

Cincom L16/20

(7M1)

(7M7)

(7M8)

Maintenance Manual

CITIZEN WATCH CO., LTD.
Precision Machinery Division

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Remarks

1. Every effort has been made to ensure the accuracy of all information in this manual. However, the manual may contain incorrect explanation or typographical errors. If you notice any part unclear, incorrect, or omitted in the manual, please contact Citizen Watch Co., Ltd.
2. The contents of this manual may be revised without prior notice. This manual applies to only the machine of the machine number shown on the back cover. Do not use manuals written for dealers and reference when operating the machine. Also, do not use this manual for other machines.
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Preface

- This **Maintenance Manual** is a part of the three-volume documentation prepared for the Cincom.

This manual covers information for maintaining Cincom in the best condition and explains methods of identifying and eliminating the causes of faults if any.

This manual also explains periodical check items (e.g., daily, monthly, and semi-annually). Also, refer to this manual when ordering parts.

The remaining documentation is the **Operator's Manual** and the **Programmer's Manual**.

The **Operator's Manual** is used when you will run the machine. It contains general information about procedures for basic daily machine operations.

The **Programmer's Manual** is used for machine programming.

It covers information for Cincom programming in order to carry out various basic machining processes.

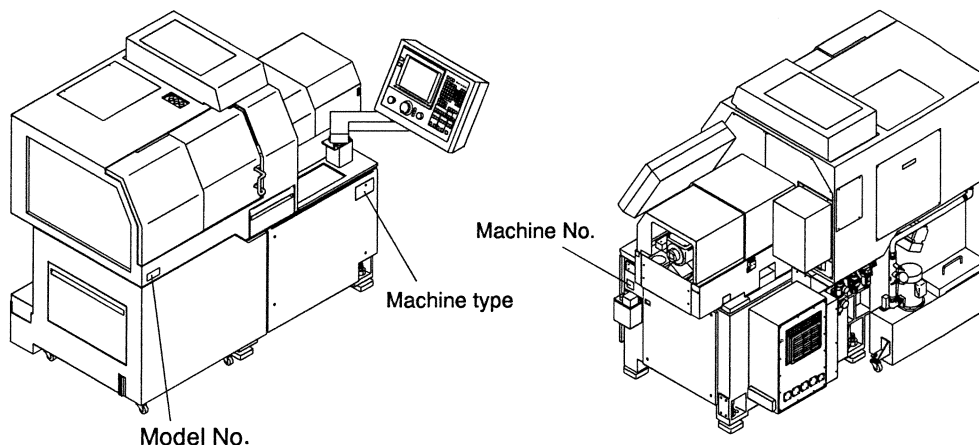
- The peripheral devices for this machine are shipped with the instruction manual for the device. Be sure read the instruction manual of the relevant device before using it.

Information for Obtaining Customer Support

Before contacting Citizen for an inquiry, please confirm as many items listed below as possible to allow for a prompt and definite response.

No.	Item	Example		Check point
1	Machine type	L20		Machine nameplate, the operation panel, the manual, etc.
2	Model No.	7M8		Model seal on the front of the machine, the cover of each manual, etc.
3	Machine No.	Q14501		Machine nameplate, etc.
4	NC unit	CINCOM SYSTEM M7		<Chapter 3 Machine Specifications> in the Operator's Manual, the operation panel, etc.
5	Delivery date	March 2005		
6	Machine paint color	Silver metallic two-tone color Your specified color		Appearance
7	Customization	Special workpiece unloading device		
8	Name of the manual and the number of the page containing the information concerning your inquiry	Page 10 in Chapter 5 of the Maintenance Manual		Manual: Operator's Manual, Programmer's Manual, or Maintenance Manual
9	Software version information	NCMAIN	BND-1004W001-**	On-screen display on the operation panel <5.6.3 Checking the version of software> in the Maintenance Manual.
		PLC	001-001	
		NCOS	BND-1000W014-**	
		HMI OS	BND-1004W150-**	
		HMIs	BND-1004W101-**	
		HMIs-Control	BND-1200W200-**	
		HMIu	001-001	
		MACRO	001-001	
		PARAMET	001-001	
10	H/W list	NC TYPE	MITSUBISHI CNC 730LUC	
		MODEL NAME	FCA730LUC-N	
		SERIAL NO	M7*****	
		UNIT NAME	FCU7-MU001	

For an inquiry about a problem, please check it with <Chapter 5 Troubleshooting> in the Maintenance Manual in advance.



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Maintenance Manual

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Chapter 1 Overview

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1.1 About This Manual

The purpose of this manual is to provide repair and maintenance personnel with the information necessary to inspect, maintain, and repair the L16/L20 machines safely and knowledgeably. This manual describes the methods and procedures for inspecting and maintaining the L16/L20 machine to get the most out of them. Before performing inspection or maintenance, be sure to read and understand the contents of this manual to operate the machine kept in its best conditions to ensure optimum performance.

This manual contains the following chapters:

Chapter 1: Overview

This chapter describes the purpose and organization of this manual..

Chapter 2: Safety Precautions

This chapter describes safety precautions to be heeded while programming, setting up, operating, and maintaining the machine.

This chapter also includes information on machine safety devices and procedures for handling an emergency situation such as a fire at your factory.

Chapter 3: Machine Components

This chapter describes the main components of the machine and their functions.

Chapter 4: Scheduled Maintenance

This chapter provides information on daily, monthly, biannual, and periodic maintenance checks that must be performed.

Chapter 5: Troubleshooting

This chapter describes the procedures for detecting and handling various alarms and basic failures.

Chapter 6: Parts List

This chapter provides exploded diagrams of the machine components together with corresponding lists of the part names and part numbers.

Chapter 7: Wiring Diagrams

This chapter shows the wiring of the machine and the terminal numbers.

Chapter 8: Ladder I/O List

This chapter shows list of input/output signals for the machine control.

Appendix: Relocating the NC Machine

This appendix describes the transporting methods and installation conditions for relocating the L16/L20.

1.2 Who Should Read This Manual

This manual is intended for all persons responsible for performing maintenance on the L16/L20 machine. All maintenance personnel should read and understand <Chapter 2 Safety Precautions> and any other sections that apply to them.

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2.1 Safety Signs

Be sure to read and understand this chapter and all other applicable chapters of this Manual and all on-product safety signs before preparation, operating, and maintaining this machine.

Each safety sign has the specific signal word indicating the degree of the danger. The following three signal words are provided. Each signal word indicates a particular degree of danger as described below.

DANGER: alerts you to an imminently hazardous situation which, if not avoided, will result in death or serious personal injury.

WARNING: indicates a potentially hazardous situation which, if not avoided, could result in death or serious personal injury.

CAUTION: indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate personal injury and/or possible damage to the machine and its components.

The location and content of the on-product safety signs are on the following pages. Be sure these signs are read and understood.



WARNING

Do not remove or hide any safety sign (warning label). If it is peeling, call the Cincom Service Office.

The warning labels are intended to call user's attention to dangers by indicating the contents of the dangers and further prevent the user's safety from being injured or dead and also the machine from being damaged.

<Figure 2.1-1> shows the locations on which the warning labels are put. <Figure 2.1-2> describes the contents of the warning labels.

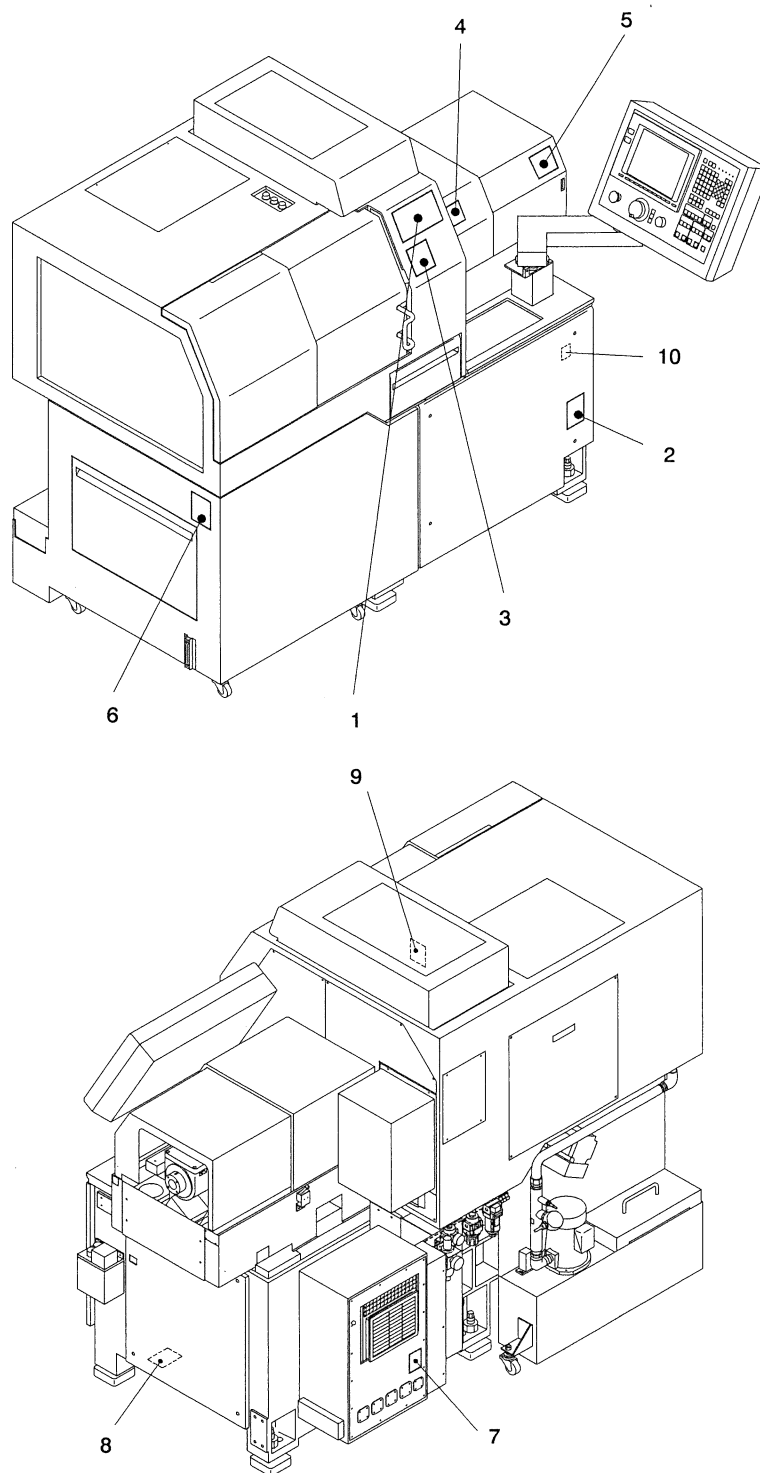








Figure 2.1-1 Location of Warning Labels




1

 WARNING		
<p>To prevent serious injury, death or property damage, follow these precautions when operating, inspecting or maintaining the machine:</p> <ul style="list-style-type: none"> • Read Operator's Manual before using machine. • Do not touch tools or other moving parts when machine is operating. • Do not operate machine unless all doors and all covers are closed. • Turn off power at main breaker before opening control unit doors or covers. • Before operation, be sure all safety devices are working. 		
	<th> WARNING</th>	 WARNING
	<p>To prevent serious injury, death or damage due to fire, do the following:</p> <ul style="list-style-type: none"> • Monitor machine when operating. • Do not use damaged tools. • Apply sufficient coolant to cutting point during operation. • Keep flammable items away from machine. • Be sure all doors, all covers, chip outlet door and product outlet door are closed during operation. • Regularly remove chip from chip collector and coolant tank. 	
EW201		



2

 WARNING

<p>Hazardous voltage inside. Will shock, burn, or cause death.</p> <p>Only qualified personnel totally familiar with electrical circuits and service manual should work inside this enclosure.</p> <p>Follow Lockout/Tagout.</p>
EW01


3

 WARNING
 
<p>Moving part, hot chips and hot oil inside.</p> <p>Keep door closed during operation.</p>
EW02

4

 WARNING

<p>Moving parts inside.</p> <p>Keep door closed during operation.</p>
EW03



5

 WARNING
<p>Moving parts can cause serious injuries.</p> <p>Keep hands and body away from moving parts.</p>
EW04


6

 WARNING
<p>Turn off machine before removing chips inside.</p> <p>Hands or chip remover tool can touch moving parts inside and cause serious injury.</p>
EW05



7

 WARNING

<p>Hazardous voltage. Can shock, burn, or cause death.</p> <p>Turn off main breaker before connecting or disconnecting coolant pump.</p>
EW07

8

 DANGER
<p>Hazardous voltage inside. Will shock, burn, or cause death.</p> <p>DO NOT work in this enclosure unless familiar with these electrical circuits and safe servicing procedures.</p>
ED01

9

 WARNING

<p>Hot surface can cause burns.</p> <p>Do not touch when power is on. Wait until surface cools.</p>
EW11

10



 WARNING
 <p>GROUND</p>
<p>GETTING ELECTRIC SHOCK OR NOISE CAN OCCUR.</p> <p>THE UNITS MUST BE GROUNDED. (RESISTANCE VALUE MUST BE 100Ω OR LESS)</p>
A -002

Figure 2.1-2 Contents of Warning Labels

2.2 Emergency Stop Button

The red emergency stop button is located on the operation panel. When there is an emergency situation such as fire, power failure, earthquake, or lightning or if you need to evacuate at once, press this button to stop the operation immediately before you leave the work site. Press this button anytime you feel dangerous while operating the machine. Note, however, that pressing these emergency stop buttons during machine operation might damage a tool as well as the product being processed. To reset the emergency stop state, first verify your safety. Then, turn the locked emergency stop button clockwise to release the lock after confirming the safety of the machine. Also return all the mobile sections of the machine to their return positions and then remove all the workpieces subject to machining from the machine.

<Figure 2.2-1> shows the location of Emergency Stop button.

