NAKANISHI

E3200 SERIES SELECTOR UNIT

NE261

OPERATION MANUAL

OM-K0582E

※Specifications may be changed without notice.

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CONTENTS

⚠ IMPORTANT INSTRUCTIONS AND WARNING - Electric Devices

WARNING !

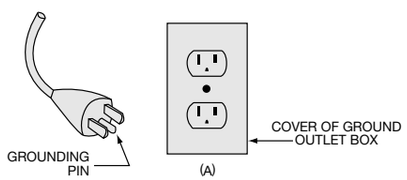
When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electrical shock and personal injury, including the following.

Read all these instructions before operating this product and save these instructions.

A. GROUNDING INSTRUCTIONS

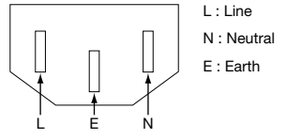
1. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord with a grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.
2. Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.
3. Improper connection of the grounding conductor can result in electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the grounding conductor to a live terminal.
4. Check with a qualified electrician or service person if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
5. Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.
6. Repair or replace damaged or worn cord immediately.
7. This tool must be used on a circuit that has an outlet that looks like the one illustrated in Sketch A in Figure (below) (115V). The tool has a grounding plug that looks like the plug illustrated in Sketch A in Figure (below).
8. FOR Installation in Machine Electrical Cabinet or when wiring directly to machine internal power terminal strip:
   1) Please refer to the pin diagram below for the proper wiring configuration. The plug shown is the female plug that attaches to the NE261 main power inlet.
   2) Make sure you test each individual wire to verify proper circuit prior to attaching any wire to the terminal block. Do not assume wire colors are the same for all power cords.
9. Install an over current protective device of maximum 10 Amp on the NE261 main power circuit.

Grounding Method



10. USE PROPER EXTENSION CORD. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop the line voltage resulting in loss of power and overheating. Table (below) shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

Power cord connector



Minimum gage for cord

Ampere Rating		Volts	Total length of cord			
		120V 240V	7.5m (25ft.) 15m (50ft.)	15m (50ft.) 30m (100ft.)	30m (100ft.) 60m (200ft.)	45m (150ft.) 90m (300ft.)
More Than	Not More Than					
0	6		18	16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	
Only the applicable parts of the Table need to be included. For instance, a 120-volt product need include the 240-volt heading.						

B. OTHER WARNING INSTRUCTIONS

1. For your own safety read instruction manual before operating tool.
2. Wear eye protection.
3. Replace cracked wheel immediately.
4. Always use guards and eye shields.
5. Do not overtighten wheel nut.
6. Use only flanges furnished with the grinder.
7. REMOVE ADJUSTING KEYS AND WRENCHES. Get in the habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
8. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
9. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
10. Risk of injury due accidental starting. Do not use in an area where children may be present.
11. DON'T FORCE TOOL. It will do the job better and safer at the rate for which it was designed.
12. USE RIGHT TOOL. Don't force tool or attachment to do a job for which it was not designed.
13. WEAR PROPER APPAREL. Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry that might get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
14. ALWAYS USE SAFETY GLASSES. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses. Also use face or dust mask if cutting operation is dusty.
15. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and it frees both hands to operate tool.
16. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for best performance and to reduce the risk of injury to persons. Follow instructions for lubricating and changing accessories.
17. DISCONNECT TOOLS before servicing; when changing accessories, such as blades, bits, cutters, and like.
18. REDUCE THE RISK OR UNINTENTIONAL STARTING. Make sure switch is in off position before plugging in.
19. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.
20. NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.
21. For recommended operating speed for various applications, please follow the instructions of bur manufacturers.

Thank you for purchasing the E3200 Ultra-Precision, High-Speed spindle system. The NE261 was designed for controlling multiple sequentially controlled spindles on CNC lathes, robots, NC lathes and special purpose machines. The motor, spindle and control unit are designed to work as an integrated system capable of 80,000 min^{-1}. This system utilizes air to cool the motor and protect the spindle, please use an air line kit to ensure clean, dry, properly regulated air is supplied to the motor and spindle. The E3200 system is capable of being used with coolants and cutting lubricants. Please read this Operation Manual carefully prior to use.

1 CAUTIONS FOR HANDLING AND OPERATION

■ Read these cautions carefully and only use in the manner intended.

■ Safety instructions are intended to avoid potential hazards that could result in personal injury or damage to the device. Safety instructions are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
⚠ WARNING	A hazard that could result in bodily injury or damage to the device if the safety instructions are not 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. **The E3200 Series is not a hand tool. It is designed to be used on a NC lathe or special purpose machine.**
2. **In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current, reducing the risk of electric shock. This system is equipped with an electric cord with a grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordnances.**
3. **Don’t use in dangerous environments. Protect the selector unit from moisture and other contaminants. Failure to protect the selector unit can result in damage to internal components and injury to the operator.**
4. **Always wear safety glasses. Everyday eyeglasses only have impact resistant lenses, they are not safety glasses. Also use a dust or face mask whenever the motor is running.**
5. **Ensure that the earth wire is properly grounded : failure to follow this warning may result in electric shock or fire.**
6. **Check to ensure that the supply is the same as the control unit's rated voltage.**

⚠ CAUTION

1. **Motor cooling and Spindle purge air is required to operate the system. Air hose must be connected to the Air in joint on the front of the control unit. 0.35MPa air must be supplied.**
2. **When errors occur and error lamp flashes, check and correct the cause of the malfunction before continuing use. Failure to correct the problem will result in damage to the unit and motor.**
3. **When the Warning Lamp on the control unit lights conditions exist that could result in dangerous operation. Check operating conditions and continue use only after correcting the problem.**
4. **Do not hit, drop or subject motor, spindle or control unit to shock as this will cause damage to internal components and result in malfunctions.**
5. **The electric motor and spindle require air for cooling and protection : ensure that this supply is clean, dry air. Introduction of dust, moisture or other contaminants into the motor and spindle will cause damage to internal components.**
6. **When using NE260 continuously, refer to Continuous Area on Torque Characteristics Graph or check the LOAD meter (3 Green Lamps).**
7. **Do not install system next to RF noise sources as malfunctions can occur. If smoke, noise or strange odors emanate from the unit or motors immediately turn off the power switch, disconnect and take to a NAKANISHI authorized Dealer for service.**
8. **Stop working immediately when abnormal rotations or unusual vibration are observed.**
9. **Do not place anything on NE261. This may cause damage to NE261.**
10. **Do not disassemble, modify or attempt to repair the unit or motor as it will damage internal components and there are no user serviceable parts.**
11. **Attach the connector cap or air plug (Provided) when you don’t use NE261.**
12. **When installing a motor/spindle to a fixed base, make sure the fixed base is grounded in order to avoid the risk of an electric shock.**

2 FEATURES

1. The E3200 system is designed to be mounted in a CNC lathe, robot, NC lathe or special purpose machine for drilling, milling, slitting, grinding or other similar application.
2. Up to 4 motors can be connected to NE261 providing individual control of each motor. (4 motors can’t be run simultaneously)
3. External control signals and external monitoring can be done with the NE260 and NE261 combination. Control and monitoring input and output signals will all be connected to CN1 on the NE260.
4. Wide speed range, 1,000-80,000 min^{-1} makes high precision machining possible.
5. Compact selector unit design allows easy installation in space restricted machines. Connectors and control panel are front mounted for easy access.
6. Control Unit is capable of being connected to AC100V to 240V power sources.

