**ATEX Compliant**

# 5 Port Solenoid Valve

# *Series 52-SY*

CE 0344 Ex II 2G Ex ia IIC T4..T5 Gb Ta−10°C to 50°C
II 2G Ex ia IIC T6 Gb Ta−10°C to 45°C

## How to order

**52 − SY 5 1 2 0 □ − □ L 3 □ − 01 F − □**

**ATEX category 2**

**Series**

| | |
|---|---|
| 5 | 52-SY5000 |
| 7 | 52-SY7000 |
| 9 | 52-SY9000 |

**Type of actuation**

| | |
|---|---|
| 1 | 2-position single<br>(A)4 2(B)<br>(EA)5 1 3(EB)<br>(P) |
| 2 | 2-position double<br>(A)4 2(B)<br>(EA)5 1 3(EB)<br>(P) |
| 3 | 3-position closed center<br>(A)4 2(B)<br>(EA)5 1 3(EB)<br>(P) |
| 4 | 3-position exhaust center<br>(A)4 2(B)<br>(EA)5 1 3(EB)<br>(P) |
| 5 | 3-position pressure center<br>(A)4 2(B)<br>(EA)5 1 3(EB)<br>(P) |

**Piping type**

| | |
|---|---|
| 2 | Body ported type |
| 4 | Base mounted type |

**Pilot type**

| | |
|---|---|
| Nil | Internal pilot |
| R Note) | External pilot |

Note) Base mounted type only.

**Barrier designation**

| | |
|---|---|
| Nil | Without barrier |
| A | Z728.H |
| G | KCD2-SLD-Ex1.1065 |

Note) Contact Pepperl+Fuchs for details on the barrier specifications.

**Electrical entry**

| | |
|---|---|
| L | Plug connector type |
| LL | Plug connector with cover type |
| TT | Cable type |

Note) TT-type is connected to the terminal block. Cables other than the connected one cannot be used.

**Lead wire length**

| | |
|---|---|
| 3 | 300 mm |
| 6 | 600 mm |
| 10 | 1000 mm |
| 15 | 1500 mm |
| 20 | 2000 mm |
| 30 | 3000 mm |
| 100 | 10000 mm (Semi-standard) |

∗ L type has 300 mm and 600 mm only.

**Manual override**

| | |
|---|---|
| Nil | Non-locking push type |
| D | Push-turn locking slotted type |
| E | Push-turn locking lever type |

**Thread type**

| | |
|---|---|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

**Bracket**

| | |
|---|---|
| Nil | Without bracket |
| F1 | With foot bracket Note 1) |
| F2 | With side bracket |

Note 1) 2 position single solenoid valve only.
Note 2) 52-SY9000 has no bracket.

**A, B port size (Body ported type)**

| Symbol | Port size | Applicable series |
|---|---|---|
| 01 | 1/8 | 52-SY5000 |
| C4 | One-touch fitting for ø4 | |
| C6 | One-touch fitting for ø6 | |
| C8 | One-touch fitting for ø8 | |
| N3 | One-touch fitting for ø5/32" | |
| N7 | One-touch fitting for ø1/4" | |
| N9 | One-touch fitting for ø5/16" | |
| 02 | 1/4 | 52-SY7000 |
| C8 | One-touch fitting for ø8 | |
| C10 | One-touch fitting for ø10 | |
| N9 | One-touch fitting for ø5/16" | |
| N11 | One-touch fitting for ø3/8" | |
| 02 | 1/4 | 52-SY9000 |
| 03 | 3/8 | |
| C8 | One-touch fitting for ø8 | |
| C10 | One-touch fitting for ø10 | |
| C12 | One-touch fitting for ø12 | |
| N9 | One-touch fitting for ø5/16" | |
| N11 | One-touch fitting for ø3/8" | |

**Port size (Base mounted type)**

| Symbol | Port size | Applicable series |
|---|---|---|
| Nil | Without sub-plate | |
| 02 | 1/4 | 52-SY5000 |
| 02 | 1/4 | 52-SY7000 |
| 03 | 3/8 | |
| 03 | 3/8 | 52-SY9000 |
| 04 | 1/2 | |

## Specifications

| Series | | | 52-SY5000 | 52-SY7000 | 52-SY9000 |
|---|---|---|---|---|---|
| Ambient and fluid temperature | Temperature class T6 | | −10 to 45°C (No freezing) | | |
| | Temperature class T4, T5 | | −10 to 50°C (No freezing) | | |
| Coil temperature rise | | | 40°C less (at rated) | | |
| Barrier input voltage (non hazardous area) | | | 24 VDC (system rated voltage) at 1.1 W | | |
| Coil rated voltage (hazardous area) | | | 12 VDC at 0.52 W | | |
| Intrinsically safe | | | ia | | |
| Gas group | | | IIC | | |
| Protection rating | L type | Plug connector type | IP30 (LL type : IP40) | | |
| | TT type | Cable type | IP65 | | |

Note) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test were performed one time each in the axial and right angle directions of the main valve and armature, in both energized and de-energized states (Valve in the initial stage).
Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000Hz. The test was performed for both energized and de-energized states in the axial and right angle directions of the main valve and armature (valve in the initial stage).

**Standard SY manifolds Types 20, 41, 42 are used for 52-SY valves.**

## ⚠ Safety Instructions

1) This product is not suitable for Zone 0. The suitable zones are Zones 1 and 2.
2) SMC-TAS and TAV Series, antistatic tubing, are available if required.
3) The solenoid valve has polarity. Confirm the correct polarity by observing the color of the lead aires. if the polarity is reversed, the barrier may be damaged.
4) Confirm that the solenoid input voltage at the lead wires is 10.8 VDC (min).
5) This product must be connected to an appropriate barrier (ATEX compliant product), or a certified intrinsically safe circuit, with the following maximum values.
   Ui = 28 V
   Ii = 225 mA (resistively limited)
   Pi = 1 W
   Ci = 0 nF
   Li = 0 mH

### Response time

| Type of actuation | Response time (ms) (0.5 MPa) | | |
|---|---|---|---|
| | 52-SY5000 | 52-SY7000 | 52-SY9000 |
| 2-position single | 26 or less | 38 or less | 50 or less |
| 2-position double | 22 or less | 30 or less | 50 or less |
| 3-position | 38 or less | 56 or less | 70 or less |

Note 1) According to dynamic performance test JIS B8375-1981.
Note 2) Response time when barriers were combined with a valve.

## Manifold Specifications for 20 Type

| Model | | SS5Y5-20 | SS5Y7-20 |
|---|---|---|---|
| Applicable valve | | 52-SY5□20 | 52-SY7□20 |
| Manifold style | | Single base / B mounting | |
| 1 (SUP) / 3/5 (EXH) | | Common SUP / Common EXH | |
| Valve stations | | 2 to 20 (1) | |
| 4/2 (A/B) Location | | Valve | |
| Port size | 1,3,5 (P,EA,EB) Port | 1/4 | |
| | 4,2 (A,B) Port | 1/8<br>C4 (One-touch fitting for ø4)<br>C6 (One-touch fitting for ø6)<br>C8 (One-touch fitting for ø8) | 1/4<br>C8 (One-touch fitting for ø8)<br>C10 (One-touch fitting for ø10) |
| Manifold base weight W (g) n: Station | | W = 36n + 6 | W = 43n + 64 |

Note 1) For more than 10 stations (more than 5 stations in case of SS5Y7), supply pressure to P port on both sides and exhaust from EA/EB port on both side.
Note 2) 52-SY9□20 valve are not available with manifold as standard.

## Manifold Specifications for 20 Type

| Model | Port size | | Flow characteristics | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1,5,3 (P,EA,EB) | 4,2 (A,B) | 1 → 4/2 (P → A/B) | | | 4/2 → 5/3 (A/B → EA/EB) | | |
| | | | c[dm³/(s·bar)] | b | Cv | c[dm³/(s·bar)] | b | Cv |
| SS5Y5-20 | 1/4 | C8 | 1.9 | 0.28 | 0.48 | 2.2 | 0.20 | 0.53 |
| SS5Y7-20 | 1/4 | C10 | 3.6 | 0.31 | 0.93 | 3.6 | 0.27 | 0.88 |

Note) Values for 5 stations manifold with a 2 position single type valve.

## Manifold Specifications for 41 and 42 Type

| Model | | SS5Y5-41 | SS5Y5-42 | SS5Y7-42 |
|---|---|---|---|---|
| Applicable valve | | 52-SY5□40 | | 52-SY7□40 |
| Manifold style | | Single base / B mounting | | |
| 1 (SUP) / 3/5 (EXH) | | Common SUP / Common EXH | | |
| Valve stations | | 2 to 20 (1) | | |
| 4/2 (A/B) Porting spec. | Location | Base | | |
| | Direction | Side | | |
| Port size | 1,3,5 (P,EA,EB) Port | 1/4 | | 1/4 |
| | 4,2 (A,B) Port | 1/8<br>C6 (One-touch fitting for ø6)<br>C8 (One-touch fitting for ø8) | 1/4<br>C6 (One-touch fitting for ø6)<br>C8 (One-touch fitting for ø8) | 1/4<br>C10 (One-touch fitting for ø10) |
| Manifold base weight W (g) n: Station | | W = 61n + 101 | W = 79n + 127 | W = 100n + 151 |

Note 1) For more than 10 stations (more than 5 stations in case of SS5Y7), supply pressure to P port on both sides and exhaust from EA/EB port on both side.
Note 2) 52-SY9□40 valve are not available with manifold as standard.
Note 3) 52-SY series are not available with resin type manifold (45 type).

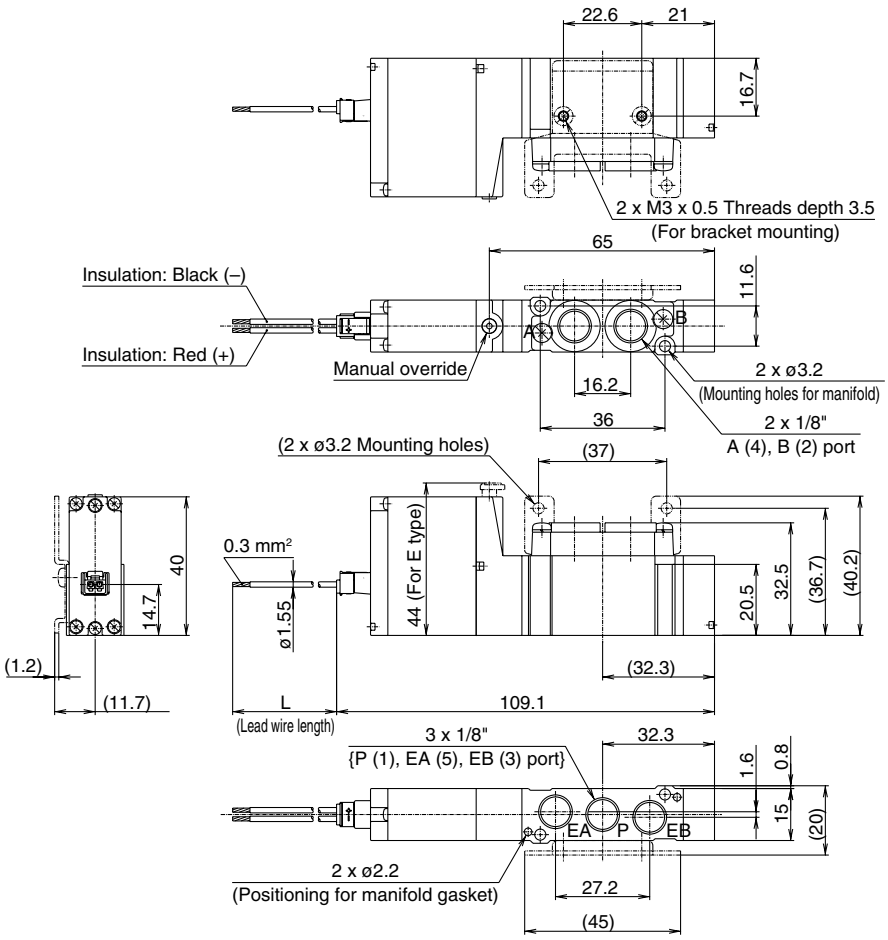
## Manifold Specifications for 41 and 42 Type

| Model | Port size | | Flow characteristics | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1,5,3 (P,EA,EB) | 4,2 (A,B) | 1 → 4/2 (P → A/B) | | | 4/2 → 5/3 (A/B → EA/EB) | | |
| | | | c[dm³/(s·bar)] | b | Cv | c[dm³/(s·bar)] | b | Cv |
| SS5Y5-41 | 1/4 | C8 | 1.8 | 0.23 | 0.44 | 1.9 | 0.16 | 0.45 |
| SS5Y5-42 | 1/4 | C8 | 1.9 | 0.20 | 0.46 | 1.9 | 0.12 | 0.43 |
| SS5Y7-42 | 1/4 | C10 | 3.0 | 0.25 | 0.75 | 3.0 | 0.12 | 0.66 |

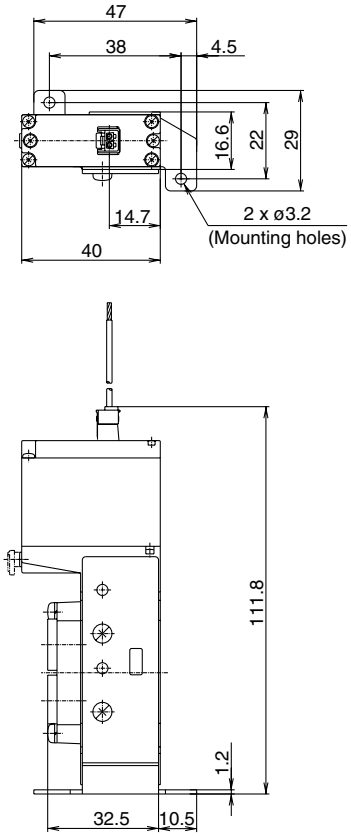
Note) Values for 5 stations manifold with a 2 position single type valve.