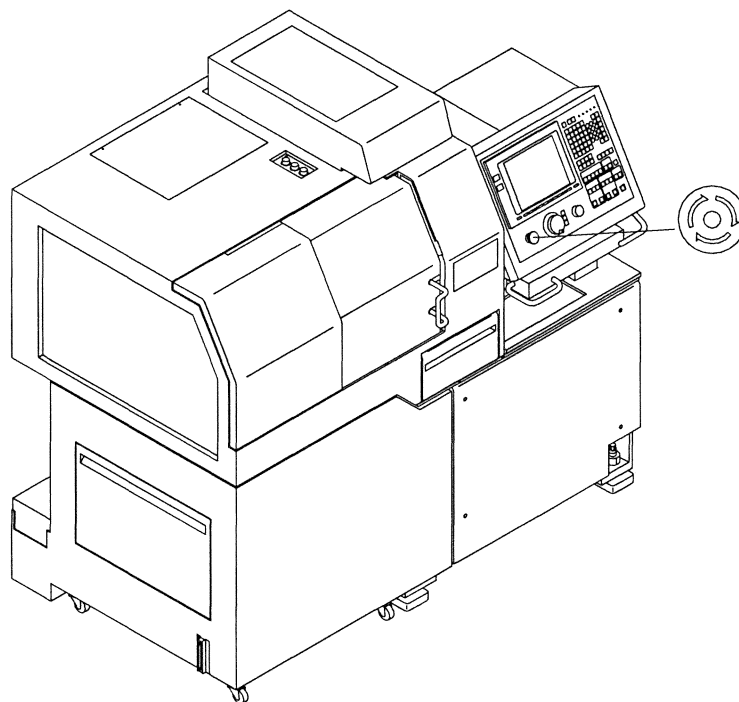


Figure 2.2-1 Location of Emergency Stop Button

2.3 Safety Devices



WARNING

No safety devices provide complete safety against accidents and hazards.

Be sure to follow the precautions and described in this chapter to operate the machine.

Failure to do so could result in death or serious personal injury.

Cincom provides the following kinds of safety devices to prevent and detect accidents and hazards when operating the machine.

The standard and optional safety devices shown and described on the following pages are installed depending on particular operating needs of the customer.

- Devices to detect any accident that occurs during machine operation.
- Devices to stop the machine operation under an unsafe condition.
- Devices to prevent production of defective products.
- Devices to prevent damage to the machine or tools.

Safety devices are strongly recommended in the following situations:

- When reducing operator's attention such as operating the machine continuously or in night shift.
- When extending the duties of the operator beyond this machine.
- When further reducing the possibility of accidents.

The remainder of this section shows the locations of safety devices and outlines their functions.

Note

Any optional safety device can be used only when you purchase it.

<Figure 2.3-1> and <Figure 2.3-2> show the locations on which safety devices are installed.

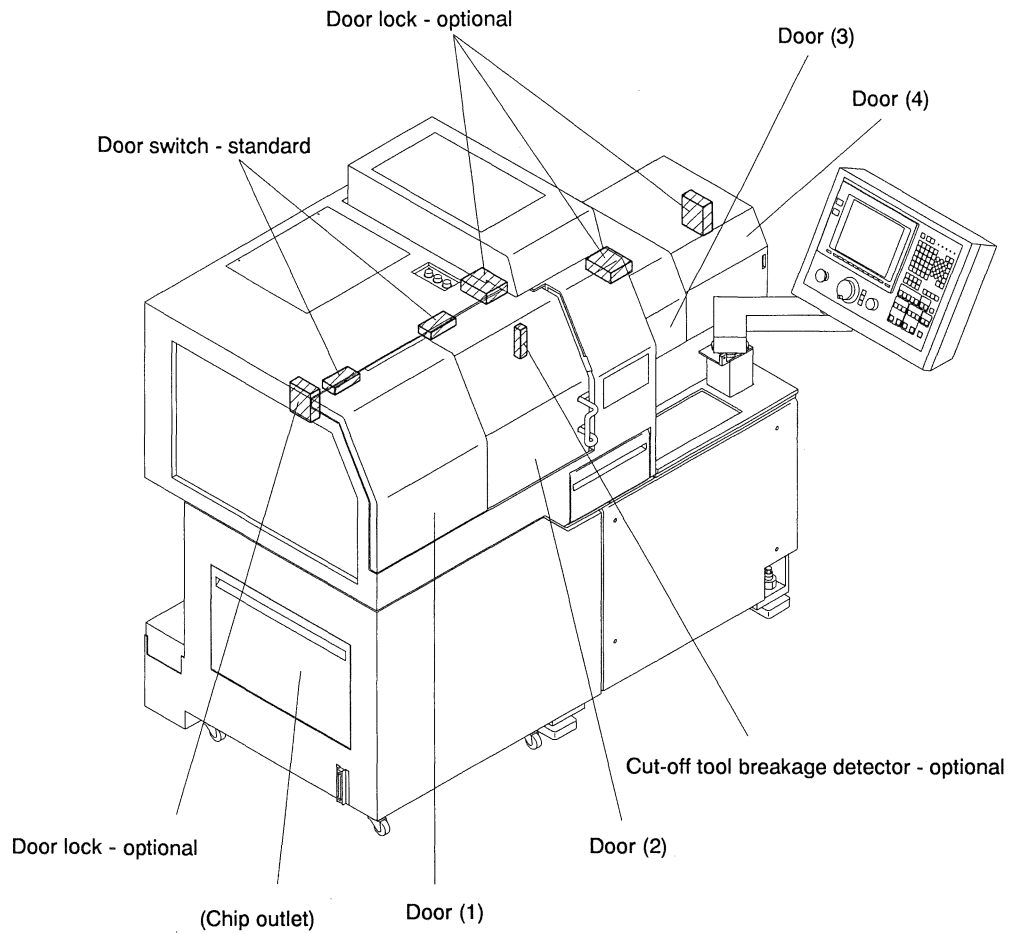
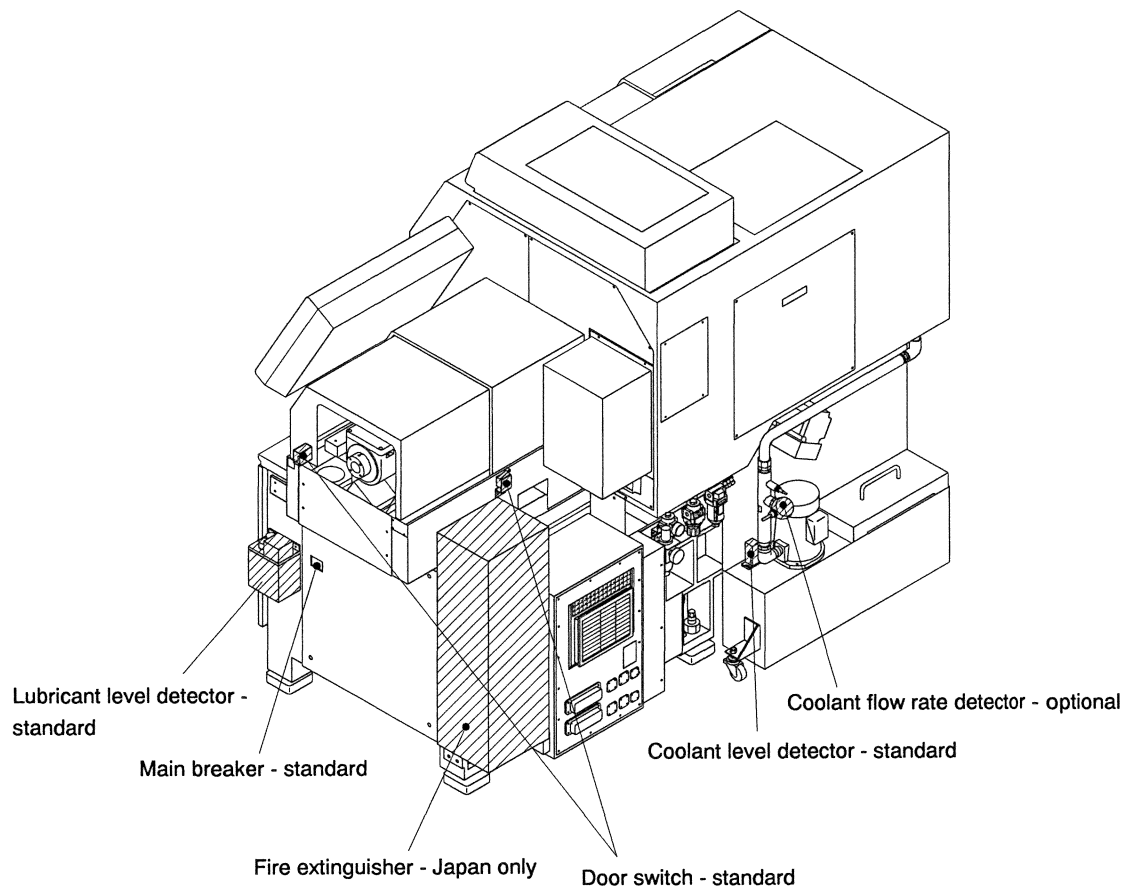


Figure 2.3-1 Locations on which safety devices are installed
(viewed from front of machine)



**Figure 2.3-2 Locations on which safety devices are installed
(viewed from rear of machine)**

The following are detailed descriptions of the safety devices:

Door switches - standard

Door switches prevent any person from opening the front left (cutting side) doors (1) and (2) and front right (main spindle side) doors (3) and (4) during machine operation. See <Figures 2.3-1 and 2.3-2>. The machine can be operated only when all the doors are closed. The machine will be stopped when any of the doors is opened during operation.

In the Handle Feed or Preparation mode, however, operations (excluding the cut-off machining operation) are performed at a speed of up to 2 m per minute even with such doors left open. In addition, manually opening or closing the chuck, manually rotating the spindle, and turning coolant supply on or off are performed whether the doors are open or closed.

Automatic fire extinguisher - Japan only

When the sensor in the machine detects a temperature higher than the prescribed value, the CO₂ fire extinguisher automatically starts to fight the fire.

The automatic fire extinguisher is not a device that can suppress the fire to occur. It is a device to prevent spreading when a fire occurs. Fire might not be able to be extinguished according to the status of a fire. Be sure to perform actions for fire preventing described in <2.7.3 Notes for prevention of fire>. The provided CO₂ fire extinguisher cannot extinguish a metal-caused fire.

Main breaker - standard

The main breaker is automatically turned off to shut down when an overcurrent or a short circuit is detected.

Coolant level detector - standard

This device is installed in the coolant tank and detects the height of the coolant level. When the coolant level gets lower than the limit, the operation of the machine is automatically stopped after completing one cycle to prevent a fire hazard.

Lubricant level detector - standard

This device is installed in the central lubricating oil unit and detects the level of the lubricating oil. When the oil level gets lower than the limit, the operation of the machine is automatically stopped after completing one cycle to prevent machine damage.

Door lock - optional

The door lock disables the doors (1) and (2) on the front left side (cutting room doors) and the doors (3) and (4) on the front right side (main spindle side doors) to be opened during the operation of the machine but enables them to be opened if the machine is stopped (see <Figure 2.3-1>). Door switch is not required when the door lock is mounted.

Cut-off tool breakage detector - optional

A cut-off tool is very easily damaged. If you continue to operate the machine with a damaged cut-off tool, the machine may be damaged or fired. This device detects whether or not material is properly cut. In other words, it indirectly detects whether the cut-off tool is damaged to prevent the above possible dangers. When this device detects a damaged cut-off tool, the operation of the machine is automatically stopped to prevent a fire or machine damage.

Coolant flow rate detector - optional

This device is installed in the coolant supply path to detect the decrease in the flow rate of the coolant. When the coolant flow rate gets lower than the limit, the operation of the machine is automatically stopped to prevent a fire or machine damage.

The following software functions are installed as safety devices in the machine.

Spindle speed change detecting - standard

This function detects excessive changes in spindle speed to prevent machine damage. When the spindle speed fluctuates beyond the predetermined range, the operation of the machine is automatically stopped to prevent the machine from being damaged.

Note, however, that this function must be turned off when the constant surface speed control function is used and during tap and die machining.

Interference check - standard

This function checks for interference between spindles, guide bushing, and tool posts of the machine. When the function determines the possibility of interference during machine operation, the operation of the machine is stopped to prevent machine damage.

2.4 Specifications of Safety Operations


The start, stop, and speed of the machine are defined as listed in the table below from the viewpoint of safety.

Operation control mode and function	Operating Section	Operation with door being opened	Operation at opening the door
Automatic operation Automatic operation of program	Spindle	The operation cannot be started. The operation can be stopped.	The spindle continues to rotate at the specified speed.
Program check Automatic operation of program Handle operation of program MDI operation Preparation for operation Cutting in cut-off machining	Control axis	The operation cannot be started.	The operation is stopped.
Preparation for operation Start position operation Return position operation Tool selection in cut-off machining Material set operation	Spindle	—	—
Manual tool set operation Positioning point operation 3-spindle tool post retract operation	Control axis	The operation can be started. The operation speed is 2 m/min or less.	The control axis continues the operation at the speed of 2 m/mm or less.
Preparation for operation Chuck open/close operation Automatic adjustment of chucking force	Spindle	The operation can be started. The operation speed is 10 min ⁻¹ or less.	The spindle continues to rotate at the speed of 10 min ⁻¹ or less.
	Control axis	The operation can be started. The operation speed is 16 m/min or less.	The control axis continues the operation at the speed of 16 m/mm or less.

2.5 General Precautions during Operation

Be sure to follow the notes described below. Failure to do so will result in death or serious personal injury.

- While the main breaker is set to ON, DO NOT make your body contact with or close to the charging section.
- Do not put your fingers or hands into any moving part of the machine during machine operation.

When the Start key  LED on the operation panel lights or flashes, regard the machine status as Operating.

Be sure to follow the notes described below. Failure to do so could result in death or serious personal injury.

- Operate the machine with all the covers closed.
- All the control unit covers and doors must be closed during machine operation. Shutdown the main breaker of the machine before opening the control unit covers and doors.
- Activate all the safety devices during operating the machine.
- DO NOT open all front left and right doors unless the machine is completely stopped.
- Make sure that all front left and right doors are closed and locked (if equipped with locks) and all safety devices are activated before operating the machine.
- To operate the machine, sufficiently understand the operation and visually confirm the operation switch to be used before actually pressing that switch.
- Check the tooling to see that it is securely clamped in place before starting the machine.

Be sure to follow the notes described below. Failure to do so may cause a fire and not only a damage to the property but also a death or serious personal injury.

- Operate the machine where an operator can complete arrangements for fire extinguishing at any time.
- When machining a material combustible (flammable) during machining by cutting, operate the machine where the operator can always monitor the machining procedure.
- Make sure that there is enough coolant in the machine and it is being supplied smoothly to all necessary parts.
- Clean the machine regularly to remove any chips and debris from the cutting area and the chip receiving area. Remove stray chips from the coolant tank as required, depending on cutting condition and type of material being machined.

