NP/NAP/NVP

3 port large flow rate valve

Pilot operated solenoid valve / external pilot air operated poppet valve

Overview

This 3 port large flow valve has a high-seal poppet.
Two types are available based on your application. The internal pilot NP Series is suitable for driving cylinders up to ø400. The external pilot NAP and NVP Series can be used for either positive or negative pressure (vacuum).

Features

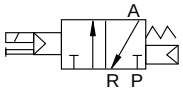
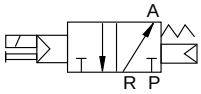
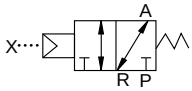
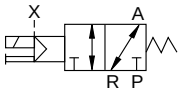
2 types are available according to applications.

- Internal pilot operated type NP Series
  N.C. (normally closed) type,
  N.O. (normally open) type
- External pilot type NAP/NVP Series
  Universal type

Compact, lightweight design large flow
(effective sectional area to 630 mm²)
Oil-free available
Random installation direction
External pilot usable with positive or negative pressure
Poppet structure

CONTENTS

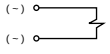
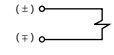
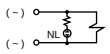
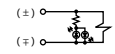
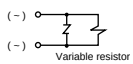
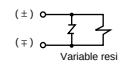
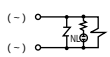
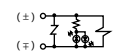
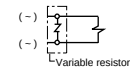
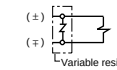
⚠ Refer to the safety precautions on Introduction and page 1132 before starting use.

Appearance		Model no.		JIS symbol	Flow characteristics C (dm^3/ (s·bar)) Note 1	Flow characteristics b	Flow characteristics S (mm^2)	Voltage (V)	
Internal pilot operated solenoid valve mounted type (N.C., N.O. type)	NP13/NP14 	3 port	NP13	N.C. type 	P → A 10 A to 20 A 15 to 35	10 A to 20 A 0.27 to 0.31	25 A to 50 A 200 to 660	100 AC 200 AC 24 DC Custom order 110 AC 220 AC	
			NP14	N.O. type 	R → A 10 A to 20 A 15 to 41	10 A to 20 A 0.21 to 0.31	25 A to 50 A 210 to 630		
Air operated (Universal type)	NAP11 		NAP11		P → A 10 A to 20 A 15 to 35	10 A to 20 A 0.27 to 0.31	25 A to 50 A 200 to 660		
Air operated with solenoid valve (Universal type)	NVP11 		NVP11		P → A 10 A to 20 A 15 to 35	10 A to 20 A 0.27 to 0.31	25 A to 50 A 200 to 660	100 AC 200 AC 24 DC Custom order 110 AC 220 AC	

Note 1: Effective sectional area S and sonic conductance C are converted as S ≒ 5.0 x C.

A/P port size							Coil housing					Page
Female thread												
Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1¼	Rc1½	Rc2	Grommet coil	With DIN terminal box (Pg screw)	With DIN terminal box with indicator light (Pg screw)	T type terminal box (G 1/2)	T type terminal box with indicator light (G 1/2)	
●	●	●	●	●	●	●	●	●	●	●	●	1136
●	●	●	●	●	●	●	●	●	●	●	●	
●	●	●	●	●	●	●						1142
●	●	●	●	●	●	●	●	●	●	●	●	1146

Electric connection circuit diagram

Option	Electric wire circuit diagram		Coil housing
	AC	DC	
-			Grommet coil (2C) DIN terminal box (2G) T type terminal box (3T)
With indicator light			DIN terminal box (2H) T type terminal box (3R)
With surge suppressor			Grommet coil (2CS, Rc1$^{1}/_{4}$ to Rc2) DIN terminal box (2GS) T type terminal box (3TS)
With surge suppressor and indicator light			DIN terminal box (2HS) T type terminal box (3RS)
Surge suppressor attached			Grommet coil (2CS, Rc3/8 to Rc1)

Safety precautions

Always read this section before starting use.
Refer to Intro 63 for valve general precautions.

3 port large flow rate valve NP/NAP/NVP Series

Design & Selection

⚠ WARNING

■ Working environment

(1) The NP and NVP Series cannot be used in an explosive gas atmosphere. When using in such an environment, change to the NAP Series model and attach the separate explosion proof solenoid valve to the pilot air circuit.

(2) If there are high levels of dust in the area, provide protection by installing a silencer or an elbow connector facing downward onto the exhaust port so that dust does not enter.

■ This product is not designed to ensure safety such as an emergency shut down valve.

When using in such a system, provide other measures to ensure safety.

■ Fluid temperature

Use within the fluid temperature range.

■ Working environment

(1) Do not use this product in an environment in which corrosive gases could impregnate configuration materials.

(2) Do not use this product near heat-generating elements or where it may be subject to radiated heat.

(3) Use the product within the ambient temperature range.

(4) Take appropriate antifreezing measures when using in cold climates.

(5) Take appropriate safeguards for the protective structure listed in catalog specifications. Consult with CKD when using outdoors.

(6) Take appropriate safeguards when using this product in places where oil or spatter from welding, etc., could come in contact.

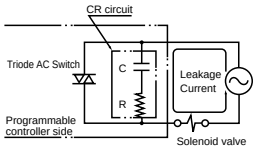
⚠ CAUTION

■ Ultra dry air

The inside of the valve is initially lubricated with grease. This valve may not be appropriate if extra 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., confirm that leakage current output from the programmable controller is within the specifications below. Failure to observe this could lead to malfunction.



Voltage / Port size	100 VAC	200 VAC	24 VDC
10 to 25 A	3 (6) mA or less	1.5 (3) mA or less	1.8 (3) mA or less
32 to 50 A	6 mA or less	3 mA or less	1 mA or less

Note that inside ( ) indicates the case with a surge suppressor.

■ External pilot air

(1) Drain measures: Compressed air contains high levels of drainage - water, oxidized oil, tar, and foreign matter - that could significantly reduce the reliability of pneumatic components. 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 used with pre-lubrication specifications, so a lubricator is not required. When lubricating, continuously lubricate so that the component does not run out of lubrication. Use turbine oil Class 1 ISO VG32 (#90) or equivalent when lubricating.

(3) Filter: Install a filter with a 5μm or less filter element.

(4) If pilot air is supplied, the valve may be activated even if pressure is less than the activation pressure range.

■ Minimum working pressure

Pressure must exceed 0.2 MPa to operate the NP Series. If the piping section at the fluid supply port is decreased, operation may become unstable due to a drop in pressure when the valve operates.

■ Securing of maintenance space

Secure sufficient space for maintenance and inspection.

■ Vibration

Install this valve at a place free of vibration.

Installation, piping & wiring

1. Installation

⚠ CAUTION

■(1) Read the instruction manual thoroughly before installing the product.
(2) When installing a solenoid valve, do not apply external force to the coil.
(3) After installation, check wiring and leakage from pipes, and check that the product is correctly installed.

2. Piping

⚠ CAUTION

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

Nominal piping diameter	Recommended tightening torque (N·m)
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 1/4	40 to 42
Rc1 1/2	48 to 50
Rc2	54 to 56

■ Do not pipe using only the solenoid valve. The valve could be damaged. (NP and NVP only)

■ Observe the valid screw length for piping threads. Chamfer the end of the screw by half a 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 (tape, gel) is applied when piping, it could enter the product and cause operation faults.

■ When applying or wrapping sealant on piping material, apply or wind from the pipe end along the screw, leaving 1.5 to 2 threads uncovered.

■ Any dirt or foreign matter in fluid may prevent the product from functioning correctly. Install a 5μm or less filter.

■ Do not mistake the supply port when piping to the product.

■ Provide a bypass circuit and pipe using unions to simplify maintenance and repair.

■ When controlling fluid in a tank, pipe at a level slightly above the bottom of the tank.

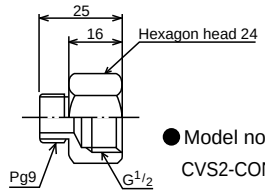
■ When using a manifold on the solenoid valve for control, use a solenoid valve with a check valve to prevent the effect of other exhaust pressure led in. (NAP only)

3. Wiring (for NP/NVP)

⚠ CAUTION

■ Refer to the technical data on page 1151 to 1152 for the connection method of DIN terminal box and T type terminal box.

■ The size of the screw for the DIN terminal box's junction box outlets can be changed from Pg9 to G1/2 using the optional connector below.



● Model no.:
CVS2-CONNECTOR-F4-202936

■ Coil orientation can be changed 180°.
Turn only the coil when reversing the electric wire connection method. The valve will not function if the pilot-operated solenoid valve is moved.

■ Use within the allowable voltage range. Use outside of the allowable voltage range may lead to operation faults or coil damage.

■ Provide a circuit breaker, such as a fuse, on the control circuit to protect electrical equipment.

■ If electrical circuitry is susceptible to solenoid surges, provide measures such as inserting a surge absorber parallel to the solenoid.

■ As a guide, use a wire with a nominal cross section of 0.5 mm^2 or more. Check that excessive force is not applied to the lead.

