540

Figure 7a. Demonstrates good connection using CGA580/580 RPV

Figure 7b. Use minimal force on bail and handle

Correct Handle Positioning

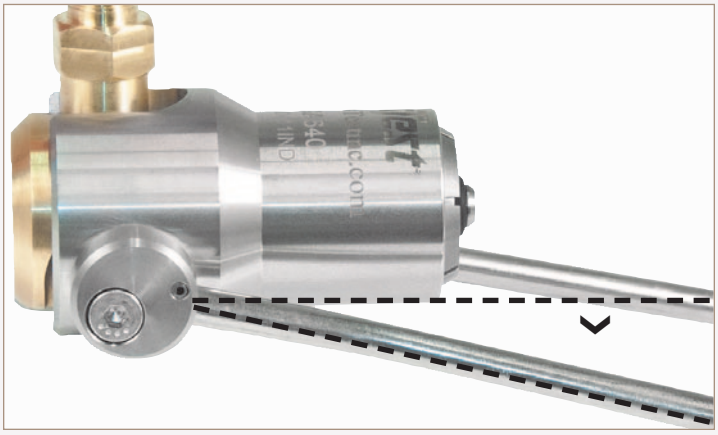


Figure 8a. Correct positioning: handle rests at a downward angle to connector body

Operation

WARNING: Improper thread connection can result in injury or death.

Incorrect Connections

Figure 6c. Misaligned CGA 540/CGA 346

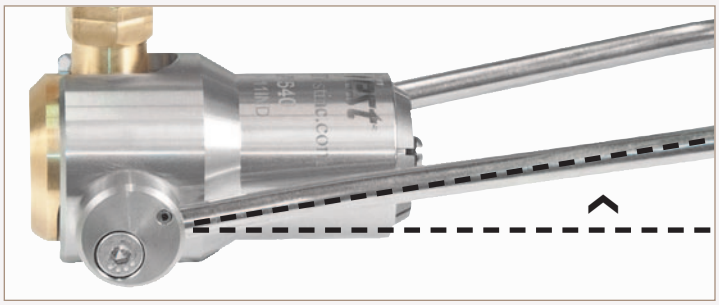
Figure 6d. Exposed threads CGA 540

Figure 7c. Misaligned CGA 580

Figure 7d. Exposed threads CGA 580

Incorrect Handle Positioning

Figure 8b. Incorrect positioning: handle is parallel or at an upward angle relative to the connector body



Step 4

Connect. The safety pin protrudes out (engages) at a pressure of approximately 150 psig, depending on connector age, cleanliness and lubrication.

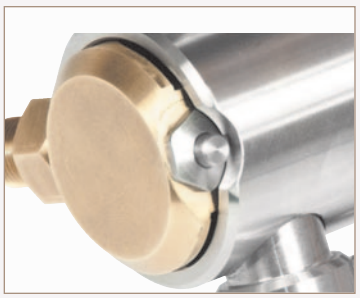


Figure 9. Safety pin extends to stop sleeve travel and accidental disconnection

Step 5

Disconnect. Disconnect only when the connector is depressurized and the safety pin retracts.

DO NOT ATTEMPT TO DISCONNECT ACTUATOR STYLE CONNECTORS WHILE UNDER SYSTEM PRESSURE. (See Safety Pin care in Maintenance section on page 14B-11).

Figure 10. Safety pin retracts when connector is depressurized

Maintenance

Good Maintenance Practices

- CGA standards for medical oxygen filling, CGA 870 and CGA 540 series connectors may require periodic lubrication. Use Krytox or approved equivalent only.
- Maintain accurate and complete product maintenance records.
- In addition to these suggested maintenance guidelines, your companies overall safety and maintenance requirements should be applied to FasTest gas connector products.
- It is recommended that gas connector products involved in high-volume filling be returned to FasTest for a complete product inspection and required maintenance every 3 years.
- Adhering to a consistent product maintenance program will minimize product returns for inspection as well as required maintenance costs.
- Minimize the use of soap solutions sprayed directly onto connector. These types of solutions cause a build-up that can hamper proper connector operation. Also, avoid contacting connector with any petroleum base chemicals that can cause product contamination.
- DO NOT EXCEED THE MAXIMUM OPERATING PRESSURE AS STATED IN BOTH PRODUCT LITERATURE AND ON ALL INDIVIDUAL CONNECTOR PRODUCTS SOLD BY FASTEST.

