Ralston Instruments QTVC Volume Controller Instruction Manual

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Ralston Instruments
Pressure Calibration Specialists

Ralston Instruments QTVC Volume Controller

Volume Controller (QTVC) Operation

For all models of QTVC Volume Controllers

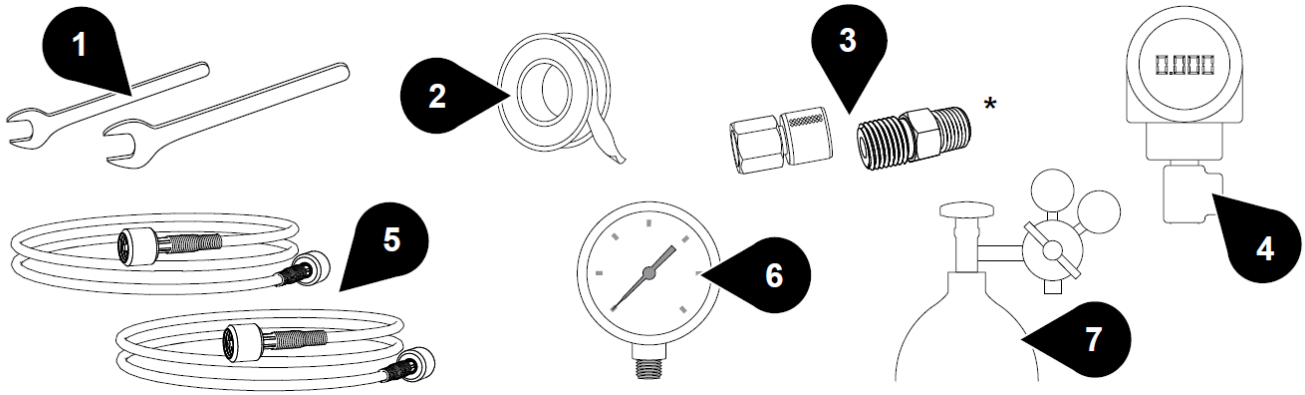
Specifications

- Pressure Range: 0 to 3,000 psi (0 to 210 bar)
- Vacuum Range: 0 to 10 inHg (0 to 260 mmHg)
- Temperature Range: 0 to 130 °F (-18 to 54 °C)
- Construction: Anodized Aluminum, Brass, Plated Steel, Stainless Steel
- Seal Materials: Buna-N, Delrin, Teflon
- Pressure Media: Fine Adjust Resolution ±0.0005 PSI (0.03 mbar)
- Inlet Port: Male Ralston Quick-test™, brass
- Outlet Port A
  Male Ralston Quick-test™ with cap and chain, brass
- Outlet Port B: Male Ralston Quick-test™, brass
- Outlet Port C: Male Ralston Quick-test™ with cap and chain, brass
- Weight: 5.38 lb (2.4 kg)
- **Dimensions**
  W: 8.5 in (21.59 cm)
  H: 6.16 in (15.65 cm)
  D: 7.38 in (18.75 cm)
- Fill and Vent Valves: Soft seated construction

- Mechanical Rotation: 42 turns (pressure balanced)

Requirements

What you need to use your Volume Controller:



1. Wrenches
2. Thread Tape
3. Ralston Quick-test™ Adapters
4. Device Under Test
5. Ralston Quick-test™ Hoses
6. Pressure Reference
7. Pressure Source

Important Safety Notices

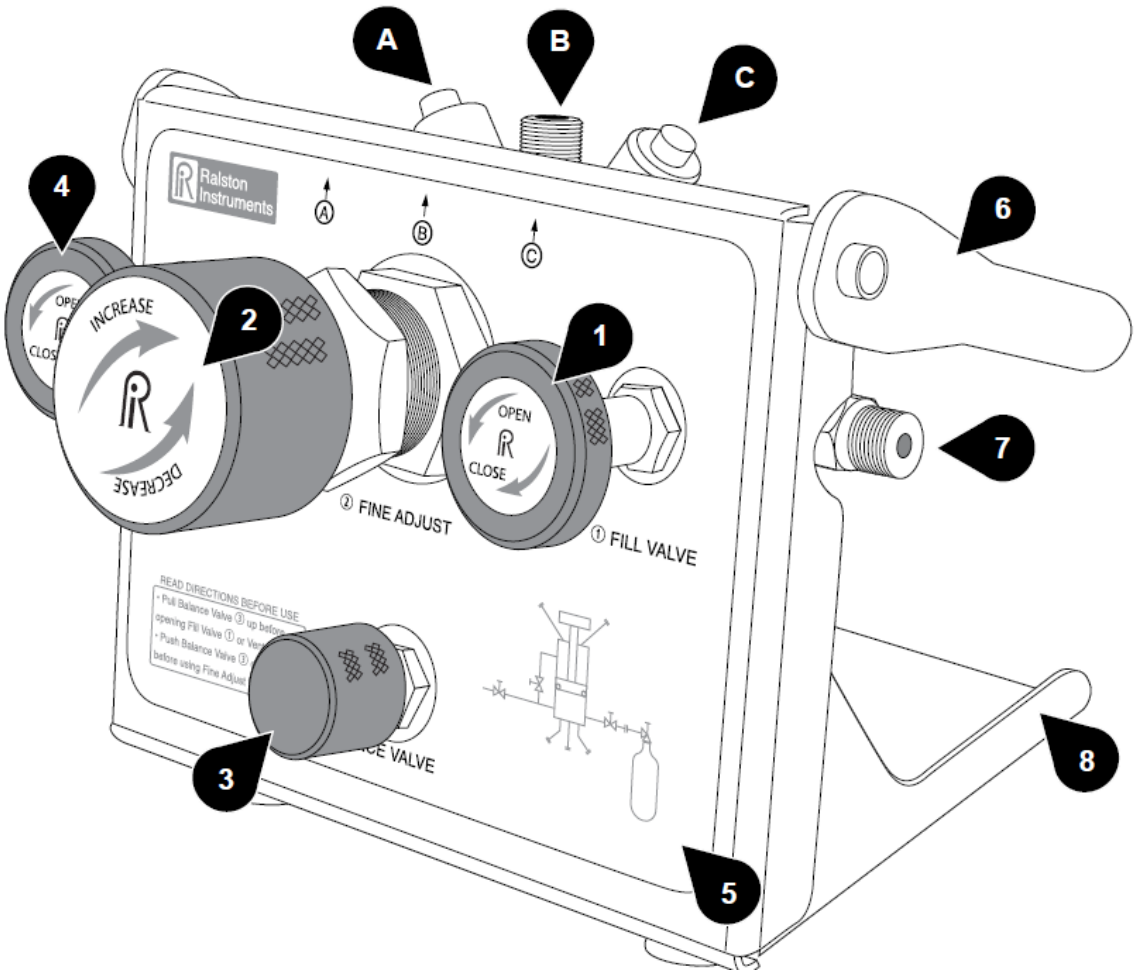
WARNING: Do not attempt to operate this product until you have read and fully understand the instructions and hazards of the product.

- Any modifications to this product with custom parts can result in hazardous operation of the product.
- Use eye protection while using this product. Leaking gas, parts or hoses can be ejected at high speed and may cause injury.

Volume Controller Overview

- A. Outlet Port A
- B. Outlet Port B
- C. Outlet Port C
- 1. Fill Valve
- 2. Fine Adjust Valve
- 3. Balance Valve
- 4. Vent Valve
- 5. Removable Front Panel
- 6. Carry Handle
- 7. Inlet Port

