

# WIDDER TOOLS



## HPIC-10000-D Hydrostatic Test Unit



### ***PRODUCT INFORMATION AND OPERATING INSTRUCTIONS***

**Description:** The **HPIC-10000-D** Test Unit is a portable, air driven, hydrostatic test system. This test unit features a rugged powder coated steel body construction, and screen printed informational graphics for long-life. This unit also features our standard, stainless steel, 140 Mesh (100 Micron) water inlet filter, as well as full air filtration and lubrication. The standard Isolation Valve allows complete isolation from the pump check valve when higher system integrity is required.

**IMPORTANT: READ MANUAL CAREFULLY BEFORE OPERATING THIS TOOL.  
FOLLOW ALL SAFETY PRECAUTIONS LISTED AND ALL OSHA REGULATIONS  
PERTAINING TO THIS TOOL.**

## ***SAFETY PRECAUTIONS:***

1. Be sure all pressure on air and water fittings is relieved before dis-connecting any hoses or fittings
2. Wear eye protection
3. Pressurization of any materials is dangerous- follow OSHA procedures for stored energy and any pressurization cautions pertaining to the fluids used
4. This system can develop pressure up to the nameplate pressure- do not over pressure test vessels as damage can occur.
5. Do not run air pump without water input as you can damage the pump
6. Oil lubricator on air input must be filled with standard air tool oil before operating. Operating without oil voids tool warrantee

## ***OPERATING INSTRUCTIONS:***

### **A. Leak Test Only**

1. Attach water (Front of Unit) and air input (Rear of Unit) with water and air supply turned off.
2. Attach water output to test vessel (pre-fill if necessary for faster fill).
3. Turn on input water supply at street pressure and check for any obvious hook-up leaks.
4. Bleed the system through the needle relief valve until no more water comes out.
5. Close needle valve firmly. **Do not over tighten.**
6. With Regulator opened all the way (counter clock-wise) turn on the air input valve.
7. Slowly close the regulator (clock-wise) causing the system pressure to build. The unit will stroke a few times quickly to build pressure and will slow as the system charges and fills.
8. Observe system output pressure gage carefully. **Do not over pressure test vessel.**
9. As desired pressure is approached, slow air input by backing off regulator. The system will hold this pressure within about 1% and will make-up any drop by recycling the pump.
10. Inspect pressurized system for leaks.
11. Once the leak test inspection is complete, refer to section C to shut down the system.

### **B. Isolated Pressure Leak Test**

For tighter control of pressures, the **HPIC-10000-D** Test Unit includes a secondary high pressure Isolation Valve. This valve is downstream from the pressurizing pump and allows the operator to isolate the pressurized test loop from the pump check valves. At high pressures, the pump check valves can leak some system pressure. Usually, this is well within test pressure drop parameters (API 6A on annex F.1.1.10 b. for example, states: "Pressure shall remain within 5% of the test pressure or 3,45 MPa (500 psi), whichever is less, during the test period.")

1. To isolate pressure, follow section A until system is pressured to desired pressure.

2. Close the Isolation Valve. **Closing the isolation valve may raise test pressure slightly as the isolation valve displaces fluid in the system.**
3. Once the isolation valve is closed, the test area is isolated from the pump and check valves.
4. Monitor pressure gage for drop in pressure over allotted time.
5. When test is complete, be sure to turn off input air, open regulator completely, crack bleed valve and re-open isolation valve. Do not store system under pressure- always be sure bleed valve is cracked and isolation valve is open.