Connector Maintenance

The following maintenance guidelines apply to all FasTest gas connector products. Additional guidelines that apply only to a specific CGA standard connector are noted.

- A daily, weekly and periodic inspection of the connector by a competent person is recommended. Inspection should include wear of swivel joints, damage to the body, leak-tightness, ease of operation, sufficient lubrication, wear, dirt accumulation and damage. (See Maintenance Checklist)
- If upon inspection a problem is noted, refer to the Trouble-shooting Guide at the end of this manual. DO NOT DISMANTLE THE CONNECTOR.
- The manufacturer (FasTest) should refurbish connectors after 30,000 fill cycles.
- You may use only original FasTest spare parts that are designed for the application and are subject to strict quality control. See Warranty.

Main Seal

The main O-ring seal must be replaced at least every 1000 cycles. FasTest recommends a daily visual inspection of the sealing O-ring, located at the tip of the filling nozzle. Inspect for tears or cracks in the O-ring surface. Replace O-ring if tears or cracks are visible or verified. Some applications require more frequent seal changes.

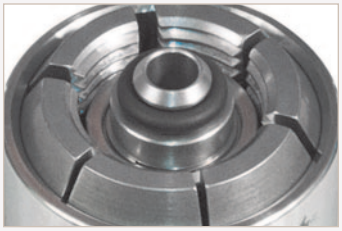


Figure 11. An example of a good O-ring main seal

Figure 12. An example of a bad O-ring main seal

Maintenance of Bail Handles

FasTest recommends a periodic inspection and tightening of the actuator handles on applicable CGA standards. If screws are loose, tighten to 8-10 ft-lb.

Do not over tighten screws.

A drop of Loctite 242 on the threads of the screw is appropriate.

