

**INSTRUCTION BOOK**TYPE. NS 648002NAME 3WAY SOLENOID VALVE **NAKAKITA SEISAKUSHO CO., LTD.**1-1, Fukuononinamachi, Daito-City, 7574-8691 Osaka TEL. (072) 871-1341
FAX. (072) 874-7501 (072) 871-7871
TELEX. 5349-129 NAKAKITA SEISAKUSHO DIT

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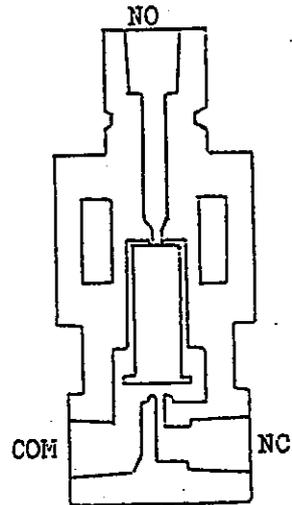
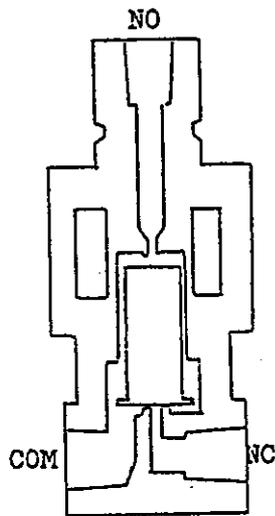
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INSTRUCTION MANUAL
FOR
SOLENOID VALVE
MODEL: NS648002

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1. Operation



SOLENOID DE-ENERGIZED : N.C. closed
COM. open to N.O.

SOLENOID ENERGIZED : N.O. closed
COM. open to N.C.

Operating instruction

- 1) Dust, chips, and foreign materials should be blown off by the compressed air 0.3MPa (bar) before piping.
- 2) Don't use valve on condition that surrounding air includes corrosive gas and explosive gas. As to some corrosive gas, valve may be available in accordance with materials.
- 3) Use below rated pressure. Otherwise malfunction may be occurred and the operation life shortened.
- 4) Use within permissible limit of voltage variation. Otherwise malfunction and/or coil burning may be caused.
- 5) Fluid temperature should be below 60°C. In case fluid temperature is over 60°C, use the special product for high-temperature (coil construction class: H)
- 6) Use on condition that surrounding temperature is below 60°C. In case surrounding temperature is over 60°C, use the product with coil whose construction class is H.
- 7) Be cautions of over-use of the seal materials (seal tape and jelly-type seal material). Otherwise, the seal materials may be entered into valve and poor operation may be caused.
- 8) Dust and foreign object should be excluded by filter in case of air and strainer in case of liquid to keep normal operation of valve.
- 9) Solenoid valve can be used in condition of continuous electric supplied. There is no trouble about the matter that coil temperature should become pretty high on that occasion.
- 10) In case active gas (propane, acetylene and others) should be used, please inform manufacture at the time of ordering.