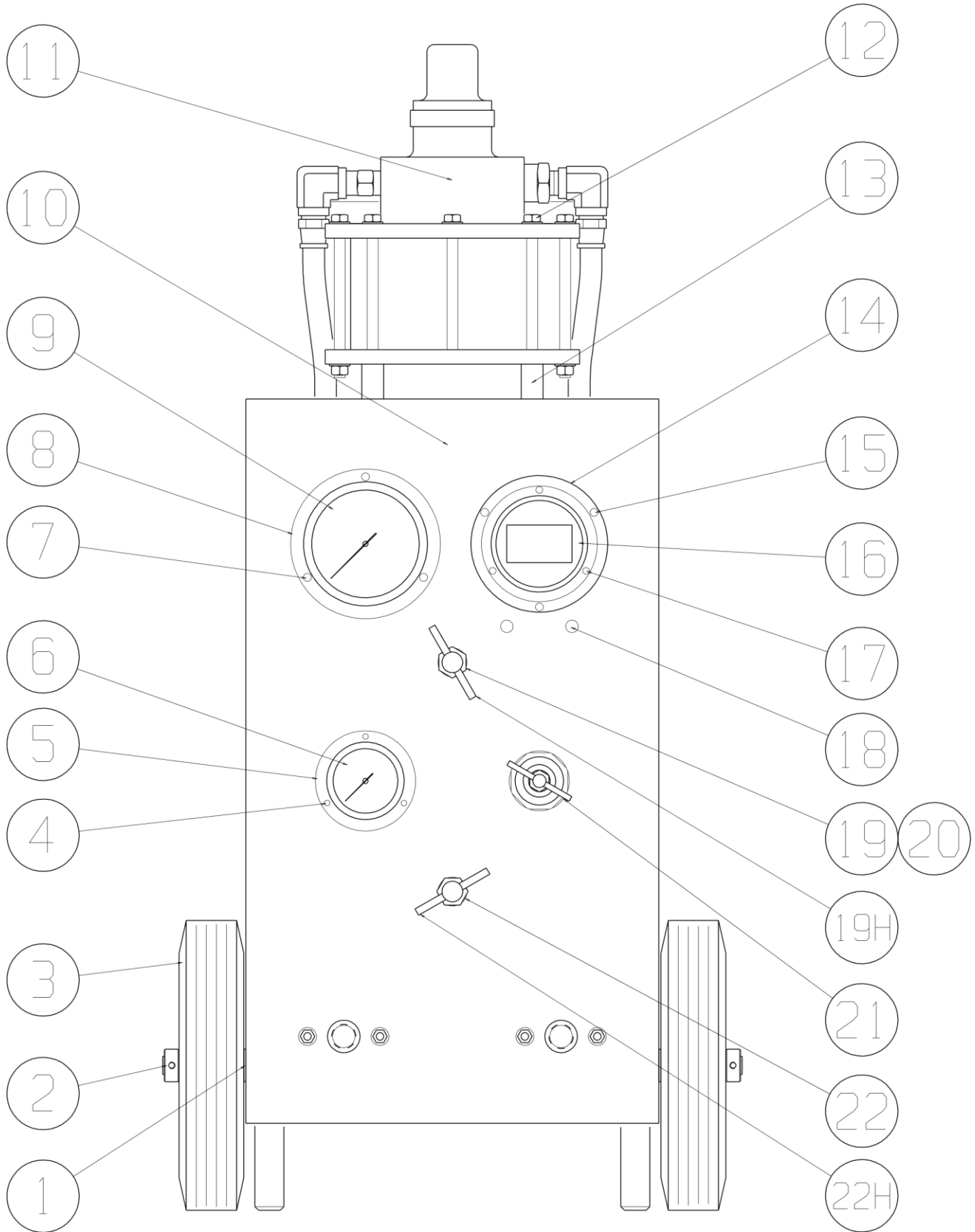
### **C. System Shut Down and Storage**

1. Once tests and inspections are complete, shut down the system by first opening the regulator to relieve air pressure (counter clock-wise) until gage reads “0”.
2. Turn off water and air input.
3. Gently crack the needle bleed valve until output pressure drops to “0”.
4. Once all pressure gages read “0” and inputs are off, drain and disconnect test vessel.
5. To store unit, add a small amount of water displacing oil to the water input and hook-up an airline to the water input.
6. With all needle valves open, blow air through the water input. Water and air will come out the discharge side of the unit.
7. Blow off until mostly dry.

