

5-axis Vertical Machining Center

MX-520

MX-850

< Chain Magazine >

Matsuura G-Tech 31i

INSTALLATION



Matsuura

Matsuura Machinery Corporation
Japan

WARNING: This machine is subject to export controls under NSG, Chemical / Biological Weapon Control, MTCR, Wassenaar Arrangement and other international treaties. When exporting this machine, the compliance with regulations set by each member country is necessary.

About the Composition of Instruction Manual

The instruction manual is in four volumes.

- * This is a manual for <Installation>.

<Operation>

The following items required for operation are described.

- Section 1 Safety
- Section 2 Basic Operation and Automatic Operation
- Section 3 Set-up Operation
- Section 4 Daily Inspection
- Section 5 Alarms

<Programming>

The following items required for programming are described.

- Section 1 Specifications
- Section 2 Programming

<Maintenance and Troubleshooting>

The following items required for maintenance work and troubleshooting operation are described.

- Section 1 Maintenance
- Section 2 Troubleshooting
- Appendix

<Installation>

The items required for machine installation work are described.

Introduction

Matsuura Machinery Corporation designs and manufactures machines giving first priority to safety precautions, to allow customers to use the machines safely and effectively.

However, every machine tool has potential dangers. If operators misuse the machine or ignore safety instructions, it can result in personal injury or property damage, and in some cases, serious injury or death.

It is most essential that all operators and service personnel pay attention to the safety instructions when operating or servicing the machine.

The safety instructions in the manual are classified in the following three levels according to the seriousness of possible damage to persons or property.



DANGER

- Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

- Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

- Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.



- Indicates a situation which, if not avoided, may result in machine damage or shortened service life of the machine.

* Strictly follow all safety instructions to prevent accidents or machine damage.

Note on exportation to a third country

The machine is manufactured in compliance with laws and regulations that are effective in your country. Therefore, if you would like to resell or move the machine to a third country, it is mandatory to comply with laws and safety regulations of that country. Consult Matsuura if any modifications are necessary.

Note on transfer

If you transfer this machine, provide this manual and other attached documents to the next owner.

Disposal of oil and machine

If you dispose of the machine after the service life expires, follow instructions given by the applicable legal and governmental regulations. Also, disposal of hydraulic oil or coolant may be regulated. Please check and follow the mandatory procedures.

Composition of this manual and documents attached

The manual and attached documents are absolutely necessary for safe and proper operation of the machine. Keep them in a fixed place for an easy access anytime required.

Machine modifications prohibited

Never modify the machine in any way including software and parameters.

Matsuura shall not be responsible for any personal injury or damage to the machine that occur after such modifications are made.



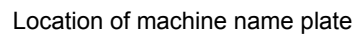
- **This manual gives information the standard and optional machine features. Specially designed features are discussed in separate manuals.**
- **The design of the product is under constant review and whilst every effort is made to keep this manual up to date, the right is reserved to change specifications and equipment at any time without prior notice.**

Further inquiries

If you have any questions or doubts about information contained in this manual, please feel free to contact Matsuura or your distributor.

- Model : MX-520 / MX-850
- Manufacturer : Matsuura Machinery Corporation

This is a detailed architectural section drawing of a building. The drawing shows the internal layout, including rooms, corridors, and structural elements like walls and floors. A large black arrow points upwards from the ground level, indicating a specific point of interest or a section cut. The drawing is a line drawing with black lines on a white background.



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1	Safety Instructions for Installation	INST-1
2	Installation Site	INST-4
2-1	Installation Environment	INST-4
2-2	Floor Space	INST-5
2-3	Foundation	INST-11
3	Lifting Machine	INST-18
4	Power Connection	INST-21
4-1	Input Power Voltage	INST-21
4-2	Cable Connection	INST-22
5	Grounding	INST-24
6	Air Connection	INST-25
7	Oiling	INST-26
7-1	Oil Table	INST-26
7-2	Recommended Oil List	INST-27
8	Operation Preparation	INST-28
8-1	Removing the Fixtures and Fixing the Cover	INST-28
8-2	Cleaning	INST-31
8-3	Power ON	INST-32
9	Leveling	INST-33
10	Spindle Warm-up Method at the time of Machine Installation	INST-34
11	Network Setting Procedure for E-mail Notification Function	INST-35
11-1	Network Configuration	INST-35
11-2	Setting on the Main Operation Panel	INST-36
11-3	Setting on the Tool Magazine Operation Panel (for ATC) / Work Station Operation Panel (for APC) (Option)	INST-41
11-4	Network Cable Connection	INST-48
11-5	Checking E-mail Transmission	INST-49

1 Safety Instructions for Installation

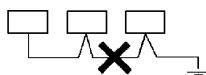
(1) Safety Instructions for Installation

DANGER



- Only officially qualified engineers are authorized to connect electrical wiring, to lift the machine by crane or forklift, or to hoist the machine. Unqualified persons are prohibited from doing so.
- Never reach or stand under the raised machine.
- Electric connection must be done by qualified electricians. Shut the power off before connecting the ground cable. Do not connect the machine to the primary switchboard before all electric connections are completed.
- Put a sign to notify other personnel that electric connection is being made.

WARNING



- When relocating or installing the machine, make sure to contact your distributor.
- To avoid electric shock, connect the grounding cable to the “E” terminal in the electric control box, and establish a ground in compliance with nationally recognized safety standards on grounding. Do not share the grounding conductor (independent grounding only).
- Check the following safety conditions of installation site.
 - The foundation bolts which are placed under the ground are clearly marked to prevent operators from tripping on them or to avoid damaging the machine and transportation units.
 - Cover up pits for waste oil, chips or piping to prevent accidents caused by falling or tripping.
 - Remove obstacles from the floor or passages, and wipe off any oil and water from the floor.
- Use a stable step or foothold when working at an elevated place which is out of your reach standing on the floor.
- When several operators should work in cooperation, determine a chief person whose instructions other members follow.
 - Make a sign to each other before operation.
 - Proceed with the operation one by one while checking the safety.
- Cover up wiring which is unavoidably placed on the floor, to protect it from chips or stepping.



WARNING

- When lifting the machine, use undamaged wire ropes, shackles and hoist jigs of the specified size, so that they can sufficiently bear the machine weight.
- Power cable from the primary terminal to the main power switch must be of sufficient nominal cross sectional area to stably supply the power required for operation.



CAUTION

- Completely wipe rust preventive oil away from the slideways using wash oil.
- Remove eye bolts and fixtures attached for transportation.
- Perfectly level the machine. (Adjust it within the value specified in the inspection data sheet attached.)
- After installation, check the following items before turning the power on:
 - Electric wiring and oiling are completed.
 - All the bolts and cannon connectors are securely tightened.
 - All hydraulic and air pipes are correctly connected and securely tightened.
 - Oil and grease are appropriately supplied according the instructions given in the instruction manual.
 - Water and dust are wiped away from the machine.
 - No oil leakage is found around the machine.

(2) Attention for setting pallet



DANGER



- Only qualified persons can operate crane, forklift and lifting up work. Unqualified persons are prohibited to operate.
- Never enter under the lifting up of work.



WARNING

- Wire rope and slings must be provide for lifting purpose. Never use breaking, lose shape and decay of wire.



CAUTION

- Be sure to wear safety gloves when cleaning up.
- Always keep clean on the table that put tool back to storage after work.

(3) Matters for caution relative to coolant

Use the coolant which satisfies the following items.

- 1. No bad influence on the human body**
- 2. No erosion of machine parts (iron, copper, aluminum, etc.)**
- 3. No bad influence on the painted surfaces**
- 4. Good cooling capability**
- 5. Good cutting capability**



CAUTION

- Handle coolant with utmost care. If coolant gets into your eyes, as it is possible that inflammation is caused, be sure to wear safety glasses for handling coolant. If touching coolant with bare hands, as it is possible that inflammation and eczema are caused, be sure to wear safety gloves for handling coolant. Keep it in mind that soot and mist may cause trouble with your eyes or throat (in case of allergy in particular). It is desirable to install the mist collector on the machine and the correct ventilators in the factory.
- It is possible that some coolant discolors, rusts or erodes the machine and workpiece, or has painting come off. Be sure to select appropriate coolant finally after testing for a trial period.
- Never use ignitable coolant. It is possible that ignitable coolant catches fire by cutting heat during machining.
- In case of water-soluble coolant, it is possible that the same coolant capacity and performance as the catalog are not obtained because a chemical reaction is produced by the ingredients and property of water to mix coolant with. When desired capacity and performance cannot be obtained, it is assumed that the used water and coolant are ill-matched. Please contact the coolant-maker, and tell them a kind of the workpiece as well as the quality of the water for making a total judgment.
- Be sure to observe the mixture method, procedure and concentration specified by the coolant-maker. Periodically check the coolant concentration.
- Matsuura does not answer for a machine fault such as trouble, rust, etc. which result from coolant. You are kindly requested to choose and use appropriate coolant after properly examining it.

2 Installation Site

2-1 Installation Environment

Ambient temperature: 10°C ~ 35°C(20°C ± 2°C recommended)

Temperature change: 1°C/30 min. (1°C/h recommended)

Humidity: 75% or less (no visible moisture)



- Install the machine in a place free from partial temperature rise caused by direct sunlight or heat source. Thermal displacement caused by partial temperature rise may result in impairing machining accuracy.

Vibrations: 0.5G (4.9 m/s²) or less



- Install the machine in a place where vibrations from press machines or forging machines are not transmitted. Vibrations impair machining accuracy and may cause damage to the machine.

Dust: 0.3 mg/m³ or less (recommended)



- Install the machine in a place free from dust, dirt or mist.
- Install the machine in a place free from chips, water or oil splashing from other machines.

2-2 Floor Space

Secure the floor space referring to the floor plan.

**NOTICE**

- Provide sufficient space for pulling out the coolant tank.
- Provide sufficient space for opening doors for maintenance purpose.
- Provide sufficient space for mounting or dismounting workpieces.
- The floor plan depends on the optional equipment provided to the machine. For machines with special attachments, request Matsuura to submit applicable floor plan.

