INDEX

Operating Instructions for Medical Connection

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• FasTest medical gas series connectors are designed to connect to specific CGA medical gas valves.

• Connectors for respiratory air/oxygen must be kept free from oil and grease. Use Krytox or approved equivalent as required.

• Do not connect to a damaged cylinder valve.

• Contact FasTest 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 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.

• FasTest does NOT recommend hanging cylinders from connectors.
**INSTALLATION**

**Step 1:** Protect the connector from damage and dirt by keeping it in its 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 or outlet (VariQuik). 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 (Figure 1).

**Step 4:** Review connector function

- **MediMate CGA 870** (Figure 2)
  - Check leak-tight seal
  - Check handle operation
  - Check seal-face/piston movement
  - Check that marking comply with application

- **WEH Medical CGA 540** (Figure 3)
  - Check leak-tight seal
  - Check that collets open and close properly by actuating the connector several times.
  - Check that marking comply with application

- **VariQuik System** (Figure 4)
  - Check leak-tight seal
  - Check for full insertions and sleeve operation

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

![Diagram of MediMate CGA 870](image)

**Figure 5.** MediMate CGA 870.

**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.

![Images of MediMate CGA 870](image)

**Figures 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.
Step 4: Disconnect

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

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

**Figure 12.** Valve is tight to the body.

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

![Diagram of WEH Medical CGA 540](image)

*Figure 14. WEH Medical CGA 540.*

**Step 2:** Safety Features
- The WEH Medical CGA 540 connector has internal locking pistons. Once the pressure exceeds 150 psig, the connector will lock the sleeve in place.
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.
WEH MEDICAL CGA 540 OPERATION

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.
**VARIQUIK SYSTEM OPERATION**

**Step 1:** At the start of each shift
- Check main seal condition
- Check for smooth operation before the first fill.

![Diagram](Image)

**Figure 22. VariQuik.**

**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 7C-10).

**Step 3:** A four-step process locks the adapter in place.

![Images of coupler alignment and transition]

**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.**
Step 3: 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.
Good Maintenance Practices

- FasTest's MediMate CGA 870, WEH Medical CGA 540 and the VariQuik System 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 company's 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 Troubleshooting Guide at the end of the manual.

  **DO NOT DISMANTLE THE CONNECTOR.**

- 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 1,000 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.

Main Seal Accessibility

**Figure 31.** An example of a “good O-ring” main seal.

**Figure 32.** An example of a “bad O-ring” main seal.

**Figure 33.** MediMate CGA 870 main seal.

**Figure 34.** WEH Medical CGA 540 main seal.

**Figure 35 and 36.** VariQuik System has a coupler and adapter. The main seal in the coupler will require disassembly to replace. The main seal and back-up ring on the adapter are easily accessible.
MediMate CGA 870

The connector must remain clean to allow for proper operation.

**Figure 37.** Press on the piston. If it does not spring back, the internal components may be clogged with soap residue. Approximately 33lbs will be required to depress piston.

**Figure 38.** Remove cartridge assembly and clean residue with water and agitation.

**Figure 39.** Example of contamination.

**Figure 40.** Check condition of clevis pin and retaining ring. If clevis pin is broken or retaining ring is not functional, contact factory.
WEH Medical CGA 540

VariQuik System

Figure 41. Check retaining ring to make sure it is tightly seated in its groove.
- Check internal thread collets for a fixed-center position and even spacing.
- An “out-of-round” condition may hinder sleeve operation. A visual inspection of the sleeve is usually sufficient.

Maintenance Checklist

**Daily**

- Inspect for Leak-tight seal
  - The main seal must be replaced more frequently depending on wear. 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.
  - Connection should operate smoothly. If the connection is forced, remove from service.
  - Check for contamination, bent or missing components.
  - Check for leaks.

**Weekly**

- Inspect for correct function
  - Inspect the correct engagement of the valve, collets or fittings.
  - 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, sleeve and all moving components.
- Check for leaks.

