

# NP/NAP/NVP

Large flow rate 3-port valve

Pilot operated solenoid valve/external pilot operated air drive poppet valve

## Overview

Large flow rate 3-way valve with sealing strength enabled by its poppet structure. NP Series, internal pilot suitable for cylinder driving up to  $\phi 400$ . NAP/NVP Series, external pilot compatible with both positive pressure and negative pressure (vacuum). Two types are available to suit the application.

## Features

Two types available

- Internal pilot NP Series

NC,  
NO

- External pilot NAP, NVP Series

Universal

Large flow rate with compact and lightweight body

Effective cross-sectional area:  $\sim 630 \text{ mm}^2$

Able to operate with no lubrication

Unrestricted mounting orientation

External pilot is compatible with both positive and negative pressures

Poppet structure



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### Large flow rate 3-port valve

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| ● Internal pilot 3-port solenoid valve NC/NO (NP13/14) | 1626 |
| ● External pilot 3-port air operated valve UNI (NAP11) | 1632 |
| ● External pilot 3-port solenoid valve UNI (NVP11)     | 1636 |

### Technical data


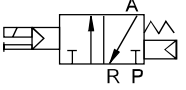
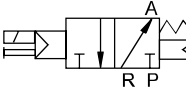
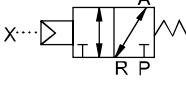
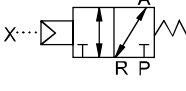
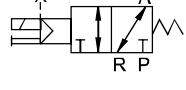
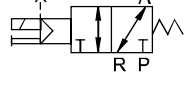
|  |      |
|--|------|
| (1) How to connect terminal box            | 1641 |
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|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |

# Series variation

# NP/NAP/NVP Series

- 4GA/B
- M4GA/B
- MN4GA/B
- 4GA/B (mastr)
- 4GD/E
- M4GD/E
- MN4GD/E
- 4GA4/B4
- MN3E  
MN4E
- W4GA/B2
- W4GB4
- 4TB
- 4L2-4/  
LMF0
- MN3S0  
MN4S0
- 4SA/B0
- 4KA/B
- 4KA/B (mastr)
- 4F
- 4F (mastr)
- PV5G  
GMF
- PV5S-0
- 3QR  
3QB
- MV3QR
- 3MA/B0
- 3PA/B
- P/M/B
- NP/NAP/  
NVP
- 4F\*0EX
- 4F\*0E
- HMV  
HSV
- 2QV  
3QV
- SKH
- PCD
- Silencer
- TotAirSys  
(Total Air)
- TotAirSys  
(Gamma)
- Ending

| Series external appearance  | Model No. | JIS symbol  | Flow characteristics  |                            |                            | Voltage (V)              |   |
|---|-----------|---|---|----------------------------|----------------------------|--------------------------|---|
|   |           |   | C [dm <sup>3</sup> /(s·bar)]  | b                          | S (mm <sup>2</sup> )       |                          |   |
| (NC/NO)<br>Internal pilot with solenoid valve<br><br> | 3-port    | NC  |    | P→A                        |                            |                          | 100 AC<br>200 AC<br>24 DC<br><br>Custom order<br>110 AC<br>220 AC |
|   |           | NP13  |   | 10A to 20A<br>15 to 35     | 10A to 20A<br>0.27 to 0.31 | 25A to 50A<br>200 to 660 |   |
|   |           | NO  |  | R→A                        |                            |                          |   |
|   |           | NP14  |   | 10A to 20A<br>15 to 41     | 10A to 20A<br>0.21 to 0.31 | 25A to 50A<br>210 to 630 |   |
| (Universal) Air operated  | NAP11     |  | P→A   |                            |                            |                          |   |
| (Universal) Pneumatic solenoid valve  | 3-port    | NAP11   |  | 10A to 20A<br>15 to 35     | 10A to 20A<br>0.27 to 0.31 | 25A to 50A<br>200 to 660 |   |
|   |           | NVP11   |  | P→A                        |                            |                          | 100 AC<br>200 AC<br>24 DC<br><br>Custom order<br>110 AC<br>220 AC |
| NVP11   |           |  | 10A to 20A<br>15 to 35  | 10A to 20A<br>0.27 to 0.31 | 25A to 50A<br>200 to 660   |                          |   |

\*1: Effective cross-sectional area S and sonic conductance C are converted as  $S \approx 5.0 \times C$ .

|  | Port size of port A/P |       |       |     |         |         |     | Coil housing |                              |  |                                 |                                      | Page |
|--|-----------------------|-------|-------|-----|---------|---------|-----|--------------|------------------------------|--|---------------------------------|--------------------------------------|------|
|  | Female thread         |       |       |     |         |         |     | Grommet coil | DIN terminal box (Pg thread) | DIN terminal box with lamp (Pg thread) | With T type terminal box (G1/2) | T type terminal box with lamp (G1/2) |      |
|  | Rc3/8                 | Rc1/2 | Rc3/4 | Rc1 | Rc1 1/4 | Rc1 1/2 | Rc2 |              |                              |  |                                 |                                      |      |
|  | ●                     | ●     | ●     | ●   | ●       | ●       | ●   | ●            | ●                            | ●                                      | ●                               | ●                                    | 1626 |
|  | ●                     | ●     | ●     | ●   | ●       | ●       | ●   | ●            | ●                            | ●                                      | ●                               | ●                                    |      |
|  | ●                     | ●     | ●     | ●   | ●       | ●       | ●   |              |                              |  |                                 |                                      | 1632 |
|  | ●                     | ●     | ●     | ●   | ●       | ●       | ●   | ●            | ●                            | ●                                      | ●                               | ●                                    | 1636 |

## Electric connection circuit diagram

| Option                                   | Wiring circuit |    | Coil housing  |
|--|----------------|----|---|
|  | AC             | DC |   |
| -  |                |    | Grommet coil (2C)<br>DIN terminal box (2G)<br>T type terminal box (3T)                    |
| With indicator lamp                      |                |    | DIN terminal box (2H)<br>T type terminal box (3R)   |
| With surge suppressor                    |                |    | Grommet coil (2CS, Rc1 1/4 to Rc2)<br>DIN terminal box (2GS)<br>T type terminal box (3TS) |
| with surge suppressor and indicator lamp |                |    | DIN terminal box (2HS)<br>T type terminal box (3RS)                                       |
| Surge suppressor attached                |                |    | Grommet coil (2CS, Rc3/8 to Rc1)  |

|                       |
|-----------------------|
| 4GA/B                 |
| M4GA/B                |
| MN4GA/B               |
| 4GA/B (mastr)         |
| 4GD/E                 |
| M4GD/E                |
| MN4GD/E               |
| 4GA4/B4               |
| MN3E                  |
| MN4E                  |
| W4GA/B2               |
| W4GB4                 |
| 4TB                   |
| 4L2-4/LMF0            |
| MN3S0                 |
| MN4S0                 |
| 4SA/B0                |
| 4KA/B                 |
| 4KA/B (mastr)         |
| 4F                    |
| 4F (mastr)            |
| PV5G                  |
| GMF                   |
| PV5                   |
| GMF                   |
| PV5S-0                |
| 3QR                   |
| 3QB                   |
| MV3QR                 |
| 3MA/B0                |
| 3PA/B                 |
| P/M/B                 |
| NP/NAP/NVP            |
| 4F*0EX                |
| 4F*0E                 |
| HMV                   |
| HSV                   |
| 2QV                   |
| 3QV                   |
| SKH                   |
| PCD                   |
| Silencer              |
| TotAirSys (Total Air) |
| TotAirSys (Gamma)     |
| Ending                |



Internal pilot 3-port valve with solenoid valve

# NP13/NP14 Series

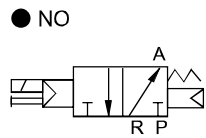
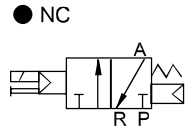
- NC, NO
- Port size: Rc3/8 to Rc2



Refer to the Ending for details.



## JIS symbol



## Common specifications

| Descriptions                            | NP13   | NP14   |
|---|--|--------|
| Actuation                               | NC   | NO     |
| Fluid pressure supply port              | P port   | R port |
| Working fluid                           | Compressed air   |        |
| Proof pressure MPa                      | 1.2 (≈170 psi, 12 bar)   |        |
| Working pressure MPa                    | 0.2 (≈29 psi, 2 bar) to 0.8 (≈120 psi, 8 bar)  |        |
| Fluid temperature °C                    | 5 (41°F) to 60 (140°F)   |        |
| Ambient temperature °C                  | 10A to 25A: -5 (23°F) to 60 (140°F) and 32A to 50A: -5 (23°F) to 40 (104°F) for both NP13/NP14 |        |
| Thermal class                           | Class 130 (B)  |        |
| Lubrication                             | No lubrication (use the turbine oil Class 1 ISO VG32 for lubrication.)                         |        |
| Valve seat leakage cm <sup>3</sup> /min | 1 or less (at pneumatic pressure 0.2 to 0.8 MPa)   |        |
| Valve structure                         | Internal pilot balance poppet structure  |        |
| Mounting orientation                    | Unrestricted   |        |