- 8. Stand

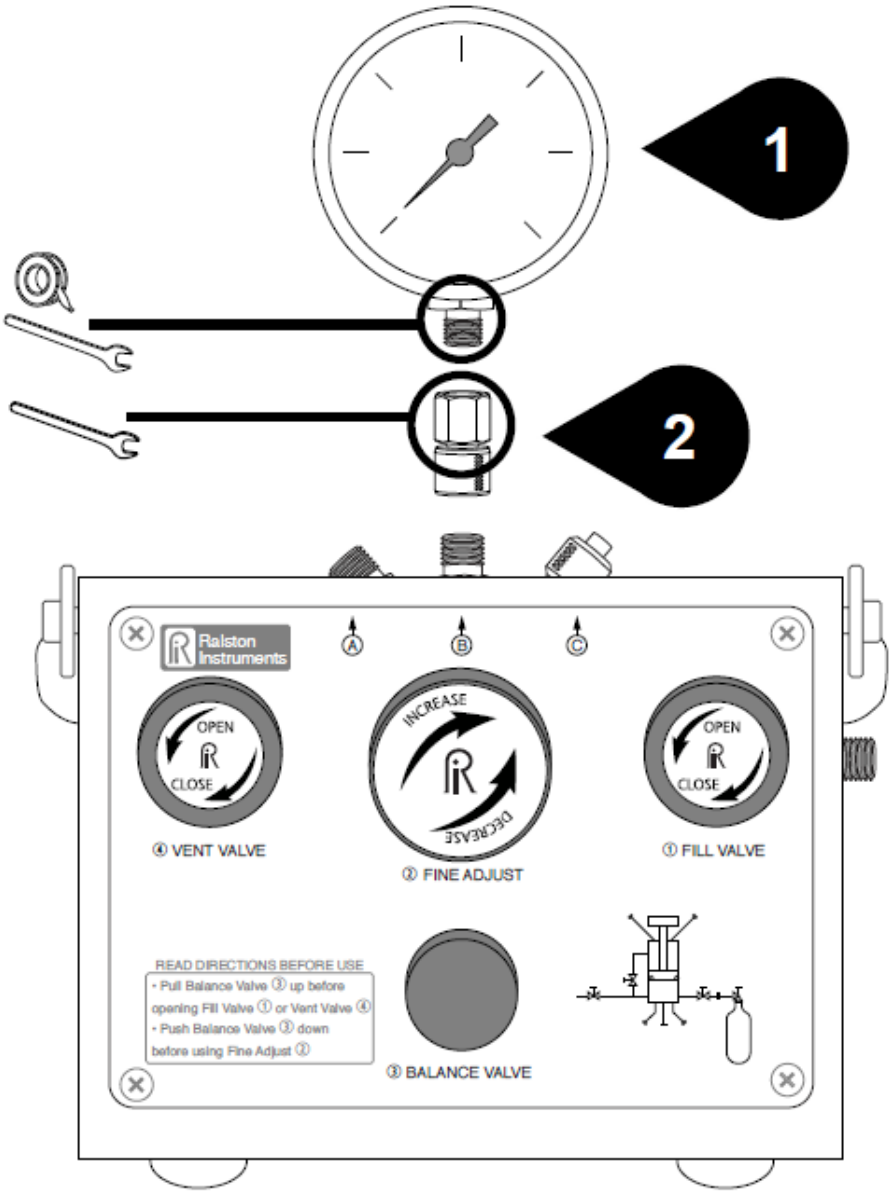


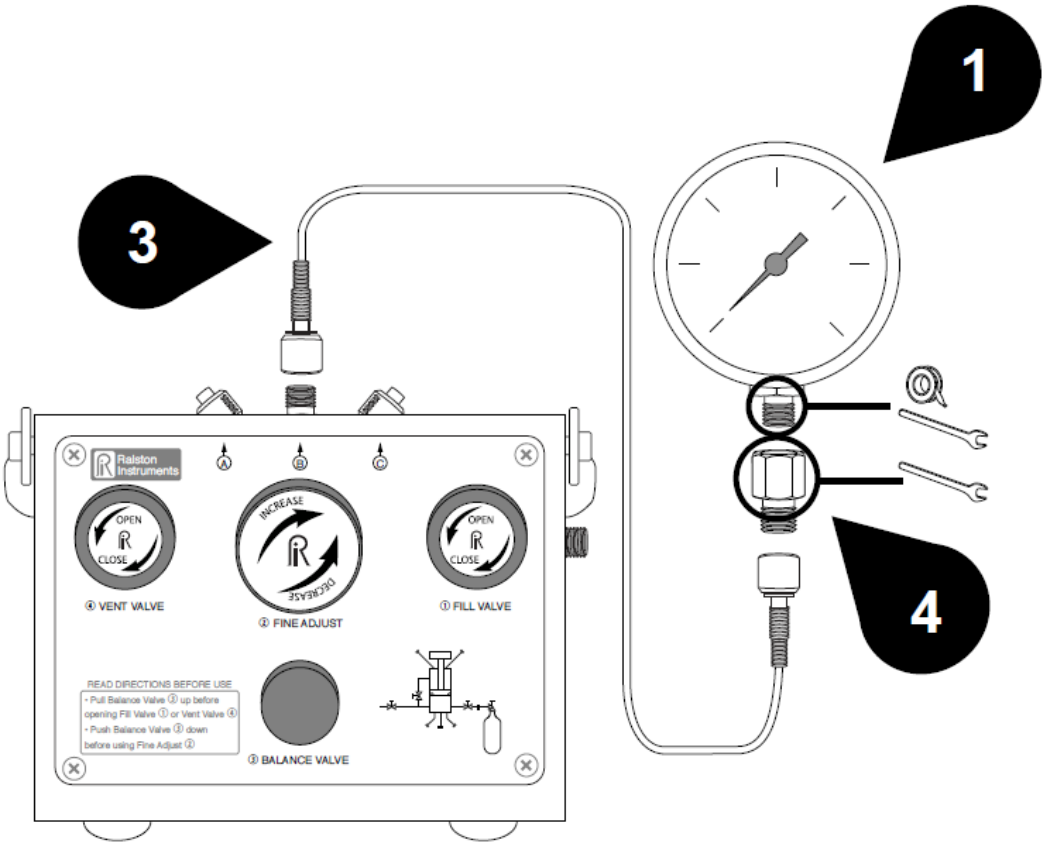
Setting Up

Connecting Reference Gauge

Male NPT Reference Gauge

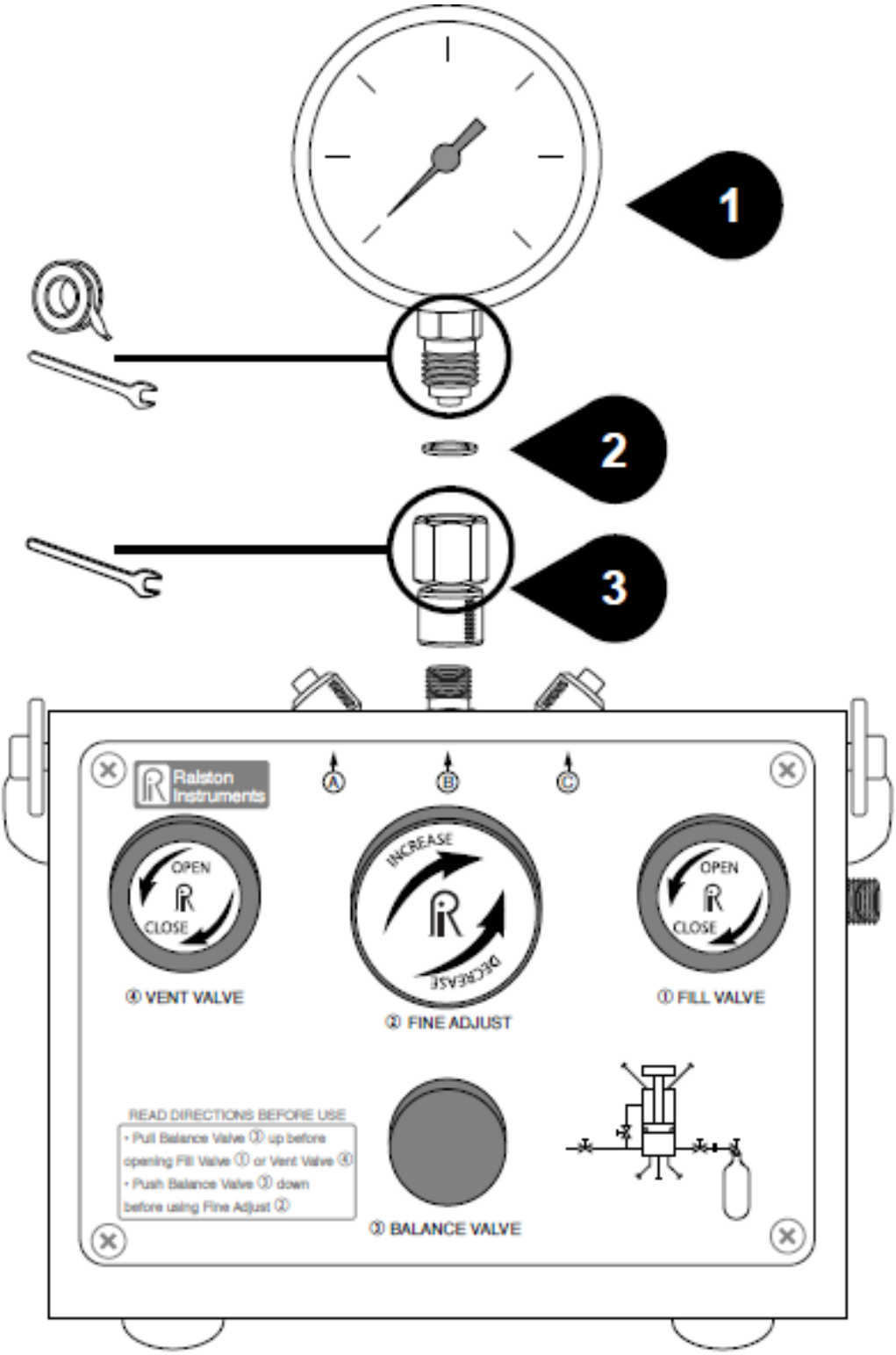
1. Reference Gauge with NPT male connection
2. NPT Female Ralston Quick-test™ Gauge Adapter
3. Ralston Quick-test™ Hose
4. NPT Female Ralston Quick-test™ Adapter


1
2
Ralston Instruments
A
B
C
OPEN
CLOSE
INCREASE
DECREASE
OPEN
CLOSE
④ VENT VALVE
② FINE ADJUST
① FILL VALVE
READ DIRECTIONS BEFORE USE
- Pull Balance Valve ③ up before opening Fill Valve ① or Vent Valve ④
- Push Balance Valve ③ down before using Fine Adjust ②
③ BALANCE VALVE



Male BSPP Reference Gauge

1. Reference Gauge with BSPP male connection
2. BSPP Washer
3. BSPP Female Ralston Quick-test™ Adapter
4. Ralston Quick-test™ Hose
5. BSPP Female (RG) Ralston Quick-test™ Adapter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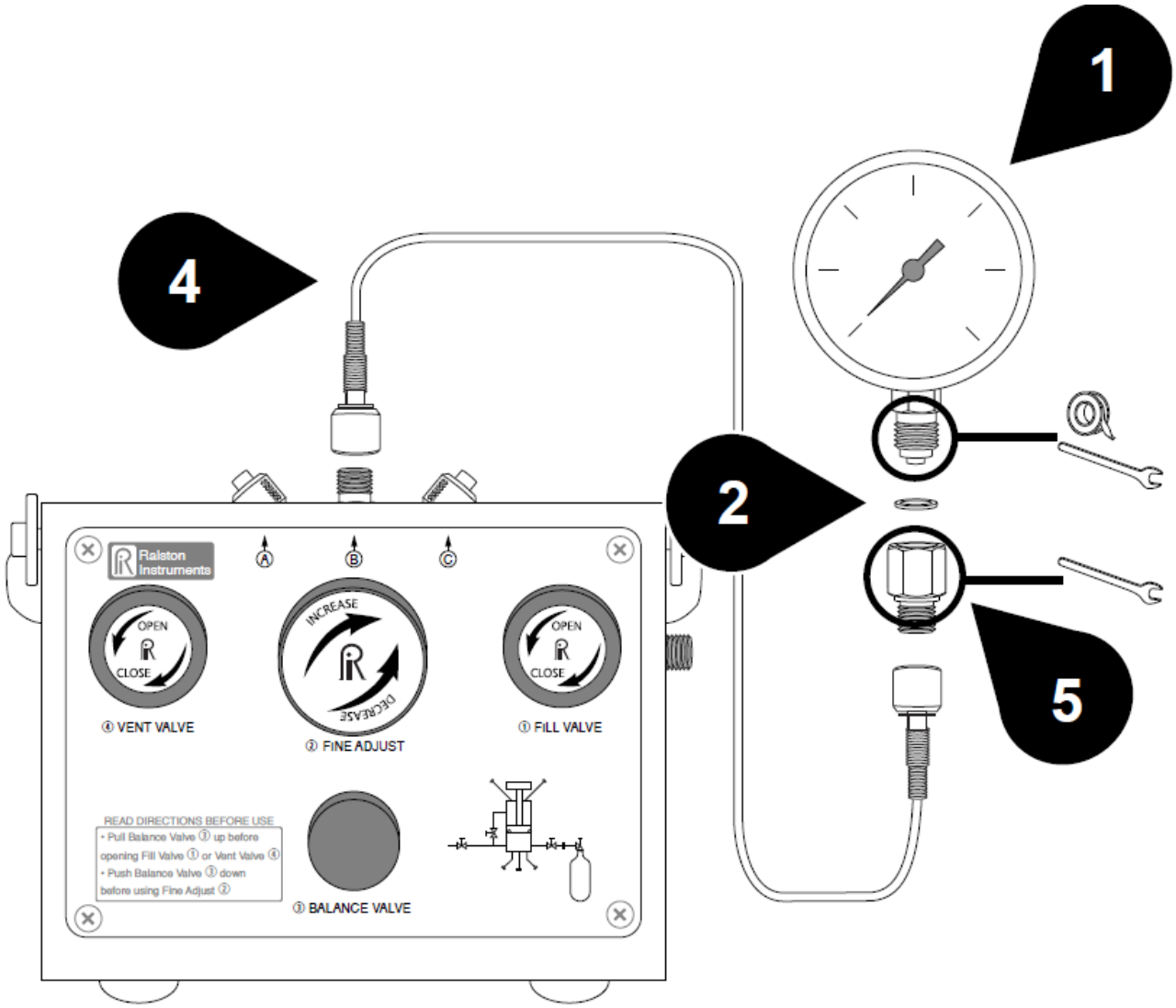
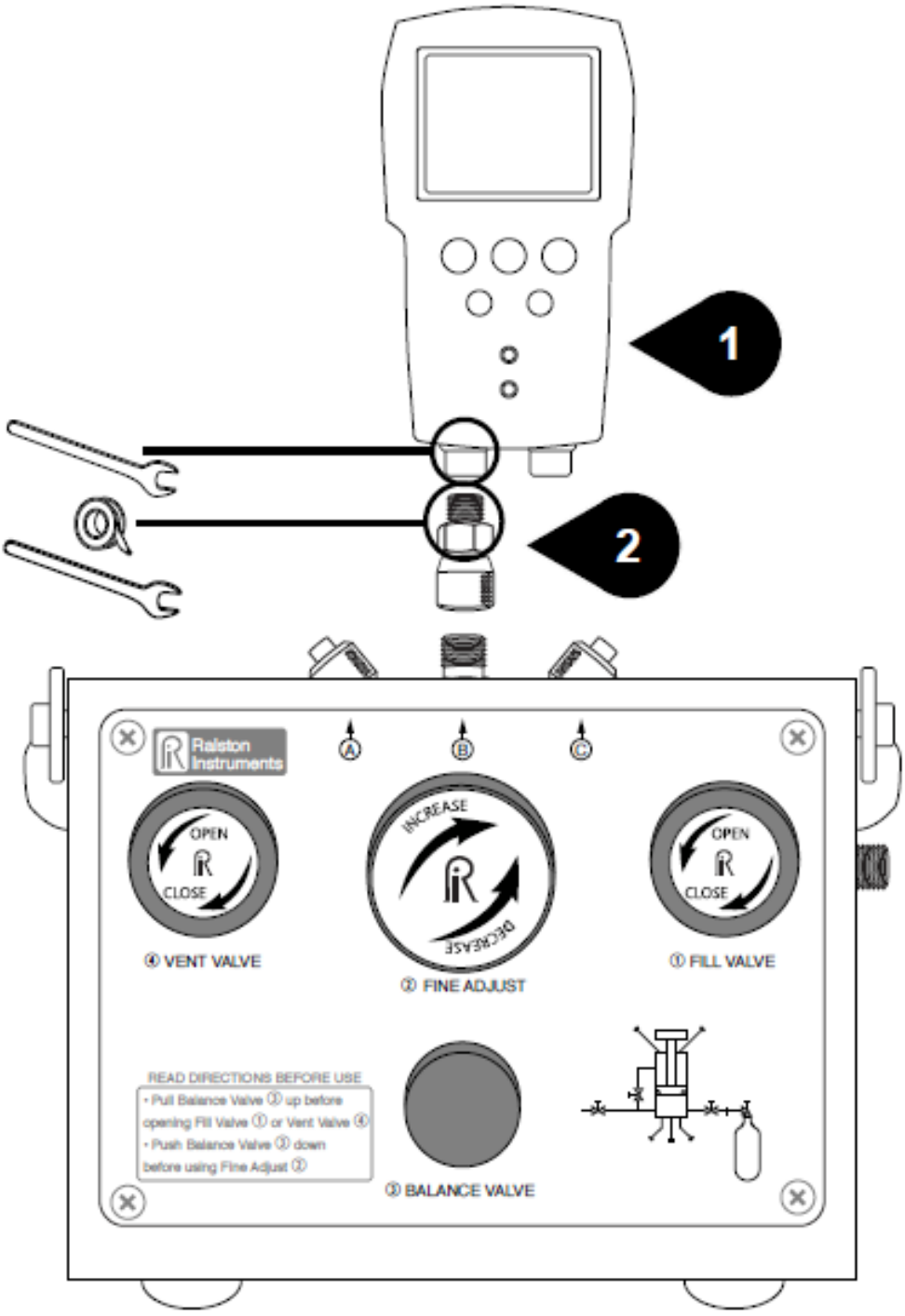


