Installation, Operation, and Maintenance Manual

Welker® Hydrostatic Testing Panel

Model

HYPAN-001

Welker® Internal Model

Drawing No.: HYPAN001[ ]

Manual No.: IOM-155

The information in this manual has been carefully checked for accuracy and is intended to be used as a guide for the installation, operation, and maintenance of the Welker® equipment described above. Correct operating and/or installation techniques, however, are the responsibility of the end user. Welker® reserves the right to make changes to this and all products in order to improve performance and reliability.

This manual is intended to be used as a basic installation and operation guide for the Welker® Hydrostatic Testing Panel, *HYPAN-001*. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is given in the Appendix section of this manual.

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Section 1:

SPECIFICATIONS

1.1 INTRODUCTION

We appreciate your business and your choice of Welker® products. The installation, operation, and maintenance liability for this product becomes that of the purchaser at the time of receipt. Reading the applicable *Installation, Operation, and Maintenance (IOM) Manual* prior to installation and operation of this equipment is required for a full understanding of its application and performance prior to use.*

If you have any questions, please call 1-800-776-7267 (USA) or 1-281-491-2331.

Notes, Cautions, and Warnings



Notes emphasize information or set it off from the surrounding text.



Caution messages appear before procedures that, if not observed, could result in damage to equipment.



Warnings are alerts to a specific procedure or practice that, if not followed correctly, could cause personal injury.

*The following procedures have been written for use with standard Welker® parts and equipment. Assemblies that have been modified may have additional requirements and specifications that are not listed in this manual.

1.2 DESCRIPTION OF PRODUCT

The Welker® Hydrostatic Testing Panel is a portable pneumatic and hydraulic supply station with calibrated pressure gauges designed to simplify the testing of manufactured equipment. The testing panel is mounted on a rolling skid for ease of movement. The panel has many functions, which may be used independently or simultaneously; functions include shop air supply, regulated air supply, 3- and 4-way pulse output air supply, regulated nitrogen, water supply, hydrostatic testing water supply, and a chart recorder connection. Each function may be operated using simple valve selections. All controls, instruments, and connections are panel-mounted for ease of access and viewing.

1.3 SPECIFICATIONS



The specifications listed in this section are generalized for this equipment. Welker® can modify the equipment according to your company's needs. However, **please note that the specifications may vary depending on the customization of your product.**

Table 1: System Specifications	
Panel Supply	Air: 160 psi MAOP Nitrogen: 2500 psi MAOP Water: 100 psi MAOP Electricity: 120 VAC
Panel Output	Air: Equal to Supply Input, up to 160 psi Regulated Air: 0-125 psi Pulsed Air: 0-125 psi Regulated Nitrogen: 0-2000 psi Hydrostatic Water: 0-15,000 psi
Capacity	Air: 50 foot hose on reel Nitrogen: 100cf storage bottle Water: 50 foot hose on reel
Connections	Air: Male Quick Connect Input, Female Quick Connect Output Pulse and Regulated Air: ¼" FNPT Nitrogen: ¼" FNPT Input to Fill, JIC Output Water: ¾" Standard Female Water Hose Input, JIC Output Electrical: 3-pronged GFI standard Chart Recorder: ¼" FNPT

Table 2: Safety Features
RV-1 Welker® Relief on Air System
15,000 psi Relief on Hydrostatic Pump
600 psi Nupro® Gauge Protector Relief
1000 psi Nupro® Gauge Protector Relief
3000 psi Nupro® Gauge Protector Relief
5000 psi Nupro® Gauge Protector Relief
Ground Fault Interrupter (GFI) on Electrical Connection