## Individual specifications

| Descriptions<br>Model No.  | Port size                       |        | Orifice size (mm) | Response time (ms) | Rated voltage           | Apparent power (VA) |       |               |       | Power consumption (W) |    | Weight (kg) |
|----------------------------|---------------------------------|--------|-------------------|--------------------|-------------------------|---------------------|-------|---------------|-------|-----------------------|----|-------------|
|                            | P, A port                       | R port |                   |                    |                         | When holding        |       | When starting |       | AC 50/60 Hz           | DC |             |
|                            |                                 |        |                   |                    |                         | 50 Hz               | 60 Hz | 50 Hz         | 60 Hz |                       |    |             |
| NC (P port pressurization) |                                 |        |                   |                    |                         |                     |       |               |       |                       |    |             |
| NP13-10A                   | Rc3/8                           | Rc1/2  | 14.8 or equiv.    | 30 or less (*1)    | 100, 200 VAC (50/60 Hz) | 3.9                 | 3.1   | 9.2           | 7.2   | 2.0/1.7               | 4  | 0.7         |
| NP13-15A                   | Rc1/2                           |        |                   |                    |                         |                     |       |               |       |                       |    | 0.7         |
| NP13-20A                   | Rc3/4                           | Rc1    | 25.4 or equiv.    | 60 or less (*1)    | 110, 220 VAC (60 Hz)    | 15                  | 11    | 40            | 35    | 7.5/6.0               | 8  | 1.5         |
| NP13-25A                   | Rc1                             |        |                   |                    |                         |                     |       |               |       |                       |    | 1.5         |
| NP13-32A                   | Rc1 <sup>1</sup> / <sub>4</sub> | Rc2    | 41.4 or equiv.    | 120 or less (*1)   | 24 VDC                  | 15                  | 11    | 40            | 35    | 7.5/6.0               | 8  | 4.5         |
| NP13-40A                   | Rc1 <sup>1</sup> / <sub>2</sub> |        |                   |                    |                         |                     |       |               |       |                       |    | 4.5         |
| NP13-50A                   | Rc2                             |        |                   |                    |                         |                     |       |               |       |                       |    | 4.4         |
| NO (R port pressurization) |                                 |        |                   |                    |                         |                     |       |               |       |                       |    |             |
| NP14-10A                   | Rc3/8                           | Rc1/2  | 14.8 or equiv.    | 30 or less (*1)    | 100, 200 VAC (50/60 Hz) | 3.9                 | 3.1   | 9.2           | 7.2   | 2.0/1.7               | 4  | 0.7         |
| NP14-15A                   | Rc1/2                           |        |                   |                    |                         |                     |       |               |       |                       |    | 0.7         |
| NP14-20A                   | Rc3/4                           | Rc1    | 25.4 or equiv.    | 60 or less (*1)    | 110, 220 VAC (60 Hz)    | 15                  | 11    | 40            | 35    | 7.5/6.0               | 8  | 1.5         |
| NP14-25A                   | Rc1                             |        |                   |                    |                         |                     |       |               |       |                       |    | 1.5         |
| NP14-32A                   | Rc1 <sup>1</sup> / <sub>4</sub> | Rc2    | 41.4 or equiv.    | 120 or less (*1)   | 24 VDC                  | 15                  | 11    | 40            | 35    | 7.5/6.0               | 8  | 4.5         |
| NP14-40A                   | Rc1 <sup>1</sup> / <sub>2</sub> |        |                   |                    |                         |                     |       |               |       |                       |    | 4.5         |
| NP14-50A                   | Rc2                             |        |                   |                    |                         |                     |       |               |       |                       |    | 4.4         |

\*1 : The response time is the value at 0.5 MPa supply pressure, with no lubrication, and with the power ON. It depends on the pressure and the lubricant quality.

\*2 : Use the product within ±10% of the rated voltage.

- 4GA/B
- M4GA/B
- MN4GA/B
- 4GA/B (mastr)
- 4GD/E
- M4GD/E
- MN4GD/E
- 4GA4/B4
- MN3E
- MN4E
- W4GA/B2
- W4GB4
- 4TB
- 4L2-4/LMF0
- MN3S0
- MN4S0
- 4SA/B0
- 4KA/B
- 4KA/B (mastr)
- 4F
- 4F (mastr)
- PV5G GMF
- PV5 GMF
- PV5S-0
- 3QR
- 3QB
- MV3QR
- 3MA/B0
- 3PA/B
- P/M/B
- NP/NAP/NVP
- 4F\*0EX
- 4F\*0E
- HMV
- HSV
- 2QV
- 3QV
- SKH
- PCD
- Silencer
- TotAirSys (Total Air)
- TotAirSys (Gamma)
- Ending

# NP13/NP14 Series

## Flow characteristics

### Flow characteristics

| Model No.                  | P→A                         |      |      |                     | A→R                         |      |      |                     |
|----------------------------|-----------------------------|------|------|---------------------|-----------------------------|------|------|---------------------|
|                            | C[dm <sup>3</sup> /(s·bar)] | b    | Cv   | S(mm <sup>2</sup> ) | C[dm <sup>3</sup> /(s·bar)] | b    | Cv   | S(mm <sup>2</sup> ) |
| NC (P port pressurization) |                             |      |      |                     |                             |      |      |                     |
| NP13-10A                   | 15                          | 0.31 | 3.4  | -                   | 16                          | 0.28 | 3.4  | -                   |
| NP13-15A                   | 18                          | 0.29 | 3.6  | -                   | 17                          | 0.26 | 3.6  | -                   |
| NP13-20A                   | 35                          | 0.27 | 8.4  | -                   | 41                          | 0.21 | 8.6  | -                   |
| NP13-25A                   | -                           | -    | 8.6  | 200                 | -                           | -    | 9.0  | 210                 |
| NP13-32A                   | -                           | -    | 25.8 | 600                 | -                           | -    | 26.2 | 610                 |
| NP13-40A                   | -                           | -    | 27.0 | 630                 | -                           | -    | 26.6 | 620                 |
| NP13-50A                   | -                           | -    | 28.2 | 660                 | -                           | -    | 27.0 | 630                 |
| Model No.                  | R→A                         |      |      |                     | A→P                         |      |      |                     |
|                            | C[dm <sup>3</sup> /(s·bar)] | b    | Cv   | S(mm <sup>2</sup> ) | C[dm <sup>3</sup> /(s·bar)] | b    | Cv   | S(mm <sup>2</sup> ) |
| NO (R port pressurization) |                             |      |      |                     |                             |      |      |                     |
| NP14-10A                   | 15                          | 0.31 | 3.4  | -                   | 15                          | 0.33 | 3.4  | -                   |
| NP14-15A                   | 17                          | 0.30 | 3.6  | -                   | 18                          | 0.31 | 3.6  | -                   |
| NP14-20A                   | 41                          | 0.21 | 8.6  | -                   | 35                          | 0.27 | 8.4  | -                   |
| NP14-25A                   | -                           | -    | 9.0  | 210                 | -                           | -    | 8.6  | 200                 |
| NP14-32A                   | -                           | -    | 26.2 | 610                 | -                           | -    | 25.8 | 600                 |
| NP14-40A                   | -                           | -    | 26.6 | 620                 | -                           | -    | 27.0 | 630                 |
| NP14-50A                   | -                           | -    | 27.0 | 630                 | -                           | -    | 28.2 | 660                 |

\*1 : Effective cross-sectional area S and sonic conductance C are converted as  $S \approx 5.0 \times C$ .

|                       |
|-----------------------|
| 4GA/B                 |
| M4GA/B                |
| MN4GA/B               |
| 4GA/B (mastr)         |
| 4GD/E                 |
| M4GD/E                |
| MN4GD/E               |
| 4GA4/B4               |
| MN3E                  |
| MN4E                  |
| W4GA/B2               |
| W4GB4                 |
| 4TB                   |
| 4L2-4/LMF0            |
| MN3S0                 |
| MN4S0                 |
| 4SA/B0                |
| 4KA/B                 |
| 4KA/B (mastr)         |
| 4F                    |
| 4F (mastr)            |
| PV5G                  |
| GMF                   |
| PV5                   |
| GMF                   |
| PV5S-0                |
| 3QR                   |
| 3QB                   |
| MV3QR                 |
| 3MA/B0                |
| 3PA/B                 |
| P/M/B                 |
| NP/NAP/NVP            |
| 4F*0EX                |
| 4F*0E                 |
| HMV                   |
| HSV                   |
| 2QV                   |
| 3QV                   |
| SKH                   |
| PCD                   |
| Silencer              |
| TotAirSys (Total Air) |
| TotAirSys (Gamma)     |
| Ending                |

# NP13/NP14 Series

## How to order

Model No. **NP1 3 - 15A - 1 2G S - 1**

**A** Actuation

**B** Port size

**C** Body/sealant combination

**D** Coil housing  
\*1

**E** Other options  
\*2

**F** Rated voltage

### ⚠ Precautions for model No. selection

\*1 : Pg thread of the DIN terminal box is Pg9 for port size 10A to 25A, and Pg11 for 32A to 50A.

\*2 : When selecting the grommet coil, the optional surge suppressor is attached (port size 10A to 25A) or incorporated (port size 32A to 50A). When selecting the coil with a terminal box, it is mounted in the terminal box.

\*3 : Manual override (non-locking) is provided as standard.

[Example of model No.]

**NP13-15A-12GS-1**

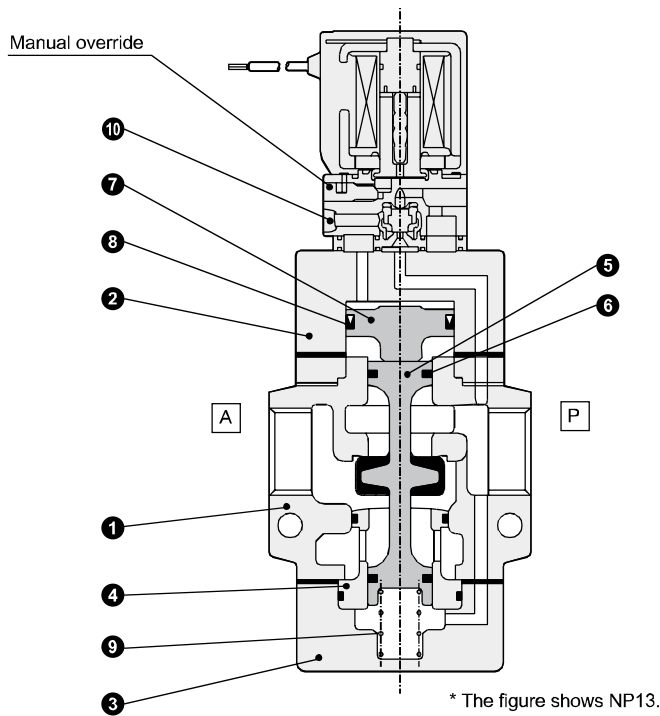
Model: NP

- A** Actuation : NC
- B** Port size : Rc1/2
- C** Body/sealant combination : Body/aluminum, sealant/nitrile rubber
- D** Coil housing : With DIN terminal box
- E** Other options : With surge suppressor
- F** Voltage : 100 VAC(50/60 Hz), 110 VAC(60 Hz)