## Dimensions

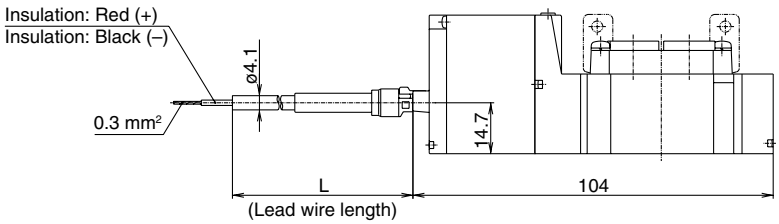
### 2-position single
### L plug connector (L)
### 52-SY5120-L□□-01□ (-F2)



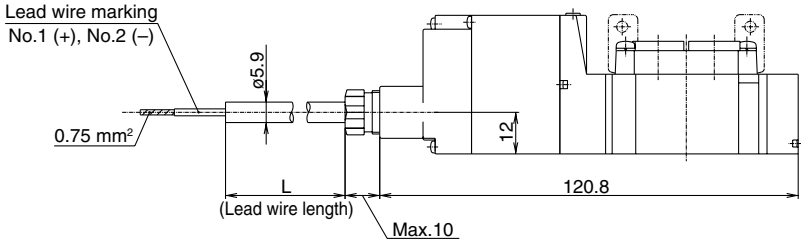

### In case with foot bracket
### 52-SY5120-L□□-01□-F1




### L plug connector with cover (LL)
### 52-SY5120-LL□□-01□ (-F2)

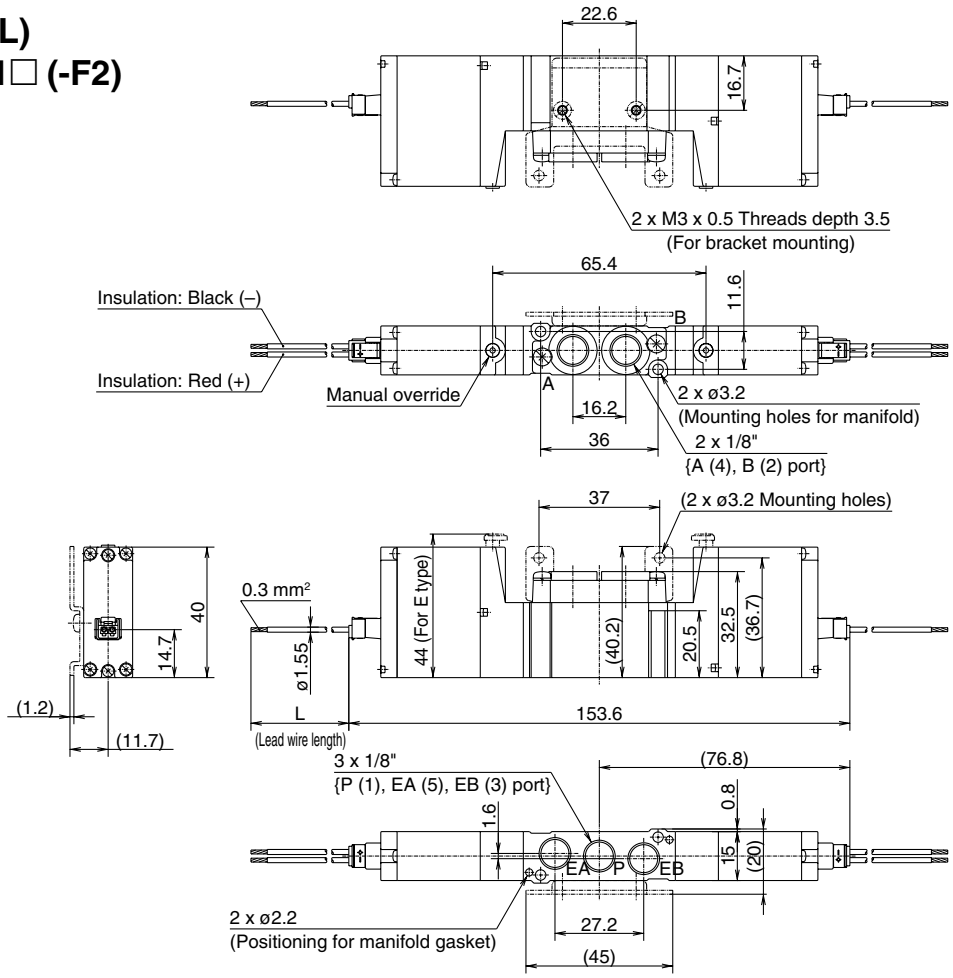



### Cable type (TT)
### 52-SY5120-TT□□-01□ (-F2)

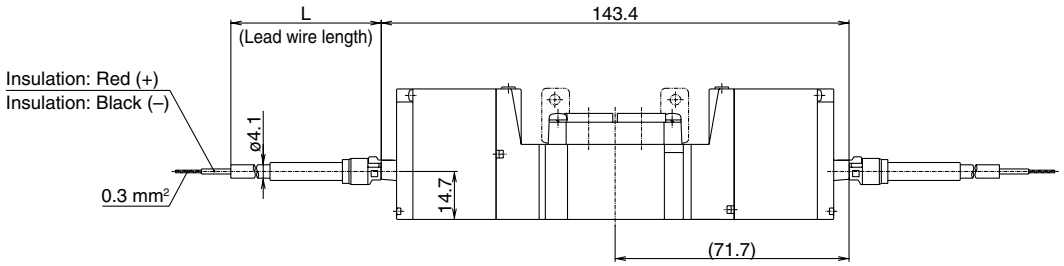


## Dimensions

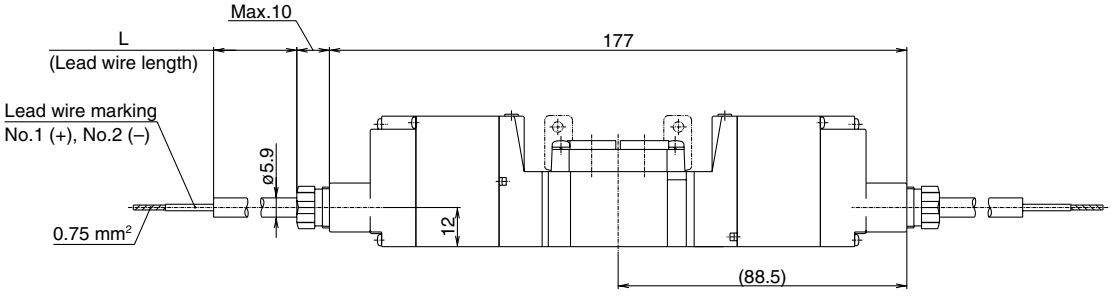
### 2-position double L plug connector (L) 52-SY5220-L□□-01□ (-F2)




### L plug connector with cover (LL) 52-SY5220-LL□□-01□ (-F2)



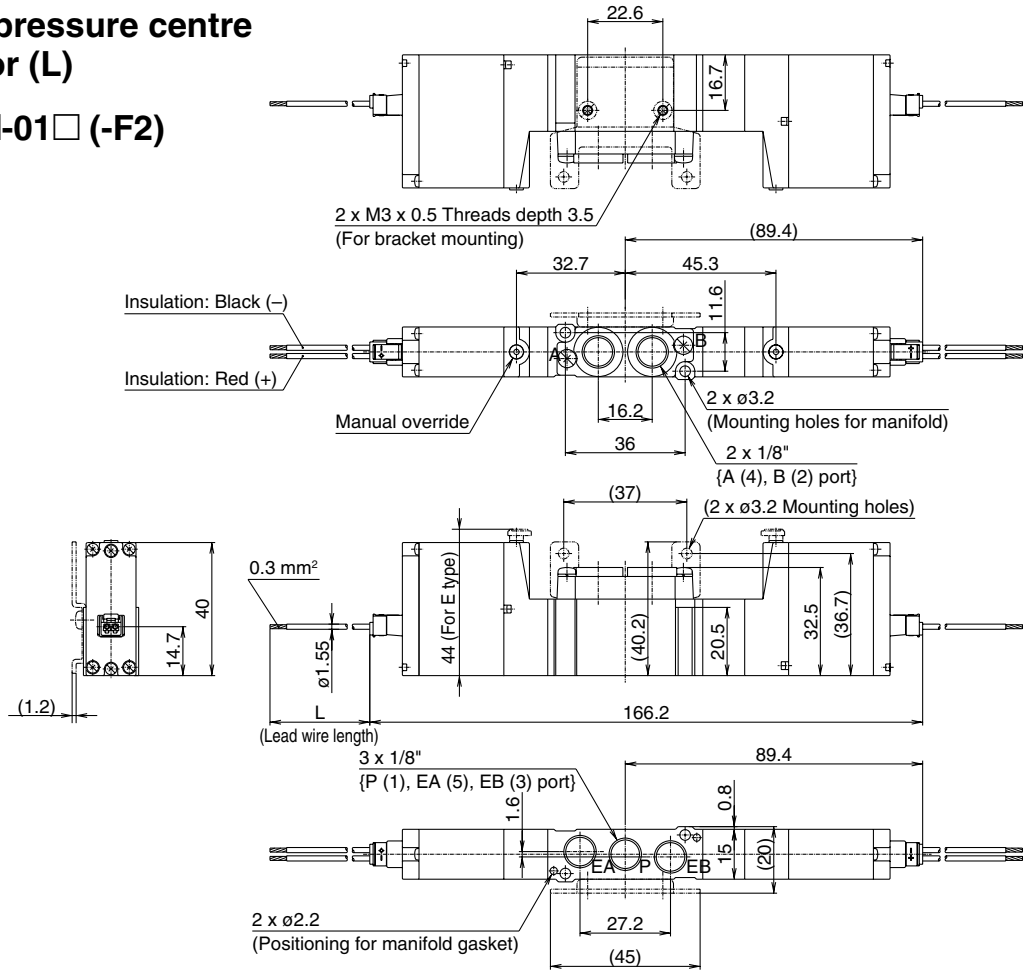

### Cable type (TT) 52-SY5220-TT□□-01□ (-F2)



## Dimensions

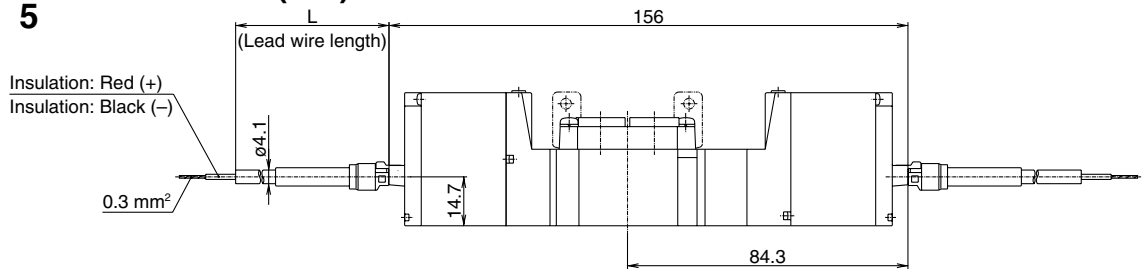
### 3-position closed centre/ exhaust centre/pressure centre L plug connector (L)

**3**
**52-SY5420-L□□-01□ (-F2)**
**5**



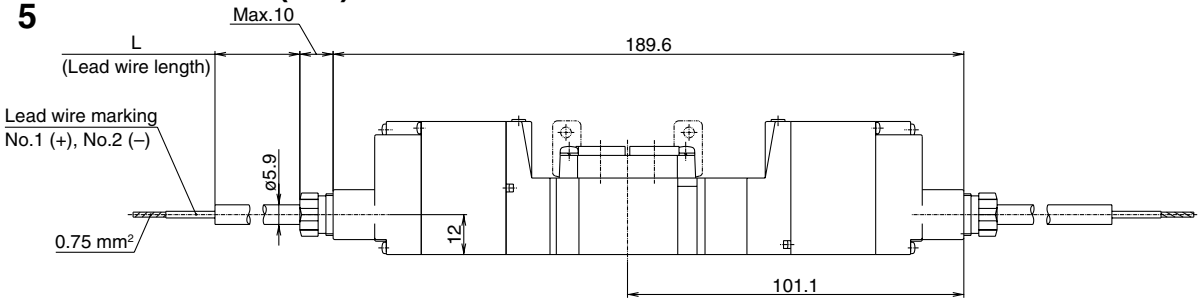

### L plug connector with cover (LL)

**3**
**52-SY5420-LL□□-01□ (-F2)**
**5**



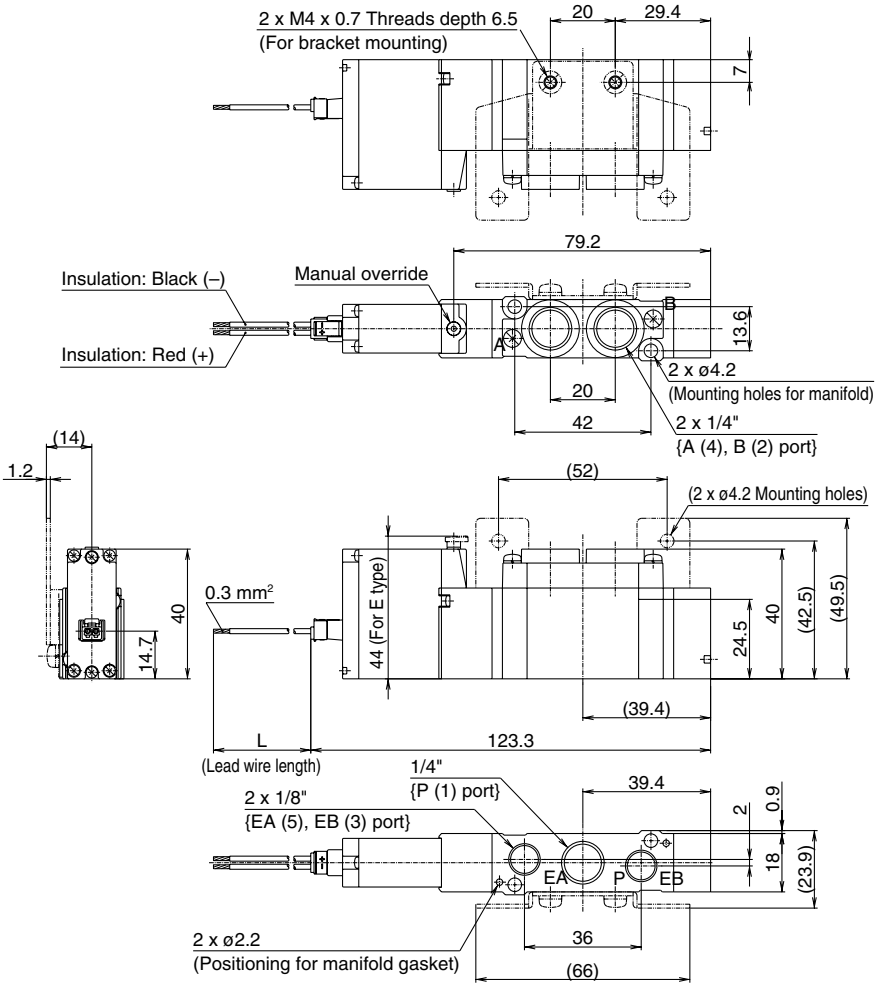

### Cable type (TT)

**3**
**52-SY5420-TT□□-01□ (-F2)**
**5**

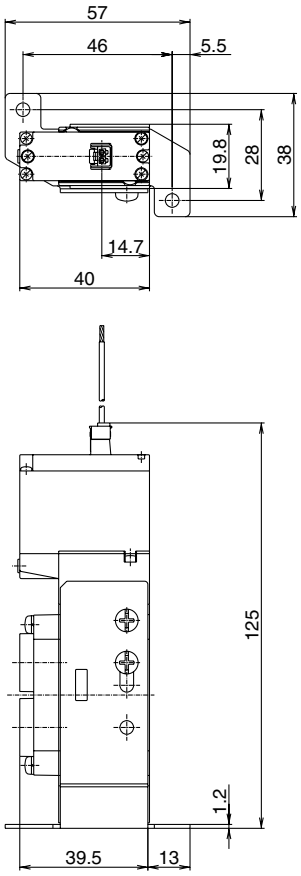


## Dimensions

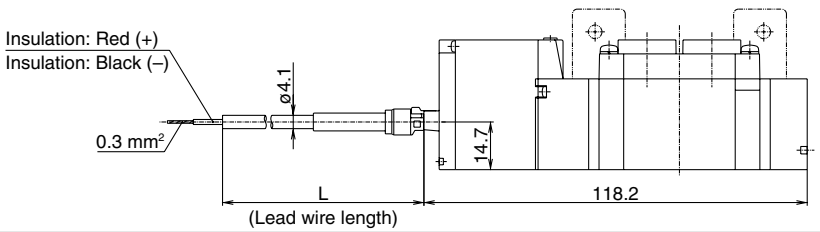
### 2-position single
### L plug connector (L)
### 52-SY7120-L□□-02□ (-F2)



