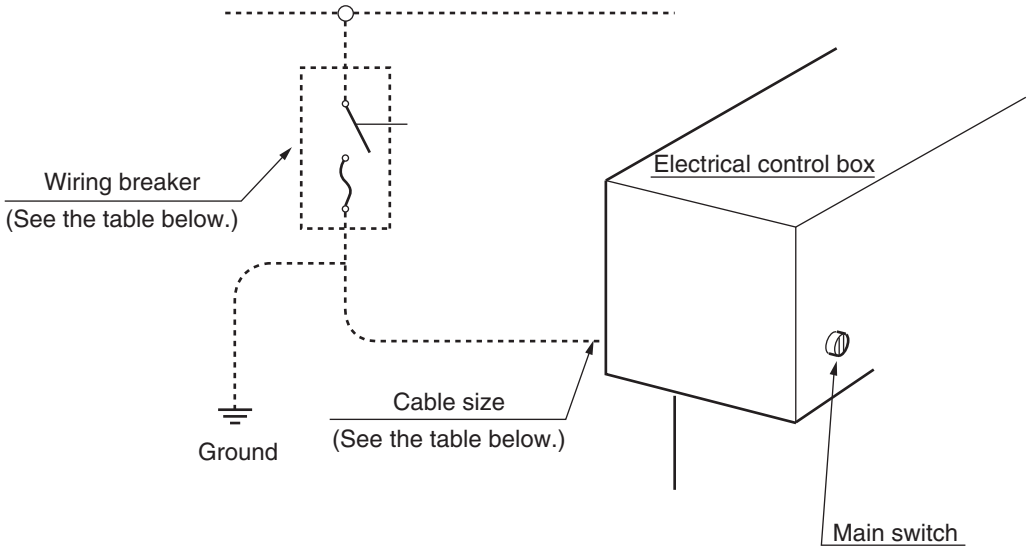
6. Power Requirements and Fuse Capacity

Power source:

Number of phases: 3 phases
Frequency: 50/60 Hz
Voltage: See the table below (±10%)
Source inductance: See the table in the subsection 6-4. Supplement.
Connect the transformer (optional) according to the power voltage.
Supply the power 200 V if no transformer is installed.



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	Standard spindle		Standard spindle w/ higher motor output		Large diameter spindle	
Required power	**27.4 kVA (29.7 kVA)**		**36.4 kVA (38.7 kVA)**		**36.4 kVA (38.7 kVA)**	
Rated voltage	**Rated current capacity of wiring breaker**	**Cable thickness**	**Rated current capacity of wiring breaker**	**Cable thickness**	**Rated current capacity of wiring breaker**	**Cable thickness**
200V	100A	30mm^2	125A	38mm^2	125A	38mm^2
220V	100A	30mm^2	125A	38mm^2	125A	38mm^2
230V	100A	30mm^2	125A	38mm^2	125A	38mm^2
380V	50A	14mm^2	75A	22mm^2	75A	22mm^2
400V	50A	14mm^2	75A	22mm^2	75A	22mm^2
415V	50A	14mm^2	75A	22mm^2	75A	22mm^2
440V	50A	14mm^2	75A	22mm^2	75A	22mm^2
480V	50A	14mm^2	75A	22mm^2	75A	22mm^2

Figures in the brackets ( ) are for the machine with a loader.

6-1. Inspection of Cable Connection

Connect the power wire in the correct phase order.
The hydraulic pressure will rise to the setting value (4.5 MPa) with the correct phase order.

CAUTION

1) Connect the ground wire to the external protective earth terminal (PE) in the control box.
2) Do not connect the power cord and the grounding wire in serial; if attempted, it will give adverse affect to other equipment or cause malfunctioning of the leak breaker, etc.
3) When a leak breaker is used, select the one meeting the following rating.
- **For inverter circuit use**
- **Sensitive current of 100 mA or more**
- **Middle-sensitivity high-speed inverter type**

4) Check that the momentary voltage variation rate is 15% or less as shown in 6-3. Measuring the Momentary Voltage Fluctuation Ratio.
If the momentary voltage variation rate exceeds 15%, the acceleration/deceleration time of the spindle may be lengthened or the protection circuit of the servo power unit may be activated.
5) For further information on instantaneous power regulation and power source inductance, please inquire at your Okuma representative.
6) To furnish the power supply line in the machine, pull the cable under the control cabinet where is advantageous for the dust and water prevention. Apply the protection against dust and water to the cable. The protection measurement is required also when pulled over the cabinet.
In addition, hold the power supply cable appropriately so that the tension wire will not hang on to the connection part of the main breaker of the power supply line.

6-2. Input Power Source Specifications

If the nominal rated voltage is other than 200 V, use a transformer to convert it to 200 V.

- Nominal rated voltage : 200 V
- Allowable voltage range : 180 to 220 Vrms (Includes voltage fluctuation caused by load)
- Frequency : 50/60 Hz
- Allowable frequency range : 49 to 61 Hz
- Power source inductance : Coefficient of momentary voltage fluctuation at the maximum output shall be within 15%. (Voltage fluctuation must be within the allowable range of the voltmeter.)

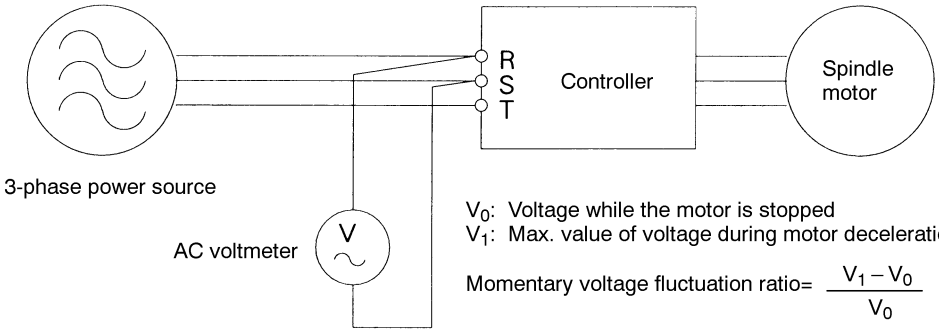
⚠ CAUTION

A large inductance of power source will cause acceleration/deceleration time of the spindle to be elongated. In addition, it may cause the protective circuit of the DC power supply unit to operate.
Output rating is guaranteed in the operation under nominal voltage rating. If input voltage varies, output rating may not be obtained even if the voltage is within the permissible range.

6-3. Measuring the Momentary Voltage Fluctuation Ratio

Procedure :

1- Connect an AC voltmeter to the power source terminals at the machine as shown in the illustration.



V_0: Voltage while the motor is stopped
V_1: Max. value of voltage during motor deceleration

Momentary voltage fluctuation ratio= $\frac{V_1 - V_0}{V_0} \times 100$ (%)

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2- Measure the voltage while the spindle motor stops and take it as V_0.

3- Measure the voltage while the spindle motor is decelerating, and take the maximum value as V_1.

4- Calculate the momentary voltage fluctuation ratio using the formula shown below.
Momentary voltage fluctuation ratio = $(V_1 - V_0) / V_0 \times 100$ (%)

Note

1) **It is recommended to use an analog voltmeter since the response of a digital voltmeter is rather slow and its reading is somewhat smaller than the true value.**
2) **Since measurement is not easy if a deceleration time is short, start spindle deceleration from a speed as high as possible.**
3) **Contact us for the instant voltage variation rate, if needed.**