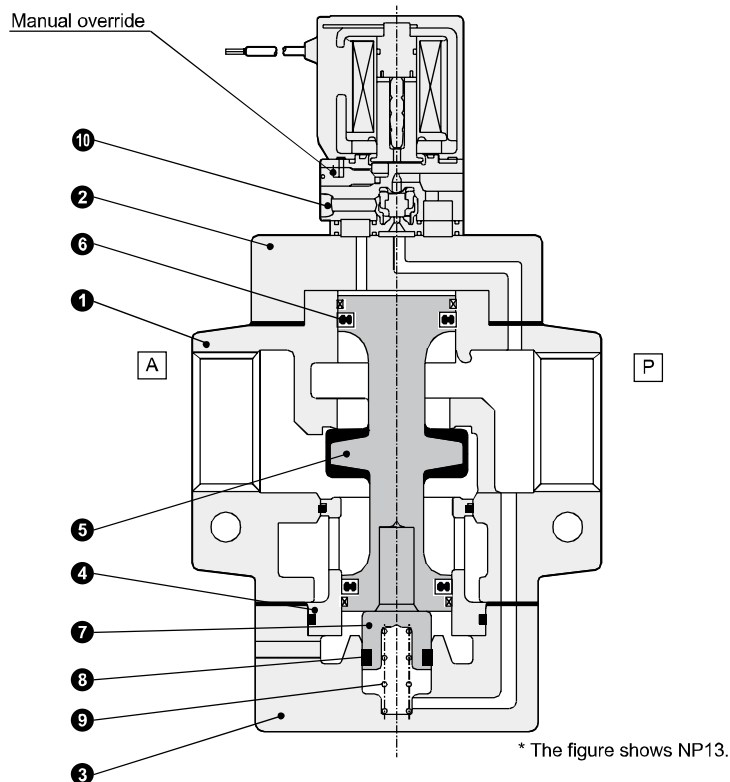
| Code                              | Content               |  |
|-----------------------------------|-----------------------|--|
| <b>A Actuation</b>                |                       |  |
| <b>3</b>                          | NC                    |  |
| <b>4</b>                          | NO                    |  |
| <b>B Port size</b>                |                       |  |
| <b>10A</b>                        | Rc3/8                 |  |
| <b>15A</b>                        | Rc1/2                 |  |
| <b>20A</b>                        | Rc3/4                 |  |
| <b>25A</b>                        | Rc1                   |  |
| <b>32A</b>                        | Rc1 1/4               |  |
| <b>40A</b>                        | Rc1 1/2               |  |
| <b>50A</b>                        | Rc2                   |  |
| <b>C Body/sealant combination</b> |                       |  |
|                                   | Body                  | Sealant                                |
| 1                                 | Aluminum              | Nitrile rubber                         |
| <b>D Coil housing</b>             |                       |  |
| <b>2C</b>                         | Std.                  | Grommet coil                           |
| <b>2G</b>                         | Option                | DIN terminal box (Pg thread)           |
| <b>2H</b>                         |                       | DIN terminal box with lamp (Pg thread) |
| <b>3T</b>                         |                       | With T type terminal box (G1/2)        |
| <b>3R</b>                         |                       | T type terminal box with lamp (G1/2)   |
| <b>E Other options</b>            |                       |  |
| <b>Blank</b>                      | No option             |  |
| <b>S</b>                          | With surge suppressor |  |
| <b>F Rated voltage</b>            |                       |  |
| <b>1</b>                          | Standard              | 100 VAC(50/60 Hz), 110 VAC(60 Hz)      |
| <b>2</b>                          |                       | 200 VAC(50/60 Hz), 220 VAC(60 Hz)      |
| <b>3</b>                          |                       | 24 VDC                                 |
| <b>AC110V</b>                     | Custom                | 110 VAC(50/60 Hz)                      |
| <b>AC220V</b>                     |                       | 220 VAC(50/60 Hz)                      |

## Internal structure and parts list

### ● NP<sup>13</sup>/<sub>14</sub>-10A/15A



### ● NP<sup>13</sup>/<sub>14</sub>-20A to 50A



| No. | Part name  | Material                            |
|-----|------------|-------------------------------------|
| 1   | Body       | AC4C Aluminum casting               |
| 2   | Body       | AC4C Aluminum casting               |
| 3   | Cap        | AC4C Aluminum casting               |
| 4   | Valve seat | C3604 Copper alloy                  |
| 5   | Valve stem | NBR, A2017 Nitrile rubber, aluminum |

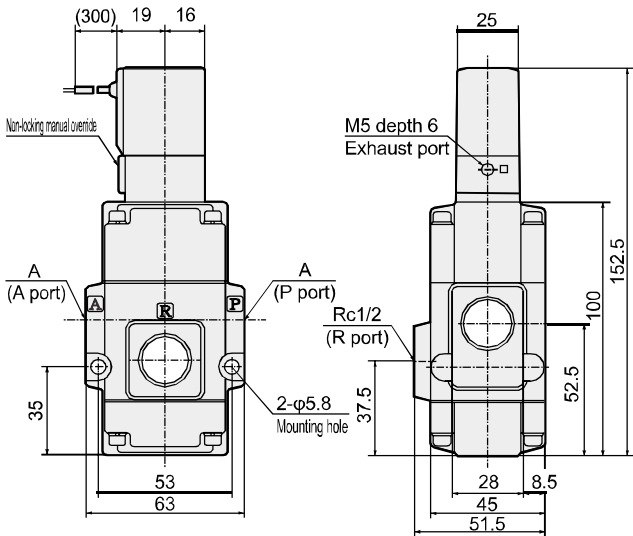
| No. | Part name            | Material               |
|-----|----------------------|------------------------|
| 6   | Packing              | NBR Nitrile rubber     |
| 7   | Piston               | POM Acetal resin       |
| 8   | MY packing           | NBR Nitrile rubber     |
| 9   | Spring               | SUS304 Stainless steel |
| 10  | Pilot solenoid valve | -                      |

|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |

# NP13/NP14 Series

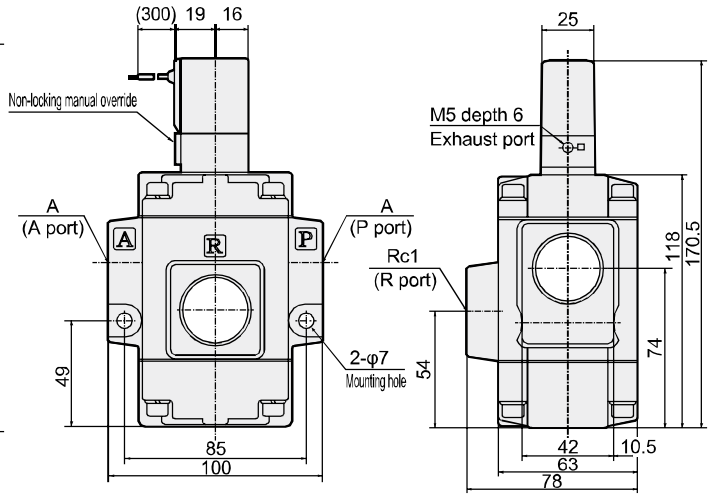
## Dimensions

● Grommet coil  
**NP<sub>13</sub><sup>14</sup>-10A/15A-12C**



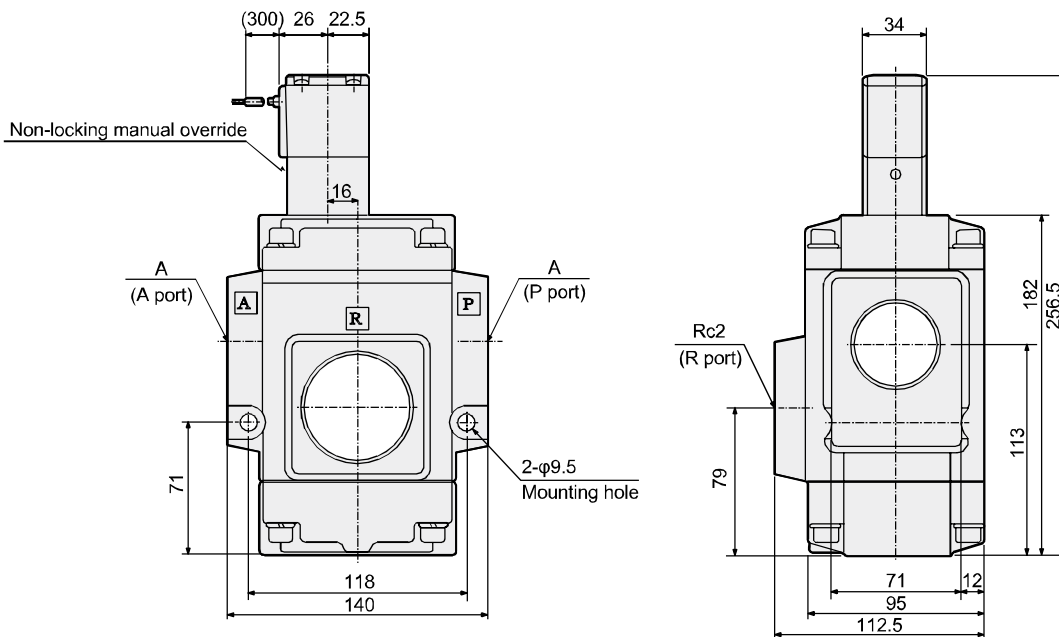
| Model No.    | A     |
|--------------|-------|
| NP1*-10A-1** | Rc3/8 |
| NP1*-15A-1** | Rc1/2 |

● Grommet coil  
**NP<sub>13</sub><sup>14</sup>-20A/25A-12C**



| Model No.    | A     |
|--------------|-------|
| NP1*-20A-1** | Rc3/4 |
| NP1*-25A-1** | Rc1   |

● Grommet coil  
**NP<sub>13</sub><sup>14</sup>-32A/40A/50A-12C**



| Model No.    | A       |
|--------------|---------|
| NP1*-32A-1** | Rc1 1/4 |
| NP1*-40A-1** | Rc1 1/2 |
| NP1*-50A-1** | Rc2     |