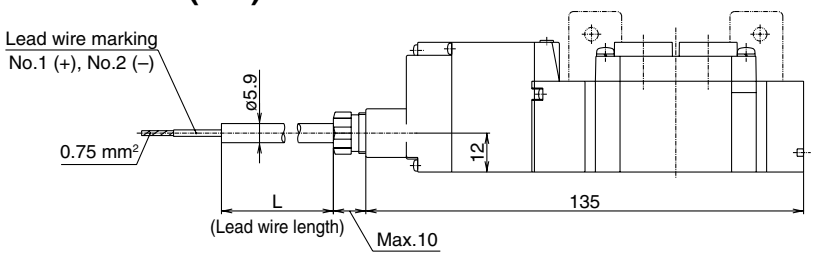

### In case with foot bracket
### 52-SY7120-L□□-02□-(F1)




### L plug connector with cover (LL)
### 52-SY7120-LL□□-02□ (-F2)

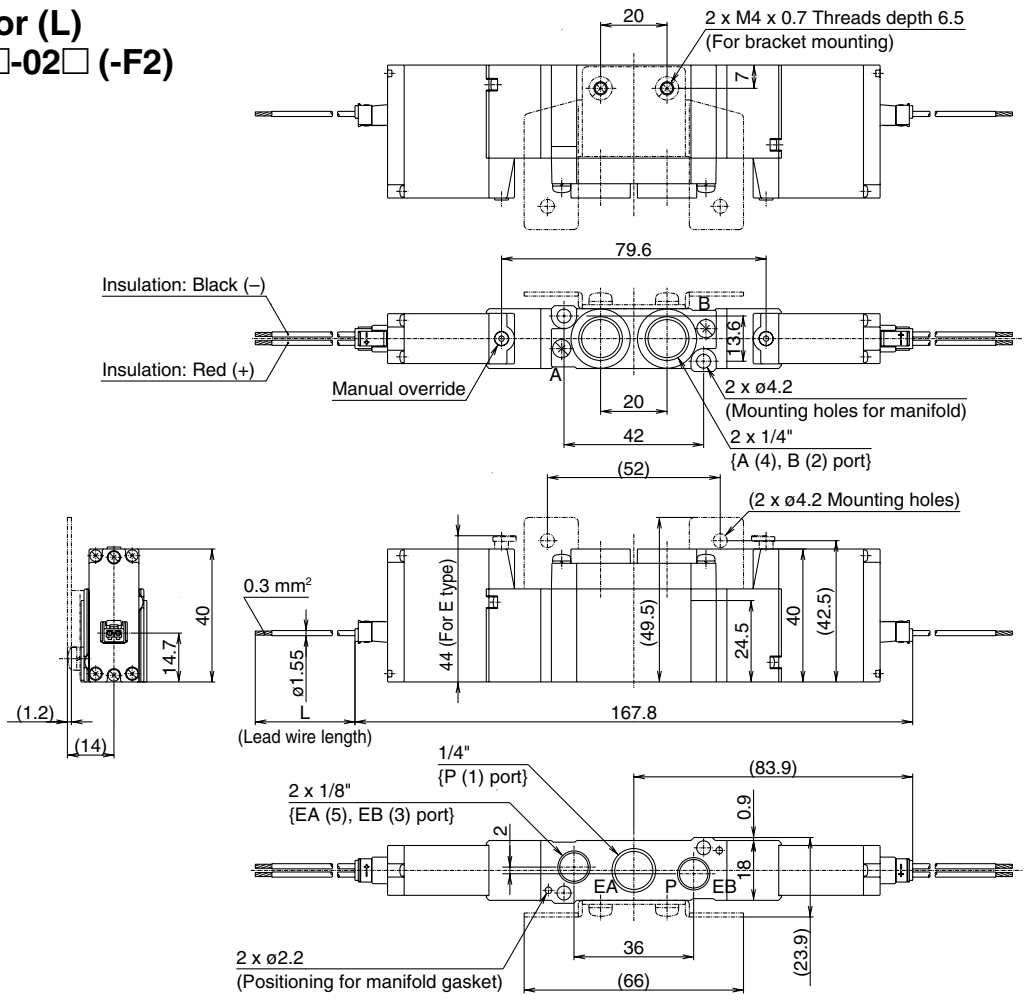



### Cable type (TT)
### 52-SY7120-TT□□-02□ (-F2)

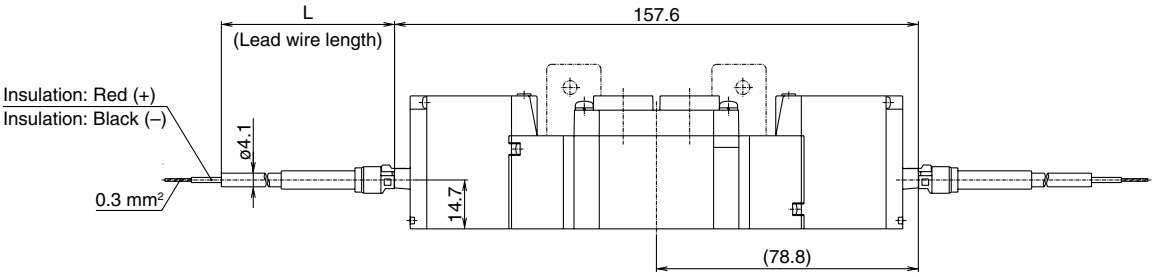


## Dimensions

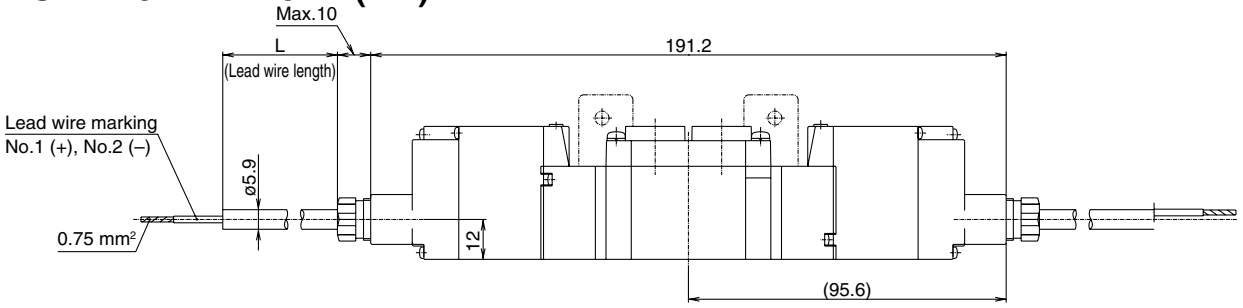
### 2-position double
### L plug connector (L)
### 52-SY7220-L□□-02□ (-F2)




### L plug connector with cover (LL)
### 52-SY7220-LL□□-02□ (-F2)




### Cable type (TT)
### 52-SY7220-TT□□-02□ (-F2)

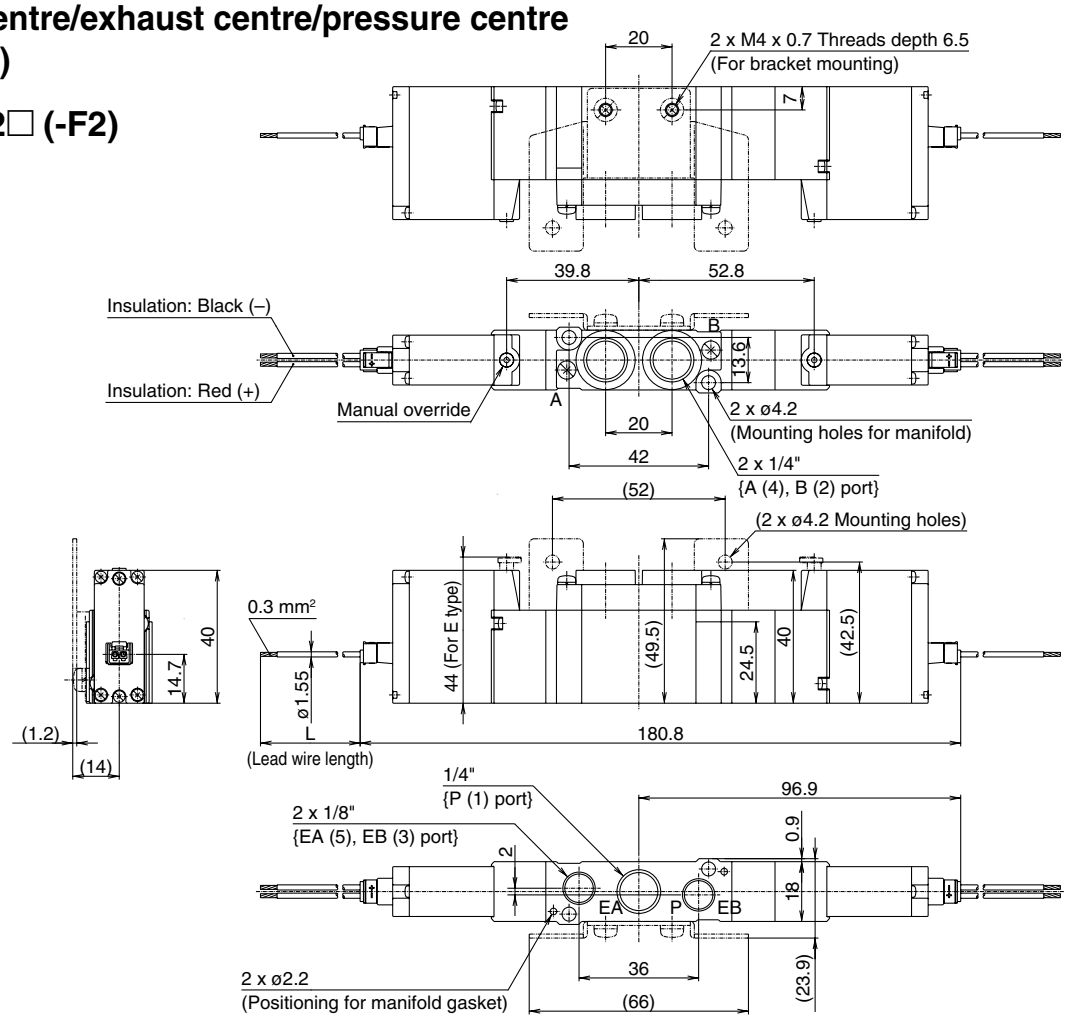


## Dimensions

### 3-position closed centre/exhaust centre/pressure centre

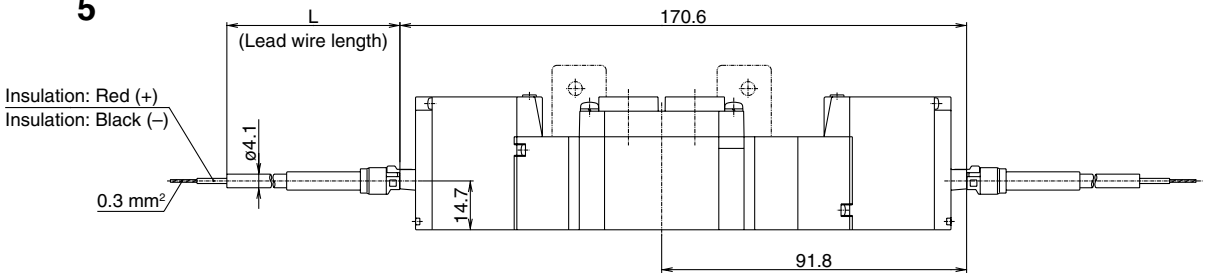
### L plug connector (L)

