1) Manifold Configuration

Double solenoid valves always consume two solenoid outputs, while single solenoid valves consume either one or two solenoid outputs depending on the internal circuit board (Single or Double “Z-Board”). There are two different methods for determining if the manifold block has a single or double “Z-board”. The first method is to view the label on the valve manifolds. In Figure 1 below, the digits in red show the user which “Z-Board” is being used. If the digits are Z1 or Z5, then there is a single “Z-Board” within the manifold. If the digits are Z2 or Z6, then there is a double “Z-Board” within the manifold. If these digits are both zero, then the second method must be used. The second method is to view the label located under the manifold. In Figure 2 below, the valves are removed from the manifold station to show the “Z-Board” labels.

![Figure 1](image1.png)

*Figure 1* - Top view of the label. The area of the part number in red determines which “Z-Board” is used.

![Figure 2](image2.png)

*Figure 2* - This view shows two valve stations with the valves removed.

The following examples show configurations using both a single and a double “Z-Board”. The valve station adjacent to the electrical connector is considered the first output point.

![Example No. 1](image3.png)

*Example No. 1* ("Z-Boards" configured identical to valve type)

![Example No. 2](image4.png)

*Example No. 2* ("Z-Boards" configured with all doubles)

2) Sub-D Cable Wire Colors

<table>
<thead>
<tr>
<th>Connector</th>
<th>Conductor</th>
<th>Connector</th>
<th>Conductor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 1</td>
<td>Black</td>
<td>Pin 21</td>
<td>Orange/Green</td>
</tr>
<tr>
<td>Pin 2</td>
<td>White</td>
<td>Pin 22</td>
<td>Black/White/Red or Brown/White</td>
</tr>
<tr>
<td>Pin 3</td>
<td>Red</td>
<td>Pin 23</td>
<td>White/Black/Red or Yellow/Black</td>
</tr>
<tr>
<td>Pin 4</td>
<td>Green</td>
<td>Pin 24</td>
<td>Red/Black/White or Violet/White</td>
</tr>
<tr>
<td>Pin 5</td>
<td>Orange</td>
<td>Pin 25</td>
<td>Green/Black/White or Gray/Black</td>
</tr>
<tr>
<td>Pin 6</td>
<td>Blue</td>
<td>Pin 26</td>
<td>Orange/Black/White or Yellow</td>
</tr>
<tr>
<td>Pin 7</td>
<td>White/Black</td>
<td>Pin 27</td>
<td>Blue/Black/White or Violet</td>
</tr>
<tr>
<td>Pin 8</td>
<td>Red/Black</td>
<td>Pin 28</td>
<td>Black/Red/Green or Gray</td>
</tr>
<tr>
<td>Pin 9</td>
<td>Green/Black</td>
<td>Pin 29</td>
<td>White/Red/Green or Pink</td>
</tr>
<tr>
<td>Pin 10</td>
<td>Orange/Black</td>
<td>Pin 30</td>
<td>Red/Black/Green or Light Green</td>
</tr>
<tr>
<td>Pin 11</td>
<td>Blue/Black</td>
<td>Pin 31</td>
<td>Green/Black/Orange or Orange/White</td>
</tr>
<tr>
<td>Pin 12</td>
<td>Black/White</td>
<td>Pin 32</td>
<td>Orange/Black/Green or Pink/Black</td>
</tr>
<tr>
<td>Pin 13</td>
<td>Red/White</td>
<td>Pin 33</td>
<td>Blue/White/Orange or Pink/Green</td>
</tr>
<tr>
<td>Pin 14</td>
<td>Green/White</td>
<td>Pin 34</td>
<td>Black/White/Orange or Pink/Red</td>
</tr>
<tr>
<td>Pin 15</td>
<td>Blue/White</td>
<td>Pin 35</td>
<td>White/Red/Orange or Pink/Violet</td>
</tr>
<tr>
<td>Pin 16</td>
<td>Black/Red</td>
<td>Pin 36</td>
<td>Orange/White/Blue or Light Blue</td>
</tr>
<tr>
<td>Pin 17</td>
<td>White/Red</td>
<td>Pin 37</td>
<td>White/Red/Blue or Light Brown</td>
</tr>
<tr>
<td>Pin 18</td>
<td>Orange/Red</td>
<td>Not Used</td>
<td>Black/White/Green</td>
</tr>
<tr>
<td>Pin 19</td>
<td>Blue/Red</td>
<td>Not Used</td>
<td>White/Black/Green</td>
</tr>
<tr>
<td>Pin 20</td>
<td>Red/Green</td>
<td>Not Used</td>
<td>Red/White/Green</td>
</tr>
</tbody>
</table>

12 and 26 pole cables do not have color identification; each conductor is numbered the length of the cable.
3) Electrical Interface Pin-outs

**25 Pin Sub-D Wiring Layout (AKJ)**
Module Number 239-1174, 239-1175
(Male View)

- 13 Wire to Output 12 (Connects to Coil 10)
- 12 Wire to Output 11 (Connects to Coil 10)
- 11 Wire to Output 10 (Connects to Coil 10)
- 10 Wire to Output 9 (Connects to Coil 10)
- 9 Wire to Output 8 (Connects to Coil 9)
- 8 Wire to Output 7 (Connects to Coil 9)
- 7 Wire to Output 6 (Connects to Coil 9)
- 6 Wire to Output 5 (Connects to Coil 9)
- 5 Wire to Output 4 (Connects to Coil 9)
- 4 Wire to Output 3 (Connects to Coil 9)
- 3 Wire to Output 2 (Connects to Coil 9)
- 2 Wire to Output 1 (Connects to Coil 9)
- 1 Wire to Output 8 (Connects to Coil 1)