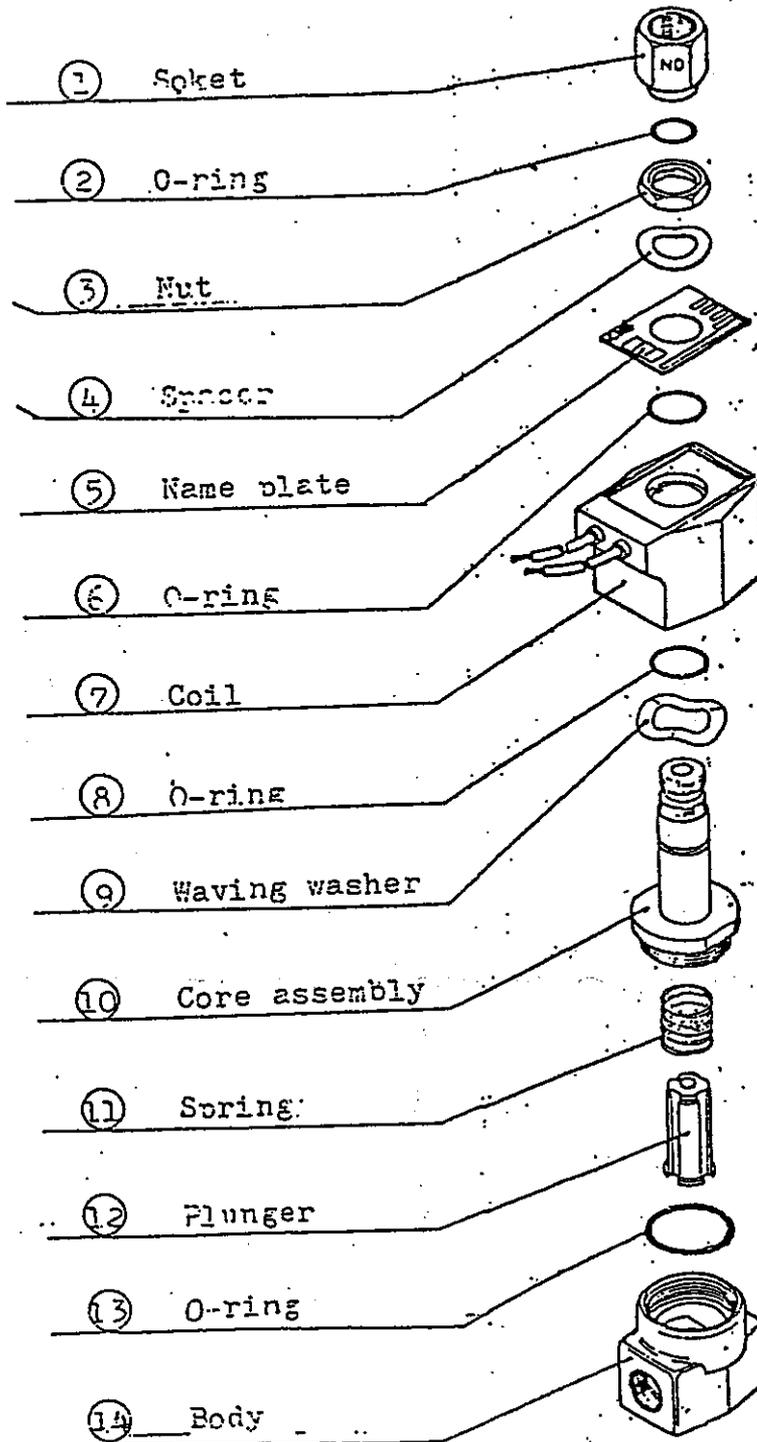
- 11) In case dry air and inert gas should be used, life time can be extended by using of DC coil. Please inform manufacturer at the time of ordering as occasion demands.
- 12) In case 3 port Solenoid Valve, No port compressed, should be used in condition of continuous electric supplied, please select normal open type Solenoid Valve. But, no trouble should be caused on universal type Solenoid Valve if time of continuous electric supplied is within 150 hours.

.. Maintenance servicing

- 1. Periodical check
1-2 times periodical check in one year leads to its long life operation. Be cautious of obstruction of rust in the pipes, oil oxide, carbon and coaltar in the compressor, and dust, due to smooth operation and long life operation.
- 2. Maintenance instruction
 - 1) Electric power, pressure and fluid should not be supplied at disassembled.
 - 2) Disassemble method should be referred to attached disassemble drawing.
 - a) Unfasten and take off the nut ③, then ④ ⑤ ⑥ can be taken off.
 - b) Unfasten and take off the core assembly ⑦, then ② ⑨ ⑪ can be taken off. However, in this case, note that core assembly should not be turned while seized at the pipe of core assembly.
 - 3) Reassembling is the reversal of the disassemble.
Note: Coil ⑥ can be rotated freely.
 - 4) Inspection after reassembly.
 - a) Electrical check: By switching ON/OFF, operation sound shall be checked.
 - b) Leakage check: Check leakage by supplying pressure.
 - c) Operation check: By switching ON/OFF, correct operation shall be checked.