**3**
**52-SY7420-L□□-02□ (-F2)**
**5**



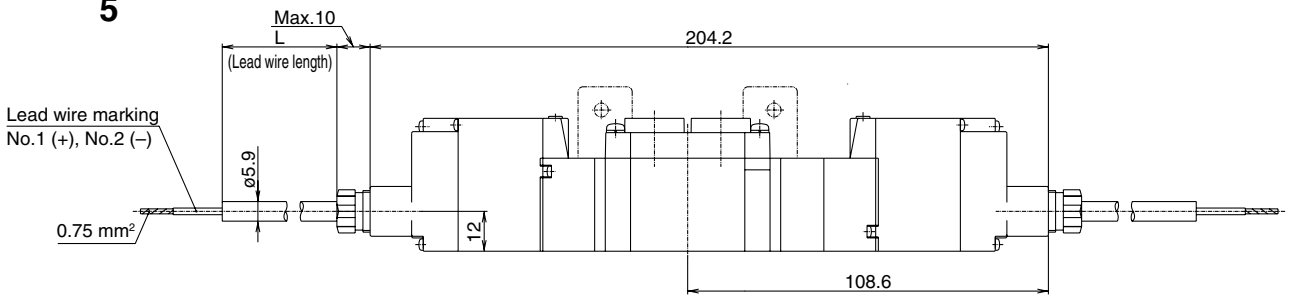

### L plug connector with cover (LL)

**3**
**52-SY7420-LL□□-02□ (-F2)**
**5**



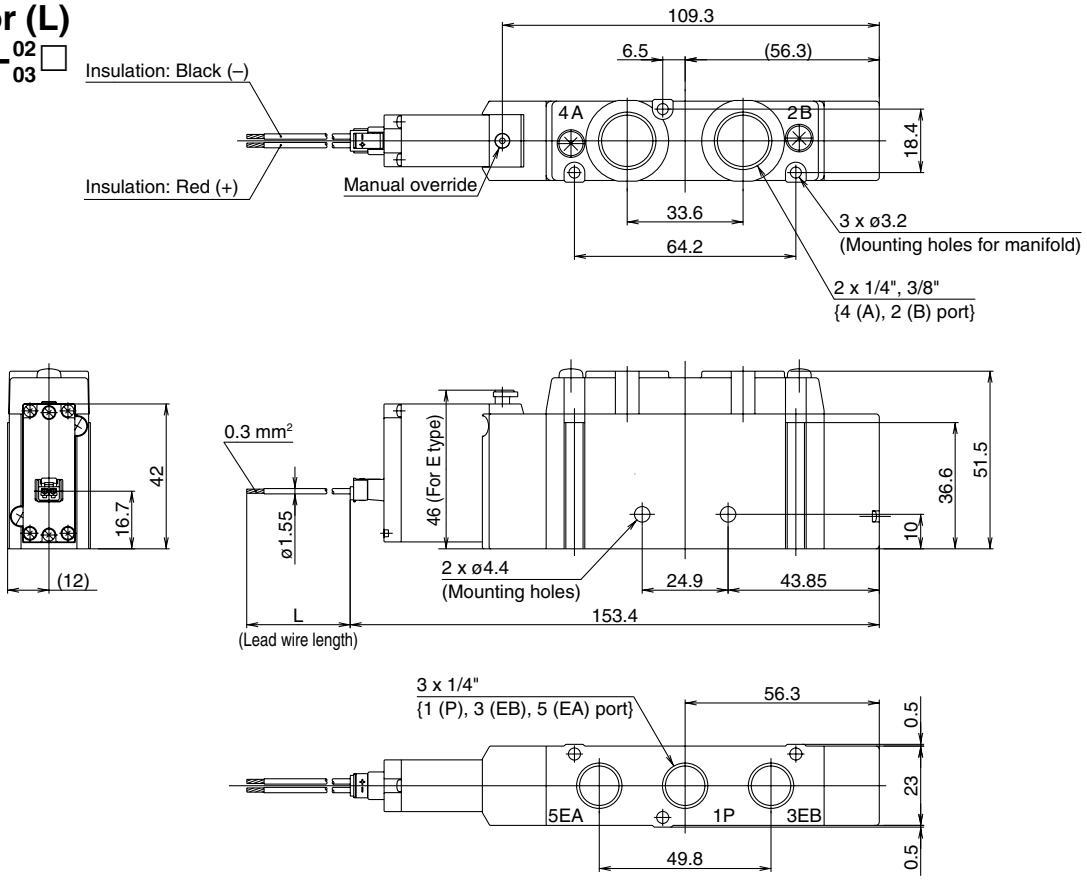

### Cable type (TT)

**3**
**52-SY7420-TT□□-02□ (-F2)**
**5**

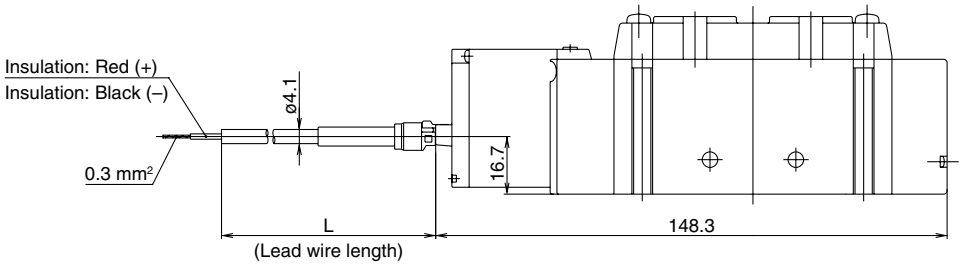


## Dimensions

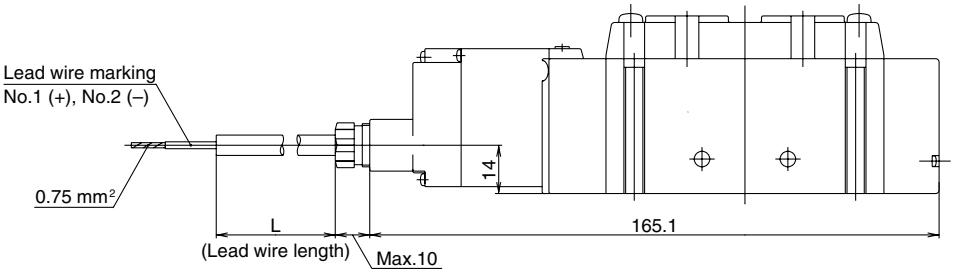
### 2-position single
### L plug connector (L)
### 52-SY9120-L□□-$^{02}_{03}$□




### L plug connector with cover (LL)
### 52-SY9120-LL□□-$^{02}_{03}$□

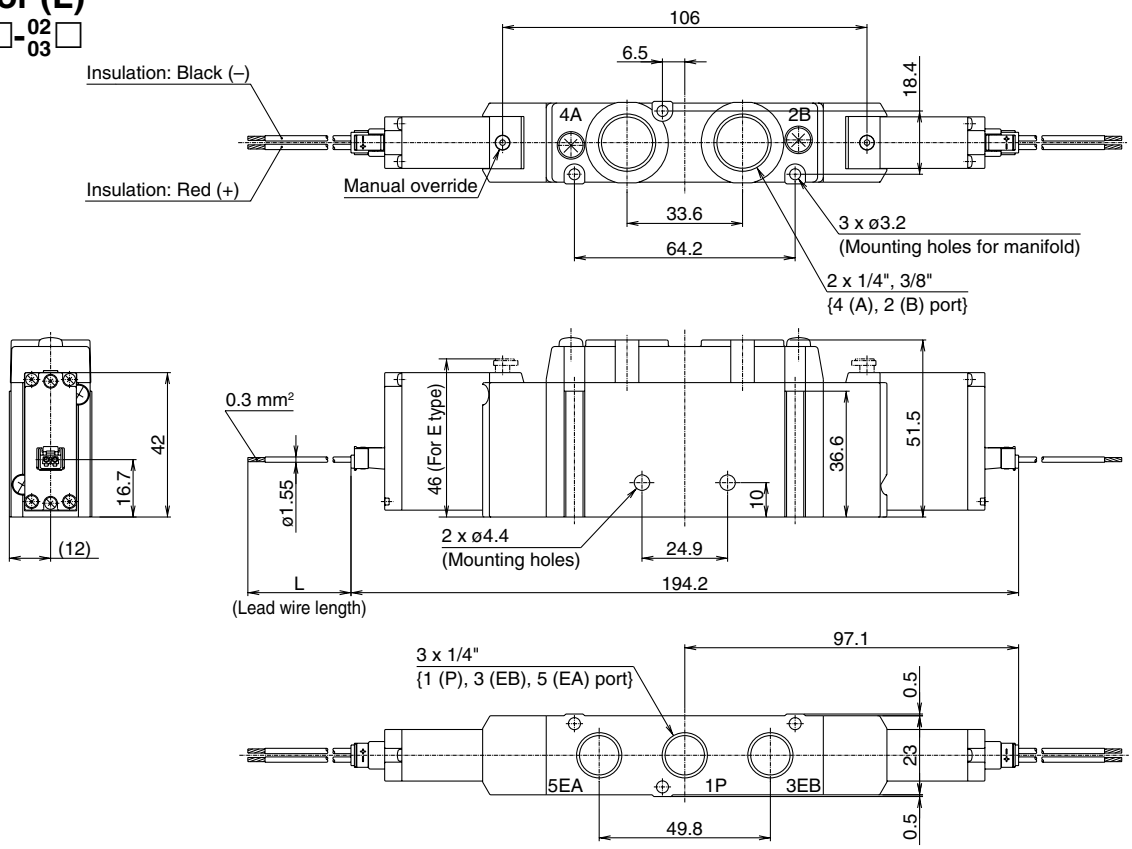



### Cable type (TT)
### 52-SY9120-TT□□-$^{02}_{03}$□

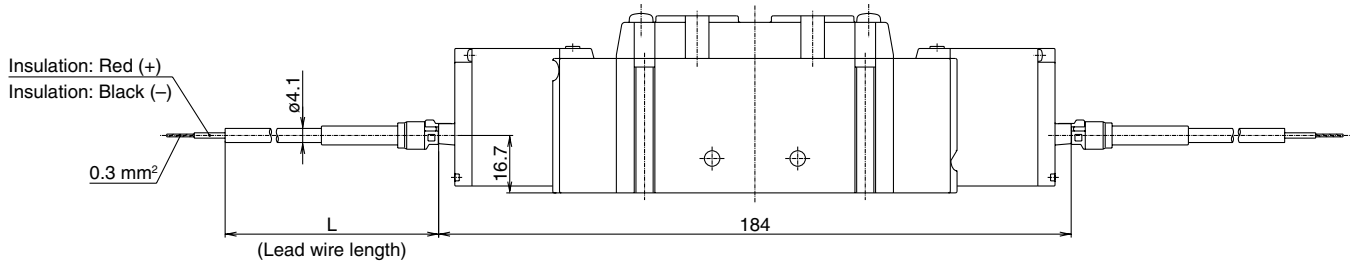


## Dimensions

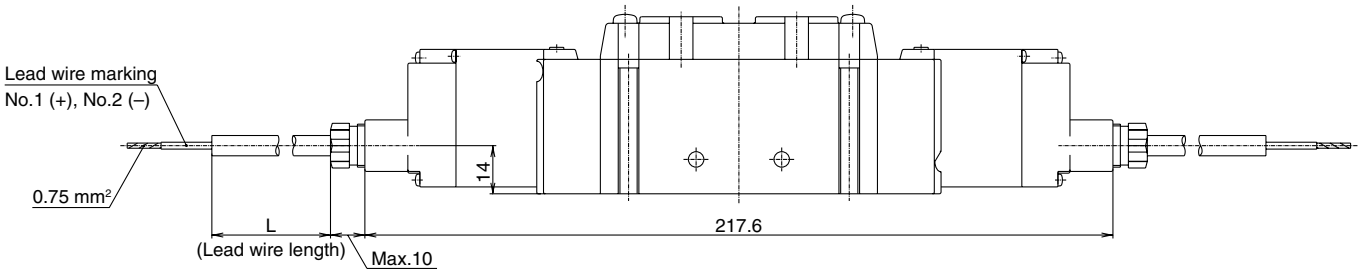
### 2-position double
### L plug connector (L)
### 52-SY9220-L□□-$^{02}_{03}$□