(1) Standard specification

MX-520

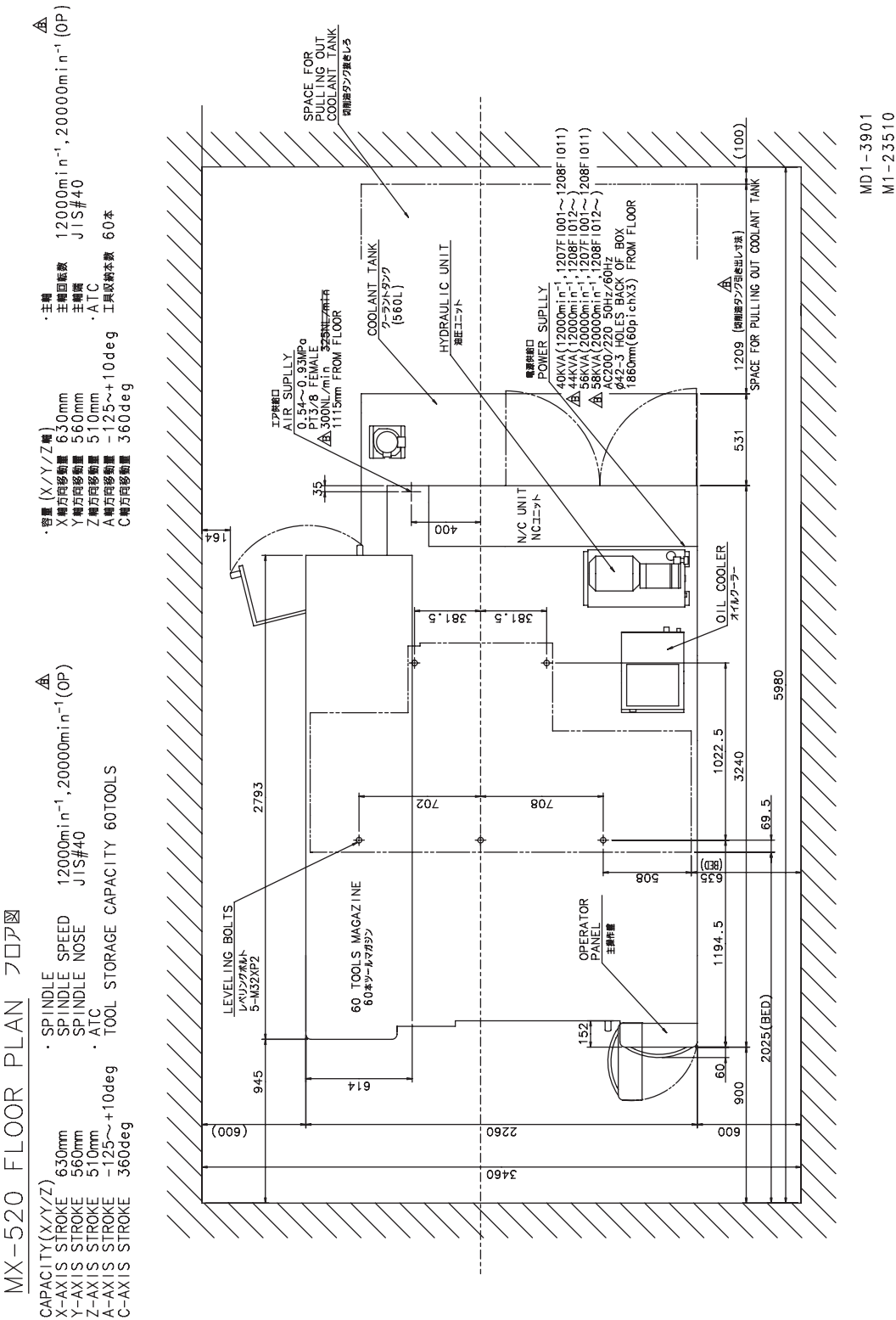


Fig. 1

MX-850

MX-850 FLOOR PLAN

フロア図

容量
X軸方向移動量 900mm
Y軸方向移動量 780mm
Z軸方向移動量 650mm
A軸方向移動量 -125~+30deg
C軸方向移動量 360deg

主軸
主軸回転数 12000min⁻¹
主軸規格 JIS#40
ATC
工具収納本数 60本

CAPACITY
X-AXIS STROKE 900mm
Y-AXIS STROKE 780mm
Z-AXIS STROKE 650mm
A-AXIS STROKE -125~+30deg
C-AXIS STROKE 360deg

SPINDLE
SPINDLE SPEED 12000min⁻¹
SPINDLE NOZE JIS#40
ATC
TOOL STORAGE CAPACITY 60 TOOLS

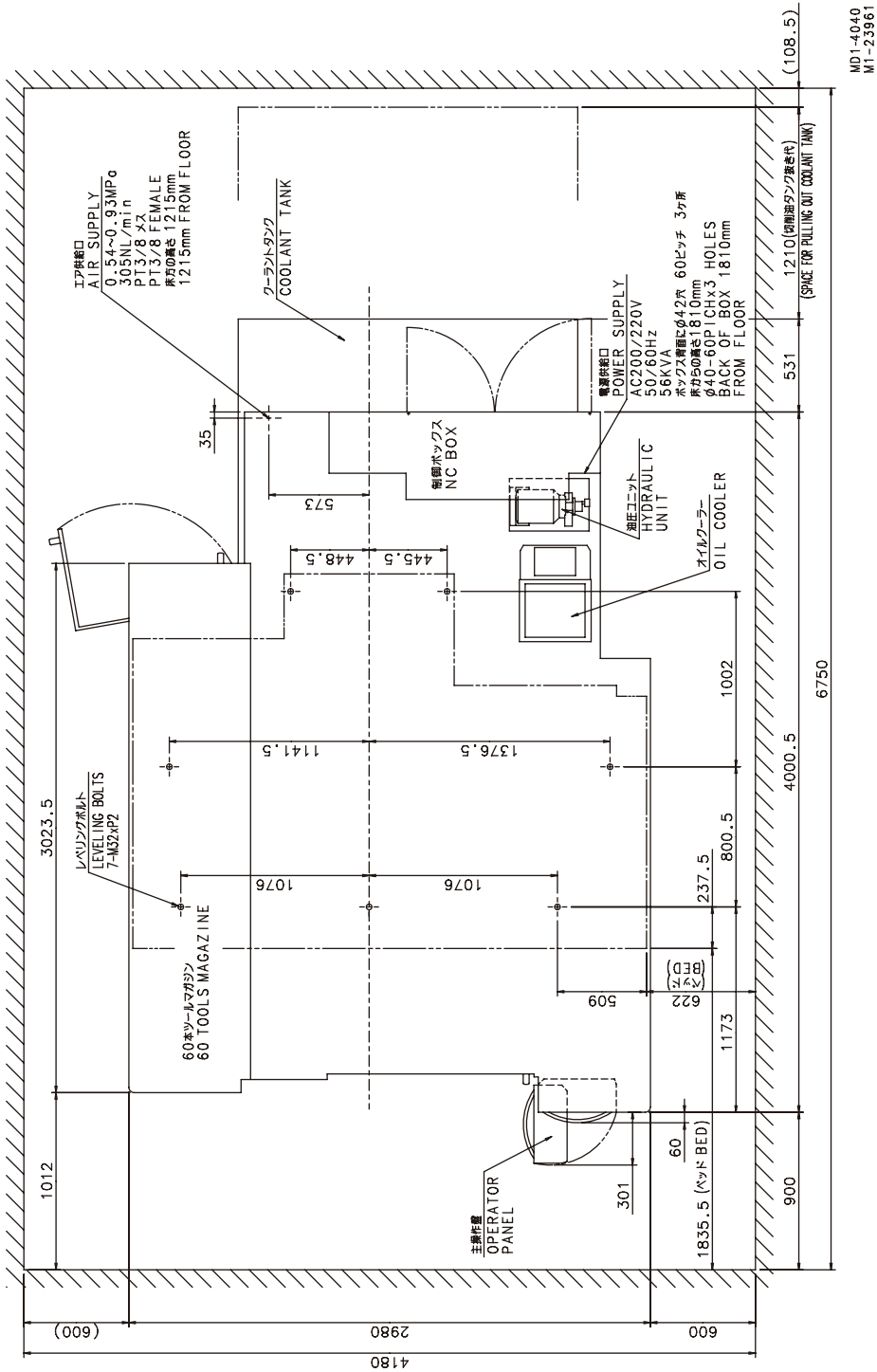


Fig. 3

(2) Lift-up chip conveyor specification

MX-520

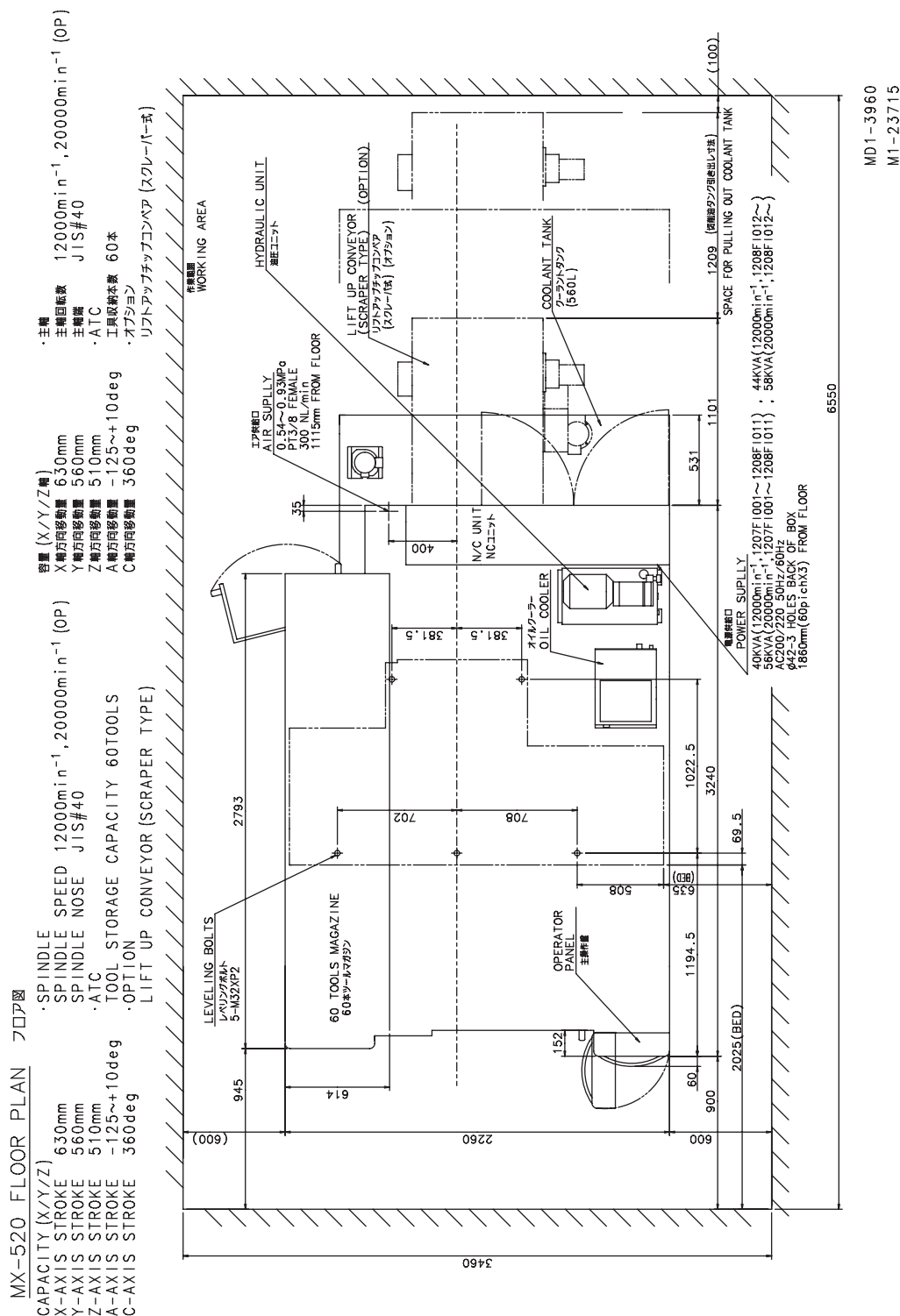


Fig. 4

MX-850 FLOOR PLAN

項目	主軸	スチジョン	CAPACITY	SPINDLE	OPTION
X軸方向移動量	900mm	12000m・min ⁻¹	X-AXIS STROKE	SPINDLE SPEED 12000m・min ⁻¹	LIFT UP CHIP CONVEYOR (SCRAPER TYPE)
Y軸方向移動量	780mm	主軸回転数	Y-AXIS STROKE	SPINDLE NOZE JIS#40	CHIP BASKET
Z軸方向移動量	650mm	ATC	Z-AXIS STROKE	ATC	
A軸方向移動量	-125~+30deg	工具収納本数	A-AXIS STROKE	-125~+30deg	
C軸方向移動量	360deg	工具収納本数	C-AXIS STROKE	TOOL STORAGE 60	CAPACITY 60 TOOL S

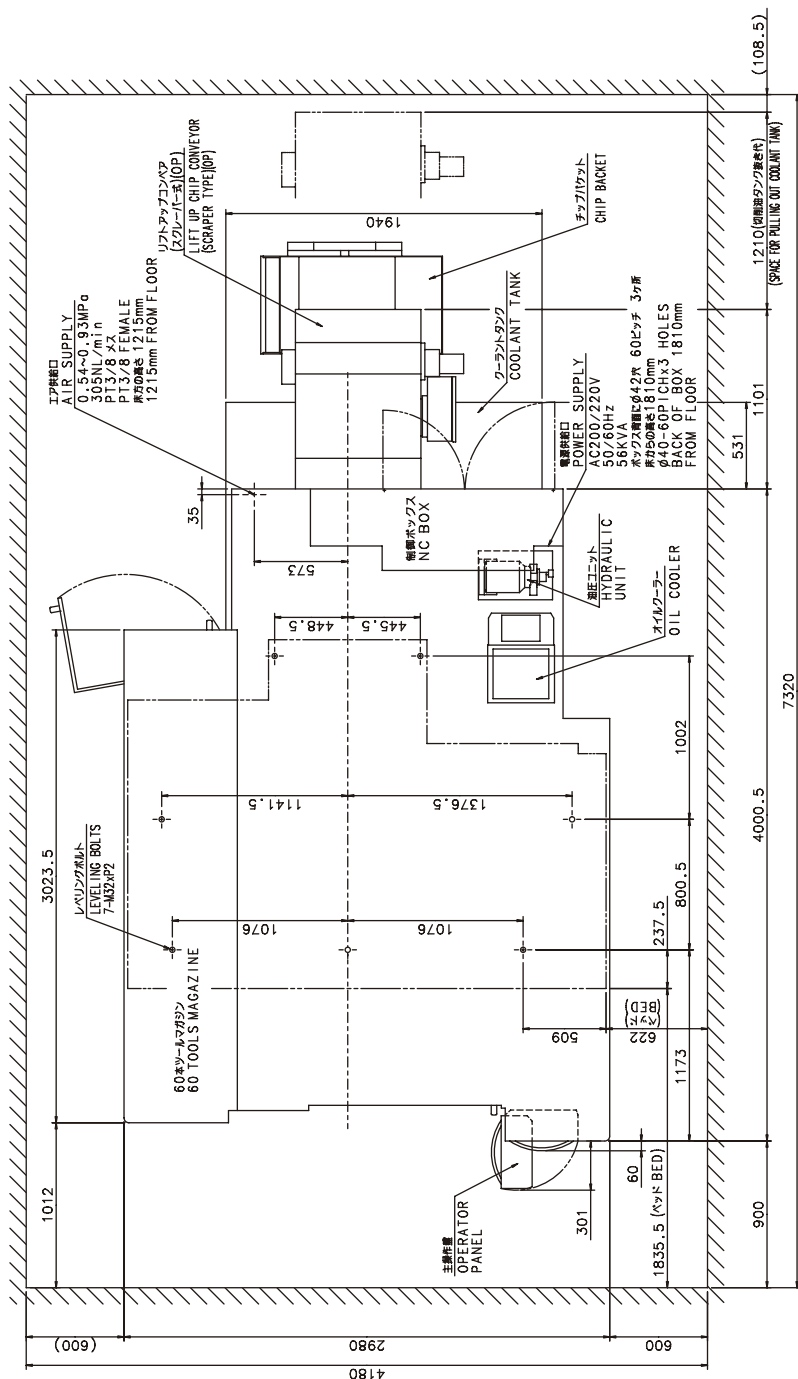


Fig. 5

MD1-4036
M1-23951

2-3 Foundation

Construct the foundation as given by the foundation drawing. Refer foundation construction to experts.



CAUTION

- Check level of the foundation at regular intervals.



NOTICE

- The required foundation depends on the optional equipment provided to the machine.
- Flatness (level) of the foundation must be within 10 mm.
- Soil bearing capacity of 51 kN/m² is required. If less than this level, reinforce the foundation by inserting reinforcing bars.

(1) Foundation Drawing

MX-520

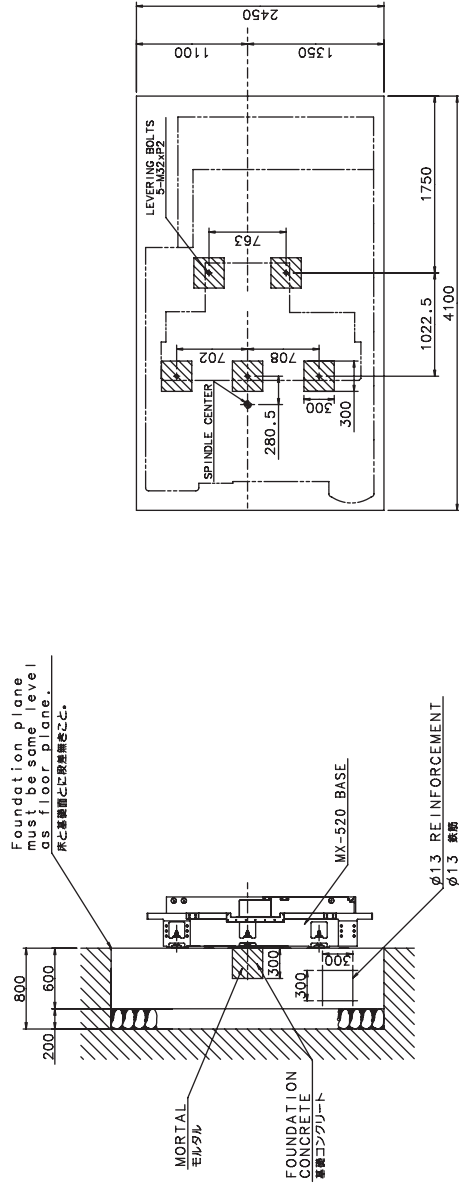
MX-520
基礎図 (1)
FOUNDATION (1)

- 注意
- 1) 本機を設置する場合は必ずアンカーボルトにて固定する事を徹底下さい。
 - 2) 各アンカーボルトの位置の許容差は、それぞれの取付位置に対して 5mm以内です。
 - 3) 本機を据え付ける床は本機重量に十分に耐えるものを御用意下さい。
 - 4) 基礎コンクリートの厚みと広さは地耐力により異なります。必要ならば、鉄筋を入れ補強して下さい。
 - 5) 床面のレベルは全長に亘り5mm以内の平面に仕上げして下さい。
 - 6) アンカーボルト詳細はM2-33798に示されています。

- NOTE:
- 1) When you install the machine, you have to fix it with the anchor bolts as shown below.
 - 2) The deviation from the correct anchor bolt positioning has to be less than 5mm.
 - 3) The floor has to be strong enough to bear the whole machine weight and APC system.
 - 4) The thickness and area of concrete required varies, since it is dependent on the rigidity of ground structure.
 - 5) If necessary, reinforce the concrete with reinforcing bars.
 - 6) The variation in height of the concrete surface must be less than 5mm.
- The anchor's detail is shown in M2-33798.

