With Detection of Main Valve Position

Category 2

The detecting function of the main valve position detects a mismatch between the input signal and valve operation.

Redundant system can be constructed easily.

Category 3, 4

When the dual residual pressure release valve is used, if one of the valves fails to operate, the other one releases residual pressure.

Redundant System

A system in which even if one part fails, the whole system will fulfill its required function. This is usually achieved by having dual channels of operation, such as dual valves, dual wiring, dual guard switches etc.

Series VP/VG

Safety Standard ISO13849-1 Certified

*Corresponding to Category 2 to 4

RoHS

*1. Refer to page 2 for compliant products.

*2. Refer to page 2 for certified products.
3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position  
Series VP/VG

With Detection of Main Valve Position (Category 2)

Category 2 Safety function can be accomplished by single channel and is automatically checked.

```
Input signal | Logical operation equipment | Output signal
-------------|-----------------------------|-------------------
I             | L                           | O

Monitoring

TE

Testing equipment

Output of test result

OTE

Output of test result

I

Input equipment

L

Logical operation equipment

O

Output equipment
```

The detecting function of the main valve position detects a mismatch between the input signal and valve operation.

Input equipment (I): Detection equipment (sensor) of starting event
Logical operation equipment (L): Relay sequence circuit, PLC control program
Output equipment (O): Solenoid valve, Electromagnetic switch, Output relay

Recommended valve: VP542/742-X536

Residual pressure release valve

```
VP542-X536
```

* This product is component which is a part of a safety system and safety equipment is not guaranteed by this single unit alone.

Highly reliable construction

1. The main valve position is detected by transferring the main valve movement directly to the reed safety limit switch with the rod.

2. Long service life: B10d: 10 million times

3. The return spring releases the residual pressure securely regardless of pressure level.

   * For VP500/700, safety limit switch made by OMRON

With soft start-up function (-X555)

- A function to gradually increase the initial pressure of the pneumatic system has been added to the dual residual pressure release valve.
- Fixed orifice and variable throttle are available as a throttle for adjusting the pressure increase. (Ø1, Ø1.5, Ø2)

Conduit (VP series only) and M12 connector (4 pin) types are available.

Made by OMRON

Made by Rockwell Automation

Safety limit switch can be selected.

Conduit (VP series only) and M12 connector with 6 pins is available.

Output Pressure (P2) vs Time Graph

Pr reaches half of P1, and then the main valve of the soft start-up valve turns on.

Soft start-up valve: OFF

Valve 1: Valve 2: OFF

Soft start-up valve: ON

Valve 1: Valve 2: ON

Start supplying fine adjusted air with less than ½ of P1 by energizing valve 1 and valve 2.
### Standards and Enclosure

<table>
<thead>
<tr>
<th>Series</th>
<th>Category</th>
<th>Safety limit switch manufacturer</th>
<th>Standards</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Pressure</td>
<td>2</td>
<td>OMRON Corporation</td>
<td>Harmonized standards</td>
<td>IP65</td>
</tr>
<tr>
<td>Release Valve VP542/742-X536</td>
<td></td>
<td></td>
<td>ISO13849-1: 2008</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EN ISO4414: 2010</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cUL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RoHS</td>
<td></td>
</tr>
<tr>
<td>Dual Residual Pressure</td>
<td>3, 4</td>
<td>OMRON Corporation</td>
<td></td>
<td>IP65</td>
</tr>
<tr>
<td>Release Valve VP544/744-X538</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual Residual Pressure</td>
<td>3, 4</td>
<td>OMRON Corporation</td>
<td></td>
<td>IP65</td>
</tr>
<tr>
<td>Release Valve VP544/744-X555</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual Residual Pressure</td>
<td>3, 4</td>
<td>OMRON Corporation</td>
<td></td>
<td>IP40</td>
</tr>
<tr>
<td>Release Valve VG342-X87</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Only port size 3/4”

### Series Variations

<table>
<thead>
<tr>
<th>Series</th>
<th>Category</th>
<th>Port size</th>
<th>Thread</th>
<th>Flow rate characteristics C [dm³/(s·bar)]</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Pressure</td>
<td>2</td>
<td>3/8”</td>
<td>Rc, G, NPT</td>
<td>8.9</td>
<td>15.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release Valve VP742-X536</td>
<td></td>
<td>1/2”</td>
<td>Rc, G, NPT</td>
<td>6.5</td>
<td>10.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Pressure</td>
<td>3, 4</td>
<td>3/8”</td>
<td>Rc, G, NPT</td>
<td>5.2</td>
<td>9.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release Valve VP744-X538</td>
<td></td>
<td>1/2”</td>
<td>Rc, G, NPT</td>
<td>5.2</td>
<td>9.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual Residual Pressure</td>
<td>3, 4</td>
<td>3/4”</td>
<td>Rc, G, NPT</td>
<td>26.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release Valve VG342-X87</td>
<td></td>
<td>3/4”</td>
<td>Rc, G, NPT</td>
<td>26.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Standards
- ISO13849-1
- CE
- cUL
- RoHS

### Enclosure
- IP65
- IP65
- IP40

### Series Variations

- Residual Pressure Release Valve VP542/742-X536
- Residual Pressure Release Valve VP742-X536
- Dual Residual Pressure Release Valve VP544/744-X538
- Dual Residual Pressure Release Valve VP744-X538
- Dual Residual Pressure Release Valve VP544/744-X555
- Dual Residual Pressure Release Valve VP744-X555
- Dual Residual Pressure Release Valve VG342-X87

### Can be connected to Modular type F.R.L. units.

Applicable models:
- VP544/744-X538
- VP544/744-X555

* Please contact SMC for the VP542/742-X536.
How to Order

3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position
VP500/700-X536, X538, X555

Made to Order

1 Series Compatible with Secondary Batteries
For details about 25A-, refer to the WEB catalog “Series Compatible with Secondary Batteries/Series 25A-.”