Female NPT Pressure Reference Gauge

1. Reference Gauge with NPT female port
2. NPT Male Ralston Quicktest ™ Gauge Adapter
3. Ralston Quick-test™ Hose
4. NPT Male Ralston Quick-test™ Adapter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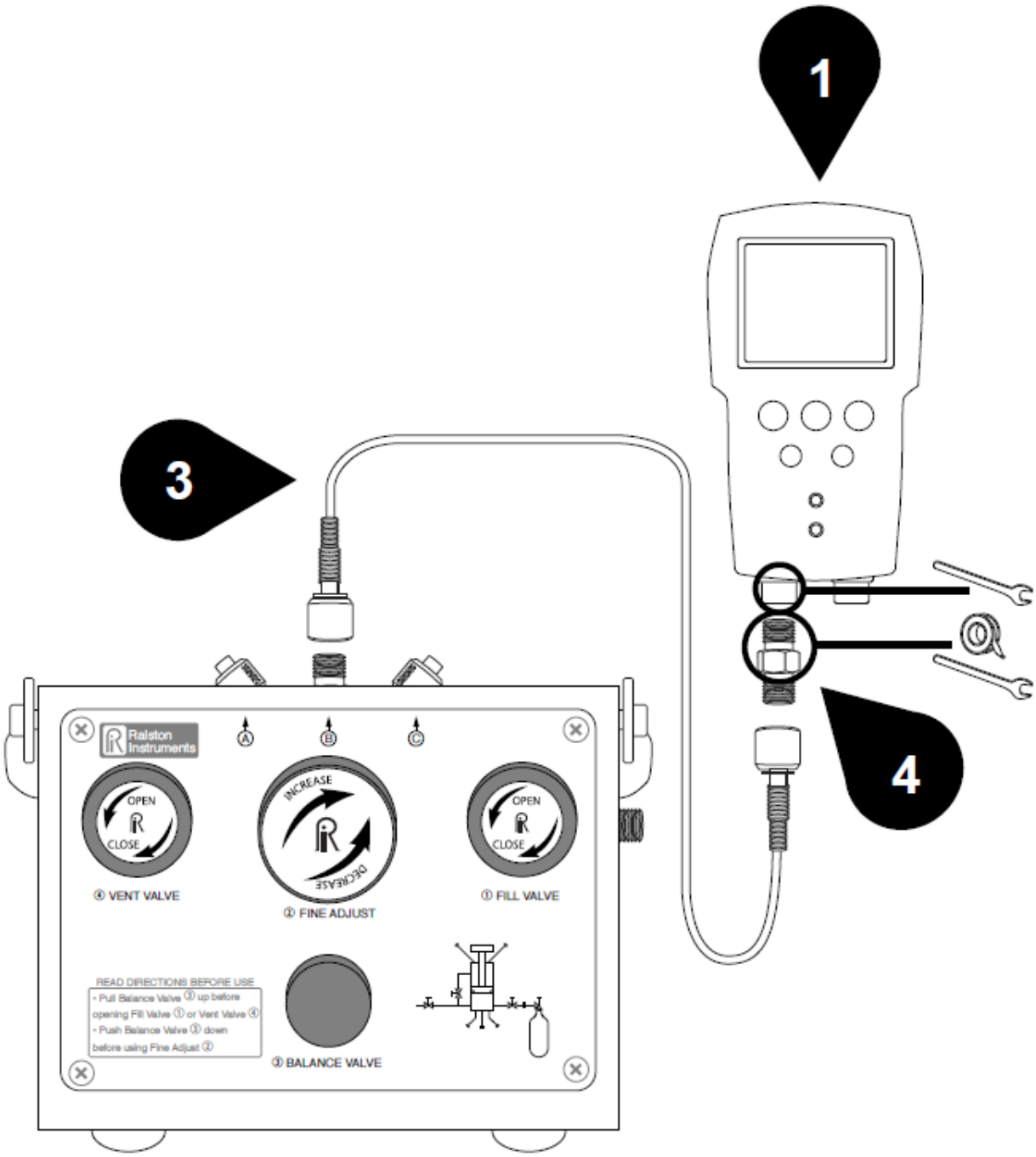
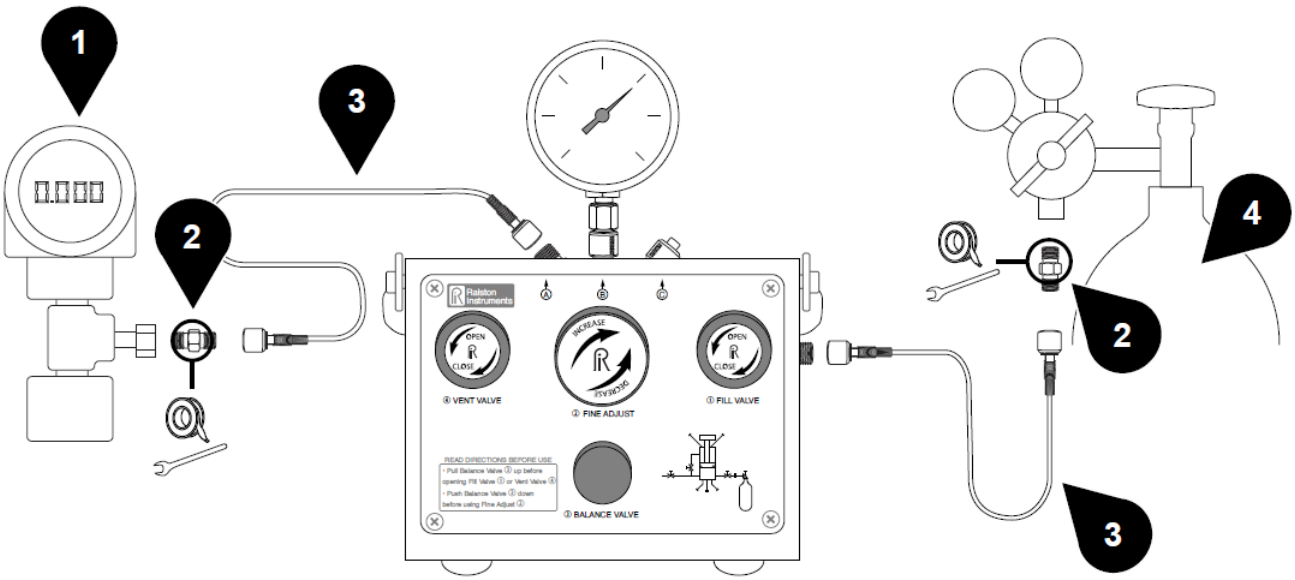


Connecting Device Under Test (DUT) and Pressure Source

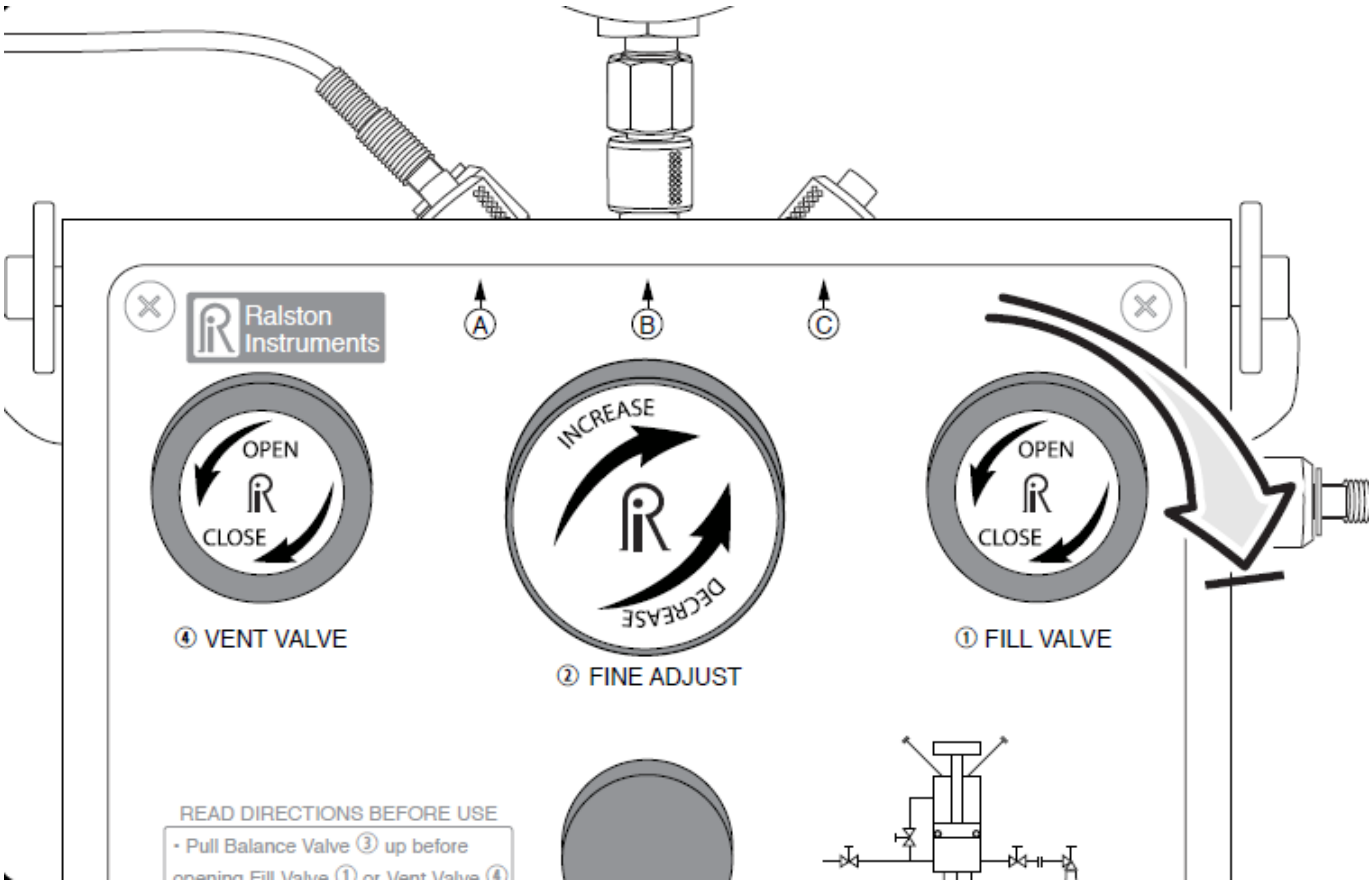
1. Device under test (DUT)
2. Ralston Quick-test™ Adapters
3. Ralston Quick-test™ Hoses
4. Pressure source