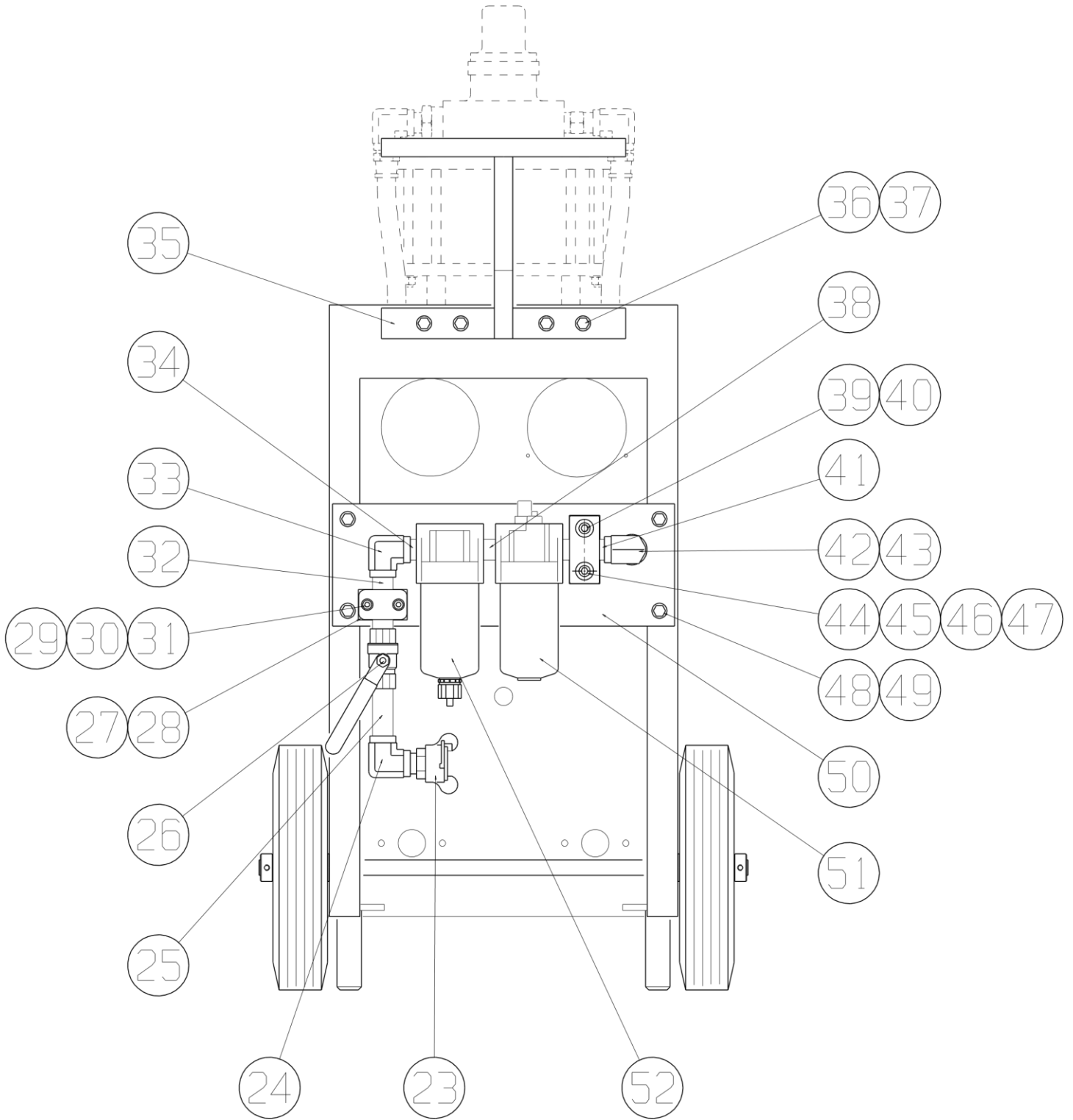
### **D. Digital Gage**

The **HPIC-10000-D** Test Unit is supplied with a digital gage accurate to .025% full scale and detects even tiny changes in test conditions. See enclosed manual for gage use. Because the gage is so accurate and can read down to a 1.0 PSI change in system pressure, the operator must be aware that minor pressure changes are caused by many factors including: temperature fluctuation, hose stretch, sealant settling, and material assembly movement. Vessel size is critical to this issue; a small test vessel will show dramatically more pressure change than a large one. (Note: For long term storage, remove batteries to extend life.)