2.5.1 Before starting the machine

Be sure to follow the notes described below. Failure to do so could result in death, serious personal injury, or damage to the machine.

- Before starting the machine for the first time, you should know the following:
 - The locations of the emergency stop button safety devices, and all front left and right doors.
 - The meaning of all safety signs.
 - How to stop the machine in an emergency situation.
 - What happens to the machine when you operate buttons, switches and keys on the operation panel.
 - Proper shutdown and startup procedures.
 - Procedures for clearing machine troubles.
 - How to shutdown the main breaker of the machine.
- Make sure you are not too tired or sick to operate the machine safely. If you are tired or sick, **DO NOT OPERATE THIS MACHINE.**
- Wear the proper shop coat (without being slack and/or loose), cap, and safety shoes. Remove gloves, rings, accessories, tie, and those which may possibly be wrapped in the machine from your body.
- Remove the obstacles that may cause slips, falls, and stumbles from the area around the machine.
- Withdraw inflammable chemicals and goods from the area around the machine.
- Clean dirt, oil, and coolant off of the machine, especially on the operation panel.
- Make sure that the machine safety devices are engaged and working properly. **DO NOT** operate the machine with the safety devices disabled or removed.
- Make sure that the emergency stop button is working properly.
- **DO NOT** modify the machine and control circuit.

2.5.2 Safety during preparation operation

Be sure to follow the notes described below. Failure to do so causes accidents as in death, serious personal injury, or damage to the machine.

- DO NOT adjust the tools or measure the dimension of the material during machine operation. If adjustment or measurement is necessary, stop the machine first. Then, before adjusting or measuring, make sure that all machine motion has stopped and that the work cycle will not start automatically.
- In the preparation mode, the tool selection or axis move operation can be done if any of the doors on the front left and right sides is opened. Whereas the machine operation speed is suppressed in the situation, take note on the machine fully and do not approach the moving parts of the machine.
- Check whether the chucking force is sufficient for the material.
- Adjust appropriately the clearance between the material and the guide bushing. Failure to do so causes burning or galling.
- Always remove the jig or tool when it is used for the guide bushing or chuck adjustment.
- Confirm that the installed tool does not interfere with the machine in a preparation work such as program installation or tool replacement.
- Confirm the program contents sufficiently. The machine does not have the function of checking or correcting the programs contents automatically.
- DO NOT attempt to perform work that is beyond the specifications of the machine.
- Take coolant flow into consideration when you select the tooling. Select tooling that allows a smooth passage of chips.
- Select the tool fit to the program contents and machining.
- Confirm that proper offset values are set.

2.5.3 Safety at machine start

Be sure to follow the notes described below. Failure to do so causes accidents as in death, serious personal injury, or damage to the machine.

- Confirm that any maintenance work is not done.
- Remove the foreign substance (including tools and work towels) within and out of the machine.
- Make sure there is enough oil in the lubricating oil tank and coolant tank.
- Before starting the machine, confirm that the tooling (including tools, tool holder, chuck, and chuck bushing) is mounted securely at the proper positions.
- Close all the doors on the front left and right sides securely.

2.5.4 Safety during automatic operation

To prevent any secondary accident from being triggered by an unexpected incident, such as jammed chips, be sure to monitor the operation status at appropriate intervals during the automatic operation and troubleshoot a failure, if any. When the machine is not monitored at all times, an operator should be placed within a certain distance from the machine so that he can immediately take an appropriate action at the occurrence of a failure in the machine. Always stop the machine before it is repaired.

Regularly Monitor the Machine

- To produce high-quality products and avoid damage to the machine and possible personal injury, monitor the machine at regular intervals for alarm messages, tool wear, coolant flow, etc.
- Take note on the operation status. If an error occurs, stop the machine immediately and take the appropriate action. The major error include chip entanglement, tool break, and workpiece burning.
- Perform the following items periodically. The interval depends on the cutting condition and material. Define the interval according to the usage state.
 - Remove chips
Too many chips on the tools and materials can greatly reduce the cooling effect of the coolant. Reduced cooling effect can cause a fire, depending on the type of material being machined. Remove chips from the chip receiving area and the cutting area at suitable intervals. When the machine is regularly used, intervals depend on cutting condition, material, etc.
 - Inspect the Coolant
Monitor the coolant condition and level regularly. Check regularly to make sure that the coolant is discharged smoothly and that the supply to the machining position is adequate. Failure to do so can result in damage to the tools and a possible fire hazard.
 - Inspect the Tools
Dull, worn, or damaged tools put excessive load on the machine. This can damage the machine and possibly cause a fire. Follow a regular inspection/maintenance schedule for the tools. During machine operation, listen for abnormal sounds and be aware of possible troubles due to damaged, dull, or worn out tools. Also inspect completed workpieces for evidence of damaged, dull, or worn out tools.

Machine stop during operation

DO NOT adjust the tool or measure the size of the workpiece during operation. If done, a serious personal injury may occur. If it is necessary to mount or adjust the tool or measure the size of the workpiece, first stop the machine. Then after confirming that the machine is stopped completely and the machining cycle is not started automatically, start the adjustment or measurement work.

Door closing

During operation, be sure to close the cutting room door, main spindle side door, chip outlet, and product outlet. If a fire occurs due to some cause without any of the door closed, flames may come out from the doors to spread the fire.


2.5.5 Safety during maintenance

Be sure to follow the notes described below. Failure to do so causes accidents as in death, serious personal injury, or damage to the machine.

- Turn off the main breaker before opening the cover or door of the control unit.
- Be sure to conduct any work in emergency stop state other than operation check.
- Only qualified maintenance personnel should perform maintenance operations on the machine.
- When more than one engineer maintain the machine, they should always communicate with each other by voices to confirm the safety.
- The electrical components in this machine are high precision devices that can be damaged by excessive force, shock, or vibration. Use caution when you handle all electrical components of the machine.
- Use care when you disconnect connectors. They are easily damaged.

2.5.6 Safety at end of operation

Be sure to follow the notes described below. Failure to do so causes accidents as in damage to the machine.

- To turn off the power of the machine, press Power OFF switch  after stopping the machine, confirm that the LCD display disappears and the lamps on the control unit are off, and turn off the main breaker.


2.6 Action of Emergency Situations

Actions and procedure required in emergency situations are explained in this section.

2.6.1 Emergency situations requiring evacuation

Concern human lives first when an emergency situation such as a fire, lightening, or earthquake occurs.

If you have time before evacuating

Stop the machine immediately. Press Power OFF switch  and confirm that the LCD display disappears and lamps on the control unit are off. Then, turn off the main circuit breaker. Try to get the machine to stop when the tool is not touching the material. Otherwise, the tip of the tool may be damaged in the process of stopping or restarting operation.

If you do not have time and must evacuate immediately

Immediately press the Emergency Stop button and turn off the main circuit breaker to stop the machine.

2.6.2 Power failure

If a power failure occurs, illegal data may enter into the machine due to the machine control scheme. After the power is recovered, turn off the main breaker once and then turn on the power of the machine again.

In addition, if a momentary power failure occurs without machine stop and LCD display disappearing, the main circuit breaker must be turned off once. Press Power OFF switch



, confirm that the LCD display disappears and lamps on the control unit are off, and turn off the main breaker. Then, turn on the power of the machine again.

2.6.3 Resuming operation

After emergency stop of the machine or a power failure, follow the procedure below to resume operation of the machine:

Procedure

1. Inspect the tool sufficiently to check whether it is damaged or worn. If the tool is damaged or worn considerably, replace it with a normal one. Also confirm that the machine can be operated safely in the normal state.
2. Provide the cut-off machining for the workpiece being subject to machining at the occurrence of the emergency situation.
3. Restart the operation of the machine according to the Operator's Manual.

2.7 Notes for Prevention of Accident

2.7.1 Notes for prevention of electric shock accident

Be sure to follow the notes described below. Failure to do so causes accidents as in death or serious personal injury due to an electric shock.

- DO NOT make your body contact with or close to the charging section of the electric device.
- Always turn off the main breaker of the machine before connecting or disconnecting the power cable of the machine. Then, turn off the power breaker in the shop from which the power is supplied to the machine.
- The machine requires proper earth connection. Refer to the "Relocating the NC Machine" described in Appendix of the Maintenance Manual for details.
- Before opening the cover or the door of the control unit, always turn off the main breaker.

2.7.2 Notes for prevention of injury or death

Be sure to follow the notes described below. Failure to do so causes accidents as in death or serious personal injury.

- Make sure you are not too tired or sick to operate the machine safely. If you are tired or sick, DO NOT OPERATE THIS MACHINE.
- Make sure you wear the proper work clothes (no loose clothing), safety goggles, cap, and safety footwear. Also make sure you remove any gloves, rings, accessories, neckties that may cause you to be caught by the machine.
- DO NOT put your fingers or hands into any moving part of the machine. DO NOT make your body contact with or close to any rotating section of a tool or the machine.
- During the operation of the machine, have the machine cover and all of the doors on the front left and right doors closed. In addition, DO NOT open any of the doors on the front left and right sides unless the machine completely stopped.
- In the preparation mode, the tool selection or axis move operation can be done if any of the doors on the front left and right sides is opened. Whereas the machine operation speed is suppressed in the status, take note on the machine fully and do not approach the moving parts of the machine.
- Be sure to maintain the machine by qualified personnel familiar with the maintenance work.
- If more than one engineer maintain the machine, they should always communicate with each other by voices to confirm the safety.
- DO NOT modify the machine and control circuit.
- Machine transfer requires work using cranes and forklifts and slinging work. Be sure to assign the personnel certified by the public institute to the work.

2.7.3 Notes for prevention of fire

Major causes of occurrence of fire

- The friction between the workpiece and the tool or the metallic section of the machine caused by break or wear of a cutting tool may overheat the machine to be fired.
- Because the coolant is not discharged to the machining point enough, the workpiece is overheated to fire. The following causes may be assumed:
 - The position of the coolant nozzle is incorrect.
 - Chips get caught in the coolant nozzle to move the position of the coolant nozzle.
 - Because of insufficient coolant in the coolant tank, the coolant flow is rather low.
 - Because chips are accumulated in the coolant tank to decrease the quantity of coolant flown into the pump, the coolant flow is rather low.
 - Because the filter in the coolant tank is clogged, the coolant flow is rather low.
 - Chips are accumulated around the machining point.
- Miscellaneous
 - A combustible workpiece (flammable workpiece) is subject to machining to cause a fire to occur.
 - Because no safety devices are operated, any failure cannot be detected to cause a fire to occur.
 - A coolant having too low flash temperature (100°C or lower) is used to cause a fire to occur.

Major causes of spread of fire

- The occurrence of a fire was found late because the machine was not monitored.
- Frames were spread out of the cutting room because the cutting room door, chip outlet, and/or product outlet were opened.

Notes for fire prevention

Be sure to follow the notes described below. Failure to do so may cause a fire resulting not only a damage to the property but also a death or serious personal injury.

- Monitor the machine status regularly. Then take appropriate action if a malfunction is found.
- To minimize the spread of a fire if it occurs, monitor the operation status to enable the extinguishing work to be done immediately.
- Make sure to inspect the machine according to steps described in Chapter 4 <Scheduled Maintenance> of the Maintenance Manual.
- Check the cutting tools to use proper tools which are neither broken nor worn.
- Operate the machine within the range of the specification.
- Provide machining under the proper cutting conditions.
- Confirm that the quantity of the coolant is enough to be supplied smoothly to the sections requiring the coolant.
- Confirm that the coolant hose is neither twisted nor broken, the connections are not loosened, and chips are not accumulated at the bending sections.
- It is particular dangerous when an error occurs in the electric device of the machine to generate sparks. Stop the machine immediately, turn off the main breaker of the machine, and call the Cincom Service Office.
- For the machining of a combustible workpiece (flammable workpiece), operate the machine under the condition that an operator always monitors it. Prepare a metal fire extinguisher near the machine.
- Check the cutting tools for any breaks or wears. If a failure is found on a cutting tool, replace it with a normal one. Also check the machining surfaces of products. If they indicate a failure of the tool, replace it with a normal one.
- DO NOT bring fire such as light of cigarette, light of lighter, and sparks close to the machine.
- Confirm the cutting room door, chip outlet, and product outlet to close them securely.
- Monitor the quantity of chips in the chip receiver and the coolant tank regularly to remove them.

Equipment for fire prevention

Take appropriate measures for fire prevention.

- The machine sold in Japan is equipped with automatic fire extinguisher.
- If you operate the machine without the automatic fire extinguisher, take substitute fire prevention measures.

The automatic fire extinguisher is not a device that can suppress the fire to occur. It is a device to prevent spreading when a fire occurs. Even if an automatic fire extinguisher has been installed, fire might not be able to be extinguished depending on the status of a fire. The most important thing is to prevent a fire from occurrence.

Be sure to operate, maintain, or inspect the automatic fire extinguisher according to Appendix <Fire extinguisher manual>.



WARNING

Observe the following notes on fire prevention:

- Before starting machine operation, operate and maintain/inspect the fire extinguisher according to Appendix <Fire extinguisher manual>".
- If you operate the machine without the automatic fire extinguisher, be sure to take substitute fire prevention measures.
- The automatic fire extinguisher functions when the cutting room door, chip outlet, and product outlet are closed (in airtight state). Confirm that the cutting room door, chip outlet, and product outlet are closed during machine operation.
- Be sure to mount the shutter on the mist collector that closes automatically by interlocking with the automatic fire extinguisher. If the shutter is open, extinguishment will fail.

Also observe the following to prevent metal-caused fire from spreading.

- The combustible metal may ignite and burn by the cutting heat or others, if it is a thin tip, particle, or melting state. The provided CO2 fire extinguisher cannot extinguish such as metal-caused fire. Be sure to use a fire extinguisher dedicated to metal-caused fire.

Keep the following in mind when cutting the above workpiece:

- Avoid unattended operation.
- Prepare a fire extinguisher dedicated to metal fires near the machine.
- Never use water to fight such fires.

Listed below are typical combustible metals. Contact the manufacturer of the material for detailed information.

zirconium, magnesium, titanium, calcium, hafnium, lithium, plutonium, sodium, thorium, uranium, zinc, and potassium

2.7.4 Notes for prevention of machine damage

Be sure to follow the notes described below. If not, the assets including the machine and machining products may be lost.