WEIGHT ■■■	
TOTAL MACHINE WEIGHT (WG)	8,900kg
MAX WORK WEIGHT (WW)	200kg
MAX TOOL WEIGHT (WT)	600kg (60X10kg)
WEIGHT OF FOUNDATION (WF)	13,300kg

NECESSARY STRENGTH OF GROUND 必要地耐力	
FACTOR OF SAFETY (FS)	2
$\frac{(WG+WW+WT+WF) \times (FS)}{\text{BASE AREA}}$	
4.6ton/m ²	



MD1-3974
M1-23771

Fig. 6

MX-520 (Machine equipped with 90 -tool magazine)

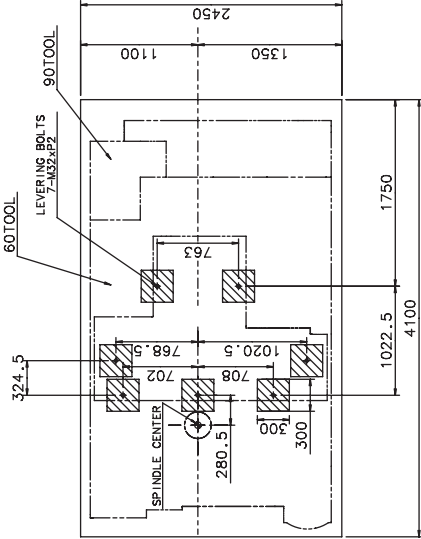
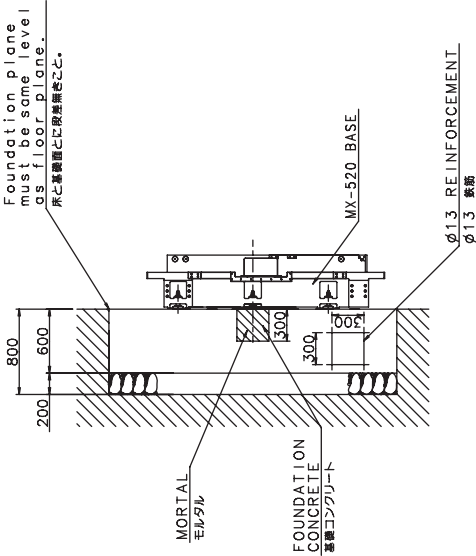
MX-520
基礎図 (1)
FOUNDATION (1)

- 注意
- 1) 本機を設置する場合は必ずアンカーボルトにて固定する事を要請下さい。
 - 2) 各アンカーボルトの位置の許容差は、それぞれ絶対位置に対して5mm以内の事。
 - 3) 本機を据え付ける所は本機重量に十分に耐えるものを用いて下さい。
 - 4) 基礎コンクリートの厚みと広さは地耐力により異なります。必要ならば、鉄筋を入れ補強して下さい。
 - 5) 床面のレベルは全機に渡り5mm以内の平面に仕上げて下さい。
 - 6) アンカーボルト詳細はM2-00000に示されています。
- NOTE:
- 1) When you install the machine, you have to fix it with the anchor bolts as shown below.
 - 2) The deviation from the correct anchor bolt positioning has to be less than 5mm.
 - 3) The floor has to be strong enough to bear the whole machine weight and APC system.
 - 4) The thickness and area of concrete required varies, since it is dependent on the rigidity of ground structure.
 - 5) If necessary, reinforce the concrete with reinforcing bars.
 - 6) The variation in height of the concrete surface must be less than 5mm.
- The anchor's detail is shown in M2-35621.

WEIGHT	60TOOL	90TOOL
TOTAL MACHINE WEIGHT (WG) 機体重量	8,900kg	8,900kg
MAX. WORK WEIGHT (WW) 加工物重量	200kg	200kg
MAX. TOOL WEIGHT (WT) 工具重量	600kg (60X10kg)	900kg (90X10kg)
WEIGHT OF FOUNDATION (WF) 基礎重量	13,300kg	13,300kg

NECESSARY STRENGTH OF GROUND 必要地耐力	
FACTOR OF SAFETY (FS) 安全率	2
$\frac{[WG+WW+WT+WF] \times (FS)}{\text{BASE AREA}}$ 必要地耐力	4.6ton/m ² 4.6ton/m ²

Fig. 7



MD1-4364A
M1-24949

MX-850

MX-850
基礎図 (1)
FOUNDATION (1)

注意

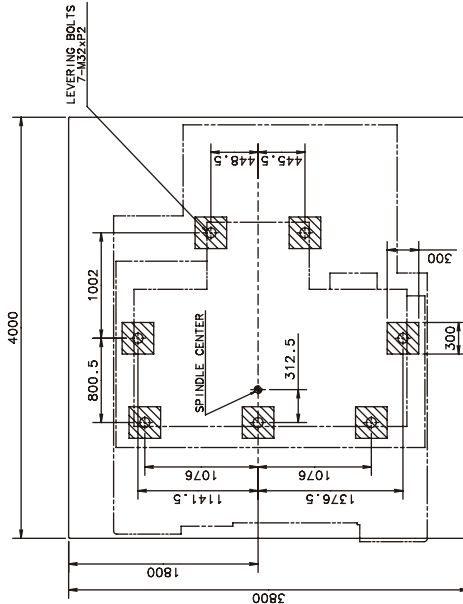
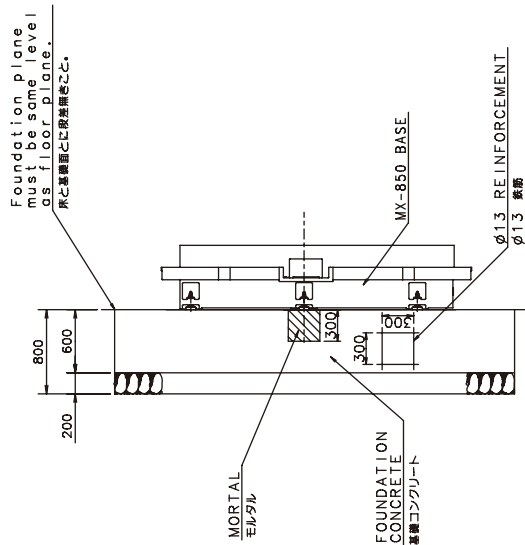
- 1) 本機を設置する場合は必ずアンカーボルトにて固定する事を考慮下さい。
- 2) 各アンカーボルトの位置の許容差は、それぞれの絶対位置に対して5mm以内の事。
- 3) 本機を据え付ける床は本機重量に十分耐えるものを御用意下さい。
- 4) 基礎コンクリートの厚みと広さは地盤力により異なります。必要ならば、鉄筋を入れ増強して下さい。
- 5) 床面のレベルは全機に亘り5mm以内の平面に仕上げて下さい。
- 6) アンカーボルト詳細はM2-33985 に示されています。

NOTE:

- 1) When you install the machine, you have to fix it with the anchor bolts as shown below.
 - 2) The deviation from the correct anchor bolt positioning has to be less than 5mm.
 - 3) The floor has to be strong enough to bear the whole machine weight.
 - 4) The thickness and area of concrete required varies, since it is dependent on the rigidity of ground structure.
 - 5) If necessary, reinforce the concrete with reinforcing bars.
 - 6) The variation in height of the concrete surface must be less than 5mm.
- The anchor's detail is shown in M2-33985

WEIGHT 重量	
TOTAL MACHINE WEIGHT (WG) (CALCULATION) 機械総重量 (推定)	16,000kg
MAX WORK WEIGHT (WW) 加工物重量	500kg
MAX TOOL WEIGHT (WT) 工具重量	300kg
WEIGHT OF FOUNDATION (WF) 基礎重量	20,000kg

NECESSARY STRENGTH OF GROUND 所要地盤力	
FACTOR OF SAFETY 安全係	2
$\frac{(WG+WW+WT) \times [FS]}{\text{BASE AREA}}$	4.9ton/m ²



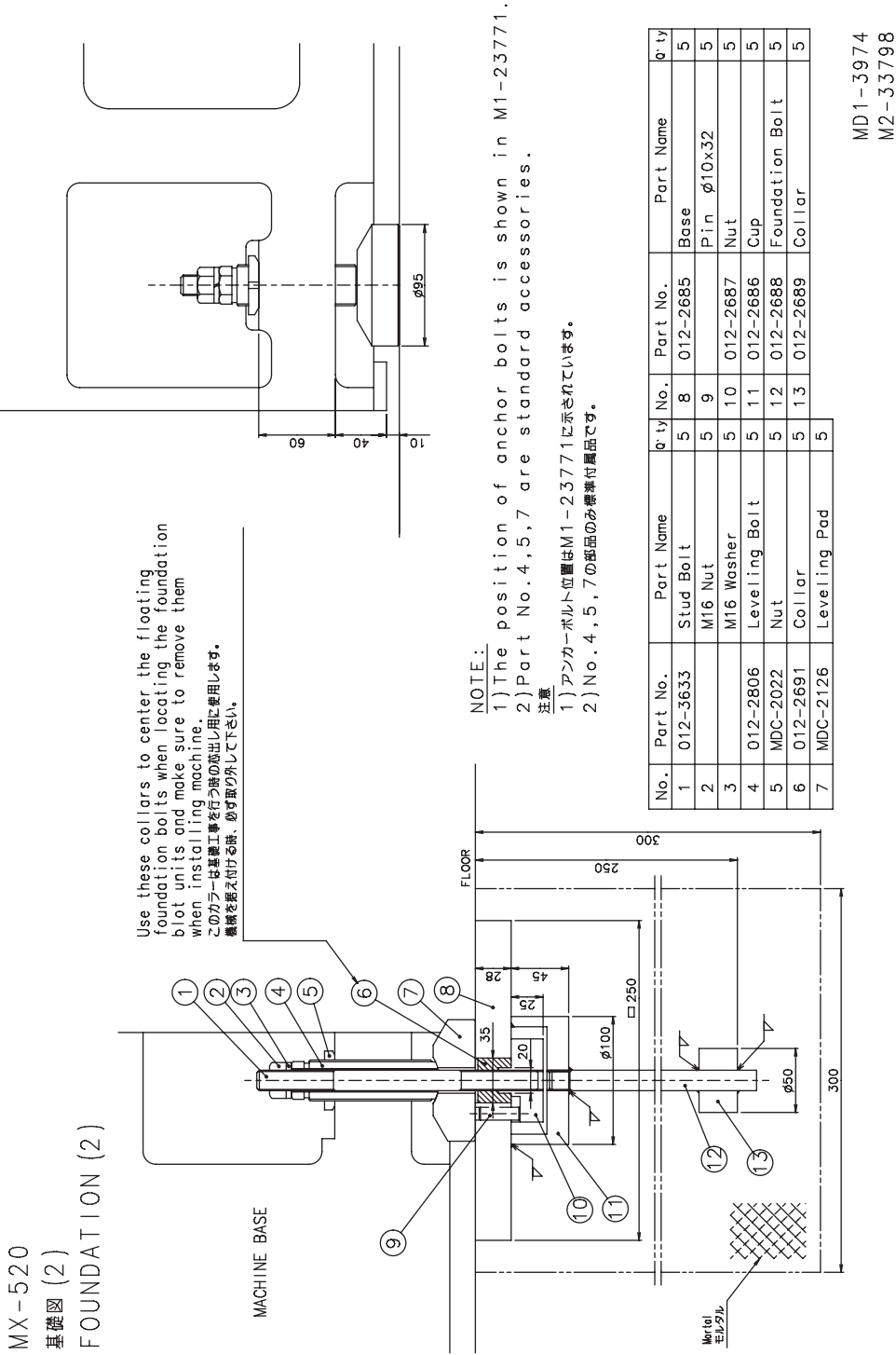
MD1-4034
M1-23949

REFERENCE ONLY
CONFIDENTIAL

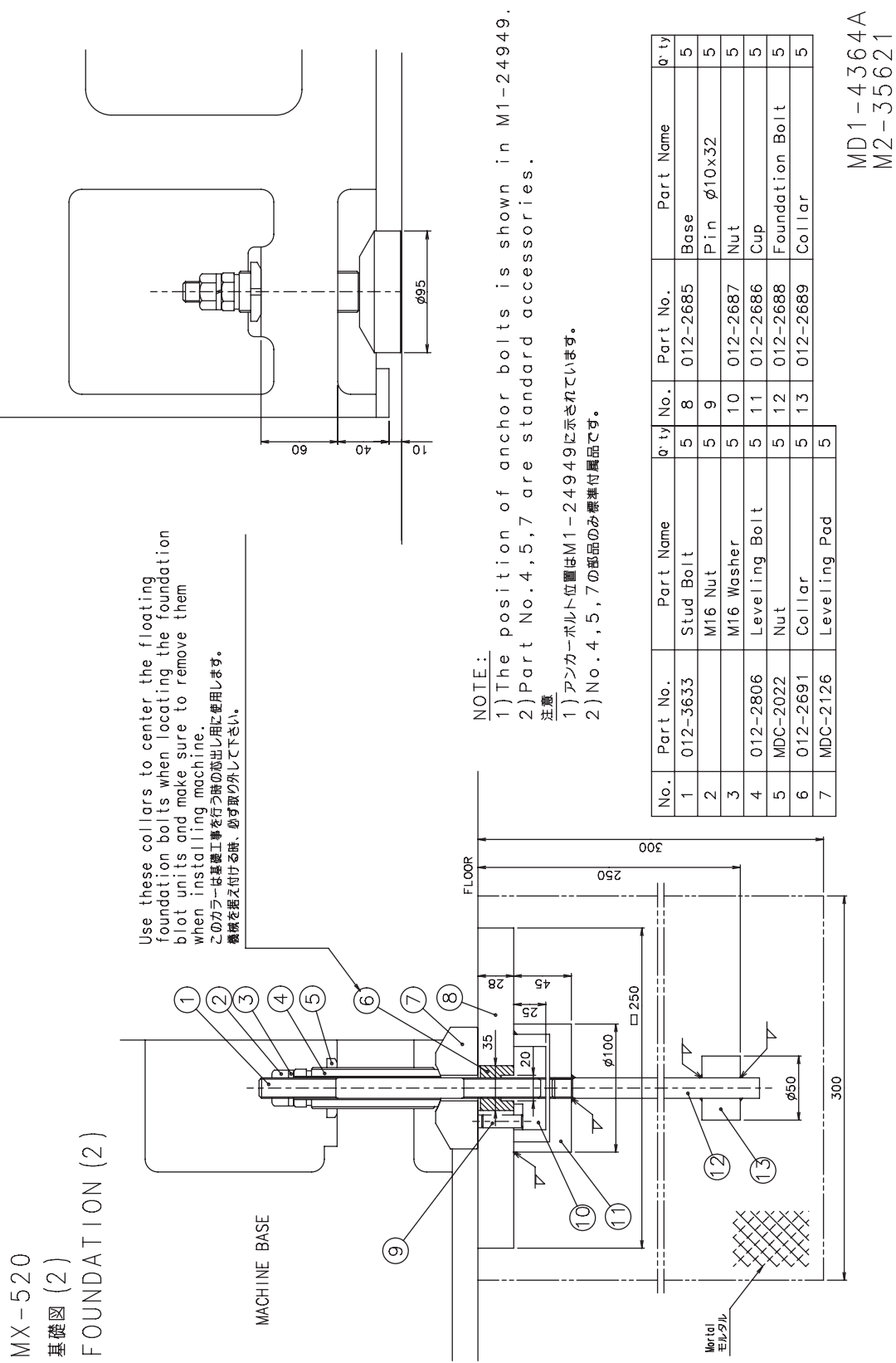
Fig. 8

(2) Foundation Drawing

MX-520



MX-520 (Machine equipped with 90 -tool magazine)



