



エアーラインキット / Air Line Kit

AL-M1201BL

取扱説明書 / OPERATION MANUAL



日本語 : P1 - P7 / English : P9 - P15

OM-K0650 001

Thank you for purchasing the " AL-M1201BL " Air Line Kit for brushless motors and motor / spindles. This Air Line Kit desinged for adjust the air supply flow with oil mist automatic lubrication to the air tool and redcer. The <motor>, <redcer>, <spindle>, <CONTROLLER> and <Compressor> are rquired to drive this Air Line Kit. Read this and all the associated component Operation Manuals carefully before use. Always keep this Operation Manual in a place where a user can referred to for reference at any time.

1. CAUTIONS FOR HANDLING AND OPERATION

- Read these warnings and cautions carefully and only use in the manner intended.
- These warnings and cautions are intended to avoid potential hazards that could result in personal injury to the operator or damage to the device. These are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
 WARNING	A safety hazard could result in bodily injury or damage to the device if the safety instructions are not properly followed.
 CAUTION	A hazard that could result in light or moderate bodily injury or damage to the device if the safety instructions are not followed.

WARNING

- ① **Handling**
Connection to the Air Line Kit should be performed by a person with experience with compressed air and air compressors.
- ② **Air Pressure**
Compressed air is required. Do not exceed an air pressure of 1.0MPa at primary side and 0.85MPa at secondary side of the Air Line Kit.
- ③ **Use of Clean Air**
Do not use compressed air contaminated with chemicals, oil compounds, organic solvents, salinity or corrosive gasses in order to avoid damage to the device.
- ④ **Connection of Hose**
Connect the input hose securely to avoid accidental disconnection during use. Input pressure should never exceed 1.0MPa.
Pressure exceeding 1.0MPa may cause the hose to rupture.
- ⑤ **Inlet and Outlet Connections**
Do not hit, impact or cause shock to the Inlet or Outlet Connector Connections. Never put undo stress or load on the Inlet or Outlet Connector Connections. Any damage to these components can cause air leakage and the inability of the inlet or outlet quick disconnect to adequately secure the air / oil hose.
- ⑥ **Mounting the Air Line Kit**
When installing the Air Line Kit, securely install the Air Line Kit by mounting it on a flat, level surface. If the Air Line Kit is dropped, damage to the Air Line Kit and injury to the operator is possible.
- ⑦ **Electric shock**
Do not touch the connection terminal, during operation of the Air Line Kit, this may cause an electric shock.
- ⑧ **Air Regulator Bowl**
 - The bowl is made of a polycarbonate.
Do not use the Air Line Kit in conditions where chemicals or organic solvents are present in the atmosphere.
 - Do not remove the bowl guard. Using the Air Line Kit without the bowl guard may cause injury to the operator should the bowl burst.
 - When removing the bowl from the regulator, remove all pressure from the Input and Outlet sides of the Air Line Kit.

⚠ CAUTION

① Use of dry air

Using compressed air containing excessive moisture could result in malfunction or failure of the motor and spindle. If excessive moisture or condensation is found in Air Filter Bowl, it will be necessary to install a dryer larger Air Filter on the primary side of the Air Line Kit to prevent and remove excessive moisture.

② Installation Location

Place this Air Line Kit on a flat and level surface.

If mounting on a wall, check if the wall is flat, and securely mount the Air Line Kit in a horizontal direction.

③ Handling

When removing the bowl for cleaning, carefully remove the bowl and do not damage to the bowl.

④ Connection of Alarm Buzzer

Do not use the power voltage of the more than DC+24V, this will cause damage to the Alarm Buzzer of the Air Line Kit.

Be sure to use the power source voltage of DC+24V.

⚠ CAUTIONS FOR STORAGE, INSTALLATION and OPERATION

① Do not use the Air Line Kit where corrosive gasses, chemicals, seawater, water, oils or steam exist.

② Do not place in direct sunlight.

③ Do not use where the Air Line Kit is subject to vibration or repetitive shock.

④ Do not use where a heat source or radiated heat exist.

⑤ To conform to "STORAGE, INSTALLATION and OPERATION" (Refer to " 3. SPECIFICATIONS ".)

2. FEATURES

- ① The Air Filter traps small amounts of water and impure substances from the input air supply. This Air Line Kit is not intended to be used or replace an Air Dryer.
- ② Air Pressure Regulator supplies steady airflow at a regulated air pressure.
- ③ The oil mist supplied from lubricator to the Air Tool and Reducer will prolong their service life due to lubrication and the reduction of heat and friction.
- ④ Equipment with " Auto Drain Mechanism ", automatically draining the drain in the filter.
- ⑤ The lubricator equipment with " Alarm Buzzer ", inform the lack of lubrication oil.