### L plug connector with cover (LL)
### 52-SY9220-LL□□-$^{02}_{03}$□



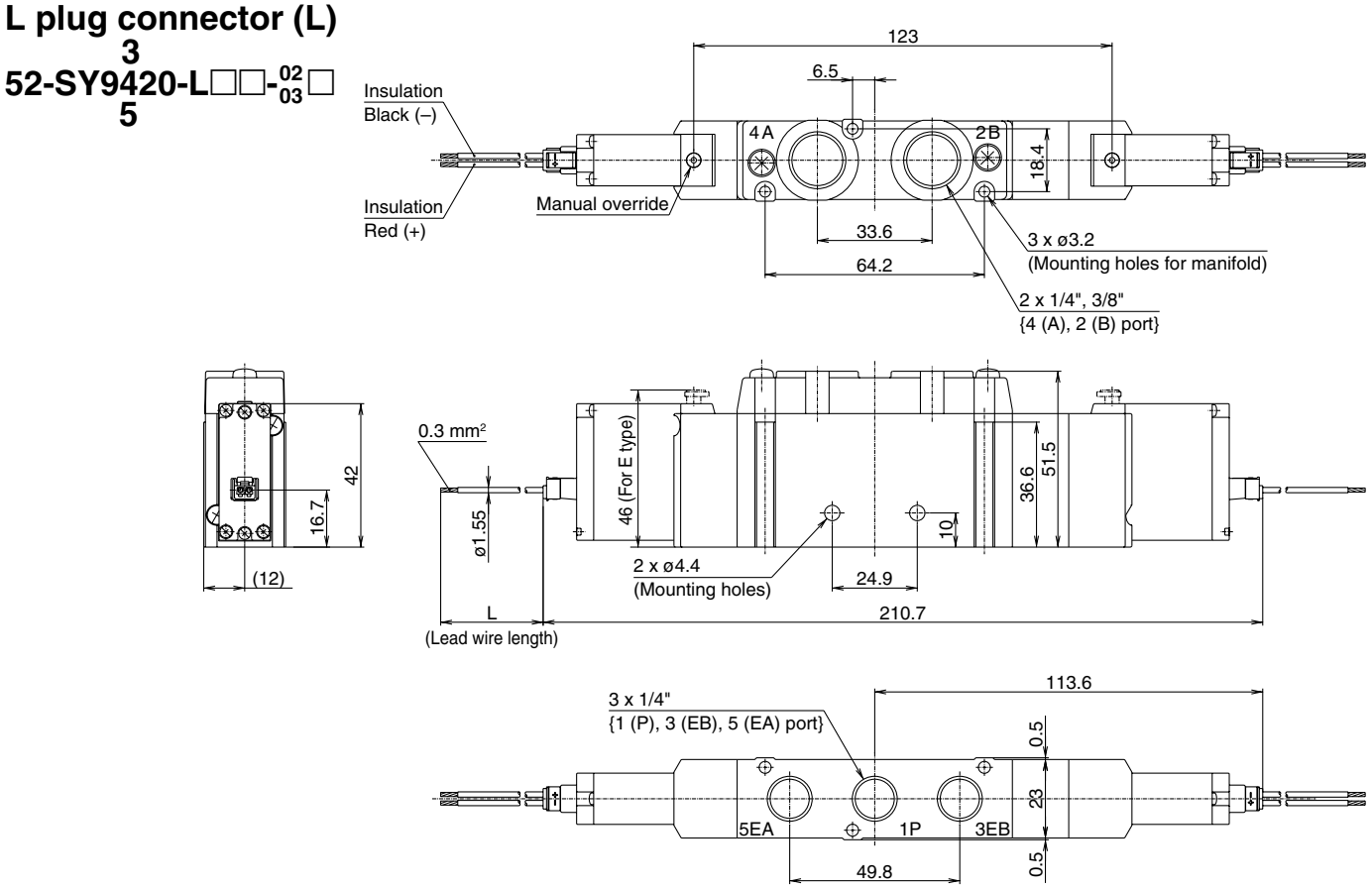

### Cable type (TT)
### 52-SY9220-TT□□-$^{02}_{03}$□



## Dimensions

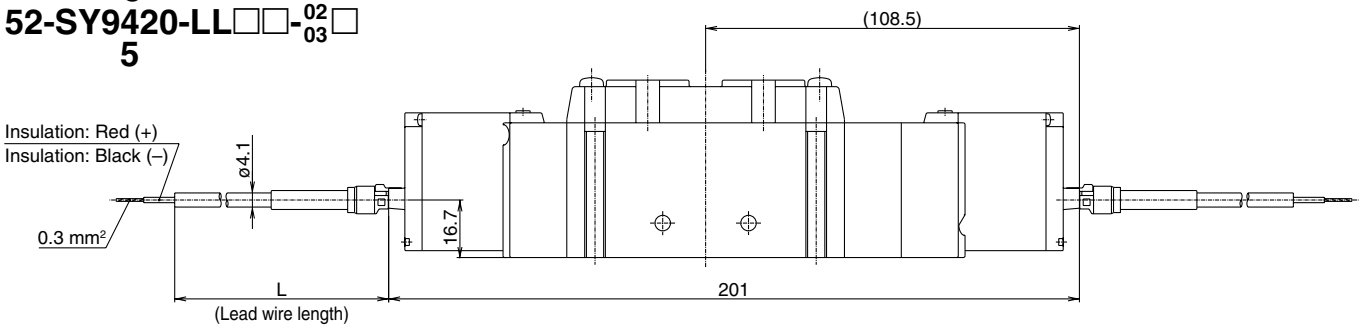
### 3-position closed centre/exhaust centre/pressure centre
### L plug connector (L)

**3**
**52-SY9420-L□□-$^{02}_{03}$□**
**5**



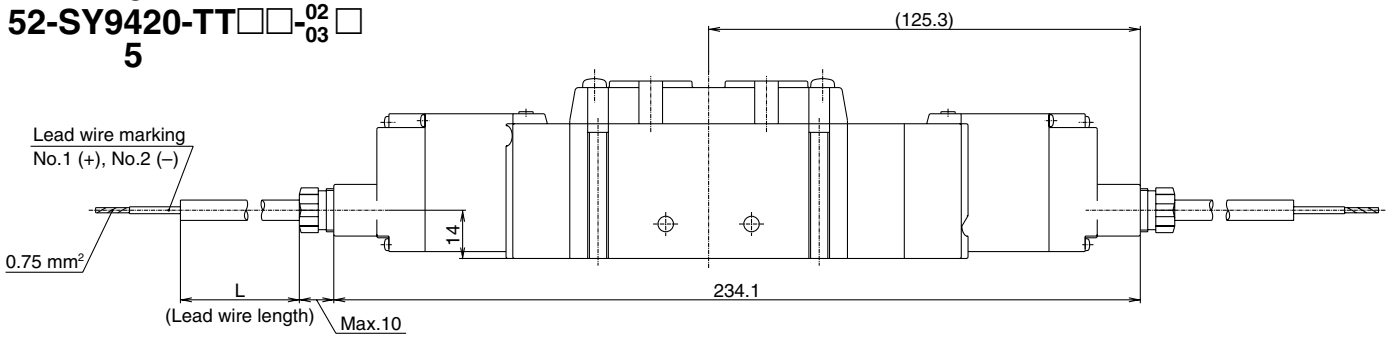

### L plug connector with cover (LL)

**3**
**52-SY9420-LL□□-$^{02}_{03}$□**
**5**



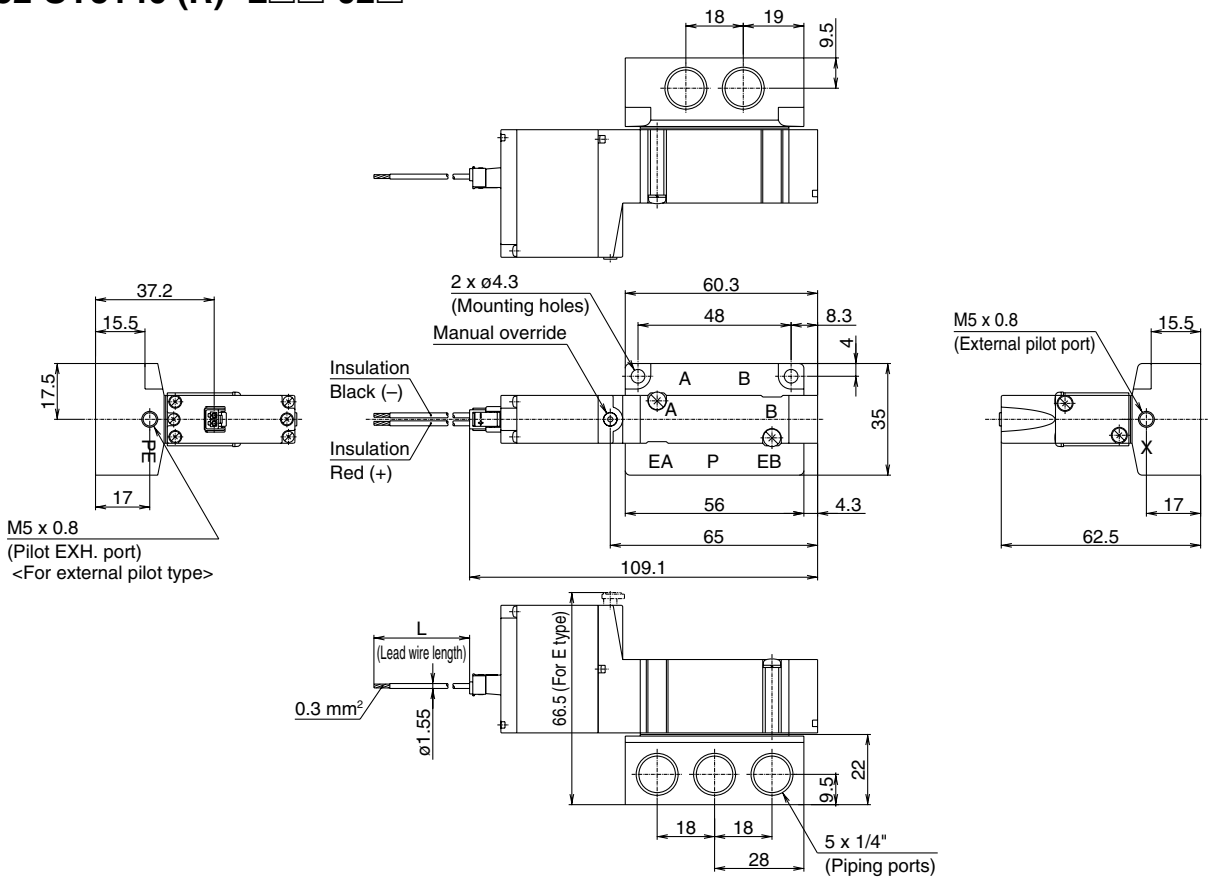

### Cable type (TT)

**3**
**52-SY9420-TT□□-$^{02}_{03}$□**
**5**

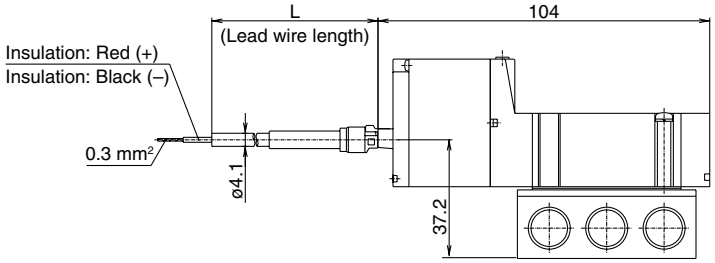


## Dimensions

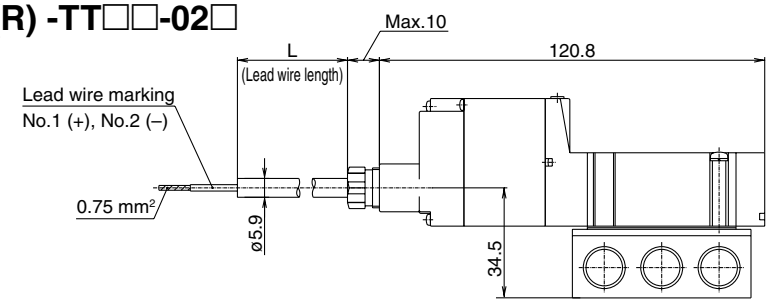
### 2-position single
### L plug connector (L)
### 52-SY5140 (R) -L□□-02□




### L plug connector with cover (LL)
### 52-SY5140 (R) -LL□□-02□

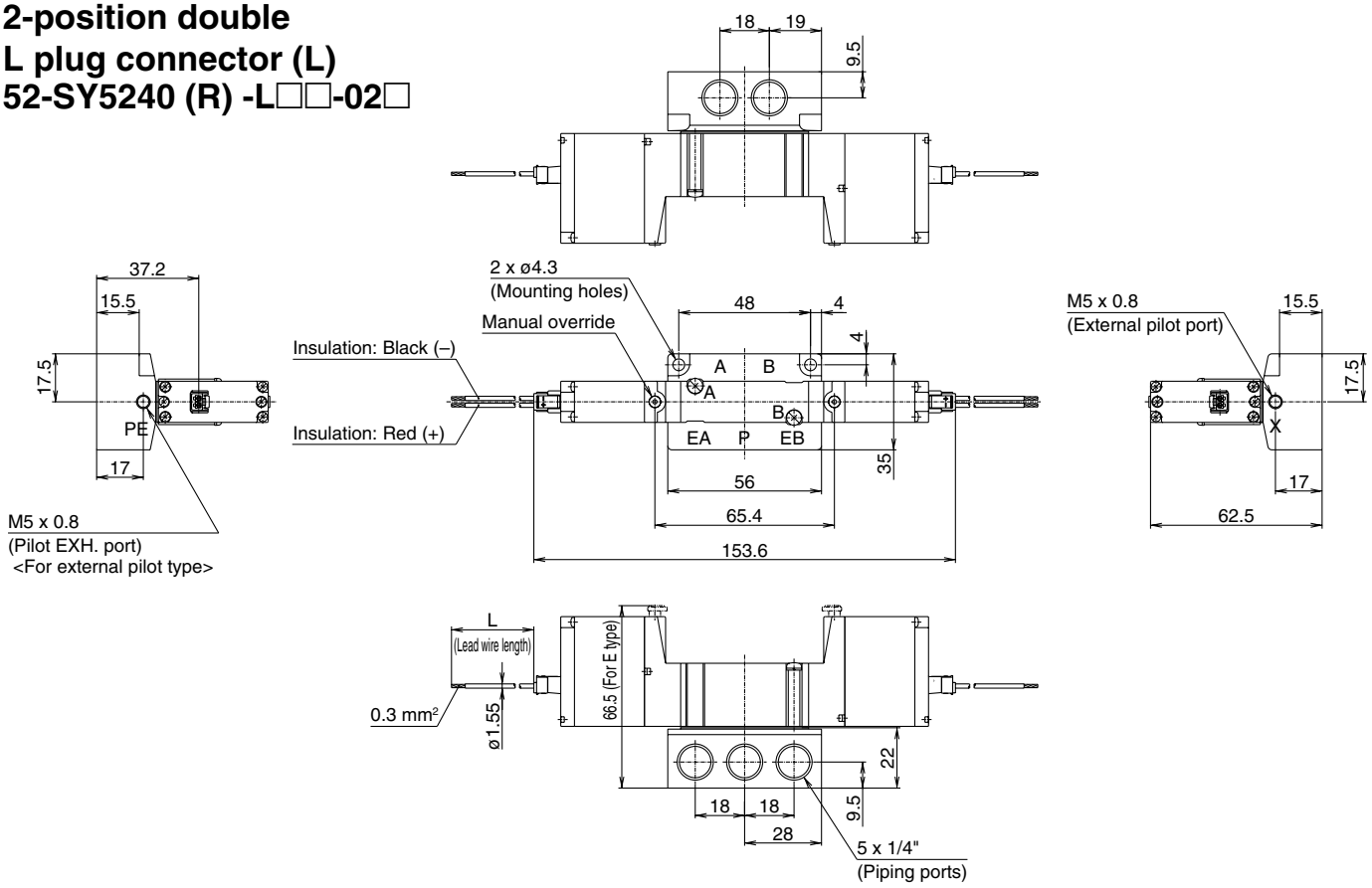



### Cable type (TT)
### 52-SY5140 (R) -TT□□-02□

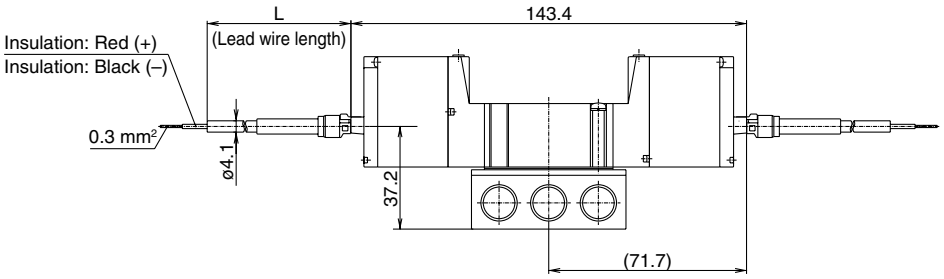


## Dimensions

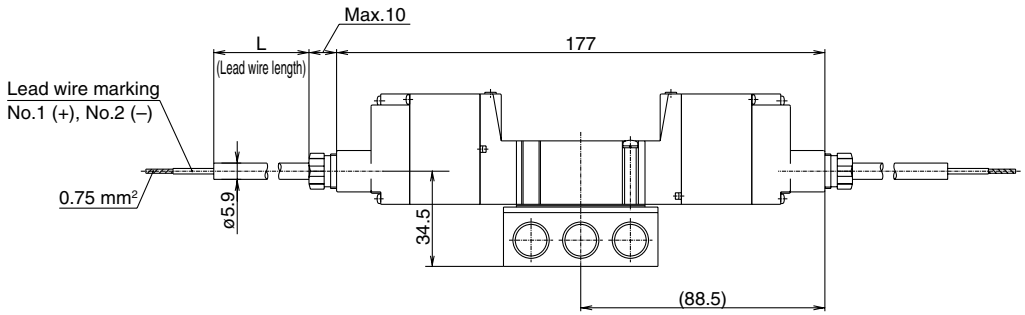
### 2-position double
### L plug connector (L)
### 52-SY5240 (R) -L□□-02□