- Confirm that the installed tool does not interfere with the machine in a preparation work such as program installation or tool replacement.
- DO NOT modify the machine and control circuit.
- DO NOT provide any machining exceeding over the machine specification.
- Electric parts are extremely precise to be damaged by excess force, shock, or vibration. Take sufficient notes on handling of electric parts.
- Take sufficient notes when connecting or disconnecting the connector because it can easily be damaged.

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Chapter 3 Machine Components

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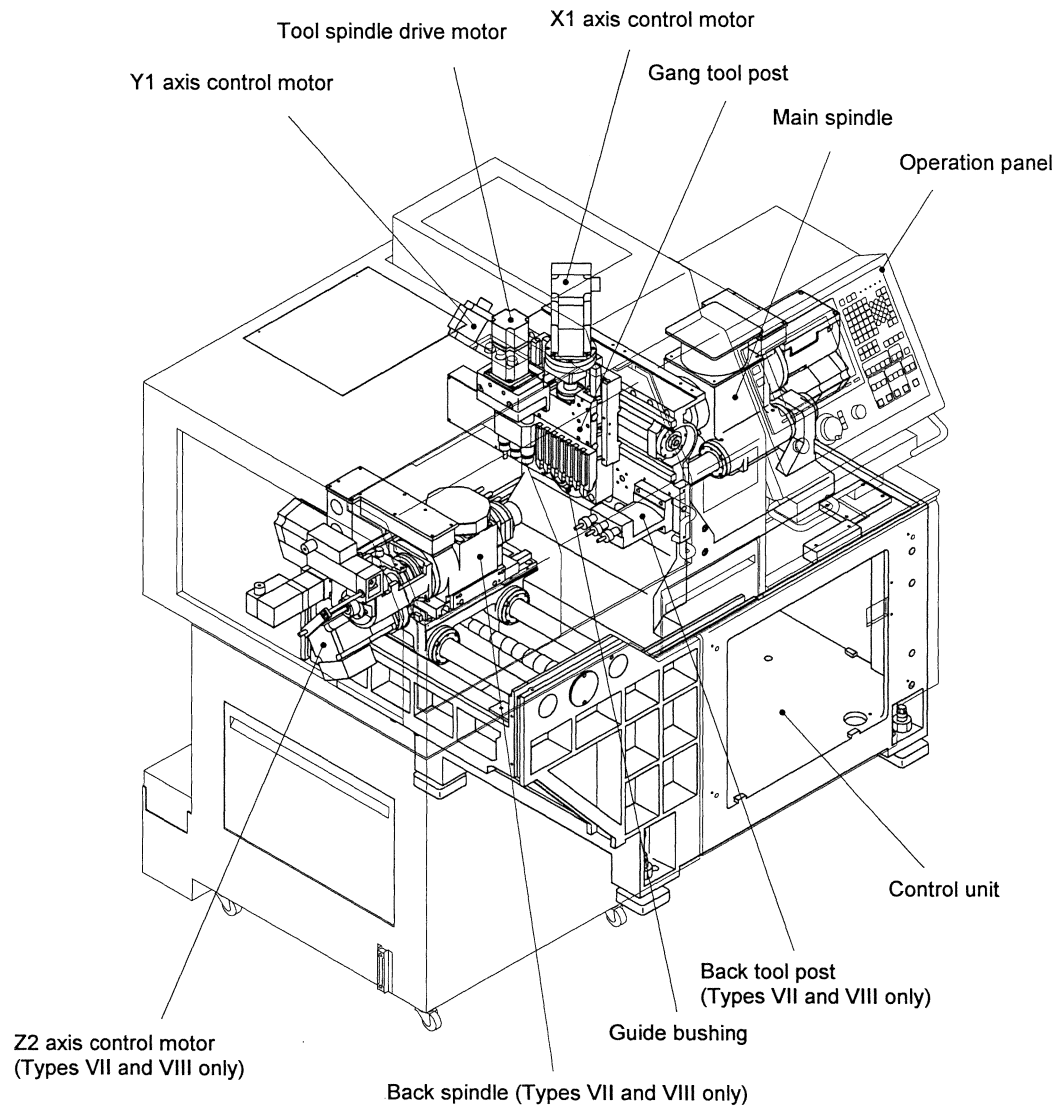
3.1 Machine Overview

Each user of the L16/L20 machine should understand the outline of its structure for constant maintenance and management of the machine in its optimum conditions and for prompt recovery from machine trouble.

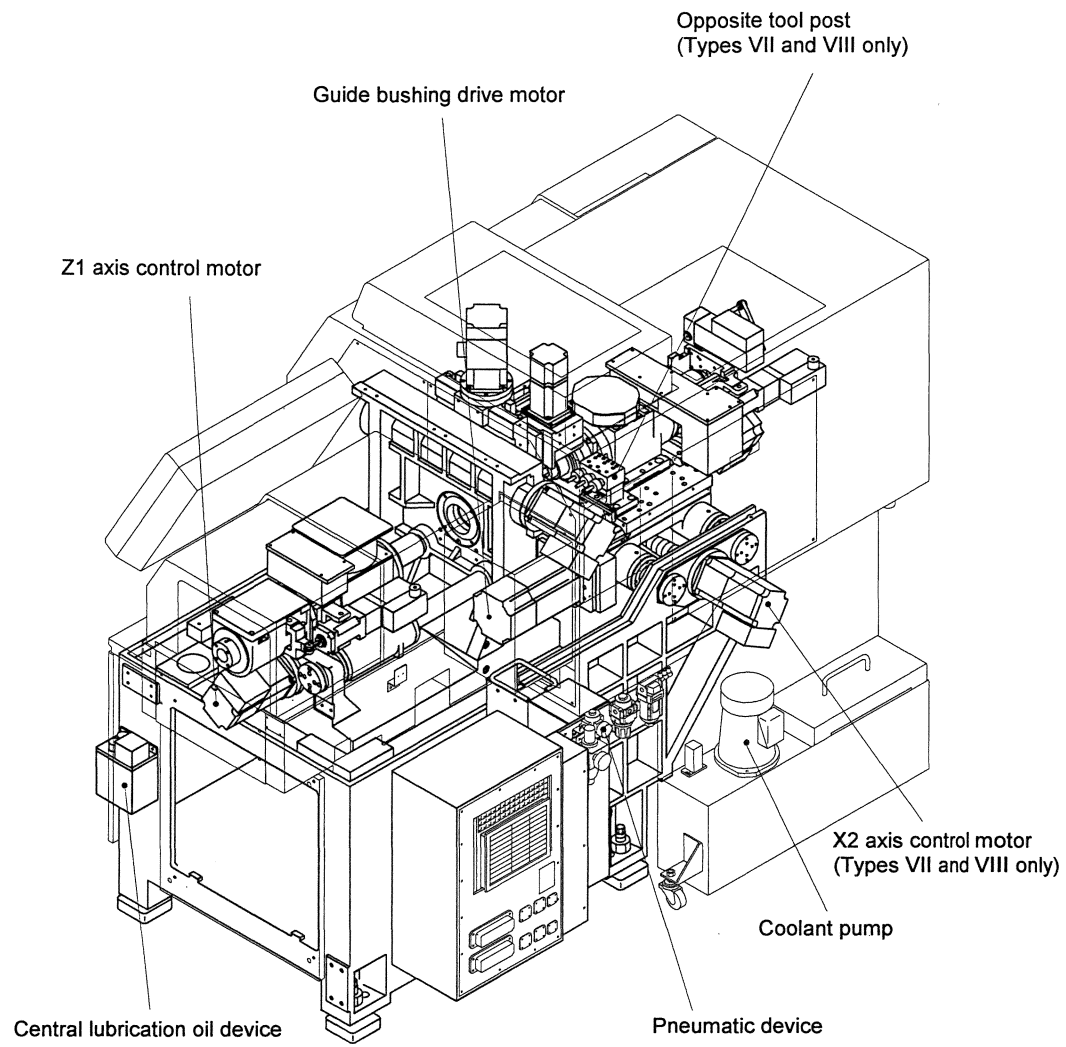
To provide an mechanical overview, this chapter illustrates the major mechanisms and components of the L16/L20 machine. See <Chapter 7 Wiring Diagrams > for electric devices.

3.2 Main Components of the Machine

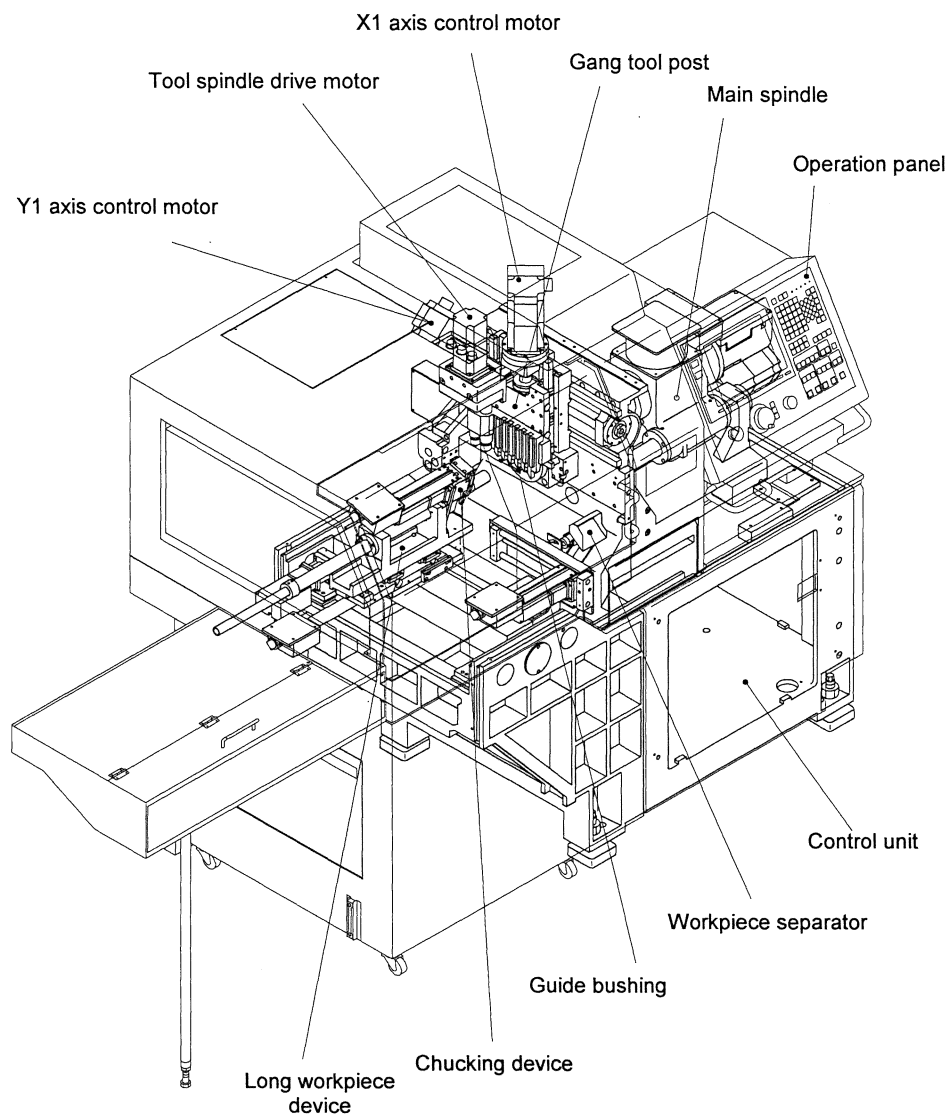
Shown below are the front and rear views of the machine with the names of its main components.



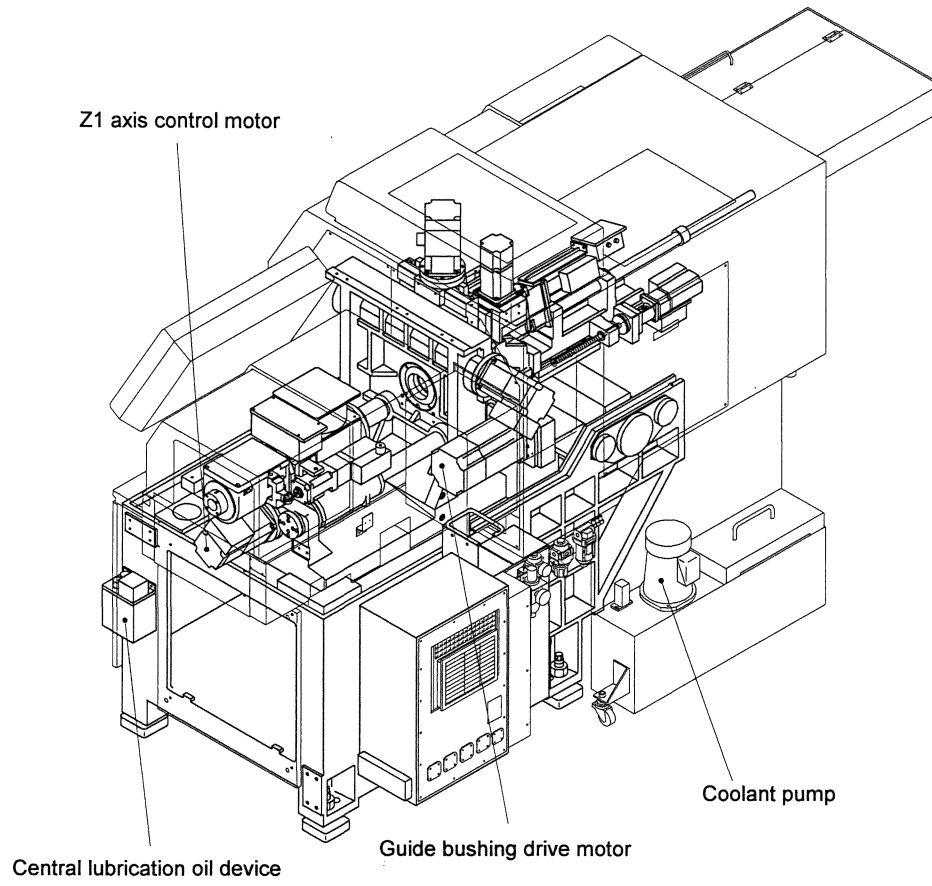
Machine Front View (Types VII and VIII)



Machine Rear View (Types VII and VIII)