How to Order

25A–VP□4□□–5DZ1–□□□□□□□□□–X536 X538 X555

*Fill in according to How to Order above.

Secondary battery compatible

Note) Electrical entry can be selected only for D type.
Check valve type is available only when the thread type is Rc.

Safety Standard ISO13849-1 Certified

Fill in according to How to Order above.

Series Compatible with Secondary Batteries
For details about 25A-, refer to the WEB catalog “Series Compatible with Secondary Batteries/Series 25A-.”

How to Order

25A–VP□4□□–5DZ1–□□□□□□□□□–X536 X538 X555

*Fill in according to How to Order above.

Secondary battery compatible

Note) Electrical entry can be selected only for D type.
Check valve type is available only when the thread type is Rc.
Valve Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of actuation</td>
<td>N.C. (Spring return)</td>
</tr>
<tr>
<td>Operation</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>0.25 to 0.7 MPa</td>
</tr>
<tr>
<td>External pilot pressure</td>
<td>—</td>
</tr>
<tr>
<td>Maximum operating frequency</td>
<td>30 times/minute</td>
</tr>
<tr>
<td>Minimum operating frequency</td>
<td>1 time/week</td>
</tr>
<tr>
<td>Operating and ambient temperature</td>
<td>−10 to 50°C (No freezing)</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>20 to 90%RH (No condensation)</td>
</tr>
<tr>
<td>Manual override</td>
<td>None</td>
</tr>
<tr>
<td>Pilot exhaust</td>
<td>Individual exhaust</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance</td>
<td>150/30 m/s²</td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP65</td>
</tr>
<tr>
<td>Operating environment</td>
<td>Indoors</td>
</tr>
<tr>
<td>B10d (MTTFd calculation)</td>
<td>10000000 times (for the safety limit switch made by OMRON) 1000000 times (for the safety limit switch made by Rockwell Automation)</td>
</tr>
</tbody>
</table>

Internal Pilot Type

**Caution**
Valve may not operate properly when air supply to P port is not adequate and the supply pressure to the valve is lower than 0.25 MPa, the minimum operating pressure. Be careful with insufficient supply pressure.

Piping for External Pilot Type

**Caution**
The product may not operate when the external pilot pressure is insufficient due to simultaneous operation or restricted air piping. In this case, use the check valve (AKH series) with the external pilot port, change the piping size or adjust the set pressure to provide a constant pressure of 0.25 MPa or more.

Flow Rate Characteristics / Weight

<table>
<thead>
<tr>
<th>Series</th>
<th>Flow rate characteristics</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1→2 (P→A)</td>
<td>b</td>
</tr>
<tr>
<td>VP542-X536</td>
<td>8.9 0.16  2.2</td>
<td>8.9 0.20  2.1</td>
</tr>
<tr>
<td>VP742-X536</td>
<td>15.1 0.21  3.6</td>
<td>15.3 0.22  3.7</td>
</tr>
<tr>
<td>VP544-X538</td>
<td>6.5 0.08  1.3</td>
<td>6.7 0.10  1.3</td>
</tr>
<tr>
<td>VP744-X538</td>
<td>10.3 0.08  2.3</td>
<td>9.7 0.08  2.1</td>
</tr>
<tr>
<td>VP544-X555</td>
<td>5.2 0.06  1.1</td>
<td>6.7 0.10  1.3</td>
</tr>
<tr>
<td>VP744-X555</td>
<td>9.8 0.08  2.1</td>
<td>9.7 0.08  2.1</td>
</tr>
</tbody>
</table>

Needle Valve / Flow Rate Characteristics (VP544/744-X555)

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>DIN terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10%</td>
</tr>
<tr>
<td>Power consumption</td>
<td>0.45 W</td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Varistor</td>
</tr>
<tr>
<td>Indicator</td>
<td>LED</td>
</tr>
</tbody>
</table>

Safety Limit Switch Specifications

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>OMRON</th>
<th>Rockwell Automation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical wiring</td>
<td>SI/2, MI/2 connector</td>
<td>M12 connector</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>25 mΩ or less</td>
<td>50 mΩ or less</td>
</tr>
<tr>
<td>Min. applicable load</td>
<td>10 kΩ, 1% (Load resistance)</td>
<td>10 kΩ, 1% (Load resistance)</td>
</tr>
<tr>
<td>Max. voltage</td>
<td>24 VDC</td>
<td></td>
</tr>
<tr>
<td>Max. load current</td>
<td>50 mA</td>
<td></td>
</tr>
<tr>
<td>Max. load inductance</td>
<td>0.5 H</td>
<td></td>
</tr>
<tr>
<td>Insulation voltage</td>
<td>300 V 600 V</td>
<td></td>
</tr>
<tr>
<td>Protection against electric shock</td>
<td>Class II (EN60947-5-1: 2004)</td>
<td></td>
</tr>
</tbody>
</table>
Symbols