### L plug connector with cover (LL)
### 52-SY5240 (R) -LL□□-02□




### Cable type (TT)
### 52-SY5240 (R) -TT□□-02□

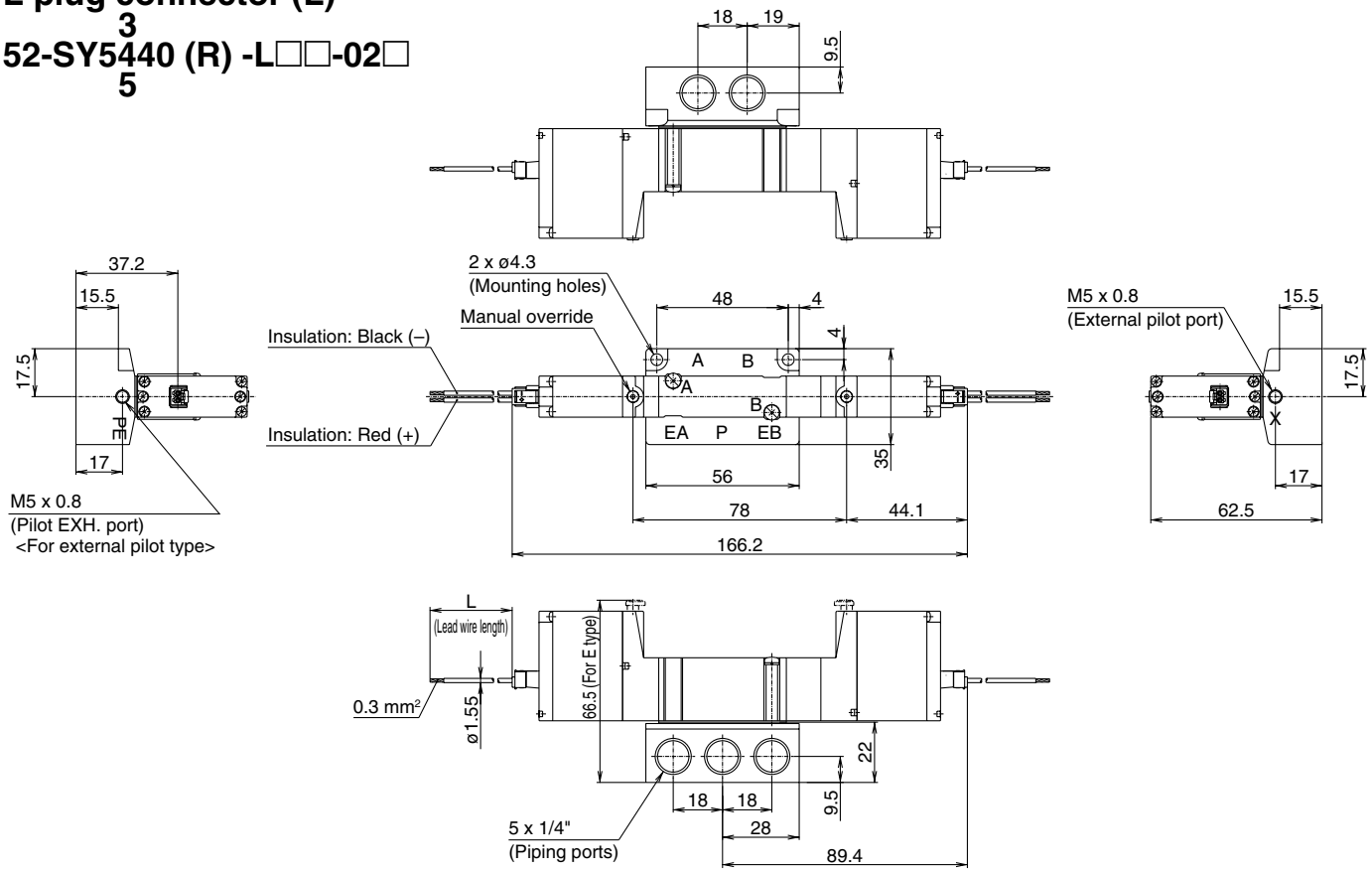


## Dimensions

### 3-position closed centre/exhaust centre/pressure centre

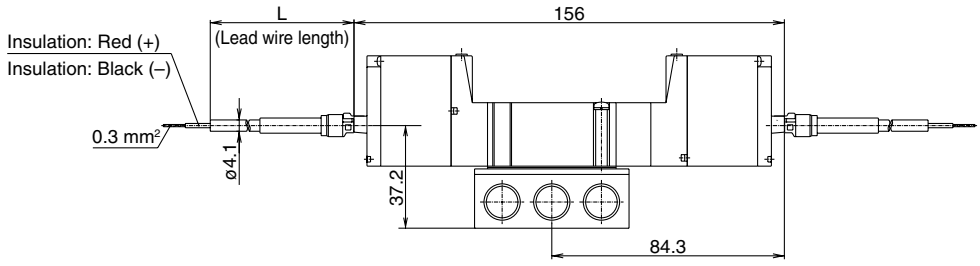
### L plug connector (L)

**3**
**52-SY5440 (R) -L□□-02□**
**5**



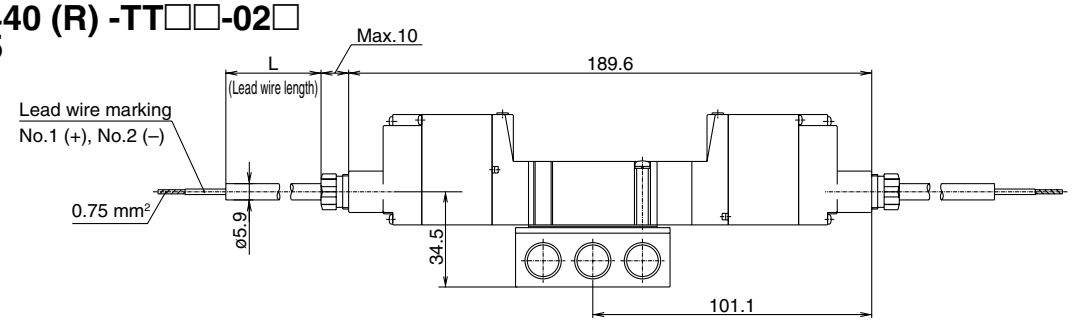

### L plug connector with cover (LL)

**3**
**52-SY5440 (R) -LL□□-02□**
**5**



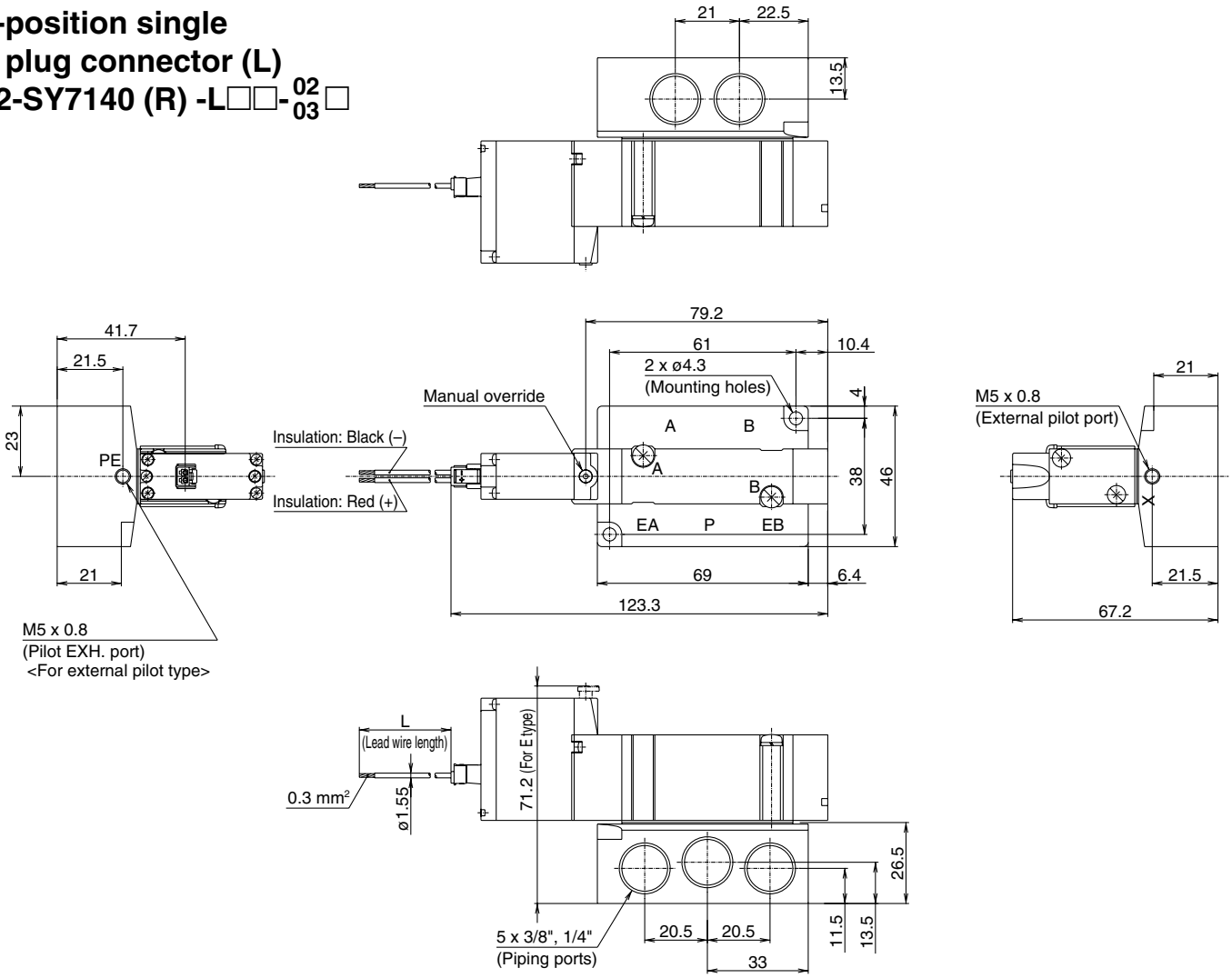

### Cable type (TT)

**3**
**52-SY5440 (R) -TT□□-02□**
**5**

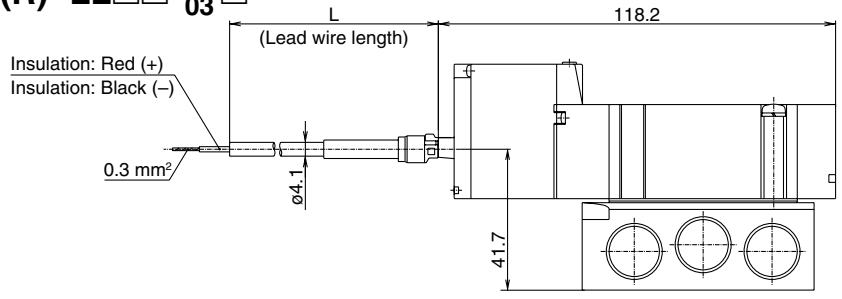


## Dimensions

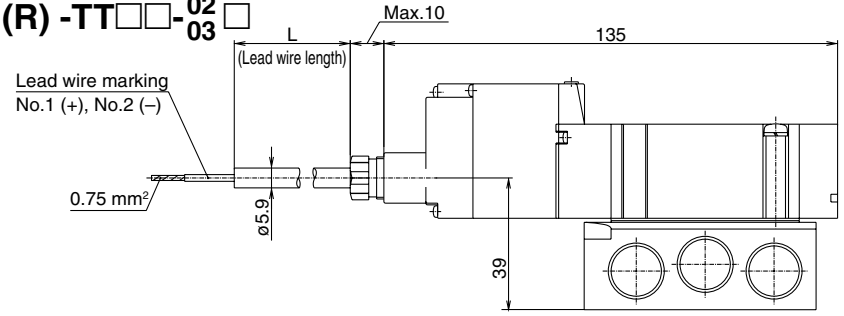
### 2-position single
### L plug connector (L)
### 52-SY7140 (R) -L□□-$^{02}_{03}$□