■ Use of a switching circuit that does not generate contact chattering increases the solenoid valve's durability.

During Use & Maintenance

1. Common

⚠ WARNING

■ Do not touch the coil or actuator while power is on or immediately after turning power off.
The solenoid valve's coil and actuator will heat up when electricity passes through. Depending on the product, directly touching these sections could cause burns.

■ Do not touch electric wiring connections (bare charged sections) while power is on. There is a risk of electrical shock.
Touching electrical wire connections while power is on could lead to electrical shocks.

■ Use within the working pressure range.

2. Usage

⚠ CAUTION

■ Vacuum use
The NVP and NAP series can be used for either negative (vacuum) or positive pressure. A balance poppet valve structure is incorporated, so pressurized or vacuum connection can be made to any port.

■ Transfer circuit
When using the vacuum absorption (suction) pad for the transfer circuit, install a filter between the suction pad and valve so that foreign matter does not enter the valve. Failure to provide such measures could lead to leakage.

■ Leaving under elevated pressure
If the valve is left under elevated pressure for more than three days, the starting response could be delayed.

■ Response time
Response times given in the catalog are for energizing in the prelubricated state at 0.5 MPa pressure.

■ Do not use valves, etc., as footing or place heavy objects on valves.

■ Conduct trial operation before starting operation after stoppage of more than a month.

3. Maintenance

⚠ CAUTION

■ Pilot solenoid valve (NP/NVP)
Port size 10 A to 25 A
Pilot solenoid valve (actuator assembly kit) for CVS2:
CVS2-B-0[*1]-[Rated voltage]
is installed. Refer to the technical data on page 1153 for the assembly method of disassembled pilot solenoid valve.
Port size 32 A to 50 A
Special purpose valve: GFAG41-1-0-1 [*1]N-[*2]
is installed.
The coil assembly mounting screw must be tightened with a torque of 1.1 to 1.8.N·m during disassembly and assembly.
After disassembly, assemble the manual override (green) onto the valve's A port.
Note: Indicate the coil housing symbol for [*1] and the rated voltage symbol for [*2].

■ Read the instruction manual thoroughly before starting maintenance.

■ Turn the power off and release fluids and pressure before starting maintenance.

■ To ensure that the product is used optimumly, regularly inspect the product every six months.

■ When cleaning the product, use a low-polluting cleaning agent such as a neutral detergent. (Note that rubber parts must be replaced because they could expand.)

■ Consult with CKD regarding consumables, etc.

MEMO

3 port Internal pilot operated valve solenoid integrated type

NP13/NP14 Series

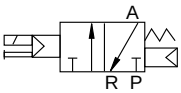
- N.C. (normally closed), N.O. (normally open) types
- Port size: Rc3/8 to Rc2

CE Refer to Intro 17 for details.

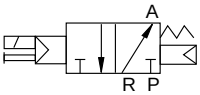
RoHS CAD

JIS symbol

● N.C. (normally closed) type



● N.O. (normally open) type



Common specifications

Descriptions	NP13	NP14
Actuation	N.C. (normally closed) type	N.O. (normally open) type
Fluid pressure supply port	P port	R port
Working fluid	Compressed air	
Withstanding pressure MPa	1.2	
Working pressure range MPa	0.2 to 0.8	
Fluid temperature °C	5 to 60	
Ambient temperature °C	-5 to 60 for 10 A to 25 A, -5 to 40 for 32 A to 50 A for both NP13 and NP14	
Heat proof class	B	
Lubrication	Oil-free (Use Turbine Oil Class 1 ISO VG32 or equivalent when lubricating)	
Valve seat leakage $cm^3/min.$	1 or less (with 0.2 to 0.8 MPa pneumatic pressure)	
Valve structure	Internal pilot operated poppet valve structure	
Installation attitude	Free	

Individual specifications

Descriptions / Model no.	Port size: P, A Port	Port size: R port	Orifice (mm)	Response time (ms)	Rated voltage	Apparent power (VA): At holding 50Hz	Apparent power (VA): At holding 60Hz	Apparent power (VA): At starting 50Hz	Apparent power (VA): At starting 60Hz	Power consumption (W): AC 50/60Hz	Power consumption (W): DC	Weight (kg)
N.C. (normally closed) type (P port pressurization)												
NP13-10A	Rc3/8	Rc1/2	14.8 or equivalent	30 or less (Note 1)	100, 200 VAC (50/60Hz)	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	Rc 1	25.4 or equivalent	60 or less (Note 1)								1.5
NP13-25A	Rc 1				110, 220 VAC (60Hz)							1.5
NP13-32A	Rc1 1/4	Rc 2	41.4 or equivalent	120 or less (Note 1)		15	11	40	35	7.5/6.0	8	4.5
NP13-40A	Rc1 1/2				24 VDC							4.5
NP13-50A	Rc 2											4.4
N.O. (normally open) type (R port pressurization)												
NP14-10A	Rc3/8	Rc1/2	14.8 or equivalent	30 or less (Note 1)	100, 200 VAC (50/60Hz)	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	Rc 1	25.4 or equivalent	60 or less (Note 1)								1.5
NP14-25A	Rc 1				110, 220 VAC (60Hz)							1.5
NP14-32A	Rc1 1/4	Rc 2	41.4 or equivalent	120 or less (Note 1)		15	11	40	35	7.5/6.0	8	4.5
NP14-40A	Rc1 1/2				24 VDC							4.5
NP14-50A	Rc 2											4.4

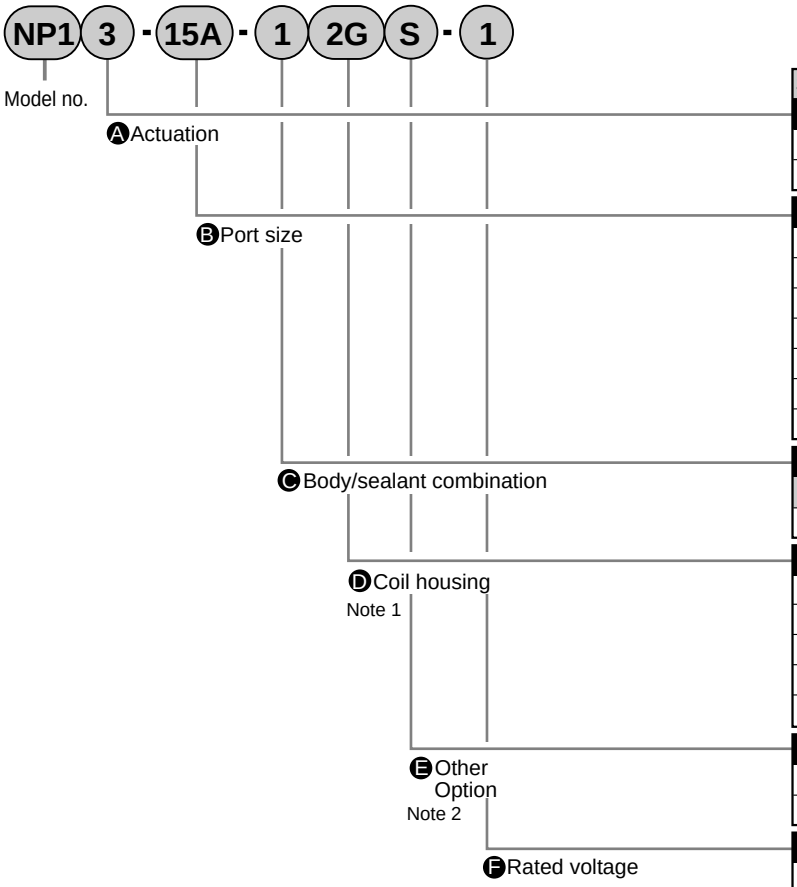
Note 1: Response time is the value when supply pressure 0.5 MPa, not lubricated and ON.
The value varies depending on pressure and quality of lubricant.
Note 2: The allowable voltage range must be within ±10% of the rated voltage.

Flow characteristics

Model no.	P ⟶ A				A ⟶ R			
	C (dm³/ (s·bar))	b	Cv flow factor	S (mm²)	C (dm³/ (s·bar))	b	Cv flow factor	S (mm²)
N.C. (normally closed) type (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 (dm³/ (s·bar))	b	Cv flow factor	S (mm²)	C (dm³/ (s·bar))	b	Cv flow factor	S (mm²)
N.O. (normally open) type (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

Note 1: Effective sectional area S and sonic conductance C are converted as S ≒ 5.0 × C.