1.4 System Diagrams

Figure 1: System Diagram

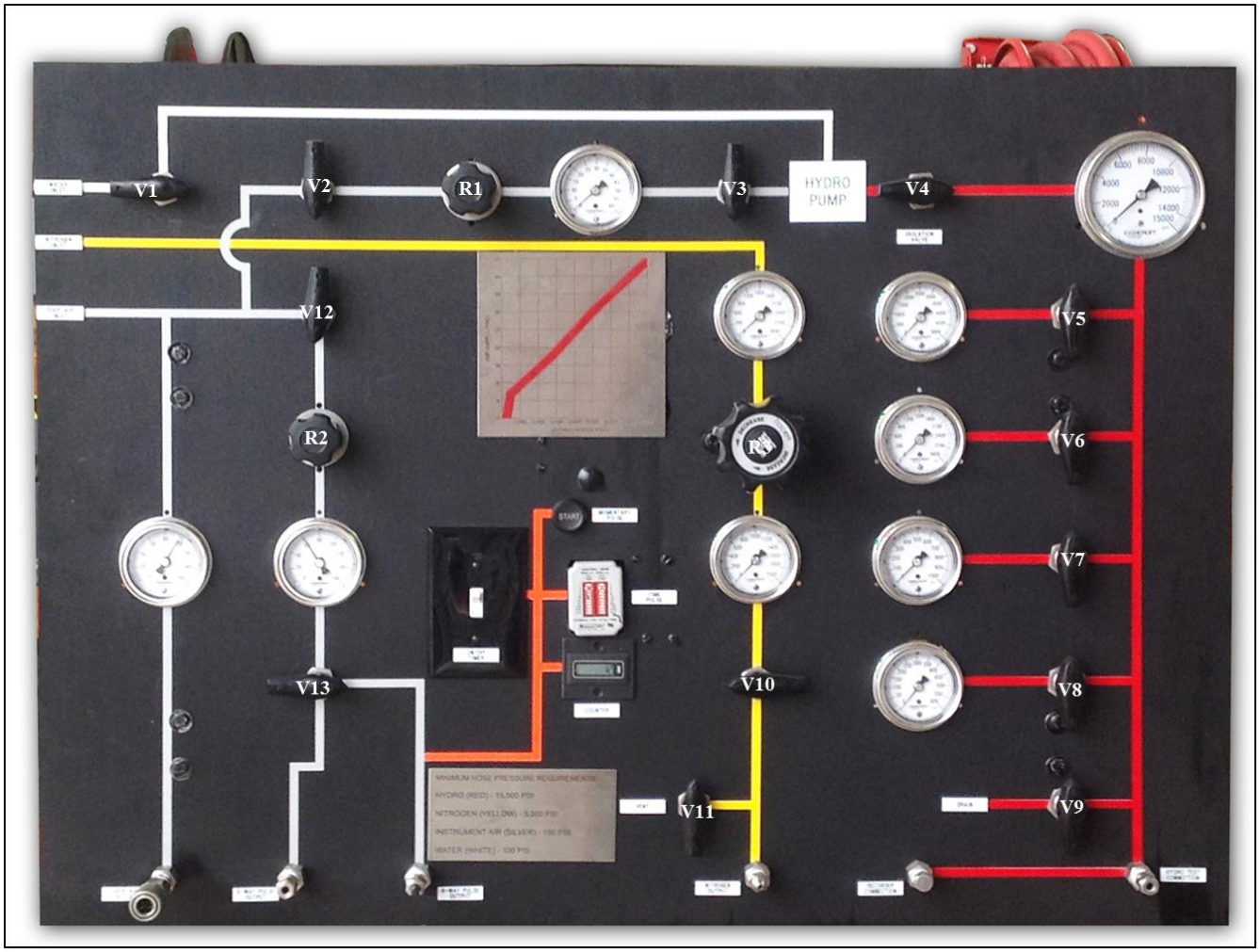
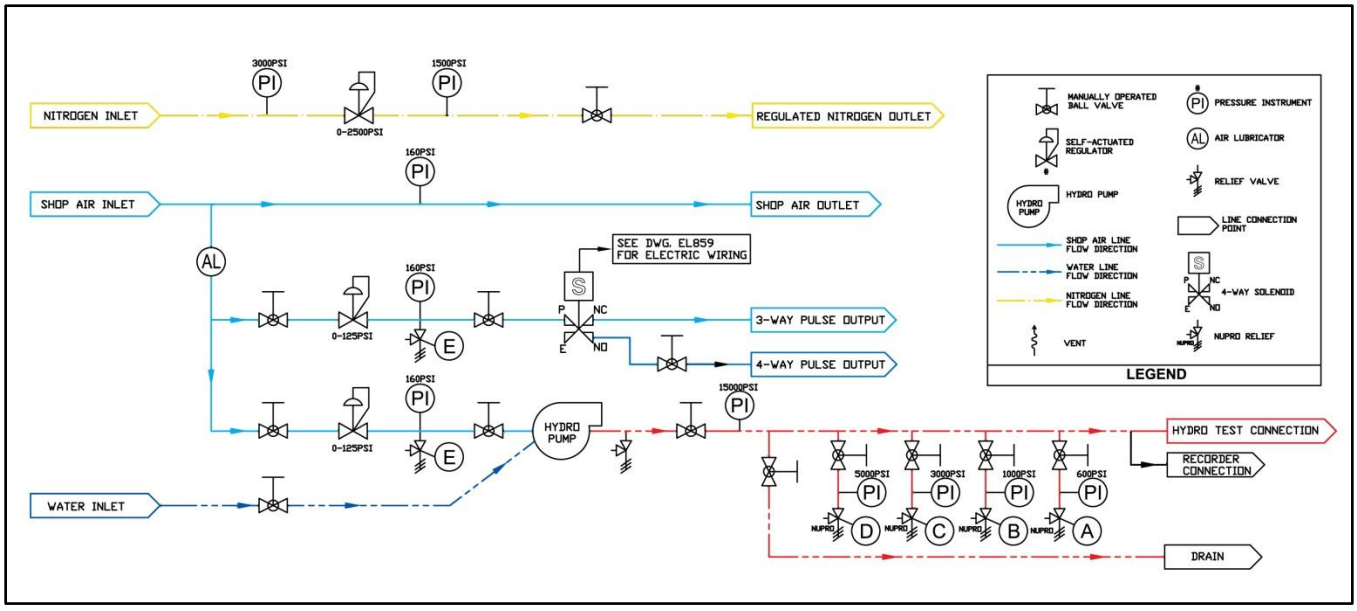