Figure 42. Make sure coupler does not thread apart. Examine the connector length and thread tightness periodically. The threads should be tight to 10ft-lbs between the front and rear hex.

Figure 43: Check main seal and back-up ring for damage or loss. Replace main seal O-ring and back-up ring as recommended.
Gas connector standard replacement parts listed in this section are available for field replacement. FasTest does not offer any further replacement components as special tools and handling precautions may be required.

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.

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<th>Connector</th>
<th>Part #</th>
<th>Description</th>
<th>Ratermann Pt #</th>
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<tr>
<td>MediMate CGA 870</td>
<td>G870041</td>
<td>Replacement Main Seal Set (5/pkg)</td>
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<td>QF-H870SPK100</td>
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<td>QF-H870SPK500</td>
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<td>SG870500</td>
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<td>QF-H870REPAIR</td>
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<td>G870041R</td>
<td>Refurbished</td>
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<td>WEH Medical CGA 540</td>
<td>521042540</td>
<td>Replacement Main Seal</td>
<td>QF-MED540F</td>
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<td>521041540</td>
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<td>QF-MED540M</td>
</tr>
<tr>
<td>VariQuik System</td>
<td>G02042 Coupler 1106V70</td>
<td>Main seal</td>
<td>QF-VC</td>
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<td>G02041 Adapter 1106V70</td>
<td>Seal set</td>
<td>QF-VAM</td>
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<td></td>
<td>Male NPT Termination GS02A Seal set</td>
<td></td>
<td>QF-VAF</td>
</tr>
<tr>
<td></td>
<td>Female NPT Termination GS02A Seal set</td>
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**Krytox GPL-203 Grease**

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

Part # KRY-GPL2032OZ
Part # KRY-GPL2038OZ
Larger sizes available upon request.
### MediMate CGA 870

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

### VariQuik System

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

### WEH Medical CGA 540

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recognized By</th>
<th>Probable Cause</th>
<th>Recommended Action</th>
</tr>
</thead>
</table>
| 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.                                                                                                          |
**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, ensure that the connector is in the fully open position and in direct contact with the front of the valve before moving the actuator. Place the connector onto/into the valve until it stops. **Do not use force!** Align the connector to the thread to prevent damage to the front seal from sharp edges of the valve. 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 through it’s full stroke and the bail cams are square with the sleeve. Check to make sure the collets are fully engaged. (See good vs. bad connection photos, page 7C-20.)

**580 RPV Pin Retraction**
Retract pin if connecting to a standard 580 valve.

**Figure 2.** CGA 540.

**Figure 3.** CGA 580.

**Figure 4a - 4b.** CGA 540 or 346 alignment.

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

**Figure 5a.** Note how the pin is extended.

**Figure 5b-5c.** Push and turn to retract.

**Figure 5d.** Retracted.
Step 3: Connecting to the cylinder.

**Good Connections**
- **Figure 6a.** Demonstrates a good connection using the CGA 540/CGA 346.
- **Figure 6b.** Use minimal force on bail.
- **Figure 6c.** A good connection to the cylinder with the CGA 346 and 540.

**Bad Connections**
- **Figure 9.** An incomplete or cross thread connection.
- **Figure 10.** Short connection.

**Warning:** Improper thread connection can result in injury or death.

**Figure 11.** Cams are square to sleeve.

**Step 4:** Connect. The safety pin protrudes out (engages) at a pressure of approximately 250 psig, depending on connector age, cleanliness and lubrication.

**Figure 13.** 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 in. **DO NOT ATTEMPT TO DISCONNECT ACTUATOR STYLE CONNECTORS WHILE UNDER SYSTEM PRESSURE.** (See Safety Pin care in Maintenance section of this manual).