How to order



Symbol	Descriptions
Ⓐ Actuation	
3	N.C. (normally closed) type
4	N.O. (normally open) type
Ⓑ Port size	
10A	Rc3/8
15A	Rc1/2
20A	Rc3/4
25A	Rc 1
32A	Rc1 1/4
40A	Rc1 1/2
50A	Rc 2

Ⓒ Body/sealant combination		
	Body	Sealant
1	Aluminum	Nitrile rubber

Ⓓ Coil housing		
2C	STD	Grommet coil
2G	Option	DIN terminal box (Pg screw)
2H		DIN terminal box with light (Pg screw)
3T		T type terminal box (G1/2)
3R		T type terminal box with light (G1/2)

Ⓔ Other options	
Blank	No option
S	With surge suppressor

Ⓕ Rated voltage		
1	Standard	100 VAC (50/60Hz), 110 VAC (60Hz)
2		200 VAC (50/60Hz), 220 VAC (60Hz)
3		24 VDC
AC110V	Custom order	110 VAC (50/60Hz)
AC220V		220 VAC (50/60Hz)

⚠ Note on model no. selection

Note 1: The Pg screw for the DIN terminal box is Pg9 for the 10 A to 25 A port size, and Pg11 for 32 A to 50 A.
Note 2: When using grommet coil specifications, the surge suppressor is enclosed with port size 10 A to 25 A, and is incorporated for port size 32 A to 50 A. The grommet coil is mounted in the terminal box when the coil is ordered with the terminal box.
Note 3: Manual override (non-locking) is provided as standard.

<Example of model number>

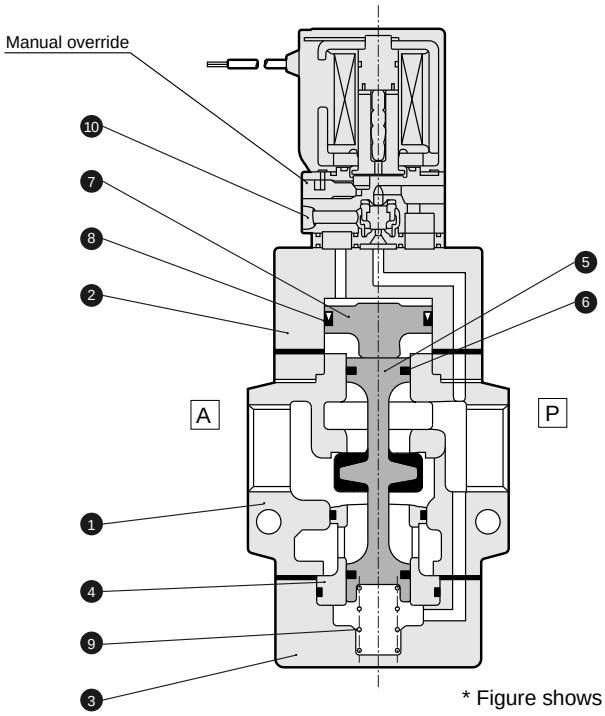
NP13-15A-12GS-1

Model: NP

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

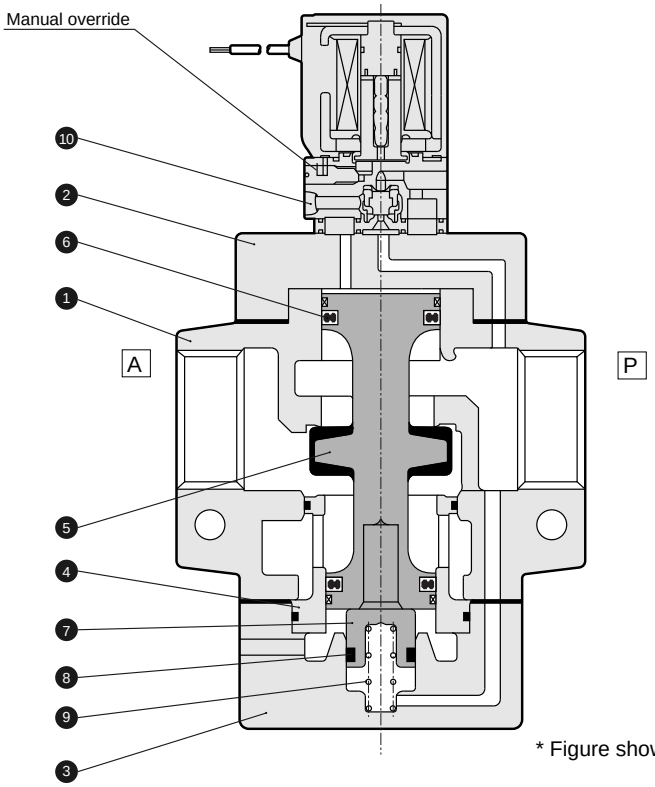
Internal structure and parts list

● NP$^{13}_{14}$-10A/15A



* Figure shows NP13.

● NP$^{13}_{14}$-20A to 50A



* Figure shows NP13.

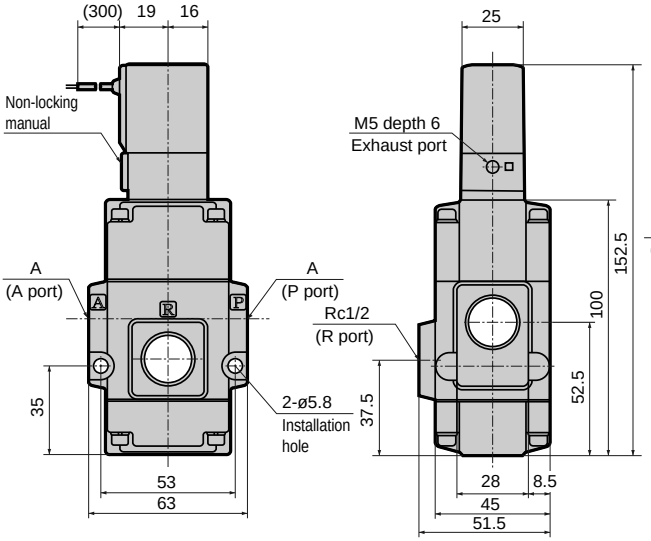
No.	Parts name	Material	
1	Body	AC4C	Aluminum casting
2	Stuffing	AC4C	Aluminum casting
3	Cap	AC4C	Aluminum casting
4	Valve seat	C3604	Brass
5	Valve stem	NBR, A2017	Nitrile rubber, aluminum