3. SPECIFICATIONS

Model	AL - M1201BL	
Primary air pressure	Less than 1.0MPa	
Secondary air pressure	Less than 0.85MPa	
Maximum Operation Pressure	1.0MPa	
Maximum Peak Pressure	Less than 1.5MPa	
Maximum Peak Pressure at Hose Connection	Less than 1.0MPa	
Filtration of the Air Filter	0.3μm	
Drain Reservoir Capacity	80cm ³	
Automatic Drain Least Operation Pressure	0.1MPa	
Safe Pressure Regulator Operating Range	0.05 ~ 0.85MPa	
Pressure Relief	Automatic Relief Valve	
Applied lubricating oil	ISO VG15, Liquid Paraffin, or equivalent	
Oil Reservoir capacity	1000cm ³	
Minimum Drip Rate	0.065m ³ /min	
Dimensions	W380mm × D130mm × H430mm	
Weight	5.2Kg	
Operation Environment	Temperature	5 ~ 40°C
	Humidity	MAX. 85%
	Atmospheric pressure	700 ~ 1,060 hPa
Transportation and Storage Environment	Temperature	-10 ~ 60°C
	Humidity	10 ~ 80%
	Atmospheric pressure	500 ~ 1060 hPa

< Alarm Buzzer >

Power Source Voltage	DC+24V
Sound Pressure	68 ~ 75dB (1m)
Protection structure	IP34

Standard Accessories

<ul style="list-style-type: none"> • Connection Hose • • 1pc. • Connection Joint • • 1pc. • φ 6mm Air Hose • • 1pc. • Spacer • • 4pcs. 	<ul style="list-style-type: none"> • Lubricating oil (K - 202) 1ℓ • • 1pc. • Hexagon Socket Bolt (M8 × 20L) • • 4pcs. • Operation Manual • • 1set.
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< Option >

Use ISO VG15 Liquid Paraffin (Shell Ondina Oil #15) in the Air Line Kit lubricator bowl (For U.S.A. specification, use Chevron Superla #9).