**Figure 15.** Safety pin retracted.

**Figure 16.** Safety pin retracted.
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, missing or loosened screws, 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 Troubleshooting 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 1,000 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.
Bail Handles  FasTest recommends a periodic inspection and tightening of the actuator handles on applicable CGA standards. If screws are loose, tighten to 7 ft-lb. **Do not over tighten screws.**

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

**Use torque wrench.**

<table>
<thead>
<tr>
<th><strong>Good Handles</strong></th>
<th><strong>Bad Handles</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Good Handle" /></td>
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<tr>
<td><img src="image5" alt="Good Handle" /></td>
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</table>

**Figure 19.** If screws are loose, tighten to 7 ft-lb.

**Figure 20.** Straight handle.

**Figure 21.** Bent handle, bent screws.

**Figure 22.** Straight handle, side view.

**Figure 23.** Bent handle, side view.

**Figure 24.** Handle and cams are square to sleeve and body.

**Figure 25.** Handle and cams are not square to sleeve and body.
Safety Pin  
Safety pin operation must be inspected daily. With actuator handle connectors, the safety pin will protrude out during the filling cycle at approximately 250-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 26.**  
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.

**Figure 27.**  
Replacing the safety pin requires attention to detail. Make sure that dismantling and assembly are executed in the right order when replacing the safety pin and corresponding seals, springs and parts. The seal and the safety pin must be greased sparingly with Krytox or equivalent.

**Figure 28.**  
The retaining screw has to be tightened to a torque of 2.5 ft-lb using a 4mm hex key and a calibrated torque wrench. Ensure that all parts are cleaned before reassembling the connector. (See torque wrench, Figure 19.)
**Main Body Set Screw:** The main body set screw should be inspected periodically and tightened to 7 ft-lb. (See torque wrench, Figure 1).

**Swivel Adapter:** The swivel adapter incorporates an O-ring that will wear over time. A periodic disassembly, clean and lubrication will be required. Lubricate with Krytox or equivalent. Replacing the internal seal requires attention to detail. Make sure dismantle and assemble are executed in the correct order. The threaded components are tightened to a torque of 15 ft-lb using a calibrated torque wrench.

**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 system is 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.
Gas connector standard replacement parts listed in this section are available for field replacement. FasTest does not offer any further replacement components as special tools and handling precautions may be required.

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.

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<td>QF-MEDSEAL</td>
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<td>QF-MED540F</td>
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<td>CGA 540 Medical Oxygen</td>
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<td>Replacement Main Seal</td>
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<td></td>
<td>Replacement Handle</td>
</tr>
<tr>
<td>QF-RPV-H580</td>
<td>QF-RPB-H580S</td>
<td>Replacement Main Seal</td>
</tr>
<tr>
<td>CGA 580 RPV</td>
<td>QF-RPB-H580PIN</td>
<td>Replacement Actuator Pin (5/pkg)</td>
</tr>
<tr>
<td></td>
<td>QF-RPB-H580TK</td>
<td>Tool Kit to Replace Actuator Pin</td>
</tr>
<tr>
<td></td>
<td>QF-HDL1FIT</td>
<td>Replacement Handle Screws</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replacement Handle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safety Pin Seal Kit</td>
</tr>
<tr>
<td>Problem</td>
<td>Recognized By</td>
<td>Probable Cause</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Gas leakage at connection of connector to valve</td>
<td>Continual sound of escaping gas</td>
<td>Damaged or worn connector sealing O-ring or damaged cylinder valve</td>
</tr>
<tr>
<td>Gas leakage at initiation of filling cycle, leakage decreasing as pressure increases</td>
<td>Sound of escaping gas</td>
<td>(a) Improper connection (b) Side load to filling connector due to rigid supply line</td>
</tr>
<tr>
<td>Gas leakage increases as pressure increases</td>
<td>Sound of escaping gas Blow off</td>
<td>Valve threads damaged Seat area of valve scored or damaged</td>
</tr>
<tr>
<td>Gas leakage at swivel joint</td>
<td>Sound of escaping gas</td>
<td>Damaged or worn sealing O-ring</td>
</tr>
<tr>
<td>Safety pin does not activate during filling cycle</td>
<td>Safety pin at rear of connector not extended outward from connector body Filling pressure must exceed 250 psi for pin actuation.</td>
<td>(a) Damaged or bent pin (b) Lack of lubrication and/or dirt contamination</td>
</tr>
<tr>
<td>Safety pin does not retract upon completion of filling cycle</td>
<td>Visual inspection of safety pin at rear of connector body Activated and not retracted into connector body</td>
<td>(a) Damaged or bent pin (b) Lack of lubrication and/or dirt contamination (c) System under pressure</td>
</tr>
<tr>
<td>Actuator handle loose</td>
<td>Excessive handle movement from side-to-side when connected to valve.</td>
<td>Loose or missing actuator handle screws</td>
</tr>
<tr>
<td>Inability to fully engage actuator handle</td>
<td>Visually inspect connection with valve to determine if connector threads are exposed</td>
<td>Short connection to cylinder valve</td>
</tr>
</tbody>
</table>