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

Dimensions CAD

● Grommet coil

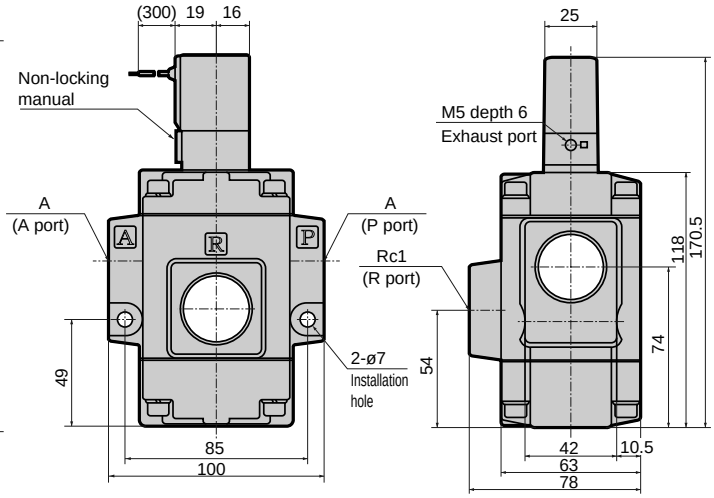
NP$^{13}_{14}$-10A/15A-12C



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

● Grommet coil

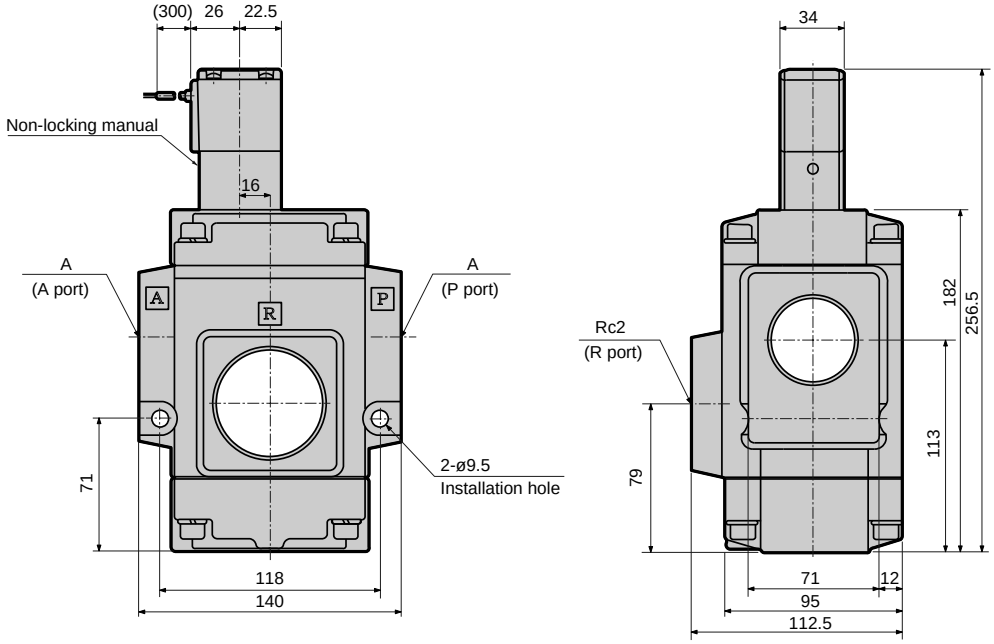
NP$^{13}_{14}$-20A/25A-12C



Model no.	A
NP1*-20A-1**	Rc3/4
NP1*-25A-1**	Rc 1

● Grommet coil

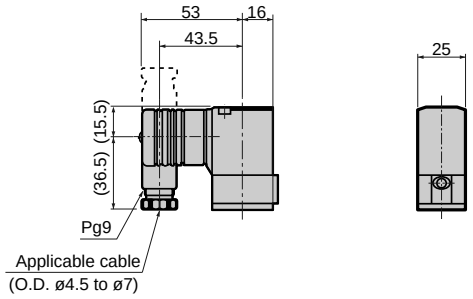
NP$^{13}_{14}$-32A/40A/50A-12C



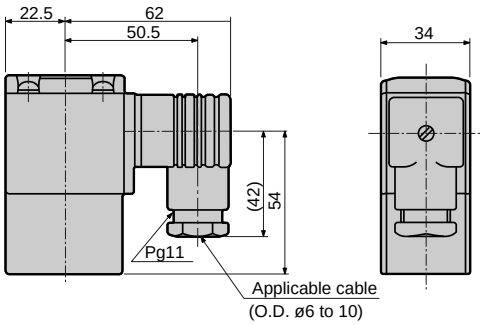
Model no.	A
NP1*-32A-1**	Rc1$^{1}/_{4}$
NP1*-40A-1**	Rc1$^{1}/_{2}$
NP1*-50A-1**	Rc 2

Optional dimensions

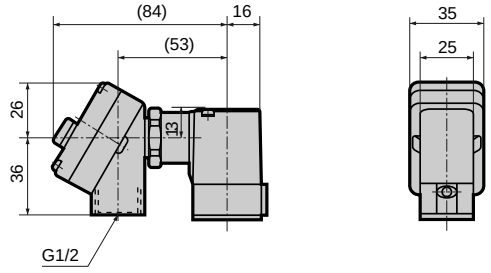
● With DIN terminal box (Pg9)
NP$^{13}_{14}$-10A/15A/20A/25A-1 [2G] [2H]



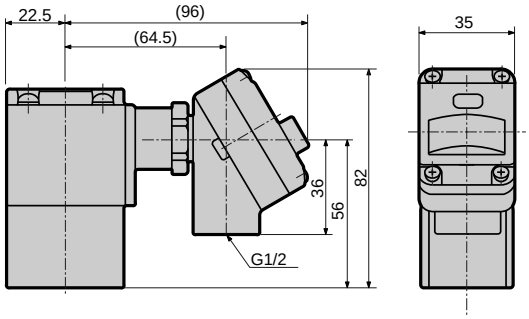
● With DIN terminal box (Pg11)
NP$^{13}_{14}$-32A/40A/50A-1 [2G] [2H]



● With T type terminal box (G1/2)
NP$^{13}_{14}$-10A/15A/20A/25A-1 [3T] [3R]



● With T type terminal box (G1/2)
NP$^{13}_{14}$-32A/40A/50A-1 [3T] [3R]



3 port air operated valve

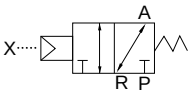
NAP11 Series

- Universal type
- Port size: Rc3/8 to Rc2

RoHS CAD

JIS symbol

● Universal type



Common specifications

Descriptions	NAP11
Actuation	Universal type
Working fluid	Compressed air, low vacuum
Withstanding pressure MPa	1.2
Working pressure range MPa	0 to 0.8 (note that when using vacuum 1.3×10^2 to 8×10^5 Pa (abs))
Fluid temperature °C	5 to 60
Ambient temperature °C	-5 to 60
Lubrication	Oil-free (Use Turbine Oil Class 1 ISO VG32 or equivalent when lubricating)
Valve seat leakage cm^3/min.	1 or less (at 0.02 to 0.8 MPa pneumatic pressure)
Valve structure	External pilot operated poppet valve structure
Installation attitude	Free
Pilot air pressure MPa	0.35 to 0.7
Pilot port size (X port)	Rc1/8

Individual specifications

Descriptions / Model no.	Port size		Orifice (mm)	Response time (ms)	Weight (kg)
	P, A Port	R port			
NAP11-10A	Rc3/8	Rc1/2	14.8 or equivalent	30 or less (*1)	0.6
NAP11-15A	Rc1/2				0.6
NAP11-20A	Rc3/4	Rc 1	25.4 or equivalent	60 or less (*1)	1.4
NAP11-25A	Rc 1				1.4
NAP11-32A	Rc1 1/4	Rc 2	41.4 or equivalent	120 or less (*1)	4.2
NAP11-40A	Rc1 1/2				4.2
NAP11-50A	Rc 2				4.1

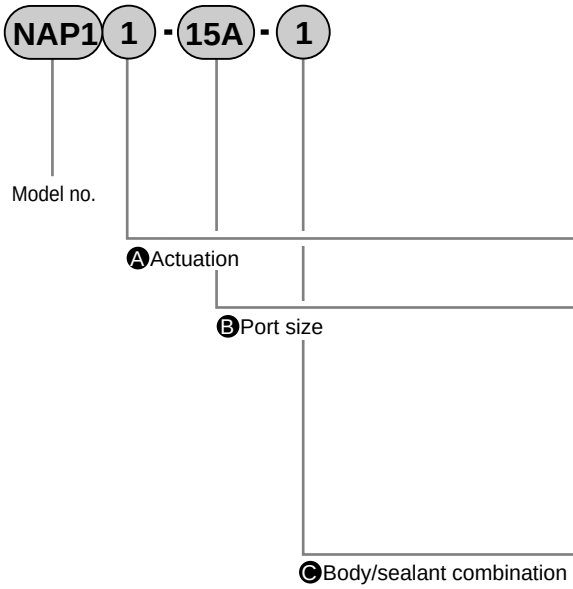
Note 1: Response time is the value when supply pressure 0.5 MPa, not lubricated and ON.
The value varies depending on pressure and quality of lubricant.

Flow characteristics

Model no.	P ⟶ A				A ⟶ R			
	C (dm^3/(s·bar))	b	Cv flow factor	S (mm^2)	C (dm^3/(s·bar))	b	Cv flow factor	S (mm^2)
NAP11-10A	15	0.31	3.4	-	16	0.28	3.4	-
NAP11-15A	18	0.29	3.6	-	17	0.26	3.6	-
NAP11-20A	35	0.27	8.4	-	41	0.21	8.6	-
NAP11-25A	-	-	8.6	200	-	-	9.0	210
NAP11-32A	-	-	25.8	600	-	-	26.2	610
NAP11-40A	-	-	27.0	630	-	-	26.6	620
NAP11-50A	-	-	28.2	660	-	-	27.0	630

Note 1: Effective sectional area S and sonic conductance C are converted as $S \fallingdotseq 5.0 \times C$.

How to order



Symbol	Descriptions
Ⓐ Actuation	
1	Universal type
Ⓑ Port size	
10A	Rc3/8
15A	Rc1/2
20A	Rc3/4
25A	Rc 1
32A	Rc1 1/4
40A	Rc1 1/2
50A	Rc 2
Ⓒ Body/sealant combination		
	Body	Sealant
1	Aluminum	Nitrile rubber

<Example of model number>

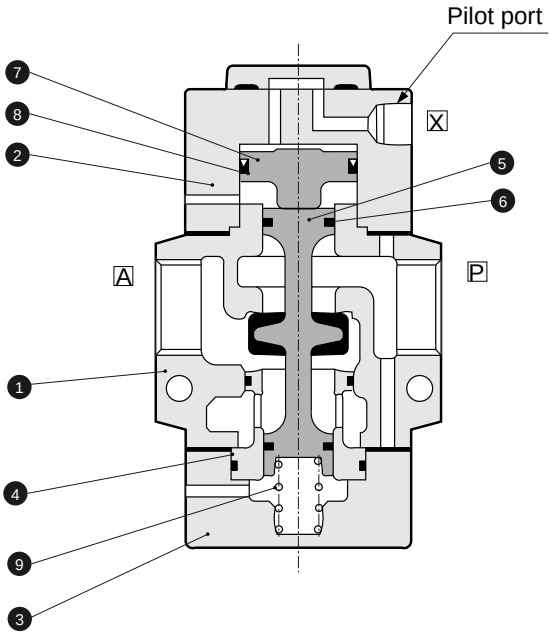
NAP11-15A-1

Model: NAP

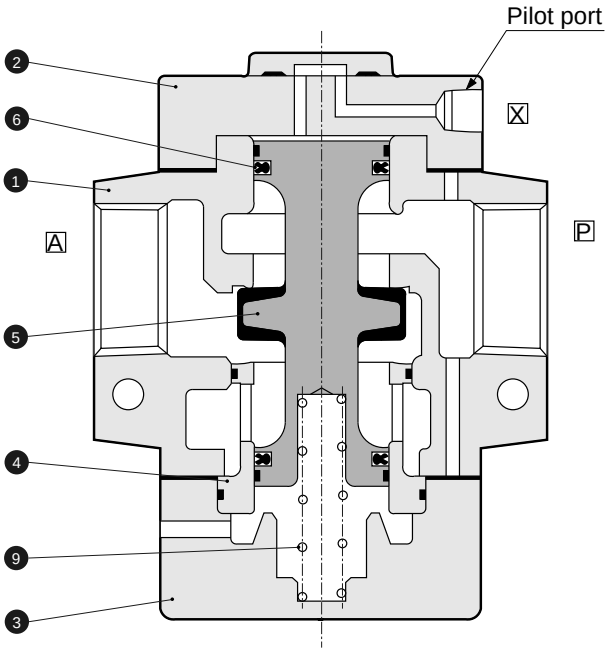
Ⓐ Actuation : Universal type
Ⓑ Port size : Rc1/2
Ⓒ Body/sealant combination
: Body/aluminum, sealant/nitrile rubber