Model
• Lubricating Oil (K - 211) 70cc
• Lubricating Oil (K - 202) 1 ℓ

4. PARTS NAME

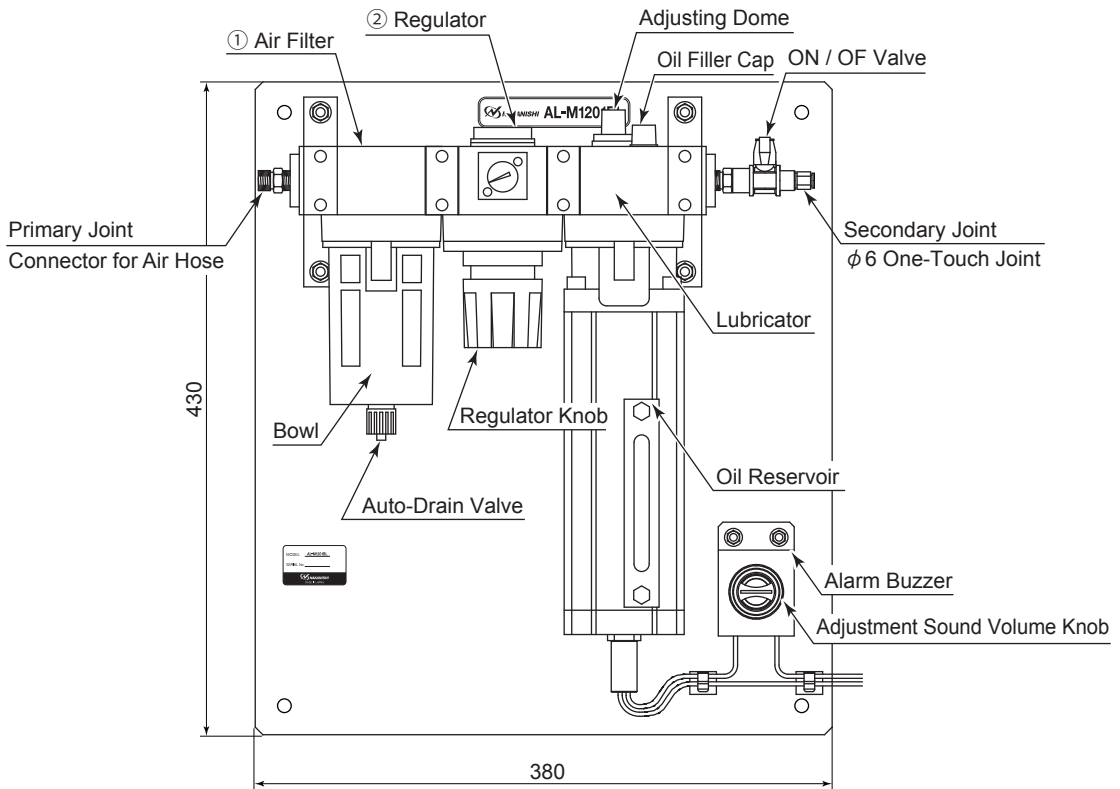


Fig. 1

If the Air Filter or Regulator are damaged, all components are replaceable by the end-user (Refer to Table 1 and Table 2.).

Table 1

	Name	Model	manufacturer
①	Air Filter	F4000 - 8 - W - FY	CKD
②	Regulator	R4000 - 8 - W	

Table 2. (Air Filter Replacing Optional.)

Name	Model	manufacturer
Air Filter Bowl Assy (Auto Drain Polycarbonate Bowl with Manual Cock)	F4000 - W - BOWL	CKD
Air Filter Consumable Parts Kit (The set includes the Louver, Baffle, Element and Bowl O-Ring.)	M4000 - KIT - Y	

5. OPERATION

5 - 1 Air Filter

The water, dirt and debris are separated from the compressed air.

The separated debris is collected in the Bowl.

5 - 2 Automatic Drain Mechanism

When collected drain will be " Upper Oil Limit " of the Bowl, draining directly the drain to the Auto-Drain outlet Port by " Auto Drain mechanism".

< To divert the drain to another location >

Connect a inside diameter $\phi 6\text{mm}$ hose (Not included / provided by the end-user.) to the Drain Output Port and divert to another location.

< Drain discharge is possible by the hand >

Opening and closing the drain valve.

Counter clockwise direction : Draining

Clockwise direction : Stop draining

5 - 3 Regulator

< Lock and Release of the Regulator Knob >

Regulator Knob is equipped with Lock mechanism.

Release : Pull the Regulator Knob OUT to unlock.

Lock : Push the Regulator Knob IN to the Lock position.

< Adjusting Air Pressure >

Turn the Regulator Knob while watching pressure gauge increase or decrease.

Clockwise direction : Air pressure is increased.

Counter-clockwise direction : Air pressure is decreased.

5 - 4 Lubricator

⚠ CAUTION

- **Weekly check the lubrication oil level. If lubrication oil level is low, Fill the oil bowl with lubricating oil up to the Upper Oil Limit on the bowl.**
- **If collected water in the lubricator taints lubricating oil, replace the lubricating oil immediately.**
- **Make sure to turn the compressed air supply to the Air Line Kit OFF, before replacing the lubricating oil or draining the water in lubricating oil.**

(1) Oil Amount (Fig. 4)

Check the Oil Amount in the Window.

If the lubricating oil level is low, add additional oil.

(2) Replacing the lubricating oil and drain the water in lubrication oil.

Remove the Oil Reservoir from lubricator drain the water in lubrication oil and supply the lubricating oil.