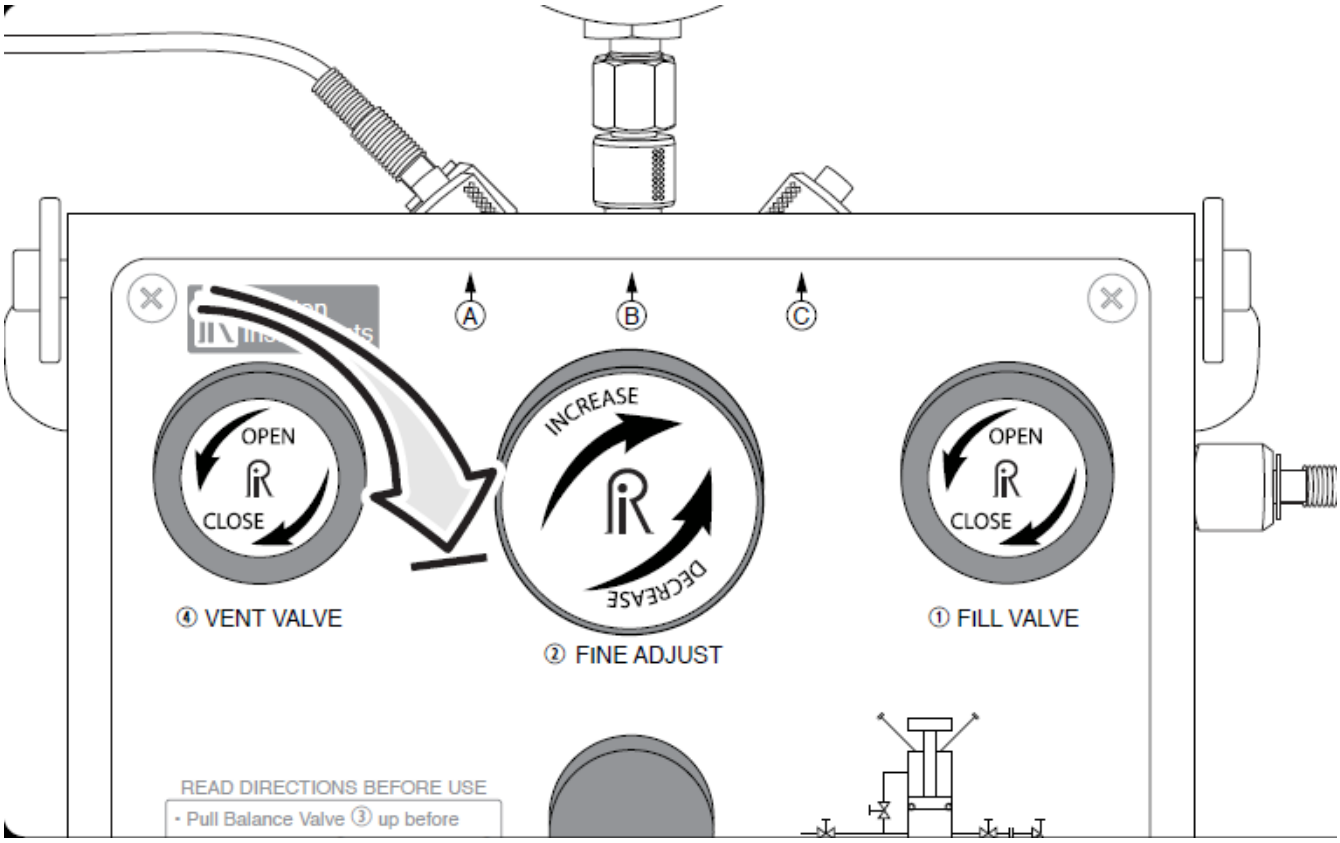
Calibration

Prepare the Volume Controller

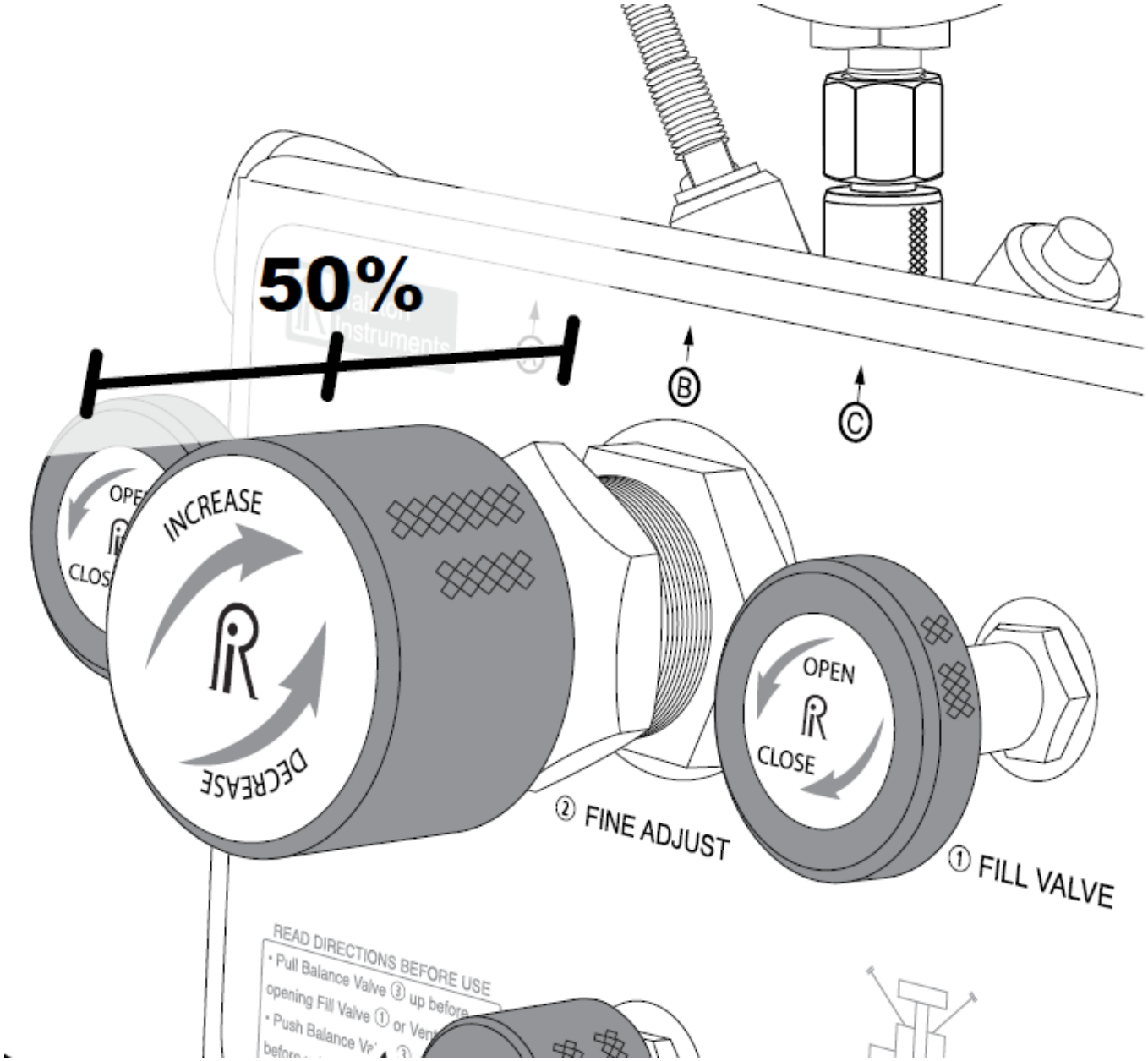
Close Fill Valve.



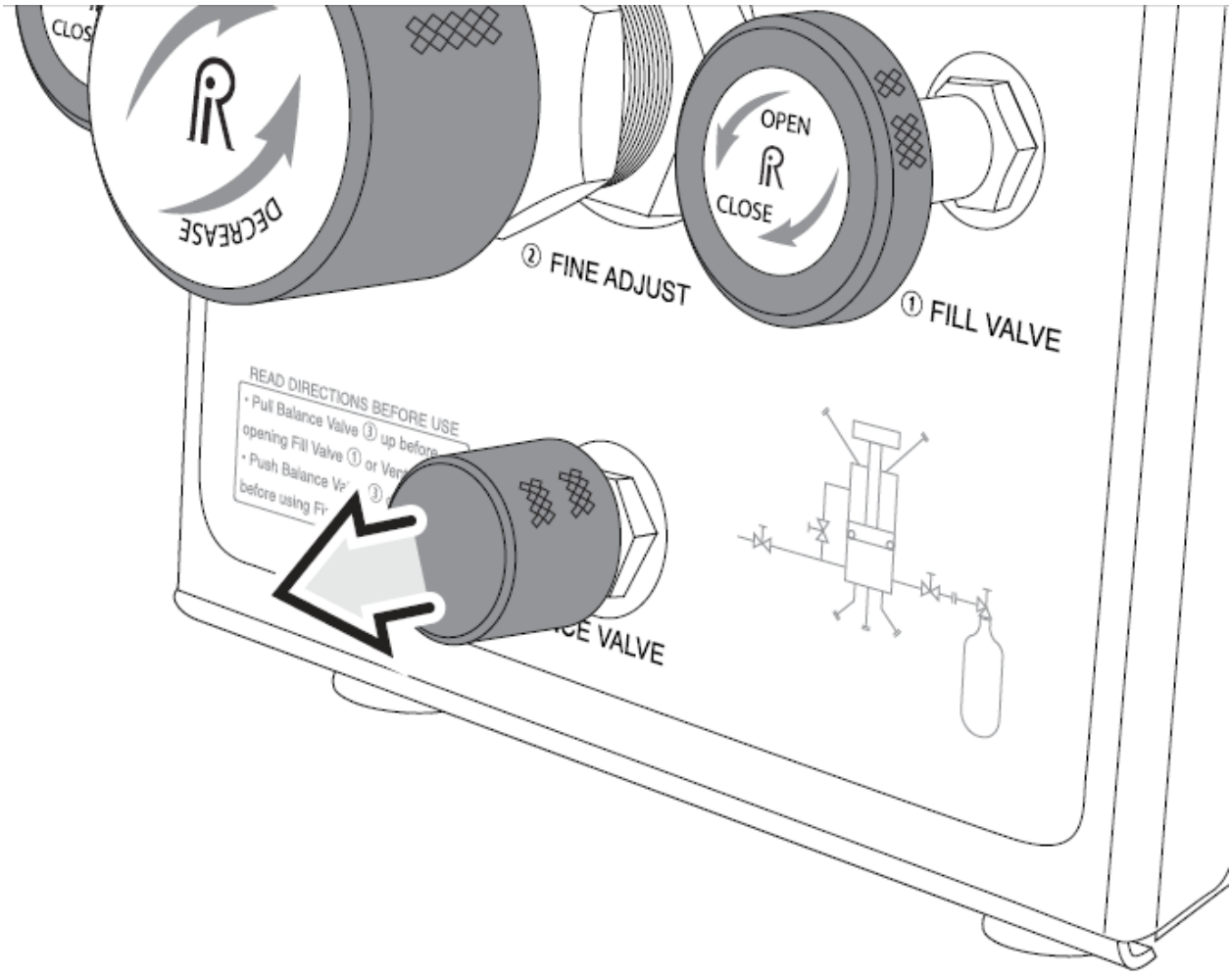
Close Vent Valve



Set Fine Adjust Valve to 50% of travel.

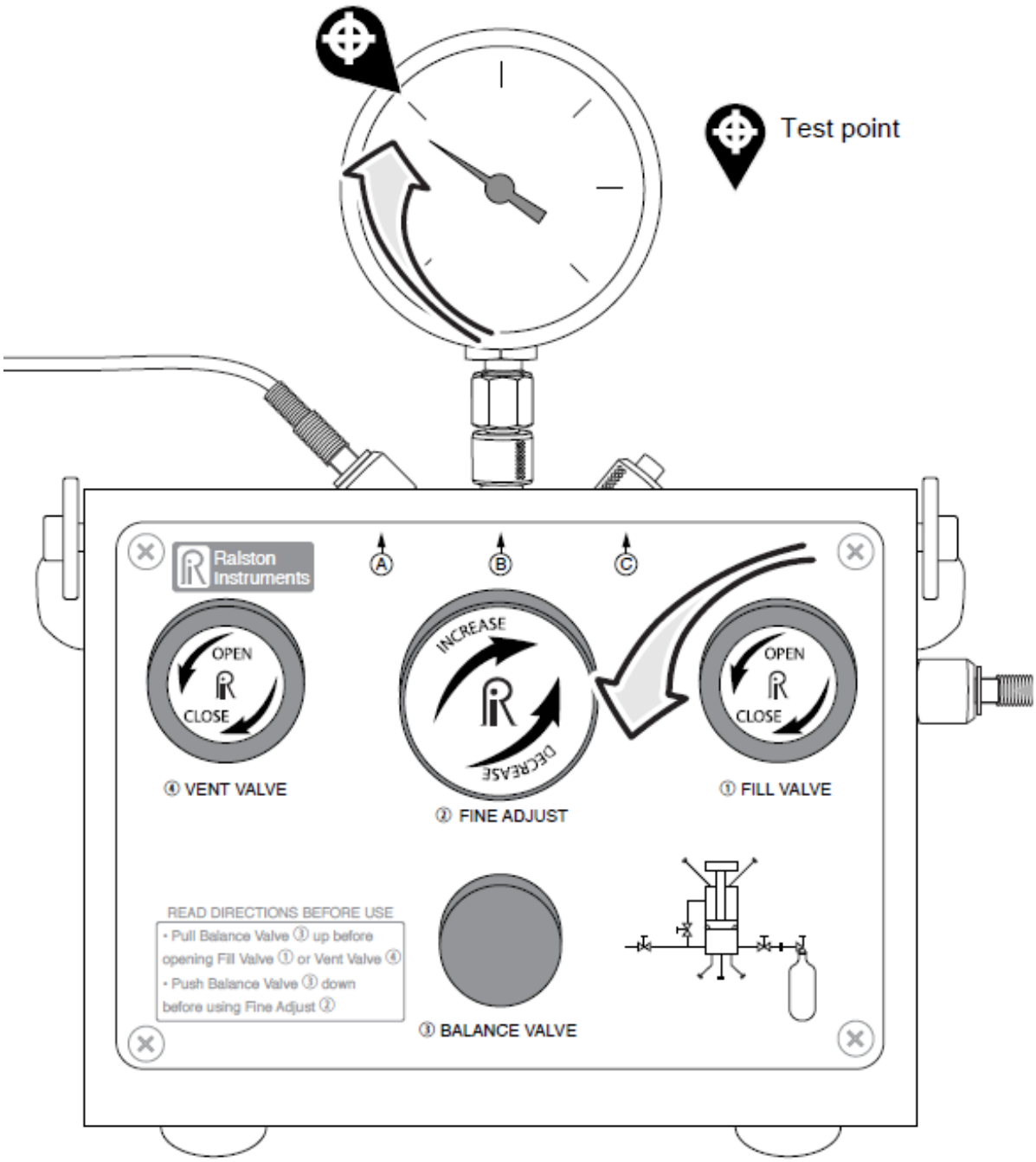


Pull Balance Valve out.