Internal structure and parts list

● NAP11-10A/15A



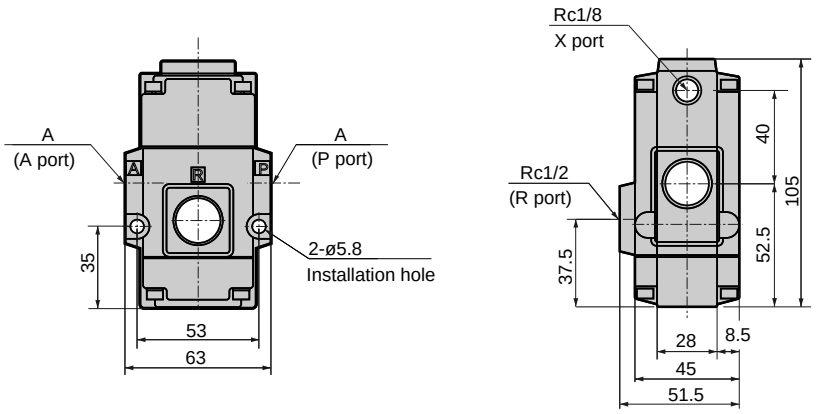
● NAP11-20A/25A/32A/40A/50A



No.	Parts name	Material		No.	Parts name	Material	
1	Body	AC4C	Aluminum casting	**6**	Packing seal	NBR	Nitrile rubber
2	Stuffing	AC4C	Aluminum casting	**7**	Piston	POM	Acetar resin
3	Cap	AC4C	Aluminum casting	**8**	MY packing seal	NBR	Nitrile rubber
4	Valve seat	C3604	Brass	**9**	Spring	SWP	Piano wire
5	Valve stem	NBR, A2017	Nitrile rubber, aluminum				

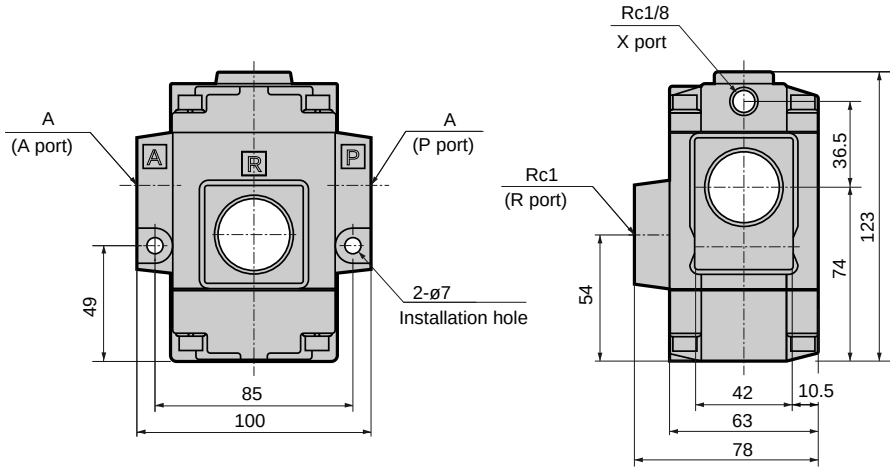
Dimensions

● NAP11-10A/15A-1



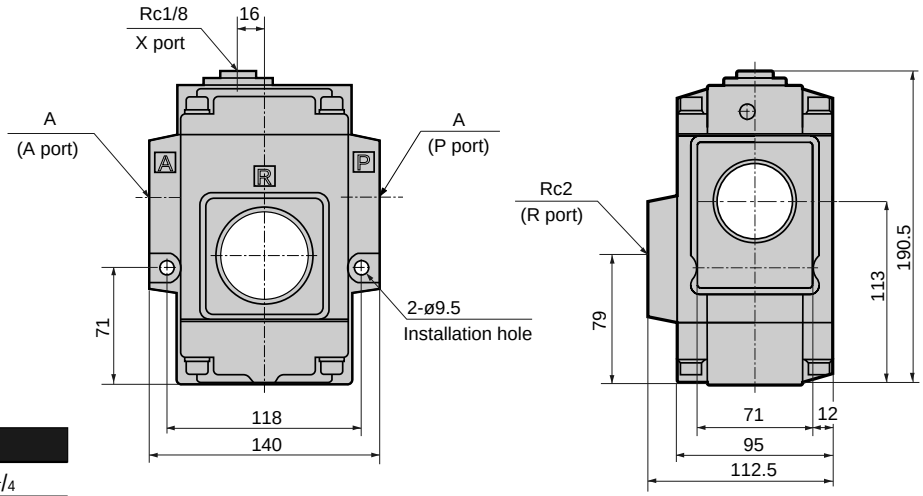
Model no.	A
NAP11-10A-1	Rc3/8
NAP11-15A-1	Rc1/2

● NAP11-20A/25A-1



Model no.	A
NAP11-20A-1	Rc3/4
NAP11-25A-1	Rc 1

● NAP11-32A/40A/50A-1



Model no.	A
NAP11-32A-1	Rc1 1/4
NAP11-40A-1	Rc1 1/2
NAP11-50A-1	Rc 2

3 port air operated valve solenoid integrated type

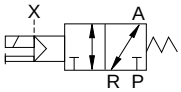
NVP11 Series

- Universal type
- Port size: Rc3/8 to Rc2

Refer to Intro 17 for details.

JIS symbol

● Universal type



Common specifications

Descriptions	NVP11
Actuation	Universal type
Working fluid	Compressed air, low vacuum
Withstanding pressure MPa	1.2
Working pressure range MPa	0 to 0.8 (note that when using vacuum 1.3×10^2 to 8×10^5 Pa (abs))
Fluid temperature °C	5 to 60
Ambient temperature °C	-5 to 60 for 10 A to 25 A, -5 to 40 for 32 A to 50 A
Heat proof class	B
Lubrication	Oil-free (Use Turbine Oil Class 1 ISO VG32 or equivalent when lubricating)
Valve seat leakage $cm^3/min.$	1 or less (at 0.02 to 0.8 MPa pneumatic pressure)
Valve structure	External pilot operated poppet valve structure
Installation attitude	Free
Pilot air pressure MPa	0.35 to 0.7
Pilot port size (X port)	Rc1/8

Individual specifications

Descriptions / Model no.	Port size: P, A Port	Port size: R port	Orifice (mm)	Response time (ms)	Rated voltage	Apparent power (VA): At holding 50Hz	Apparent power (VA): At holding 60Hz	Apparent power (VA): At starting 50Hz	Apparent power (VA): At starting 60Hz	Power consumption (W): AC 50/60Hz	Power consumption (W): DC	Weight (kg)
NVP11-10A	Rc3/8	Rc1/2	14.8 or equivalent	30 or less (Note 1)	100, 200 VAC (50/60Hz)	3.9	3.1	9.2	7.2	2.0/1.7	4	0.7
NVP11-15A	Rc1/2											0.7
NVP11-20A	Rc3/4	Rc 1	25.4 or equivalent	60 or less (Note 1)	110, 220 VAC (60Hz)							1.5
NVP11-25A	Rc 1											1.5
NVP11-32A	Rc1¼	Rc 2	41.4 or equivalent	120 or less (Note 1)	24 VDC	15	11	40	35	7.5/6.0	8	4.5
NVP11-40A	Rc1½											4.5
NVP11-50A	Rc 2											4.4

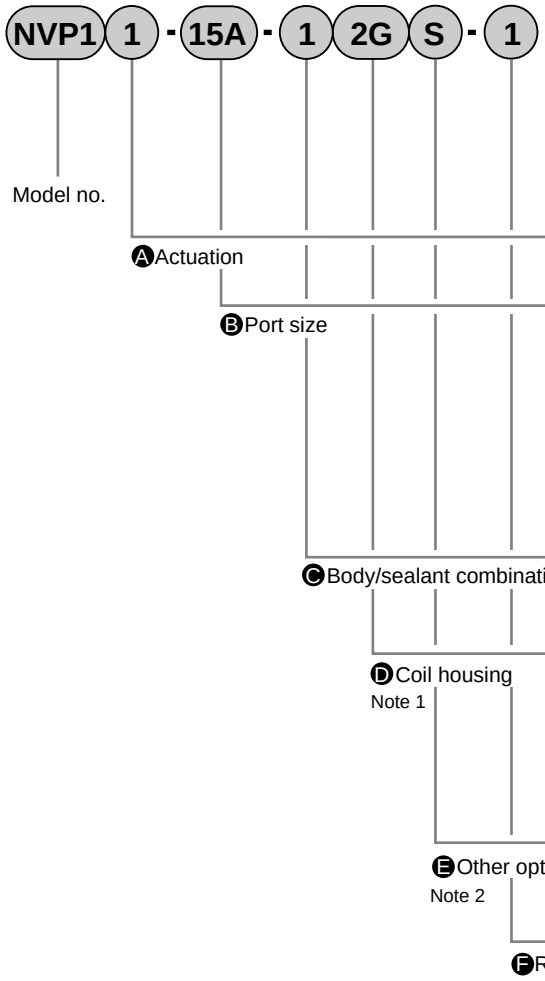
Note 1: Response time is the value when supply pressure 0.5 MPa, not lubricated and ON.
The value varies depending on pressure and quality of lubricant.
Note 2: The allowable voltage range must be within ±10% of the rated voltage.

