

3 Installation - continued

3.8.1 DC - Polar type

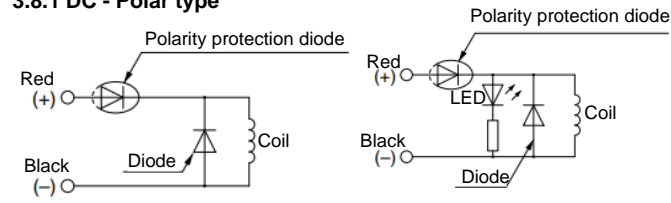


Figure 1. With surge voltage suppressor (#S) Figure 2. Grommet or L/M-type plug with light/surge voltage suppressor (#Z)

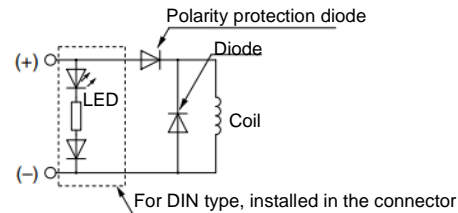


Figure 3. DIN or Conduit terminal with light/surge voltage suppressor (Standard type #Z)

3.8.2 DC - Non-polar type

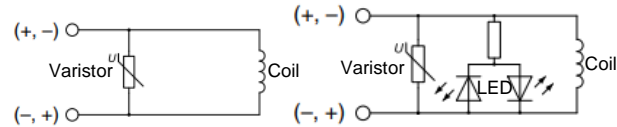


Figure 4. With surge voltage suppressor (Standard #R/Low wattage type #R, #S) Figure 5. Grommet or L/M-type plug with light/surge voltage suppressor (#U)

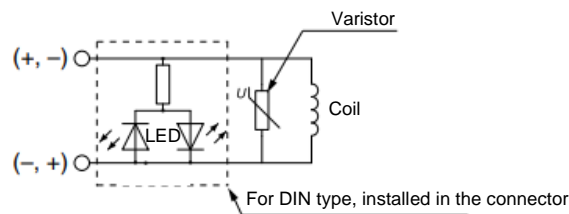


Figure 6. DIN or Conduit terminal with light/surge voltage suppressor (Standard #U/Low wattage type #Z)

3.8.3 Power saving

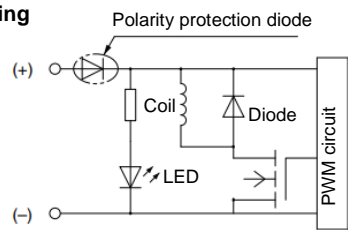


Figure 7. Power saving circuit

Note) Effective energizing time is over 40 ms at 24 VDC. Refer to catalogue for details of the electrical power waveform.

3 Installation - continued

3.8.4 AC

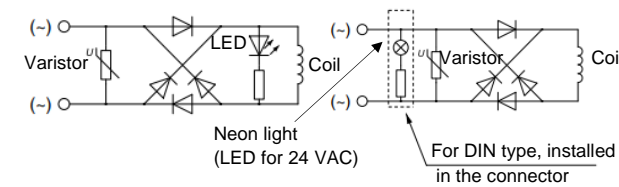


Figure 8. Grommet or L/M-type plug with light/surge voltage suppressor (#Z) Figure 9. DIN or Conduit terminal with light/surge voltage suppressor (#Z)

3.9 Electrical connectors

Caution

3.9.1 DIN terminal

- Refer to catalogue for how to use DIN connector.
- Refer to catalogue for how to change DIN connector direction.
- Applicable cable diameter O.D.: $\phi 3.5$ to $\phi 7$.

3.9.2 DIN (EN175301-803) terminal

Y type DIN terminal corresponds to the DIN connector with terminal pitch 10 mm, which complies with EN175301-803B. Since the terminal pitch is different from the D type DIN connector, these two types are not interchangeable.

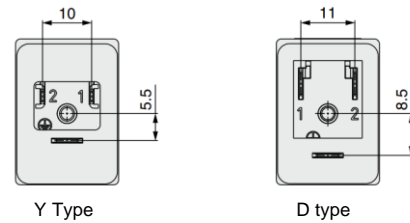


Figure 10. D/Y type DIN terminal diagram

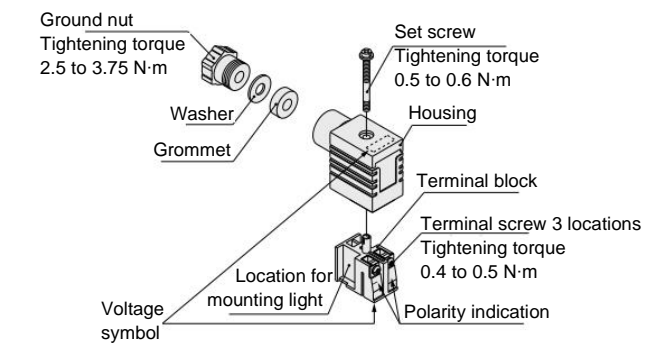


Figure 11. DIN connector assembly (Standard type)