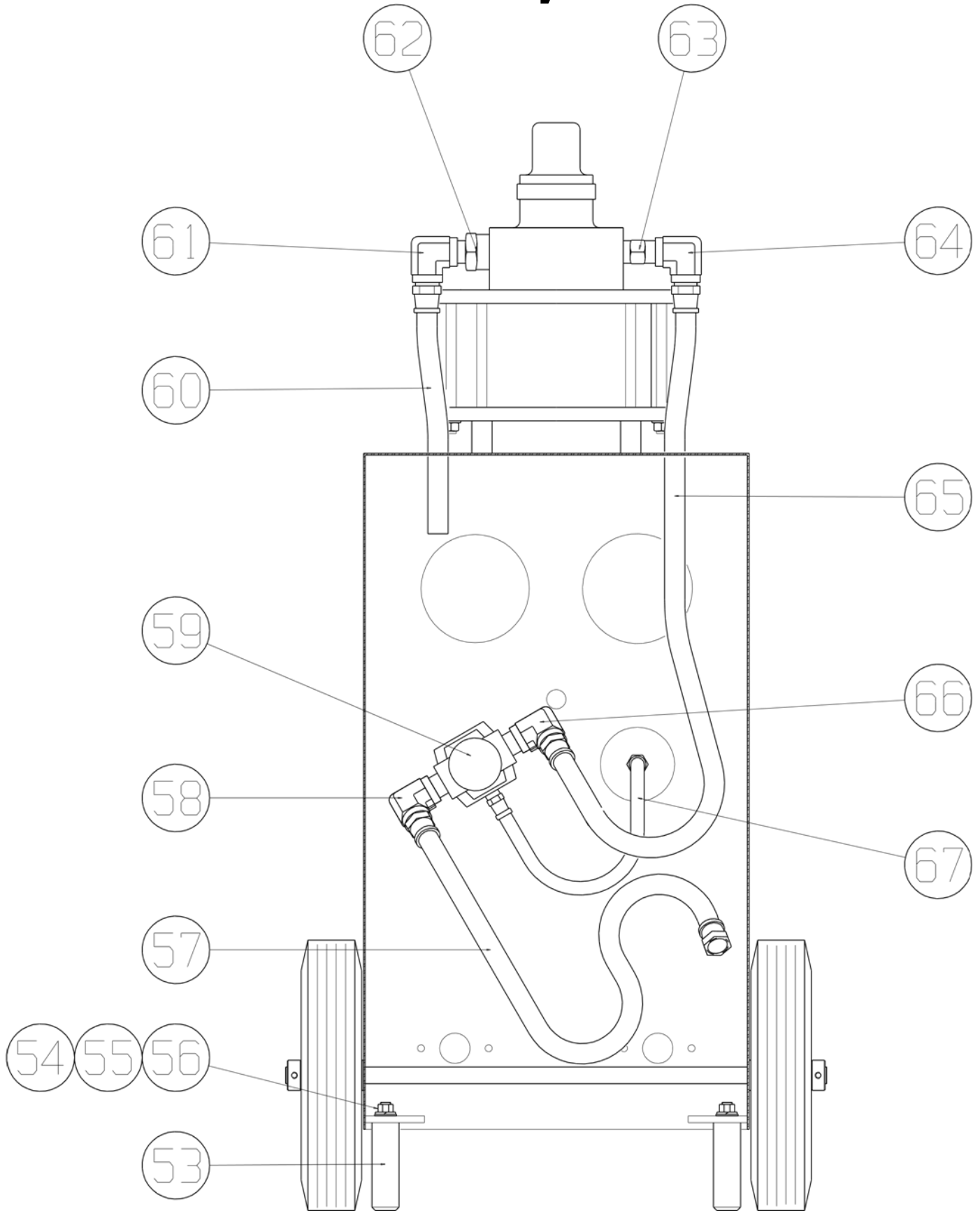
# WIDDER HPIC Hydrostatic Test Pump Front View