MX-850

MX-850

基礎図(2)

FOUNDATION (2)

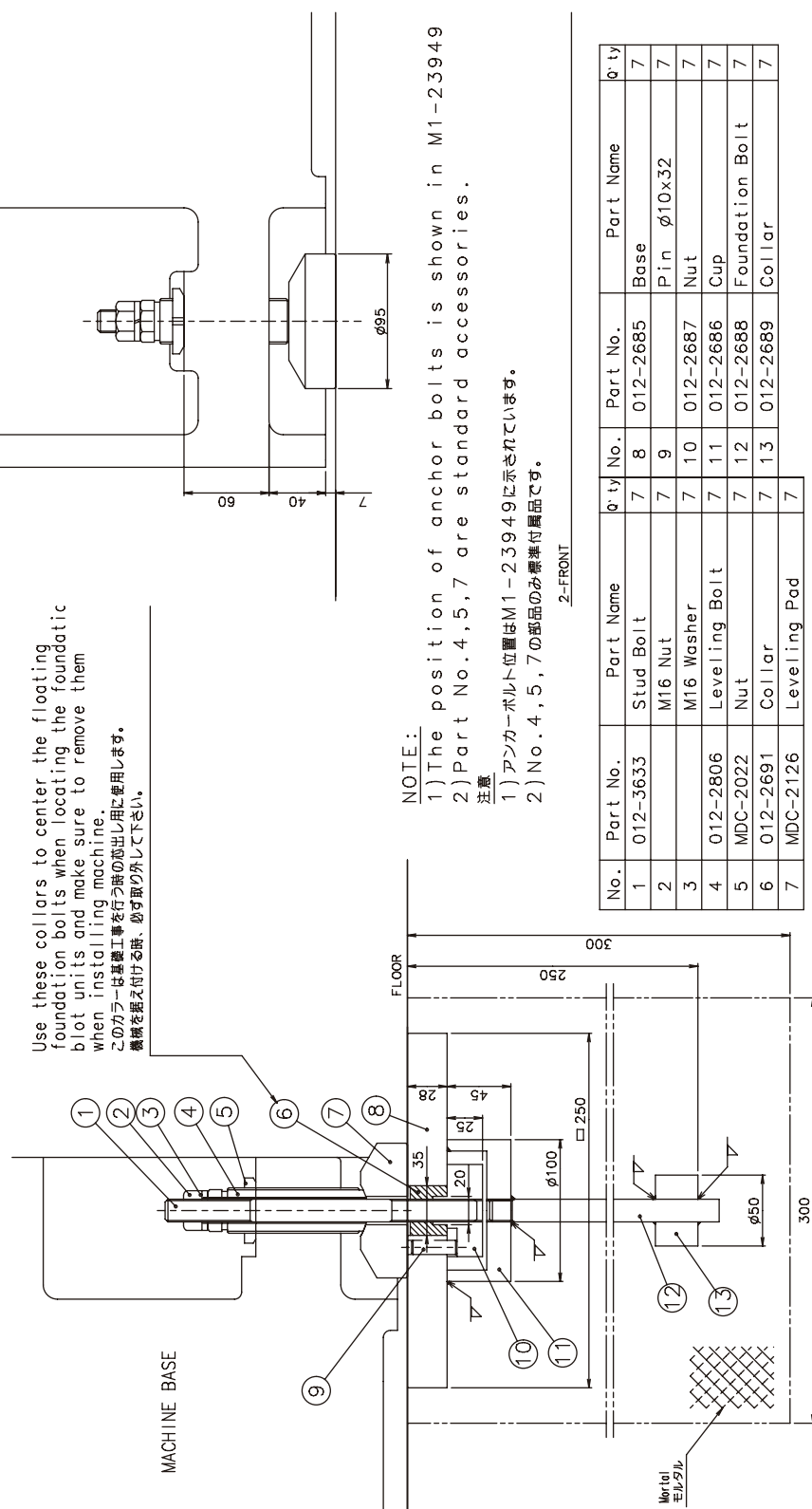


Fig. 11

MD1-4034
M2-33985

3 Lifting Machine



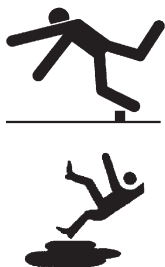
DANGER



- Only the officially qualified engineers are authorized to lift the machine by crane or forklift, or to hoist the machine. Unqualified persons are prohibited from conducting these works.
- Never reach or stand under the raised machine.



WARNING



- When relocating or installing the machine, make sure to contact your distributor.
- Use a lifting jig that can sufficiently bear the machine weight.
- Cover the parts of the machine where the wire ropes are tied with pieces of woods or cloth.
- When several operators should work in cooperation, determine a chief person whose instructions other members follow.
 - Make a sign each other before operation.
 - Proceed operation one by one while checking the safety.
- Check the following safety conditions of installation site.
 - The foundation bolts which are placed under the ground are clearly marked to prevent operators from tripping on them or to avoid damaging the machine and transportation units.
 - Cover up pits for waste oil, chips or piping to prevent accidents caused by falling or tripping.
 - Remove obstacles from the floor or passages, and wipe off any oil and water from the floor.



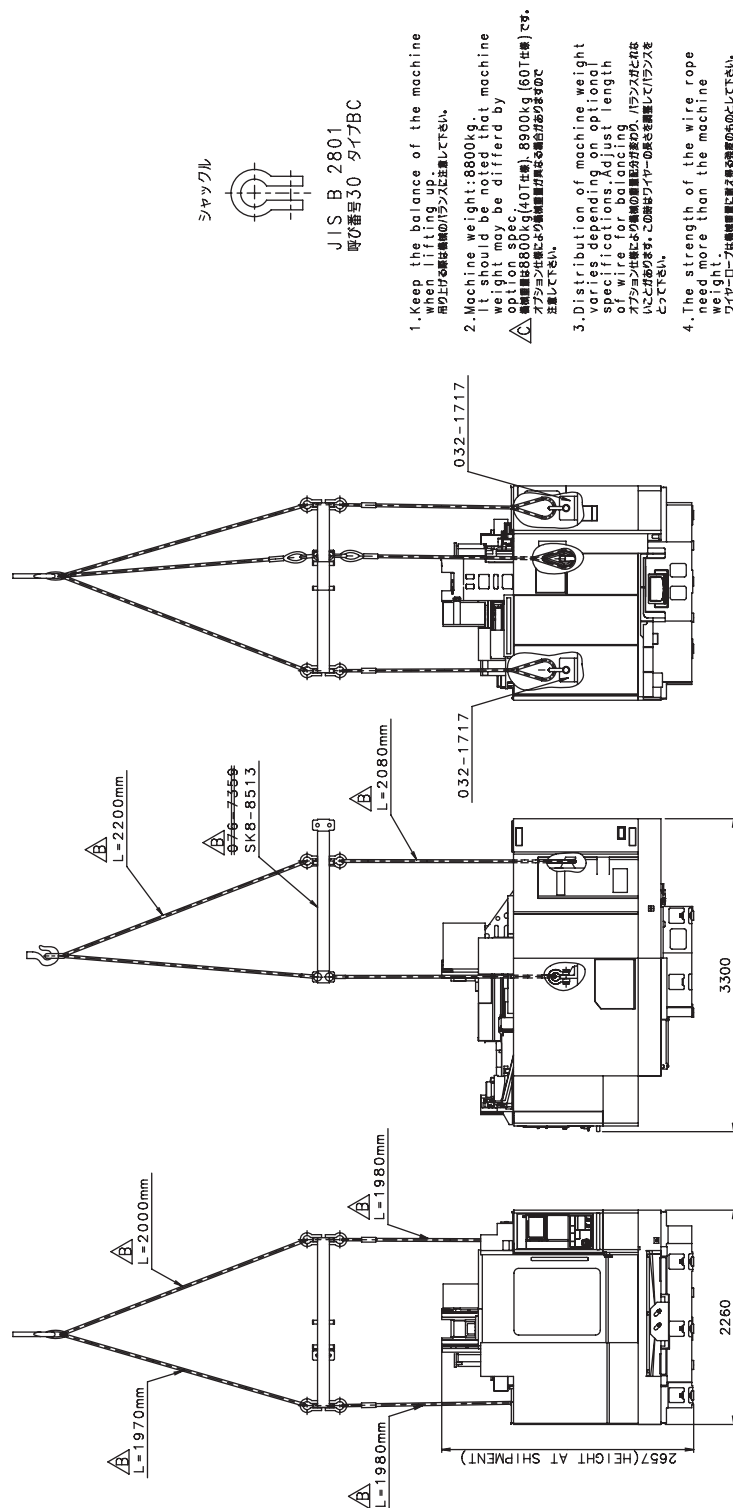
CAUTION

- Lift the machine slowly while checking the balance.
- Never give vibrations or physical shocks to the machine.

Lifting the machine

MX-520

LIFTING THE MACHINE 機械の吊り上げ方法



MC1-3809
M2-32773

Fig. 12

MX-850

参考図
REFERENCE PURPOSE ONLY

LIFTING THE MACHINE
機械の吊り上げ方法

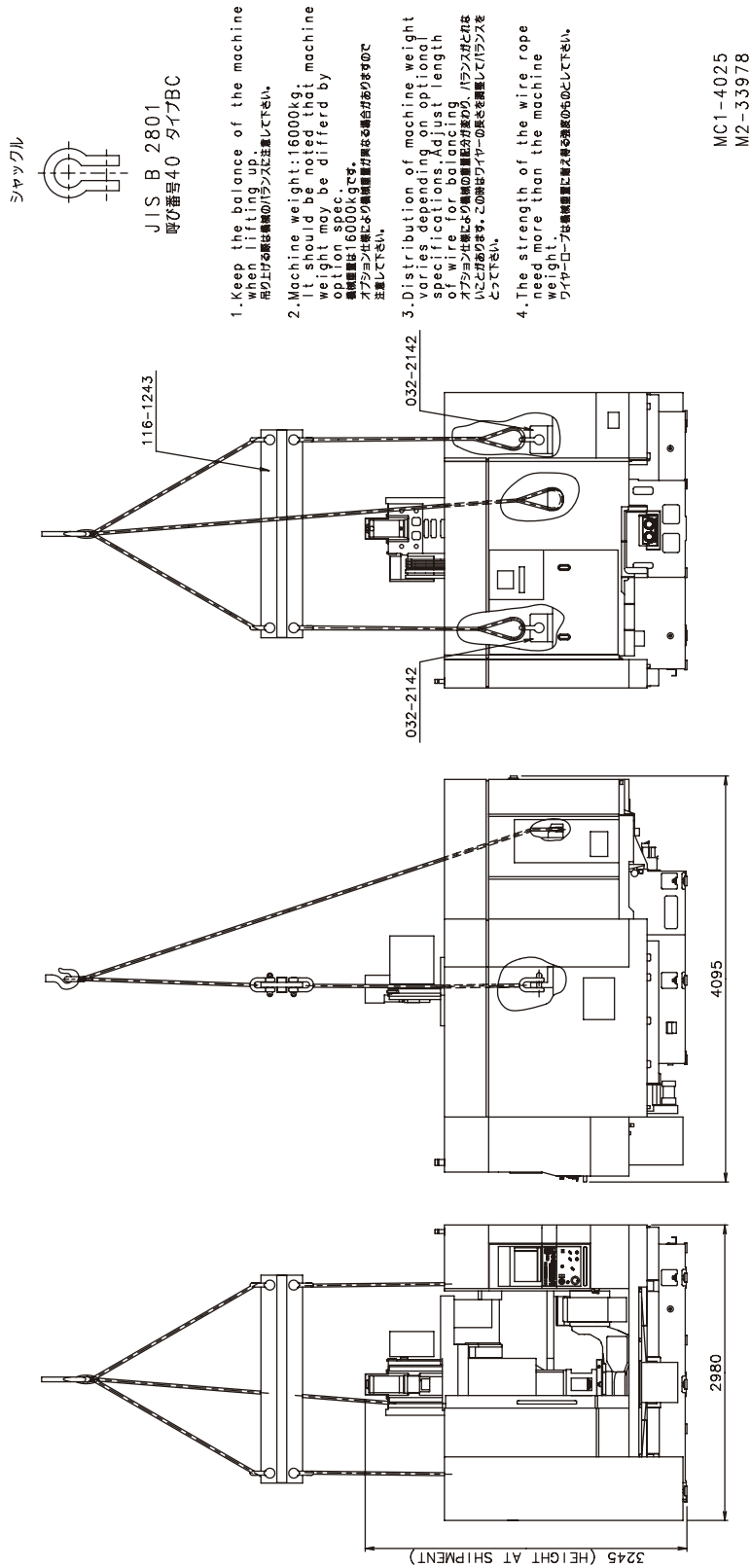


Fig. 13

4 Power Connection

4-1 Input Power Voltage

Use power cables that can sufficiently carry the electric capacity required for the machine.

**WARNING**

- Power cable from the primary terminal to the main power switch must have a nominal cross sectional area that can stably carry the electric capacity required for the machine.

Power voltage : AC 200/220 Vac \pm 10%
: 50/60 Hz \pm 1 Hz

Electric capacity: 44 kVA (MX-520)
56 kVA (MX-850)

**NOTICE**

- Total electric capacity required for the machine depends on the optional attachments provided.

4-2 Cable Connection



DANGER



- Electric connection must be conducted by qualified electricians. Any other personnel are prohibited from doing so.
- Shut the power off before connecting the power cable and the ground cable. Do not connect the machine to the primary switchboard before all electric connections are completed.
- Put a sign saying “DO NOT TURN POWER ON” to notify other personnel that electric connection is being made.
- Never touch damaged electric wires or cables. Electric leakage or shock may result. Thoroughly check electric wires and cables for damage before turning the power on.



WARNING

- Cover up wiring which is unavoidably placed on the floor, to protect them from chips or stepping.