<table>
<thead>
<tr>
<th>Safety limit switch terminal [N.C.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made by OMRON</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Terminal/Pin Numbers (Built-in switch 2N.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 connector pin number</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

**VP542(R)/742(R)-X536**

- **Internal pilot**
- **External pilot**
- **External pilot/With check valve**

**VP544(R)/744(R)-X538**

- **Internal pilot**
- **External pilot**
- **External pilot/With check valve**

**VP544(R)/744(R)-X555**

- **Internal pilot**
- **External pilot**
- **External pilot/With check valve**
Symbols

Safety limit switch

Made by Rockwell Automation

Symbol | Pin Numbers (Built-in switch 3N.C.)
-------|------------------------------------

<table>
<thead>
<tr>
<th>M12 connector pin number</th>
<th>Wiring specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3(R)</td>
</tr>
<tr>
<td>2</td>
<td>1(P)</td>
</tr>
<tr>
<td>3</td>
<td>2(A)</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

VP542(R)/742(R)-X536

- Internal pilot
- External pilot
- External pilot/With check valve

VP544(R)/744(R)-X538

- Internal pilot
- External pilot
- External pilot/With check valve

VP544(R)/744(R)-X555

- Internal pilot
- External pilot
- External pilot/With check valve

Safety limit switch terminal [N.C.] M12 connector pin number

Made by Rockwell Automation

Symbols

VP500/700

X536

X538

X555

Specific Product Precautions

Optional Accessories

VP500/700

X536

X538

X555

Specific Product Precautions

Optional Accessories

VP500/700

X536

X538

X555

Specific Product Precautions

Optional Accessories
VP500/700-X536

Dimensions

VP542(R)-5Z1-03□-□-X536
VP542(R)-5Z1-03□-M□-X536

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)
(External pilot port)

Port size: 3/8"
[2(A) port]

Applicable cable O.D.
ø3.5 to ø7

Safety limit switch
Made by
OMRON

Applicable cable O.D.
ø3.5 to ø7

Safety limit switch
Made by
Rockwell Automation

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)
(External pilot port)

Port size: 3/8"
[2(A) port]

Applicable cable O.D.
ø3.5 to ø7

Safety limit switch
Made by
OMRON

Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)

Part number: 440P-CDPB03R6

View A
For M12 connector

View A
M12 connector
Dimensions

Residual Pressure Release Valve (-X536)

VP742(R)-5\(Z1\)-04\(-\)-X536
VP742(R)-5\(Z1\)-04\(-\)-M\(-\)-X536

Safety limit switch
Made by OMRON

Applicable cable O.D.
\(\phi3.5\) to \(\phi7\)

1/2"
Port size: 1/8" (Without check valve)
Applicable tube O.D.: \(\phi6, \phi1/4"\) (With check valve)
(External pilot port)

Port: \(2(A)\) port

Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)

M12 connector

Pin number

View A
For M12 connector

View A
M12 connector

Pin number

VP742(R)-5\(Z1\)-04\(-\)-S1\(-\)-X536

Safety limit switch
Made by Rockwell Automation

Applicable cable O.D.
\(\phi3.5\) to \(\phi7\)

1/2"
Port size: 1/8" (Without check valve)
Applicable tube O.D.: \(\phi6, \phi1/4"\) (With check valve)
(External pilot port)

Part number: 440P-CDPB03R6

M12 connector

Pin number

View A
M12 connector
VP500/700-X538

Dimensions

Dual Residual Pressure Release Valve (-X538)

VP544(R)-50Z1-03□-□-X538
VP544(R)-50Z1-03□-□-M□-X538

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)
(Applicable cable O.D.: \( \varnothing 3.5 \) to \( \varnothing 7 \))

Vent port \( (\varnothing 6.2) \)
\( (22.9) \) (With check valve)

Channel 2
Channel 1

(2 x \( \varnothing 5.2 \))
(For mounting)

(2 x \( 3/8" \))
(M12 connector)

View A
For M12 connector

Pin number

Made by
OMRON

Safety limit switch
(Safety limit switch (made by OMRON)
Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)

Applicable cable O.D.: \( \varnothing 3.5 \) to \( \varnothing 7 \)

Made by
OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)

Pin number

Made by
OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)

Made by
OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)

Made by
OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)

Pin number

Made by
OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)

Made by
OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: \( \varnothing 6, \varnothing 1/4" \) (With check valve)
Safety limit switch
Made by Rockwell Automation

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

Applicable cable O.D.: ø3.5 to ø7

Dimensions

Dual Residual Pressure Release Valve (-X538)

VP544(R)-5□Z1-03□-S1□-X538

Safety limit switch (made by Rockwell Automation)
Part number: 440P-CDPB03MR6

VP500/700-5D Y Z1-03 L X538

Dual Residual Pressure Release Valve (-X538)

View A

M12 connector

Pin number

Made by Rockwell Automation

Option 3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position VP500/700-X538