Model : NS648002

Disassemble drawing



Disassemble tools

Parts name	Tool	Standard
Socket	Spanner	Rc 1/4 17mm .
Nut	Spanner	17mm
Core assembly	Spanner	27mm

Noise is appeared in case electric power supplies

Follow ings should be checked .

Electrical Check

Voltage is same as name plate → NO → Correct

Voltage variation is within 10% → NO → Correct

Fluid Check YES

Fluid pressure is pertinent → NO → Correct fluid pressure or change model

Fluid viscosity is within 50 cst → NO → Change model

Fluid temperature is pertinent → NO → In case fluid teperature is more than 60C , change model fo steam

Disassemble Check

Nut (3) is not loosen → NO → Fasten firmly

Dust and foreing object is not inside → NO → Wash inside

Valve sheet is not transformed → NO → Exchange plunger (9)

Spring (12) is not broken → NO → Exchange spring (12)

Operating method and frequency Check

Operating frequency and year
quality of fluid
Surrounding temperature

Judgement

Over life
Poor operating method
Poor selection
Defective assembly

Over life
Excessive temperature of fluid
Excessive pressure of fluid
Poor quality of fluid
Poor quality of fluid
Nonuse of strainer or fluid carelessness at piping

Fluid is not flowed :

Followings should be checked :

Electrical check

Electric circuit is ON NO → Correct

Voltage is same as name plate NO → Correct

Voltage variation is within 10 % NO → Correct

In case electrical power supplies, noise is appeared NO → Because of coil burning, exchange coil (6)

- Excessive: temperature of fluid
- Excessive viscosity of fluid
- Excessive pressure of fluid
- Unusual voltage
- Excessive temperature in surroundings

Fluid Check

Fluid pressure is pertinent NO → Correct fluid pressure or change model

Fluid viscosity is within 50 cst NO → Change model

Fluid temperature is pertinent NO → In case fluid temperature is more than 60°C, Change model for steam

- Poor quantity of fluid
- Nonuse of strainer or filter
- Carelessness at piping

Disassemble Check

Dust and foreign object is not inside NO → Wash inside

Valve sheet is not seperated from plunger NO → Exchange plunger (9)

Valve sheet is not transformed NO → Exchange plunger (9)

Spring is not seperated from plunger NO → Exchange spring (12)

- Excessive temp. of fluid
- Excessive pressure of fluid

- Over life
- Defective assembly

Operating method and frequency check

YES

Operating frequency and year
Surrounding temperature

Judgement

Life time	Poor selection
Poor operating method	Defective assembly

Flowing fluid is not stopped
 Followings should be checked :

Piping check

Piping method is right NO → Correct

Electrical check

Electric circuit is OFF NO → Correct

In case electrical power supplies, noise is appeared

YES → Because of coil burning, exchange coil (6)
 NO →

- Excessive temp. of fluid
- Excessive viscosity of fluid
- Excessive pressure of fluid
- Unusual voltage
- Excessive temp. in surroundings

Fluid check

Fluid pressure is pertinent NO → Correct fluid pressure or change model

Fluid viscosity is within 50 cst NO → Change model

Fluid temperature is pertinent NO → In case fluid temp. is more than 60°C, change model for steam

- Nonuse of strainer or filter
- Carelessness at piping

Disassemble check

Dust and foreign object is not inside NO → Wash inside

Plunger (9) is not adhered NO → Wash the core assembly, and exchange plunger (9) and spring (12)

Valve seat is not wounded NO → Exchange body (13)

Valve sheet is not seperated NO → Exchange plunger (9)

Valve sheet is not wounded NO → Exchange plunger (9)

Valve sheet is not transformed NO → Exchange plunger (9)

Spring is not broken NO → Exchange spring (12)

Poor quality of fluid

- Intermixture of dust and foreign object
- Broken spring
- Excessive viscosity of fluid

Intermixture of dust and foreign object

Over life
 Excessive temp. of fluid

Operating method and frequency check

Operating frequency and year

Over life
 Continuous voltage is too long

Surrounding temperature

Judge-ment

Over life	Poor selection
Poor operating method	Defective assembly