Gas Connector CGA standards 346, 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 7C-24.
### BAIL ACTUATOR TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recognized By</th>
<th>Probable Cause</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector’s thread collets not expanding properly during initial hook-up to cylinder valve.</td>
<td>Visual inspection of connection joint</td>
<td>Short connection of connector to valve</td>
<td>Visual inspection of valve. Replace if damaged or worn.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Disconnect and reconnect connector to valve. Be sure actuator handle sleeve is fully engaged. If problem is unresolved, contact Ratermann Mfg., Inc.</td>
</tr>
<tr>
<td>Loose connection</td>
<td>Connector is loose despite proper connection</td>
<td>Worn or damaged threads of cylinder valve</td>
<td>Replace cylinder valve.</td>
</tr>
<tr>
<td>Damage, deformation or distortion to connector body, sleeve, and collet threads.</td>
<td>Visual inspection of connector</td>
<td>Improper operation</td>
<td>Remove connector from filling operation immediately!</td>
</tr>
<tr>
<td>Possible internal leakage</td>
<td>Difficult operation of connector</td>
<td></td>
<td>Return to FasTest to determine probable cause.</td>
</tr>
<tr>
<td>Connecting collet(s) missing or difficult to connect to valve and/or front outer sleeve loose</td>
<td>Visual inspection of socket head screw on front of outer sleeve or connector body</td>
<td>Loose or missing</td>
<td>Discontinue use of connector until socket head screw is tightened to 7 ft-lbs. or replaced</td>
</tr>
<tr>
<td>Inability to connect to, or a leakage with, CGA 540 and 580 RPV style connectors and Residual Pressure Valves</td>
<td>Inability to fully actuate connector actuator handle and/or outer sleeve</td>
<td>(a) Bent actuator pin</td>
<td>(a) Replace actuator pin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Damaged actuator piston</td>
<td>(b) Return to FasTest for repair</td>
</tr>
<tr>
<td>Inability to connect or leakage of RPV version connector to non RPV cylinder valves</td>
<td>Inability to fully actuate and/or gas leakage at initial filling</td>
<td>(c) Actuator pin not retracted</td>
<td>(c) Retract/remove actuator pin according to specific connector operation instructions</td>
</tr>
</tbody>
</table>
WARRANTY

FasTest, Inc. warrants its products against defects in workmanship and materials for 12 months from the date of sale by FasTest, 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, Inc.’s written recommendations and/or instructions. FasTest, Inc. does not warrant the suitability of the product for any particular application. Determining product application suitability is solely the customer’s responsibility. FasTest, 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, Inc. All allegedly defective products must be returned prepaid transportation to FasTest, Inc., together with information describing the product’s performance, unless disposition in the field is authorized in writing by FasTest, 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 FasTest, Inc.

INTENDED USE/ MODIFICATION WARNING

FasTest gas connector products are ONLY intended for use with a specific CGA standard. FasTest 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 FasTest for repairs, are subject to inspection to determine feasibility of repair.