# NP13/NP14 Series

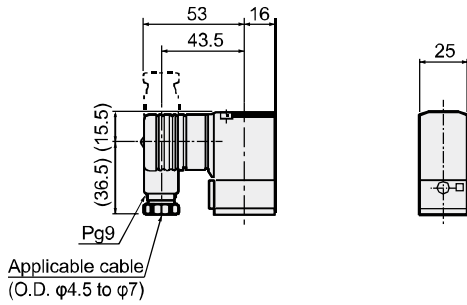
Solenoid valve (NC/NO)

## Optional dimensions



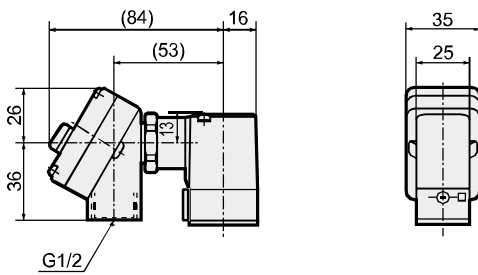
- With DIN terminal box (Pg9)

NP<sup>13</sup><sub>14</sub>-10A/15A/20A/25A-1 **2G**  
**2H**



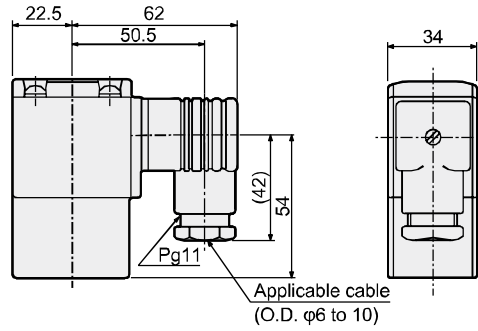
- With T type terminal box (G1/2)

NP<sup>13</sup><sub>14</sub>-10A/15A/20A/25A-1 **3T**  
**3R**



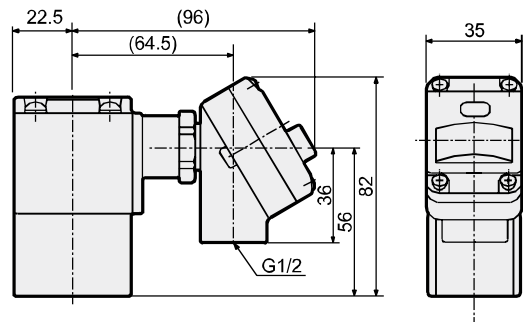
- With DIN terminal box (Pg11)

NP<sup>13</sup><sub>14</sub>-32A/40A/50A-1 **2G**  
**2H**



- With T type terminal box (G1/2)

NP<sup>13</sup><sub>14</sub>-32A/40A/50A-1 **3T**  
**3R**

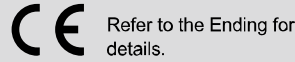


|                       |
|-----------------------|
| 4GA/B                 |
| M4GA/B                |
| MN4GA/B               |
| 4GA/B (mastr)         |
| 4GD/E                 |
| M4GD/E                |
| MN4GD/E               |
| 4GA4/B4               |
| MN3E                  |
| MN4E                  |
| W4GA/B2               |
| W4GB4                 |
| 4TB                   |
| 4L2-4/LMF0            |
| MN3S0                 |
| MN4S0                 |
| 4SA/B0                |
| 4KA/B                 |
| 4KA/B (mastr)         |
| 4F                    |
| 4F (mastr)            |
| PV5G                  |
| GMF                   |
| PV5                   |
| GMF                   |
| PV5S-0                |
| 3QR                   |
| 3QB                   |
| MV3QR                 |
| 3MA/B0                |
| 3PA/B                 |
| P/M/B                 |
| NP/NAP/NVP            |
| 4F*0EX                |
| 4F*0E                 |
| HMV                   |
| HSV                   |
| 2QV                   |
| 3QV                   |
| SKH                   |
| PCD                   |
| Silencer              |
| TotAirSys (Total Air) |
| TotAirSys (Gamma)     |
| Ending                |

Air operated 3-port valve with solenoid valve

# NVP11 Series

- Universal
- Port size: Rc3/8 to Rc2



4GA/B

M4GA/B

MN4GA/B

4GA/B  
(mastr)

4GD/E

M4GD/E

MN4GD/E

4GA4/B4

MN3E  
MN4E

W4GA/B2

W4GB4

4TB

4L2-4/  
LMF0

MN3S0  
MN4S0

4SA/B0

4KA/B

4KA/B  
(mastr)

4F

4F  
(mastr)

PV5G  
GMF

PV5  
GMF

PV5S-0

3QR  
3QB

MV3QR

3MA/B0

3PA/B

P/M/B

NP/NAP/  
NVP

4F\*0EX

4F\*0E

HMV  
HSV

2QV  
3QV

SKH

PCD

Silencer

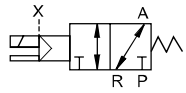
TotAirSys  
(Total Air)

TotAirSys  
(Gamma)

Ending

## JIS symbol

- Universal



## Common specifications

1 MPa = 10 bar

| Descriptions                            | NVP11  |
|---|--|
| Actuation                               | Universal  |
| Working fluid                           | Compressed air, low vacuum   |
| Proof pressure MPa                      | 1.2 (≈170 psi, 12 bar)   |
| Working pressure MPa                    | 0 (≈0 psi) to 0.8 (≈120 psi) (1.3 x 10 <sup>2</sup> to 8 x 10 <sup>5</sup> Pa (abs) when used in vacuum) |
| Fluid temperature °C                    | 5 (41°F) to 60 (140°F)   |
| Ambient temperature °C                  | 10A to 25A: -5 (23°F) to 60 (140°F) and 32A to 50A: -5 (23°F) to 40 (104°F)                              |
| Thermal class                           | Class 130 (B)  |
| Lubrication                             | No lubrication (use turbine oil Class 1 ISO VG32 for lubrication)  |
| Valve seat leakage cm <sup>3</sup> /min | 1 or less (at pneumatic pressure 0.02 (≈2.9 psi) to 0.8 MPa (≈120 psi))                                  |
| Valve structure                         | External pilot balance poppet structure  |
| Mounting orientation                    | Unrestricted   |
| Pilot fluid                             | Air  |
| Pilot pressure MPa                      | 0.35 (≈51 psi, 3.5 bar) to 0.7 (≈100 psi, 7 bar)   |
| Pilot port size (port X)                | Rc1/8  |

## Individual specifications

| Descriptions<br>Model No. | Port size    |        | Orifice size<br>(mm) | Response<br>time (ms) | Rated voltage              | Apparent power (VA) |       |               |       | Power consumption (W) |    | Weight<br>(kg) |
|---------------------------|--------------|--------|----------------------|-----------------------|----------------------------|---------------------|-------|---------------|-------|-----------------------|----|----------------|
|                           | P, A<br>port | R port |                      |                       |                            | When holding        |       | When starting |       | AC<br>50/60 Hz        | DC |                |
|                           |              |        |                      |                       |                            | 50 Hz               | 60 Hz | 50 Hz         | 60 Hz |                       |    |                |
| NVP11-10A                 | Rc3/8        | Rc1/2  | 14.8 or equiv.       | 30 or less<br>(*1)    | 100, 200 VAC<br>(50/60 Hz) | 3.9                 | 3.1   | 9.2           | 7.2   | 2.0/1.7               | 4  | 0.7            |
| NVP11-15A                 | Rc1/2        |        |                      |                       |                            |                     |       |               |       |                       |    |                |
| NVP11-20A                 | Rc3/4        | Rc 1   | 25.4 or equiv.       | 60 or less<br>(*1)    | 110, 220 VAC<br>(60 Hz)    | 15                  | 11    | 40            | 35    | 7.5/6.0               | 8  | 1.5            |
| NVP11-25A                 | Rc 1         |        |                      |                       |                            |                     |       |               |       |                       |    |                |
| NVP11-32A                 | Rc1 1/4      | Rc 2   | 41.4 or equiv.       | 120 or less<br>(*1)   | 24 VDC                     | 15                  | 11    | 40            | 35    | 7.5/6.0               | 8  | 4.5            |
| NVP11-40A                 | Rc1 1/2      |        |                      |                       |                            |                     |       |               |       |                       |    |                |
| NVP11-50A                 | Rc 2         |        |                      |                       |                            |                     |       |               |       |                       |    | 4.4            |

\*1 : The response time is the value at 0.5 MPa supply pressure, with no lubrication, and with the power ON.  
It depends on the pressure and the lubricant quality.

\*2 : Use the product within ±10% of the rated voltage.

## Flow characteristics

| Model No. | P→A                         |      |      |                     | A→R                         |      |      |                     |
|-----------|-----------------------------|------|------|---------------------|-----------------------------|------|------|---------------------|
|           | C[dm <sup>3</sup> /(s·bar)] | b    | Cv   | S(mm <sup>2</sup> ) | C[dm <sup>3</sup> /(s·bar)] | b    | Cv   | S(mm <sup>2</sup> ) |
| NVP11-10A | 15                          | 0.31 | 3.4  | -                   | 16                          | 0.28 | 3.4  | -                   |
| NVP11-15A | 18                          | 0.29 | 3.6  | -                   | 17                          | 0.26 | 3.6  | -                   |
| NVP11-20A | 35                          | 0.27 | 8.4  | -                   | 41                          | 0.21 | 8.6  | -                   |
| NVP11-25A | -                           | -    | 8.6  | 200                 | -                           | -    | 9.0  | 210                 |
| NVP11-32A | -                           | -    | 25.8 | 600                 | -                           | -    | 26.2 | 610                 |
| NVP11-40A | -                           | -    | 27.0 | 630                 | -                           | -    | 26.6 | 620                 |
| NVP11-50A | -                           | -    | 28.2 | 660                 | -                           | -    | 27.0 | 630                 |

\*1 : Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

### How to order

**NVP11-15A-12GS-1**

Model No.