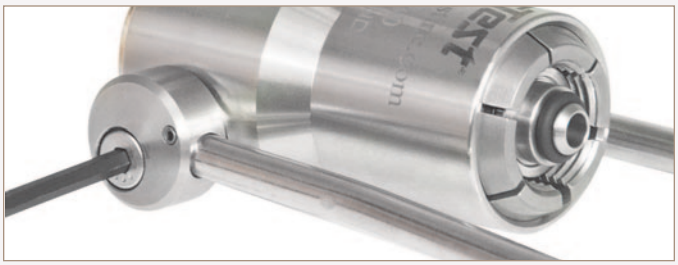


Figure 13. Tighten with a torque wrench

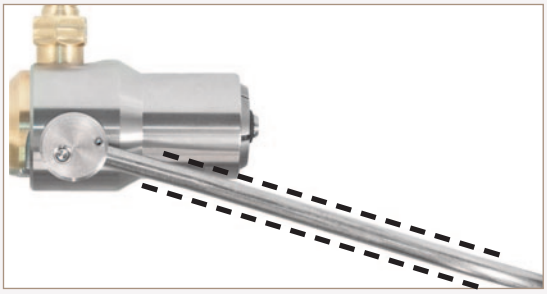


Figure 14a. Inspect bail handles for straight position

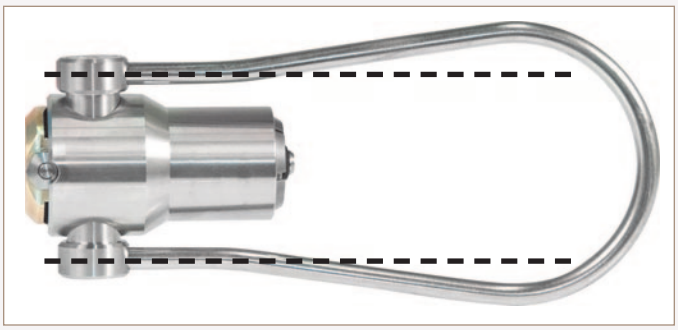


Figure 14b. Straight handles, side view

Maintenance & Replacement Parts

Maintenance of Safety Pins

Safety pin operation must be inspected daily. With actuator handle connectors, the safety pin will protrude out during the filling cycle at approximately 150-psig. The safety pin retracts back into the connector body upon completion of the fill/vent cycle. The actuator handle will flip back easily when the connector is depressurized and the safety pin retracts. Failure to wait may cause damage to the safety pin.

If the safety pin does not function properly, the pin assembly may require cleaning and lubrication. Or, if bent, the safety pin will require total replacement. Attempting to disconnect the connector while pressurized contributes to the bending of the safety pin.

DO NOT ATTEMPT TO DISCONNECT ACTUATOR STYLE CONNECTORS WHILE UNDER PRESSURE.

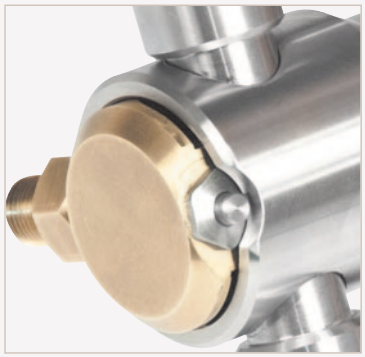


Figure 15. Example of a bad or damaged safety pin. When the pin is bent it will not retract. There is a noticeable indentation on the sleeve from contact with pin. The handle is also bent from forcing actuation while the pin is protruding out

Maintenance Checklist

Daily

Inspect for Leak-tight seal

- The main seal must be replaced more frequently depending on wear. Dismantling of the connector for this purpose is not required. It is recommended that an O-ring pick be used for removal to avoid damage to the groove
- Clean groove if required and insert new O-ring

Inspect for correct function.

- Does the safety pin properly protrude and lock the connector under pressure?
- Does the safety pin move backwards when the systems depressurized?

Weekly

Inspect for correct function

- Inspect the correct engagement of the collets
- Check the connector's collet thread with gauge
- Check for any bent or missing components

Periodic

- Inspect that all threaded components are tight and properly torqued
- Check for any bent or missing components
- Check for proper actuation of handle, collets and all moving components
- Check for leaks

Standard Field Replacement Parts

Gas connector standard replacement components listed in this section are immediately available for field replacement. Additional field replacement components such as bail handles are also available by consulting Ratermann Mfg., Inc. Remaining components are not offered for field replacement as they typically require special tools and handling precautions during assembly.

Due to the high pressure of compressed gas filling, as well as the Oxygen cleaning requirements of specific CGA standards, FasTest requires you to return gas connector products for maintenance and repair. Specific CGA standards require O2 cleaning before being returned to field service. **Please contact Ratermann Mfg., Inc. for additional information.**

FasTest

Connector	Part #	Description	Pack of
QFT-540	QFT-540SPK5	Replacement Main Seals, Viton	Pack of 5
	QFT-540SPK100	Replacement Main Seals, Viton	Pack of 100
	QFT-540SPK250	Replacement Main Seals, Viton	Pack of 250
	QFT-540ESPK5	Replacement Main Seals, EPDM	Pack of 5
	QFT-540ESPK100	Replacement Main Seals, EPDM	Pack of 100
	QFT-540ESPK250	Replacement Main Seals, EPDM	Pack of 250
QFT-580	QFT-580ESPK5	Replacement Main Seals, EPDM	Pack of 5
	QFT-580ESPK100	Replacement Main Seals, EPDM	Pack of 100
	QFT-580ESPK250	Replacement Main Seals, EPDM	Pack of 250
QFT-RPV-580	QFT-RPV-580ESPK5	Replacement Main Seals, EPDM	Pack of 5
	QFT-RPV-580ESPK100	Replacement Main Seals, EPDM	Pack of 100
	QFT-RPV-580ESPK250	Replacement Main Seals, EPDM	Pack of 250
	QFT-RPV-580-RT	Pin Retraction Tool	
	QFT-RPV-580-PN	Replacement Pin and Nut	
	QFT-RPV-580-PINPK5	Replacement Pins	Pack of 5

⚠ **WARNING:** These products contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. For more information: **www.P65Warnings.ca.gov**

Operation

Step 1

At the start of each shift

- Check main seal condition
- Check for smooth operation before the first fill.