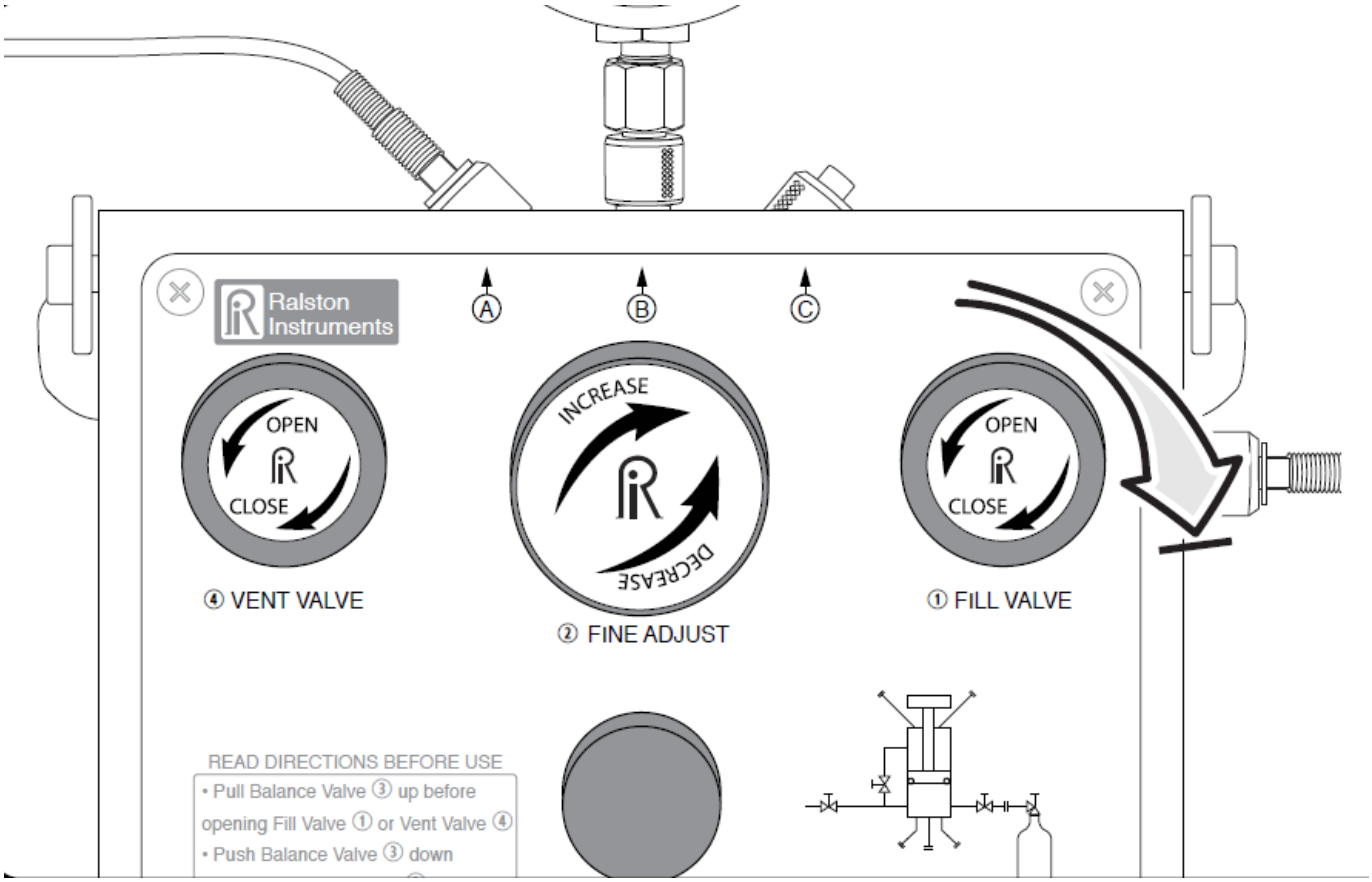


Increase Pressure

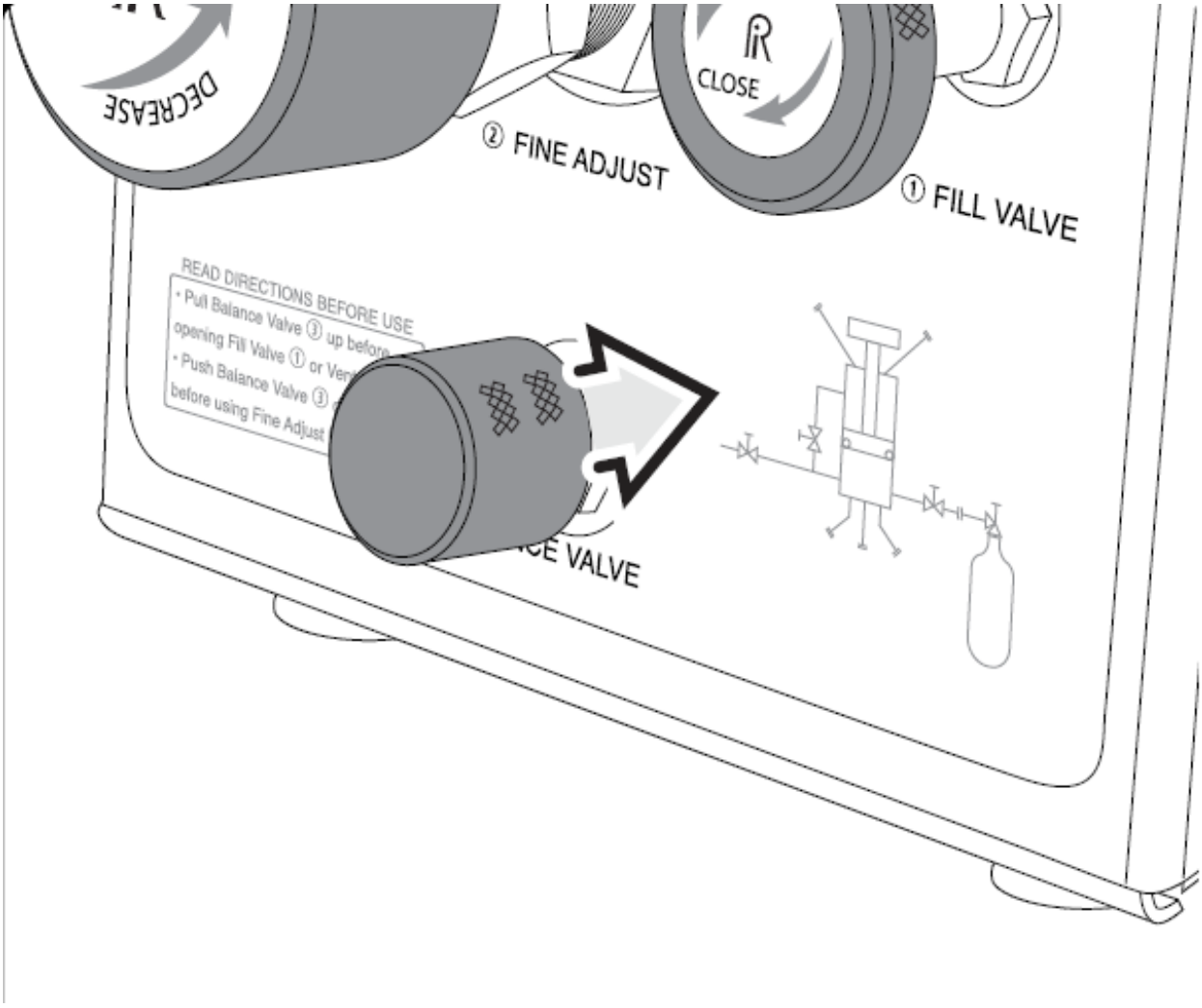
Slowly open Fill Valve to just below first test point.



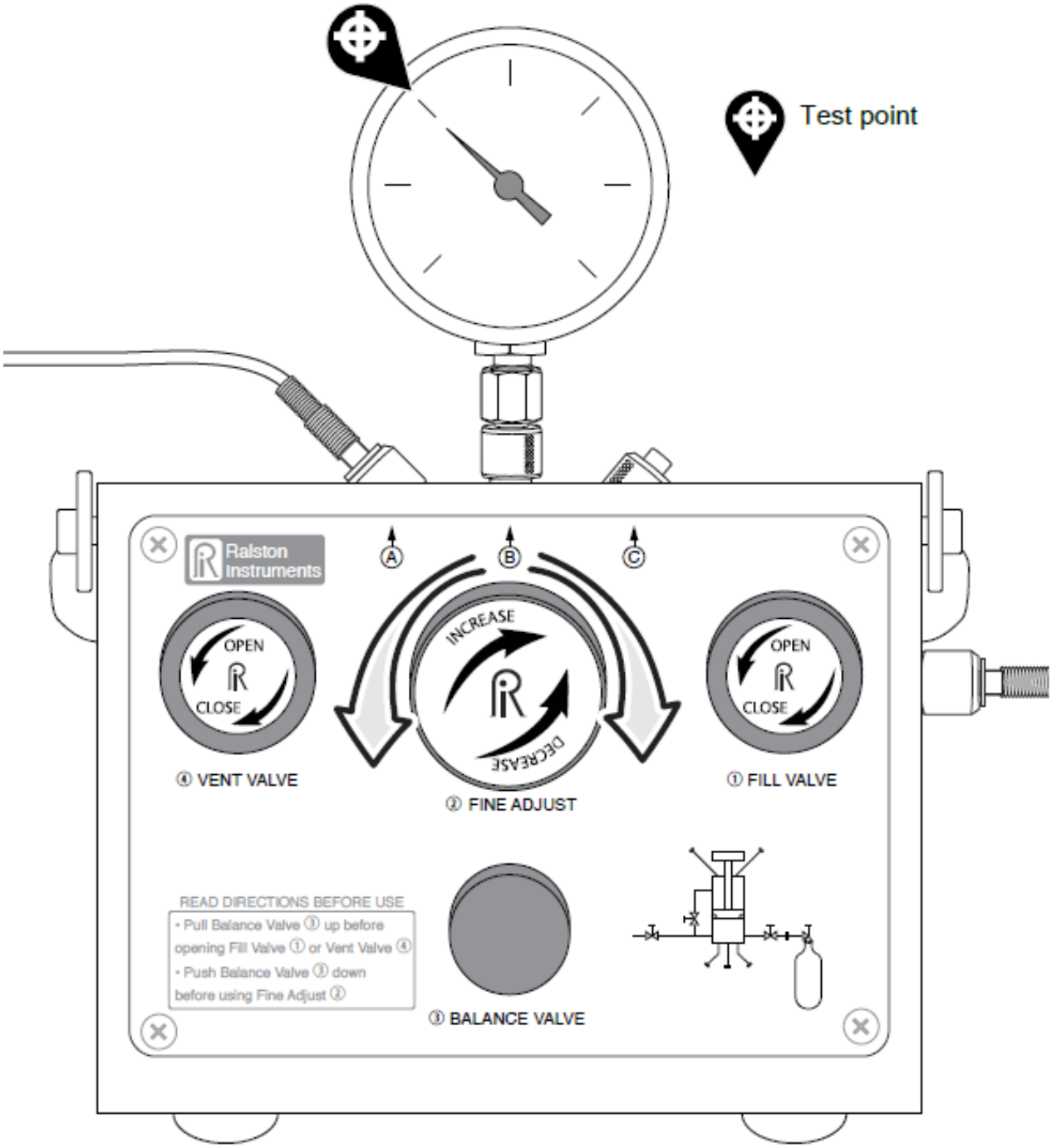
Close Fill Valve.



Push Balance Valve in to close.

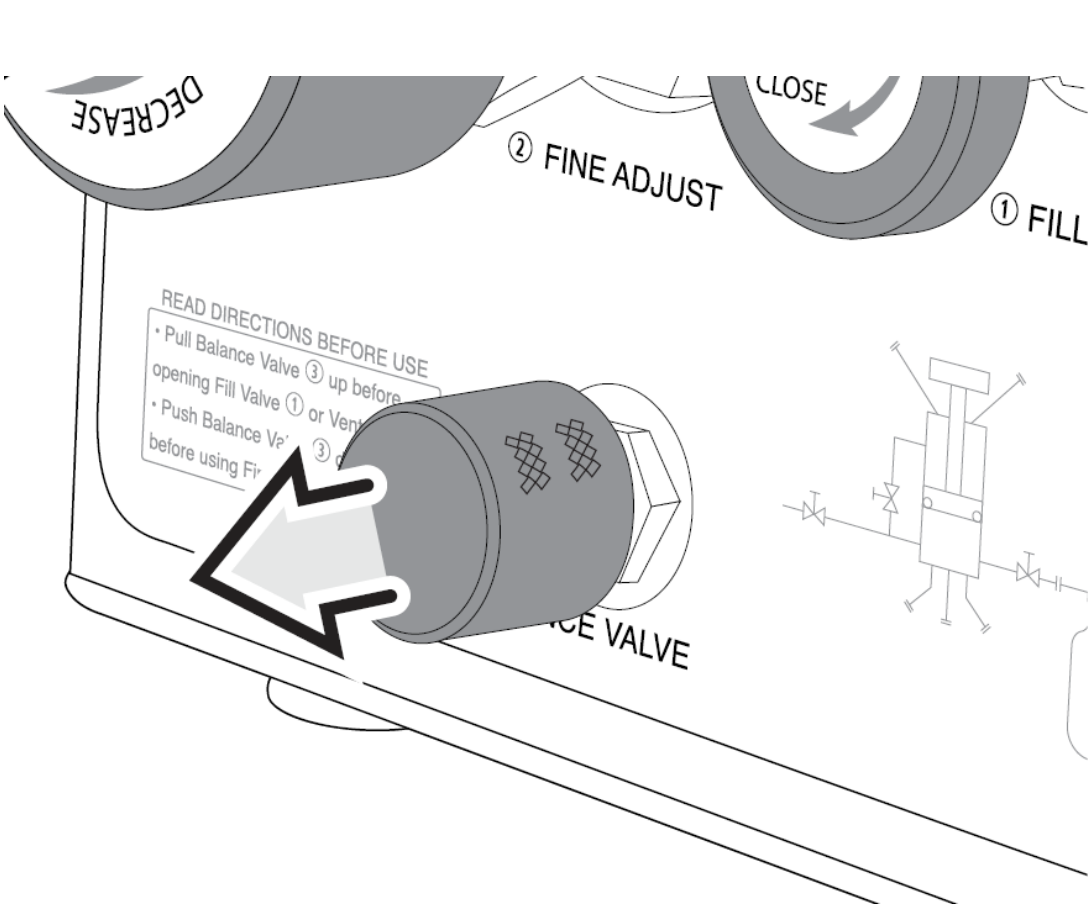


Use Fine Adjust Valve to put reference gauge on exact test point.