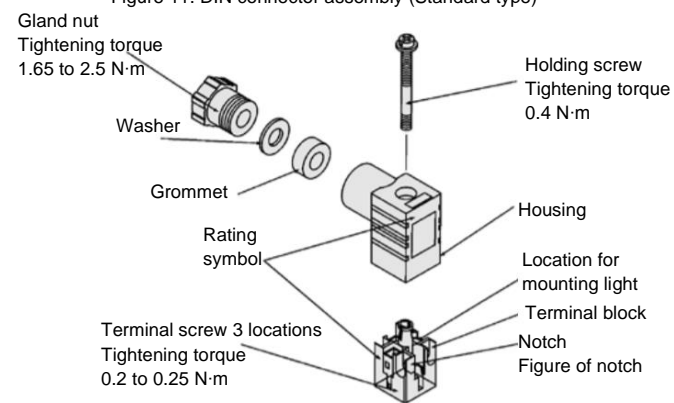
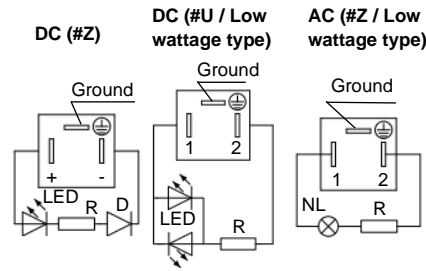


Figure 12. DIN connector assembly (Low wattage specification)

3 Installation - continued



D: Protective diode R: Resistor NL: Neon light

Figure 13. DIN connector pin wiring diagram

3.9.3 Conduit terminal

- Refer to catalogue for how to use Conduit terminal.
- For polar type refer to terminal polarity shown in figure 14.
- Applicable cable diameter O.D.: $\phi 4.5$ to $\phi 7$.

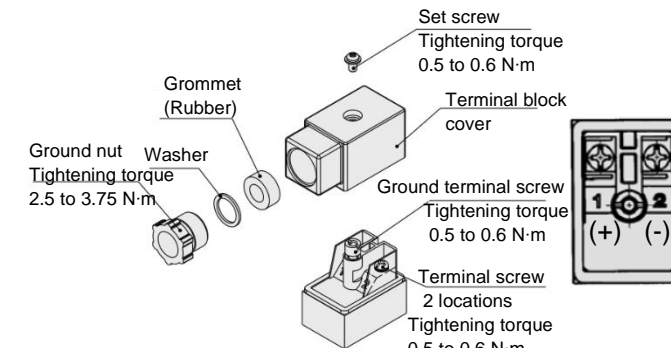


Figure 14. Conduit terminal assembly

3.9.4 L/M-Type plug connector

Refer to catalogue for how to order and how to use plug connector assembly

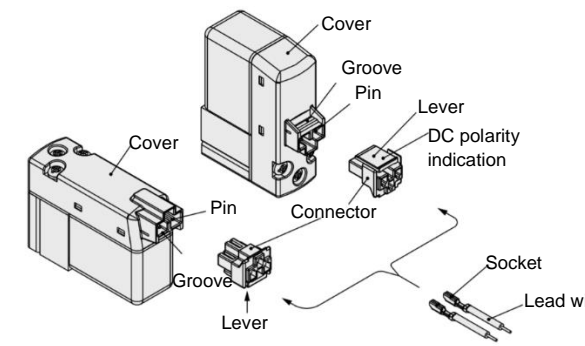


Figure 15. Connector attachment/detachment (standard type)

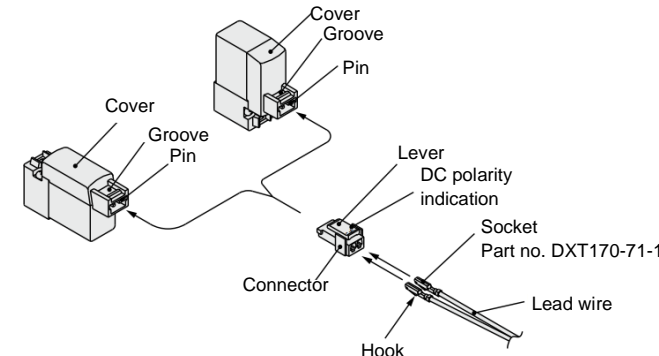


Figure 16. Connector attachment/detachment (low wattage type)