Step 2

Safety Features

- The VariQuik System has a visual indicator that is visible when properly connected. Once the connection is made, the adapter will push back from the coupler, leaving a small gap. This will lock the sleeve (See good vs. bad connection photos, page 14B-13).

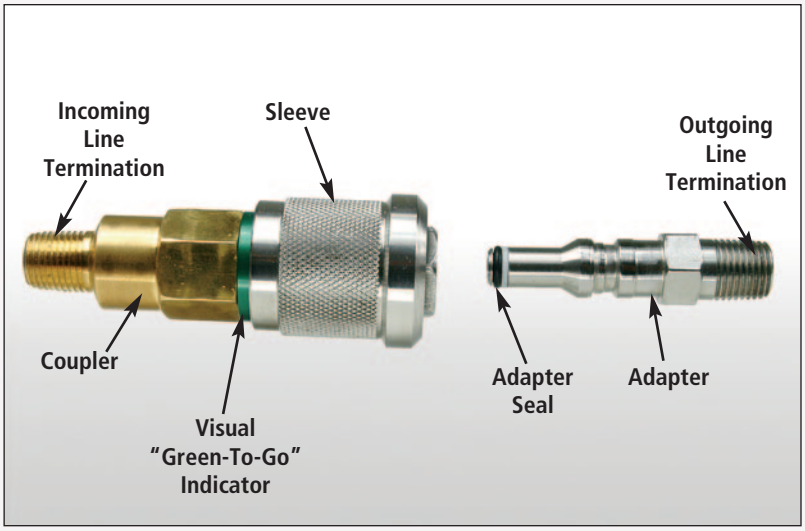


Figure 22. VariQuik.

Step 3

A four-step process locks the adapter in place.

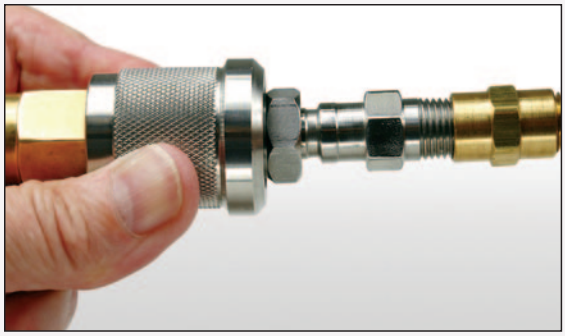


Figure 23. Coupler properly aligned.

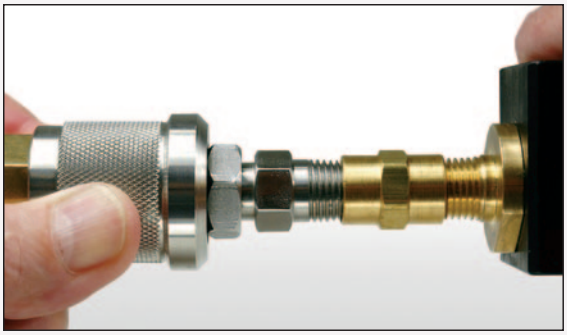


Figure 24. Coupler in transition.