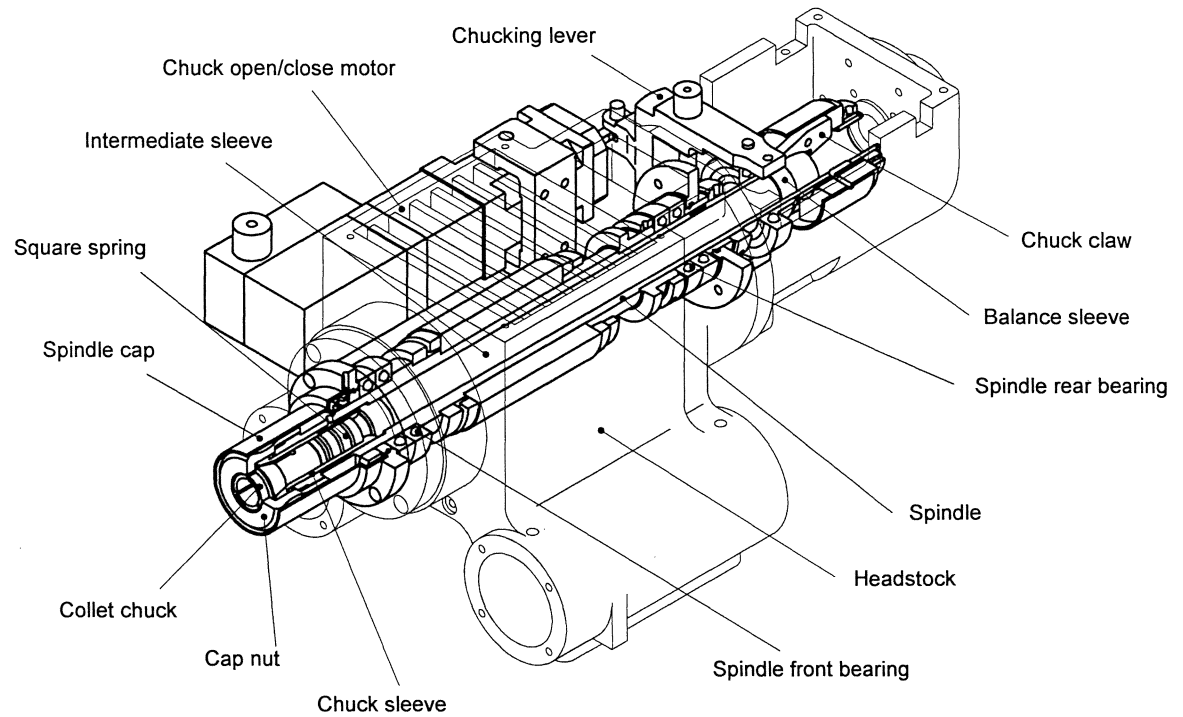
Machine Front View (Type I)



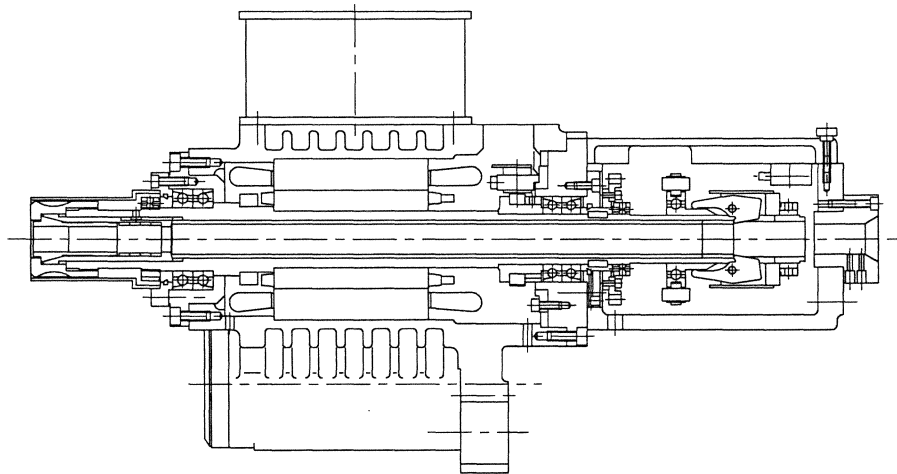
Machine Rear View (Type I)

3.3 Spindle Device

Shown below are the names of the components of the spindle device and its sectional view.



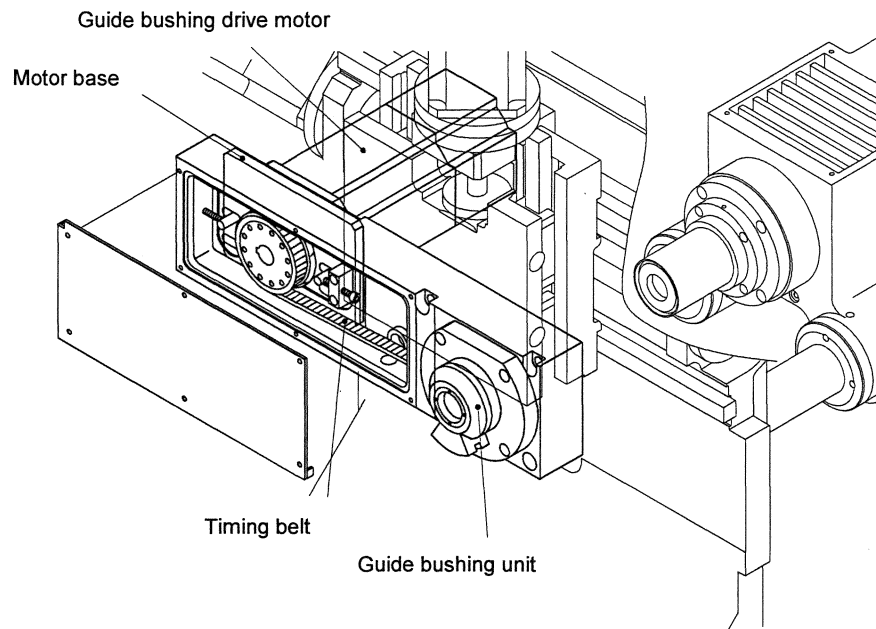
Spindle Device



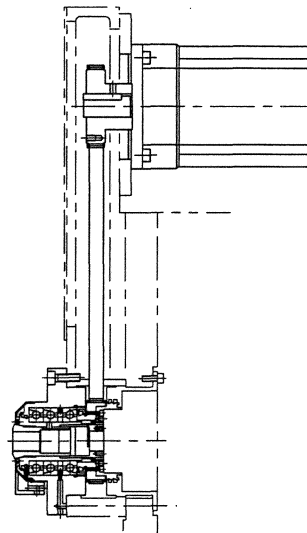
Cross-sectional View of Spindle (center of spindle)

3.4 Guide Bushing and Guide Bushing Drive Device

Shown below are the names of the components of the guide bushing and the guide bushing drive device and the sectional view of the guide bushing.



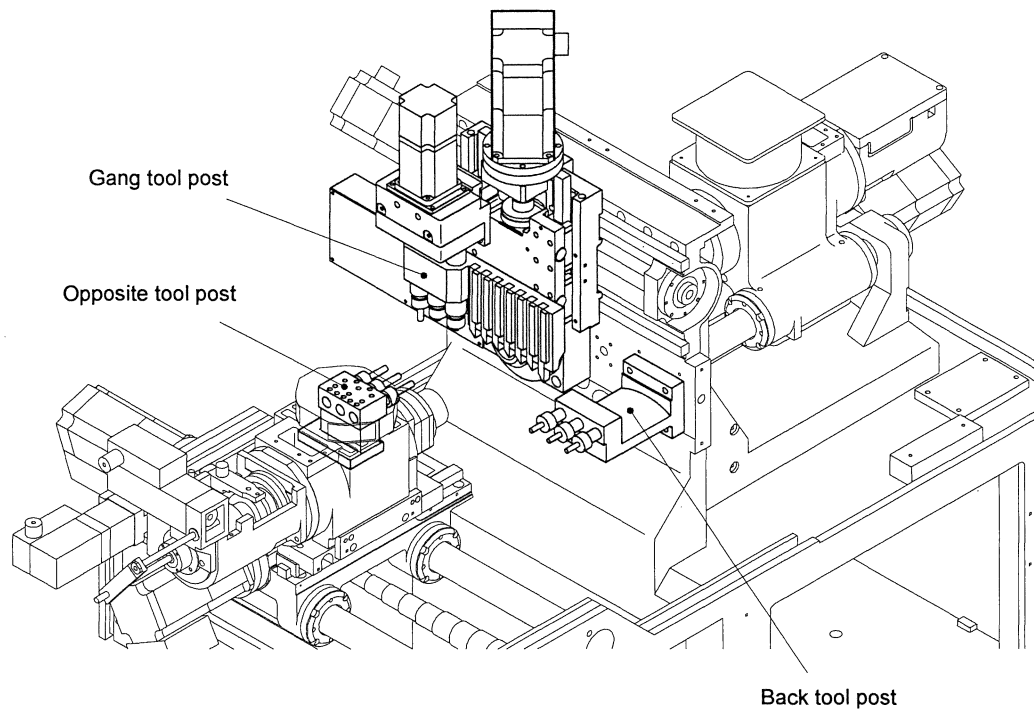
Guide Bushing and Guide Bushing Drive Device



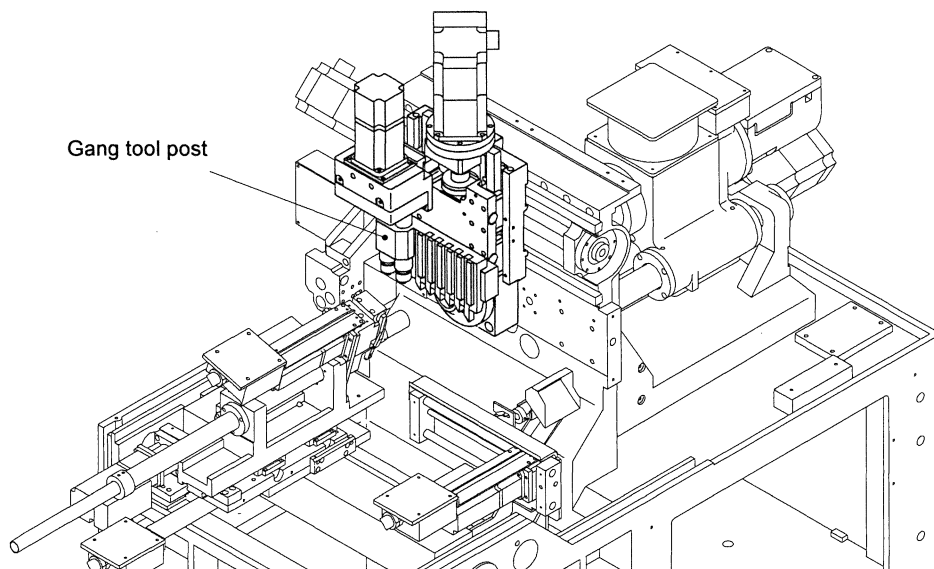
Cross-sectional View of Guide Bushing

3.5 Tool Post

Shown below is the external view of the tool post with the names of its components.



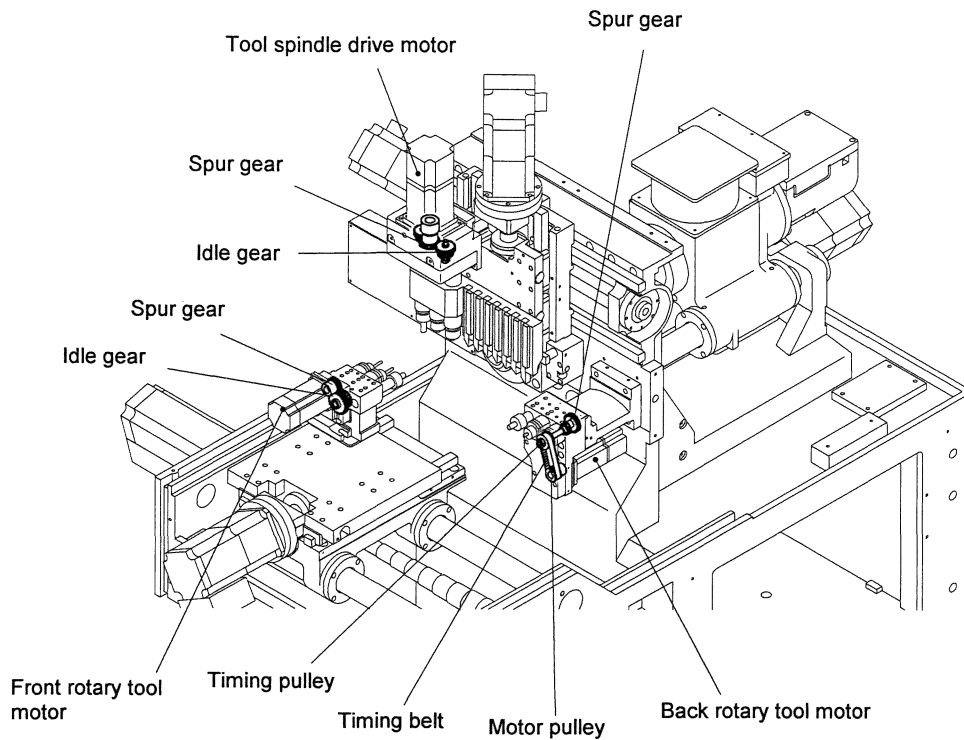
Tool Post (Types VII and VIII)



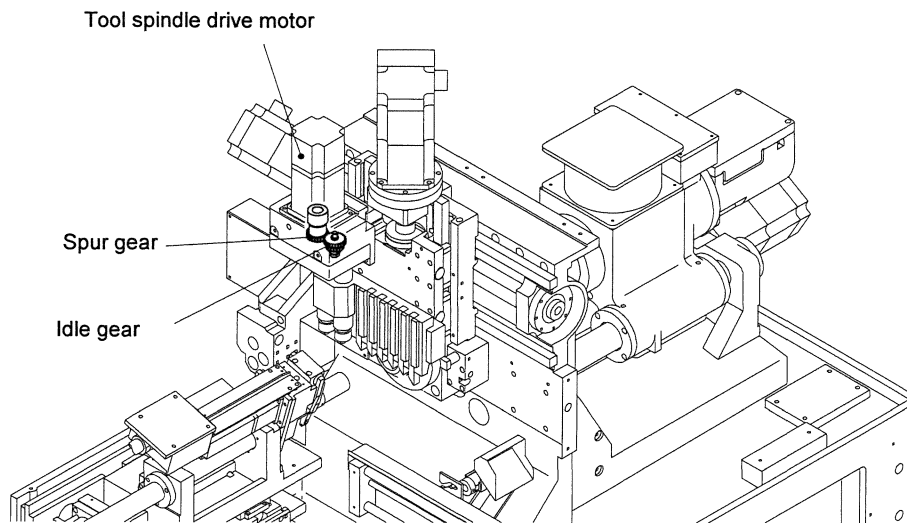
Tool Post (Type I)

3.6 Tool Spindle Drive Device

Shown below is the external view of the tool spindle drive device with the names of its components.