Flow characteristics

Model no.	P ⟶ A: C ($dm^3/(s\cdot bar)$)	P ⟶ A: b	P ⟶ A: Cv flow factor	P ⟶ A: S (mm^2)	A ⟶ R: C ($dm^3/(s\cdot bar)$)	A ⟶ R: b	A ⟶ R: Cv flow factor	A ⟶ R: S (mm^2)
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

Note 1: Effective sectional area S and sonic conductance C are converted as S≒5.0×C.

How to order



Symbol		Descriptions
Ⓐ Actuation		
1		Universal type
Ⓑ Port size		
10A		Rc3/8
15A		Rc1/2
20A		Rc3/4
25A		Rc 1
32A		Rc1 1/4
40A		Rc1 1/2
50A		Rc 2

Ⓒ Body/sealant combination	Body	Sealant
1	Aluminum	Nitrile rubber

Ⓓ Coil housing		
2C	STD	Grommet coil
2G	Option	DIN terminal box (Pg screw)
2H		DIN terminal box with light (Pg screw)
3T		T type terminal box (G1/2)
3R		T type terminal box with light (G1/2)

Ⓔ Other options	
Blank	No option
S	With surge suppressor

Ⓕ Rated voltage		
1	Standard	100 VAC 50/60Hz, 110 VAC 60Hz
2		200 VAC 50/60Hz, 220 VAC 60Hz
3		24 VDC
AC110V	Custom order	110 VAC 50/60Hz
AC220V		220 VAC 50/60Hz

⚠ Note on model no. selection

Note 1: The Pg screw for the DIN terminal box is Pg9 for the 10 A to 25 A port size, and Pg11 for 32 A to 50 A.
Note 2: When using grommet coil specifications, the surge suppressor is enclosed with port size 10 A to 25 A, and is incorporated for port size 32 A to 50 A. The grommet coil is mounted in the terminal box when the coil is ordered with the terminal box.
Note 3: Manual override (non-locking) is provided as standard.

<Example of model number>

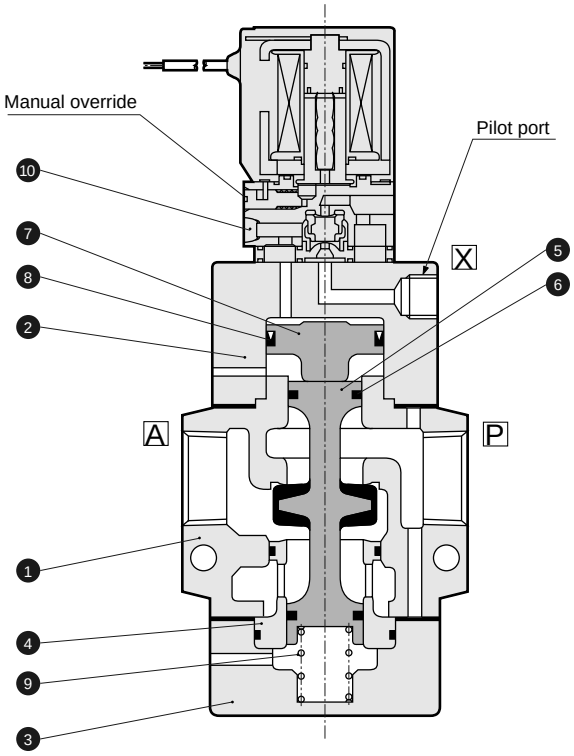
NVP11-15A-12GS-1

Model: NVP

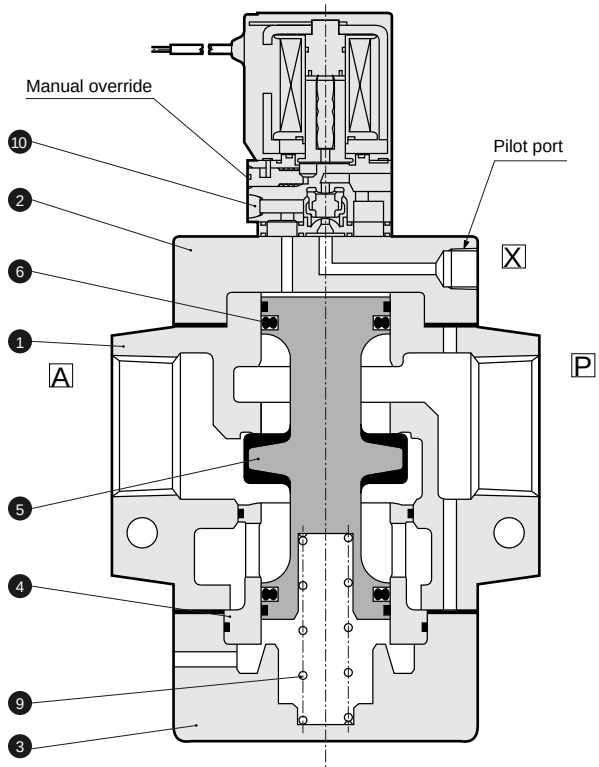
Ⓐ Actuation : Universal type
Ⓑ Port size : Rc1/2
Ⓒ Body/sealant combination
: Body/aluminum, sealant/nitrile rubber
Ⓓ Coil housing : With DIN terminal box
Ⓔ Other options : With surge suppressor
Ⓕ Voltage : 100 VAC 50/60Hz, 110 VAC 60Hz

Internal structure and parts list

● NVP11-10A/15A



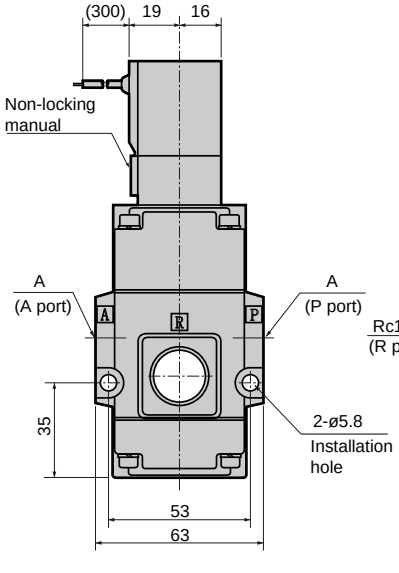
● NVP11-20A/25A/32A/40A/50A

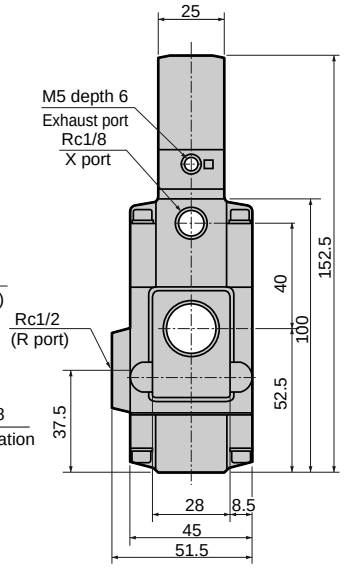


No.	Parts name	Material		No.	Parts name	Material	
1	Body	AC4C	Aluminum casting	**6**	Packing seal	NBR	Nitrile rubber
2	Stuffing	AC4C	Aluminum casting	**7**	Piston	POM	Acetar resin
3	Cap	AC4C	Aluminum casting	**8**	MY packing seal	NBR	Nitrile rubber
4	Valve seat	C3604	Brass	**9**	Spring	SWP	Piano wire
5	Valve stem	NBR, A2017	Nitrile rubber, aluminum	**10**	Pilot solenoid valve	-	-