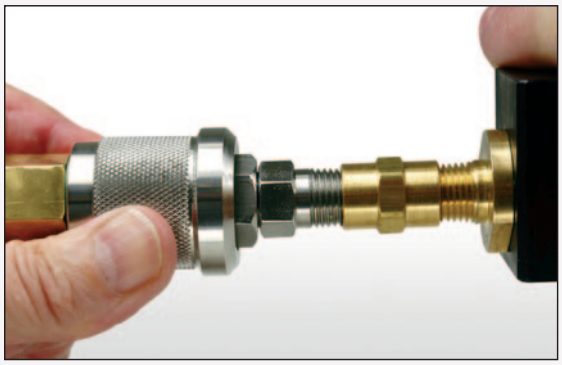


Figure 25. Adapter fully inserted.

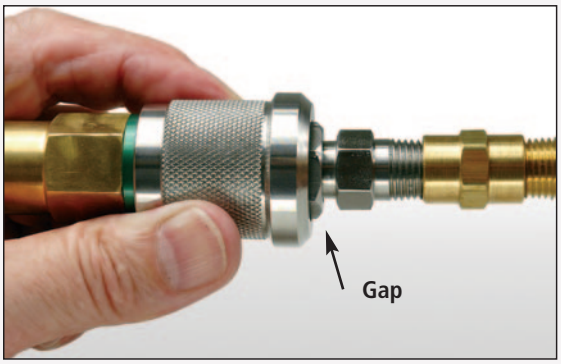


Figure 26. Sleeve released, connector pushes back leaving a visible gap between hex.

Good Connections

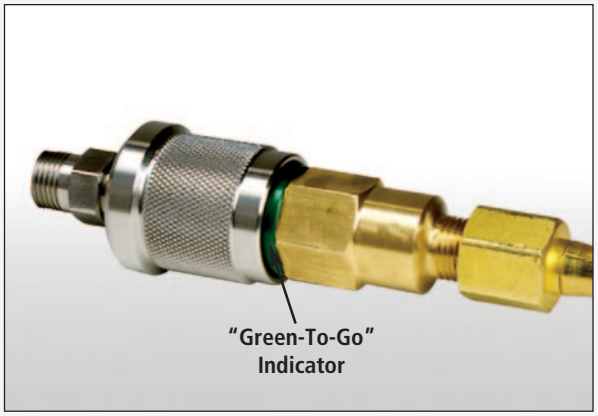


Figure 27. Visual indicator present.

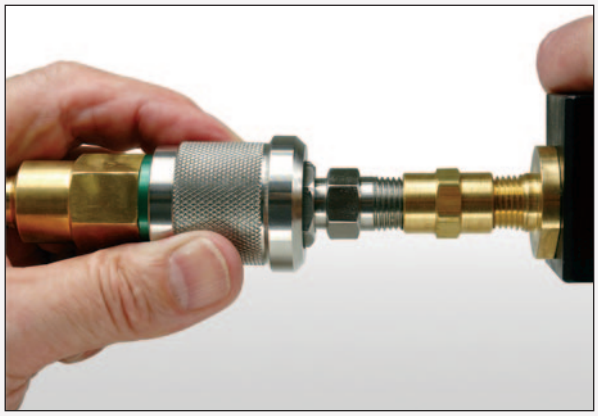


Figure 28. Sleeve is forward, visual indicator present, visible gap between hex.

Bad Connections

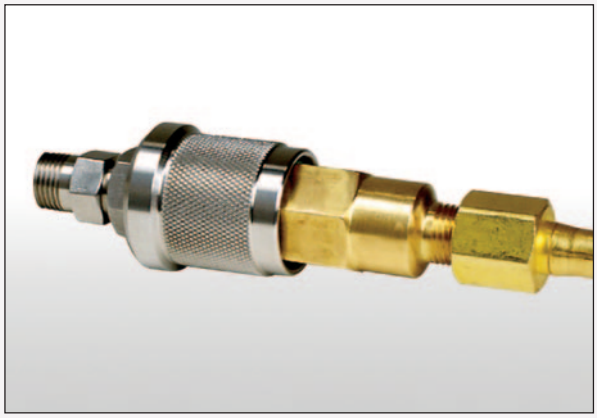


Figure 29. No visual indicator present.