Figure 2: Schematic



Section 2:

INSTALLATION & OPERATIONS

2.1 BEFORE YOU BEGIN



After unpacking the unit, check the equipment for compliance and for any damage that may have occurred during shipment. **Claims for damage caused during shipping must be initiated by the receiver and directed to the shipping carrier.** Welker® is not responsible for any damage caused by mishandling by the shipping company.

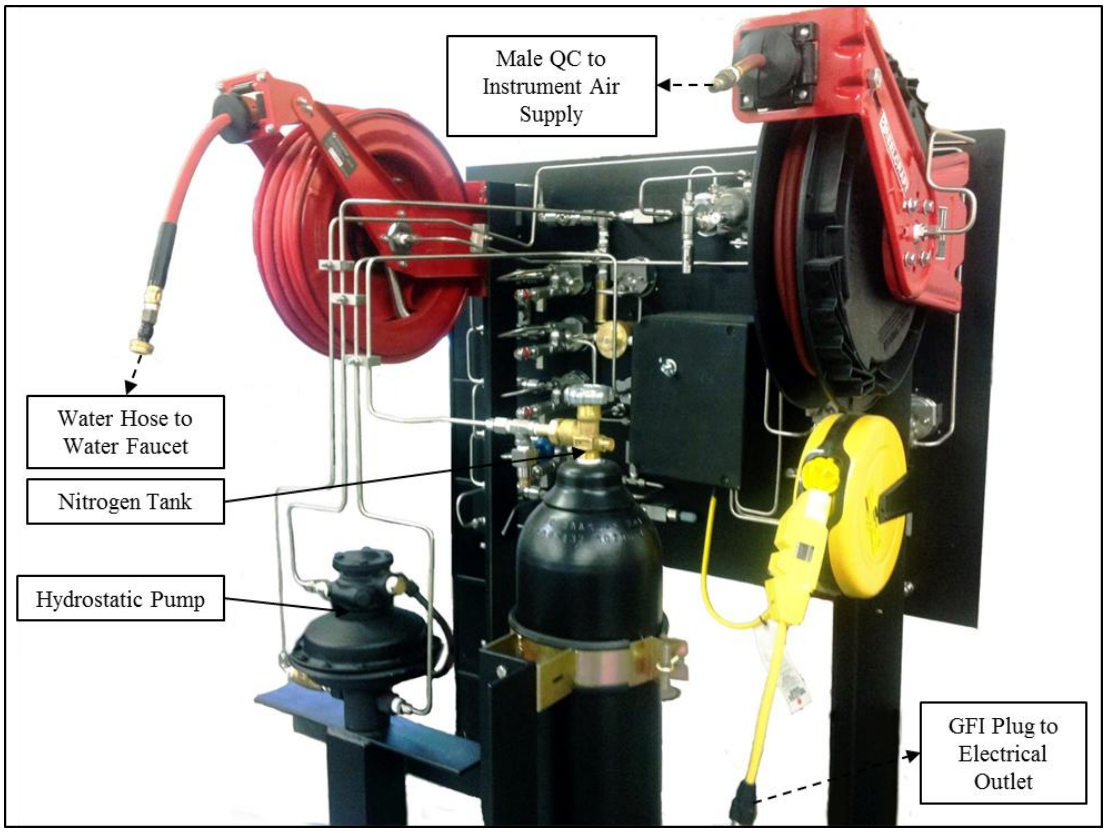
2.2 INSTALLATION

1. Begin with all valves on the panel closed and all regulators backed off.



Regulators should be turned *clockwise* to set regulation and *counter-clockwise* to back off regulation.