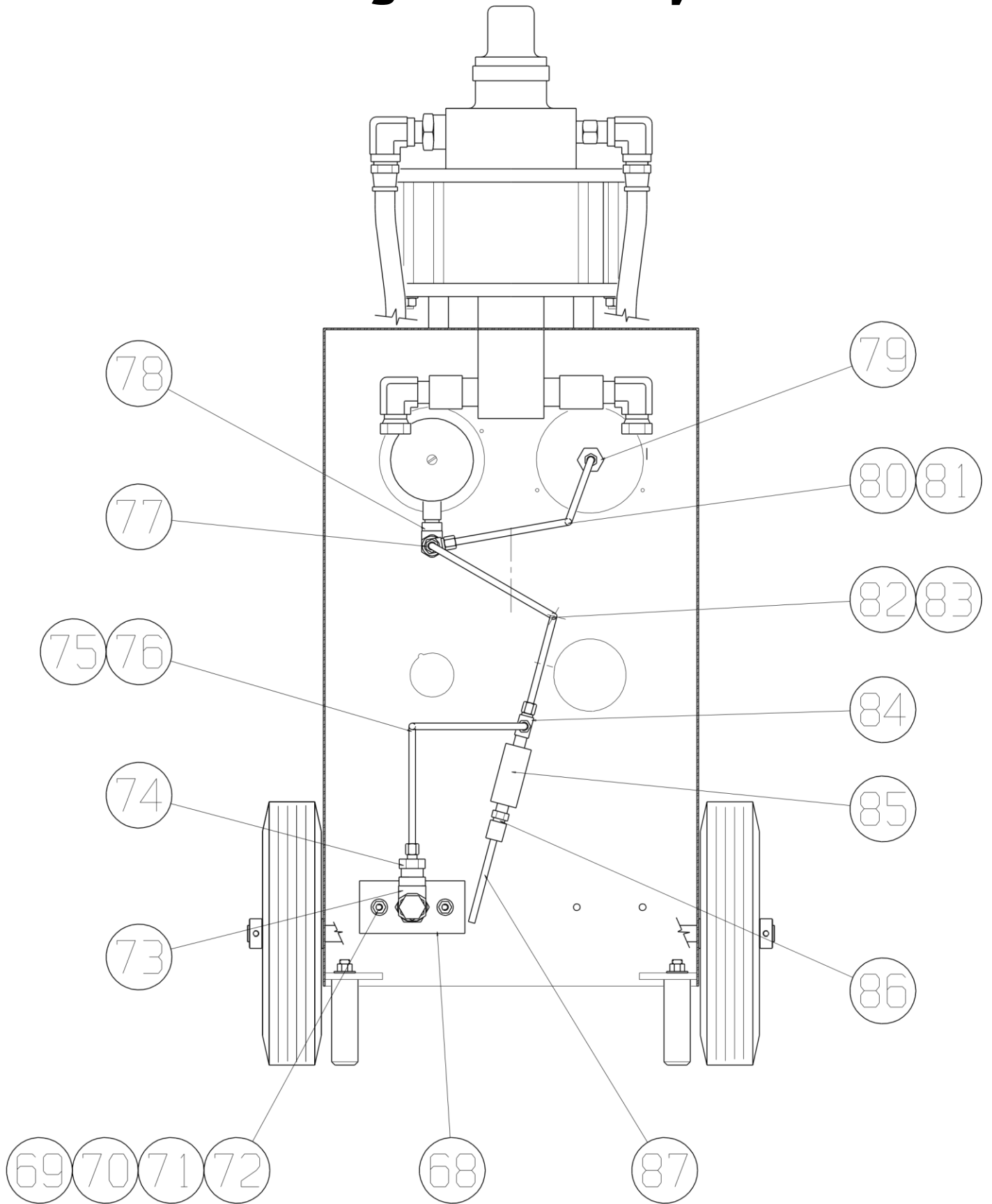
# Back Panel View



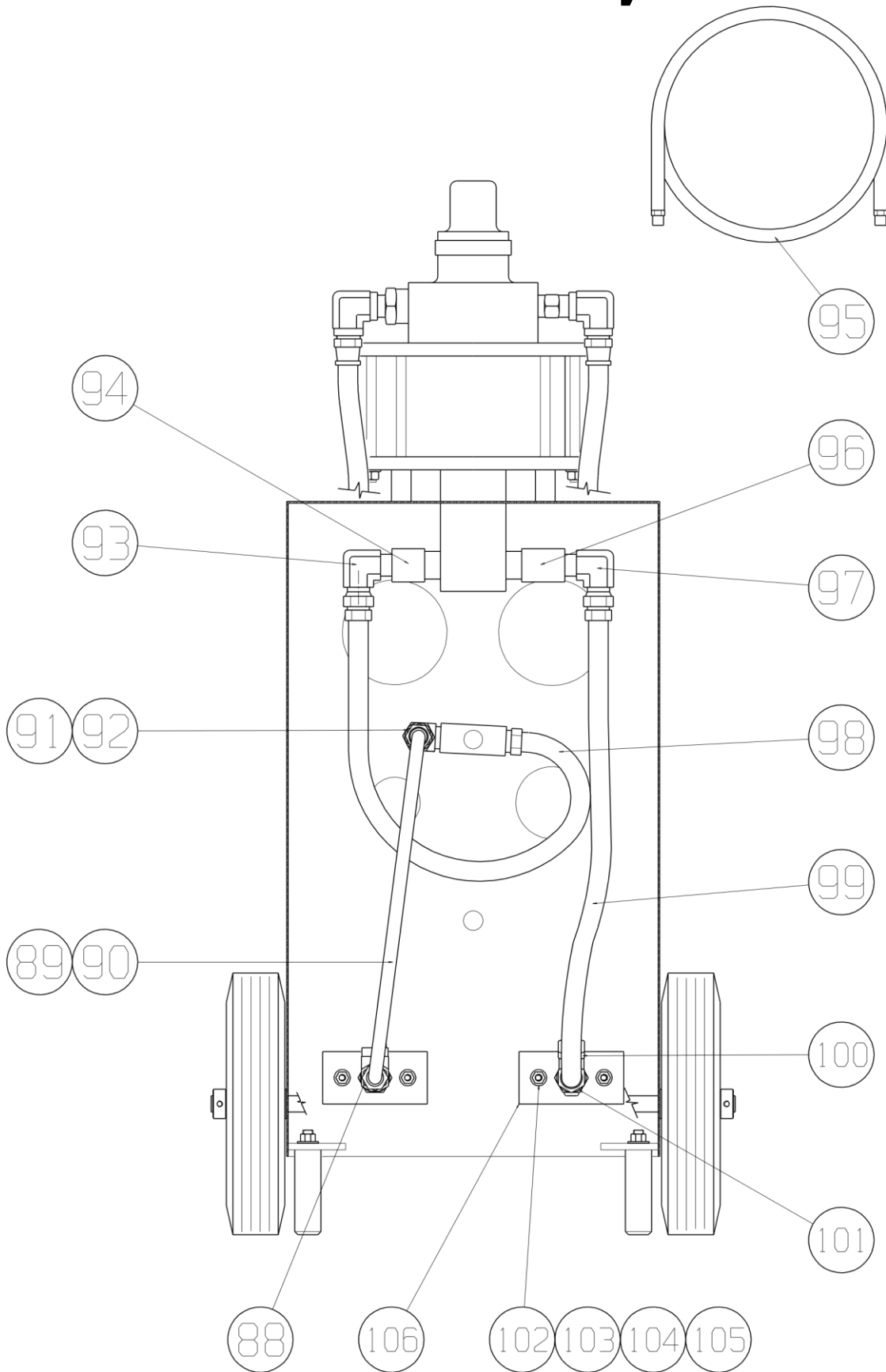
# Inner Air System



# Small High Pressure System



# Main Water In/Out System





## **WIDDER HPIC Hydrostatic Test Pump**

| Item              | Description                    | Part #               |                      |
|-------------------|--------------------------------|----------------------|----------------------|
| <b>Front View</b> |                                |                      |                      |
|                   |                                | <b>HPIC-10000-D</b>  | <b>HPIC-10000</b>    |
| <b>1</b>          | <b>Wheel Spacer</b>            | <b>03-1014</b>       | <b>03-1014</b>       |
| <b>2</b>          | <b>Wheel Collar</b>            | <b>PI7000-29</b>     | <b>PI7000-29</b>     |
| <b>3</b>          | <b>10" Wheel</b>               | <b>PI7000-21</b>     | <b>PI7000-21</b>     |
| <b>4</b>          | <b>Flange Screw, 2 ½" Gage</b> | <b>PI7000-20</b>     | <b>PI7000-20</b>     |
| <b>5</b>          | <b>2 ½" Flange</b>             | <b>PI7000-11A</b>    | <b>PI7000-11A</b>    |
| <b>6</b>          | <b>2 ½"-160 psi Gage</b>       | <b>PI7000-11</b>     | <b>PI7000-11</b>     |
| <b>7</b>          | <b>Flange Screw, 4" Gage</b>   | <b>PI7000-19</b>     | <b>PI7000-19</b>     |
| <b>8</b>          | <b>4" Flange</b>               | <b>PI7000-06A</b>    | <b>PI7000-06A</b>    |
| <b>9</b>          | <b>4"-15k psi Gage</b>         | <b>PI7000-06</b>     | <b>PI7000-06</b>     |