3 SPECIFICATIONS & DIMENSIONS

3-1 Control Unit

Model	NE261
Input	AC100V-240V, 50/60Hz, 1PHASE, 0.15A
Operating Temperature	0-40°C
Ambient Humidity	MAX. 85%
Over Voltage Category	Ⅱ
Pollution Degree	2
Weight	1.9kg
Dimensions	W88 x D138 x H238 mm

3-2 Standard Equipment • Accessories

Model	Standard Equipment • Accessories	
NE261	· Power Cord : 2 m · Connect NE260 to NE261 Cable : 60 cm · Communication Cable : 60 cm · Connector Cap (Provided) · Plug to avoid Air Flow	· Bracket · Nylon Tension Relief · Screw · Rubber Pad · Fuse (T1.6AL 250V) : 2 pcs. · Operation Manual

3-3 Mounting Bracket

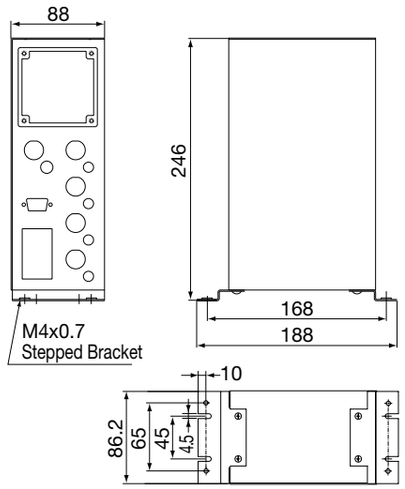


Fig. 1 Bottom Mounting

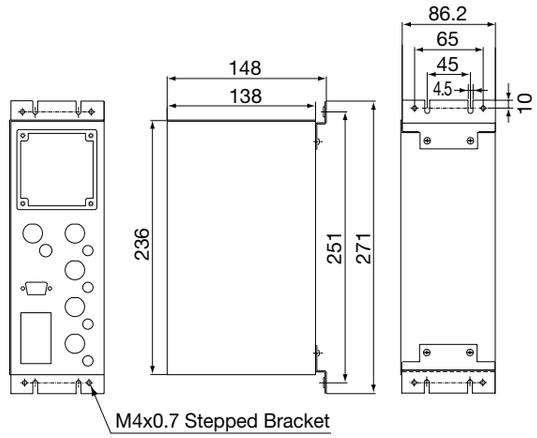


Fig. 2 Back Mounting

4 NOMENCLATURE

4-1 System

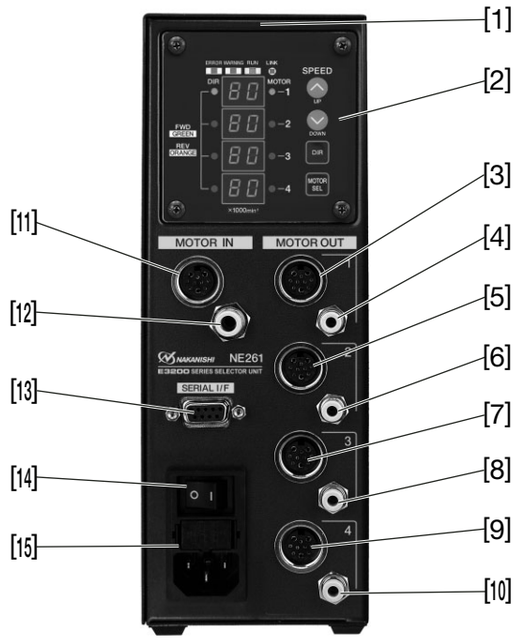


Fig. 3

[1] **Selector Unit** (NE261)

[2] **Control Panel**
Refer to Control Panel details

[3] [5] [7] [9] **Motor Output Connector**
Connect the motor connector to motor output connector. Attach the connector cap (Provided) for safety, when you don't use Motor Output Connector.

[4] [6] [8] [10] **Air Output Joint**
Supply clean, dry, regulated air for motor cooling. Attach Plug to avoid Air Flow to Air Output Joint when you don't use Air Output Joint.

[11] **Motor Input Connector**
Connect the Motor Cord Connector (Provided) to NE260 to the Motor Input Connector on the NE261.

[12] **Air Input Joint**
Supply clean, dry, regulated air for motor cooling. Regulate air to 0.35MPa. Max. Air Consumption 120Nℓ/min. Air must be supplied to operate the system.

[13] **Connector for Communication**
Connect the Communication Cable (Provided) to the NE260 Serial I/F connector and to the NE261 Serial I/F connector.

[14] **Power Switch**
ON/OFF Power Source

[15] **Main Power Inlet**
Insert the Plug for Power Cord (Provided). Fuse (T1.6AL 250V) : 2 pcs.

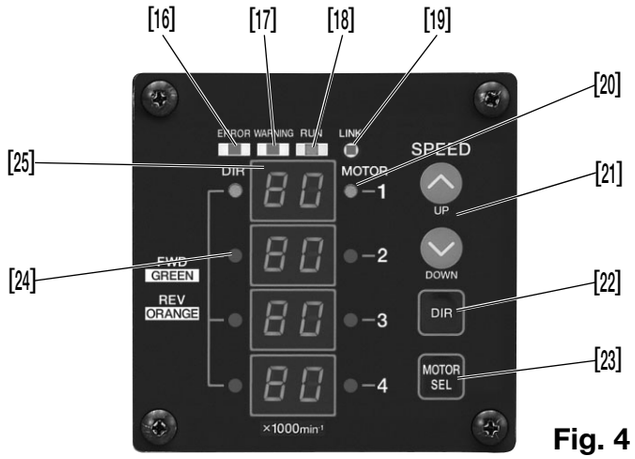


Fig. 4

[16] **Error LED (ERROR)**

When a serious problem with the system is detected this LED blinks, the motor/spindle is shut down and the Digital Speed Indicator in NE260 Control Panel displays the error code.

[17] **Warning LED (WARNING)**

The operating and working conditions of the system are constantly monitored and the warning LED blinks when a hazardous condition has been detected. When a hazardous condition is detected the warning LED blinks and the Digital Speed Indicator in NE260 Control Panel alternates between the warning code and the actual or preset speed, depending on whether or not the motor/spindle is rotating.

[18] **Rotating LED (RUN)**

When the motor is rotating this LED will flash.

[19] **LINK LED (LINK)**

LINK LED blinks when NE261 is correctly connected to NE260.

[20] **Motor LED**

The LED corresponding to the selected motor lights.

[21] **Motor Speed Adjustment Switch (SPEED)**

Set Motor Speed (Up or Down)

[22] **Rotation Direction Switch (FWD./REV.)**

Right hand rotation (FWD.) and left hand rotation (REV.) are as viewed with the cutting tool facing the operator. With the cutting tool facing the operator right hand rotation (FWD.) will be clockwise rotation.

[23] **Motor Selection Switch (MOTOR SEL)**

Select Motor #1-Motor #4 If Motor #1 is selected, Motor1 LED [20] blinks.

[24] **Motor Rotation Direction LED**

LED lit Green indicates Right Hand Rotation (FWD.)
LED lit Orange indicates Left Hand Rotation (REV.)

[25] **Digital Speed Indicator (SPEED)**

Preset Speed, Actual Speed are displayed to 2 digits.

5 CHANGING FUSES

⚠ WARNING

- **Before removing fuse make sure that the main power switch is in the off position and the power cord is disconnected from the power supply.**
- **Make sure and use only the properly rated and type of fuse.**
- **Failure to use the proper type and rated fuse will result in fire, injury, electric shock and/or product damage.**

(1) Push on the clips on the top and bottom of the fuse holder and remove the fuse holder and fuses.
(2) Remove the bad fuse or fuses and replace with the proper type and rating of fuse as listed below and determined by the input voltage being used.

Fuse : T1.6AL 250V

(3) Replace the fuse holder containing the fuses into the fuse inlet box and make sure it snaps in place.

Fig. 5

6 BRACKET INSTALLATION

⚠ CAUTION

- **If there is a threat to fall the control unit from the desk, be sure to place it with the provided brackets for safety.**
- **Never install the unit in such a manner as to block the air vents on the side of the control unit. This manner of installation will cause heat buildup and damage to the internal components of the control unit.**

(1) Two mounting brackets are provided with the system.
(2) The brackets can be installed on the bottom or on the back of the control unit.
(3) After installing the brackets you can use the screw cutouts to mount the control unit.

6-1 Bottom Mounting

Attach the 2 brackets using the 4 holes the bottom of the unit with the provided screws.

Fig. 6

6-2 Back Mounting

Attach the 2 brackets using the on 4 holes on the back of the unit with the provided screws.