- * Transformer is not included in the package; please prepare one on your own. (It should provide 200/220 Vac $\pm 10\%$ at the output side.)
- * Required electric capacity depends on the optional features provided to the machine.
 - Power supply voltage (primary): 380/400/440/480 Vac $\pm 10\%$, 50/60 Hz ± 1 Hz
 - Power supply voltage (machine): 200/220 Vac $\pm 10\%$, 50/60 Hz ± 1 Hz
 - Required electric capacity: 44 kVA (MX-520)
56 kVA (MX-850)

Power cable connection (Refer to the figures on the next page.)

1. An additional box is attached to the rear of the power supply box. Connect the primary power cable (1) to the no-fuse breaker (QF0) in the box.
2. Connect from (2) of the no-fuse breaker (QF0) to (3) the transformer (TM1).
3. Connect from (4) of the transformer (TM1) to (5) of the no-fuse breaker (QF1) in the electric control box.

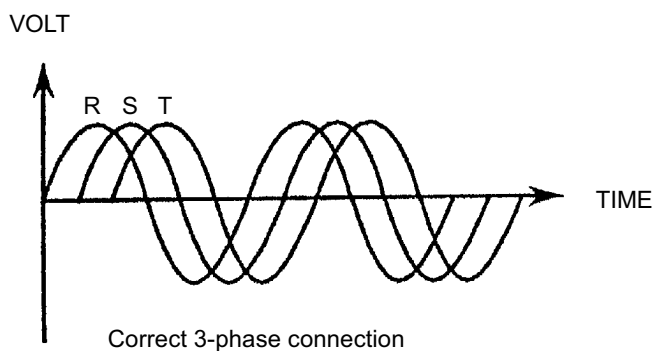


Fig. 14

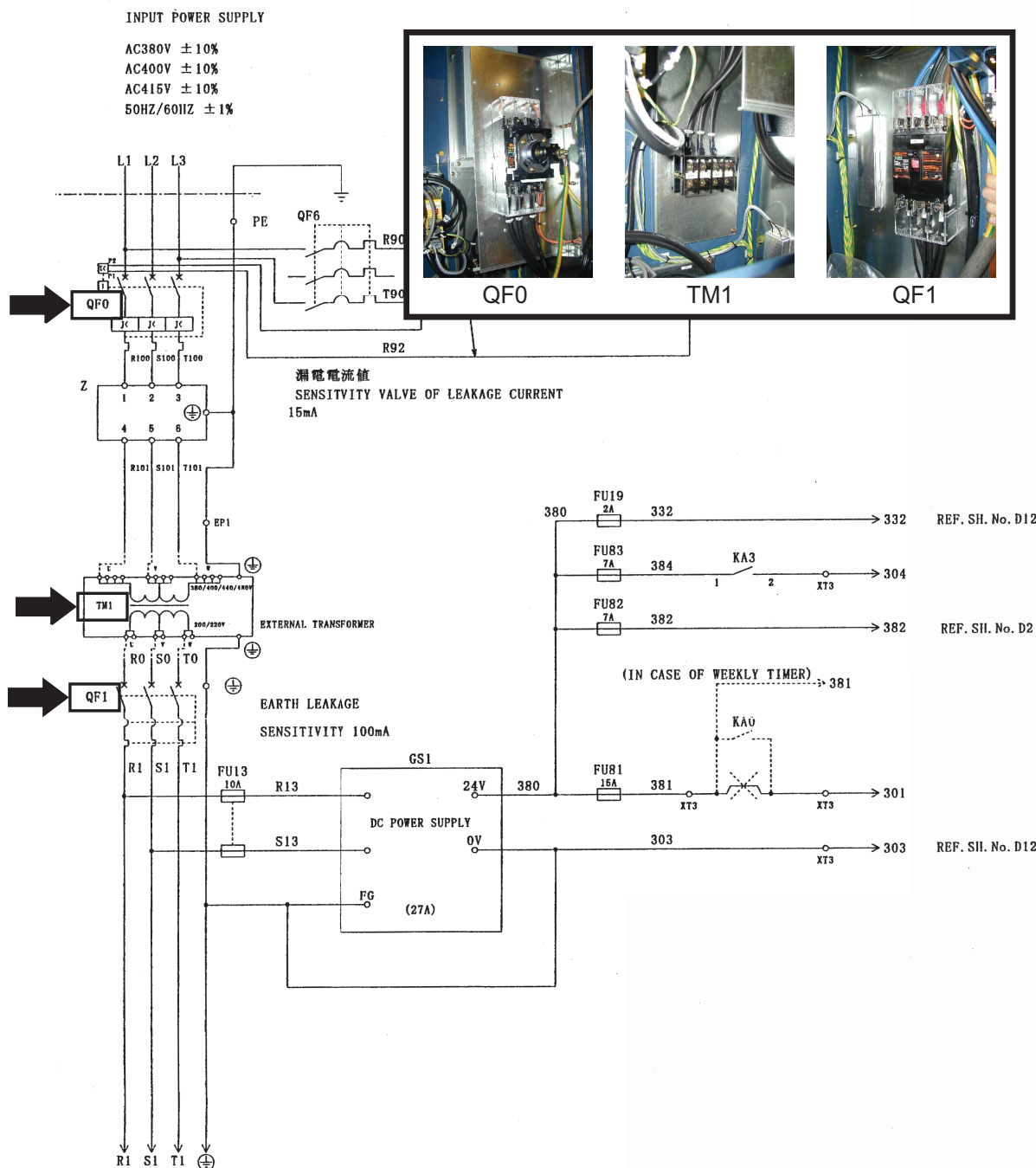


Fig. 15

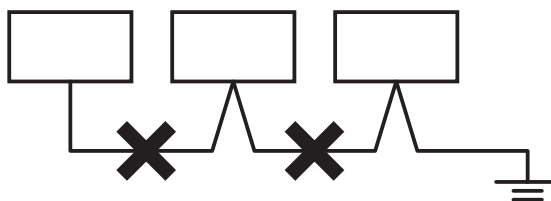
5 Grounding

Establish grounding in compliance with nationally recognized electrical safety standards on grounding.

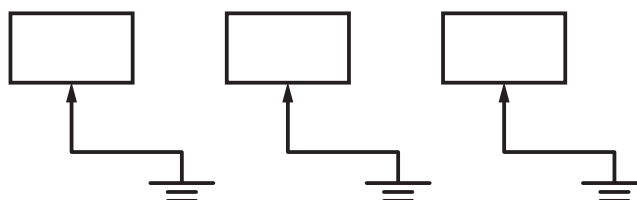


WARNING

- Only officially qualified electricians are authorized to establish grounding.
- One grounding cable (14 mm² or above) must be connected independently to one conductor. Connection as shown below may result in accidents.
- Never share the grounding conductor with a machine which may generate electrical noise, such as arc welding machines, induction hardening machines, etc.



Wrong grounding



Right grounding

Fig. 16

6 Air Connection



CAUTION

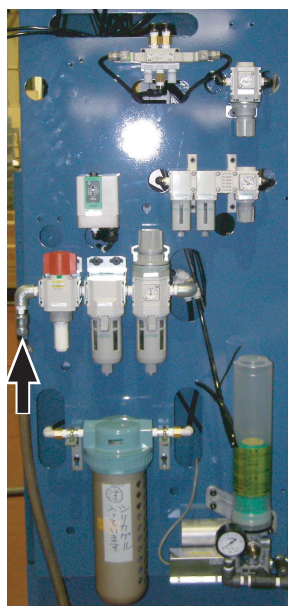
- Use clean, dry air for the compressor. (Maintain the compressor in the good condition.)
- When sharing the air source with another equipment, check to see that pressure drop does not occur. When the pressure drops, the machine may not work properly.
- Use a socket of PT3/8" for connection. Sockets of smaller port may hinder the machine from proper operation.

Source air pressure: 0.54 ~ 0.93 MPa

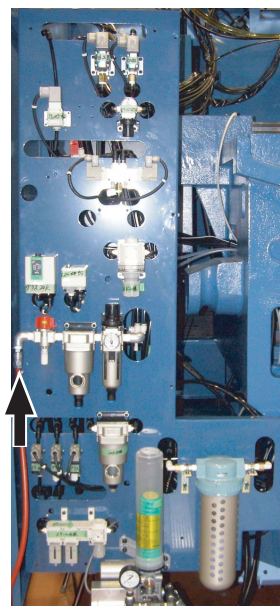
Hose joint: PT3/8 female (to be prepared by the customer)

Hose: Withstand pressure at 1.5 MPa or above, inner diameter $\phi 9.5$ mm or above (to be prepared by the customer)

MX-520



MX-850



Air connection port

Fig. 17

7 Oiling



DANGER



- Do not use highly combustible coolant. Heat generated during machining may ignite the coolant.
- Always use new oil (except coolant) of the types and manufacturers as specified in this manual.
- Do not use coolant of high viscosity (10 cSt or above). Otherwise, the required amount of coolant may not be discharged.

7-1 Oil Table

No.	Oil Type	Oiling Position	Oil Amount (L)
1	A	Hydraulic unit	10 (MX-520) 20 (MX-850)
2	C K	Oil cooler (12,000min ⁻¹) 20,000 rpm	37 (tank; 15) (MX-520) 16 (tank; 14) (MX-850)
3	-	Coolant tank	560



The "Oil Type" column corresponds to those listed in "7-2 Recommended Oil List" (page 27)

MX-520



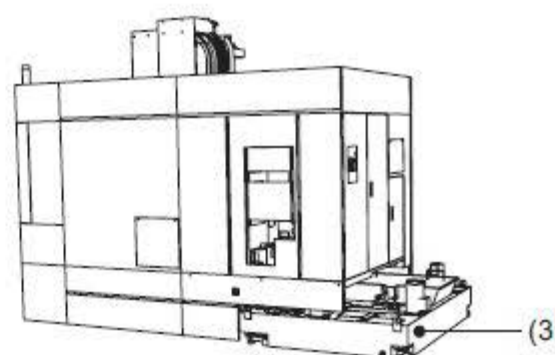
Hydraulic unit

(1)

(2)



Oil cooler



(3)

MX-850

(1)



Hydraulic unit

(2)



Oil cooler

(3)

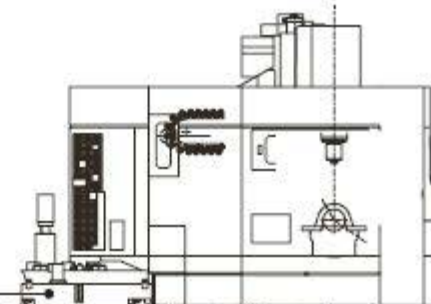


Fig. 18

7-2 Recommended Oil List

Oil Type	Idemitsu	JX Nippon Oil & Energy	Cosmo
A	Daphne Hydraulic Fluid 32	FBK Oil RO32	Cosmo Hydro RO32
B	Daphne Multiway 68C	Uniway SF68	Cosmo Dynaway 68
C	Daphne Super Multi Oil 10	Super Mulpus DX10	Cosmo Mighty Super 10
D	Daphne Mechanic Oil 68	FBK Oil RO68	Cosmo Hydro RO68
E	Daphne Mechanic Oil 120	FBK Oil RO100	Cosmo Hydro RO100
F	Coronex Grease 2	Multinoc Grease 2	Cosmo Grease Dynamax No. 2
G	Daphne Turbin Oil 32	FBK Turbin 32	Cosmo Turbin Super 32
H	Daphne CE Compound 68S	Bonnoc M68	Cosmo Gear SE68
I	Daphne Hi-Thermo Grease	Pilonoc Grease 2	Cosmo Urea Grease No. 2
J	Daphne Coronex Grease EP No. 2	Epnoc Grease AP2	Cosmo Grease Dynamax EP No. 2
K	Daphne Super Multi Oil 2	Super Mulpus DX2	Cosmo Mighty Super 2
L	For oil-air lubrication unit: DTE Oil Light (Mobil)		
M	Daphne Super Multi Oil 5	Super Mulpus DX5	Cosmo Mighty Super 5
N	Daphne Super Gear Oil 150	Bonnoc M150	Cosmo Gear SE150

Oil Type	Esso	Shell	Mobil	Castrol
A	Teresso 32	Tellus S2 M 32	D.T.E. 24	Hyspin AWS32
B	Febis K68	Tonna S3 M 68	Vactra Oil No.2S, No.2	
C	Spinesso 10	Tetra Oil 10 SP	Velocite Oil No. 6	Hyspin AWS10
D	Teresso 68	Tellus S2 M 68	D. T. E 26	Hyspin AWH68
E	Teresso 100	Omala S2 G 100	Mobil Gear 627	Alpha ZN100
F	Andok B	Alvania Grease S2	Mobilax EP2	Spheerol AP2
G	Teresso 32	Tellus S2 M 32	D.T.E. Oil Light	Hyspin AWS32
H	Spartan EP68	Omala S2 G 68	Mobil Gear 626	Alpha SP100
I	Temprex N2 & N3	Darina Grease RL2	Temp Grease 1	Spheerol BNS
J	Lithtan EP2	Alvania EP Grease 2	Mobilax EP2	Spheerol AP2
K	Unipower MP2	Tetra Oil 2 SP	Velocite Oil No. 3	Magna 2
L	For oil-air lubrication unit: DTE Oil Light (Mobil)			
M	Spinesso 5	Tetra Oil 5 SP	*1	*1
N	Spartan EP150	Omala S2 G 150	Mobil Gear 629	Alpha SP150

*1: Use lubricating oil correspondent to ISO viscosity grade 5 (ISO VG5).

8 Operation Preparation

8-1 Removing the Fixtures and Fixing the Cover

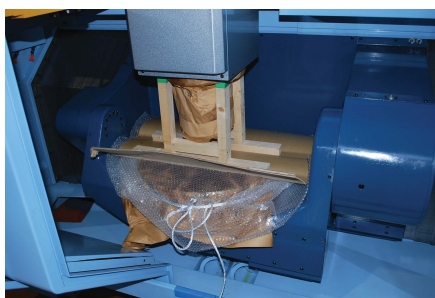
(1) Removal of Fixture

NOTICE

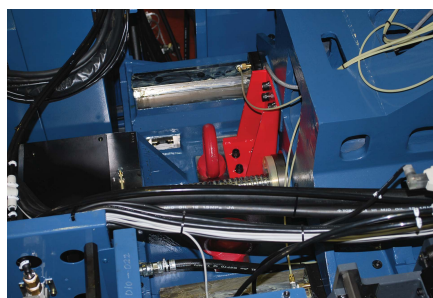
- Keep the removed fixtures.

1. Please remove the support for Y-axis, support for oil cooler, and the Z axis- fixing wooden block.

- * In case of removing the Z axis-fixing wooden block, move the Z axis in the “+” direction after the power-on, and then remove the wooden block.



