

**OPERATING PROCEDURES FOR G-450 TUBE TESTING ENDS****PRIOR TO TESTING:**

1. The tubes to be tested should be cleaned and any loose deposits or scale should be removed. If the tubes have not been cleaned any foreign materials present may be ejected during the testing operation and may damage the test guns or injure the operators.

The operators should always wear safety glasses or a face shield when testing with the G-450 or any type of pressure test guns.

2. If the tubes have been chemically cleaned, please check with EST regarding the compatibility of the test gun seals with cleaning agent. Different types of elastomer seals are available as replacements.
3. Make sure the support rod and tube assembly has the correct size Replacement Seal and Washer Set in place for the tubes being tested. See chart below for correct sizing information. The seals and washers are considered to be correctly sized if the OD of the seal is 0.03" to 0.05" (0.7mm to 1.3mm) under the actual tube ID. Using seals that are too small may cause the following: premature seal wear, jamming of the test gun in the tube, or expulsion of the test gun from the tube end. Replacement seals for the G-450 testing guns can be manufactured for any tube ID from 0.50" to 1.23" (12.7mm to 21.2mm). See page 2 for parts list and note for part numbering system on replacement seals sets. (\*GSB-XXXX-M)

| <b>BWG</b>     | <b>5/8</b>  | <b>3/4</b>  | <b>7/8</b>  | <b>1"</b>   | <b>1-1/8</b> | <b>1-1/4</b> | <b>1-3/8</b> | <b>1-1/2</b> |
|----------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| <b>8 - 9</b>   | -           | -           | <b>0056</b> | <b>0068</b> | <b>0081</b>  | <b>0093</b>  | <b>0106</b>  | <b>0118</b>  |
| <b>10 - 11</b> | -           | -           | <b>0062</b> | <b>0072</b> | <b>0087</b>  | <b>0097</b>  | <b>0112</b>  | <b>0122</b>  |
| <b>12 - 13</b> | -           | <b>0053</b> | <b>0065</b> | <b>0078</b> | <b>0090</b>  | <b>0103</b>  | <b>0115</b>  | -            |
| <b>14 - 15</b> | -           | <b>0056</b> | <b>0072</b> | <b>0083</b> | <b>0097</b>  | <b>0110</b>  | <b>0122</b>  | -            |
| <b>16 - 17</b> | <b>0050</b> | <b>0062</b> | <b>0075</b> | <b>0087</b> | <b>0100</b>  | <b>0112</b>  | -            | -            |
| <b>18 - 19</b> | <b>0053</b> | <b>0065</b> | <b>0078</b> | <b>0090</b> | <b>0103</b>  | <b>0115</b>  | -            | -            |
| <b>20 - 24</b> | <b>0056</b> | <b>0068</b> | <b>0081</b> | <b>0093</b> | <b>0106</b>  | <b>0118</b>  | -            | -            |

4. Check measurements of total length of tube to be tested and the seal to seal length on the support rod and tube assembly. G-450 will not function properly and may jam in tube, if a seal protrudes partially or completely from tube.

**TESTING PROCEDURE:**

1. Configuring the Support Rod and Tube Assembly: Place one seal and washer set onto ported pull rod assembly. Firmly thread the remaining support rod extension(s) together with set screws, ending with the end pull rod (with quick connect). Slide ported compression tubes onto rod assembly ending with the non-porting support tube extension. Place seal and washer set onto pull rod and secure with lock nut. Tighten lock nut until all slack in the assembly is taken up.
2. Attach air supply to the air injection gun. The G-450 test guns will be operational on plant air supplies ranging from 40 to 125 psi (3 to 8.6 Bars) at a minimum of 5 cfm (2.4 lps).
3. Insert the support rod and compression tube assembly into the exposed end of the tubesheet. Connect the support rod and tube assembly to the gun via a quick connect on the gun. Turn the slotted end of the gun to meet washer of the tube assembly to remove free play.
4. Begin testing: Squeeze the handle of the air control valve to pressurize tube. Gun operator should observe the pressure gage on the gun. Any tube leaks will be identified by a reduction in pressure on the gage.
5. Press the bleed valve on the injection gun to bleed off the air pressure in the tube, air cylinder and to relax the seals.
6. Disconnect the gun from the support rod and tube assembly. Set the gun aside.
7. Remove the support rod and tube assembly and reinsert it into the next tube to be tested. Mark each leaking tube encountered for repair. The total operation should be completed in 15 to 30 seconds. Your actual testing time will depend on the amount of time you choose to hold the pressure test.
8. Repeat steps 2 through 6 until testing is complete.