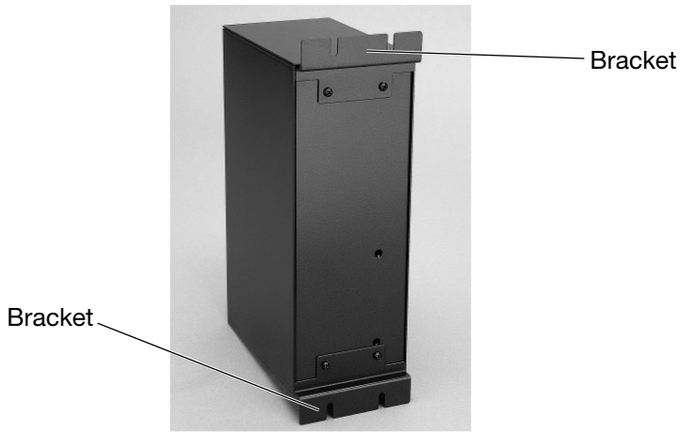


Fig. 7

6-3 Rubber Pad Installation

When placing the control unit horizontally, the Rubber Pad (Provided) is installed at the side of the Selector Unit.
And when installing horizontally, remove the 4 screws on the Control Panel, and can use NE261, moving the panel at the 90°Angle.
When moving the direction of setting control panel, need to get off the Power Switch and to remove the Power Inlet.

⚠ CAUTION

Never install the control panel upward when setting the selector unit horizontally. This may cause damage to control unit because of electric shock or fire.
When setting the control panel, get off the power switch and detach the fuse with inlet from the Power Plug.

Fig. 8

Fig. 9

6-4 Proper Clearance

When installing 2 or more control units in the machine cabinet make sure to check that each single control unit has the proper clearance on all sides.

Vertical mounting

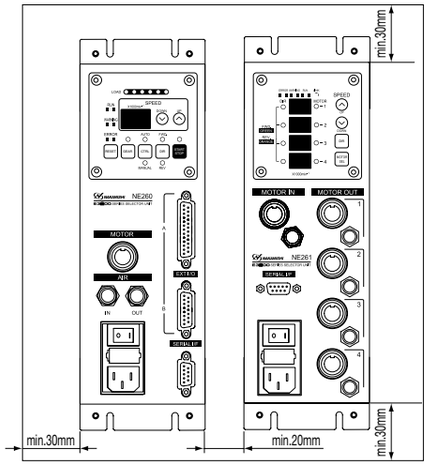


Fig. 10

Horizontal mounting

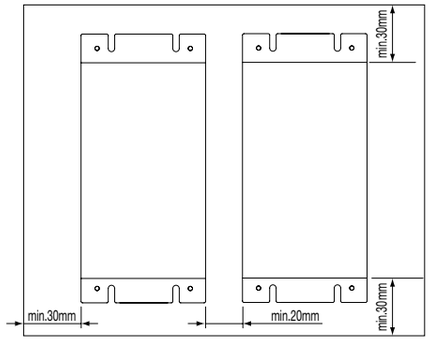


Fig. 11

7 POWER CORD CONNECTION

⚠ WARNING

Only use grounded power sources. Failure to properly ground the unit may result in electric shock, injury, fire and/or damage to the system components.

(1) Insert the female plug into the main power inlet box [15] on the front of the unit.
(2) A screw hole is provided on the lower, right side of the control unit for attaching the tension relief. Use the provided Nylon Tension Relief to attach the power cord to the side of the control unit.

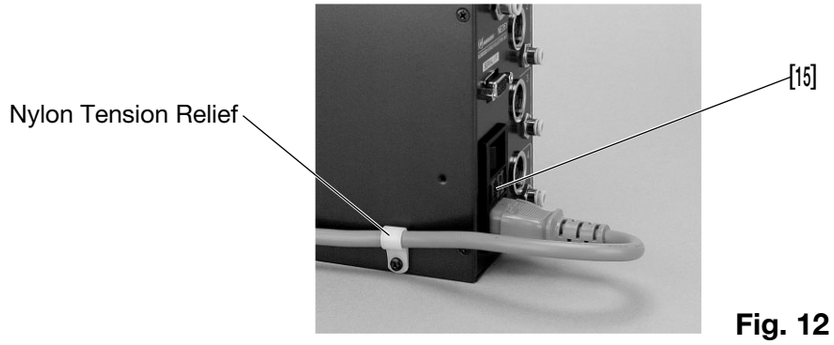


Fig. 12

8 MOTOR CORD CONNECTION

(1) Align the guide pin A on the motor plug with the key way B on the motor socket on the front of the control unit.
(2) Screw in the coupling nut C of the motor plug to the motor socket D on the front of the control unit.

⚠ CAUTION

Before connecting the motor cord, make sure the power switch is OFF.

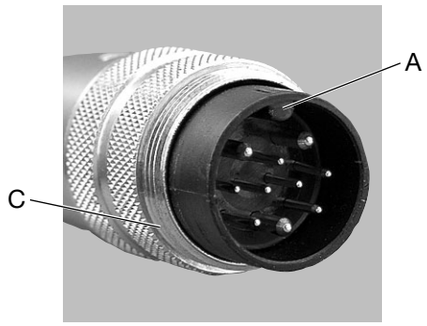


Fig. 13

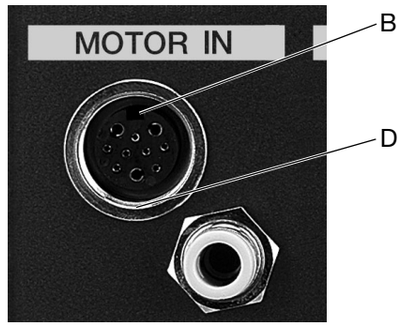


Fig. 14

9 CONNECTING THE CONTROL UNIT (NE260) TO THE SELECTOR UNIT (NE261)

9-1 Connection of Motor Cord (Provided)

Connect the Motor Cord (Length : 60 cm Provided) to MOTOR connector on the (NE260) and Motor Input Connector [11]. Refer to the details on 8 **MOTOR CORD CONNECTION**.

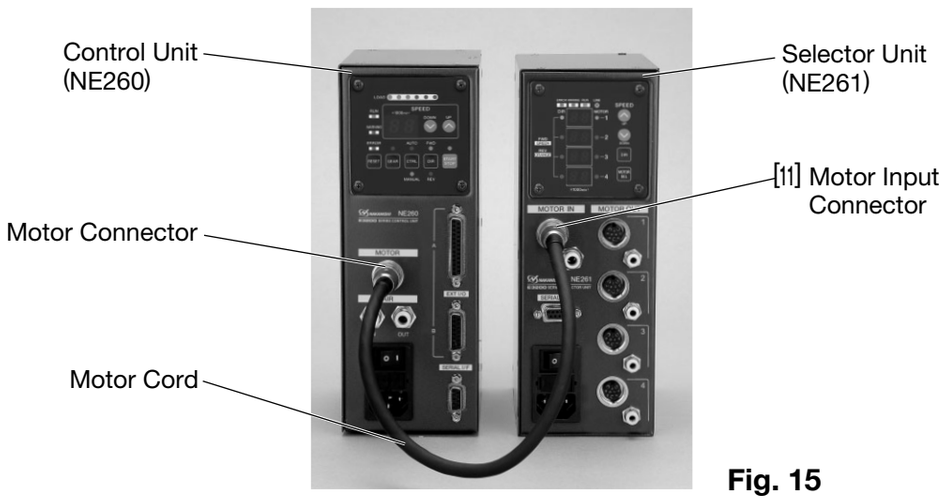


Fig. 15

9-2 Connection of Communication Cable (Provided)

Connect Communication Cable (Length : 60 cm) to Communication Connector for Control Unit (NE260) & Communication Connector [13] on the (NE261).