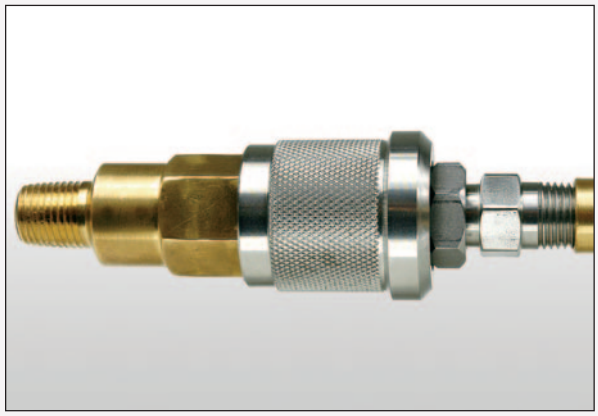
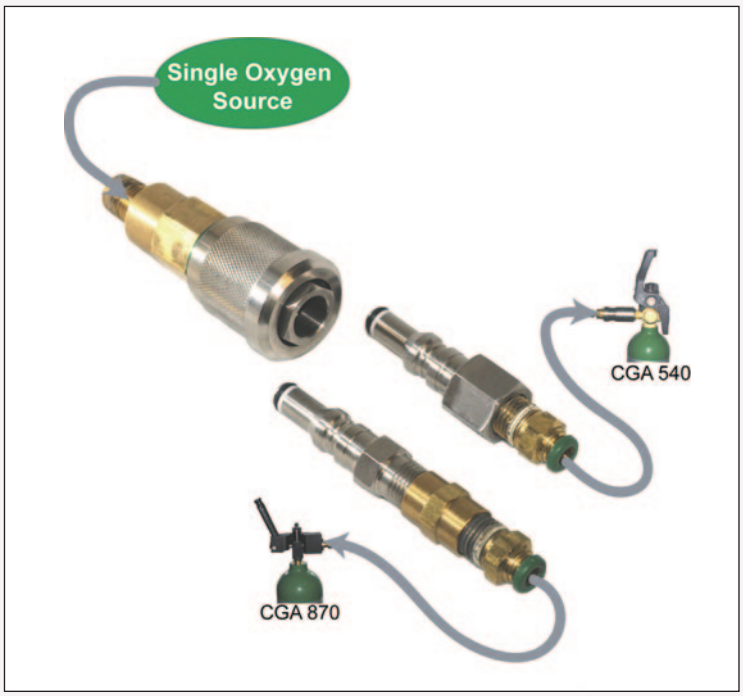


Figure 30. No visual indicator.

Step 4

Disconnection

- Push the adapter into the coupler and pull sleeve back. Remove adapter.
- Relieve pressure. Push the adapter into the coupler and pull sleeve back. Remove adapter.



MediMate CGA 870

Problem	Recognized By	Probable Cause	Recommended Action
Gas leakage at connection of connector to valve.	Continual sound of escaping gas	(a) Damaged or worn connector sealing O-ring or damaged cylinder valve. (b) Contaminated or clogged pressure piston	(a) Visual inspection of connector O-ring. Replace as required. Recommend O-ring replacement every 1000 cycles. (b) Clean
Loose cylinder connection with MediMate 870 connector. Ability to move connector side-to-side once connection is made.	(a) Disconnect and inspect connector. (b) Check index pins.	Index pins removed.	Replace and/or reinsert index pins properly. Do Not Remove Index Pins!
MediMate 870 leakage.	Hissing or popping off under pressure. Main seal blows out.	Internal connector components are contaminated, which does not allow internal piston to move freely.	Disassemble connector, clean component parts, apply approved lubricant, and reassemble.
Gas leakage at connection. Loss of main seal.	Continual sound of escaping gas.	Connection pressure piston is clogged with contaminates	(a) Visual inspection of connector O-ring. Replace as required. Recommend O-ring replacement every 1000 cycles. (b) Remove cartridge assembly and clean.