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**G450 TEST GUN & AIR ACTIVATED TUBE TESTER  
PARTS LIST**

| ITEM | QUANTITY | DESCRIPTION  | PART NO.                   |
|------|----------|--|----------------------------|
| 1    | 1        | COMPLETE G450 TEST GUN<br>(INCLUDES ITEMS 13 THRU 19)  | GSB-4500                   |
| 2    | 1        | COMPLETE SUPPORT ROD & TUBE ASSEMBLY<br>(INCLUDES ITEMS 4 THRU 12, 20)<br>0.50" - 0.86"<br>0.87" - 1.23" | GSB-4511-LL<br>GSB-4512-LL |
| 3    | 2        | REPLACEMENT SEAL & WASHER SET  | *GSB-XXXX-M                |
| 4    | 1        | LOCK NUT<br>0.50" - 0.86"<br>0.87" - 1.23"   | GSA-1533<br>GSA-1532       |
| 5    | 1        | QUICK-CONNECT ASSEMBLY   | SEE ITEM 2                 |
| 6    | 1        | BACK-UP WASHER   | SEE ITEM 2                 |
| 7    | 1        | PORTED PULL ROD ASSEMBLY   | SEE ITEM 2                 |
| 8    | 1        | PORTED COMPRESSION TUBE  | SEE ITEM 2                 |
| 9    | 1        | END PULL ROD   | SEE ITEM 2                 |
| 10   | **       | SUPPORT ROD EXTENSION  | SEE ITEM 2                 |
| 11   | **       | SUPPORT TUBE EXTENSION   | SEE ITEM 2                 |
| 12   | **       | SET SCREW  | SEE ITEM 2                 |
| 13   | 1        | PRESSURE GAGE, 0-160 PSI   | GSA-1540                   |
| 14   | 1        | CYLINDER BODY COMPLETE<br>(INCLUDES NOSE CONE)   | GSA-1567                   |
| 15   | 1        | ADAPTER, ¼ NPTF TO 1/8 NPT   | P01420                     |
| 16   | 1        | AIR CONTROL VALVE  | P00831                     |
| 17   | 1        | 2-1/2" NIPPLE, 1/4 NPT   | GSA-1548                   |
| 18   | 1        | HANDLE, PORTED W/O BLEED VALVE   | GSA-1571                   |
| 19   | 1        | BLEED VALVE  | GSA-1560                   |
| 20   | 1        | SPACER WASHER  | SEE ITEM 2                 |
| 21   | 1        | CHECK VALVE, ¼ NPT   | GSC-6693                   |

\* GSB-XXXX-M, Seal and Washer Sets must be ordered separately. Replacement Seal and Washer Set part numbers are derived from the actual pipe or tube ID that is to be tested. The part number GSB-XXXX-M is defined as follows:

"XXXX" = tube ID rounded to (2) decimal places XX.XX

"M" = seal material designation

B - buna-n

N - neoprene

S - silicone

V - fluoroelastomer (Viton® or equivalent)

\*\* Quantities vary depending on tube length requirements, pipe, piping systems, pressure vessels and their components.

Viton® is a registered trademark of DuPont Dow Elastomers.

**QUESTIONS?** Contact EST Group Customer Service at any of the following locations with questions.

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- On the Internet: <http://estgroup.cwfc.com>

**EST Group** provides a complete range of repair products, services, and replacement parts covering the life cycle of heat exchangers and condensers; additionally EST Group provides products and services to facilitate pressure testing pipe, piping systems, pressure vessels, and their components. Visit EST Group on the Internet at <http://estgroup.cwfc.com>.