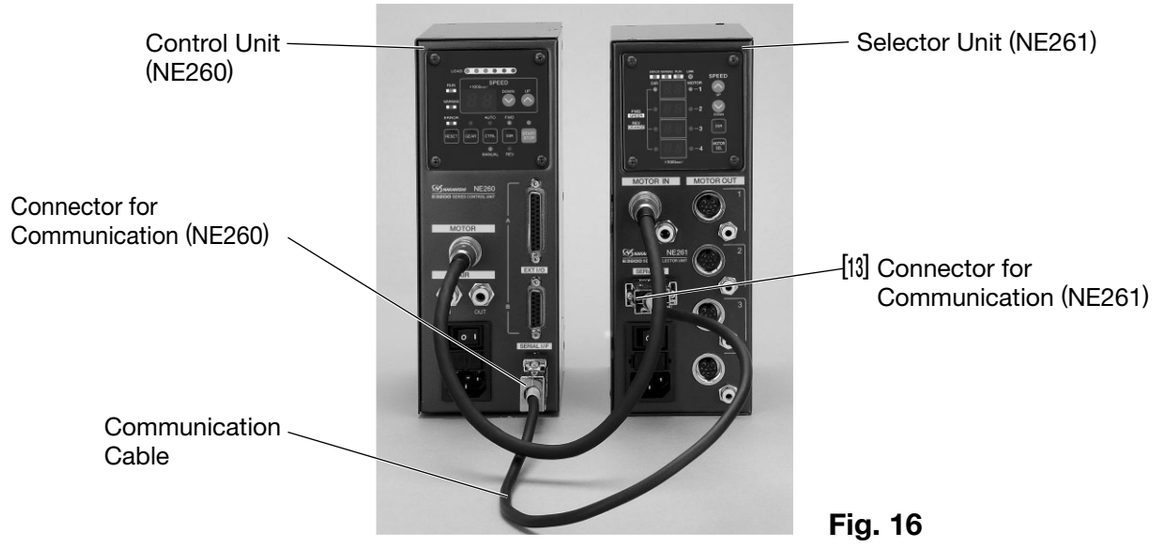


Fig. 16

⚠ CAUTION

Never use the provided Communication Cable for any purpose other than connection between the NE260 and NE261 units. Do not use any cable other than the provided Communication Cable for data transfer between the NE260 and NE261. Failure to adhere to this caution could cause damage to the systems.

9-3 Connection of Motor Plug

Connect Motor Plug of Motor Spindle to Motor Output Connector [3] [5] [7] [9] on the NE261.
Refer to 8 **MOTOR CORD CONNECTION** for details.
Attach Connector Caps (Provided) for safety when not using Motor Plugs.

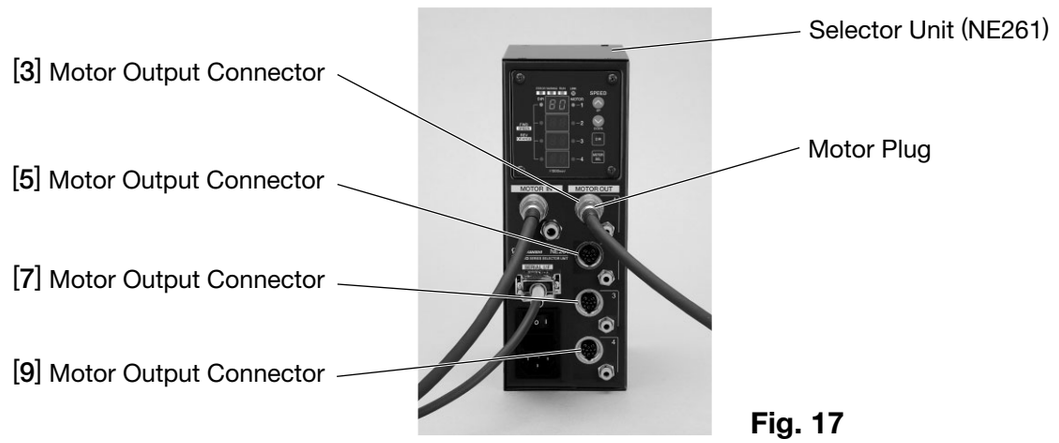


Fig. 17

9-4 Air Hose Connection

(1) Connection of Air Input Joint
Insert the provided ø6mm filtered air hose from the AL-0201 air line kit into the Air Input Joint [12] on the front of the selector unit. (If you are not using the AL-0201 air line kit make sure that the incoming air supply is dry, clean air.)

(2) Connection of Air Output Joint
Insert one end of the provided ø4 mm cooling air hose into the Air Output Joint [4] [6] [8] [10] on the front of NE261. Attach the Plugs to unused Air Output Joints. Insert another end of air hose to air joint at the rear of the motor spindle.

(3) Regulate air pressure 0.35MPa.
The system can be set to operate without cooling air. Please see parameter setting P7 (NE260) to set this option. Maximum speed is 30,000min^{-1} when not using cooling air.
Note : It is not recommended to use the system in this manner for general machining. This setting is only for light cutting and not for use with coolants.

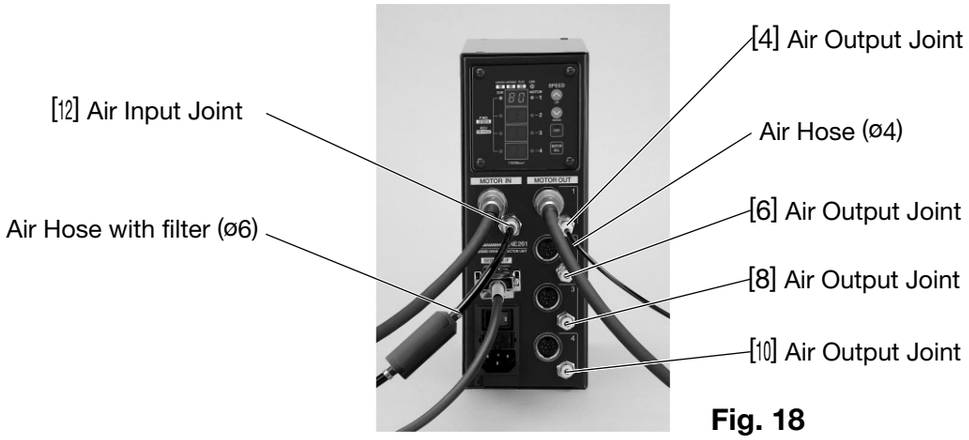


Fig. 18

(4) NE260 to NE261 Connection

Fig. 19

⚠ CAUTION

1. **Regulate the air supply 0.35MPa. If the air pressure is too low the control unit will not operate.**
2. **When you don't use a motor connection, insert Plug to unused Air Output Joints [4] [6] [8] [10] to avoid Air Flow. Attach the provided connector cap to unused Motor Output Connectors [3] [5] [7] [9].**
3. **When using Selector Unit NE261, don't need to supply the cooling air to Control Unit NE260. Insert the provided Plug into (ø6) Air Input Joint and Air Output Joint.**
4. **The cooling air also provides air purge protection to the spindle. If the Power Switch [14] is turned off, the cooling air will continue to flow. When using the E3200 without supplying cooling air, do not spray coolant directly on the spindle body.**
5. **Check that cooling air is being supplied to the motor/spindle and ensure that the cooling hose is properly connected to the motor and the NE261. Failure to connect the hose properly or supply the proper amount of cooling air to the motor will cause damage to the motor and spindle.**
6. **When you are plumbing the hose, take care not to apply excessive force to the hose, it can easily become bent or broken. Failure to supply proper air may cause damage to the motor spindle.**
7. **Never supply over the regulated air pressure. There is a threat to damage to the air detect sensor inside the control unit.**
8. **The air detect function with the control unit is the detector of the input only. When damaging to the air hose of the output of the control unit, can't be able to detect no air supply to the motor spindle.**

10 OPERATION PROCEDURES

1. Select Control Mode (MANUAL/AUTO)
   - Using the control switch on the NE260 you can select between Manual (Front Panel Control) or Auto (External Signal Source) modes. External Signal Source can be used to control Motor Start/Stop, Rotational Direction, and Motor Speed.
   - Manual Mode-Front Panel Operation.
   - Auto Mode-Control by External Signal Source.