**A** Actuation

**B** Port size

**C** Body/sealant combination

**D** Coil housing

\*1

**E** Other options

\*2

**F** Rated voltage

| Code                              | Content               |  |
|-----------------------------------|-----------------------|--|
| <b>A Actuation</b>                |                       |  |
| 1                                 | Universal             |  |
| <b>B Port size</b>                |                       |  |
| 10A                               | Rc3/8                 |  |
| 15A                               | Rc1/2                 |  |
| 20A                               | Rc3/4                 |  |
| 25A                               | Rc1                   |  |
| 32A                               | Rc1 1/4               |  |
| 40A                               | Rc1 1/2               |  |
| 50A                               | Rc2                   |  |
| <b>C Body/sealant combination</b> |                       |  |
|                                   | Body                  | Sealant                                |
| 1                                 | Aluminum              | Nitrile rubber                         |
| <b>D Coil housing</b>             |                       |  |
| 2C                                | Std.                  | Grommet coil                           |
| 2G                                | Option                | DIN terminal box (Pg thread)           |
| 2H                                |                       | DIN terminal box with lamp (Pg thread) |
| 3T                                |                       | With T type terminal box (G1/2)        |
| 3R                                |                       | T type terminal box with lamp (G1/2)   |
| <b>E Other options</b>            |                       |  |
| Blank                             | No option             |  |
| S                                 | With surge suppressor |  |
| <b>F Rated voltage</b>            |                       |  |
| 1                                 | Standard              | 100 VAC 50/60 Hz, 110 VAC 60 Hz        |
| 2                                 |                       | 200 VAC 50/60 Hz, 220 VAC 60 Hz        |
| 3                                 |                       | 24 VDC                                 |
| AC110V                            | Custom                | 110 VAC 50/60 Hz                       |
| AC220V                            |                       | 220 VAC 50/60 Hz                       |

### ⚠ Precautions for model No. selection

\*1 : Pg thread of the DIN terminal box is Pg9 for port size 10A to 25A, and Pg11 for 32A to 50A.

\*2 : When selecting the grommet coil, the optional surge suppressor is attached (port size 10A to 25A) or incorporated (port size 32A to 50A).  
When selecting the coil with a terminal box, it is mounted in the terminal box.

\*3 : Manual override (non-locking) is provided as standard.

[Example of model No.]

**NVP11-15A-12GS-1**

Model: NVP

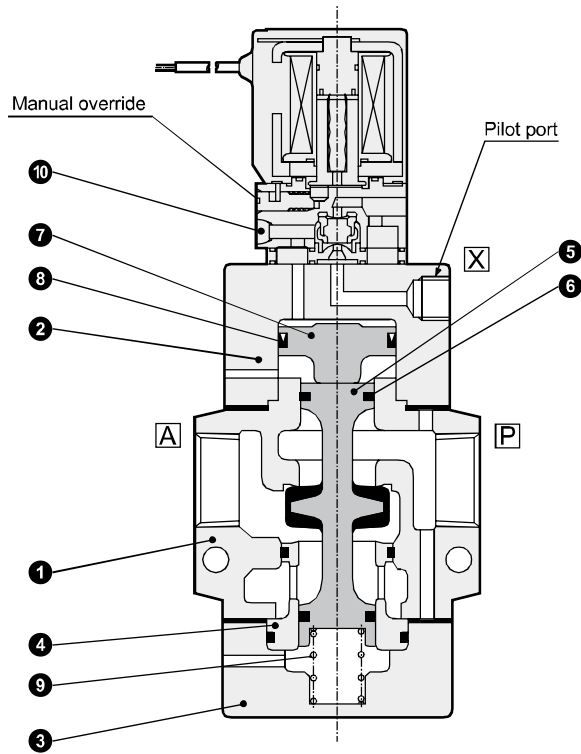
- A** Actuation : Universal
- B** Port size : Rc1/2
- C** Body/sealant combination : Body/aluminum, sealant/nitrile rubber
- D** Coil housing : With DIN terminal box
- E** Other options : With surge suppressor
- F** Voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

|                       |
|-----------------------|
| 4GA/B                 |
| M4GA/B                |
| MN4GA/B               |
| 4GA/B (mastr)         |
| 4GD/E                 |
| M4GD/E                |
| MN4GD/E               |
| 4GA4/B4               |
| MN3E                  |
| MN4E                  |
| W4GA/B2               |
| W4GB4                 |
| 4TB                   |
| 4L2-4/LMF0            |
| MN3S0                 |
| MN4S0                 |
| 4SA/B0                |
| 4KA/B                 |
| 4KA/B (mastr)         |
| 4F                    |
| 4F (mastr)            |
| PV5G                  |
| GMF                   |
| PV5                   |
| GMF                   |
| PV5S-0                |
| 3QR                   |
| 3QB                   |
| MV3QR                 |
| 3MA/B0                |
| 3PA/B                 |
| P/M/B                 |
| NP/NAP/NVP            |
| 4F*0EX                |
| 4F*0E                 |
| HMV                   |
| HSV                   |
| 2QV                   |
| 3QV                   |
| SKH                   |
| PCD                   |
| Silencer              |
| TotAirSys (Total Air) |
| TotAirSys (Gamma)     |
| Ending                |

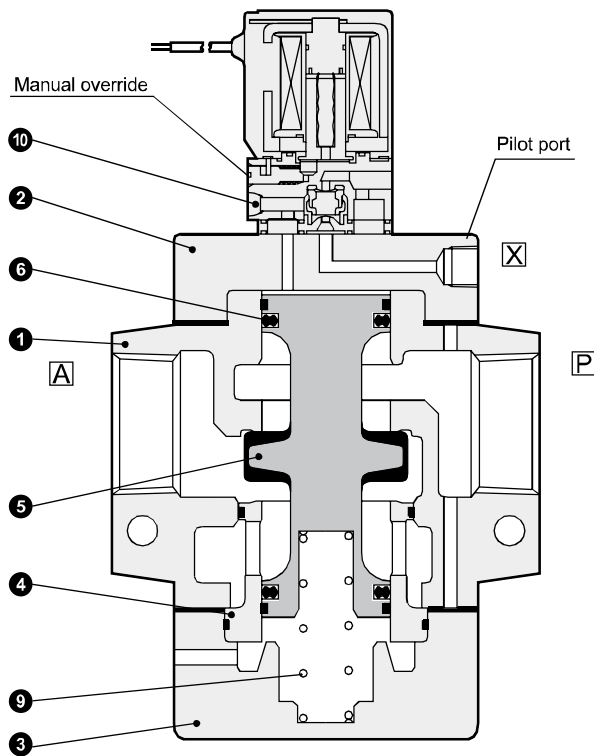
# NVP11 Series

## Internal structure and parts list

### ● NVP11-10A/15A



### ● NVP11-20A/25A/32A/40A/50A



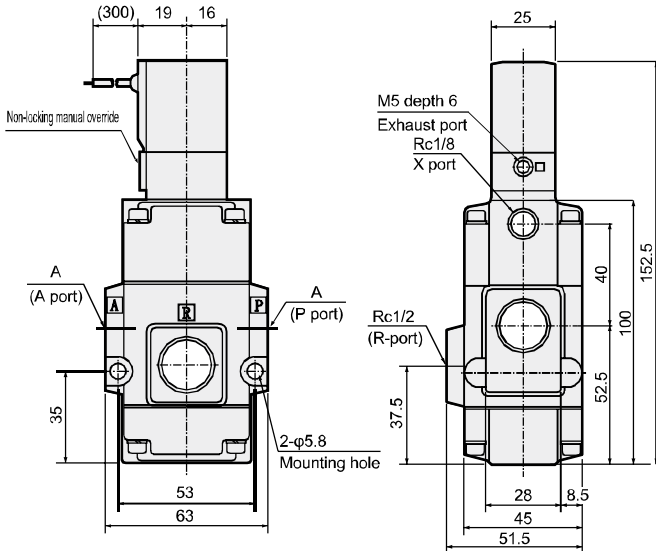
| No. | Part name  | Material                            | No. | Part name            | Material           |
|-----|------------|-------------------------------------|-----|----------------------|--------------------|
| 1   | Body       | AC4C Aluminum casting               | 6   | Packing              | NBR Nitrile rubber |
| 2   | Body       | AC4C Aluminum casting               | 7   | Piston               | POM Acetal resin   |
| 3   | Cap        | AC4C Aluminum casting               | 8   | MY packing           | NBR Nitrile rubber |
| 4   | Valve seat | C3604 Copper alloy                  | 9   | Spring               | SWP Piano wire     |
| 5   | Valve stem | NBR, A2017 Nitrile rubber, aluminum | 10  | Pilot solenoid valve | -                  |

# NVP11 Series

Solenoid valve (universal)