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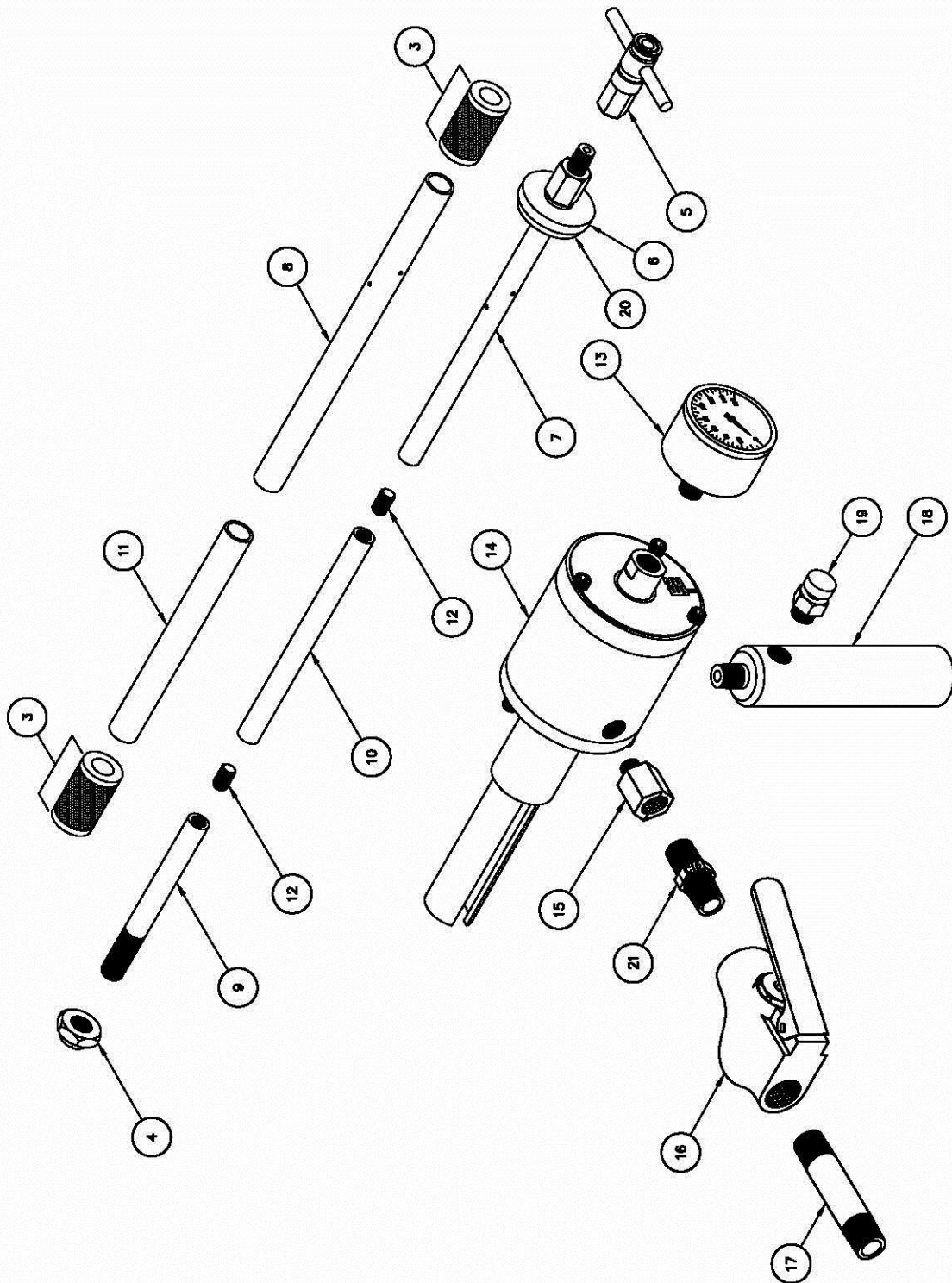
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