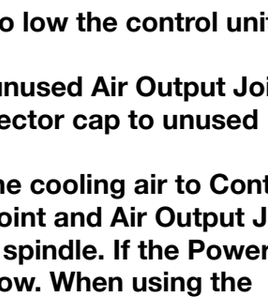


Fig. 20 Control Panel (NE260)

2. Setting motor rotating direction, gear ratio (GEAR), Motor Start/Stop, Motor Speed

2-1 Manual Mode Operation

When using Manual Mode with the NE260 and NE261 combination the following functions will be controlled from the front panel of the respective units.

NE260	NE261
Gear Mode Operation and Selection Motor Start/Stop	Motor Speed Motor Selection Rotating Direction 500 min^{-1} rotation

(1) Set Motor Selection
Motor #1-#4 can be selected by pushing the Motor Selection Switch [23].
LED [20] corresponding to the selected motor will light. (Refer to Fig.21 NE261 Control Panel)

(2) Set motor rotating direction
Push the motor rotating direction switch [22]. Check the color of LED [24] to verify Motor Direction. (Refer to Fig.21 NE261 Control Panel)
FWD. Right hand rotation (Green)
REV. Left hand rotation (Orange)

(3) Set 500 min^{-1} centering rotation
To select 0.5 (500 min^{-1}), push the Motor Speed Adjustment Switch [21].
When controlling motor speed from 1,000 min^{-1} to 500 min^{-1} or from 500 min^{-1} to 1,000 min^{-1}, stop the motor/spindle prior to changing speed. Never attempt to cut while rotating in centering mode. (Refer to Fig.21 NE261 Control Panel)

(4) Setting Gear Ratio
Push Gear Mode Select Switch. Check the gear ratio of the spindle/reducer combination being used, select the appropriate gear ratio, by pushing the Motor Speed Adjustment Switch. (Refer to Fig. 22 NE260 Control Panel)
Display Indicator, will show the 5 possible gear ratios, the following are possible : 1.0, 1.5, 2.7, 4.0, 16. If you are not using a speed reducer, or an angle type spindle, you do not need to set Gear Ratio Mode. (Set Gear Ratio1.0)

(5) Setting Motor Speed
Set the speed by pushing the Motor Speed Adjustment Switch [21].
(Refer to Fig. 21 NE261 Control Panel)
- Motor Speed Range is 1,000-80,000 min^{-1}
- The motor speed is displayed in 1,000 min^{-1} increments. 80 equals 80,000 min^{-1}
- When using Gear Mode the display Indicator will show Motor Speed changes at a slower rate than during operation at ratio 1.0.

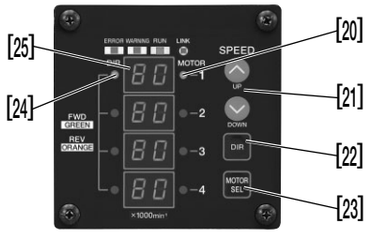


Fig. 21 Control Panel (NE261)

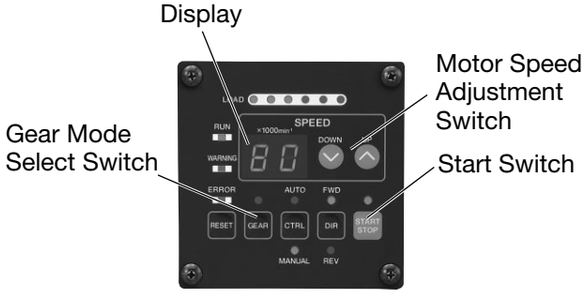


Fig. 22 Control Panel (NE260)

(6) Motor Start/Stop
Push Start Switch on the front panel of the Control Unit NE260 and START LED will light.
(Refer to Fig. 22 NE260 Control Panel)

2-2 Setting Auto Mode

Use the Input/Output Connector A to input control signals to the unit.
(Expect setting gear ratio)
Refer to the Operation Manual : **11** Input/Output Signal Source

(1) Set Motor Selection
Motor Selection Signal (Pin No. 5 : SEL1 and Pin No. 17 : SEL0)
Select Motor by inputting signals in the following pattern.

Table 1 Motor Selection Signal

Select Motor	SEL1 (Pin No. 5)	SEL0 (Pin No. 17)
Motor 1	OFF (Open)	OFF (Open)
Motor 2	OFF (Open)	ON (Closed)
Motor 3	ON (Closed)	OFF (Open)
Motor 4	ON (Closed)	ON (Closed)

(2) Set motor rotating direction
Input the motor rotating direction signal to Pin No. 2 : DIR_IN
Right hand rotation is OFF 'Open' ("FWD." LED will light)
Left hand rotation is ON 'Closed' ("REV." LED will light)

(3) Set 500 min^{-1} rotation
Input the centering rotation signal to Pin No.16 : 500 min^{-1}
500 min^{-1} LED will light
Never use 500 min^{-1} centering rotation for cutting

(4) Setting Gear Ratio
Push Gear Mode Select Switch. Check the gear ratio of the spindle/reducer combination being used, select the appropriate gear ratio, by pushing the Motor Speed Adjustment Switch.
Display Indicator, will show the 5 possible gear ratios, the following are possible : 1.0, 1.5, 2.7, 4.0, 16.
If you are not using a speed reducer, or an angle type spindle, you do not need to set Gear Ratio Mode. (Set Gear Ratio 1.0)

(5) Setting Motor Speed
Input the motor speed signal to Pin No. 23 : VR
- Motor Speed Range is 1,000-80,000 min^{-1}
- The motor speed is displayed in 1,000 min^{-1} increments. 80 equals 80,000 min^{-1}

(6) Motor Start/Stop
Input the motor start signal to Pin No. 14 : START
Motor rotating is ON 'Closed' (START LED will light)
Motor stopped is OFF 'Open' (START LED is Off)

⚠ CAUTION

1. When using the NE261 and NE260 combination if the LINK LED on the NE260 is not lit, data is not being passed to the NE260. In this case motor rotation direction, motor speed, and motor selection functions will not be able to be controlled from the NE261. Please check the Communication Cable connections and Communication Cable.
2. If Selector Unit NE261 does not link properly to Control Unit NE260, LINK LED will not light, and motor speed will not be displayed.
Check the link communication cable between NE261 and NE260.