Figure 3: Connection Diagram (Back of Panel)



2. Connect the water hose to a water faucet.
3. Connect the male quick connect on the air hose to an instrument air supply.
4. Connect the GFI plug on the extension cord to an electrical outlet.
5. Open the nitrogen tank valve (*Figure 4*).

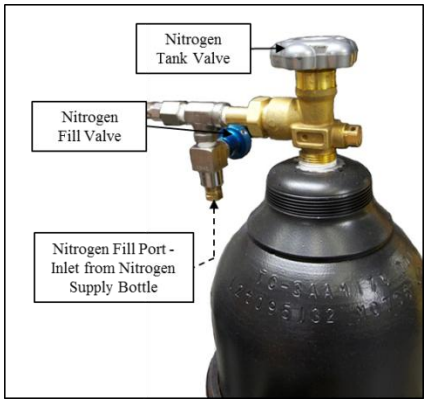


For safety during transport, the nitrogen tank is shipped empty from the manufacturer.

To Fill or Refill the Nitrogen Tank (*Figure 4*):

1. Connect a full nitrogen bottle to the Nitrogen Fill Port. This full nitrogen bottle will be designated the "nitrogen supply bottle."
2. Open the Nitrogen Fill Valve.
3. Open the Nitrogen Tank Valve.
4. Open the outlet valve from the nitrogen supply bottle.
5. Allow tank to fill completely.
6. Close the Nitrogen Fill Valve.
7. Close the Nitrogen Tank Valve
8. Close the outlet valve from the nitrogen supply bottle.
9. Remove the nitrogen supply bottle from the Nitrogen Fill Port.

Figure 4: Nitrogen Tank Diagram



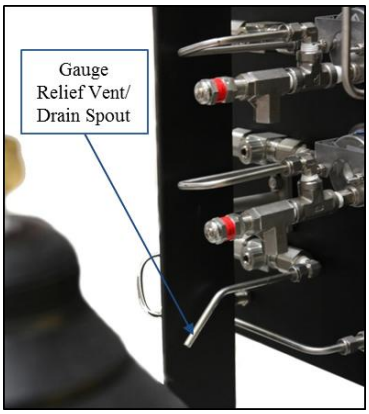
2.3 OPERATIONS

1. Begin with all valves closed and all regulators backed off.
2. If at any time water is visible at the drain spout (*Figure 5*), stop and ensure that all valves are in the correct orientation and that the gauge(s) being used are appropriate for the pressure setting.
3. The hydrostatic test gauges on this panel have been equipped with relief valves to prevent damage or wrapping of the gauges. Water draining from the drain spout on the back of the panel (*Figure 5*) may indicate that a gauge with a higher pressure rating should be utilized.



When draining water using valve V9 (*Figure 1*), water will drain from the drain spout on the back of the panel. You may wish to place a bucket or small container beneath the drain spout to prevent water from draining onto the floor.

Figure 5: Drain Spout

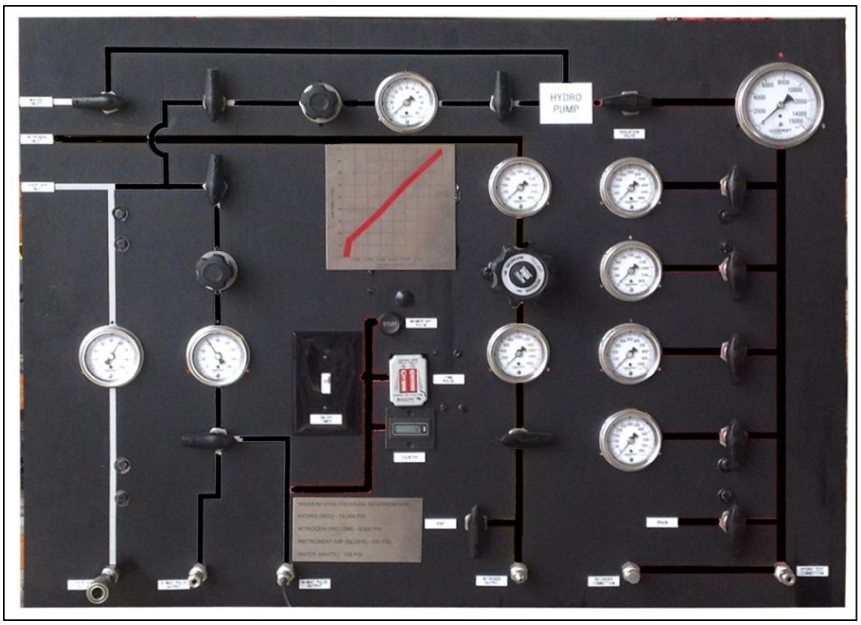


4. If at any time a hissing sound is audible, stop and ensure that all valves are in the correct orientation, with all unused valves closed.