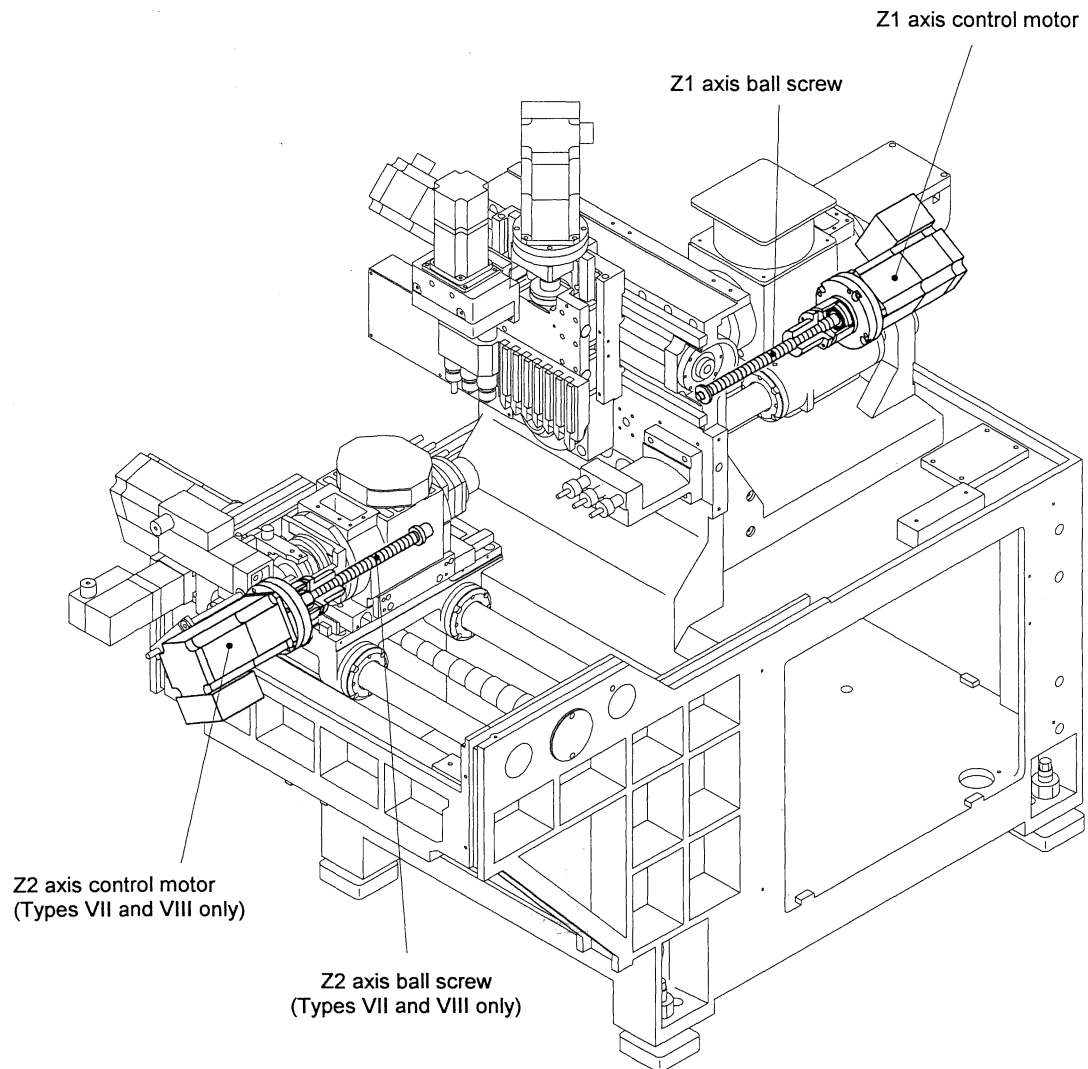
Tool Spindle Drive Device (Types VII and VIII)



Tool Spindle Drive Device (Type I)

3.7 Z-Axis Feed Mechanism

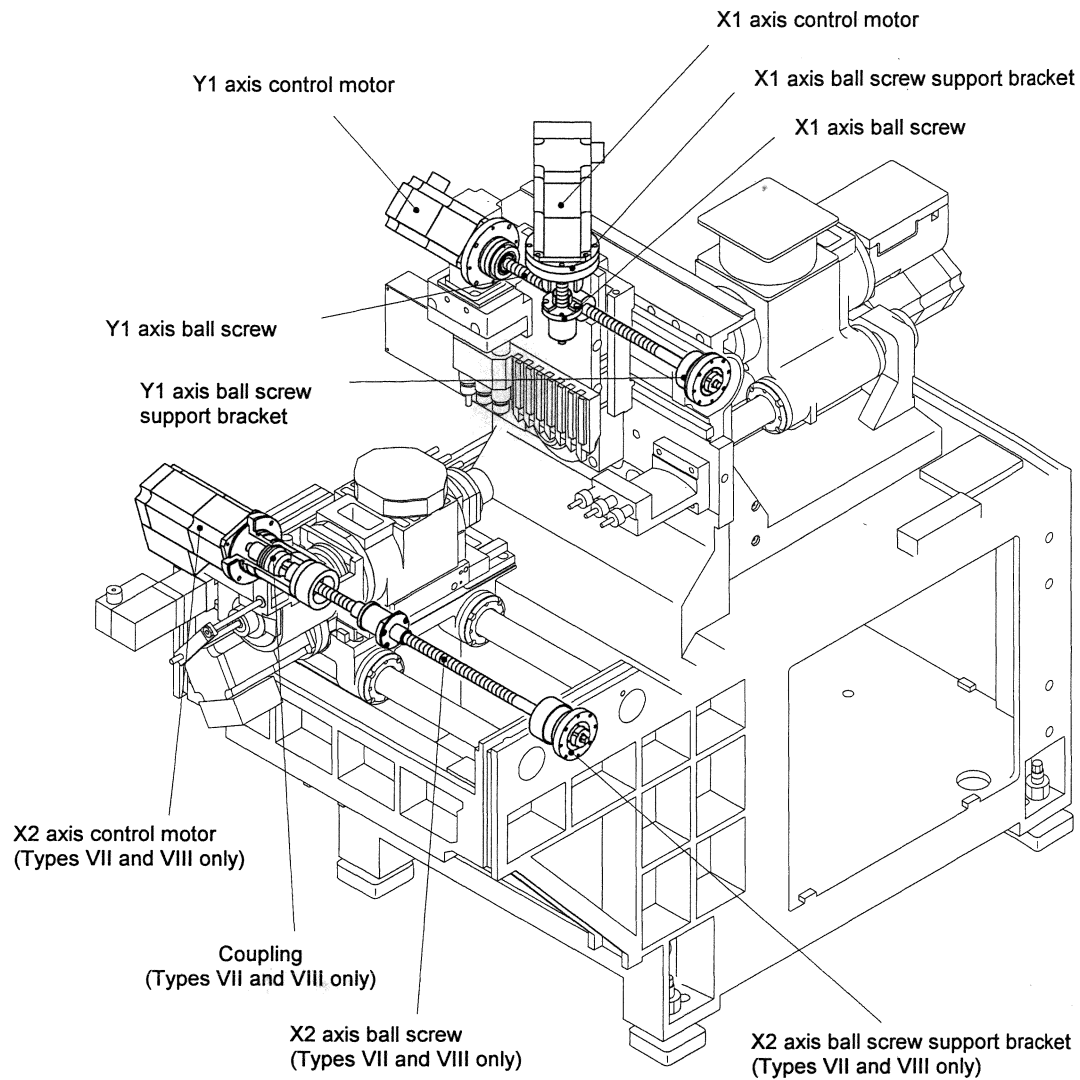
Shown below is the perspective view of the Z-axis feed mechanism with the names of its components.



Z-Axis Feed Mechanism

3.8 X, Y-Axis Feed Mechanism

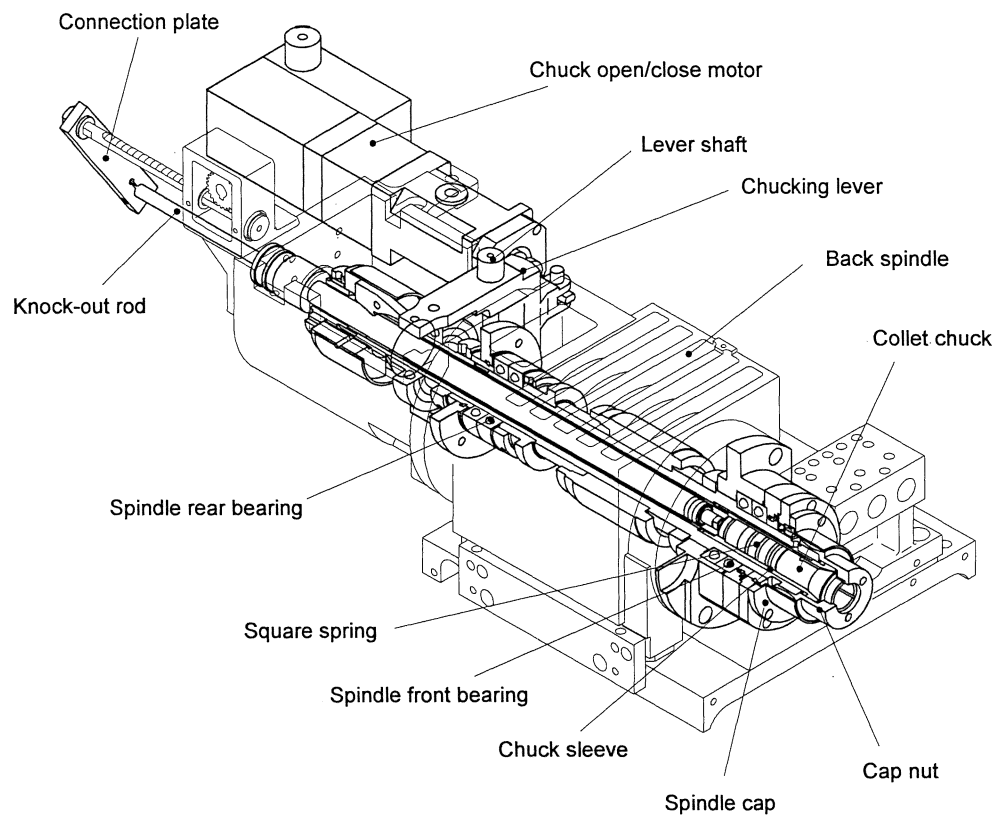
Shown below is the perspective view of the X,Y-axis feed mechanism with the names of its components.



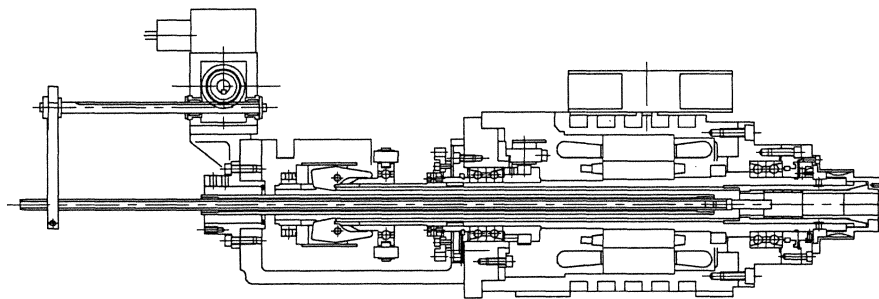
X, Y-Axis Feed Mechanism

3.9 Back Spindle Device (Types VII and VIII)

Shown below are the names of the components of the back spindle device and its sectional view.



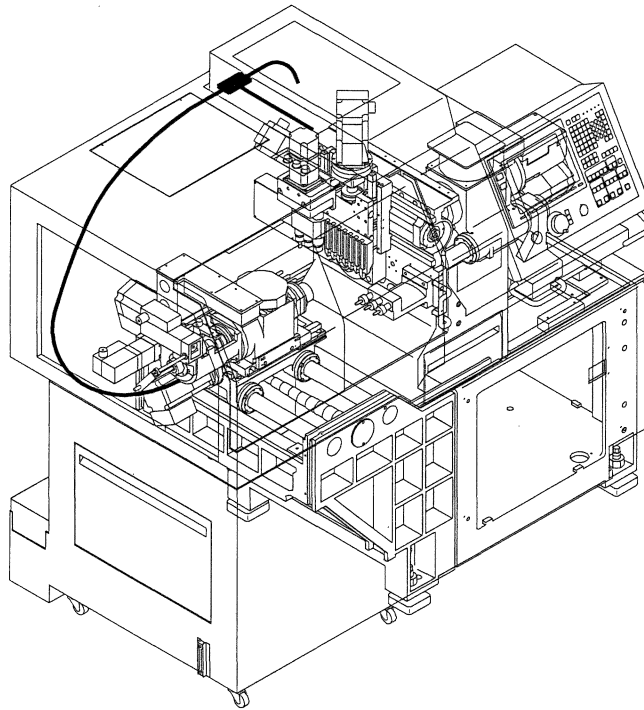
Back Spindle Device



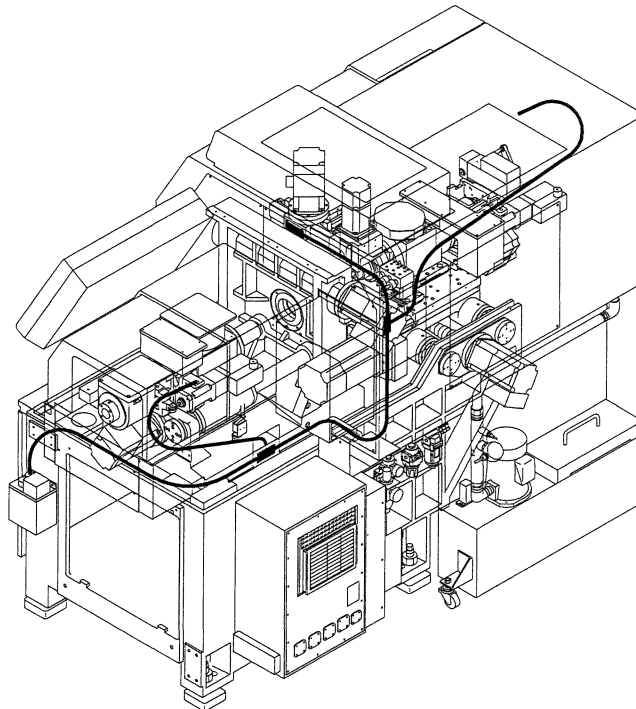
Cross-sectional View of Back Spindle (center)