### L plug connector with cover (LL)
### 52-SY7140 (R) -LL□□-$^{02}_{03}$□

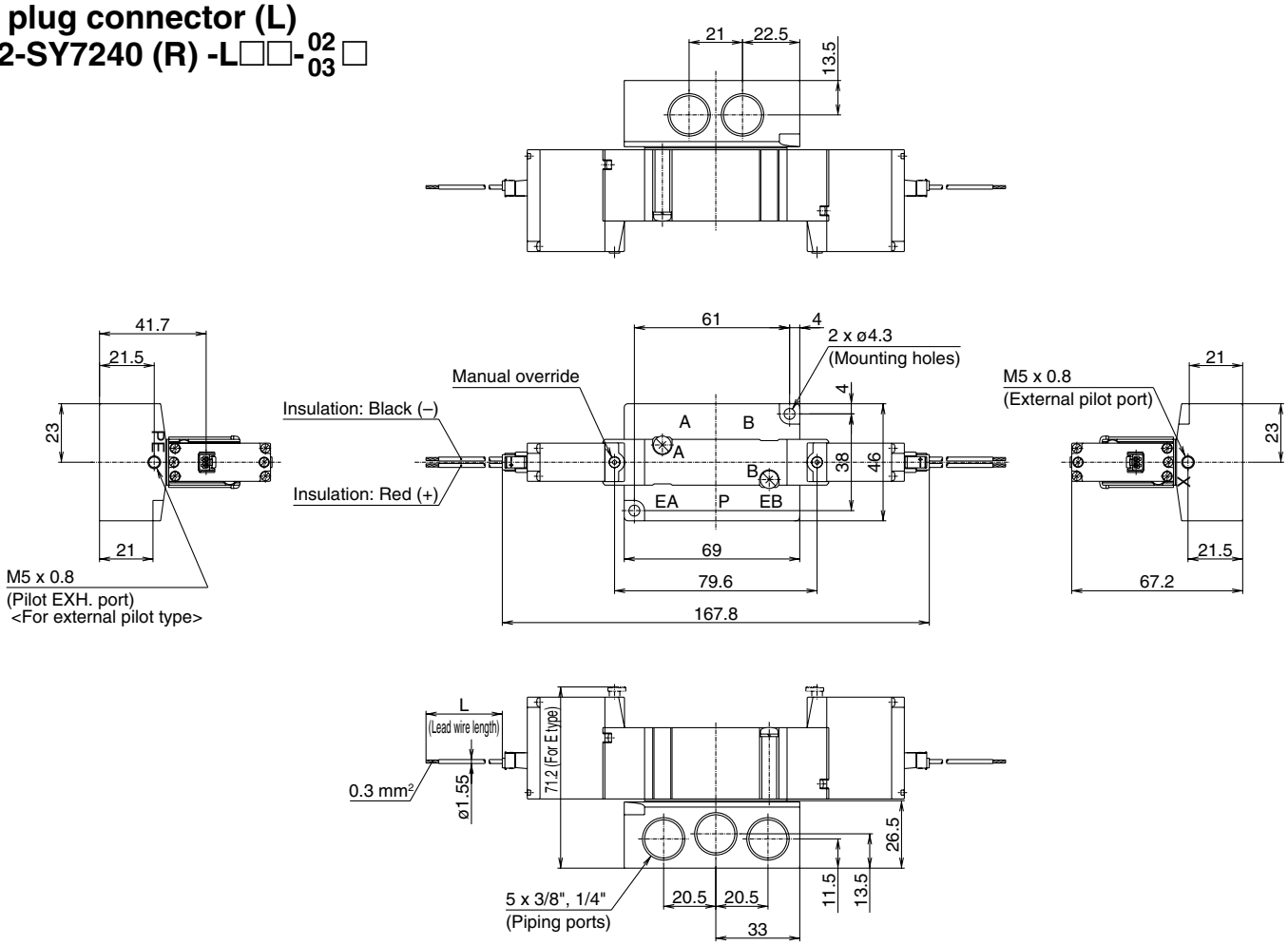



### Cable type (TT)
### 52-SY7140 (R) -TT□□-$^{02}_{03}$□

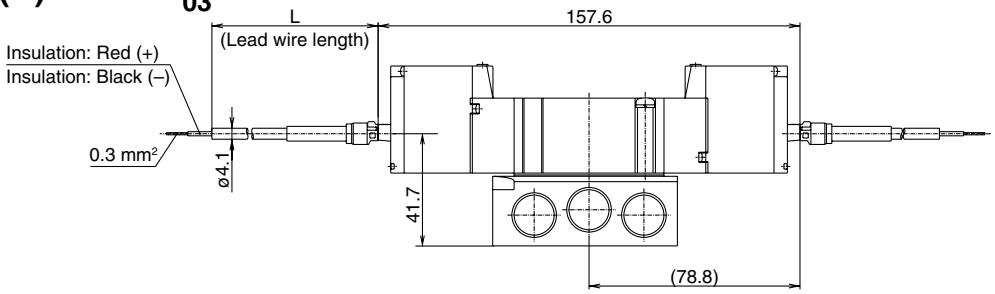


## Dimensions

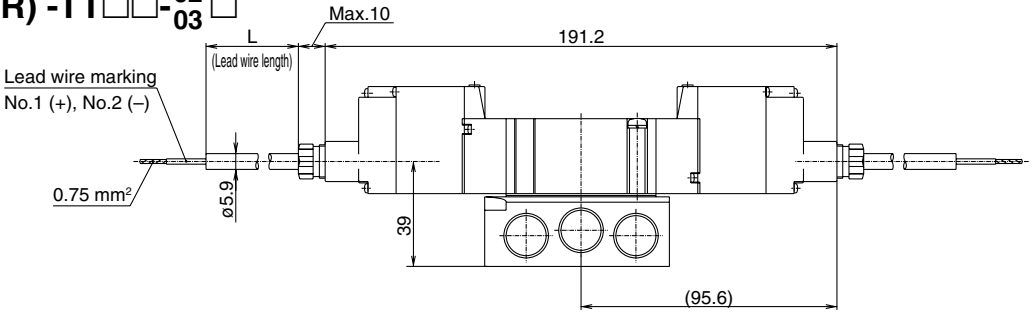
### 2-position double
### L plug connector (L)
### 52-SY7240 (R) -L□□-$^{02}_{03}$□




### L plug connector with cover (LL)
### 52-SY7240 (R) -LL□□-$^{02}_{03}$□




### Cable type (TT)
### 52-SY7240 (R) -TT□□-$^{02}_{03}$□

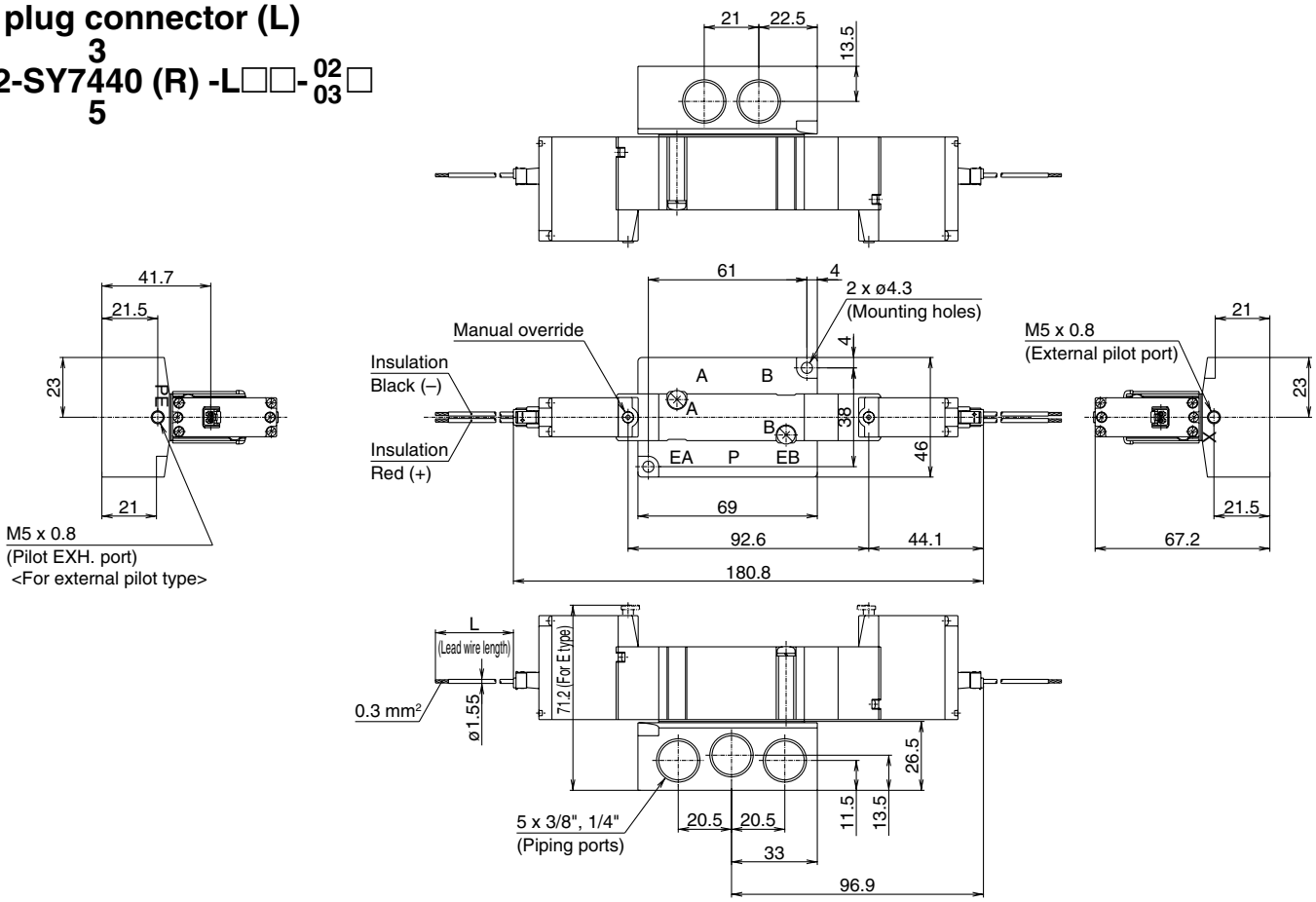


## Dimensions

### 3-position closed centre/exhaust centre/pressure centre

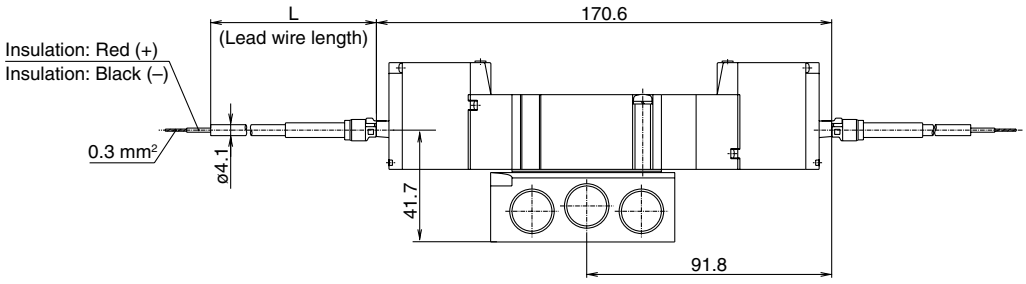
### L plug connector (L)

**52-SY7$^{3}_{5}$40 (R) -L□□-$^{02}_{03}$□**



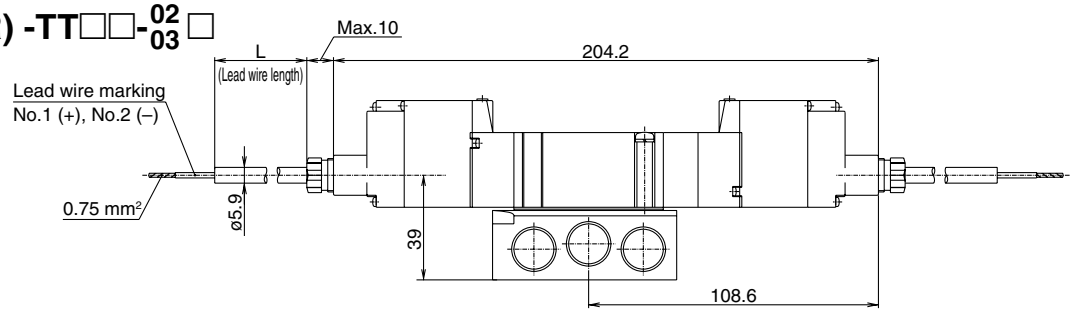

### L plug connector with cover (LL)

**52-SY7$^{3}_{5}$40 (R) -LL□□-$^{02}_{03}$□**



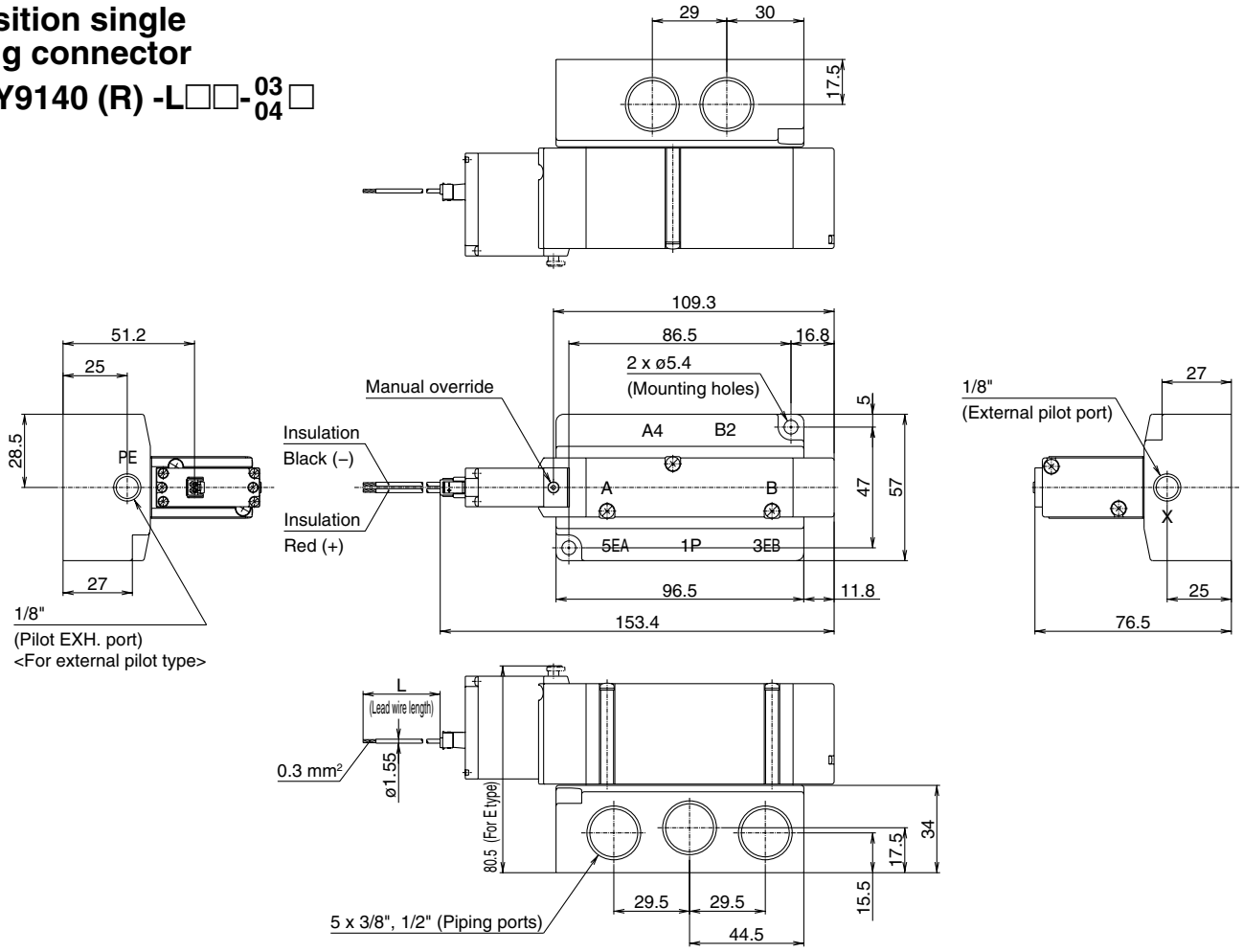

### Cable type (TT)

**52-SY7$^{3}_{5}$40 (R) -TT□□-$^{02}_{03}$□**

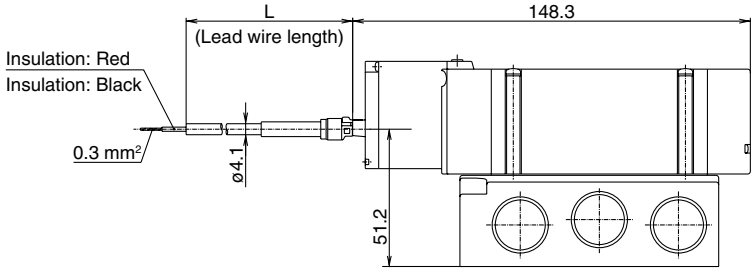


## Dimensions

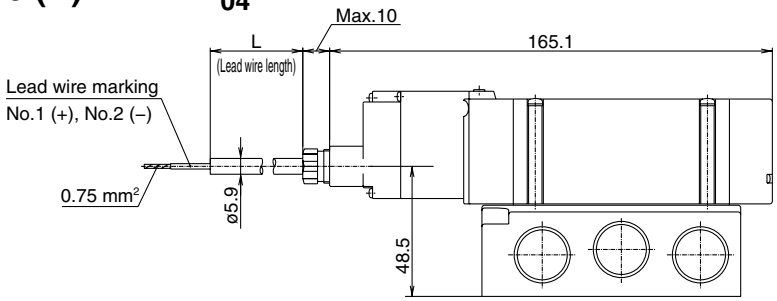
### 2-position single
### L plug connector
### 52-SY9140 (R) -L□□-$\frac{03}{04}$□