To Operate the Shop Air Supply Line (*Figure 6*)

1. Connect the test fixture or product to be tested to the quick-connect on the shop air outlet.
2. When testing or filling is complete, pull back on the quick-connect fitting to disconnect.

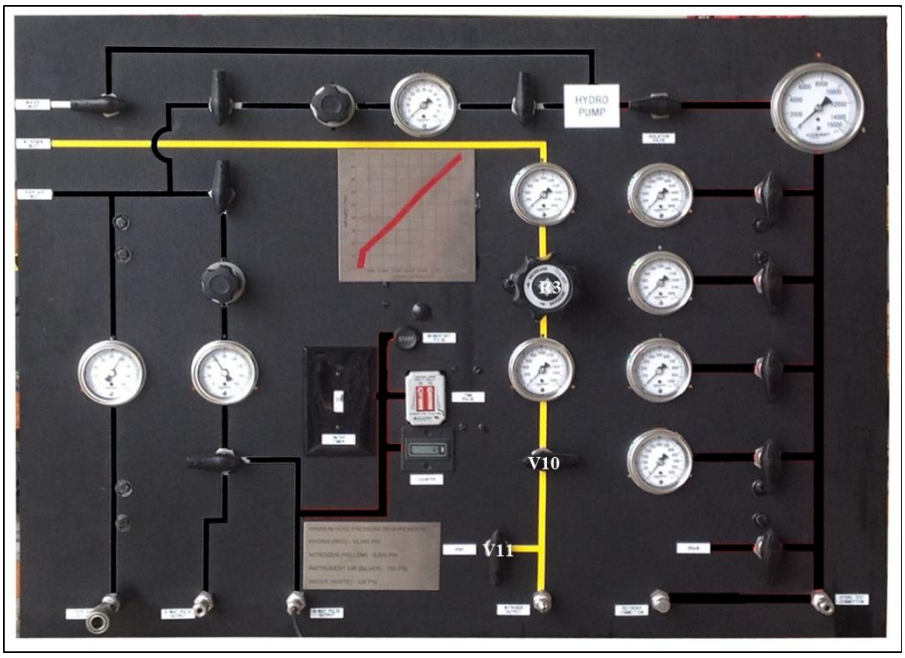
Figure 6: Shop Air Supply Line Diagram



To Operate the Nitrogen Supply Line (*Figure 7*)

1. Attach the test fixture or product to be tested to the nitrogen supply outlet.
2. Set regulator R3 to the desired output nitrogen pressure.
3. Open valve V10.
4. When testing or filling is complete, close valve V10.
5. Open valve V11 to vent the nitrogen supply line.
6. Back off regulator R3.
7. Disconnect the test fixture or product tested.

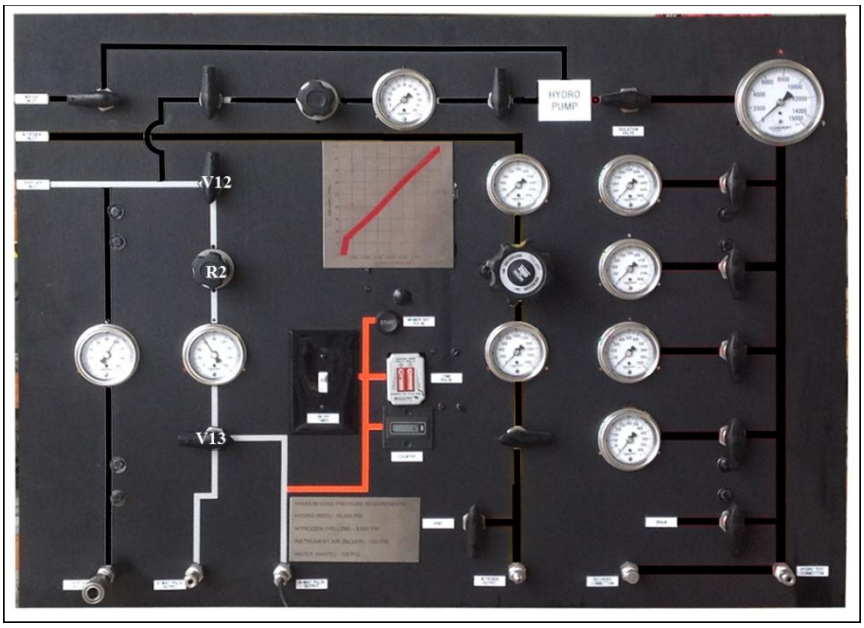
Figure 7: Nitrogen Supply Line Diagram



To Operate the Regulated Air Supply Line (*Figure 8*)

