NAKANISHI

AIR LINE KIT

AL-A0611

OPERATION MANUAL

OM-K0514E

Thank you for purchasing Air Line Kit AL-A0611.
The Air Line Kit AL-A0611 is designed for Air Bearing Spindle.
Please Read the operation manual carefully before initial use.

1 CAUTIONS IN HANDLING

■Read these cautions carefully and only use in the manner intended.
■Safety instructions are intended to avoid potential hazards that could result in personal injuries or damages to the device.
Safety instructions are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
⚠WARNING	**Existence of a hazard that could result in bodily injury or damage of the device, if the safety instructions are not followed.**
⚠CAUTION	**Possibility of a hazard that could result in light or middle degree of bodily injury or damage of device, if the safety instructions are not followed.**

⚠ WARNING

①Air pressure
Use air pressure below 0.8MPa (8kgf/cm²) on primary side and 0.6MPa (6kgf/cm²) on secondary side.
②Use clean air
Air should be clean and free from chemicals, oil, organic solvents, saline, or corrosive gas to avoid damage to the device.
③Connection of Hose
Connect hose securely to avoid accidental disconnection during use.

⚠ WARNING

Only an experienced and well-informed person shall assemble, operate and service the air compressor.

⚠ CAUTION

①Use Dry Air
Connect an air filter and/or dryer between the compressor and NAKANISHI's air line kit to ensure a clean, dry air supply. Mount the air line kit as close as possible to the spindle to ensure constant oil supply. In high humidity areas, use a large capacity filter and/or dryer to ensure trouble free operation.
②Draining
Be sure to drain moisture condensation from the air filter regularly to avoid moisture carried by air to the air tool.
③Installation Location
Place this device on a flat surface.
④Handling
Care should be exercised to avoid breaking the plastic bowl of the air filter and lubricator when it is removed for cleaning.

⚠ CAUTIONS FOR AMBIENT CONDITIONS

① Do not use the device where corrosive gas, chemicals, seawater, water, or steam exists.
② Do not use in the direct sunlight.
③ Do not use where the device is subject to vibration or repetitive shocks.
④ Do not use where ignition source or radiant heat exists.

2 FEATURES

① Micro mist filter enables filtration of 0.01μm (95% filteration particle size)
② Please use in conjunction with an air dryer to ensure dry air supply.

3 SPECIFICATIONS

3-1 AL-A0611 Specifications

Model	AL-A0611
Working Fluid	Compressed Air (Not for dehumidification, Air containing corrosive gas or organic solvent is unuseable.)
Maximum Operation Pressure	0.8MPa
Minimum Operation Pressure	0.3MPa
Operating Temperature Range	−5 to 50℃ (No freezing)
Dimensions	W475㎜×D112㎜×H430㎜
Weight	8.2kg

3-2 Detail Specifications

①Membrane Air Dryer

Model		IDG30M (Standard dew point −20℃)
Condition	Working Fluid	Compressed Air
	Inlet Air Pressure MPa {psi}	0.3 to 1.0 {44 to 145}
	Inlet Air Temperature ℃ {°F}	−5 to 50 {23 to 122} (※1)
	Ambient Temperature ℃	−5 to 50 {23 to 122°F}
Performances	Outlet Air Dew point ℃ {°F}	−20 {−4}
	Inlet Air Flow rate L/min (ANR) (※2)	375
	Outlet Air Flow rate L/min (ANR)	300
	Purging Air Flow rate L/min (ANR) (※3)	75
	Inlet Air Pressure MPa {psi}	0.7 {101}
	Inlet Air Temperature ℃ {°F}	25 {77}
	Inlet Air Saturation Temperature ℃ {°F}	25 {77}
	Ambient Temperature ℃	25 {77°F}
Purging Air Flow rate of Dew point checker		1L/min (ANR) {Inlet Air Pressure : 0.7MPa}
Filtration degree of micro mist separator		0.01μm (95% filteration particle size)

※1 : Not Frozen.
※2 : ANR means flow rate converted into values at atmospheric pressure of 20℃ {68°F}
※3 : Included purging air flow rate for dew point checker.

※Please read another operation manual on membrane air dry unit about "Caution items" "Maintenance & Service" "Parts".