| <b>10</b>         | <b>Cabinet</b>                 | <b>PI7000-38</b>     | <b>PI7000-38</b>     |
| <b>11</b>         | <b>10k psi Pump</b>            | <b>PI7000-01</b>     | <b>PI7000-01</b>     |
| <b>12</b>         | <b>Pump Hex Bolt</b>           | <b>PI7000-41</b>     | <b>PI7000-41</b>     |
| <b>13</b>         | <b>Pump Standoff</b>           | <b>PI7000-88</b>     | <b>PI7000-88</b>     |
| <b>14</b>         | <b>3" Gage Adapter Ring</b>    | <b>PI7000-206</b>    |                      |
| <b>15</b>         | <b>3" Adapter Ring Screw</b>   | <b>PI7000-209</b>    |                      |
| <b>16</b>         | <b>3" 10k psi Digital Gage</b> | <b>PI7000-205</b>    |                      |
| <b>17</b>         | <b>3" Gage Screw</b>           | <b>PI7000-207</b>    |                      |
| <b>18</b>         | <b>Finishing Plug</b>          | <b>PI7000-208</b>    |                      |
| <b>19</b>         | <b>Isolation Needle Valve</b>  | <b>PI7000-216</b>    | <b>PI7000-216</b>    |
| <b>19H</b>        | <b>Handle, Isolator Valve</b>  | <b>PI7000-216-RH</b> | <b>PI7000-216-RH</b> |
| <b>20</b>         | <b>Valve Mount Washer</b>      | <b>PI7000-217</b>    | <b>PI7000-217</b>    |
| <b>21</b>         | <b>Regulator</b>               | <b>PI7000-16</b>     | <b>PI7000-16</b>     |
| <b>22</b>         | <b>Bleed Needle Valve</b>      | <b>PI7000-36</b>     | <b>PI7000-36</b>     |
| <b>22H</b>        | <b>Handle, Bleed Valve</b>     | <b>PI7000-36-RH</b>  | <b>PI7000-36-RH</b>  |