Z axis-fixing wooden block



Y axis-fixing fixture



Oil cooler-fixing fixture

Fig. 19

2. Please remove the support for X-axis.

- * After removing this support, please connect the hose for coolant and the hose for grease.



Fig. 20

(2) Fixing the motor

NOTICE

1. Please note the direction of the motor connector and put Z-axis motor.
 - **Do not disconnect the motor connector because the zero-position of Z-axis will be deleted from the memory.**
2. Please connect the Z-axis brake connector.

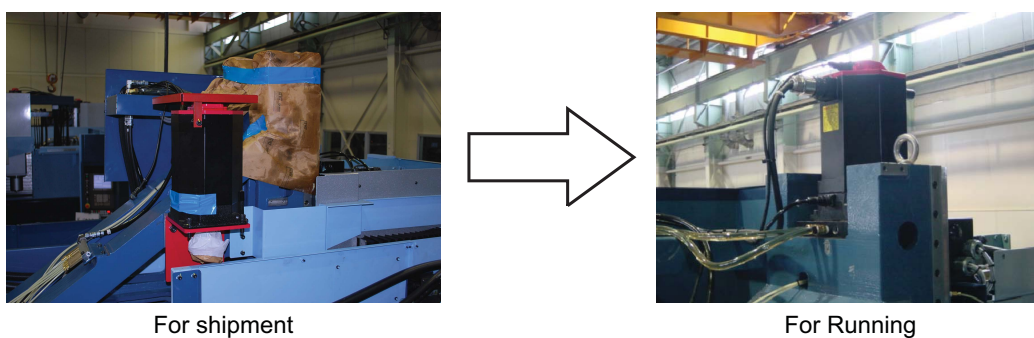


Fig. 21

(3) Fixing the covers

1. Install the covers that were removed before shipping, referring to the picture below.

MX-520



At machine shippment



At machine shippment

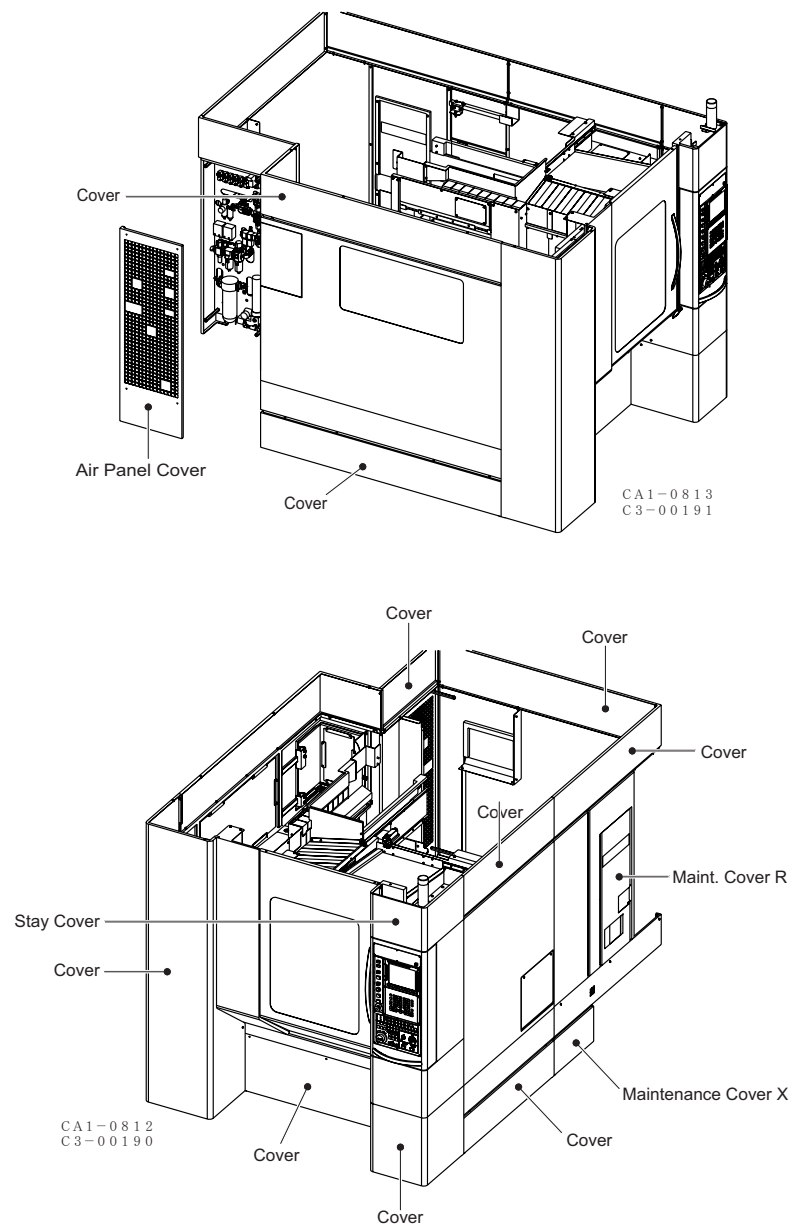


Fig. 22

8-2 **Cleaning**

Rust preventive agent is applied to the slideways, the table and the spindle. Wipe it away completely using light oil and waste cloth.



CAUTION

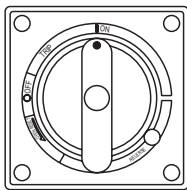
- **After rust preventive agent is removed, apply lubrication oil. Axial movement before removing the rust prevent agent may damage the machine.**

8-3 Power ON



CAUTION

- Check the following items before turning the power on:
 - Electric wiring and oiling are completed.
 - All the bolts and cannon connectors are securely tightened.
 - All hydraulic and air pipes are correctly connected and securely tightened.
 - Oil and grease are appropriately supplied according the instructions given in the instruction manual.
 - Water and dust are wiped away from the machine.
 - No oil leakage is found around the machine.

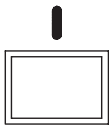


1. Turn the main power switch on at the electric control box.
 - The oil cooler starts.

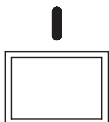


CAUTION

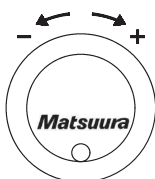
- Double-check that all the shipping brackets (except for the Z axis) are removed.



2. Press the POWER ON switch on the main operation panel.
The NC controller is turned on, and the CRT screen lights up.



3. Press the POWER ON switch again.
 - The machine power is supplied, and gets ready for operation.
 - The hydraulic unit starts.



4. After slowly moving the Z-axis in the “+” (plus) direction using the manual pulse generator, remove the Z-axis-fixing wooden blocks and fixtures.



Refer to “Fig. 19 ” (page 28)



CAUTION

- Never move the Z axis in the minus direction before the wooden block is removed.

9 Leveling

Machine level greatly affects machining accuracy as well as service life.



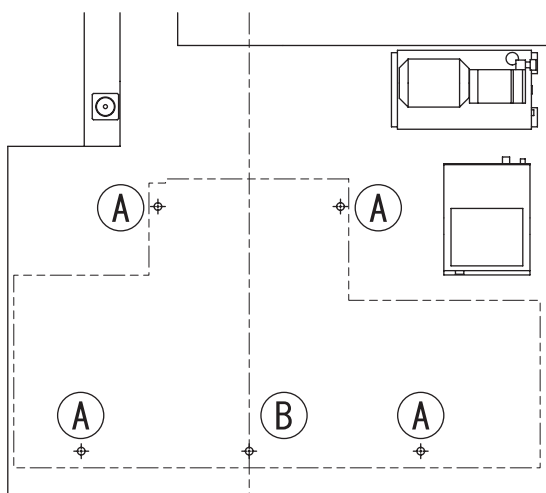
CAUTION

- If the machine is left unpacked for a long time or is placed in an inappropriate condition, machine level may not be stabilized by one adjustment. In such a case, adjust the level again in three or four weeks after the first leveling.

NOTICE

- Adjust the leveling bolts until the distance between the floor and the bed bottom becomes between 10mm and 20mm.

MX-520



MX-850

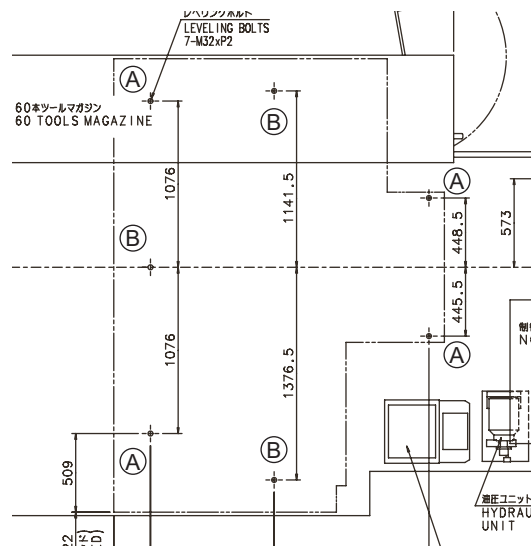


Fig. 23

1. Place a spirit level on the 4/5-axes table, adjust the level at four positions marked with (A).
2. After adjusting the squareness and the moving level, exert weight on the remaining bolts indicated as (B) in the above figure.



CAUTION

- Adjust all leveling bolts until the machine weight is exerted on them evenly.
- Machine level may be changed with time after installation. Check the level at regular intervals (three months for the first time, and afterwards every six months).

10 Spindle Warm-up Method at the time of Machine Installation

It is necessary to warm up a greased spindle when the machine is installed/

Warm up the greased spindle with the following method.

(1) 12,000min⁻¹ Spindle

1. 3,000min⁻¹ : 10min
2. 6,000min⁻¹: 10sec
and 1,000min⁻¹: 50sec : 5times
3. 6,000min⁻¹ : 10min
4. 9,000min⁻¹: 10sec
and 1,000min⁻¹: 50sec : 5times
5. 9,000min⁻¹ : 15min
6. 12,000min⁻¹: 10sec
and 1,000min⁻¹ : 50sec : 5times
7. 12,000min⁻¹ : 15min

11 Network Setting Procedure for E-mail Notification Function

This machine is equipped with e-mail notification function, which automatically sends the machine information to the address preliminarily registered. To use this function, the network connection must be set up.

11-1 Network Configuration

The following network configuration is required to use the e-mail notification function.

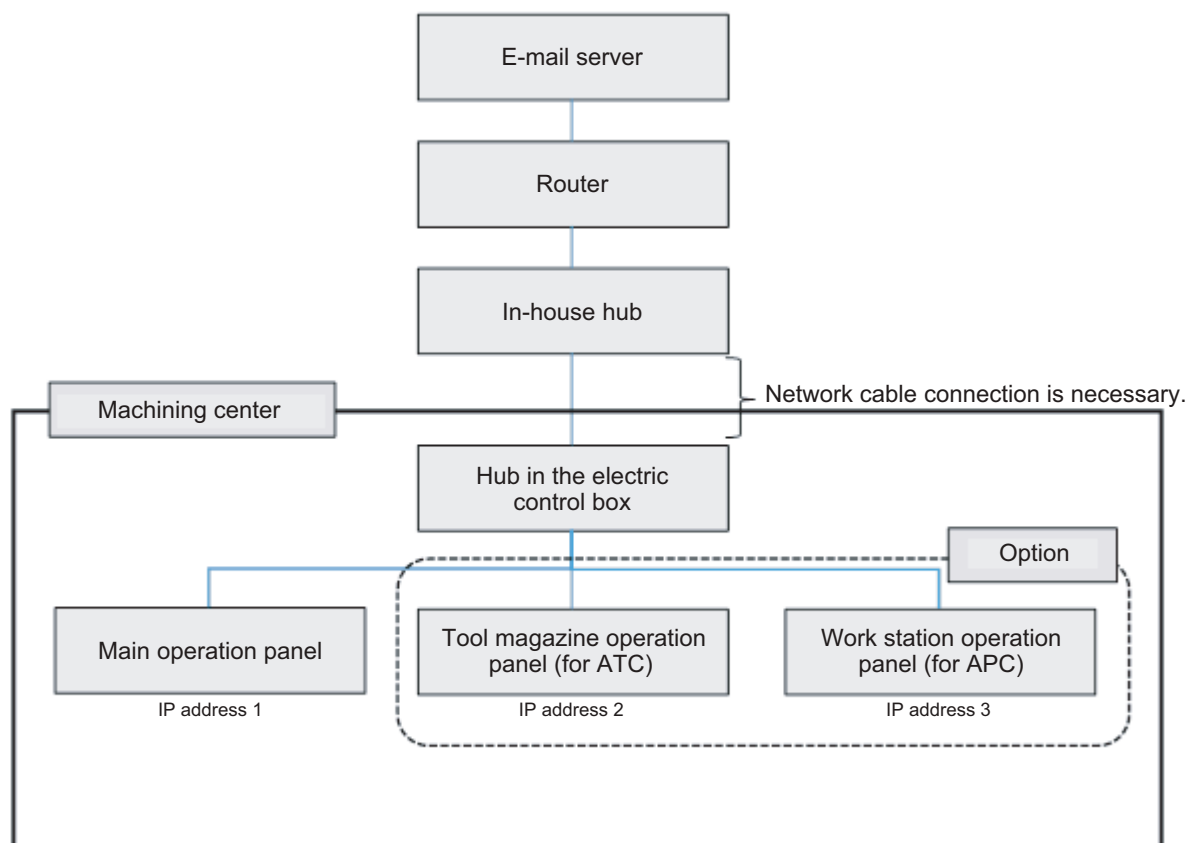


Fig. 24

Prerequisite

- IP addresses for LAN connection
 - * Depending on the options, a maximum of three addresses, from IP address 1 to IP address 3 shown in the above figure, are required.
 - * For IP address assignment, contact your network administrator.
- Network cable that connects between the in-house hub and the hub in the electric control box
- E-mail server
- E-mail address of destination

11-2 Setting on the Main Operation Panel

To enable communication with the e-mail server, an IP address must be assigned to the main operation panel.

The following operation must be performed when the machine is placed in the emergency stop state.

1. Hold down the CTRL, ALT and DELETE keys at the same time.
 - The following screen is displayed.



Fig. 25

2. Select [Start Task Manager].
 - The task manager screen is displayed.

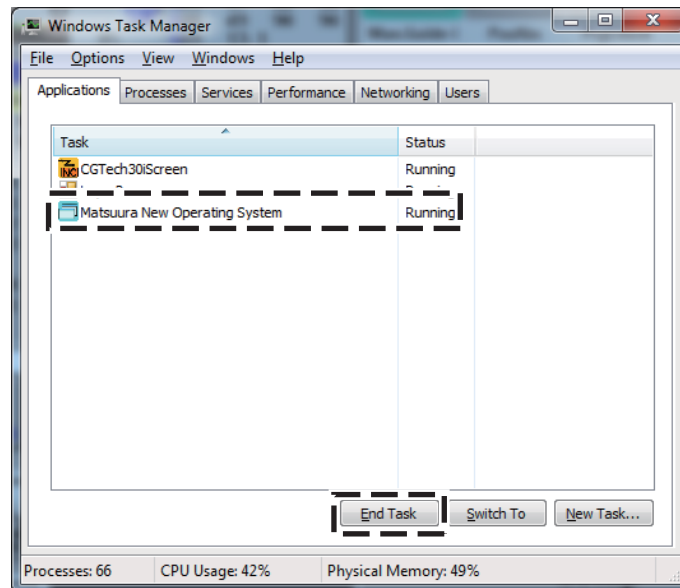


Fig. 26

3. Select [Matsuura New Operating System].
4. Press the [End Task] button.
 - The normal operation screen closes and the OS screen appears.
5. Select [Control Panel] from the [Start] menu, and select [Network and Sharing Center].
 - The screen display changes.