Specific Product
Precautions

Symbols

Optional Accessories

VP500/700

X536

X538

X555

VG342

X87

Specific Product
Precautions

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

Applicable cable O.D.: ø3.5 to ø7

Safety limit switch (made by Rockwell Automation)
Part number: 440P-CDPB03MR6

VP544(R)-5□Z1-03□-S1□-X538

Channel 2

Channel 1

(Vent port (ø6.2)
(With check valve)

(22.9)

(2) port

3/8"

2 x ø5.2
(For mounting)

M12 connector

2 x 3/8"
[3(R) port]

A

3/8"
[1(P) port]
VP500/700-X538

Dimensions

Dual Residual Pressure Release Valve (-X538)

VP744(R)-5Z1-04-□-X538
VP744(R)-5Z1-04-□-M-X538

Safety limit switch
Made by OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)
(External pilot port)

Applicable cable O.D.: ø3.5 to ø7

Dimensions

View A
For M12 connector

Pin number
Dimensions

VP744(R)-5Z1-04_S1-X538

Safety limit switch
Made by Rockwell Automation

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(External pilot port)

Applicable cable O.D.
ø3.5 to ø7

(With check valve)

1/2"
(2(A) port)

(3(R) port)

M12 connector

2 x ø6.2
(For mounting)

Channel 2

Channel 1

2 x 1/2"

Vent port
(ø6.2)

(22.9)

(With check valve)

1/2"

[1(P) port]

Pin number

36

124.8

80

135.9

103.2

1/2"

93

View A

M12 connector

99

238.5

67

6.5

113.5

135.9

8

70.2

27.2

16

7.5

77.5

36

40

41.5

40

18

50

18

117.3

113.5

8238.5(Max. 10)

(22.9)

103.2

(With check valve)

Port number: 440P-CDPB03R6

(VP744(R)-5Z1-04_S1-X538)

Dual Residual Pressure Release Valve (-X538)

VP500/700-X538

Made by Rockwell Automation

Safety limit switch (made by Rockwell Automation)

3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position

Safety Standard ISO13849-1 Certified
3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position

VP500/700

Specific Product Precautions

Optional Accessories
VP500/700-X555

Dual Residual Pressure Release Valve with Soft Start-up Function (-X555)

Dimensions

VP544(R)-5Z1-03-□-□-X555
VP544(R)-5Z1-03-□-□-X555

Safety limit switch
Made by
OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(Vent port)
(Variable throttle type)
(M12 connector)

Safety limit switch (made by OMRON)
Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)

Port: 3/8" [P] port
2 x 3/8" [R] port

(A) port

Pin number

Made by
OMRON

Safety limit switch
Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)

Port size: 3/8" [P] port
2 x 3/8" [R] port

(A) port

Pin number

Made by
OMRON

Safety limit switch
Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)

Port size: 3/8" [P] port
2 x 3/8" [R] port

(A) port

Pin number

Made by
OMRON

Safety limit switch
Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)

Port size: 3/8" [P] port
2 x 3/8" [R] port

(A) port

Pin number

Made by
OMRON

Safety limit switch
Part number: D4N-2B31 (G1/2)
: D4N-9B31 (M12 connector)
Dimensions

VP544(R)-5\[Z1-03\[S1\[X555

Safety limit switch
Made by Rockwell Automation

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)
(External pilot port)

Safety limit switch (made by Rockwell Automation)
Part number: 440P-CDPB03R6

M12 connector

Vent port
 ø6.2
(With check valve)

(Variable throttle type)

Applicable cable O.D.
(ø3.5 to ø7)

2 x ø5.2
(For mounting)

2 x 3/8"
[3(R) port]

28.5

90.4

(90.4)

93.8

35

62.5

93.8

(3/8")

[2(A) port]

125

55.7

8

216.1

62.5

28.5

216.7

101.3

24.2

15.5

10.5

75.5

24.2

3/8"

[1(P) port]

15

90.4

28.5

90.4

216.7

15

90.4

30

22.9

Max. 10

15

90.4

30

22.9

Max. 10
VP500/700-X555

Dimensions

Dual Residual Pressure Release Valve with Soft Start-up Function (-X555)

VP744(R)-5°Z1-04-□-□-X555
VP744(R)-5°Z1-04-□-□-X555

Safety limit switch
Made by OMRON

Part number: D4N-2B31 (G1/2)
D4N-9B31 (M12 connector)

2 x ø6.2 (For mounting)
Applicable cable O.D.: ø3.5 to ø7

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(External pilot port)

1/2"
[2(A) port]

Safety limit switch (made by OMRON)

[3(R) port]
G1/2
(M12 connector)

2 x 1/2"
[5(R) port]

224.2 (88.9)
(Variable throttle type)

1/2"
[1(P) port]

Vent port
ø6.2
(With check valve)

40

Vent port
ø6.4

224.8
88.9

6.5

9.5

33.7

18.5

27.2

70.7

77.5

99

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(View A
For M12 connector

Pin number

Dimensions Dual Residual Pressure Release Valve with Soft Start-up Function (-X555)

VP744(R)-5°Z1-04-□-□-X555
VP744(R)-5°Z1-04-□-□-X555

Safety limit switch
Made by OMRON

Part number: D4N-2B31 (G1/2)
D4N-9B31 (M12 connector)

2 x ø6.2 (For mounting)
Applicable cable O.D.: ø3.5 to ø7

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(External pilot port)

1/2"
[2(A) port]

Safety limit switch (made by OMRON)