| <b>Back Panel View</b> |                                |                     |                   |
|------------------------|--------------------------------|---------------------|-------------------|
| <b>Item</b>            | <b>Description</b>             | <b>Part #</b>       |                   |
|                        |                                | <b>HPIC-10000-D</b> | <b>HPIC-10000</b> |
| <b>23</b>              | <b>Universal Coupling</b>      | <b>36-1010</b>      | <b>36-1010</b>    |
| <b>24</b>              | <b>90° Elbow</b>               | <b>PI7000-96</b>    | <b>PI7000-96</b>  |
| <b>25</b>              | <b>½ x 3” Brass Nipple</b>     | <b>PMI014</b>       | <b>PMI014</b>     |
| <b>26</b>              | <b>Ball Valve</b>              | <b>PI7000-14</b>    | <b>PI7000-14</b>  |
| <b>27</b>              | <b>Small Clamp</b>             | <b>PI7000-59</b>    | <b>PI7000-59</b>  |
| <b>28</b>              | <b>Small Clamp Spacer</b>      | <b>PI7000-61</b>    | <b>PI7000-61</b>  |
| <b>29</b>              | <b>Small Clamp Screw</b>       | <b>PI7000-50</b>    | <b>PI7000-50</b>  |
| <b>30</b>              | <b>Washer</b>                  | <b>PI7000-26</b>    | <b>PI7000-26</b>  |
| <b>31</b>              | <b>Locknut</b>                 | <b>PI7000-27</b>    | <b>PI7000-27</b>  |
| <b>32</b>              | <b>½ x 3” Brass Nipple</b>     | <b>PMI014</b>       | <b>PMI014</b>     |
| <b>33</b>              | <b>90° Elbow</b>               | <b>PI7000-96</b>    | <b>PI7000-96</b>  |
| <b>34</b>              | <b>½ x Close Brass Nipple</b>  | <b>PMI035</b>       | <b>PMI035</b>     |
| <b>35</b>              | <b>Handle</b>                  | <b>PI7000-31</b>    | <b>PI7000-31</b>  |
| <b>36</b>              | <b>Handle Mounting Bolt</b>    | <b>PI7000-23</b>    | <b>PI7000-23</b>  |
| <b>37</b>              | <b>Washer</b>                  | <b>PI7000-24</b>    | <b>PI7000-24</b>  |
| <b>38</b>              | <b>½ x Close Brass Nipple</b>  | <b>PMI035</b>       | <b>PMI035</b>     |
| <b>39</b>              | <b>Large Clamp</b>             | <b>PI7000-60</b>    | <b>PI7000-60</b>  |
| <b>40</b>              | <b>Large Clamp Spacer</b>      | <b>PI7000-62</b>    | <b>PI7000-62</b>  |
| <b>41</b>              | <b>½ x 2-1/2” Brass Nipple</b> | <b>PMI037</b>       | <b>PMI037</b>     |
| <b>42</b>              | <b>90° Elbow</b>               | <b>PI7000-96</b>    | <b>PI7000-96</b>  |
| <b>43</b>              | <b>1/2 x 2” Brass Nipple</b>   | <b>PMI023</b>       | <b>PMI023</b>     |
| <b>44</b>              | <b>Large Clamp Screw</b>       | <b>PI7000-51</b>    | <b>PI7000-51</b>  |
| <b>45</b>              | <b>Washer (Outer)</b>          | <b>PI7000-54</b>    | <b>PI7000-54</b>  |
| <b>46</b>              | <b>Washer (Inner)</b>          | <b>PI7000-53</b>    | <b>PI7000-53</b>  |
| <b>47</b>              | <b>Locknut</b>                 | <b>PI7000-52</b>    | <b>PI7000-52</b>  |
| <b>48</b>              | <b>Panel Mounting Bolt</b>     | <b>PI7000-23</b>    | <b>PI7000-23</b>  |