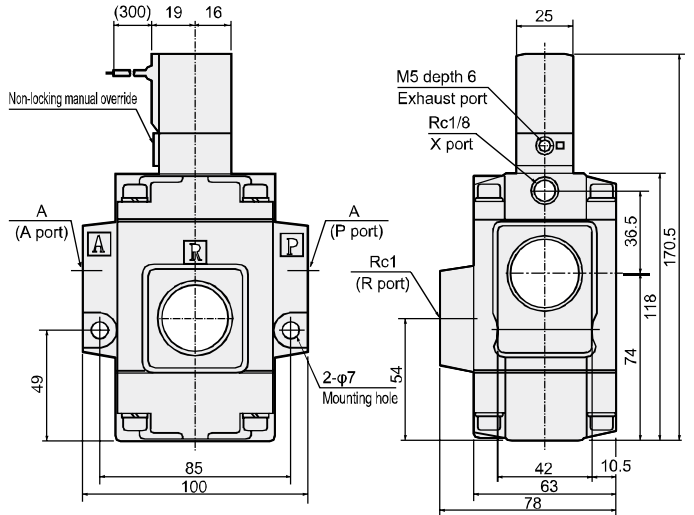
## Dimensions

● Grommet coil  
**NVP11-10A/15A-12C**



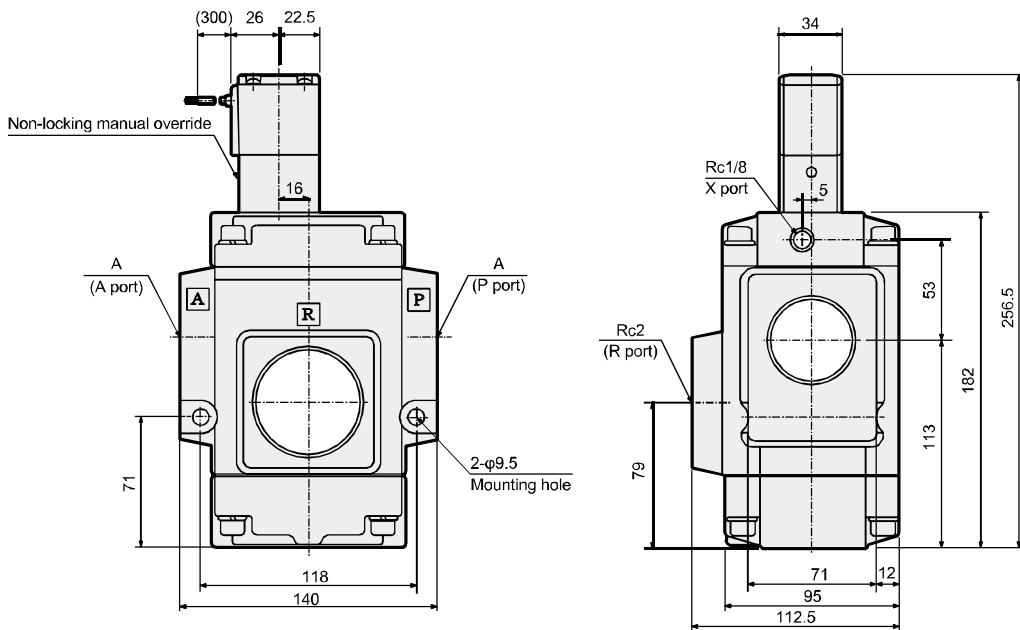
| Model No.     | A     |
|---------------|-------|
| NVP11-10A-1** | Rc3/8 |
| NVP11-15A-1** | Rc1/2 |

● Grommet coil  
**NVP11-20A/25A-12C**



| Model No.     | A     |
|---------------|-------|
| NVP11-20A-1** | Rc3/4 |
| NVP11-25A-1** | Rc1   |

● Grommet coil  
**NVP11-32A/40A/50A**



| Model No.     | A       |
|---------------|---------|
| NVP11-32A-1** | Rc1 1/4 |
| NVP11-40A-1** | Rc1 1/2 |
| NVP11-50A-1** | Rc2     |

|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |

# NVP11 Series

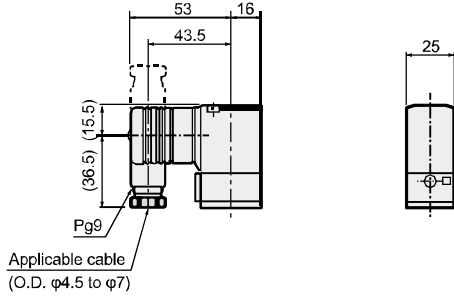
Solenoid valve (universal)

|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |

## Optional dimensions

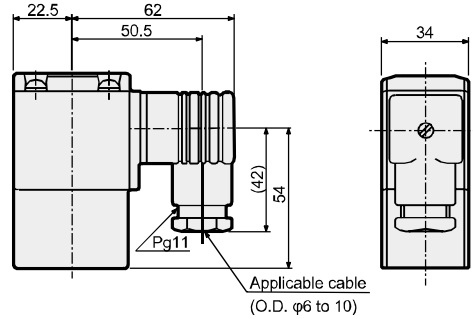
● With DIN terminal box (Pg9)

**NVP11-10A/15A/20A/25A-1** **2G**  
**2H**



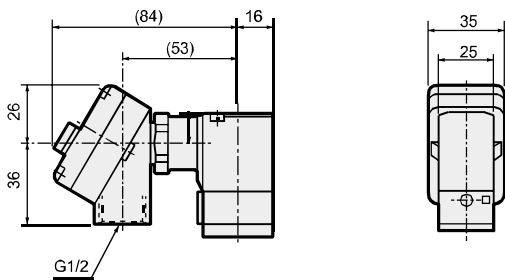
● With DIN terminal box (Pg11)

**NVP11-32A/40A/50A-1** **2G**  
**2H**



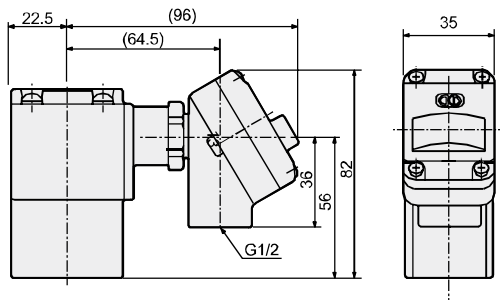
● With T type terminal box (G1/2)

**NVP11-10A/15A/20A/25A-1** **3T**  
**3R**



● With T type terminal box (G1/2)

**NVP11-32A/40A/50A-1** **3T**  
**3R**



### How to connect terminal box

#### DIN terminal box (Pg9), DIN terminal box with lamp (Pg9)

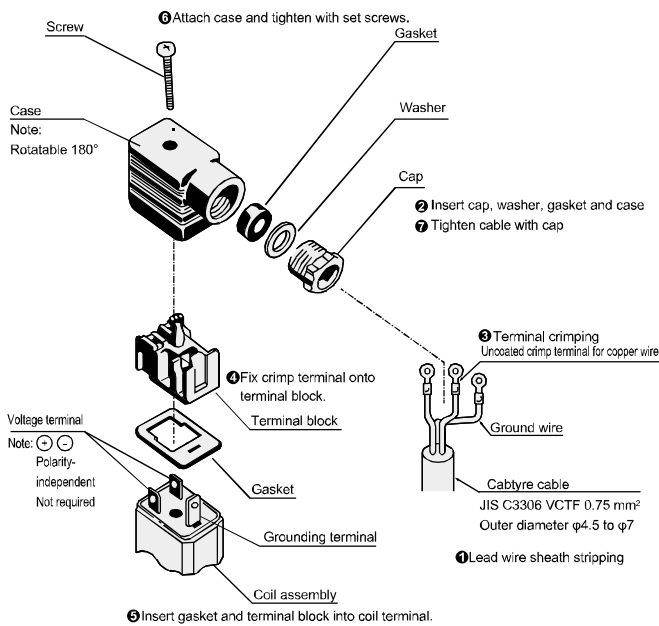
(1) Use the following cabtyre cable.

- Cable O.D.:  $\phi 4.5$  to  $\phi 7$  · Nominal sectional area:  $0.75 \text{ mm}^2$

(2) Put the crimp terminal for copper wire on the cabtyre cable's lead wire and crimp the terminal. The terminal box thread size is M3.

(3) Tighten the screws with the following tightening torque.

- Set screw tightening torque:  $0.5 \text{ N}\cdot\text{m}$
- Terminal screw tightening torque:  $0.5 \text{ N}\cdot\text{m}$



Wire with steps ① to ②.

\* The orientation of the cord can be changed by removing the terminal block from the case, rotating it by  $180^\circ$ , and then replacing the block into the case.

#### DIN terminal box (Pg11), DIN terminal box with lamp (Pg11)

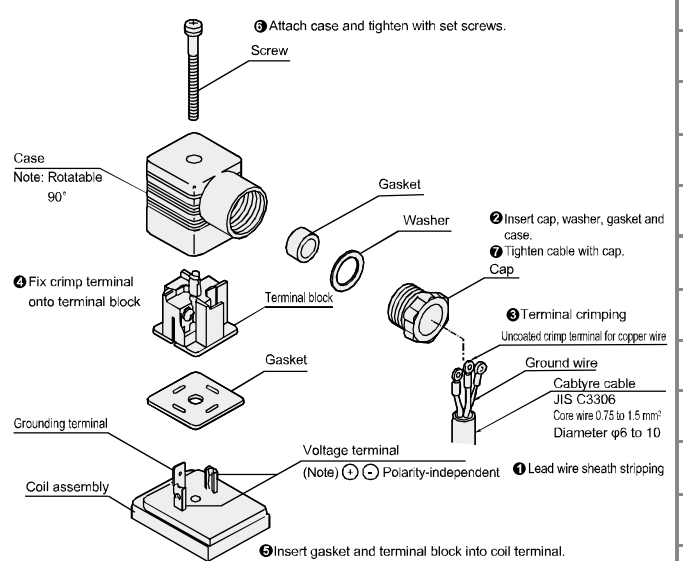
(1) Use the following cabtyre cable.

- Cable O.D.:  $\phi 6$  to  $\phi 10$  · Nominal sectional area:  $0.5$  to  $1.5 \text{ mm}^2$

(2) Put the crimp terminal for copper wire on the cabtyre cable's lead wire and crimp the terminal. The terminal box thread size is M3.

(3) Tighten the screws with the following tightening torque.

- Set screw tightening torque:  $0.5 \text{ N}\cdot\text{m}$
- Terminal screw tightening torque:  $0.5 \text{ N}\cdot\text{m}$



Wire with steps ① to ②.