VariQuik System

Problem	Recognized By	Probable Cause	Recommended Action
Gas leakage at connection.	Continued sound of escaping gas.	Damage or worn sealing O-ring on adapter.	Visual inspection of adapter O-ring. Replace as required. Recommend O-ring replacement every 1000 cycles.
Gas leakage through coupler when not connected.	Continued sound of escaping gas.	Damaged or worn sealing O-ring in coupler.	Visual inspection of connector O-ring. Replace as required.
Gas leakage around sleeve area.	Continued sound of escaping gas.	Coupler body is threading apart.	Tighten connector body to 10 ft-lb.
Cannot make full connection.	Cannot connect	(a) Adapter is deformed and will not fully insert. (b) Wrong adapter style.	(a) Replace adapter (b) Replace with correct adapter.
Sleeve will not retract.	Cannot move sleeve.	System remains under pressure.	Remove internal pressure.

Troubleshooting

Problem	Recognized By	Probable Cause	Recommended Action
Gas leakage at connection of connector to valve	Continual sound of escaping gas	Damaged or worn connector sealing O-ring or damaged cylinder valve	Visual inspection of connector O-ring. Replace as required. Recommended O-ring replacement every 1000 filling cycles
Gas leakage at initiation of filling cycle, leakage decreasing as pressure increases	Sound of escaping gas	(a) Improper connection (b) Side load to filling connector due to rigid supply line	(a) Terminate filling cycle and repeat connection (b) Replace supply line with swivel and/or flexible pigtail
Gas leakage increases as pressure increases	Sound of escaping gas Blow off	Valve threads damaged Seat area of valve scored or damaged	Terminate filling cycle and replace damaged or worn valve
Safety pin does not activate during filling cycle	Safety pin at rear of connector not extended outward from connector body	(a) Damaged or bent pin (b) Lack of lubrication and/or dirt contamination	(a) Field replacement of actuator pin assembly (b) Remove safety pin assembly, clean and lubricate with approved lubricant
Safety pin does not retract upon completion of filling cycle	Unable to remove connector	(a) Damaged or bent pin (b) Lack of lubrication and/or dirt contamination (c) System under pressure	(a) Field replacement of actuator pin assembly (b) Remove safety pin assembly, clean and lubricate with approved lubricant (c) Vent or exhaust system of gas before attempting disconnection
Actuator handle loose	Excessive handle movement from side-to-side when connected to valve	Loose or missing actuator handle screws	Replace missing screw or remove existing screw. Apply thread lock to screw threads. Reinsert and tighten to 8-10 ft-lbs. Do not over tighten screw
Inability to fully engage actuator handle	Visually inspect connection with valve to determine if connector threads are exposed	Short connection to cylinder valve	Disconnect and reconnect to valve with connector fully seated into valve
Connector's thread collets not expanding properly during initial hook-up to cylinder valve	Visual inspection of connection joint	Short connection of connector to valve	Visual inspection of valve. Replace if damaged or worn. Disconnect and reconnect connector to valve. Be sure actuator handle sleeve is fully engaged. If problem is unresolved, contact Ratermann Mfg.
Loose connection	Connector is loose despite proper connection	Worn or damaged threads of cylinder valve	Replace cylinder valve.
Damage, deformation or distortion to connector body, sleeve, and collet threads. Possible internal leakage	Visual inspection of connector Difficult operation of connector	Improper operation	Remove connector from filling operation immediately! Return to Ratermann to determine probable cause
Inability to connect to, or a leakage with, CGA 540 and 580 RPV style connectors and Residual Pressure Valves	Inability to fully actuate connector actuator handle and/or outer sleeve	(a) Bent actuator pin (b) Damaged actuator piston	(a) Replace actuator pin (b) Return to Ratermann for repair
Inability to connect or leakage of RPV version connector to non RPV cylinder valves	Inability to fully actuate and/or gas leakage at initial filling	(c) Actuator pin not retracted	(c) Retract/remove actuator pin according to specific connector operation instructions

Gas Connector CGA standards 540, 580 and 580 RPV series. Gas connector products should be visibly inspected on a routine basis to ensure efficient product performance. Refer to the Maintenance Checklist on page 14B-11.