3 Installation - continued

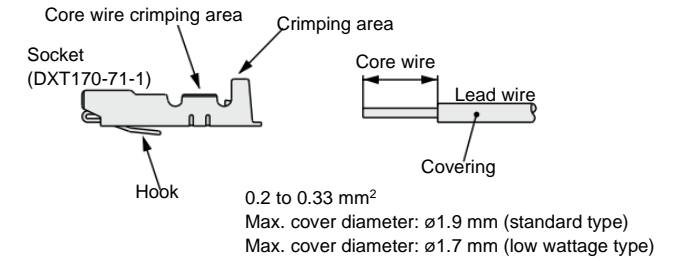


Figure 17. Crimping lead wire and socket connection

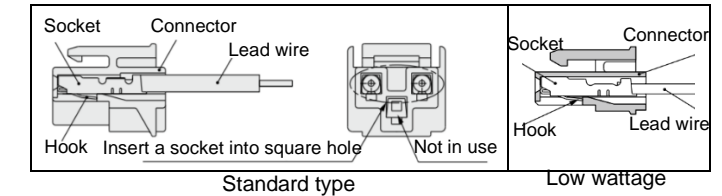


Figure 18. Socket with lead wire attachment/detachment

3.10 Residual voltage

Caution

- If a diode or varistor voltage suppressor is used, the suppressor arrests the back EMF voltage from the coil to the level indicated in Table 6.
- Ensure the transient voltage is within the specification of the host controller.
- Valve response time is dependent on surge suppression method selected.

Surge voltage suppressor	DC		AC
	24 V	12 V	
Diode	Approx. 1 V		Approx. 1 V
Varistor	Approx. 47 V	Approx. 32 V	-

Table 6.

3.11 Countermeasure for surge voltage

Caution

- At times of sudden interruption of the power supply, the energy stored in a large inductive device may cause non-polar type valves in a de-energised state to switch.
- When installing a breaker circuit to isolate the power, consider a valve with polarity (with polarity protection diode), or install a surge absorption diode across the output of the breaker.

3.12 Extended period of continuous energization

Warning

- If a valve will be continuously energized for an extended period of time, the temperature of the valve will increase due to the heat generated by the coil assembly. This will likely adversely affect the performance of the valve and any nearby peripheral equipment. Therefore, if the valve is to be energized for periods of longer than 30 minutes at a time or if during the hours of operation the energized period per day is longer than the de-energized period, we advise using a valve with specifications listed below.
- Pilot operated: A 0.4 W or lower valve, such as the SY series, or a valve with a power-saving circuit.

3.13 Effect of back pressure when using a manifold

Warning

- Use caution when valves are used on a manifold, because an actuator may malfunction due to back-pressure.
- Special caution must be taken when using 3 position exhaust centre valve or when driving a single acting cylinder. To prevent a malfunction, implement counter measures such as using a single EXH spacer assembly or an individual exhaust manifold.

4 How to Order

Refer to catalogue for 'How to Order'.

5 Outline Dimensions

Refer to catalogue for outline dimensions.

6 Maintenance

6.1 General maintenance

⚠ Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

6.2 Mounting

⚠ Caution

Refer to 3.7 Mounting for how to mount valve to sub-plate or manifold.

6.3 Maintainable parts

⚠ Caution

- Refer to catalogue for how to order pilot for how to order and replace pilot valves (Not available for Low wattage specification valves). Recommended tightening torque for M2.5 pilot valve mounting screws: 0.32 N·m.
- Refer to catalogue for how to order gaskets, mounting screws, manifold accessories, electrical connector assemblies and sub-plates.

7 Limitations of Use

7.1 Limited warranty and disclaimer/compliance requirements

⚠ Caution

Refer to Handling Precautions for SMC Products.

⚠ Warning

7.2 Effect of energy loss on valve switching

	Single solenoid	Double solenoid	3 Position
Air supply present, electrical supply cut	Spool returns to the OFF position by air and spring force	Spool stops moving after electricity cut (Position cannot be defined)	Spool returns to the OFF position by spring force
Electrical supply present, air supply cut	Spool stops moving after air pressure cut (Position cannot be defined)	Spool stops moving after air pressure cut (Position cannot be defined)	Spool returns to the OFF position by spring force

Table 7.

Note) Applies to when the spool is at the end position and at an intermediate position.

7.3 Cannot be used as an emergency shut-off valve

This product is not designed for safety applications such as an emergency shut-off valve. If the valves are used in this type of system, other reliable safety assurance measures should be adopted.

7.4 Intermediate stopping

Refer to Handling Precautions for 3/4/5 port Solenoid Valves.

7.5 Holding of pressure

Since valves are subject to air leakage, they cannot be used for applications such as holding pressure (including vacuum) in a system.

⚠ Caution

7.6 Leakage voltage

Ensure that any leakage voltage caused by the leakage current when the switching element is OFF causes $\leq 3\%$ (for DC coils) or $\leq 8\%$ (for AC coils) of the rated voltage across the valve.

7 Limitations of Use - continued

7.7 Low temperature operation

Unless otherwise indicated in the specifications for each valve, operation is possible to -10°C , but appropriate measures should be taken to avoid solidification or freezing of drainage and moisture, etc.

7.8 Momentary energization

If a double solenoid valve is operated with momentary energization, it should be energized for at least 0.1 second. However, depending on the secondary load conditions, it should be energized until the cylinder reaches the stroke end position, as there is a possibility of malfunction otherwise.

8 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

9 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor/importer.

SMC Corporation

URL : <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)
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