② Digital Pressure Switch

Series		ISE35-N-25-ML
Rated Pressure Range		0 to 1MPa
Set Pressure Range		−0.1 to 1MPa
Proof Pressure		1.5MPa
Setting and Display Resolution		0.01MPa
Applicable Fluids		Air, inert gases and incombustible gases
Power Supply Voltage		12 to 24VDC, ripple(p-p)10% or less (Protected against inverse connection)
Current Consumption		55mA or less (With no load)
Switch Output		NPN Open Collector Output
	Max.Load Current	80mA
	Max.Impressed Voltage	30V (During NPN output)
	Residual Voltage	1V or less (80mA load current)
	Response Time chatter-proof function	1s (0.25, 0.5, 2, 3 selectable)
	Short Circuit Protection	Provided
Repeatability		±1%F.S. or less
Hysteresis	Hysteresis Mode / Window Comparator Mode	Variable (from 0)
Display Method		3digits 7-segment display, dual-color display (Red/Green) A switch can be operated simultaneously.
Indicator Accuracy		±2%F.S. ±1digit (25℃±3℃ reference)
Indicator Lamp		OUT : LIT when ON (Green)
Environment	Enclosure	IP40
	Ambient Temperature	−5 to 50℃ (No freezing)
Lead wire with connector (for option "L")		φ3.4 3 cores 25AWG 2m

※Please read digital pressure switch operation manual for "Caution items" "Maintenance & Service" "Parts".

③ Solenoid Valve

Model	VCA21-5G-3-02
	VCA21A-5G-3-02-X15

Valve specifications	Valve construction	Direct operated poppet
	Fluid	Air, Insert gas, Low vacuum (133Pa・abs)
	withstand pressure (MPa)	2.0
	Body material	Al
	Seal material	HNBR
	Ambient Temperature (℃)	−20 to 60
	Fluid Temperature (℃)	−10 to 60 (No freezing)
	Enclosure	Dusttight, low jetproof (equivalent to IP65)
	Environment	Location without corrosive or explosive gases
	Valve leakage cm³/min (ANR)	0.2 or less
	Mounting orientation	Unrestricted
Coil specifications	Rated voltage	24VDC
	Allowable voltage fluctuation	±10% of rated voltage
	Coil insulation type	Class B
	Power consumption	6.5W

3-3 ACCESSORIES

・Spacer (4pcs.)　　・Operation Manual

3-4 Dimensions & Details

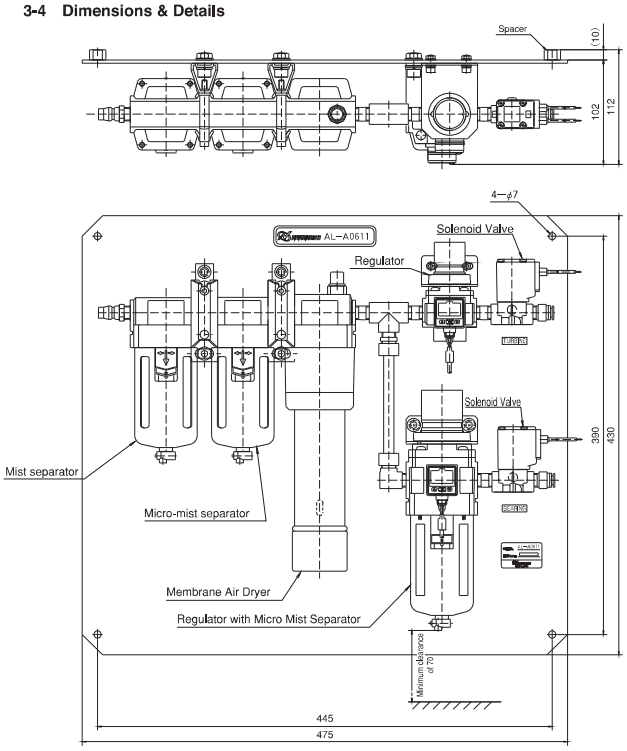

Fig.1

4 Operation instruction of components parts

4-1 Mist separator (Air filter which performs filtration of 0.3μm)
Micro-mist separator (Air filter which performs filtration of 0.01μm)

Water, dirt and debris are separated from the compressed air and collected in Plastic Bowl. Drain by pushing Drain Valve sideways.

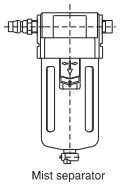

Fig.2

4-2 Membrane Air Dryer

Dehumidifing hollow filter that allow easy vapor transmission but resisits air transmission.