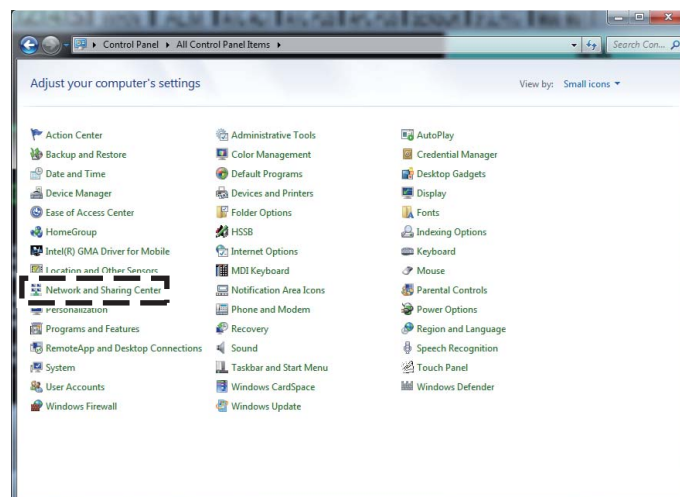


Fig. 27

6. Select [Change adapter setting].
 - The screen display changes.

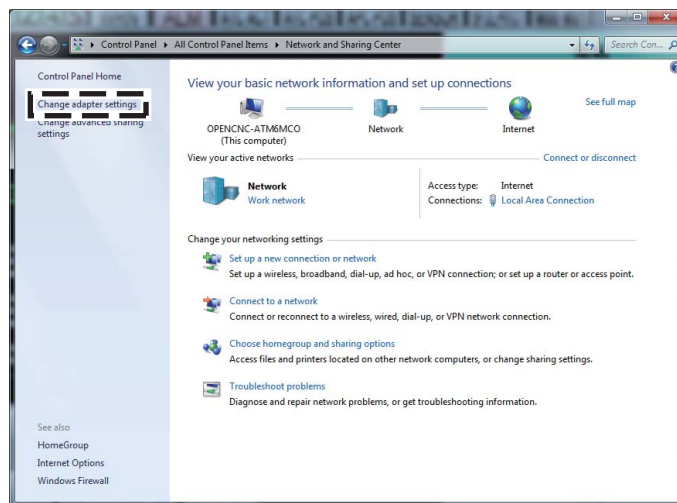


Fig. 28

7. Right-click [Local Area Connection] and select [Properties].

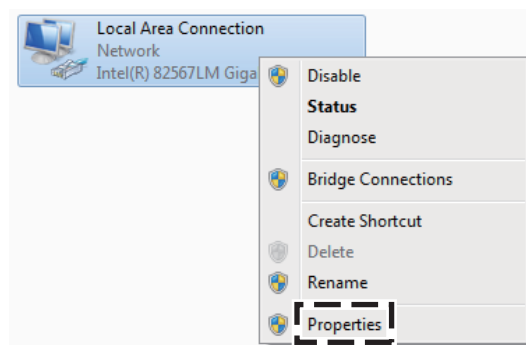


Fig. 29

8. Select [Internet Protocol Version 4 (TCP/IPv4)].

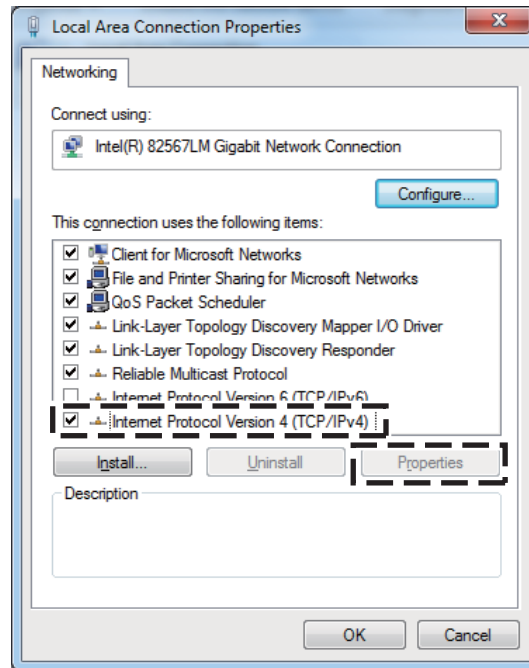


Fig. 30

9. Press the [Properties] button.
- The screen display changes.

10. Set the IP address, subnet mask, default gateway, and DNS server.

- * The following IP address and subnet mask are preset before shipment:

IP address: 192.168.1.200

Subnet mask: 255.255.255.0

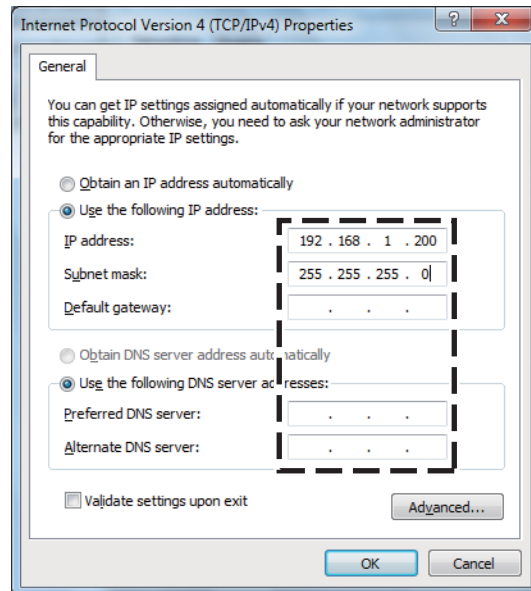


Fig. 31

11. Press the [OK] button.

11-3 Setting on the Tool Magazine Operation Panel (for ATC) / Work Station Operation Panel (for APC) (Option)

To enable communication with the e-mail server, an IP address must be assigned to the tool magazine operation panel (for ATC) / work station operation panel (for APC).

To enable communication with the main operation panel, the contents in “PaneComATC.ini”/“PanecomAPC.ini” must be modified.

The setting procedure on the tool magazine operation panel (for ATC) is explained below.

The following operation must be performed when the machine is placed in the emergency stop state.

1. Press the upper left edge on the touch panel of the tool magazine operation panel (for ATC).
 - A keyboard is displayed.

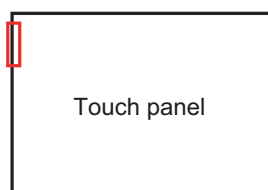


Fig. 32

2. Press the [Fn] key.
 - The keyboard display changes.



Fig. 33

3. Press the [Alt] key and [F4] key at the same time.

- The normal operation screen closes and the OS screen appears.



Fig. 34

4. Select [Control Panel] from the [Start] menu, and select [Network and Sharing Center].

- The screen display changes.

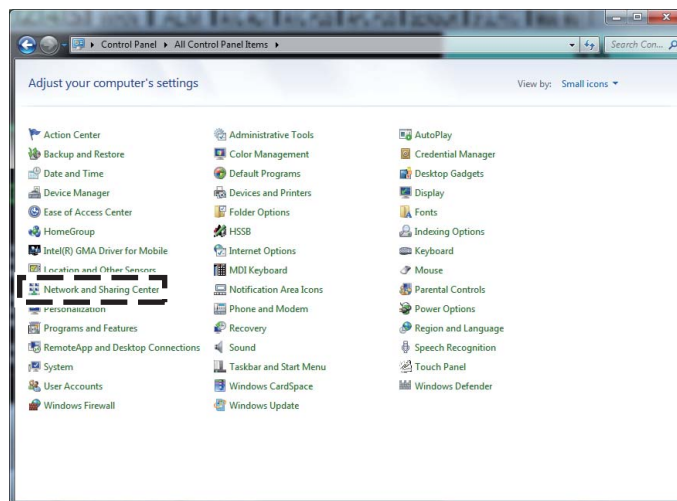


Fig. 35

5. Select [Change adapter setting].

- The screen display changes.

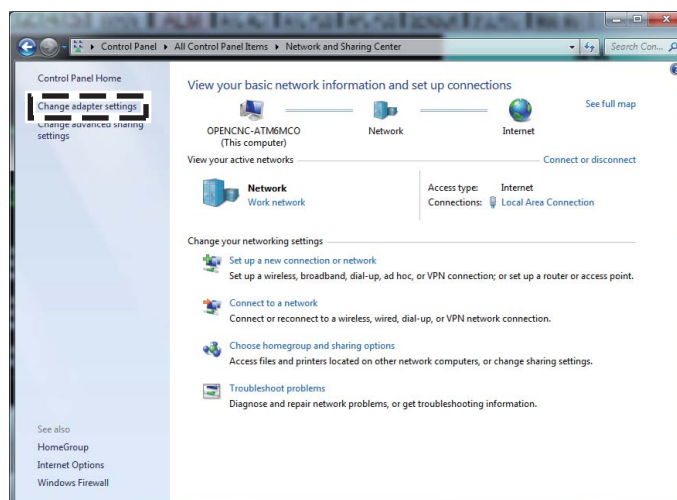


Fig. 36

6. Right-click [Local Area Connection] and select [Properties].

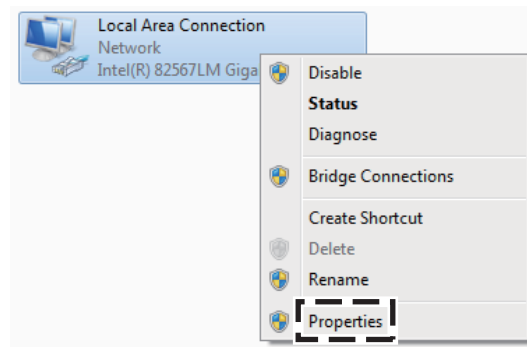


Fig. 37

7. Select [Internet Protocol Version 4 (TCP/IPv4)].

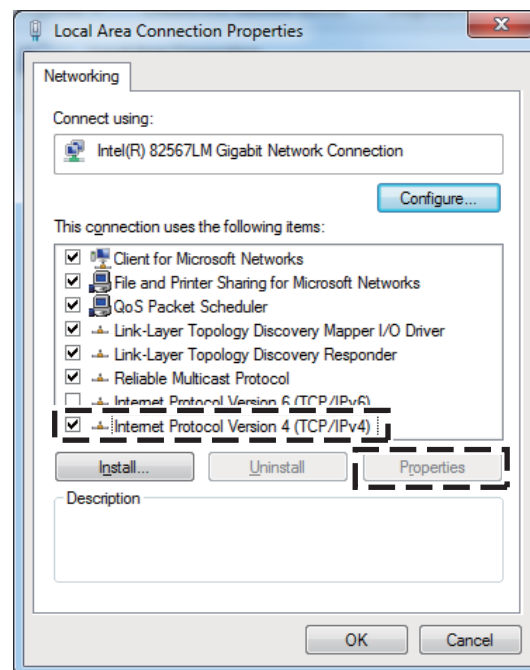


Fig. 38

8. Press the [Properties] button.

- The screen display changes.

9. Set the IP address, subnet mask, default gateway, and DNS server.

- * The following IP address and subnet mask are preset before shipment:

IP address: 192.168.1.201

Subnet mask: 255.255.255.0

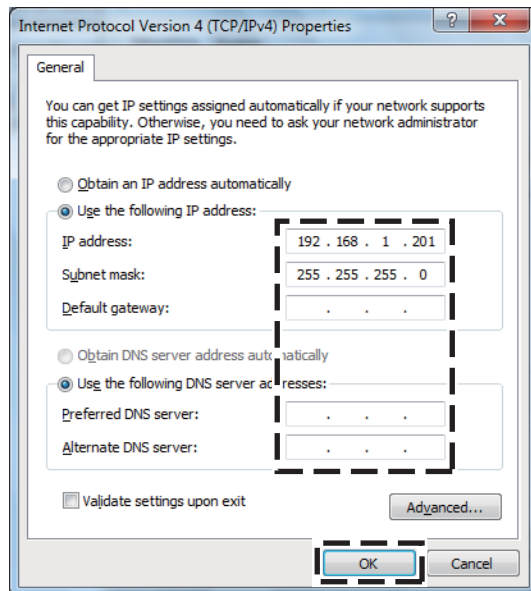


Fig. 39

- * The following IP address and subnet mask for the work station operation panel (for APC) are preset before shipment:

IP address: 192.168.1.202

Subnet mask: 255.255.255.0

10. Press the [OK] button.

11. From the [Start] menu, select [Computer] → [Local Disk (C:)] → [MAXIA_ATC], and open “PaneComATC.ini”.

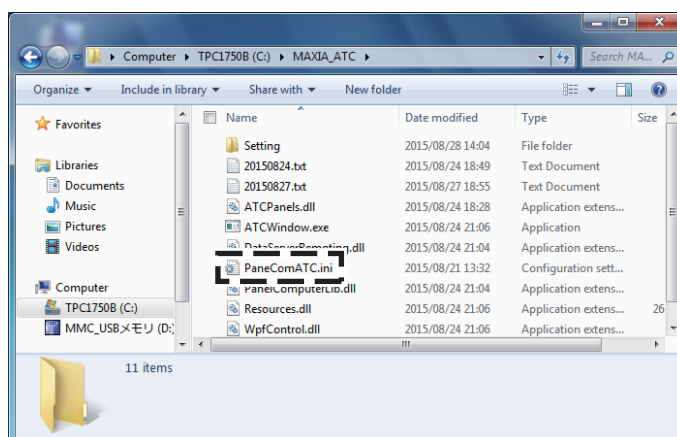


Fig. 40

- * When setting on the work station operation panel (for APC): From the [Start] menu, select [Computer] → [Local Disk (C:)] → [MAXIA_APC], and open “PaneComAPC.ini”.