### L plug connector with cover (LL)
### 52-SY9140 (R) -LL□□-$\frac{03}{04}$□

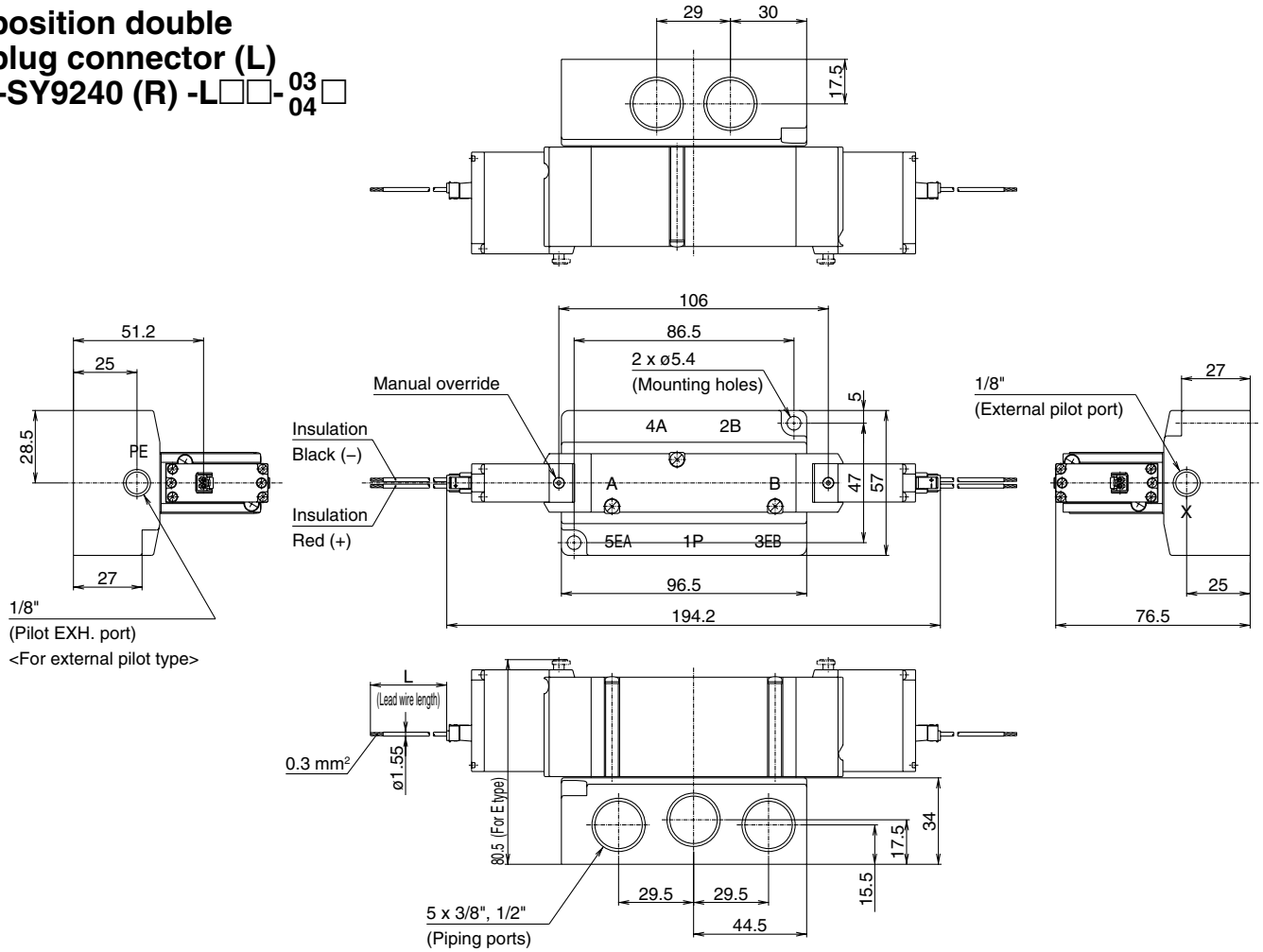



### Cable type (TT)
### 52-SY9140 (R) -TT□□-$\frac{03}{04}$□

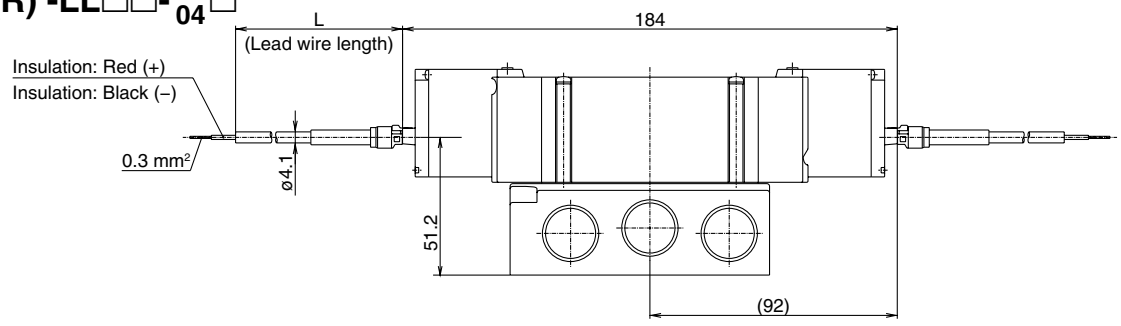


## Dimensions

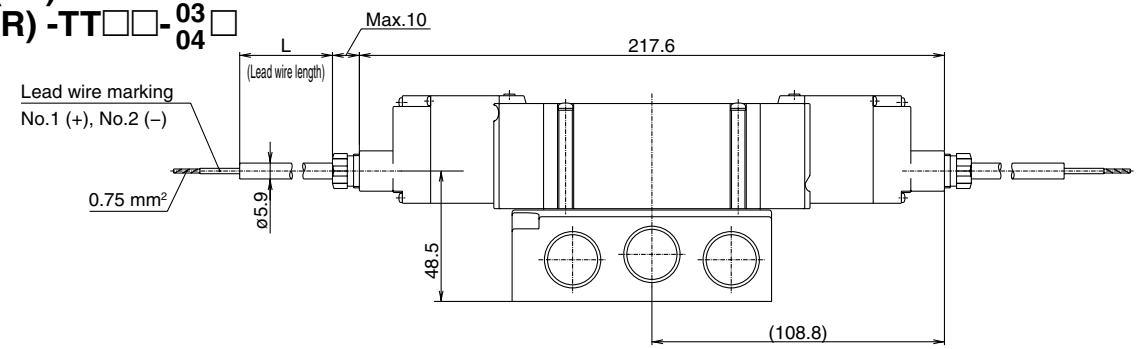
### 2-position double
### L plug connector (L)
### 52-SY9240 (R) -L□□-$\frac{03}{04}$□




### L plug connector with cover (LL)
### 52-SY9240 (R) -LL□□-$\frac{03}{04}$□

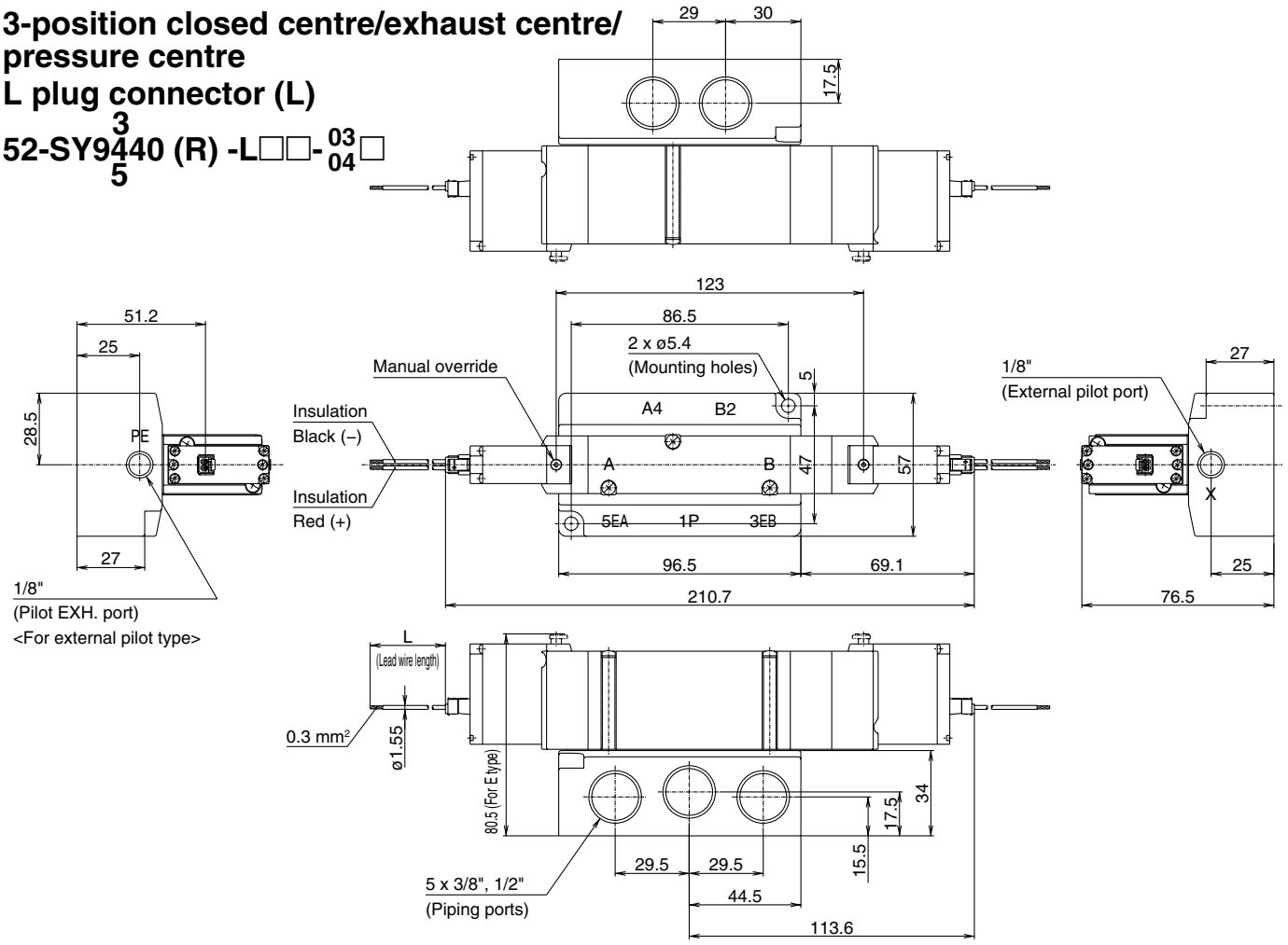



### Cable type (TT)
### 52-SY9240 (R) -TT□□-$\frac{03}{04}$□

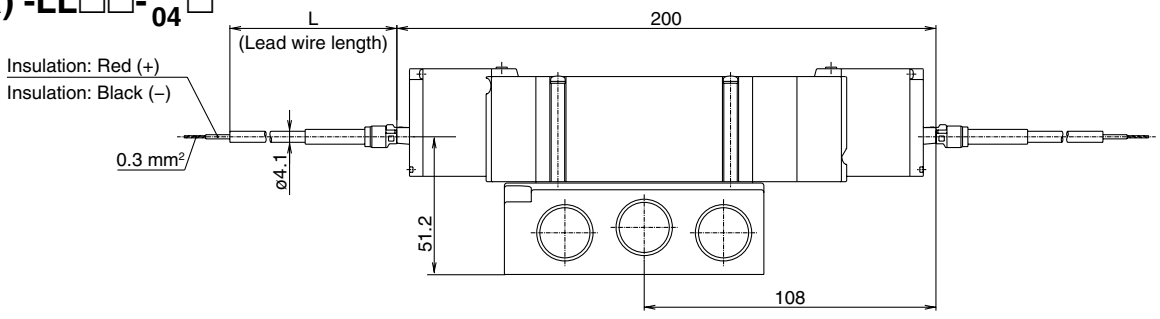


## Dimensions

### 3-position closed centre/exhaust centre/ pressure centre
### L plug connector (L)
### 52-SY9$^{3}_{5}$40 (R) -L□□-$^{03}_{04}$□




### L plug connector with cover (LL)
### 52-SY9$^{3}_{5}$40 (R) -LL□□-$^{03}_{04}$□




### Cable type (TT)
### 52-SY9$^{3}_{5}$40 (R) -TT□□-$^{03}_{04}$□