3.10 Lubricating Oil Device

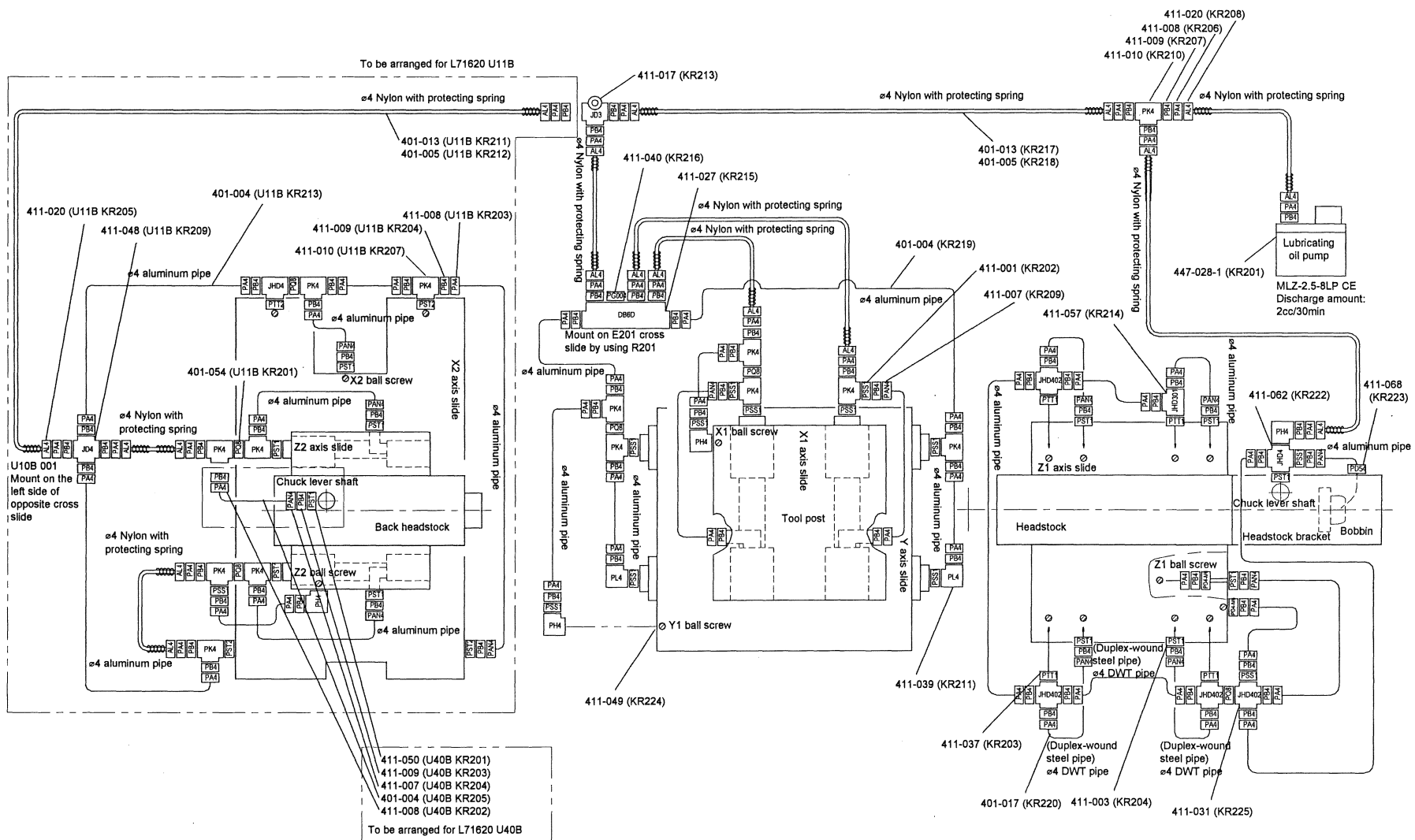
Shown below are the front and rear views of the Lubricating oil device, and the Lubricating oil piping diagram.

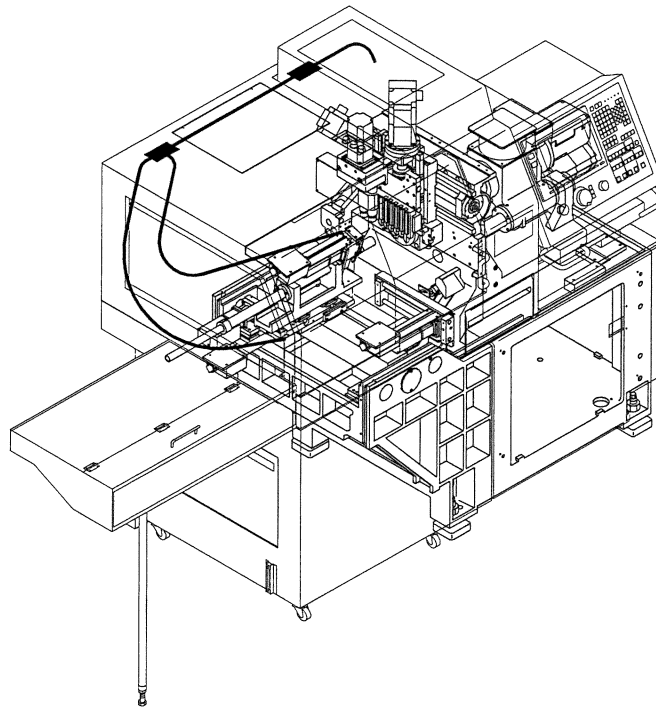


Types VII and VIII Layout (front view)

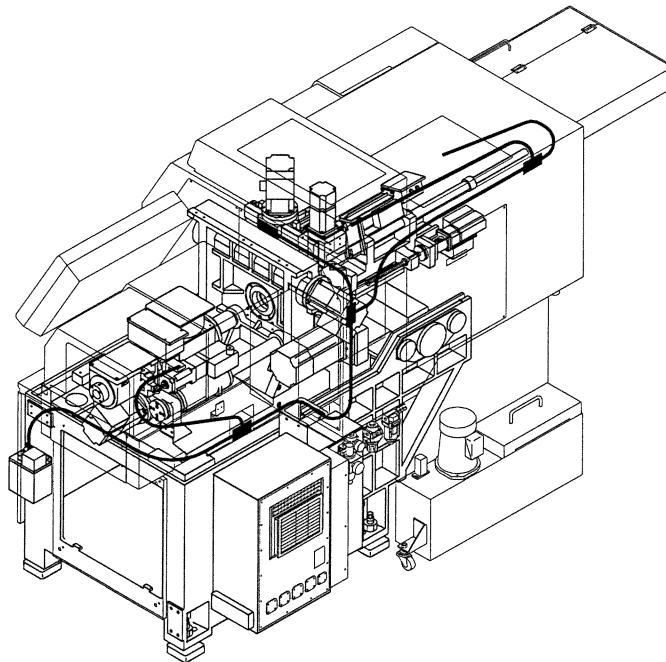


Types VII and VIII Layout (rear view)

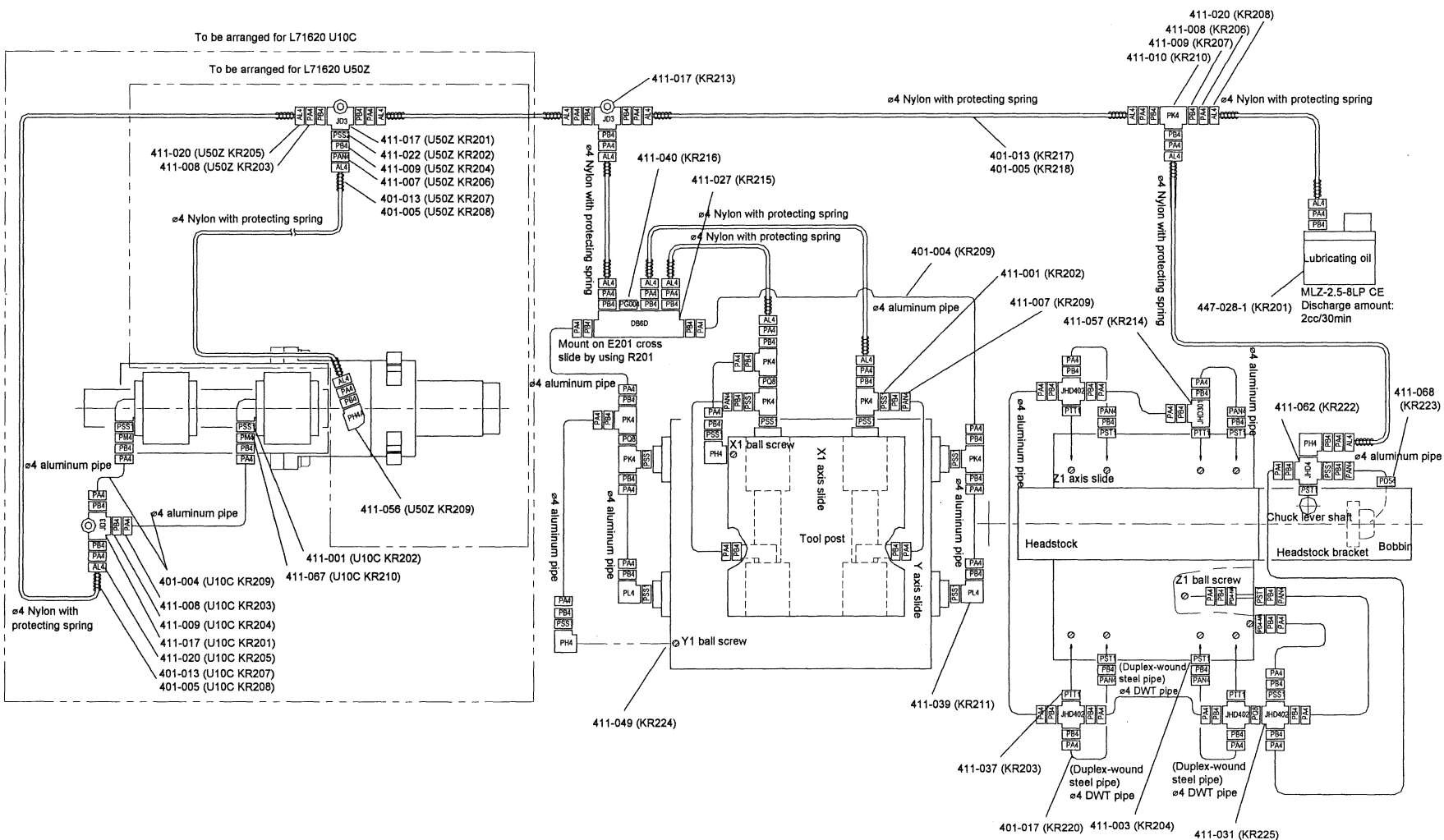




Type I Layout (front view)



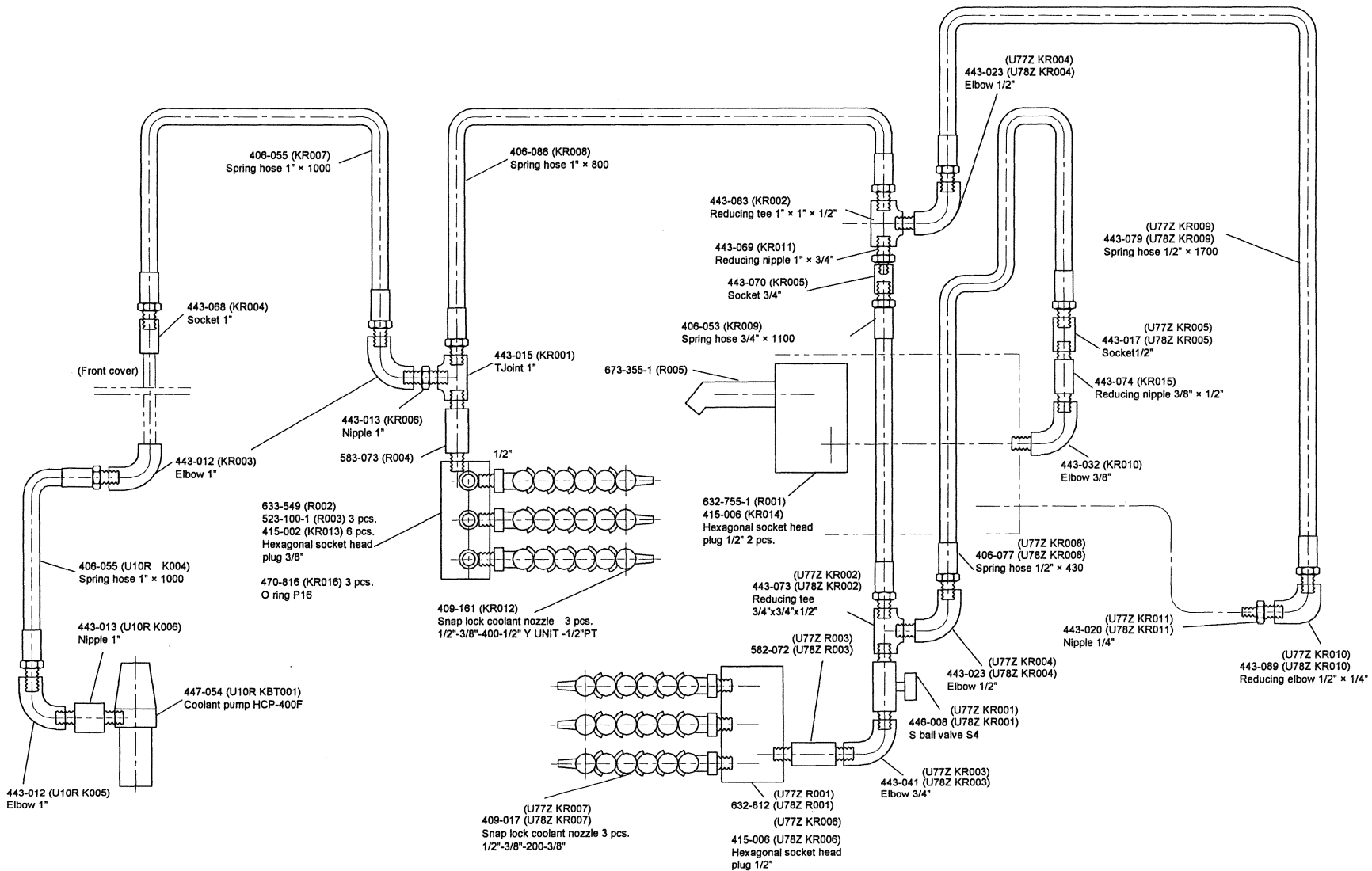
Type I Layout (rear view)