11 EXTERNAL INPUT/OUTPUT CONTROL SIGNAL SPECIFICATIONS

(1) Input/Output Connector A

Pin No.	Pin Name	Description	Input/Output	Signal	Function
1	COM_1	External Power Source for External Inputs	Input	0V or +24V DC	Power Source to be used for External Inputs.
2	DIR_IN	Rotating Direction Signal	Input	OFF (Open) : FWD. ON (Closed) : REV.	Controls the direction of rotation of the motor.
3	CNT_IN	Count Pulse Signal for setting Motor Speed	Input	OFF (Open)→ON (Closed)	Count Pulse for setting Motor Speed. (Need to set parameter)
4	RESET	Error Release Signal	Input	ON (Closed)→OFF (Open)	Error code can be released and the system restarted by switching this signal OFF and ON.
5	SEL1	Motor Select Signal1	Input	OFF (Open) ON (Closed)	Select Motor (Refer to Table 1) Input Signal when using Selector Unit NE261.
6	RUN	Rotating Signal	Output	ON (Closed) : Motor Rotating OFF (Open) : Motor Stopped	Voltage output shows that the motor is rotating.
7	DIR_OUT	Rotating Direction Signal	Output	OFF (Open) : FWD. ON (Closed) : REV.	Voltage output shows the direction the motor is rotating.
8	ERR	Error Signal	Output	ON (Closed) : Normal OFF (Open) : Error	Error has occurred. (*1) Error Code is displayed on the Digital Speed Display.
9	—	Not Used	—	—	——————— (*2)
10	GND	Internal GND	Output	Internal GND	This GND to be used for motor speed control circuit. (Refer to Fig.27)
11	VCC	Internal Power Source for Analog Signal	Output	+10V DC	Power Source for VR Output +10VDC
12	MOTOR_1	Motor Current Monitor	Output	0-10V DC 0V : 0A 10V : 20A	Voltage Output shows the motor current consumption. Output voltage is proportional to the motor current consumption.
13	GND	Internal GND	Output	Internal GND	This GND to be used for analog outputs (12, 24 and 25) circuit. (Refer to Fig.30)
14	START	Rotate Command Signal	Input	ON (Closed) : Rotation OFF (Open) : Stop	Starts and Stops motor rotation.
15	UD-IN	UP/DOWN Signal for Motor Speed Signal	Input	ON (Closed) : Speed Up OFF (Open) : Speed Down	When CNT_IN Signal is in, 1,000 min^{-1} speed up.
16	500 min^{-1}	Rotates Motor at 'Centering' Speed	Input	ON (Closed) : 500 min^{-1} OFF (Open) : Normal Operation	Maintains constant 500 min^{-1} motor speed for centering.
17	SEL0	Motor Selection Signal0	Input	OFF (Open) ON (Closed)	Select Motor (Refer to Table 1) Input when using Selector Unit NE261.
18	COM_2	Power Source for External Outputs	Output	0V or +24V DC	Power Source to be used for External Output Signals.
19	PULSE	Rotating Pulse	Output	1 pulse/rotation	1 revolution of the motor generates one pulse. Duty 50%
20	WARNING	Warning Signal	Output	OFF (Open) : Normal Operation ON (Closed) : Warning	This output shows a Warning has occurred. The Warning Code is shown on the Digital Speed Indicator.
21	COIN	Speed Achievement Signal	Output	ON (Closed) : Ordered Speed Achieved OFF (Open) : Ordered Speed Not Achieved	Voltage output shows that the motor has achieved more than 90% of the set speed.
22	—	Not Used	—	—	——————— (*2)
23	VR	Motor Speed Control Signal	Input	0-10V DC 0V : 1,000 min^{-1} 8V+ : 80,000 min^{-1}	Sets rotating speed of Motor.
24	LOAD	Torque Load Monitor	Output	0-10V DC 0V : 0% 10V : 200%	Voltage output shows the torque being applied to the motor. Load monitor voltage x20 equals the torque load %. 20V = Load%
25	SPEED_V	Rotating Speed Monitor Voltage	Output	0-10V DC 1V : 10,000 min^{-1} 8V : 80,000 min^{-1}	Voltage Output is proportional to the motor speed.

*1 The error signal output can be reversed. Please refer to the setting of parameters section of the NE260 manual.

*2

⚠ CAUTION

Never use pins labeled NOT USED.

(2) Input/Output Diagram

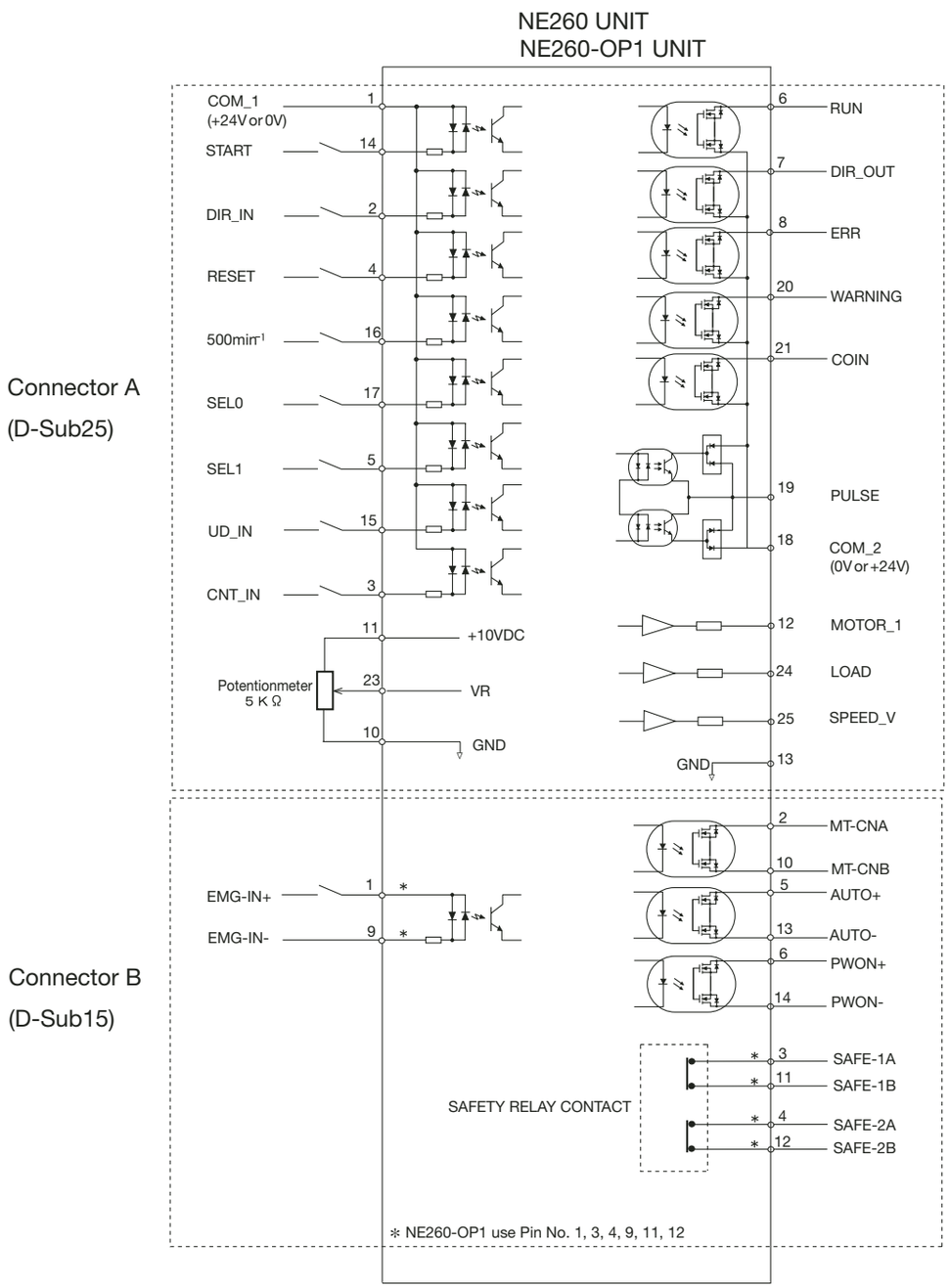


Fig. 23

(3) Input/Output Signal

①Input Signal

There are 8 kinds of input signals : rotation command, rotation direction, error release, speed up-down signal, speed command pulse signal, motor selection signal 0, motor selection signal 1,500 min^{-1} speed command. These signals are +24VDC signals from an external signal source.

Please use a separate power source that is capable of supplying 24VDC±10%, 100mA.

Refer to Figures below for connections.

*When using NE261, input signal : Motor Selection Signal 0, Motor Selection Signal 1.

*By setting parameter, Motor Speed change is possible by pulse signal. If input “Speed up-down signal” “Speed Command pulse signal”.

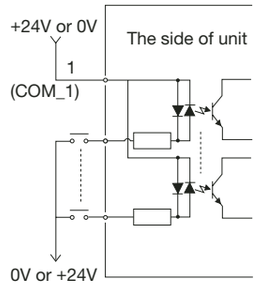


Fig. 24

②Output Signal Ⅰ

There are 5 kinds of output signals : rotating, rotating direction, error, warning and rotating speed achieved. These signals are MOSS Relay Contact Connections.

The output current can be connected to both the sink and the source.

Voltage and Current Specifications

- Applied Voltage (V max) ≦ 30VDC
- Working Current (Ip) ≦ 100 mA

Use an external power source for output circuits. It is recommended to use the same 24VDC power source used for input signals.

Please refer to Fig. 25 for connections.