[3(R) port]
G1/2
(M12 connector)

2 x 1/2"
[5(R) port]

224.2 (88.9)
(Variable throttle type)

1/2"
[1(P) port]

Vent port
ø6.2
(With check valve)

40

Vent port
ø6.4

224.8
88.9

6.5

9.5

33.7

18.5

27.2

70.7

77.5

99

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(View A
For M12 connector

Pin number

Dimensions Dual Residual Pressure Release Valve with Soft Start-up Function (-X555)

VP744(R)-5°Z1-04-□-□-X555
VP744(R)-5°Z1-04-□-□-X555

Safety limit switch
Made by OMRON

Part number: D4N-2B31 (G1/2)
D4N-9B31 (M12 connector)

2 x ø6.2 (For mounting)
Applicable cable O.D.: ø3.5 to ø7

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(External pilot port)

1/2"
[2(A) port]

Safety limit switch (made by OMRON)

[3(R) port]
G1/2
(M12 connector)

2 x 1/2"
[5(R) port]

224.2 (88.9)
(Variable throttle type)

1/2"
[1(P) port]

Vent port
ø6.2
(With check valve)

40

Vent port
ø6.4

224.8
88.9

6.5

9.5

33.7

18.5

27.2

70.7

77.5

99

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(View A
For M12 connector

Pin number

Dimensions Dual Residual Pressure Release Valve with Soft Start-up Function (-X555)

VP744(R)-5°Z1-04-□-□-X555
VP744(R)-5°Z1-04-□-□-X555

Safety limit switch
Made by OMRON

Part number: D4N-2B31 (G1/2)
D4N-9B31 (M12 connector)

2 x ø6.2 (For mounting)
Applicable cable O.D.: ø3.5 to ø7

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

(External pilot port)

1/2"
[2(A) port]

Safety limit switch (made by OMRON)

[3(R) port]
G1/2
(M12 connector)

2 x 1/2"
[5(R) port]

224.2 (88.9)
(Variable throttle type)

1/2"
[1(P) port]

Vent port
ø6.2
(With check valve)
Dimensions

Dual Residual Pressure Release Valve with Soft Start-up Function (-X555)

VP744(R)-5[Z1-04-S1-X555

Made by Rockwell Automation

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø6, ø1/4" (With check valve)

Applicable cable O.D.: ø3.5 to ø7

Safety limit switch (made by Rockwell Automation)
Part number: 440P-CDPB03R6

Max. 10

16

245

40

27.2

36

86.3

40

1/2"

[1(P) port]

M12 connector

Vent port

(ø6.4)

(22.9)

(236.4)

(86.3)

(67)

6.5

18.5

11/2"

[3(R) port]

2 x 1/2"

External pilot port

[2(A) port]

67

117.3

7.6

4.15

18

44.4

117.3

(Max. 10)

(Variable throttle type)

2 x ø6.2

(For mounting)

Vent port

(ø6.4)

(236.4)

(86.3)

40

1/2"

[1(P) port]

M12 connector

Vent port

(ø6.4)

(236.4)

(86.3)

40

1/2"

[1(P) port]

M12 connector

View A

M12 connector

Pin number

Made by Rockwell Automation

Safety Standard ISO13849-1 Certified
3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position

VP500/700-X555
VP500/700-X538, X555
Optional Accessories

For details about optional accessories, refer to the WEB catalog.

Piping Adapter: 3/8, 1/2

A piping adapter allows installation/removal of the component without removing the piping and thus makes maintenance easier.

Spacer with Bracket

Note) □ in part numbers indicates a pipe thread type.
No indication is necessary for Rc; however, indicate N for NPT, and F for G.
* Separate interfaces are required for modular unit.

Ordering Example*

VP544-5DZ1-03-X538 ........ 1 pc.
Filter regulator
AW30-03G-A ......................... 1 pc.
Spacer with bracket
Y300T-A ......................... 3 pcs.
Piping adapter
E300-03-A ......................... 2 pcs.

* Each product is not assembled.

Spacer with Bracket Mounting Position

Dual residual pressure release valve (-X538)

Dual residual pressure release valve with soft start-up function (-X555)

<table>
<thead>
<tr>
<th>Model</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP544-5DZ1-03-X538</td>
<td>33.9</td>
<td>57.2</td>
<td>95.7</td>
<td>220.7</td>
<td>AW30-03G-A Y300T-A E300-03-A</td>
</tr>
<tr>
<td>VP744-5DZ1-04-X538</td>
<td>34.4</td>
<td>75.2</td>
<td>118.7</td>
<td>262.7</td>
<td>AW40-04G-A Y400T-A E400-04-A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP544-5DZ1-03-X555</td>
<td>33.9</td>
<td>57.2</td>
<td>129.2</td>
<td>254.2</td>
<td>AW30-03G-A Y300T-A E300-03-A</td>
</tr>
<tr>
<td>VP744-5DZ1-04-X555</td>
<td>34.4</td>
<td>75.2</td>
<td>160.2</td>
<td>304.2</td>
<td>AW40-04G-A Y400T-A E400-04-A</td>
</tr>
</tbody>
</table>
VP500/700-X536, X538, X555
Specific Product Precautions

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For 3/4/5 Port Solenoid Valve Precautions, refer to “Handling Precautions for SMC Products” and the Operation Manual on the SMC website, http://www.smcworld.com

How to Use DIN Terminal Connector

⚠️ Caution

Connection
1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding screw, insert a flat blade screwdriver etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3. Loosen the screw (slotted screws) in the terminal block. Insert the lead core wires to the terminals according to the connection method, and secure the wires by re-tightening the terminal screw.
4. Secure the cord by fastening the ground nut.