12. Input the IP address assigned to the main operation panel to “IPAddress1” and “IPAddress2” under “[Remoting]”.

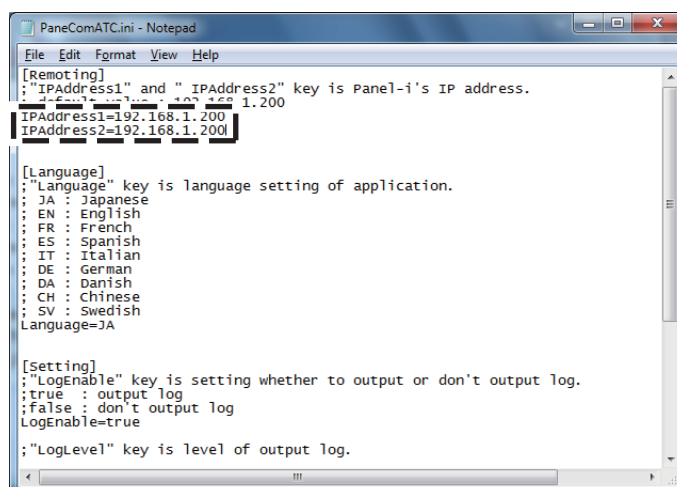


Fig. 41

13. Select [Save] from the [File] menu.

14. Hold down the CTRL, ALT and DELETE keys on the main operation panel at the same time.
- The following screen is displayed.

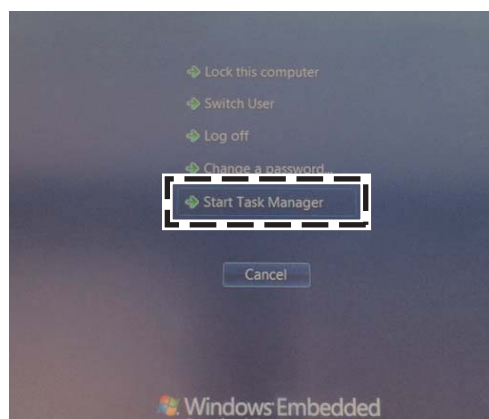


Fig. 42

15. Select [Start Task Manager].
- The task manager screen is displayed.

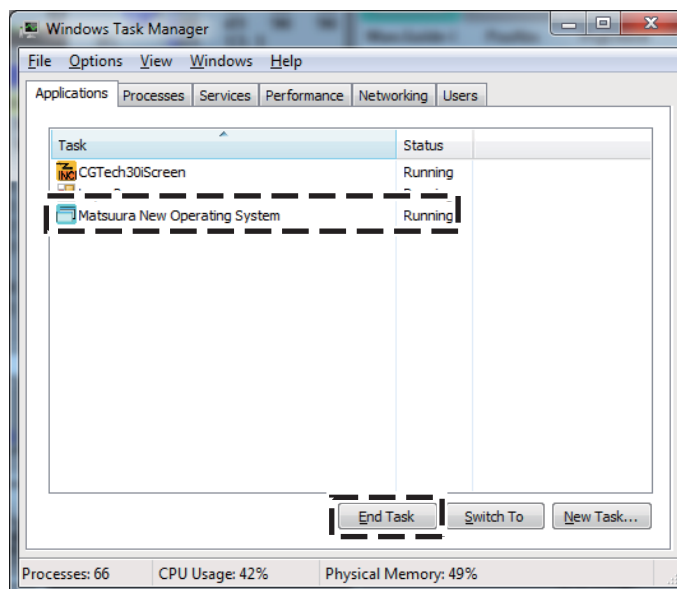
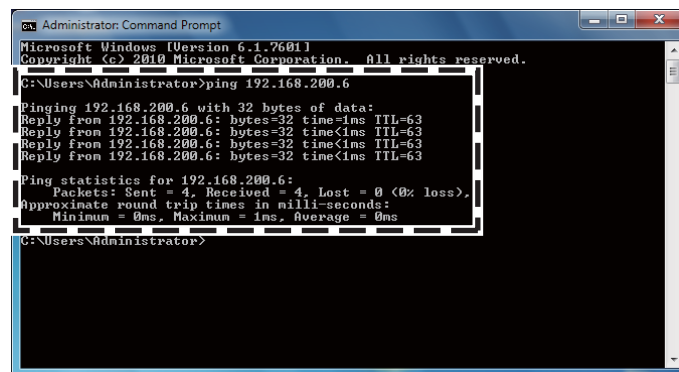


Fig. 43

16. Select [Matsuura New Operating System].
17. Press the [End Task] button.
 - The normal operation screen closes and the OS screen appears.
18. Select [Accessories] from the [Start] menu, and open [Command Prompt].
19. Execute the ping command in the Command Prompt window.
 - * Input the IP address of the tool magazine operation panel (for ATC) / work station operation panel (for APC).
 - * If connected successfully, the following reply messages are displayed.
If not displayed, check the settings again.



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2010 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 192.168.200.6

Pinging 192.168.200.6 with 32 bytes of data:
Reply from 192.168.200.6: bytes=32 time=1ms TTL=63
Reply from 192.168.200.6: bytes=32 time<1ms TTL=63
Reply from 192.168.200.6: bytes=32 time<1ms TTL=63
Reply from 192.168.200.6: bytes=32 time<1ms TTL=63

Ping statistics for 192.168.200.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

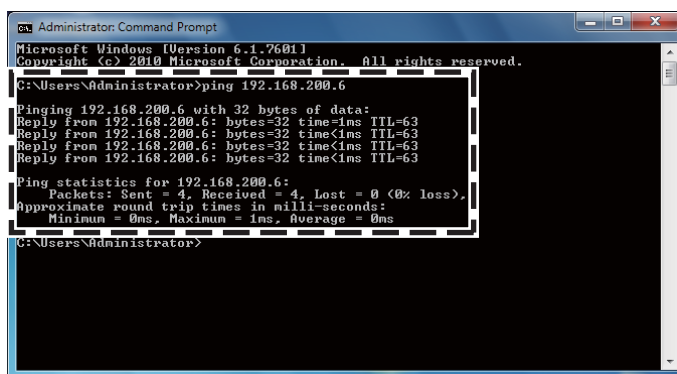
C:\Users\Administrator>
```

Fig. 44

11-4 Network Cable Connection

Connect the machine and the in-house hub with an Ethernet cable.

1. Connect the Ethernet cable from the in-house hub to an empty port of the hub in the electric control box.
 - * Check that the LEDs on both hubs are flashing to ensure that there is no disconnection.
2. Execute the ping command in the Command Prompt window on the main operation panel.
 - * Input the IP address of the e-mail server.
 - * If connected successfully, the following reply messages are displayed.
If not displayed, check the settings again.



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2010 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 192.168.200.6

Pinging 192.168.200.6 with 32 bytes of data:
Reply from 192.168.200.6: bytes=32 time<1ms TTL=63
Reply from 192.168.200.6: bytes=32 time<1ms TTL=63
Reply from 192.168.200.6: bytes=32 time<1ms TTL=63
Reply from 192.168.200.6: bytes=32 time<1ms TTL=63

Ping statistics for 192.168.200.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users\Administrator>
```

Fig. 45

11-5 Checking E-mail Transmission

When the network settings have been completed, ensure that an e-mail can be transmitted by following the procedure described below.

1. Turn the machine power off and back it on.
 - The touch panel on the main operation panel lights up.
2. Select the Mail Setting icon in the “Maintenance” category.
 - The mail setting screen is displayed.

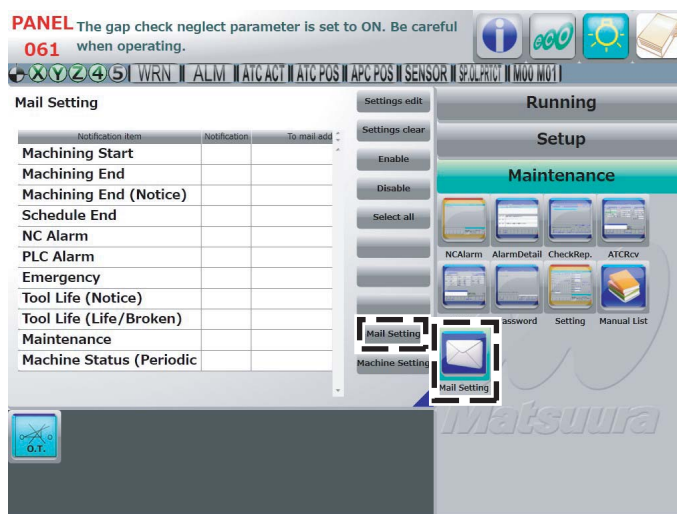
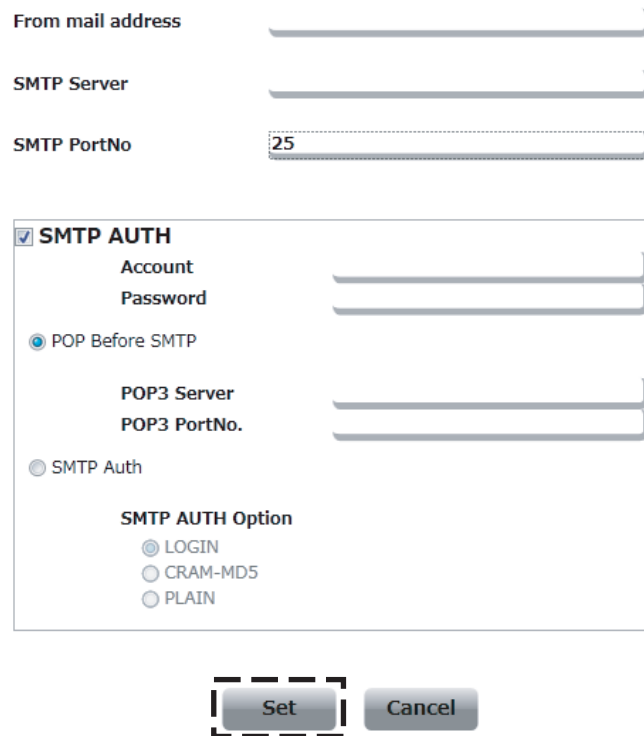


Fig. 46

3. Press [Mail Setting].
 - The mail setting dialog box is displayed.

Mail Setting



The Mail Setting dialog box contains the following fields and options:

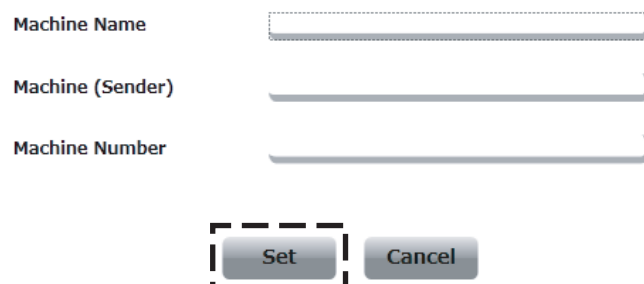
- From mail address:
- SMTP Server:
- SMTP PortNo:
- ☒ **SMTP AUTH**
 - Account:
 - Password:
 - ☒ POP Before SMTP
 - POP3 Server:
 - POP3 PortNo.:
 - ☐ SMTP Auth
 - SMTP AUTH Option**
 - ☒ LOGIN
 - ☐ CRAM-MD5
 - ☐ PLAIN

At the bottom, there are two buttons: **Set** (highlighted with a dashed border) and **Cancel**.

Fig. 47

4. Set the e-mail settings.
5. Press the [Set] button.
6. Press [Machine Setting].
 - The machine setting dialog box is displayed.

Machine Setting



The Machine Setting dialog box contains the following fields:

- Machine Name:
- Machine (Sender):
- Machine Number:

At the bottom, there are two buttons: **Set** (highlighted with a dashed border) and **Cancel**.

Fig. 48

7. Set the machine information.
 - * The data set here is used as the sender's information when an e-mail is sent.
8. Press the [Set] button.
9. Select [Emergency] for notification, and select [Settings edit].
 - The settings edit dialog box is displayed.

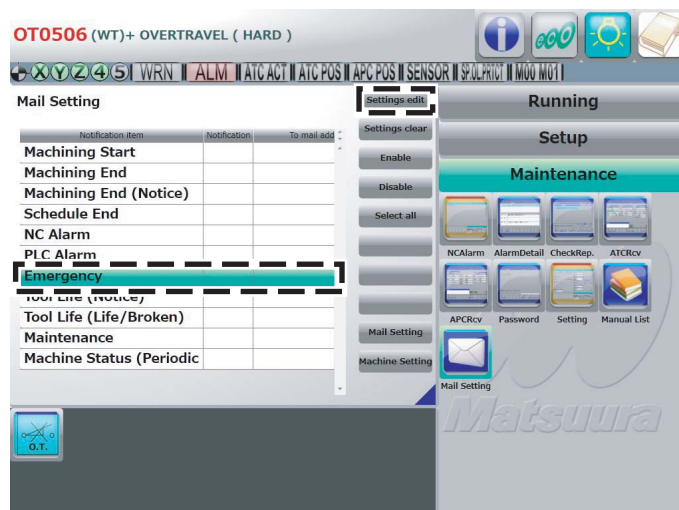


Fig. 49

10. Put checkmarks in two positions, and set the e-mail address to which the notification should be sent.

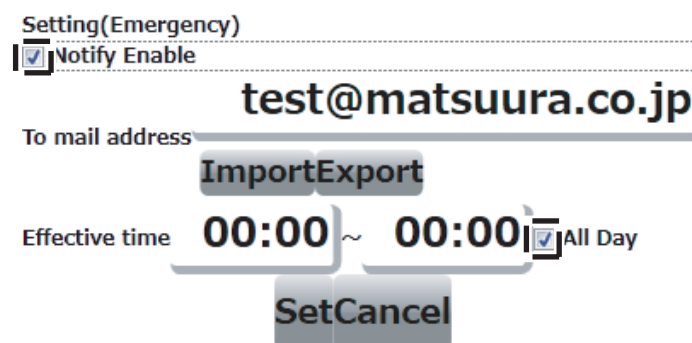


Fig. 50

11. Press the [Set] button.
 - “Emergency” is set for a notification item.

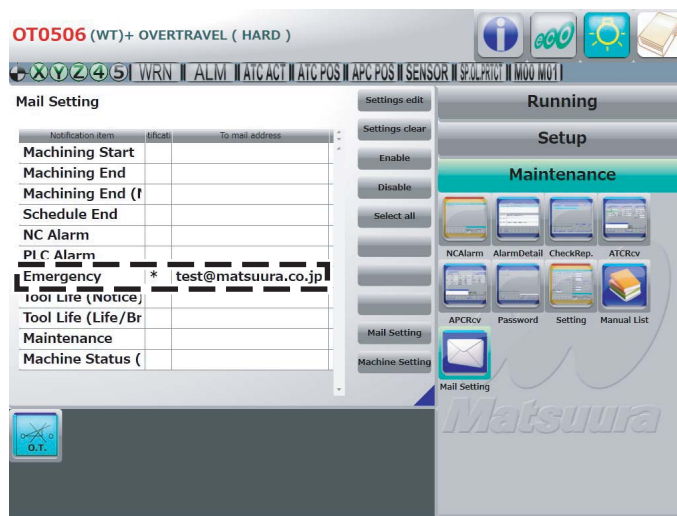


Fig. 51

12. Press the POWER ON switch on the main operation panel.
13. Place the machine in the emergency stop state.
 - * Check that an e-mail is sent from the machine to the registered e-mail address.