Dimensions CAD

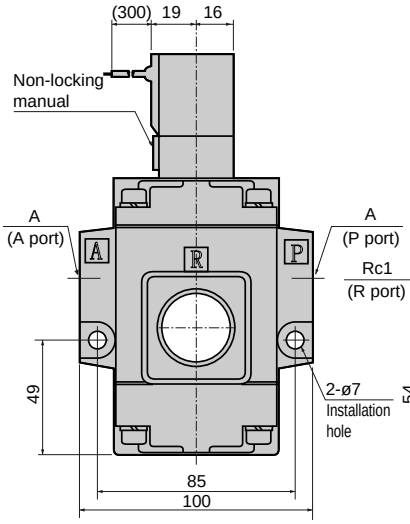
● Grommet coil
NVP11-10A/15A-12C

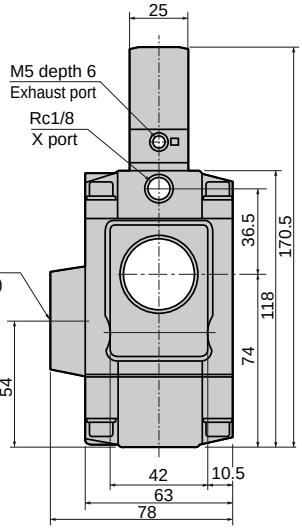




Model no.	A
NVP11-10A-1**	Rc3/8
NVP11-15A-1**	Rc1/2

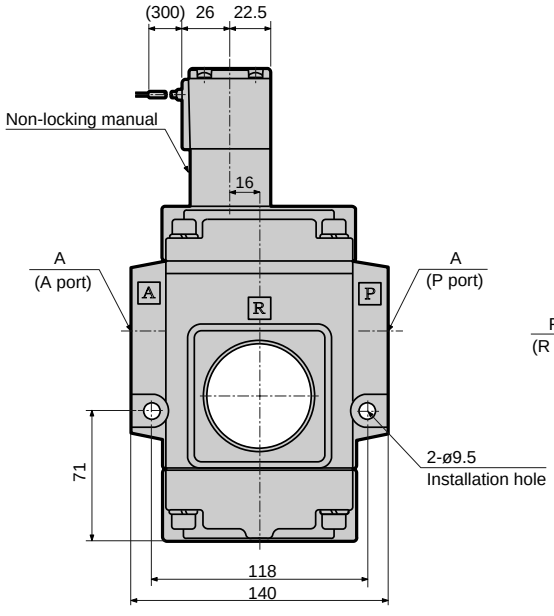
● Grommet coil
NVP11-20A/25A-12C

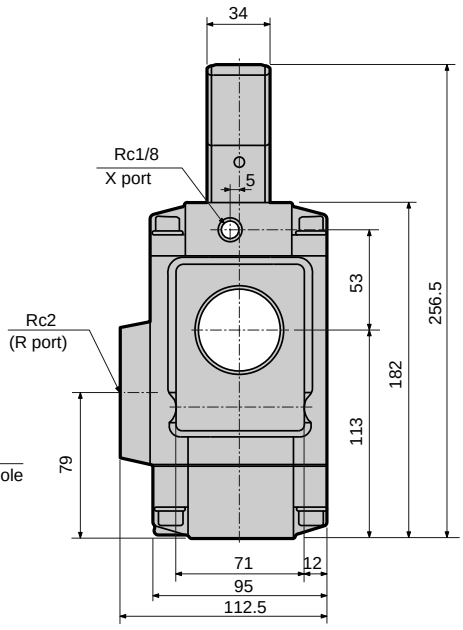




Model no.	A
NVP11-20A-1**	Rc3/4
NVP11-25A-1**	Rc 1

● Grommet coil
NVP11-32A/40A/50A



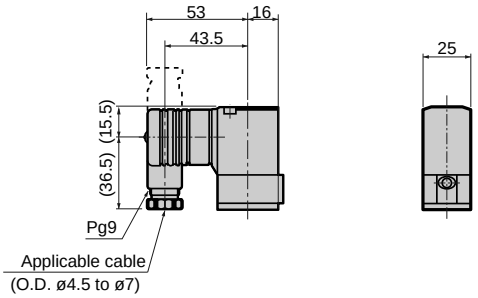


Model no.	A
NVP11-32A-1**	Rc1 1/4
NVP11-40A-1**	Rc1 1/2
NVP11-50A-1**	Rc 2

Optional dimensions

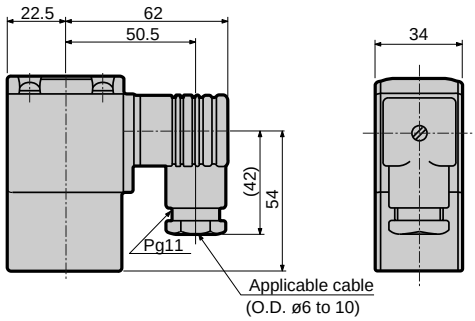
● With DIN terminal box (Pg9)

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



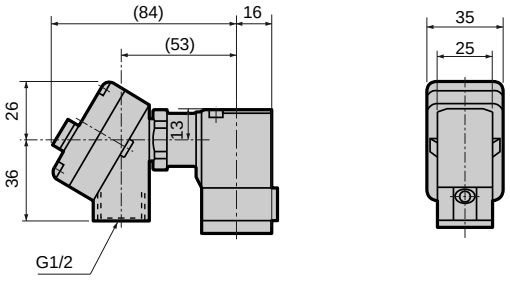
● With DIN terminal box (Pg11)

NVP11-32A/40A/50A-1 [2G 2H]



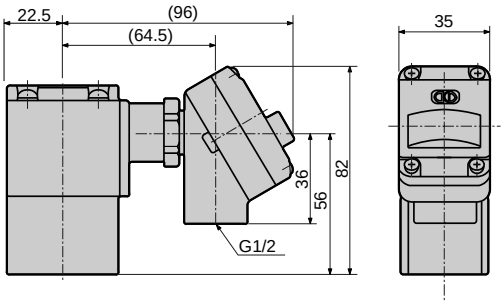
● With T type terminal box (G1/2)

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



● With T type terminal box (G1/2)

NVP11-32A/40A/50A-1 [3T 3R]



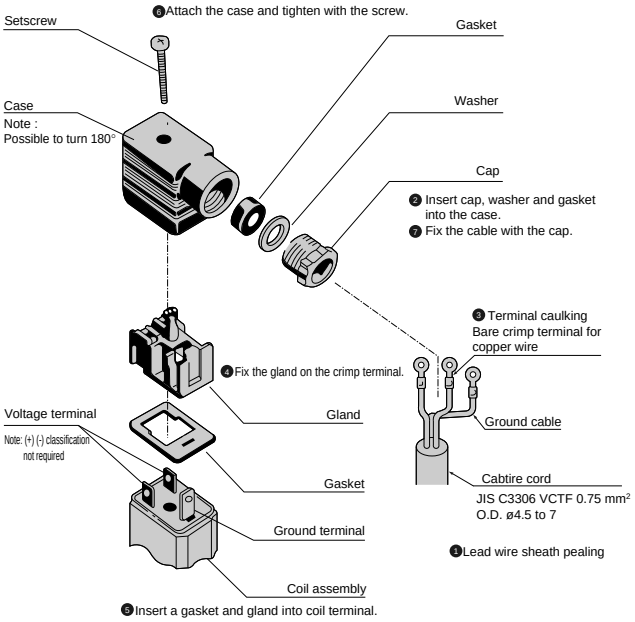
How to wire terminal box

DIN terminal box (Pg9), DIN terminal box with indicator light (Pg9)

(1) Use the following cabtire cable.
· Cable O.D. : ø4.5 to ø7 · Nominal section area: 0.75 mm²

(2) Insert the crimp terminal for copper wires into the cabtire cable's lead wire, and crimp the terminal with the designated tool. M3 terminal screws are used with the terminal box.

(3) Tighten screws with the following tightening torque.
· Setscrew tightening torque: 0.5 N·m
· Terminal screw tightening torque: 0.5 N·m



Wire according to (1) to (7).

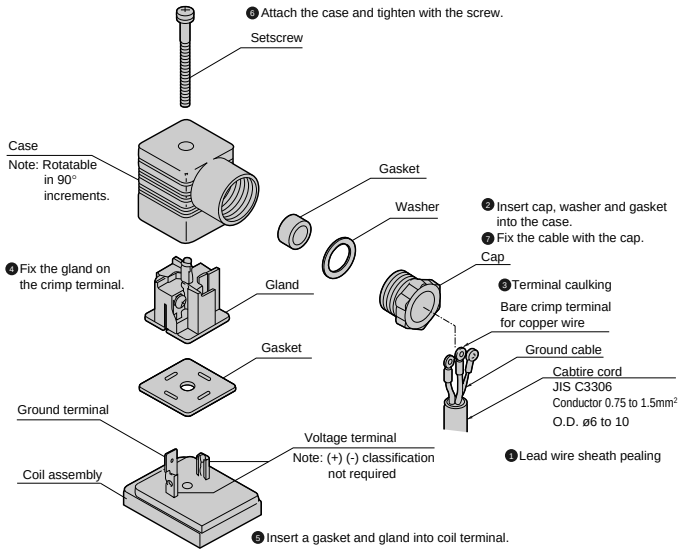
* The orientation of the cable lead out port can be changed by removing the terminal box from the case, rotating it by 180°, then returning the terminal box to the case.