⚠️ Caution

When making connections, please note that using other than the supported size (ø3.5 to ø7) heavy-duty cord will not satisfy IP65 (enclosure) standards. Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

Changing the entry direction

After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90° intervals).

* When equipped with a light, be careful not to damage the light with the cord's lead wires.

Precautions

Plug in and pull out the connector vertically without tilting to one side.

Compatible cable

Cord O.D.: ø3.5 to ø7
(Reference) 0.5 mm², 2-core or 3-core, equivalent to JIS C 3306

light/surge voltage suppressor

DIN Terminal

With light (DZ)  
(YZ)

No.1  
(–)(+)

Varistor

No.2  
(+)(–)

Coil

LED

There is no polarity.

Note) Surge voltage suppressor of varistor has residual voltage corresponding to the protective element and rated voltage; therefore, protect the controller side from the surge voltage.

Limit Switch Cable

OMRON or Rockwell Automation M12 connector limit switch cable is available.

M12 Connector Cable (4 Pins) Made by OMRON

<table>
<thead>
<tr>
<th>Part number</th>
<th>Cable length [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZS-37-L</td>
<td>300</td>
</tr>
<tr>
<td>ZS-37-M</td>
<td>500</td>
</tr>
<tr>
<td>ZS-37-N</td>
<td>1000</td>
</tr>
<tr>
<td>ZS-37-P</td>
<td>2000</td>
</tr>
<tr>
<td>ZS-37-C</td>
<td>5000</td>
</tr>
</tbody>
</table>

M12 Connector Cable (6 Pins) Made by Rockwell Automation

<table>
<thead>
<tr>
<th>Part number</th>
<th>Cable length [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP500-231-1</td>
<td>2000</td>
</tr>
</tbody>
</table>

Installation

Use the external pilot type when using VP500/700-X536 or X538 with AV series. Install the AV series to the primary side.

Type “Y”

DIN connector type Y is a DIN connector that confirms to the DIN pitch 8-mm standard.
- D type DIN connector with 9.4 mm pitch between terminals is not interchangeable.
- To distinguish from the D type DIN connector, “N” is listed at the end of voltage symbol.
- Dimensions are completely the same as D type DIN connector.
How to Order

Dual residual pressure release valve

VG342 R - 5DZ - 06 - M - X87

- Pilot
  - Nil: Internal pilot
  - R: External pilot

- Voltage
  - 5: 24 VDC

- Electrical entry
  - D: DIN terminal

- Light/surge voltage suppressor
  - Z: With light/surge voltage suppressor

- Port size
  - 06: 3/4"
  - 1: 1"

- Safety limit switch/Wiring
  - M: M12 connector (Made by OMRON)
  - S1: M12 connector (Made by Rockwell Automation)

- Thread
  - Nil
  - Rc
  - G
  - NPT

With check valve (Only external pilot)

<table>
<thead>
<tr>
<th>Check valve</th>
<th>Applicable tube O.D.</th>
<th>Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>—</td>
<td>Rc G NPT</td>
</tr>
<tr>
<td>A</td>
<td>ø8</td>
<td>● — —</td>
</tr>
<tr>
<td>B</td>
<td>ø5/16&quot;</td>
<td>— ● —</td>
</tr>
</tbody>
</table>

* For internal pilot, the symbol is nil.
* Refer to “Piping for External Pilot Type” on page 20 for selection of the check valve.

Made to Order

1 Series Compatible with Secondary Batteries

For details about 25A-, refer to the WEB catalog “Series Compatible with Secondary Batteries/Series 25A-.”

How to Order

25A–VG342 – 5DZ – – – – M – X87

- Fill in according to How to Order above.
- Secondary battery compatible

Note) Electrical entry can be selected only for D type. Check valve type is available only when the thread type is Rc.
Valve Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of actuation</td>
<td>N.C. (Spring return)</td>
</tr>
<tr>
<td>Operation</td>
<td>Internal pilot</td>
</tr>
<tr>
<td></td>
<td>External pilot</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>0.25 to 0.7 MPa</td>
</tr>
<tr>
<td></td>
<td>0.25 to 0.7 MPa</td>
</tr>
<tr>
<td>External pilot pressure</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>0.25 to 0.7 MPa (Same as operating pressure)</td>
</tr>
<tr>
<td>Maximum operating frequency</td>
<td>30 times/minute</td>
</tr>
<tr>
<td>Minimum operating frequency</td>
<td>1 time/week</td>
</tr>
<tr>
<td>Operating and ambient temperature</td>
<td>−10 to 50°C (No freezing)</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>95%RH or less (No condensation)</td>
</tr>
<tr>
<td>Manual override</td>
<td>None</td>
</tr>
<tr>
<td>Pilot exhaust</td>
<td>Individual exhaust</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance</td>
<td>150/50 m/s²</td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP40</td>
</tr>
<tr>
<td>Operating environment</td>
<td>Indoors</td>
</tr>
<tr>
<td>Weight</td>
<td>2.6 kg 2.9 kg</td>
</tr>
<tr>
<td>B10d (MTTFd calculation)</td>
<td>900000 times</td>
</tr>
</tbody>
</table>

**Internal Pilot Type**

⚠️ Caution

Valve may not operate properly when air supply to P port is not adequate and the supply pressure to the valve is lower than 0.25 MPa, the minimum operating pressure. Be careful with insufficient supply pressure.