\* The orientation of the cord can be changed by removing the terminal block from the case, rotating it by  $90^\circ$ , and then replacing the block into the case.

|                       |
|-----------------------|
| 4GA/B                 |
| M4GA/B                |
| MN4GA/B               |
| 4GA/B (mastr)         |
| 4GD/E                 |
| M4GD/E                |
| MN4GD/E               |
| 4GA4/B4               |
| MN3E                  |
| MN4E                  |
| W4GA/B2               |
| W4GB4                 |
| 4TB                   |
| 4L2-4/LMF0            |
| MN3S0                 |
| MN4S0                 |
| 4SA/B0                |
| 4KA/B                 |
| 4KA/B (mastr)         |
| 4F                    |
| 4F (mastr)            |
| PV5G                  |
| GMF                   |
| PV5                   |
| GMF                   |
| PV5S-0                |
| 3QR                   |
| 3QB                   |
| MV3QR                 |
| 3MA/B0                |
| 3PA/B                 |
| P/M/B                 |
| NP/NAP/NVP            |
| 4F*0EX                |
| 4F*0E                 |
| HMV                   |
| HSV                   |
| 2QV                   |
| 3QV                   |
| SKH                   |
| PCD                   |
| Silencer              |
| TotAirSys (Total Air) |
| TotAirSys (Gamma)     |
| Ending                |

# NP/NAP/NVP Series

Technical data ① How to wire the terminal box

|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |

## How to connect terminal box

T type terminal box (G1/2), T type terminal box with lamp (G1/2)

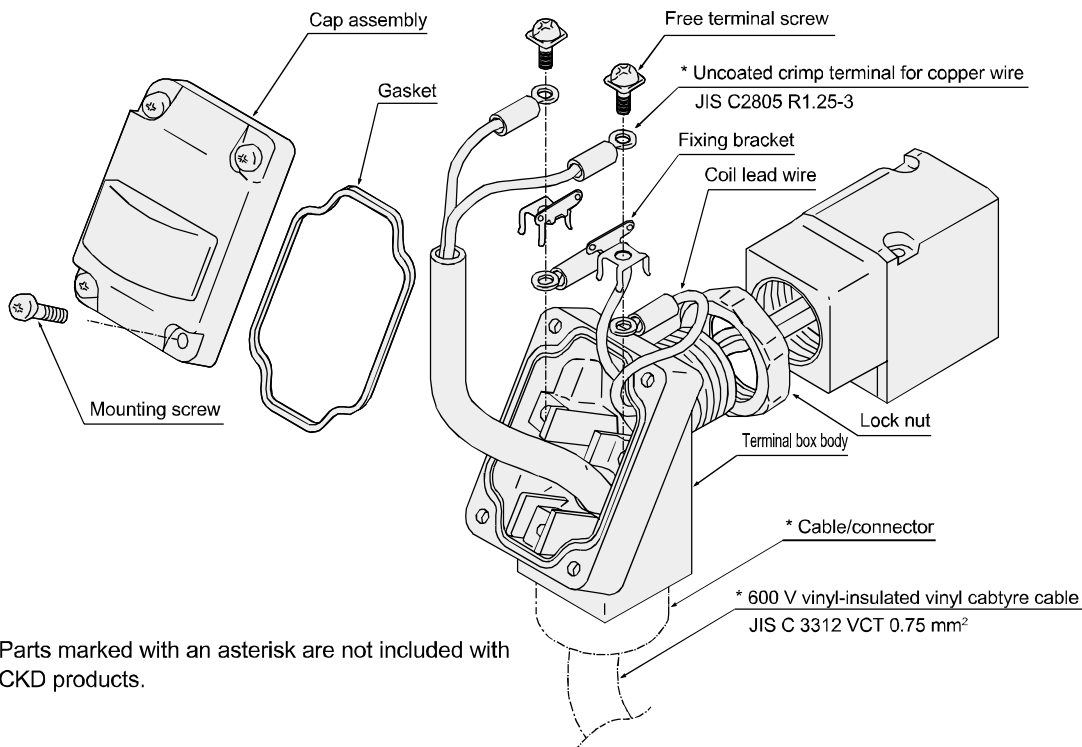
(1) Use the following cabtyre cable.

·Nominal sectional area: 0.75 mm<sup>2</sup>

(2) Put the crimp terminal for copper wire on the cabtyre cable's lead wire and crimp the terminal. The terminal box thread size is M3.

(3) Tighten the screws with the following tightening torque.

·Mounting screw tightening torque: 0.5 N·m ·Terminal screw tightening torque: 0.5 N·m



Parts marked with an asterisk are not included with CKD products.

### \* Changing the orientation of T type terminal box

Use the following steps to change the orientation of the T type terminal box from the default state.

- (1) Hold the tang (25 width) of the T type terminal box with a tool (adjustable wrench, wrench, etc.), and loosen it by turning counterclockwise.
- (2) Loosen the lock nut.
- (3) Rotate the T type terminal box clockwise to approx. 15° before the required position.
- (4) Tighten the lock nut to the coil side by hand until it is lightly tightened.
- (5) Hold the tang of the T type terminal box with a tool, and rotate it (approx. 15°) to tighten it to the required position.

Note : When further tightening the terminal box to change the orientation from the default position, rotate it within 1/2 turn.

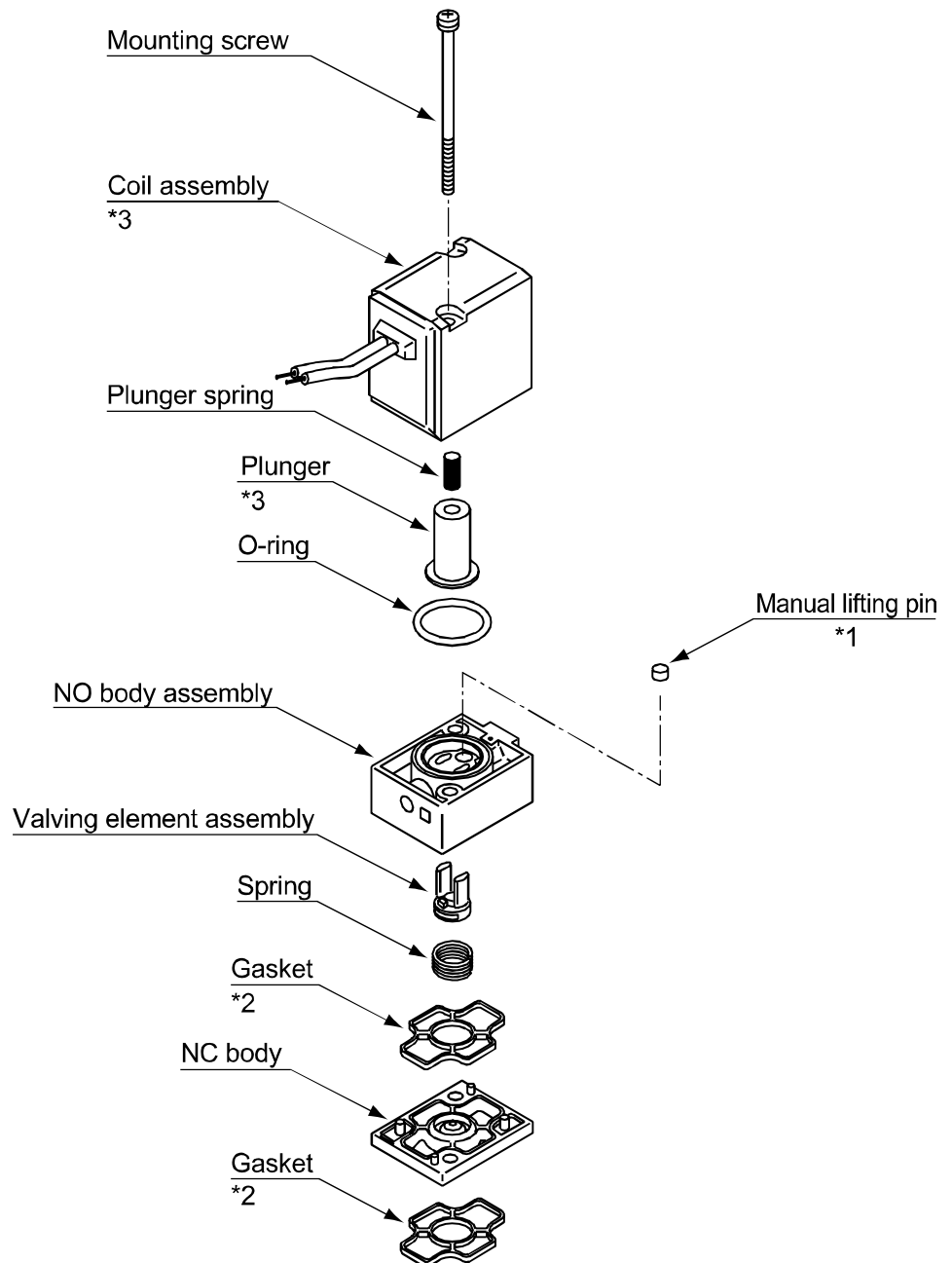


### NVP11, NP13, NP14-10A to 25A

#### 1 Pilot solenoid valve assembling procedure (for types with solenoid valve)

If the pilot solenoid valve has been disassembled, assemble it as follows.

After disassembly, assemble the manual override section (green) onto the A port side of the body.



- \*1 : Do not lose components such as manual lifting pins during disassembly.
- \*2 : The gasket has an orientation. Be careful when setting in the NC body.
- \*3 : Coil assembly and plunger are different between AC voltage and DC voltage. Replace them as a set when necessary.
- \*4 : Plunger is coated with turbine oil for lubrication.

■ Remarks ● Model No. of pilot solenoid valve (actuator assembly kit) for NVP11-10A to 25A, NP 13-10A to 25A

CVS2-B-0   - (Rated voltage)  
 ↑  
 Coil option code

|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |



# Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 59 for general precautions for using valves.

- 4GA/B
- M4GA/B
- MN4GA/B
- 4GA/B (mastr)
- 4GD/E
- M4GD/E
- MN4GD/E
- 4GA4/B4
- MN3E  
MN4E
- W4GA/B2
- W4GB4
- 4TB
- 4L2-4/  
LMF0
- MN3S0  
MN4S0
- 4SA/B0
- 4KA/B
- 4KA/B (mastr)
- 4F
- 4F (mastr)
- PV5G  
GMF
- PV5  
GMF
- PV5S-0
- 3QR  
3QB
- MV3QR
- 3MA/B0
- 3PA/B
- P/M/B
- NP/NAP/  
NVP
- 4F\*0EX
- 4F\*0E
- HMV  
HSV
- 2QV  
3QV
- SKH
- PCD
- Silencer
- TotAirSys  
(Total Air)
- TotAirSys  
(Gamma)
- Ending

Product-specific cautions: 3-port large flow rate valve NP/NAP/NVP Series

## Design/selection

### ⚠ WARNING

#### ■ Ambient environment

- (1) NP and NVP Series cannot be used in an explosive gas atmosphere. When using in an explosive gas atmosphere, change to the NAP Series, and provide a separate explosion-proof solenoid valve on the pilot air circuit.
- (2) If there are high levels of dust in the area, install a downward-facing silencer or elbow fitting on the exhaust port so that dust does not enter.