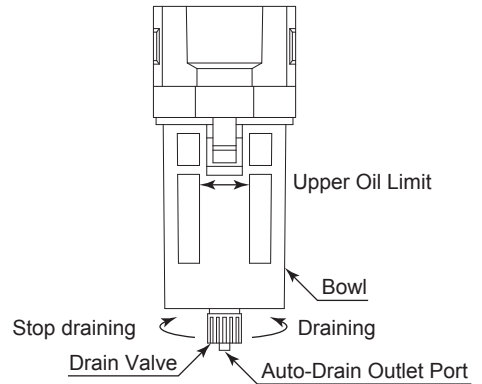


Fig. 2

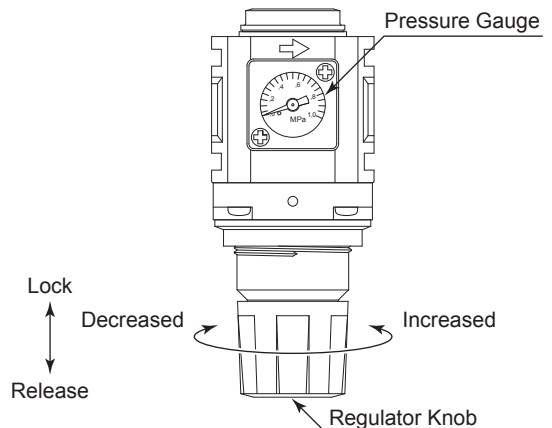


Fig. 3

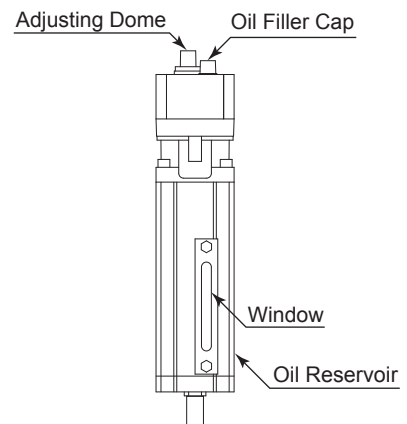


Fig. 4

(3) Adjustment of oil drip rate (Fig 5)

- ① Set the air pressure to the motors recommended maximum air pressure.
- ② Adjust the oil drip rate to the recommended volume which is 1 to 3 drops/min.
Counterclockwise : Increase.
Clockwise : Decrease.
(If using the Air Turbine Spindle, adjust the oil drip rate to the recommended volume which is 1 drops/min.)

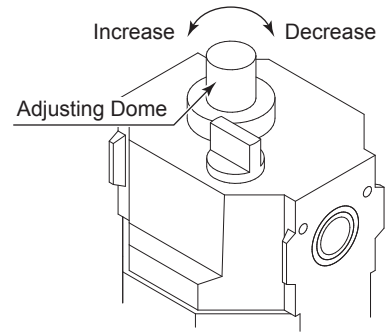


Fig. 5

5 - 5 ON - OFF Valve

Turn the ON/ OFF lever located on the valve 90-Degrees to turn the air output ON (OPEN) or OFF (CLOSE).

5 - 6 Alarm Buzzer

If the lubricating oil level of the Oil Reservoir is low, the Alarm Buzzer will "Beep".
Adjust the sound volume by turning the Adjustment Sound Volume Knob if needed.

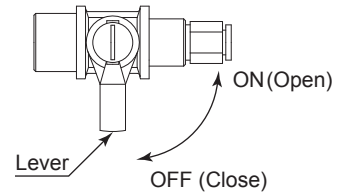


Fig. 6

6. CONNECTION AND INSTALLATION of the Air Line Kit (Ex: installation)

- (1) Insert the Connection Joint (Air Line Kit's Standard Accessory) into the Primary Joint of the Air Line Kit.
- (2) Connect the $\phi 6\text{mm}$ air hose (Air Line Kit's Standard Accessory) to the Connection Joint of the Primary Joint of the Air Line Kit. Connect the other side of the $\phi 6\text{mm}$ air hose to the Air Output Joint on the CONTROLLER.
- (3) Insert one end of the $\phi 4\text{mm}$ oil / air hose (Motor Cord's Standard Accessory) into the Secondary Joint ($\phi 6$ One-Touch Joint) of the Air Line Kit.
Insert the other end of the $\phi 4\text{mm}$ oil / air hose (Motor Cord's Standard Accessory) into the back of the motor.
Using the provided Reducer ($\phi 6\text{mm} - \phi 4\text{mm}$ Adaptor : CONTROLLER's Standard Accessory).
- (4) Connect the power source voltage DC+24V to the electric wire of the Alarm Buzzer.