1. Connect the test fixture or product to be tested to the 4-way pulse outlet.
2. Open valve V12.
3. Set regulator R2 to the desired output air pressure.
4. Turn valve V13 so the arrow in the handle faces the 4-way pulse line.
5. When testing or filling is complete, close valve V12.
6. Back off regulator R2.
7. Turn valve V13 back toward the 3-way pulse line.
8. Disconnect the test fixture or product tested.

Figure 8: Regulated Air Supply & Pulse Line Diagram



To Operate the 3- and 4-Way Pulse Line (*Figure 8*)

1. Connect the test fixture or product to be tested to the 3- or 4-way pulse outlet.



The 4-way pulse line yields constant air output, whereas the 3-way pulse line only outputs air when actuated using the timer switch or momentary pulse button. Select the appropriate line for testing purposes based on this definition.

2. Open valve V12.
3. Set regulator R2 to the desired output air pressure.
4. Turn valve V13 so the arrow on the handle faces the appropriate line, 3-way or 4-way.
5. On the electrical line, set the pulse rate.
    a. To use the Timer pulse feature: The Timer comes preset at a standard pulse rate. If a pulse rate other than standard is needed, set the pulse rate using the On Time/Off Time switchboard. Then, flip the On/Off Timer switch to "On." The digital counter will keep track of the number of pulses. Approximately 4 seconds on and 4 seconds off is a good standard pulse rate for this test panel.
    b. To use the Momentary pulse feature, press the momentary pulse "Start" button to get a one-time pulse. The pulse will continue as long as the "Start" button is pressed and will cease when the button is released.
6. Close valve V12.
7. Back off regulator R2.
8. If valve V13 is turned toward the 4-way line, turn it back to the 3-way line.
9. When testing is complete, disconnect the test fixture or product tested.

To Operate the Hydrostatic Testing Line (*Figure 9*)

1. Connect the test fixture or product to be tested to the hydro test outlet.
2. If necessary, connect the chart recorder to the chart recorder connection.
3. Open valves V1 and V4.
4. Completely fill the product to be tested. Ensure that all air is displaced from the product.
5. Select the appropriate hydrostatic test gauge and open the appropriate valve to that gauge (i.e., valve V5, V6, V7, or V8). To test to 15,000 psi, no valve selection is necessary; use V4 only.



Welker® recommends that the gauge used best suits the range of the test. The test pressure should fall within the midscale of the selected gauge.