DIN terminal box (Pg11), DIN terminal box with indicator light (Pg11)

(1) Use the following cabtire cable.
· Cable O.D. : ø6 to ø10 · Nominal section area:0.5 to 1.5 mm²

(2) Insert the crimp terminal for copper wires into the cabtire cable's lead wire, and crimp the terminal with the designated tool. M3 terminal screws are used with the terminal box.

(3) Tighten screws with the following tightening torque.
· Setscrew tightening torque: 0.5 N·m
· Terminal screw tightening torque: 0.5 N·m



Wire according to (1) to (7).

* The orientation of the cable lead out port can be changed by removing the terminal box from the case, rotating it by 90°, then returning the terminal box to the case.

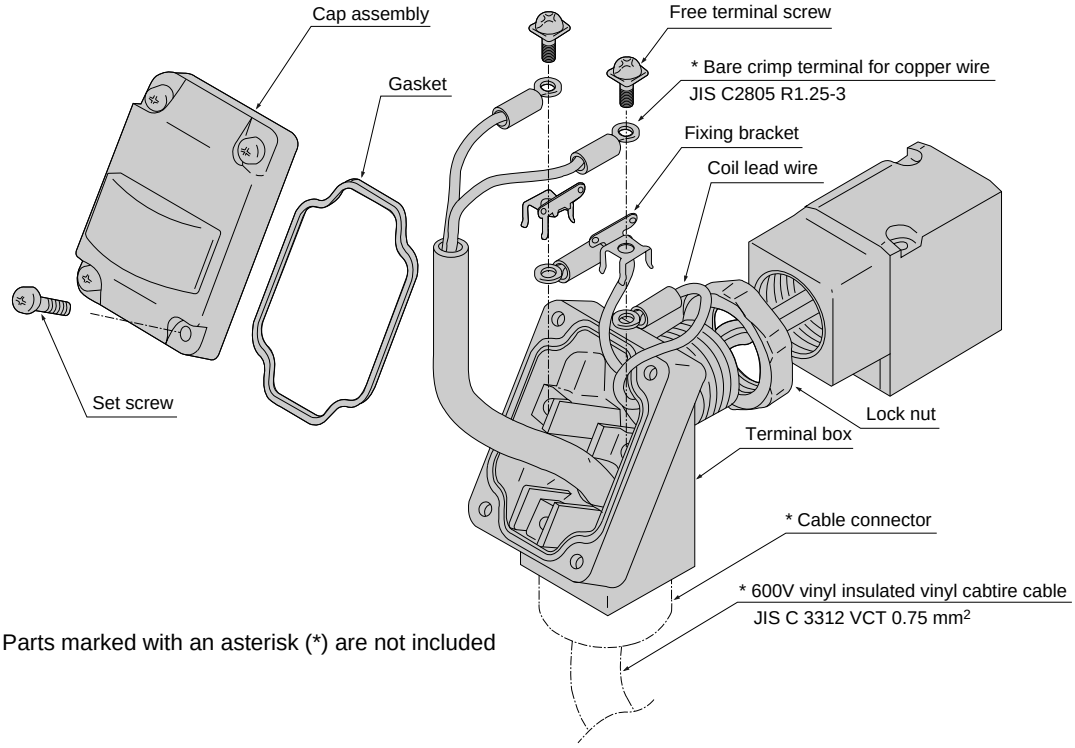
How to wire terminal box

T type terminal box (G1/2), T type terminal box with indicator light (G1/2)

(1) Use the following cabtire cable.
· Nominal section area: 0.75 mm^2

(2) Insert the crimp terminal for copper wires into the cabtire cable's lead wire, and crimp the terminal with the designated tool. M3 terminal screws are used with the terminal box.

(3) Tighten screws with the following tightening torque.
· Set screw tightening torque: 0.5 N·m · Terminal screw tightening torque: 0.5 N·m



Parts marked with an asterisk (*) are not included

* Change of direction of T type terminal box

Change the orientation of the T-type terminal block from the default state as follows.

(1) Pinch width across flats (25 wide) of T type terminal box with a tool (an adjustable spanner or a spanner etc.), and turn the terminal box counterclockwise to loosen.

(2) Loosen the lock nut.

(3) Turn T type terminal box 15° on the required position clockwise.

(4) Tighten the lock nut lightly to coil side by hand.

(5) Pinch width across flats of T type terminal box with a tool, and tighten with turning to the required position (15°).

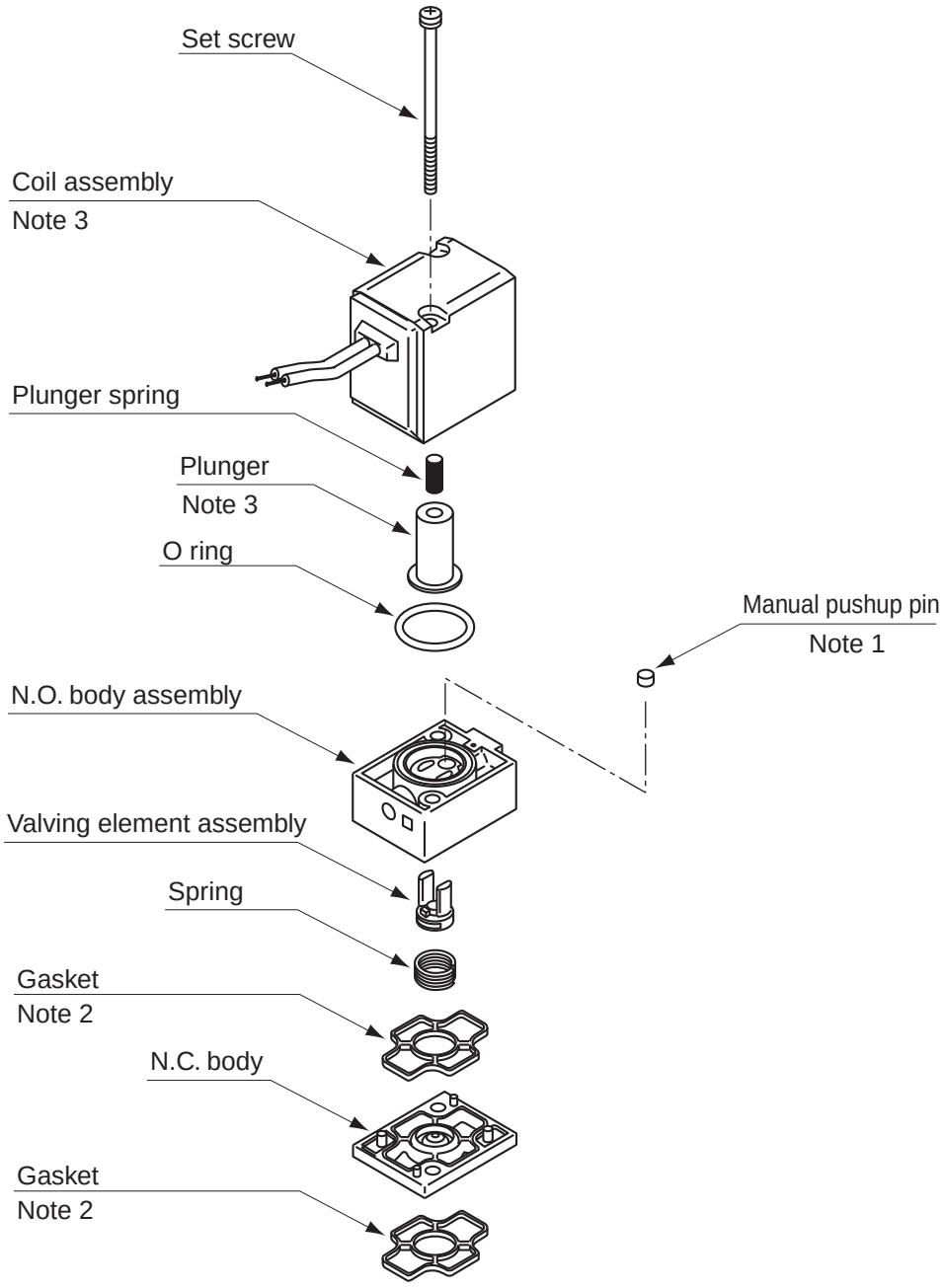
Note: When changing terminal box position from the original position at shipping with further tightening, tightening should be within 1/2 rotation.

NVP11/NP13/NP14-10A to 25A

1 Assembling pilot solenoid valve (for solenoid valve)

When a solenoid was disassemble, re-assemble the solenoid according to the following procedures.

After disassembly, assemble the manual override (green) onto the valve's A port.



Note 1: Take care not to lose components such as the manual pushup pin when disassembling the device.
Note 2: The gasket has an orientation. Take care when fitting it into the N.C.
Note 3: The coil assembly and plunger differ for AC and DC voltage. Replace the coil assembly and plunger as a set.
Note 4: Turbine oil is applied to the plunger as a lubricant.

■ Remarks ● Pilot solenoid valve (actuator assembly kit) No. for NVP11-10A to 25A, NP$^{13}_{14}$-10A to 25A

CVS2-B-0 ☐☐ -[Rated voltage]

↑ Coil option symbol