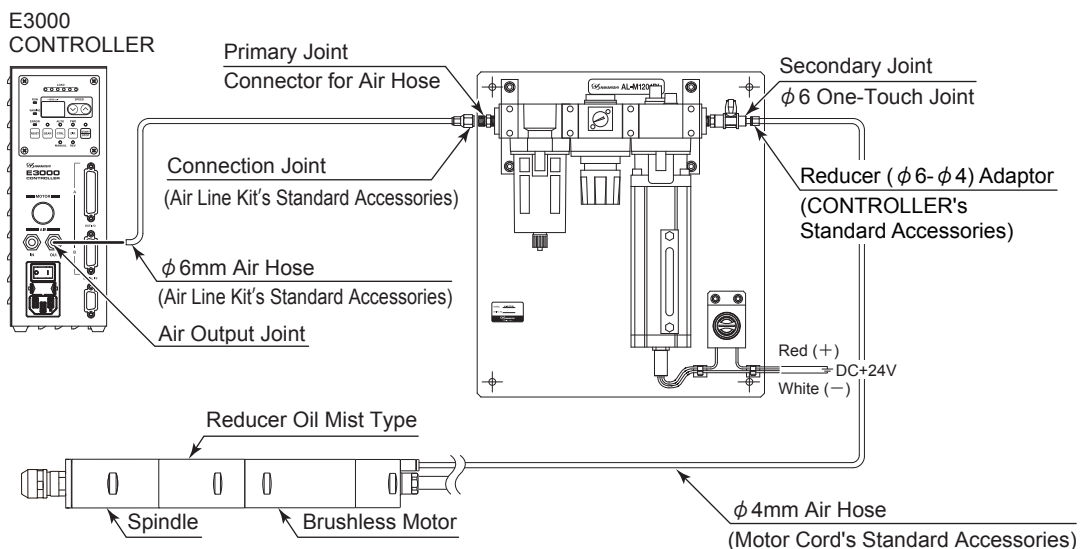


Fig. 7

- (5) Mount the Air Line Kit to the vertical wall.
 Because the head of the mounting screw is sticking out from the Base Plate, Use the Hexagon Socket Bolts and Spacers (Standard Accessories : 4pcs. each) when mounting.
- ① Stick the Hexagon Socket Bolts (M8×20L) (Standard Accessories : 4pcs) in the holes of the Base Plate and cover the bolt shafts with the Spacers.
 - ② Mount it to the vertical wall (Fig.8).
 - ③ Make sure that the Hexagon Socket Bolts (M8 × 20L) (Standard Accessories : 4pcs) are firmly fixed to the wall.

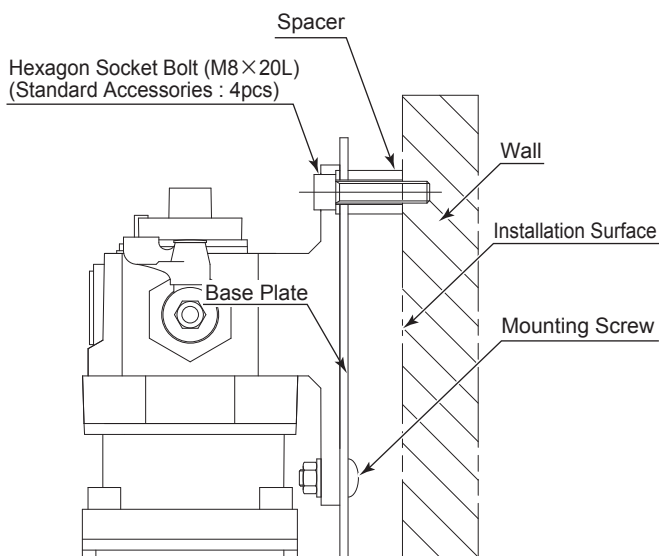


Fig. 8

7. TROUBLESHOOTING

If a problem or concern occur, please check the following items prior to consulting your dealer.

Trouble	Inspection / Corrective Active
Broken air / oil hose.	Replace the air / oil hose.
No air flow.	Check the compressor power supply and the air compressor output.
	Check if air / oil hose is broken, bent or disconnected.
	Check the Regulator and set to the correct air pressure. Check all air / oil hose connections.
	ON / OFF valve is OFF position. The ON / OFF valve set to ON position.
Air leakage.	Check all threaded joints and re-tighten if necessary.
Low air pressure.	Check the Compressor, Air Circuit, and Regulator.
Low Lubricating oil or no Lubricating oil.	<ul style="list-style-type: none"> • Check lubricator for proper lubricant level. Set lubricant drip rate from 1 to 3 drops /min. • Removing the air / oil hose from the Secondary Joint ($\phi 6$ One - Touch Joint), supply a small amount of oil directly into the air / oil hose if bowl is completely empty.
Over filled lubricator.	Inclined or upside down lubricator will flood spindle with lubricant.
	Drain lubricant from reservoir to within indicated levels. Excess lubricant will flood spindle. (In the case of Air Turbine Spindle)
Excess oil drips.	Given excess oil drips, this could slow rotate bearings. Drain oil to proper level by loosening drain valve.
Insufficient number of oil drops.	Air Tool and Reducer internal components will be deprived of oil and this longevity will dramatically shortened. Set from 1 to 3 drops/min.
Even if drain reaches to the upper limit of the bowl, drain is not drained.	Automatic Drain Mechanism is broken. Replace the Air Filter Bowl Assy. Refer to P4 Table 2 " Air Filter Bowl Assy < Model : F4000 - W - BOWL - F > ".

8. DISPOSAL OF THE Air Line Kit

When disposal of a Air Line Kit is necessary, follow the instructions from your local government agency for proper disposal of industrial components.

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