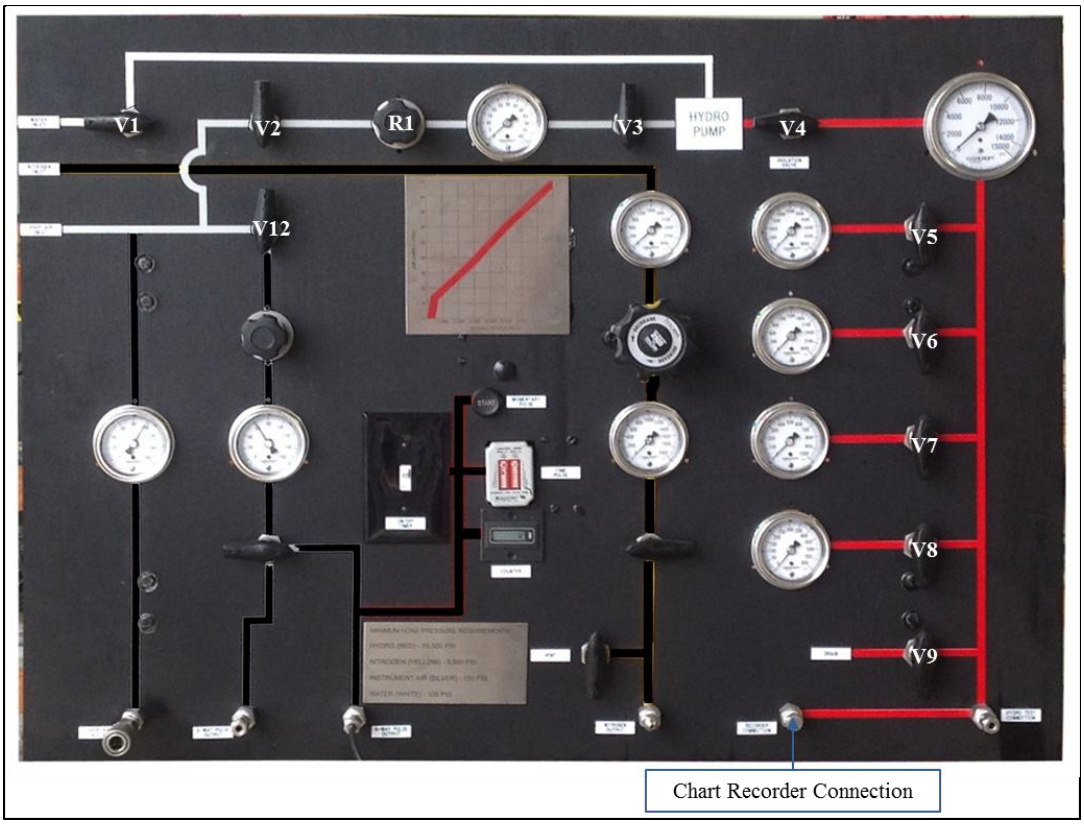
6. Open valve V2.
7. Set regulator R1 to the desired test pressure. Refer to the hydrostatic test graph mounted on the panel to determine the appropriate air pressure setting for the desired test pressure.
8. Open valve V3.



If water drains from the drain spout at this time, close the gauge valve being used and open the valve of a gauge with a higher pressure rating.

9. Once the product to be tested has reached the desired test pressure, close valve V4, the isolation valve.
10. Close valve V3.
11. Back off regulator R1.
12. Close valve V2.
13. Check the product being tested for leaks and complete any company-mandated steps for hydrostatic testing.
14. When testing is complete, open valve V9 to drain (*Figures 5 & 9*).
15. Disconnect the test fixture or product tested.

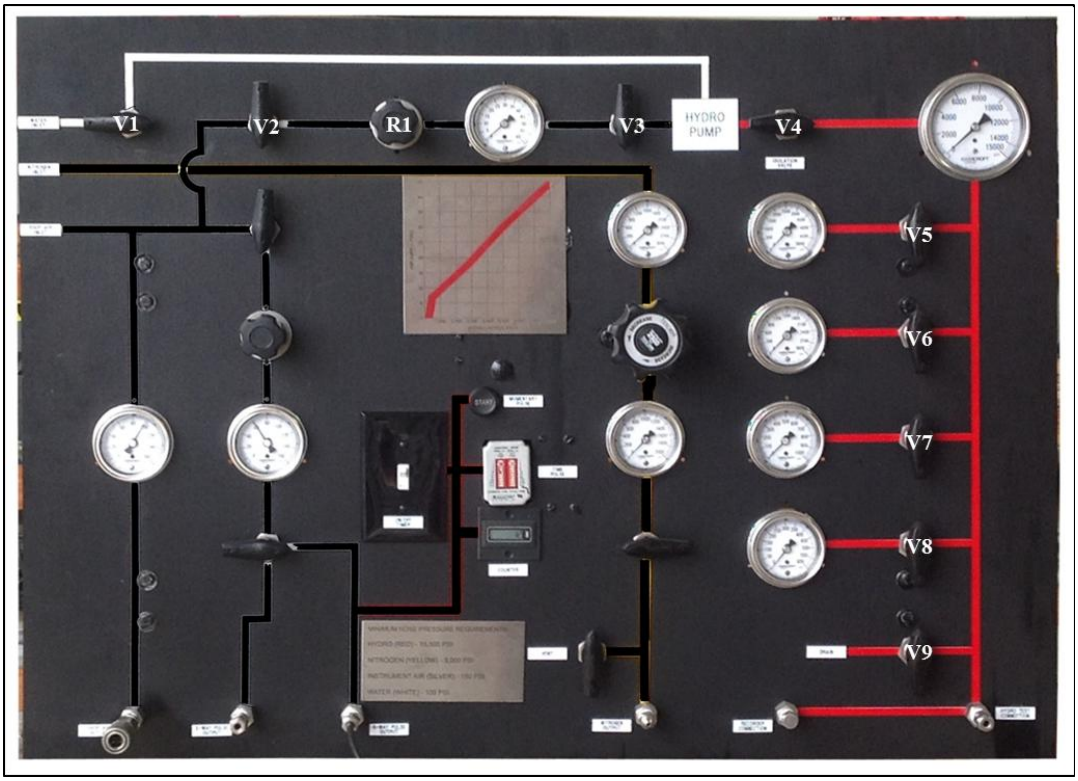
Figure 9: Hydrostatic Testing Line Diagram