**26 Wire to Earth Ground**

- 25 & 24 Wire to Common

**37 Pin Sub-D Wiring Layout (AKM)**
Module Number 239-1180, 239-1181
(Male View)

- 19 Wire to Output 18 (Connects to Coil 16)
- 18 Wire to Output 17 (Connects to Coil 15)
- 17 Wire to Output 16 (Connects to Coil 15)
- 16 Wire to Output 15 (Connects to Coil 15)
- 15 Wire to Output 14 (Connects to Coil 14)
- 14 Wire to Output 13 (Connects to Coil 14)
- 13 Wire to Output 12 (Connects to Coil 13)
- 12 Wire to Output 11 (Connects to Coil 13)
- 11 Wire to Output 10 (Connects to Coil 13)
- 10 Wire to Output 9 (Connects to Coil 12)
- 9 Wire to Output 8 (Connects to Coil 12)
- 8 Wire to Output 7 (Connects to Coil 12)
- 7 Wire to Output 6 (Connects to Coil 12)
- 6 Wire to Output 5 (Connects to Coil 11)
- 5 Wire to Output 4 (Connects to Coil 11)
- 4 Wire to Output 3 (Connects to Coil 11)
- 3 Wire to Output 2 (Connects to Coil 11)
- 2 Wire to Output 1 (Connects to Coil 11)
- 1 Wire to Output 8 (Connects to Coil 1)

**37 Wire to Earth Ground**

- 36 & 35 Wire to Common

**Terminal Strip Wiring Layout (AKF, AKT)**
Module Number 239-1229, 239-1230, 239-1231, 239-1232

- 17 Wire to Output 16 (Connects to Coil 15)
- 16 Wire to Output 15 (Connects to Coil 15)
- 15 Wire to Output 14 (Connects to Coil 14)
- 14 Wire to Output 13 (Connects to Coil 13)
- 13 Wire to Output 12 (Connects to Coil 13)
- 12 Wire to Output 11 (Connects to Coil 12)
- 11 Wire to Output 10 (Connects to Coil 12)
- 10 Wire to Output 9 (Connects to Coil 12)
- 9 Wire to Output 8 (Connects to Coil 11)
- 8 Wire to Output 7 (Connects to Coil 11)
- 7 Wire to Output 6 (Connects to Coil 11)
- 6 Wire to Output 5 (Connects to Coil 11)
- 5 Wire to Output 4 (Connects to Coil 10)
- 4 Wire to Output 3 (Connects to Coil 10)
- 3 Wire to Output 2 (Connects to Coil 10)
- 2 Wire to Output 1 (Connects to Coil 10)
- 1 Wire to Output 8 (Connects to Coil 1)

**12 Pin Round Connector Wiring Layouts (AKS)**
Module Number 239-1184, 239-1185
(Male View)

- 18 Wire to Output 15 (Connects to Coil 13)
- 17 Wire to Output 14 (Connects to Coil 13)
- 16 Wire to Output 13 (Connects to Coil 13)
- 15 Wire to Output 12 (Connects to Coil 13)
- 14 Wire to Output 11 (Connects to Coil 12)
- 13 Wire to Output 10 (Connects to Coil 12)
- 12 Wire to Output 9 (Connects to Coil 12)
- 11 Wire to Output 8 (Connects to Coil 11)
- 10 Wire to Output 7 (Connects to Coil 11)
- 9 Wire to Output 6 (Connects to Coil 11)
- 8 Wire to Output 5 (Connects to Coil 10)
- 7 Wire to Output 4 (Connects to Coil 10)
- 6 Wire to Output 3 (Connects to Coil 10)
- 5 Wire to Output 2 (Connects to Coil 9)
- 4 Wire to Output 1 (Connects to Coil 9)

**26 & 12 Pin Round Connectors Wiring Layouts (AKR)**
Module Number 239-1376, 239-1377
(Male View)

- 16 Wire to Output 15 (Connects to Coil 15)
- 15 Wire to Output 14 (Connects to Coil 15)
- 14 Wire to Output 13 (Connects to Coil 14)
- 13 Wire to Output 12 (Connects to Coil 14)
- 12 Wire to Output 11 (Connects to Coil 14)
- 11 Wire to Output 10 (Connects to Coil 14)
- 10 Wire to Output 9 (Connects to Coil 14)
- 9 Wire to Output 8 (Connects to Coil 14)
- 8 Wire to Output 7 (Connects to Coil 14)
- 7 Wire to Output 6 (Connects to Coil 14)
- 6 Wire to Output 5 (Connects to Coil 13)
- 5 Wire to Output 4 (Connects to Coil 13)
- 4 Wire to Output 3 (Connects to Coil 13)
- 3 Wire to Output 2 (Connects to Coil 13)
- 2 Wire to Output 1 (Connects to Coil 13)
- 1 Wire to Output 8 (Connects to Coil 1)

**Electrical Interface Wiring Data Sheet**

Subject to change without notice

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