#### ■ This product cannot be used as an emergency cutoff valve.

It is not designed to function as a safety valve, such as an emergency shut-off valve. When using in such a system, always take separate measures that will ensure safety.

#### ■ Fluid temperature

Be sure to use the coolant check valve within the specified fluid temperature range.

#### ■ Ambient environment

- (1) Do not use this product in a corrosive gas atmosphere or an atmosphere that could affect the component materials.
- (2) Do not use this product near a heat generating source or in a location where it may be exposed to radiant heat.
- (3) Use this product within the operating ambient temperature.
- (4) When using this product in a cold climate, take the necessary measures to prevent freezing.
- (5) Take appropriate safeguards according to the degree of protection listed in the catalog specifications. Consult with CKD when using outdoors.
- (6) Take appropriate safeguards when using this product in places where oil or welding spatter, etc. could come in contact with it.

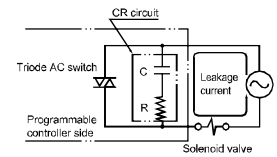
### ⚠ CAUTION

#### ■ Ultra dry air

The inside of the valve is pre-lubricated with grease. This valve may not be appropriate if ultra dry air quality is required at the end of the circuit.

#### ■ Leakage current from other fluid control components

When operating the solenoid valve with a programmable controller, etc., check that the output leakage current from the programmable controller is within the following specifications. Failure to observe this could lead to malfunctions.



| Voltage<br>Bore size | 100 VAC          | 200 VAC            | 24 VDC             |
|----------------------|------------------|--------------------|--------------------|
| 10 to 25A            | 3 (6) mA or less | 1.5 (3) mA or less | 1.8 (3) mA or less |
| 32 to 50A            | 6 mA or less     | 3 mA or less       | 1 mA or less       |

The values in ( ) are for models with surge suppressors.

#### ■ Precautions for external pilot air

- (1) Draining: Compressed air contains a large amount of drainage (water, oil oxides, tar, foreign matter). This is a factor that significantly reduces the reliability of the pneumatic components. For drainage measures, improve air quality by dehumidifying with an after cooler or dryer, removing foreign matter with a filter, and removing tar with a tar removal filter, etc.
- (2) Pre-lubrication - This series is pre-lubricated, so no lubrication is required. However, once lubrication has been started, it must be continued so that the lubricant does not run out. Use turbine oil Class 1 ISO VG32 (#90) or equivalent for lubrication.
- (3) Filter: Install a filter with a 5 μm or less filter element.
- (4) If pilot air is supplied, the valve may operate even if the pressure is less than the working pressure range.

#### ■ Min. working pressure

The pressure must be 0.2 MPa and over to operate the NP Series. If the piping cross-section area on the fluid inlet is reduced, the operation may become unstable due to a pressure drop during valve operation.

#### ■ Securing maintenance space

Secure sufficient space for maintenance and inspection.

#### ■ Vibration

Install this product in a place not subject to vibration.

## Mounting, piping, and wiring

### 1. Mounting

#### ⚠ CAUTION

- (1) Be sure to read the instruction manual thoroughly before installing the product.
- (2) In the case of models with solenoid valves, do not apply external force to the coil during installation.
- (3) After installation, check for leaks from pipes, for proper wire connections and that the product is installed correctly.

### 2. Piping

#### ⚠ CAUTION

■ Refer to the table below for the piping tightening torque.

| Piping nominal diameter         | Recommended piping tightening torque (Nm) |
|---------------------------------|---|
| Rc1/8                           | 7 to 9                                    |
| Rc3/8                           | 22 to 24                                  |
| Rc1/2                           | 28 to 30                                  |
| Rc3/4                           | 31 to 33                                  |
| Rc1                             | 36 to 38                                  |
| Rc1 <sup>1</sup> / <sub>4</sub> | 40 to 42                                  |
| Rc1 <sup>1</sup> / <sub>2</sub> | 48 to 50                                  |
| Rc2                             | 54 to 56                                  |

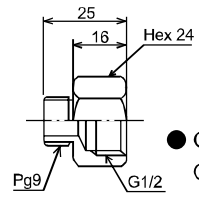
- Do not pipe using the solenoid valve section. There is a risk of damage. (NP/NVP only)
- Observe the effective thread length for the piping threads. Chamfer the end of the thread section by approx. a half-pitch.
- Before piping, flush the inside of the pipe with 0.3 MPa of air, and remove foreign matter such as dirt, metal chips, rust and sealing tape.
- If excessive sealant (sealing tape, gel-type sealant) is applied when piping, it could enter the product and cause malfunctions.
- When applying or wrapping sealant on the piping material, apply or wind it from the pipe end along the thread section, and leave 1.5 to 2 threads uncovered.
- Dirt or foreign matter in fluid could prevent the product from functioning correctly. Install a 5 μm or finer air filter.
- Make sure not to use the wrong supply port when connecting the pipes to the product.
- Install a by-pass circuit and use an elbow union for piping to simplify the maintenance and repair work.
- When controlling fluid in a tank, pipe at a level slightly above the bottom of the tank.

- If a manifold is used on the solenoid valve for control, use a solenoid valve with a built-in “exhaust check valve” to avoid malfunctions caused by other exhaust pressures. (NAP only)

### 3. Wiring (for NP/NVP)

#### ⚠ CAUTION

- Refer to the technical data on pages 1641 to 1642 for connection methods to a DIN terminal box or T type terminal box.
- When changing the nominal thread size from Pg9 to G1/2 for the DIN terminal box’s junction box outlets, use the optional connector shown below.



● Order Model No.: CVS2-CONNECTOR-F4-202936

- Coil direction can be changed 180°. To reverse the electrical connection direction, rotate only the coil. The valve will not function if the pilot solenoid valve body is moved.
- Use with the allowable voltage range. Usage outside the allowable voltage range may lead to malfunction or coil damage.
- Provide a circuit breaker, such as a fuse, on the control circuit to protect electrical equipment.
- If the electric circuit system is vulnerable to solenoid surge, use a solenoid with a surge suppressor (optional), or insert a surge absorber, etc., in parallel to the solenoid.
- As a guide, use a wire with a nominal cross section of 0.5 mm<sup>2</sup> or more. Make sure that excessive force is not applied to the lead wire.
- Use of a switching circuit which does not generate contact chattering extends the useful life of solenoid valves/motor driven valves.

|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |

## Use/maintenance

|                          |
|--------------------------|
| 4GA/B                    |
| M4GA/B                   |
| MN4GA/B                  |
| 4GA/B (mastr)            |
| 4GD/E                    |
| M4GD/E                   |
| MN4GD/E                  |
| 4GA4/B4                  |
| MN3E<br>MN4E             |
| W4GA/B2                  |
| W4GB4                    |
| 4TB                      |
| 4L2-4/<br>LMF0           |
| MN3S0<br>MN4S0           |
| 4SA/B0                   |
| 4KA/B                    |
| 4KA/B (mastr)            |
| 4F                       |
| 4F (mastr)               |
| PV5G<br>GMF              |
| PV5<br>GMF               |
| PV5S-0                   |
| 3QR<br>3QB               |
| MV3QR                    |
| 3MA/B0                   |
| 3PA/B                    |
| P/M/B                    |
| NP/NAP/<br>NVP           |
| 4F*0EX                   |
| 4F*0E                    |
| HMV<br>HSV               |
| 2QV<br>3QV               |
| SKH                      |
| PCD                      |
| Silencer                 |
| TotAirSys<br>(Total Air) |
| TotAirSys<br>(Gamma)     |
| Ending                   |

### 1. Common

#### ⚠ WARNING

■ Do not touch coils or actuators with hands or body parts while the power is ON or immediately after it is turned OFF.

The solenoid valve coil and actuator will heat up when energized. Depending on the product, direct contact could cause burns.

■ Do not touch the electrical wiring connections (bare, live parts) with hands or body when they are energized. There is a risk of electric shock.

Touching electrical wiring connections while power is on may lead to electrical shock.

■ Use within the working pressure range.

### 2. Using the product

#### ⚠ CAUTION

■ Using with vacuum

The NVP and NAP Series can be used for both negative pressure (vacuum) and positive pressure. As a balance poppet valve structure is incorporated, a pressurized or vacuum connection can be made from any port.

■ Transfer circuit

When using a vacuum absorbing pad (suction bowl) for the transfer circuit, install a filter between the suction pad and valve so that foreign matter does not enter the valve. Otherwise, leakage may result.

■ Leaving under elevated pressure

If the valve is left under elevated pressure for three days or longer, the starting response could be delayed.

■ Response time

The response times given in the catalog are the times when energized at a pressure of 0.5 MPa and without lubrication.

■ Do not use valves as footing or place any heavy objects on top of the valves.

■ If the product has been out of use for one month or more, perform a test run before starting the actual operation.

### 3. Maintenance

#### ⚠ CAUTION

■ Pilot solenoid valves (NP/NVP)

Port size 10A to 25A

Pilot solenoid valve (actuator assembly kit) for CVS2: CVS2-B-0 [\*1]-(Rated voltage)

is built in. If the pilot solenoid valve has been disassembled, follow the assembly procedure provided on page 1643 of the technical data.

Port size 32A to 50A

Special purpose valve: GFAG41-1-0-1 [\*1]N-[\*2]

is built in. The tightening torque for the coil assembly screw is 1.1 to 1.8 N·m when disassembling or assembling.

After disassembly, assemble the manual override section (green) onto the A port side of the body.

Note: [\*1] is the coil housing code

[\*2] is the rated voltage code

■ Carefully read the instruction manual before starting maintenance.

■ Always turn the power OFF and release any fluids or pressure before starting maintenance.

■ To ensure optimum use, inspect the product every six months.

■ When cleaning the product, use a low-polluting cleaning agent such as a neutral detergent. (Note that the rubber parts must be replaced. There is a risk of expansion.)

■ Contact CKD with questions about repair parts, etc.