**Piping for External Pilot Type**

⚠️ Caution

The product may not operate when the external pilot pressure is insufficient due to simultaneous operation or restricted air piping. In this case, use the check valve (AKH series) with the external pilot port, change the piping size or adjust the set pressure to provide a constant pressure of 0.25 MPa or more.

Flow Rate Characteristics

<table>
<thead>
<tr>
<th>Series</th>
<th>Flow rate characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1→2 (P→A)</td>
</tr>
<tr>
<td></td>
<td>C [dm³/(s·bar)]</td>
</tr>
<tr>
<td>VG342-X87</td>
<td>26.6</td>
</tr>
</tbody>
</table>

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>DIN terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>−15% to +10% of rated voltage</td>
</tr>
<tr>
<td>Power consumption</td>
<td>2.2 W</td>
</tr>
<tr>
<td>Suppressor</td>
<td>Diode</td>
</tr>
<tr>
<td>Indicator</td>
<td>LED</td>
</tr>
</tbody>
</table>

Safety Limit Switch Specifications

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>OMRON</th>
<th>Rockwell Automation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical wiring</td>
<td>M12 connector</td>
<td></td>
</tr>
<tr>
<td>Contact resistance</td>
<td>25 mA or less</td>
<td>50 mA or less</td>
</tr>
<tr>
<td>Min. applicable load</td>
<td>10 VAC, 10 mA (Load resistance)</td>
<td>10 VAC, 10 mA (Load resistance)</td>
</tr>
<tr>
<td>Max. voltage</td>
<td>24 VDC</td>
<td></td>
</tr>
<tr>
<td>Max. load current</td>
<td>50 mA</td>
<td></td>
</tr>
<tr>
<td>Max. load inductance</td>
<td>0.5 H</td>
<td></td>
</tr>
<tr>
<td>Insulation voltage</td>
<td>300 V</td>
<td>600 V</td>
</tr>
<tr>
<td>Protection against electric shock</td>
<td>Class II (EN60947-5-1: 2004)</td>
<td></td>
</tr>
</tbody>
</table>
Symbols

Safety limit switch

Made by OMRON

Symbol | Pin Numbers (Built-in switch) 2N.C.

<table>
<thead>
<tr>
<th>M12 connector pin number</th>
<th>Wiring specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3(R) 2(A) 1(P)</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

VG342(R)-X87

Internal pilot

External pilot

External pilot/With check valve

Made by Rockwell Automation

Symbol | Pin Numbers (Built-in switch) 3N.C.

<table>
<thead>
<tr>
<th>M12 connector pin number</th>
<th>Wiring specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6(R) 5(A) 4(B) 3(C) 2(D) 1(P)</td>
</tr>
<tr>
<td>2</td>
<td>5(R) 4(B) 3(C) 2(D) 1(P)</td>
</tr>
<tr>
<td>3</td>
<td>4(B) 3(C) 2(D) 1(P)</td>
</tr>
<tr>
<td>4</td>
<td>3(C) 2(D) 1(P)</td>
</tr>
</tbody>
</table>

VG342(R)-X87

Internal pilot

External pilot

External pilot/With check valve
Dimensions

VG342(R)-5DZ-06□-M□-X87

Made by OMRON

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø8, ø5/16" (With check valve)
(External pilot port)

3 x ø8.5 (Mounting hole)

Vent port
Should be normally open.

2 x 3/4" [3(R) port]
Should be normally open.

3/4" [1(P) port]

Channel 2
A
M12 x 1
Pg9

Channel 1

View A
M12 connector

Pin number

Safety limit switch (made by OMRON)
Part number: D4N-9B31
Applicable cable O.D.: ø4.5 to ø7

3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position

VG342-X87

VP500/700

Symbols

X536

X538

X555

X87

Specific Product Precautions
Optional Accessories

VP500/700

Symbols
VG342-X87

Dimensions

Dual Residual Pressure Release Valve (-X87)

VG342(R)-5DZ-10□-M□-X87

- Port size: 1/8" (Without check valve)
- Applicable tube O.D.: ø8, ø5/16" (With check valve)
- (External pilot port)

- 1" [2(A) port]
- Safety limit switch (made by OMRON)
- Part number: D4N-9B31

- Applicable cable O.D.: ø4.5 to ø7

- View A
  - M12 connector
  - Pin number

- Safety limit switch
  - Made by OMRON
  - Should be normally open.

- Adapter
  - 2 x 1" [3(R) port]

- Vent port
  - Should be normally open.