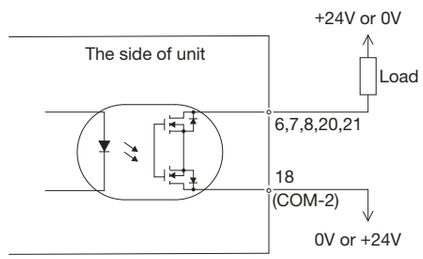


Fig. 25

③ Output Signal Ⅱ

Refer to Fig. 26 about the Output Signal of the Rotating Pulse. The output current can be connected to both the sink and the source.

Voltage and Current Specifications

- Applied Voltage (V max) ≦ 30VDC
- Working Current (Ip) ≦ 50 mA

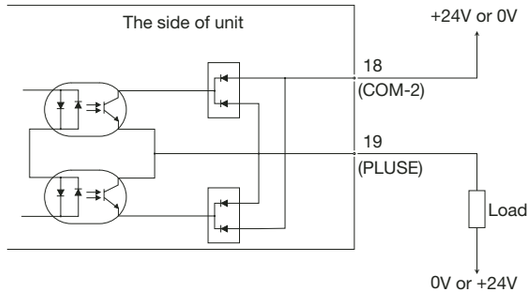


Fig. 26

④ Motor Speed Control Signal

Refer to Fig. 27, 28, 29 for connections.

*When applying the voltage, never input over 10VDC. This will avoid damaging to the control unit.

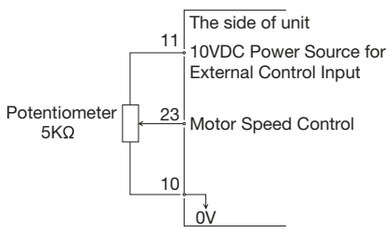


Fig. 27

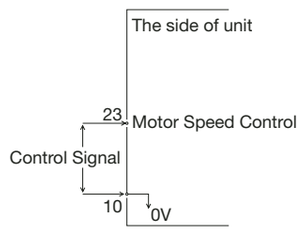


Fig. 28

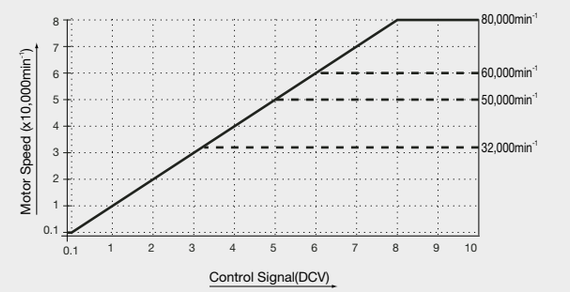


Fig. 29

⑤ Monitoring Signals

There are 3 kinds of monitoring signals : Motor Current, Torque Load Monitor and Rotating Speed Monitor. Please refer to Fig. 30 for connections.

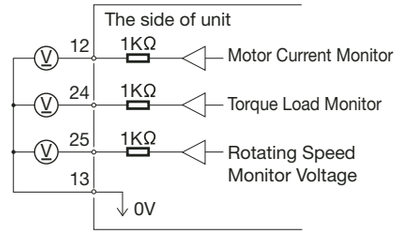


Fig. 30

12 TROUBLE SHOOTING

Trouble	Cause	Inspect/Corrective Action
Motor Does Not Run	Power is not supplied.	•Check the Main Power Inlet connection on the front of the selector unit. •Insert Power Source Plug correctly.
	Motor Cord or Connector Disconnected.	Connect the Motor Cord to the connector or check the Motor Cable.
	Not use the provided communication cable. (LINK LED does not blink)	Use the provided communication cable.
	Controller Switch is set to Manual but trying to start with an external command signal through Input/Output Connector A.	Start with the Start Switch on the Control Panel, or set the Controller Switch to Auto.
	Controller Switch is set to Auto but trying to start with the Start Switch on the Control Panel.	Start with an external command signal or set the Controller Switch to Manual.
	Error Code Indicated.	Check and correct the source of the Error Code.
	Not supply Air to NE261.	Supply Air to NE261.
	Low Air Pressure.	Adjust air pressure to 0.35MPa.
Motor Speed is not displayed correctly	LINK does not blink.	Use the provided communication cable.
	Not connect the Plug to avoid Air Flow to Air Output Joint of Air Output Joint.	Insert the Plug to avoid Air Flow to Air Output Joint when you don't use Air Output Joint.
	Change the Parameter mode [P2] At Auto Mode Setting Motor Speed Selection.	Set Parameter mode [P2] by External Input/ Output Connector A Signal. Or control by the switch on NE261 operation panel. And set Motor Speed by parameter [P2].
	Fix Motor Speed Setting by Parameter [P3] on NE260.	Release Fix Motor Speed Setting by Parameter [P3].
	Fix Max. Motor Speed by Parameter [P4].	Release Fix Max. Motor Speed by Parameter [P4].
Not Change Motor Rotation Direction	LINK LED does not light.	Use the provided communication cable.
	Set AUTO mode on NE260 operation panel.	Set Manual Mode on NE260 operation panel.
Motor does not Run	LINK LED does not light.	Use the provided communication cable.
	Run the motor at high load level.	Check if Load LED is OK, control motor speed.
	Low air pressure than the regulated level.	Check if air pressure is OK.