To Operate the Water Supply Line (*Figure 10*)

1. Connect the test fixture or product to be tested to the hydro test outlet.
2. Open valve V1.
3. Open valve V4, the isolation valve.
4. When testing or filling is complete, close valves V1 and V4.
5. Open valve V9 to drain any remaining water (*Figures 5 & 10*).

Figure 10: Water Supply Line Diagram



Section 3:

MAINTENANCE

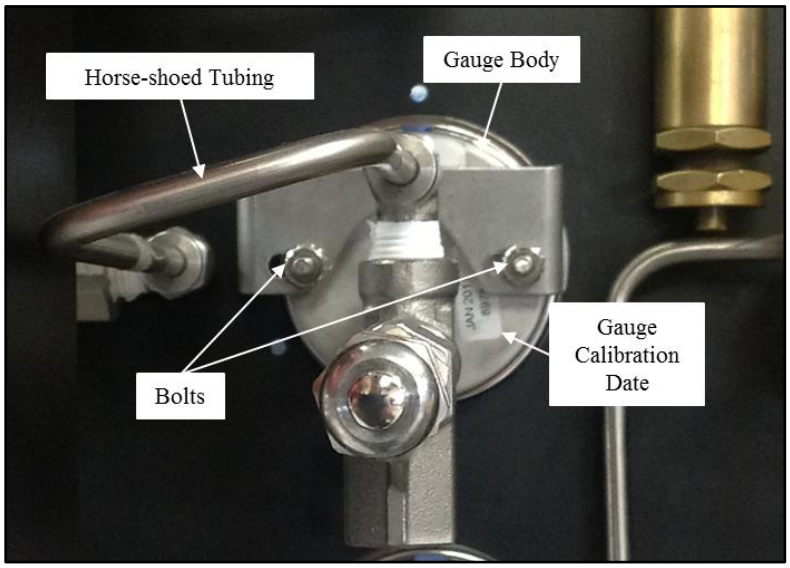
3.1 BEFORE YOU BEGIN

1. **Welker® recommends that the unit have annual maintenance under normal operating conditions.** In cases of severe service, dirty conditions, excessive usage, or other unique applications that may lead to excess wear on the unit, a more frequent maintenance schedule may be appropriate.
2. All maintenance and cleaning of the unit should be done on a smooth, clean surface.

3.2 MAINTENANCE

1. Remove gauges for calibration in accordance with company policy.
    a. On the back of the test panel, locate the test gauge(s) requiring calibration.
    b. Remove the two bolts or screws connecting each gauge to the test panel.
    c. Pull the horse-shoed tubing away from the test panel horizontally.
    d. Label the horse-shoed tubing carefully for proper reassembly.
    e. Gently remove the gauge.
    f. Submit the gauge for calibration in accordance with company policy.
    g. When the gauge has been returned from calibration, gently return the gauge to the panel opening for that gauge.
    h. Insert the horse-shoed tubing.
    i. Insert and tighten the two bolts or screws to connect the gauge to the test panel.
    j. File the gauge calibration certificate appropriately in accordance with company policy.

Figure 11: Gauge Maintenance Diagram



2. Periodically refill the Norgren® air lubricator/oiler with oil. Refill as necessary. Refer to the *Installation, Operation, and Maintenance Manual* for the Norgren® Air Lubricator for proper maintenance and filling instructions.
3. Periodically check the system for leaks or malfunctions. Tighten connections at any point that is leaking. If the system malfunctions, the system may need to be repaired by Welker®.

APPENDIX

ATTACHED DOCUMENTS:

Welker® *Installation, Operation, and Maintenance* Manuals suggested for use with this unit:

- None

Other *Installation, Operation, and Maintenance* Manuals suggested for use with this unit:

- L73M, L73C: Norgren® Air Lubricator (Welker® IOM-V013)

Welker® drawings and schematics suggested for use with this unit:

- Schematic, Assembly, & Electrical Drawings: HYPAN001[ ]
- Electrical Drawing: EL859

See also:

- Work Instruction WI-003, Hydrostatic Testing of Welker® Equipment

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