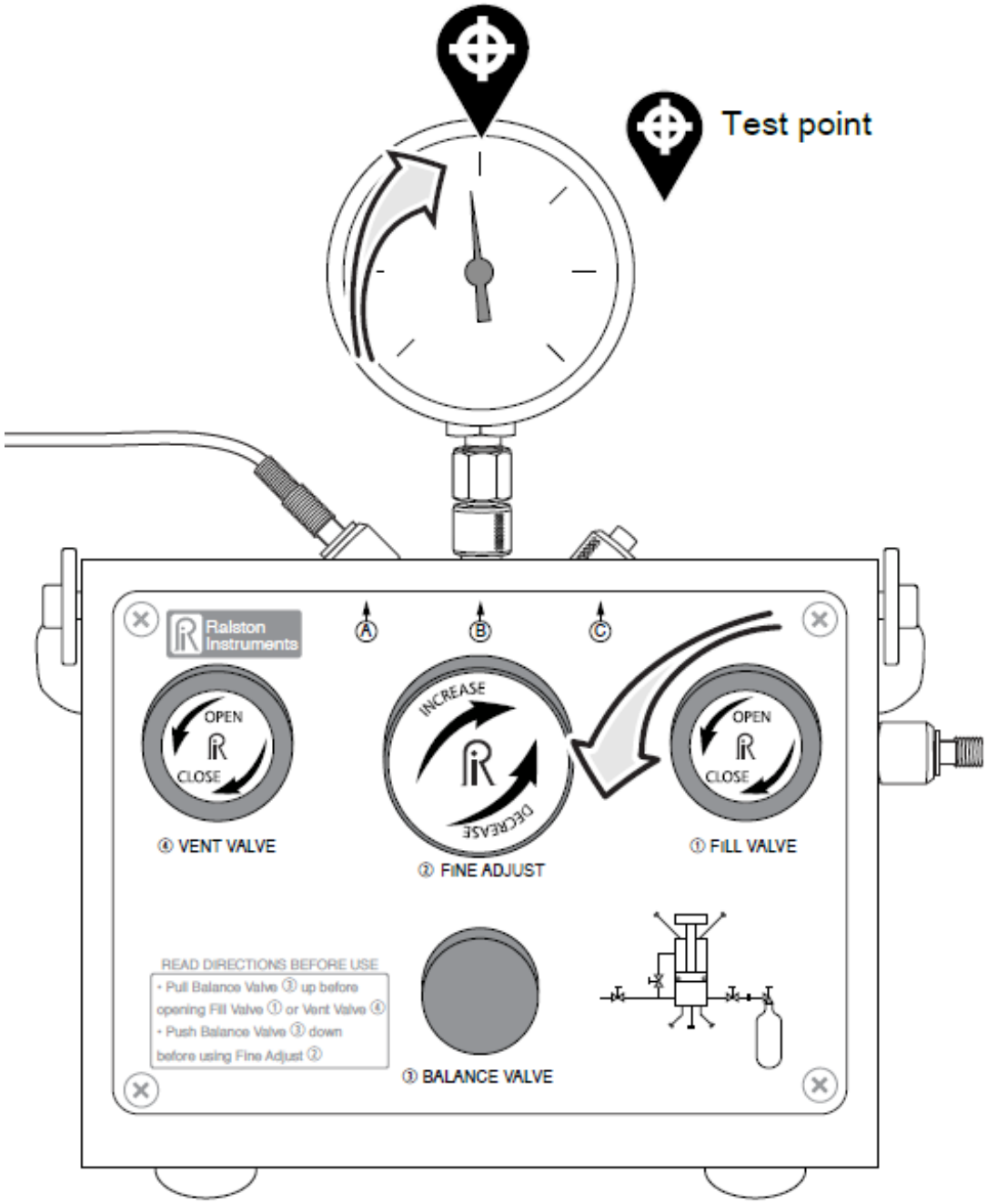


To Continue Moving Up-scale in Pressure

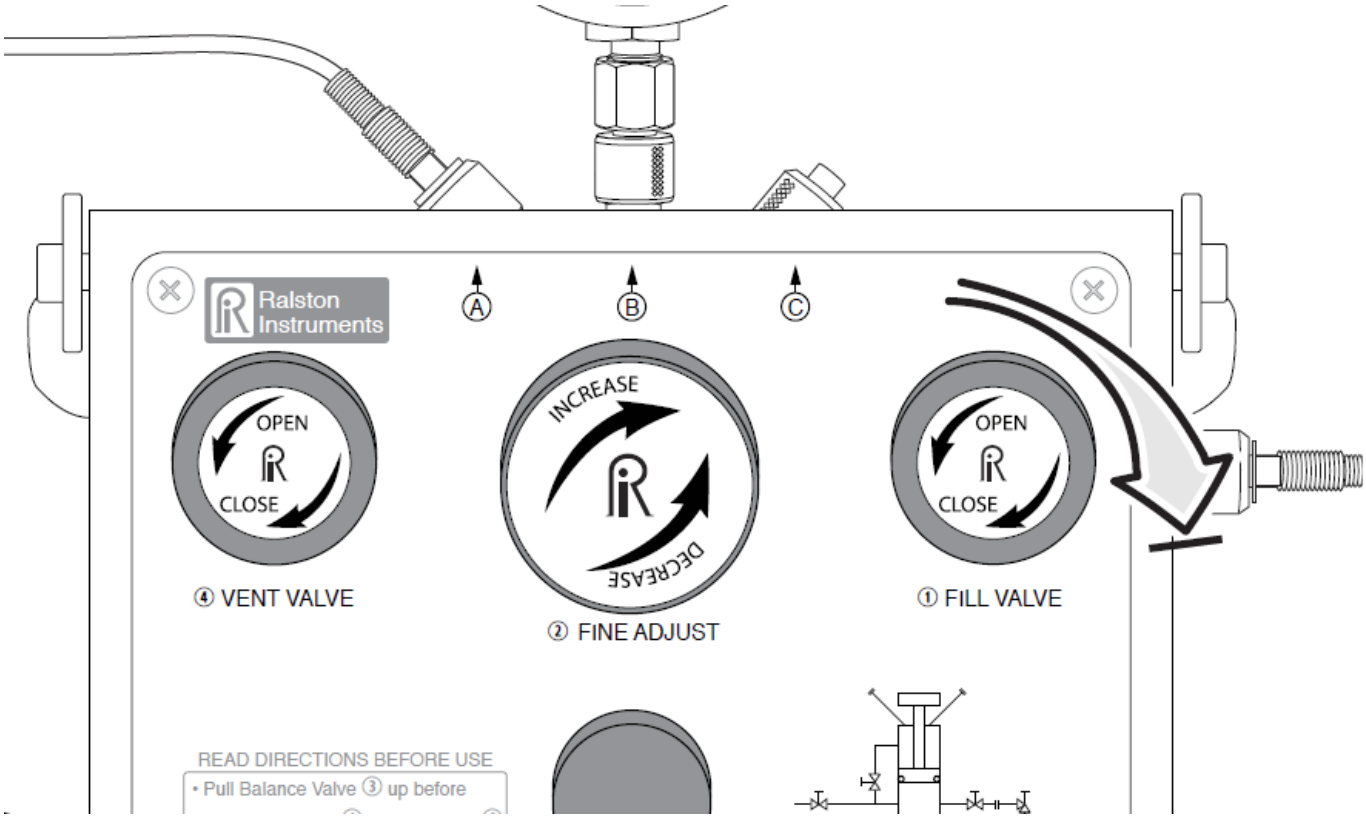
Pull Balance Valve out to open.



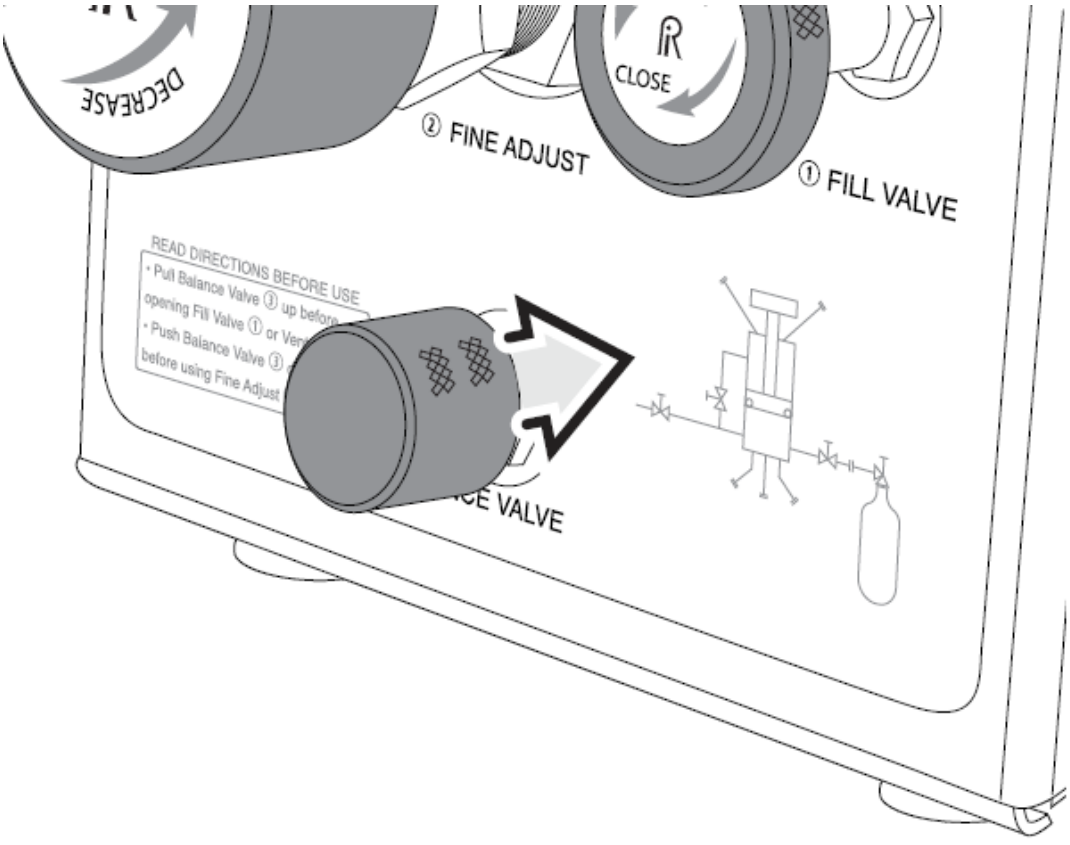
Slowly open Fill Valve to just below next test point.



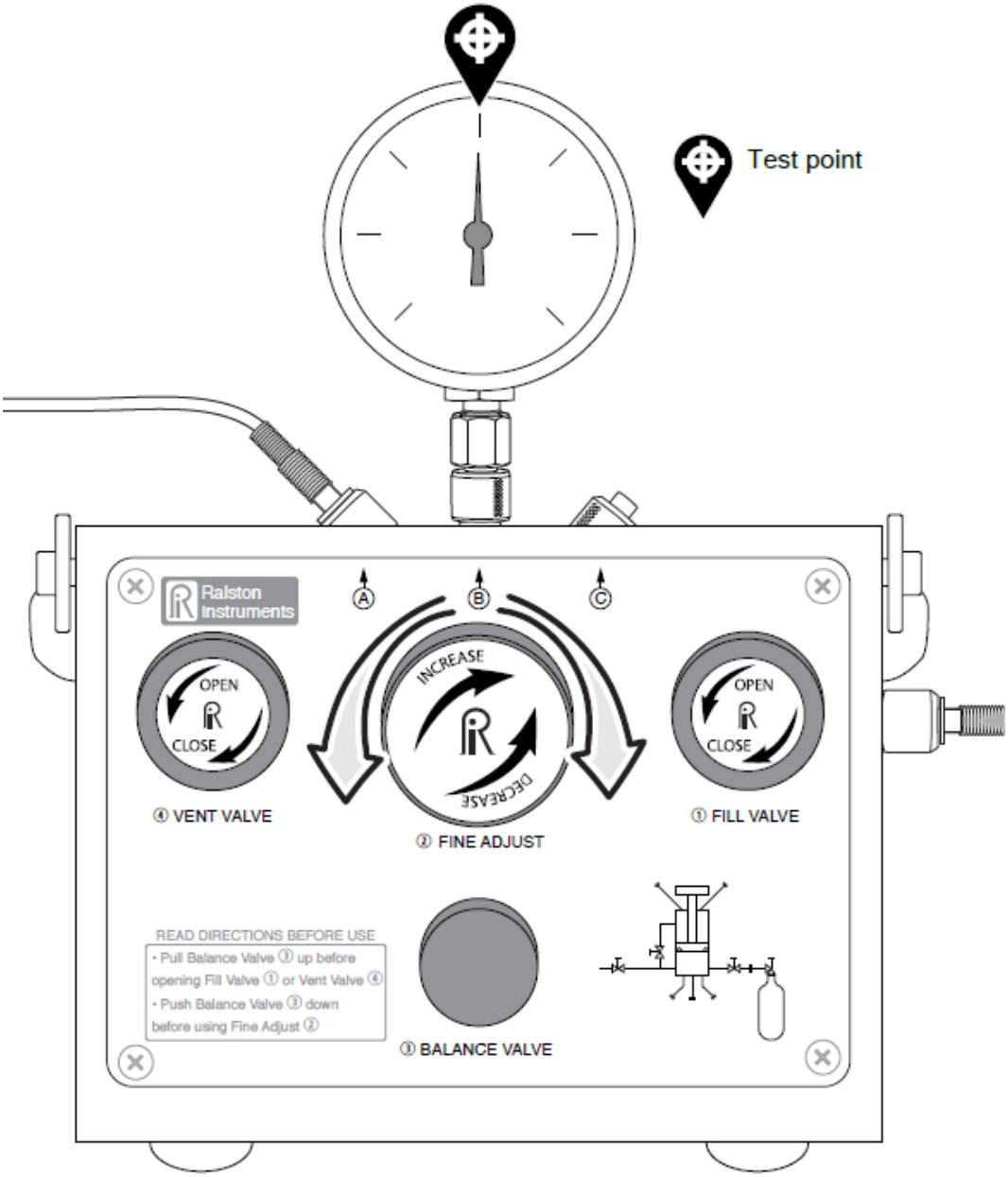
Close Fill Valve.



Push Balance Valve in to close.



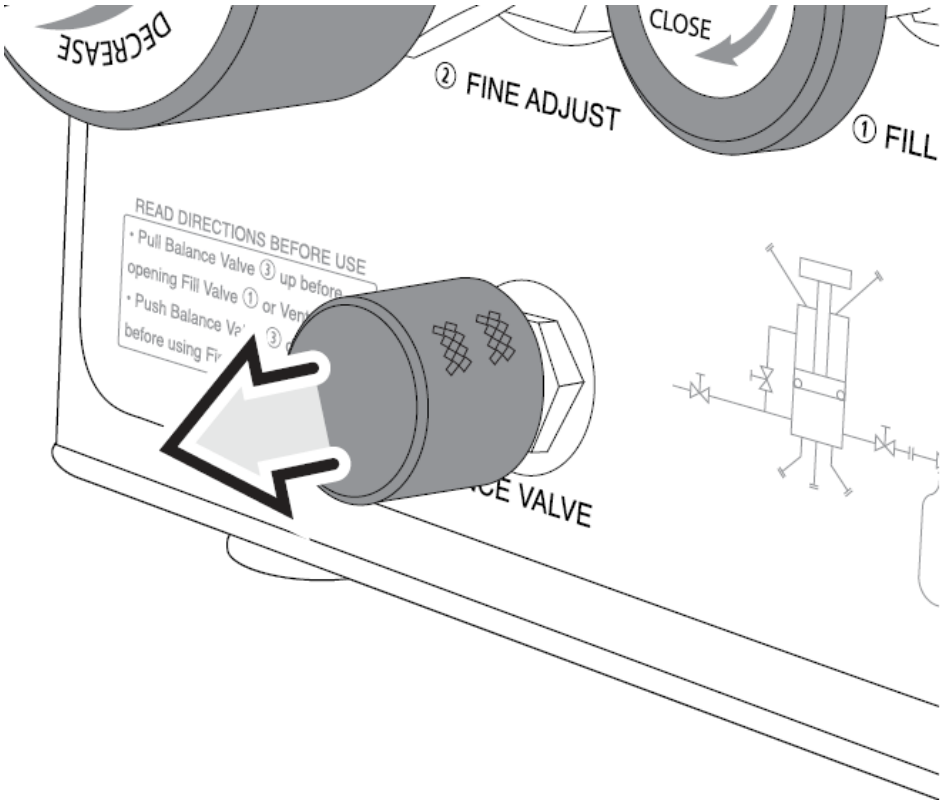
Fine-adjust to exact test point.