13 SYSTEM CHART

4-1 Motor Speed 80,000min^{-1}

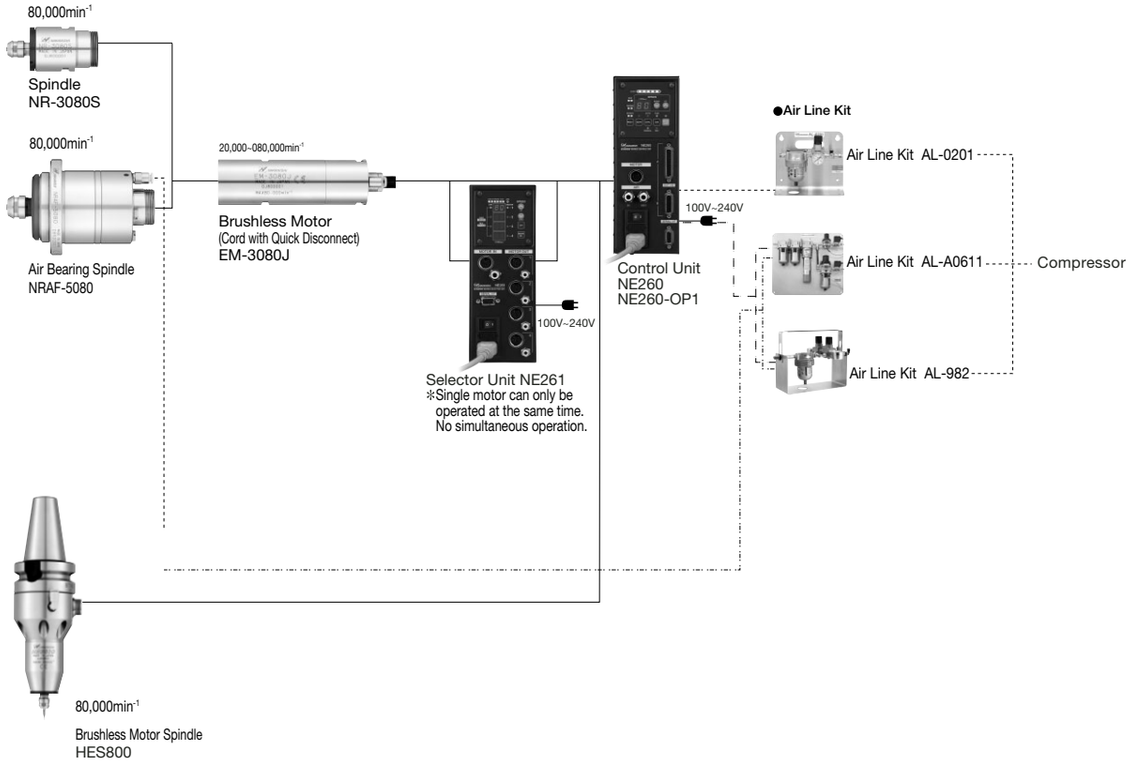


Fig. 31

4-2 Motor Speed 60,000min^{-1} / 50,000min^{-1} / 32,000min^{-1}

(1) One Piece Type

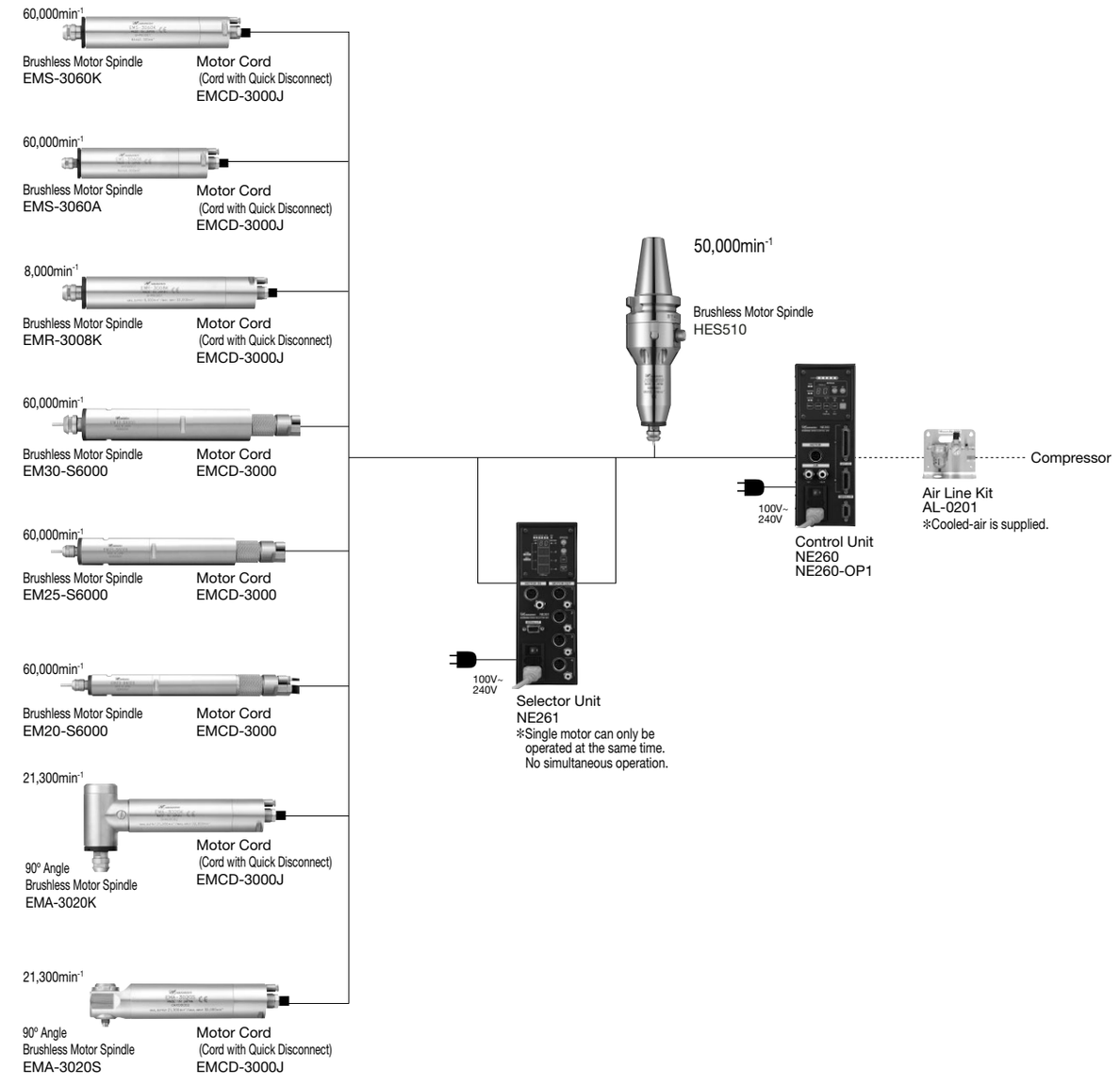
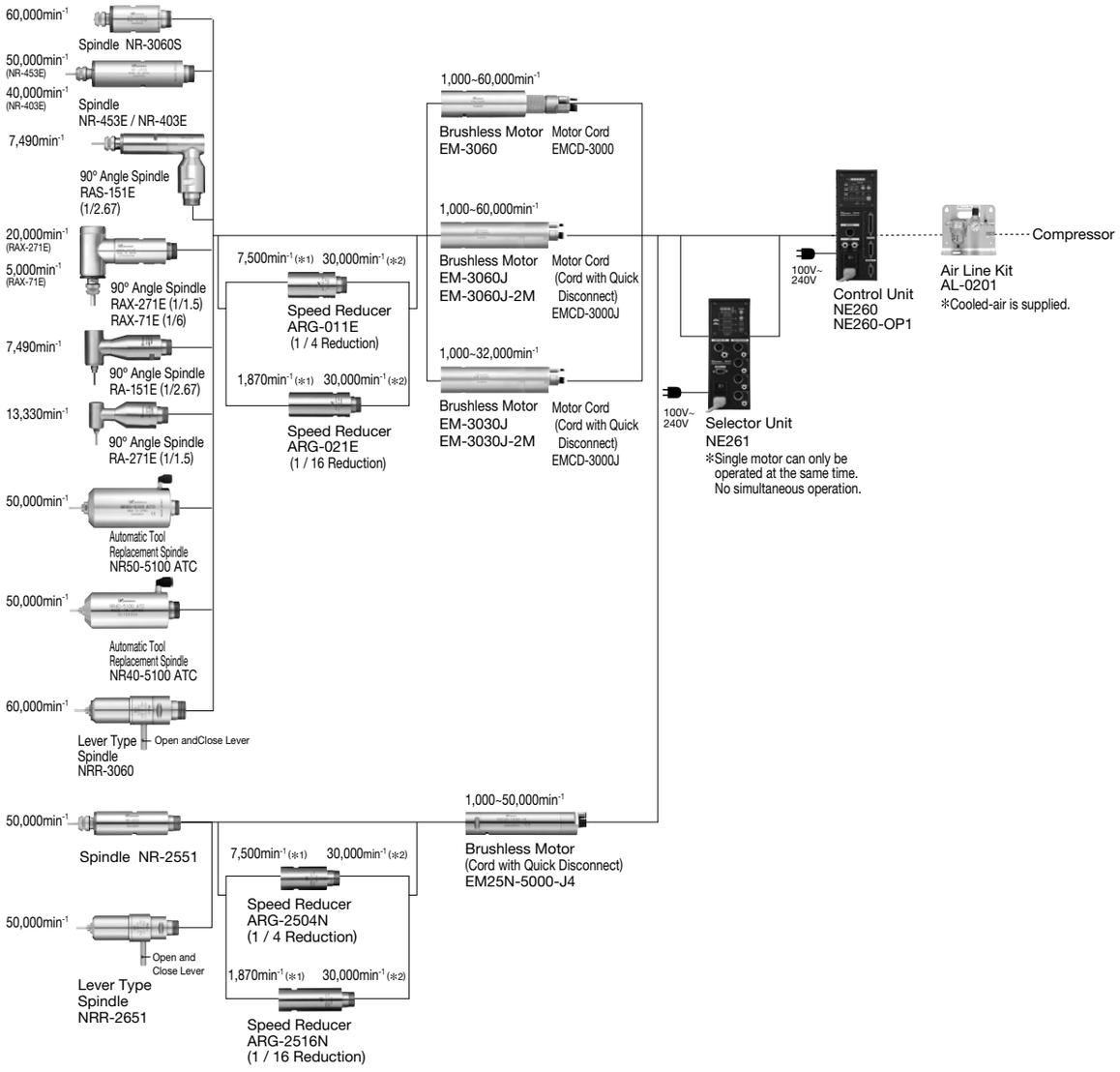


Fig. 32

(2) Modular Type



※1 : Maximum rotating speed at the cutting tool.
※2 : Maximum allowable motor speed for the spindle.

Fig. 33

memo