(Mounting hole)

(27.7)

(190.5: For external pilot)

(76.2)

(75)

(106.6)
**Dimensions**

**VG342(R)-5DZ-06-□-S1□-X87**

**Dual Residual Pressure Release Valve (-X87)**

- **Port size:** 1/8" (Without check valve)
- **Applicable tube O.D.:** ø8, ø5/16" (With check valve)
- **Applicable cable O.D.:** ø4.5 to ø7
- **Safety limit switch** (made by Rockwell Automation)
- **Part number:** 440P-CDPB03R6
- **Channel 1**
  - **Vent port:** Should be normally open.
- **Channel 2**
  - **Applicable cable O.D.:** ø4.5 to ø7
  - **Part number:** 440P-CDPB03R6

**View A**

- **M12 connector**
- **Pin number:**

---

- **Made by Rockwell Automation**

---

**Safety limit switch**

**VG342(X)5DZ-06□-S1□-X87**

**3/4" [2(A) port]**

**Safety Standard ISO13849-1 Certified**

**Residual Pressure Release Valve with Detection of Main Valve Position**

**VG342-X87**

**Pin number:**

**VG342-VP500700**

**Dual Residual Pressure Release Valve (-X87)**

- **Port size:** 1/8" (Without check valve)
- **Applicable tube O.D.:** ø8, ø5/16" (With check valve)
- **Applicable cable O.D.:** ø4.5 to ø7
- **Safety limit switch** (made by Rockwell Automation)
- **Part number:** 440P-CDPB03R6
- **Channel 1**
  - **Vent port:** Should be normally open.
- **Channel 2**
  - **Applicable cable O.D.:** ø4.5 to ø7
  - **Part number:** 440P-CDPB03R6

**View A**

- **M12 connector**
- **Pin number:**

---

**Made by Rockwell Automation**

---

**VG342-X87**

**Pin number:**

**VG342**

**Symptoms**

**X536**

**X538**

**X555**

**Accessories**

**VG342**

---

**Resistance Standard ISO13849-1 Certified**

**Residual Pressure Release Valve with Detection of Main Valve Position**

**VG342-X87**

**Pin number:**

---

**Made by Rockwell Automation**

---

**VG342**

**Symbols**

---

**X87**

---

**Accessories**

---
VG342-R-5DZ-10□-S1□-X87

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø8, ø5/16" (With check valve)
(External pilot port)

Dimensions

Dual Residual Pressure Release Valve (-X87)

View A
M12 connector

Pin number

Made by Rockwell Automation

Port: 1/8" (R) port
Should be normally open.

Pin:

- Channel 1
- Channel 2

Safety limit switch
(made by Rockwell Automation)
Part number: 440P-CDPB03R6
Applicable cable O.D.: ø4.5 to ø7

Safety limit switch
Made by Rockwell Automation

Port size: 1/8" (Without check valve)
Applicable tube O.D.: ø8, ø5/16" (With check valve)
(External pilot port)
**VG342-X87**

**Specific Product Precautions**

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For 3/4/5 Port Solenoid Valve Precautions, refer to “Handling Precautions for SMC Products” and the Operation Manual on the SMC website, http://www.smcworld.com

---

### How to Use DIN Terminal Connector

**Caution**

**Connection**

1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding screw, insert a flat blade screwdriver etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3. Loosen the screw in the terminal block. Insert the lead core wires to the terminals, and secure the wires by re-tightening the terminal screw.
4. Secure the cord by fastening the ground nut.

**Changing the entry direction**

After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the opposite direction 180°.

* Be careful not to damage the element etc. with the cord’s lead wires.

**Precautions**

Plug in and pull out the connector vertically without tilting to one side.

**Compatible cable**

Cord O.D.: ø4.5 to ø7 (Reference) 0.5 to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

**Applicable crimped terminals**

O-terminals: Equivalent to R1.25-4M defined in the JIS C 2805

---

### Light/Surge Voltage Suppressor

- Terminal number 1 (+)
- Terminal number 2 (-)

---

### Limit Switch Cable

OMRON or Rockwell Automation M12 connector limit switch cable is available.

#### M12 Connector Cable (4 Pins) Made by OMRON

<table>
<thead>
<tr>
<th>Part number</th>
<th>Cable length [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZS-37-L</td>
<td>300</td>
</tr>
<tr>
<td>ZS-37-M</td>
<td>500</td>
</tr>
<tr>
<td>ZS-37-N</td>
<td>1000</td>
</tr>
<tr>
<td>ZS-37-P</td>
<td>2000</td>
</tr>
<tr>
<td>ZS-37-C</td>
<td>5000</td>
</tr>
</tbody>
</table>

#### M12 Connector Cable (6 Pins) Made by Rockwell Automation

<table>
<thead>
<tr>
<th>Part number</th>
<th>Cable length [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP500-231-1</td>
<td>2000</td>
</tr>
</tbody>
</table>

---

### Terminal block

- Terminal number
- Terminal screw
- 3 locations
- Tightening torque 0.4 to 0.5 N·m

---

### Housing

- Ground nut: Tightening torque 2.5 to 3.75 N·m
- Washer
- Grommet (Rubber)
- Holding screw: Tightening torque 0.5 to 0.6 N·m
These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1, and other safety regulations.

---

### Safety Instructions

**Caution:** Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

**Warning:** Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

**Danger:** Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

---

### Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

---

### Caution

1. The product is provided for use in manufacturing industries.

   The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.

   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

   A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

---

### Limited warranty and Disclaimer

**Compliance Requirements**

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

**Limited warranty and Disclaimer**

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.

   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.

   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

**Compliance Requirements**

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

---

### Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.