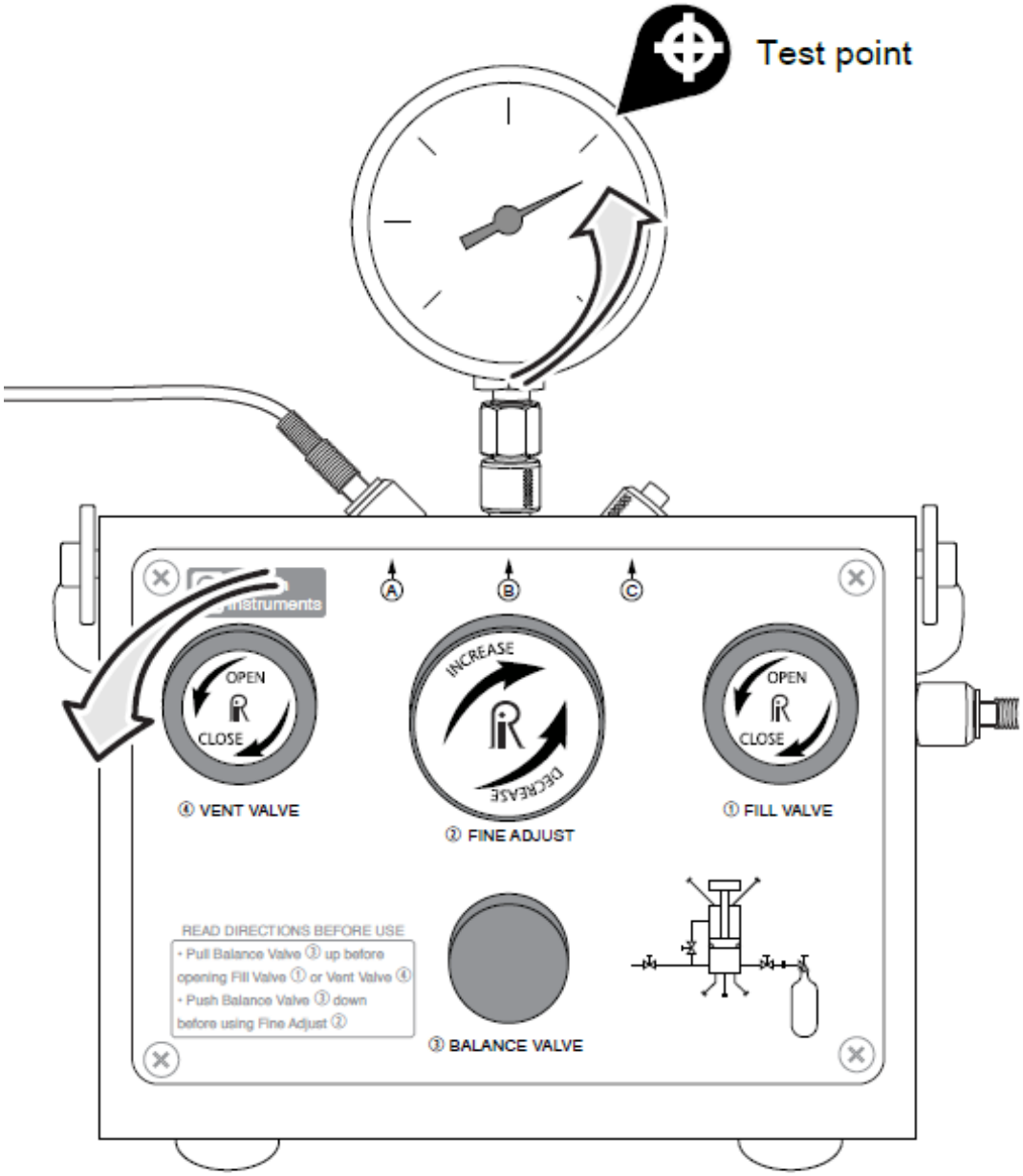
Repeat for each test point up-scale until range is complete.

To Move Down-scale in Pressure

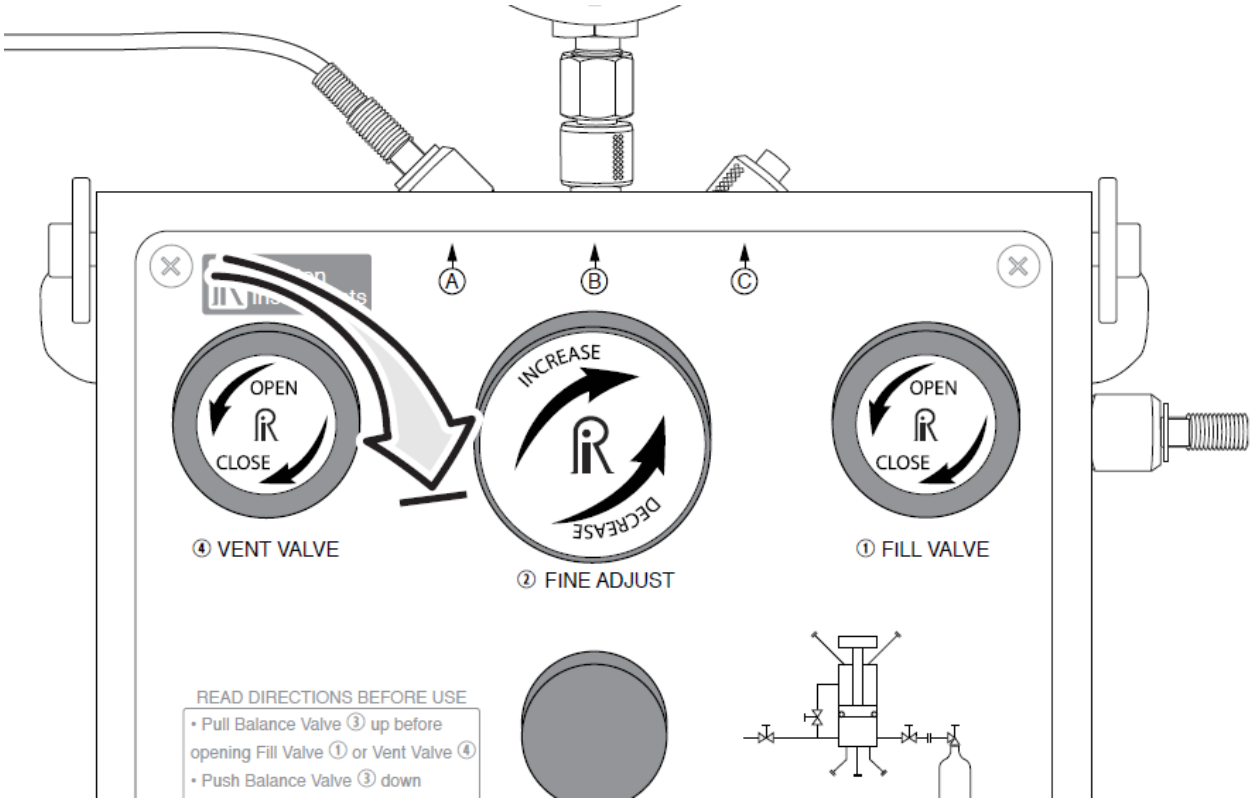
Pull Balance Valve out to open.



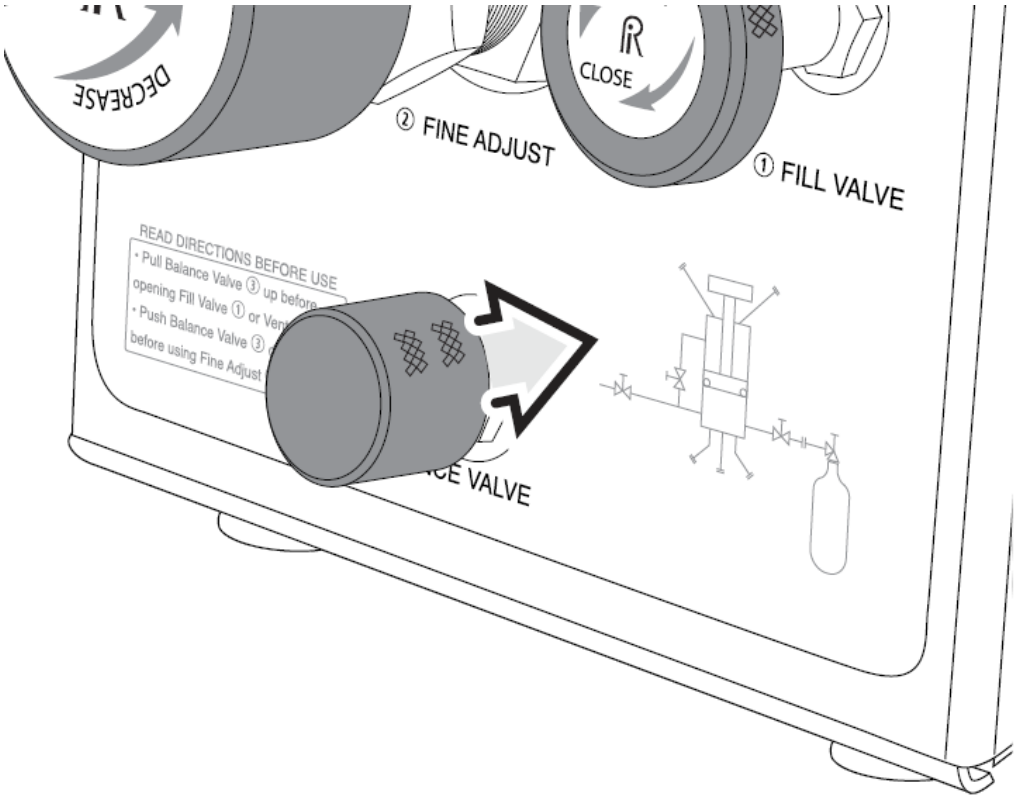
Slowly open Vent Valve to just above next test point.



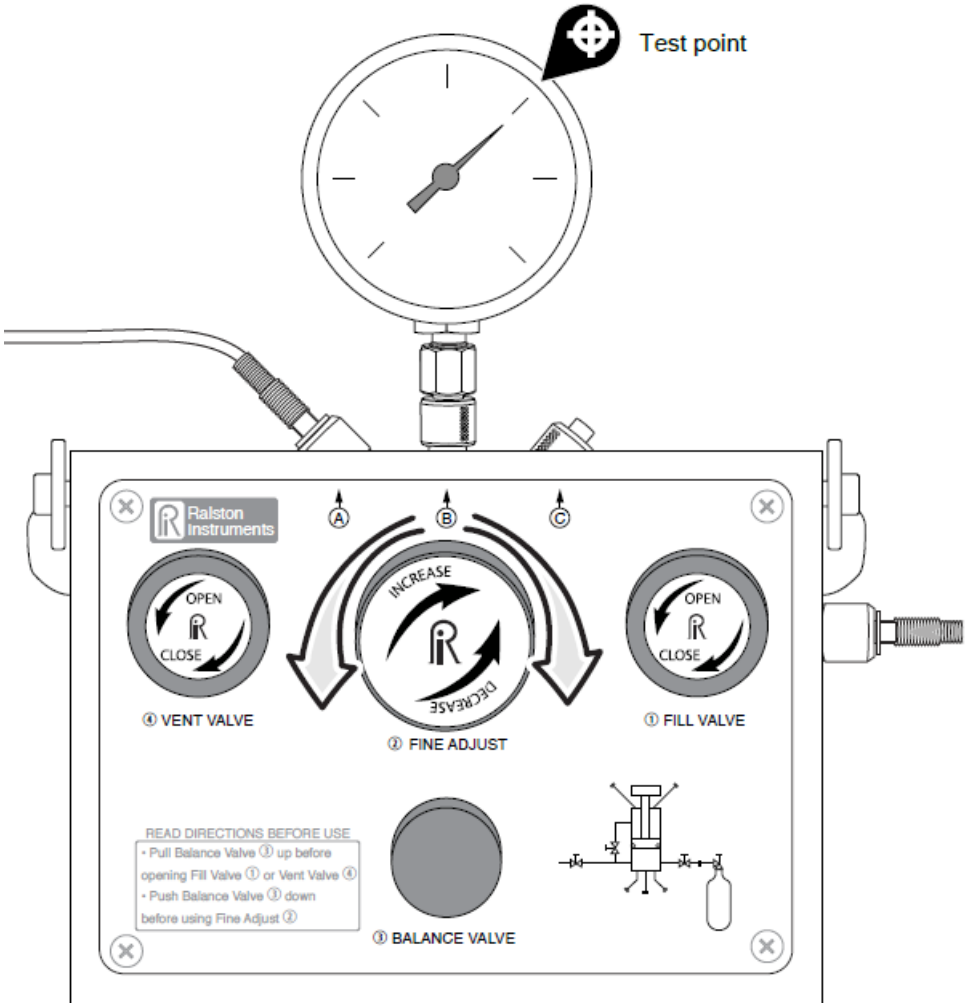
Close Vent Valve.