Medical CGA 540

Problem	Recognized By	Probable Cause	Recommended Action
Short connection of connector to valve.	Visual inspection of connection joint.	Connector thread collets not expanding properly during initial hook-up to cylinder valve.	(a) Visual inspection of valve. Replace if damaged or worn. (b) Disconnect and reconnect connector to valve. Be sure sleeve is fully engaged. If problem is unresolved, contact Ratermann Mfg., Inc.
Loose connection.	Connector is loose despite proper connection.	Worn or damaged threads of cylinder valve.	Replace cylinder valve.
Improper operation. Possible internal leakage.	Visual inspection of connector. Connector difficult to operate.	Damaged, deformed or distorted connector body, sleeve and collet threads.	Remove connector from filling operation immediately. Return to FasTest to determine probable cause.
Gas leakage at initiation of filling cycle, leakage decreasing as pressure increases.	Continual sound of escaping gas.	(a) Improper connection. (b) Side load to filling connector due to rigid supply line.	(a) Terminate filling cycle and repeat connection. (b) Replace supply line with swivel and/or flexible pigtail.
Gas leakage increases as pressure increases.	Continual sound of escaping gas.	Valve threads damaged. Seat area of valve scored or damaged.	Terminate filling cycle and replace damaged or worn valve.
Gas leakage at connection of connector to valve.	Continual sound of escaping gas	(a) Damage or worn connector sealing O-ring or damaged cylinder valve.	(a) Visual inspection of connector O-ring. Replace as required. Recommend O-ring replacement every 1000 cycles.

Warranty

FasTest warrants its products against defects in workmanship and materials for 12 months from the date of sale by Ratermann Manufacturing, Inc. or its authorized distributor. This warranty is void if the product is misused, tampered with or used in a manner that is contrary to FasTest® written recommendations and/or instructions. Ratermann Manufacturing, Inc. does not warrant the suitability of the product for any particular application. Determining product application suitability is solely the customer's responsibility. Ratermann Manufacturing, Inc. is not liable for consequential or other damages including, but not limited to; loss, damage, personal injury, or any other expense directly or indirectly arising from the use of or inability to use its products either separately or in combination with other products. ALL OTHER WARRANTIES EXPRESS OR IMPLIED, WHETHER ORAL, WRITTEN OR IN ANY OTHER FORM, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY EXCLUDED.

The sole and exclusive remedy under this warranty is limited to replacement of the product or an account credit in the amount of the original selling price, at the option of FasTest. All allegedly defective products must be returned prepaid transportation to Ratermann Manufacturing, Inc., together with information describing the product's performance, unless disposition in the field is authorized in writing by Ratermann Manufacturing, Inc.

WARNING: High pressure is potentially dangerous. Do not use Gas Filling connectors without first reading and following the operating instructions included with the product. Additional copies of all gas product instructions may be obtained from Ratermann Manufacturing, Inc.

INTENDED USE/ MODIFICATION WARNING: FasTest gas connector products are ONLY intended for use with a specific CGA standard. Ratermann assumes no product liability if modifications are made to the product. If modifications are made, the product warranty becomes null and void.

Non-Warranty Claims: FasTest gas connector products which are no longer covered by the original warranty period are subject to a flat rate charge for required product repairs. Flat rate charges will vary depending on CGA standard. Non-warranty connectors, returned to Ratermann for repairs, are subject to inspection to determine feasibility of repair.

Contact Ratermann Manufacturing, Inc. directly at 1-800-264-7793 for non-warranty repair and maintenance requests.

Krytox GPL-203 Grease

For use on medical o-ring seals such as the QF-H870 fill connectors or the QFT-540 connectors. Can also be used on medical fill racks for general lubrication.

For our full line of Lubricant products please see section 33A

Part # KRY-GPL2032OZ
Part # KRY-GPL2038OZ

Larger sizes available upon request.