| Item                              | Description                  | Part #       |            |
|-----------------------------------|------------------------------|--------------|------------|
|                                   |                              | HPIC-10000-D | HPIC-10000 |
| 49                                | Washer                       | PI7000-26    | PI7000-26  |
| 50                                | Back Panel                   | PI7000-39    | PI7000-39  |
| 51                                | Lubricator                   | PI7000-18    | PI7000-18  |
| 52                                | Filter                       | PI7000-17    | PI7000-17  |
| <b>Inner Air System</b>           |                              |              |            |
| 53                                | Foot                         | PI7000-33    | PI7000-33  |
| 54                                | Hex Jam Nut, Foot            | PI7000-32    | PI7000-32  |
| 55                                | Split Lock Washer, Foot      | PI7000-34    | PI7000-34  |
| 56                                | Washer, Foot                 | PI7000-30    | PI7000-30  |
| 57                                | Air In To Regulator Hose     | PI7000-84    | PI7000-84  |
| 58                                | 90° Elbow                    | PI7000-63    | PI7000-63  |
| 59                                | Regulator                    | PI7000-16    | PI7000-16  |
| 60                                | Pump Air Out Hose            | PI7000-87    | PI7000-87  |
| 61                                | 90° Elbow                    | PI7000-63    | PI7000-63  |
| 62                                | Hex Adapter                  | PI7000-45    | PI7000-45  |
| 63                                | Hex Nipple                   | PI7000-73    | PI7000-73  |
| 64                                | 90° Elbow                    | PI7000-63    | PI7000-63  |
| 65                                | Regulator To Pump Hose       | PI7000-86    | PI7000-86  |
| 66                                | 90° Elbow                    | PI7000-63    | PI7000-63  |
| 67                                | Regulator To Air Gage Hose   | PI7000-83    | PI7000-83  |
| <b>Small High Pressure System</b> |                              |              |            |
| 68                                | Bulkhead Plate Assy., Outlet | PI7000-28    | PI7000-28  |
| 69                                | Hex Bolt                     | PI7000-23    | PI7000-23  |
| 70                                | Washer (Outer)               | PI7000-26    | PI7000-26  |
| 71                                | Washer (Inner)               | PI7000-24    | PI7000-24  |
| 72                                | Locknut                      | PI7000-27    | PI7000-27  |
| 73                                | Tee                          | PI7000-69    | PI7000-69  |
| 74                                | Flare Adapter                | PI7000-93    | PI7000-93  |
| 75                                | Bulkhead To Bleed Flare Tube | PI7000-232   | PI7000-232 |

| Item                            | Description                  | Part #       |            |
|---------------------------------|------------------------------|--------------|------------|
|                                 |                              | HPIC-10000-D | HPIC-10000 |
| 76                              | 1/4" Flare Seal (2 per Tube) | PI7000-221   | PI7000-221 |
| 77                              | Tee                          | PI7000-94    | PI7000-94  |
| 78                              | 90° Elbow                    | PI7000-215   | PI7000-215 |
| 79                              | Flare Adapter                | PI7000-95    | PI7000-95  |
| 80                              | Gage To Gage Flare Tube      | PI7000-230   | PI7000-230 |
| 81                              | 1/4" Flare Seal (2 Per Tube) | PI7000-221   | PI7000-221 |
| 82                              | Gage To Bleed Flare Tube     | PI7000-231   | PI7000-231 |
| 83                              | 1/4" Flare Seal (2 per Tube) | PI7000-221   | PI7000-221 |
| 84                              | Tee                          | PI7000-94    | PI7000-94  |
| 85                              | Bleed Needle Valve           | PI7000-36    | PI7000-36  |
| 86                              | Flareless Adapter            | PI7000-78    | PI7000-78  |
| 87                              | Bleed Tube                   | PI7000-82    | PI7000-82  |
| <b>Main Water In/Out System</b> |                              |              |            |
| 88                              | Flare Adapter                | PI7000-71    | PI7000-71  |
| 89                              | Bulkhead to Iso. Valve Tube  | PI7000-233   | PI7000-233 |
| 90                              | 1/2" Flare Seal (2 per Tube) | PI7000-220   | PI7000-220 |
| 91                              | 90° Elbow                    | PI7000-63    | PI7000-63  |
| 92                              | Flare Adapter                | PI7000-71    | PI7000-71  |
| 93                              | 90° Elbow                    | PI7000-74    | PI7000-74  |
| 94                              | Check Valve, Outlet          | PI7000-223   | PI7000-223 |
| 95                              | 1/2" x 15 Foot HP Hose       | PI7000-89    | PI7000-89  |
| 96                              | Check Valve, Inlet           | PI7000-222   | PI7000-222 |
| 97                              | 1/2M x 1/2F SW 90            | PI7000-74    | PI7000-74  |
| 98                              | Pump Outlet Hose             | PI7000-218   | PI7000-218 |
| 99                              | Strainer To Pump In Hose     | PI7000-85    | PI7000-85  |
| 100                             | 1/2" Strainer – 100m         | PMI017       | PMI017     |
| 101                             | 1/2 x Close Brass Nipple     | PMI035       | PMI035     |
| 102                             | Hex Bolt                     | PI7000-23    | PI7000-23  |
| 103                             | Washer (Outer)               | PI7000-26    | PI7000-26  |

| Item       | Description                        | Part #              |                   |
|------------|------------------------------------|---------------------|-------------------|
|            |                                    | <b>HPIC-10000-D</b> | <b>HPIC-10000</b> |
| <b>104</b> | <b>Washer (Inner)</b>              | <b>PI7000-24</b>    | <b>PI7000-24</b>  |
| <b>105</b> | <b>Locknut</b>                     | <b>PI7000-27</b>    | <b>PI7000-27</b>  |
| <b>106</b> | <b>Bulkhead Plate Assy., Inlet</b> | <b>PI7000-28</b>    | <b>PI7000-28</b>  |