Push Balance Valve in to close.

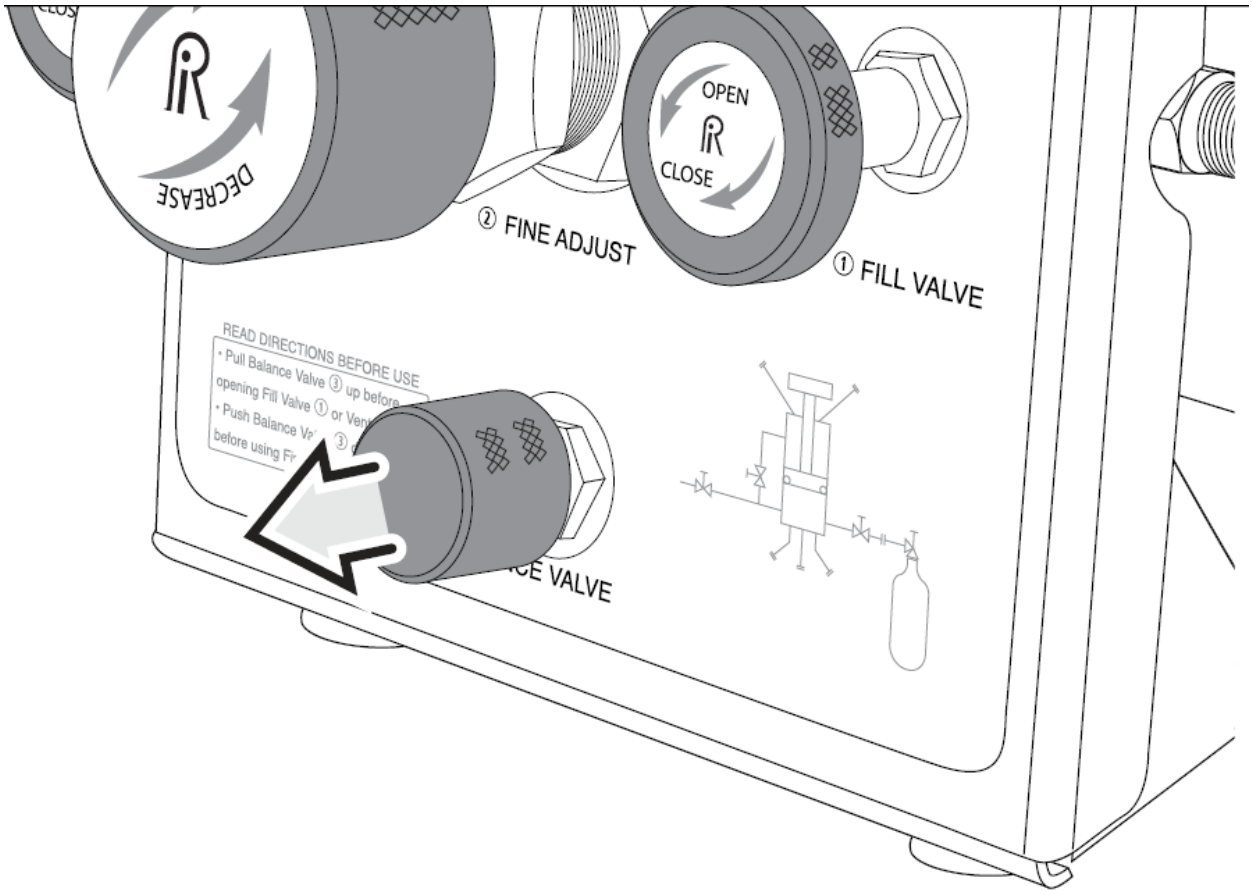


Fine-adjust to exact test point.

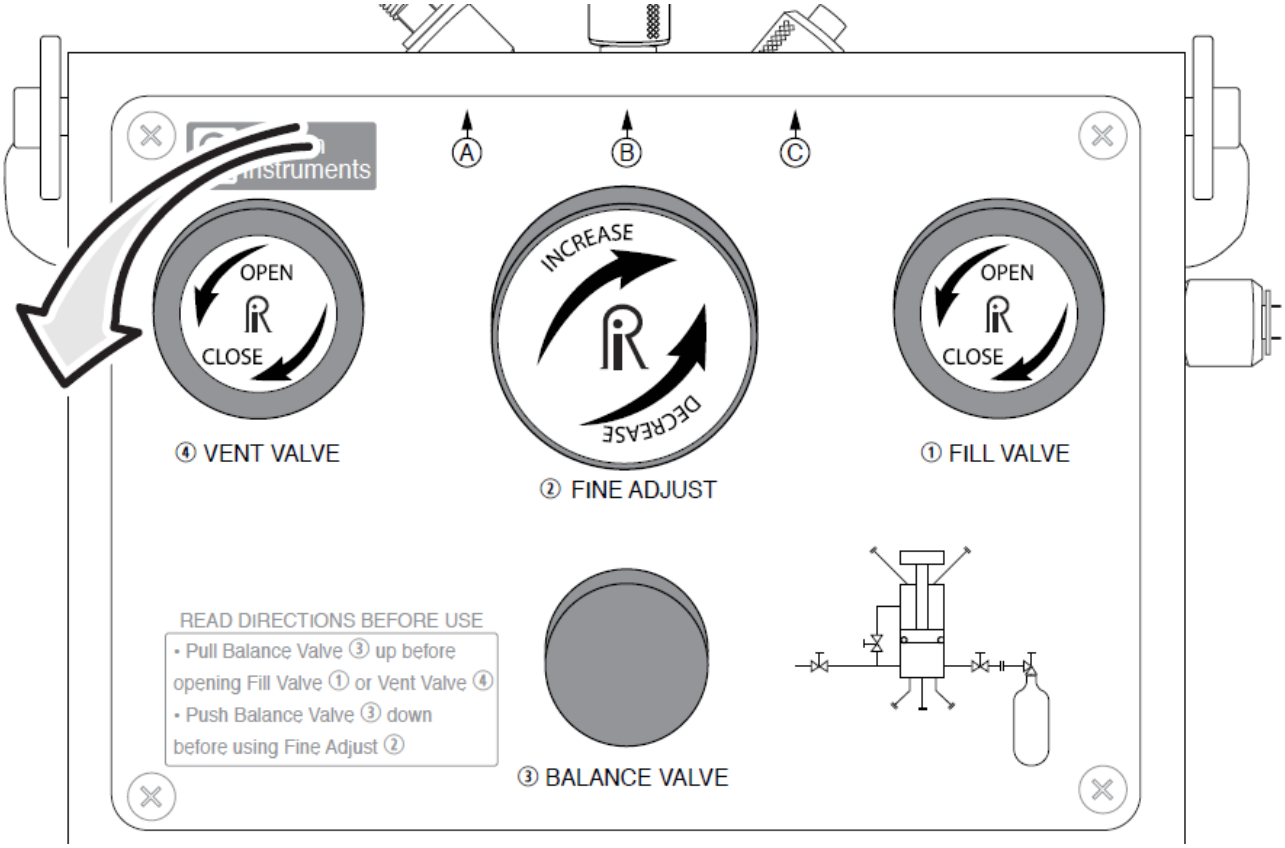


Venting System

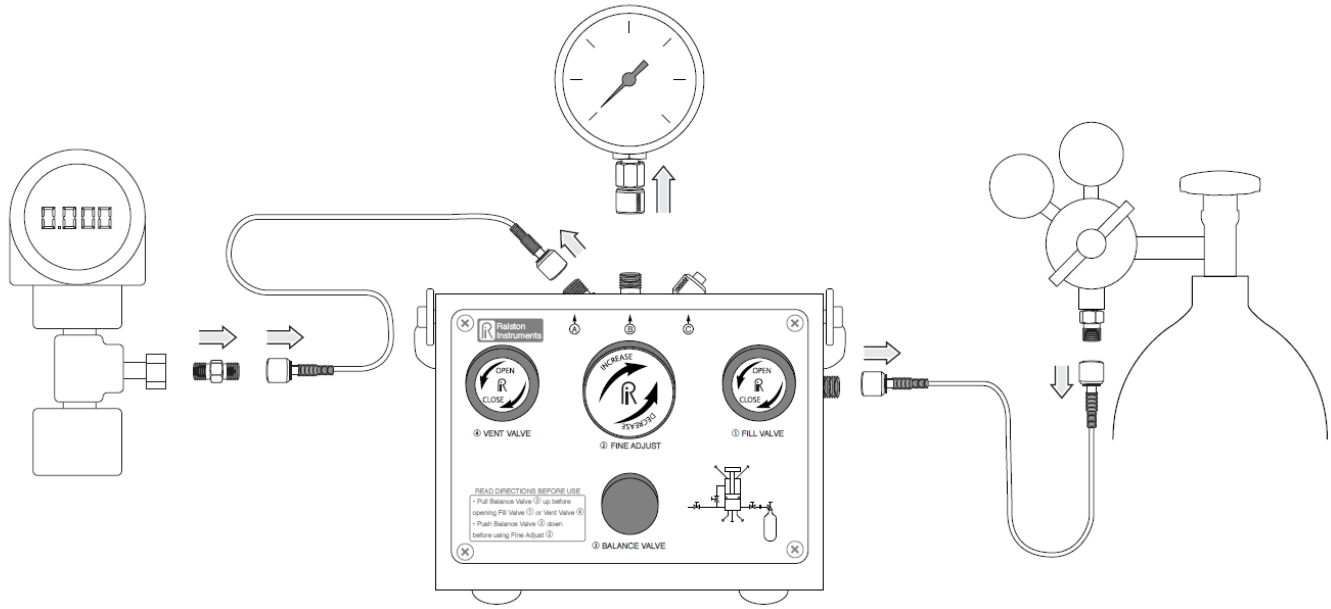
Pull Balance Valve out.



Open the Vent Valve.



Storage and Transport



Disconnect hoses and pressure reference, and store everything.

Maintenance

Maintenance Interval
Every 300 uses or 3 months

Maintenance Procedure

- Lubricate the Ralston Quick-test™ fittings by squirting 2 ml of oil inside the connection.
- Lubricate the balance valve O-rings with silicone lubricant.

Troubleshooting

There is a drop in system pressure when the Volume Controller has been pressurized and the Fill Valve is closed If there is a drop in system pressure when the Volume Controller has been pressurized and the Fill Valve is closed, then there is a leak.

Follow these instructions to locate and repair the leak:

1. Connect the Volume Controller to a Device Under Test (DUT) and connect a Ralston Quick-test™ hose to the Inlet Port.
2. Make sure the process connections are assembled wrench-tight.
3. Close Vent Valve.
4. Open Balance and Fill Valves.
5. Apply pressure to unit.
6. Close Fill Valve.
7. Spray soapy water or leak detection fluid where leaks are suspected or immerse the Volume Controller in water. Be careful not to immerse the pressure gauge or calibrator.
8. Observe where the bubbles are coming from to determine where there is a leak.
9. Remove the leaking part and remove the O-ring.

10. Clean and lubricate the O-ring, and backup ring if applicable.
11. Replace the O-ring, and backup ring if applicable.
12. Reassemble.

Fine Adjust Valve is difficult to operate
If the Fine Adjust Valve is difficult to operate over years of service, then the inside walls of the piston need grease.

1. Remove the Fine Adjust Valve.
2. Apply a thin coat of graphite grease, such as Dow Corning® Moly-kote G-n Metal Assembly Paste (or equivalent) to the inside walls of the piston.
3. Reassemble.

The Volume Controller does not adjust pressure
If the Volume Controller does not adjust pressure, then the O-rings in the Balance Valve and/or Fine Adjust Valve need to be cleaned and lubricated.

1. Remove the Balance Valve assembly from the front of the panel.
2. Clean and lubricate the O-ring.
3. Replace the O-ring.
4. Reassemble.
5. If the Volume Controller still does not adjust pressure, then remove the Fine Adjust Piston.
6. Clean and lubricate the O-ring and backup ring.
7. Reassemble.

The Balance Valve gets stuck in the closed position and cannot be opened
If the Balance Valve gets stuck in the closed position and cannot be opened, then there is gas trapped in the top of the fine adjust piston, because the Volume Controller was vented with the Balance Valve in the closed position.

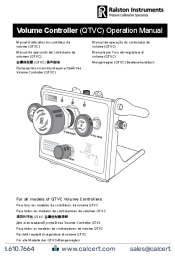
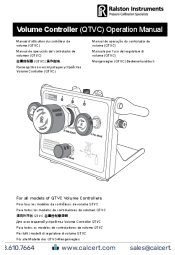
1. Open the Vent Valve 4-5 turns until you hear gas escaping from the top of the fine adjust piston. It will take several turns as there is a secondary seal in the Vent Valve that must be opened.
   If the issue was not resolved by these troubleshooting instructions, then please contact support listed on page 38.

Volume Controller (QTVC) Operation Manual

For all models of QTVC Volume Controllers

Website: www.calcert.com
Email: sales@calcert.com

Documents / Resources

	[Ralston Instruments QTVC Volume Controller] [pdf] Instruction Manual QTVC Volume Controller, QTVC, Volume Controller, Controller
	[Ralston Instruments QTVC Volume Controller] [pdf] Instruction Manual QTVC Volume Controller, QTVC, Volume Controller, Controller

References

- Quick Test Point Adapters, Valves and Fittings
- Calcert