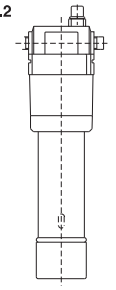

Fig.3

4-3 Regulator

Set the air pressure by the air adjustment knob.
The air pressure is displayed digitally.

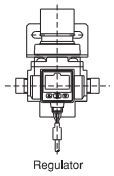

Fig.4

4-4 Regulator with Micro Mist Separator

Set the air pressure by the air adjustment knob. The air pressure is displayed digitally.
Dust and moisture in the compressed air are eliminated.
Drain by pushing the button on the bottom of the Mist Separator when contaminants are collected.

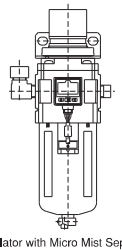

Fig.5

4-5 Solenoid Valve

Direct operated 2 port solenoid valve for air (open when current is applied : NC) is used. It is operated by DC24V.

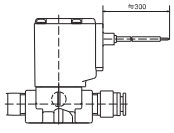

Fig.6

5 Installation and Operation

①Attach the provided M6 bolts in the 4 holes on the air line kit back plate.

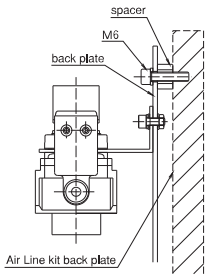

Fig.7

②Connect the solenoid valve and the pressure switch cable to your control equipment.
③Connect the intake hoses of the air bearing spindle to the φ6mm one-touch joints on the solenoid valves. Be sure to connect the solenoid valve for the turbine to the hose marked turbine and the solenoid valve for the bearing to the hose marked air bearing.
④Connect the air piping hose to the primary side of the mist separator.
⑤Apply compressed air from the air compressor and adjust air pressure by the regurator.
⑥Apply DC24V to the solenoid valve of the bearing side and supply air to the air bearing.
⑦Apply DC24V to the solenoid valve for the turbine after confirming the spindle turns smoothly. The spindle will rotate.
⑧In order to stop the rotation, remove voltage from the solenoid valve for the turbine, then supply air to the turbine will stop.
⑨Remove voltage from the solenoid valve for the bearing after confirming that spindle is stopped.

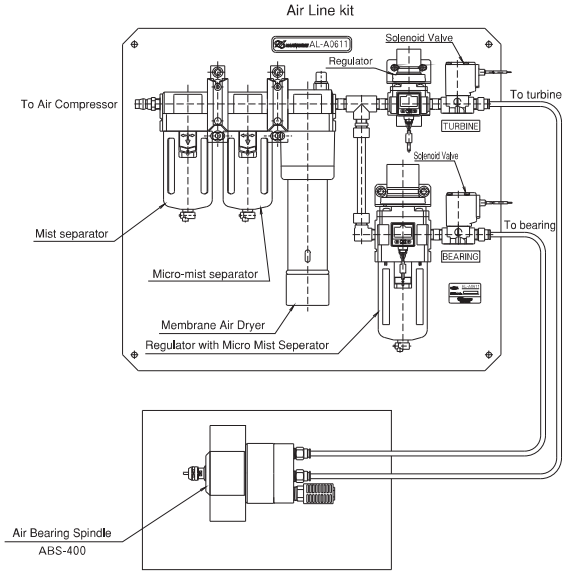

Fig.8

6 Maintenance and check

Please read each operation manual before maintenance and check.

⚠CAUTION

①Set the air pressure zero when maintenance and check.
②Please read each operation manual before maintenance and check.

Description	Model	Replacement Part	Replacement part No.
Mist separator	AFM40-02	Element assembly	AFM40P-060S
Micro-mist separator	AFD40-02	Element assembly	AFD40P-060AS
Membrane Air Dryer	IDG30-02	Module set	IDG-EL30
		Dew point checker set	IDG-DP01
Regulator with Micro Mist Separator	AWD40-02BE1	Element assembly	AFD40P-060AS

※Specifications may be changed without notice.

NAKANISHI INC.
www.nakanishi-inc.com
700 Shimohinata Kanuma-shi
Tochigi 322-8666,
Japan

NSK Europe GmbH EC REP
www.nsk-europe.de
Elly-Beinhorn-Strasse 8
65760 Eschborn,
Germany

NSK America Corp
www.nskamericacorp.com
1800 Global Parkway
Hoffman Estates, IL 60192,
USA

'07.05.002(V)