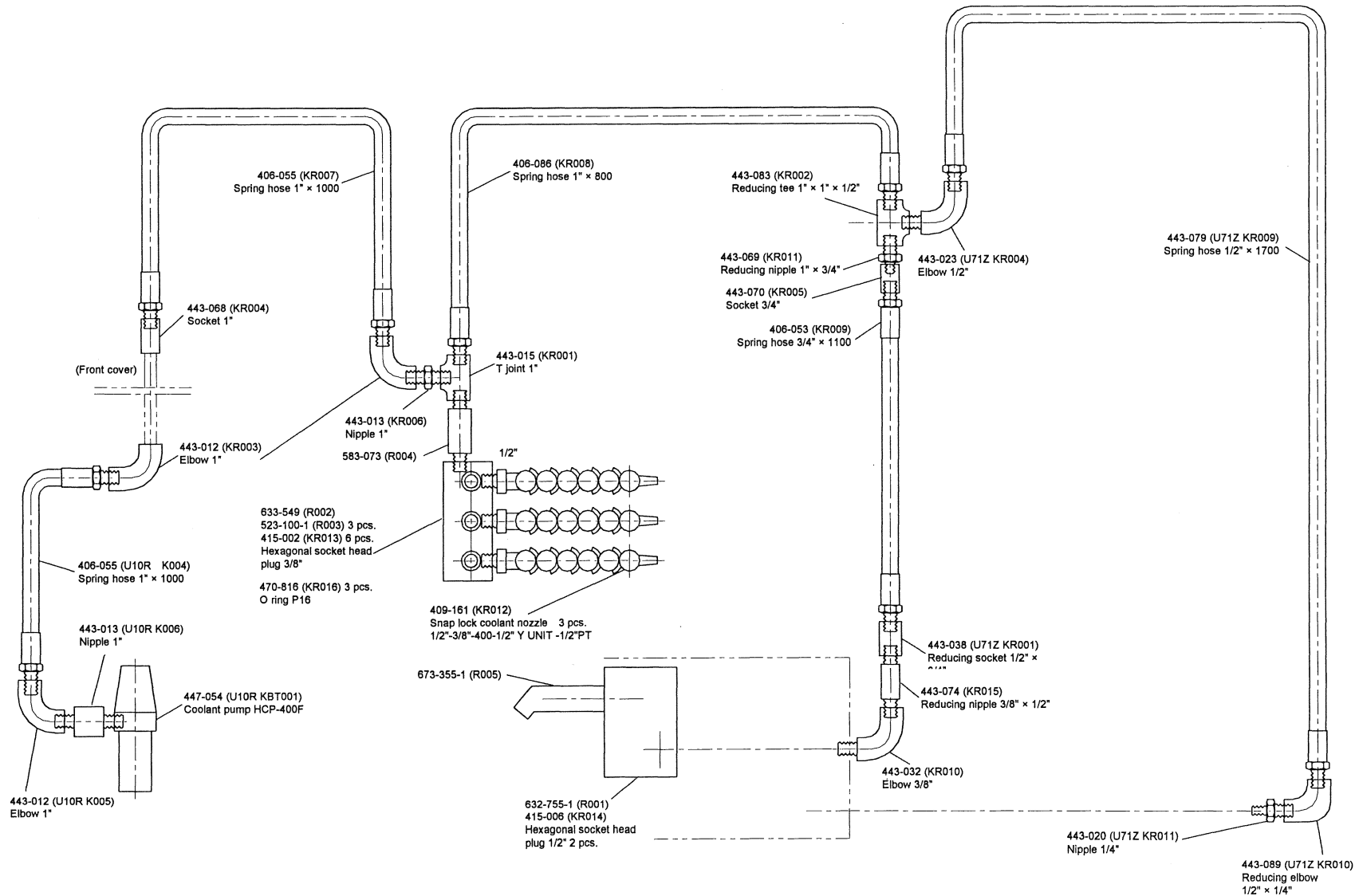
3.11 Coolant Device

Shown below are coolant piping diagrams.

Coolant Circuit Diagram (Types VII and VIII)

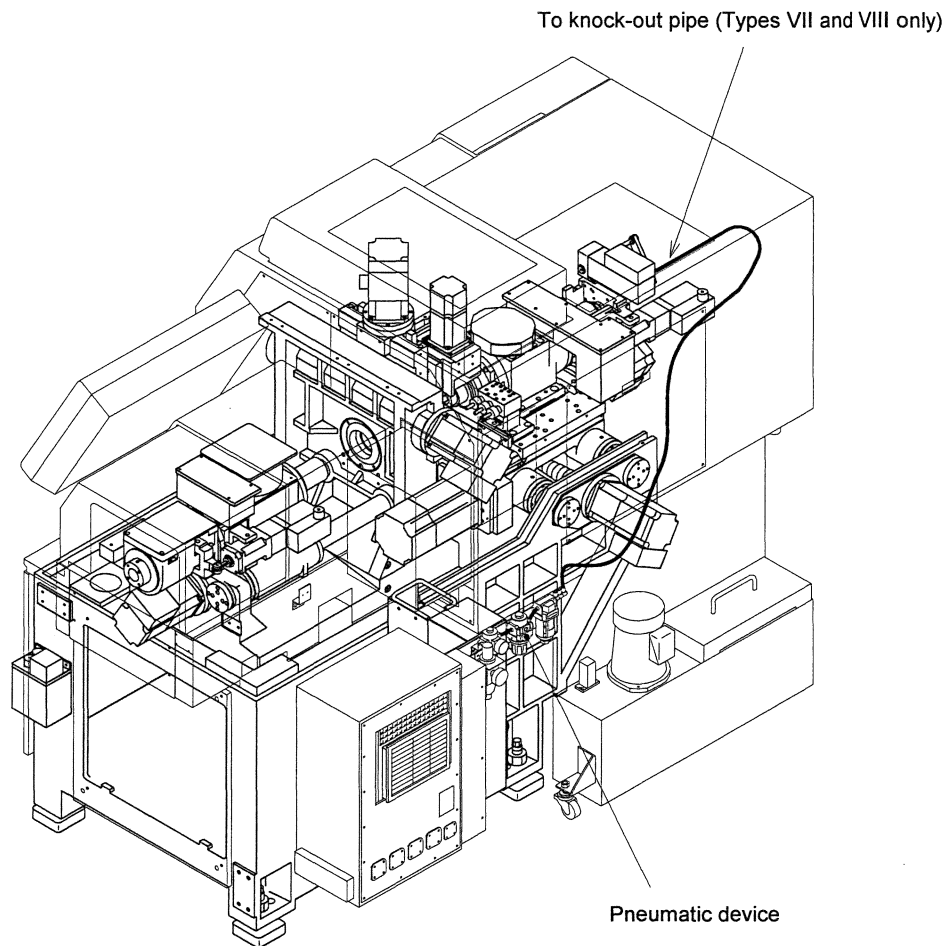


Coolant Circuit Diagram (Type I)



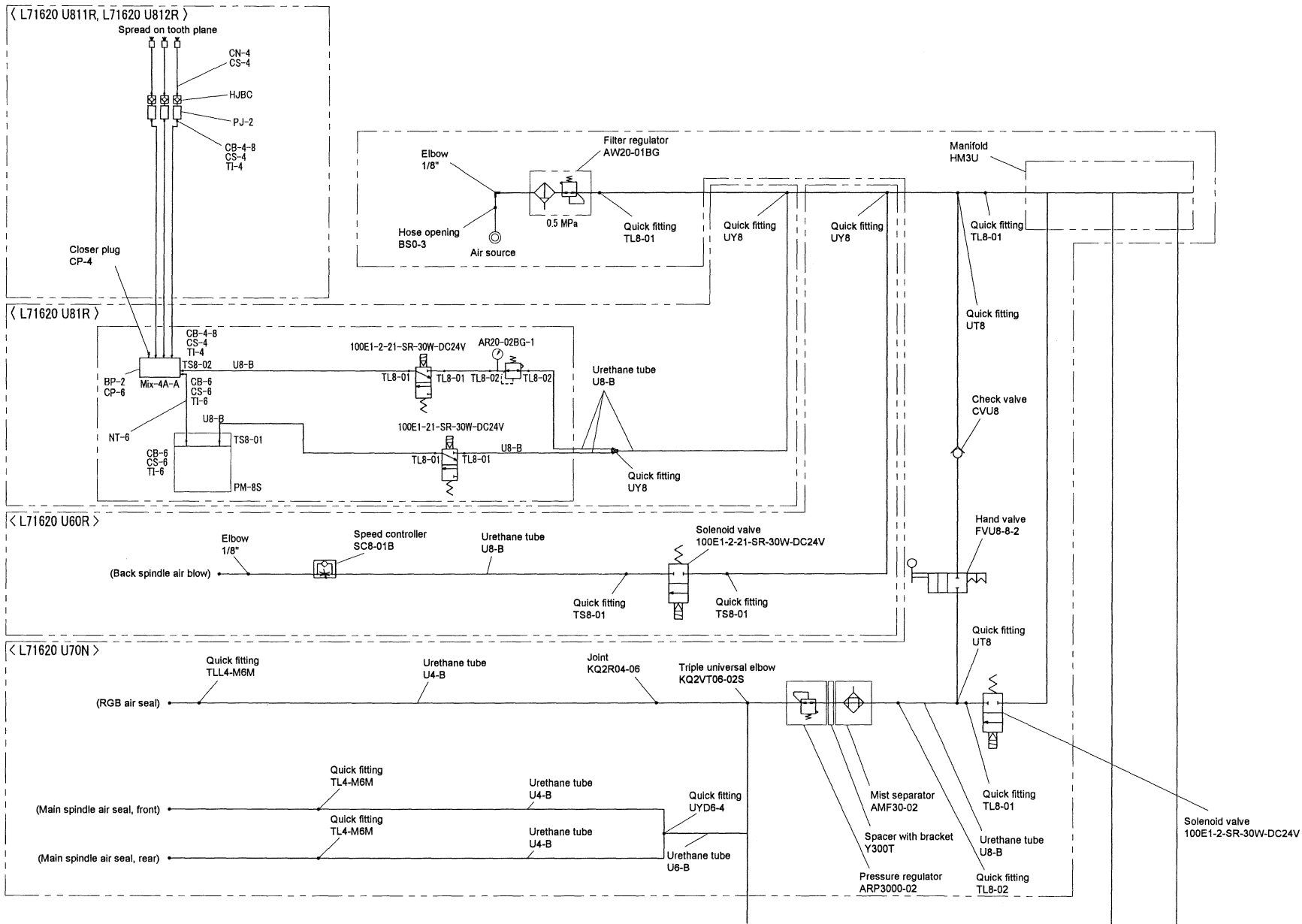
3.12 Pneumatic Device

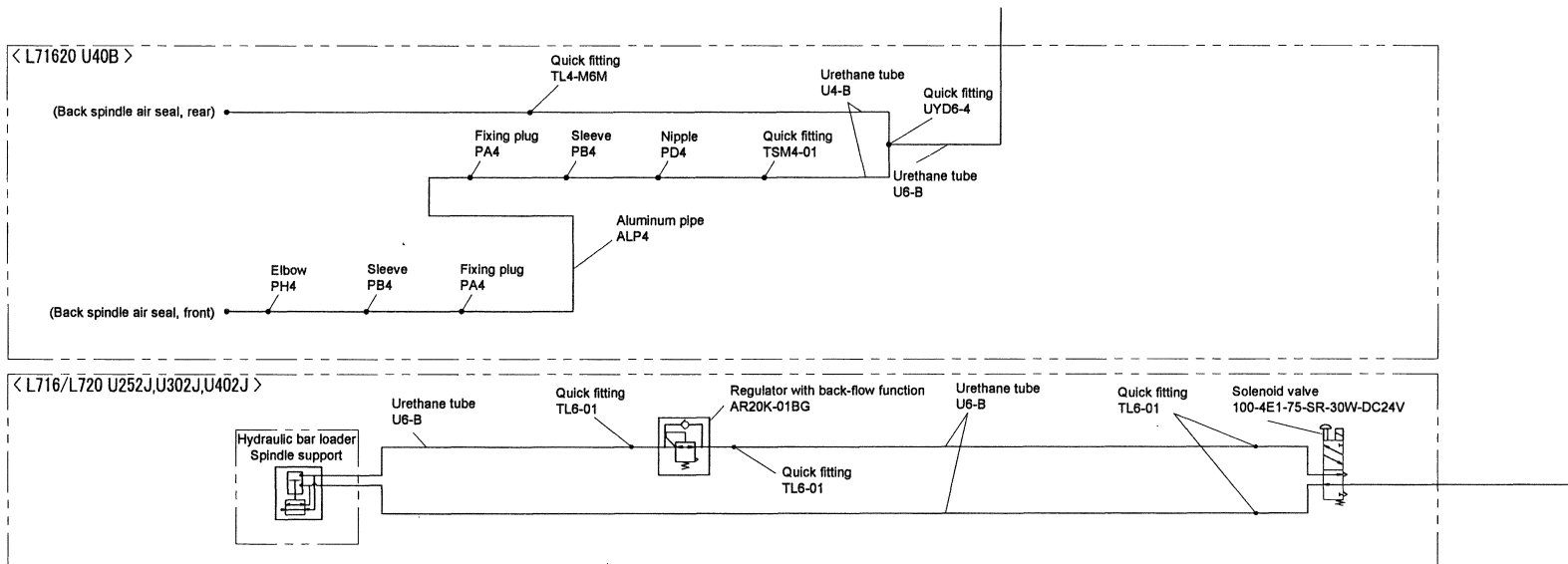
Shown below are the pneumatic device piping diagram and pneumatic piping diagram.

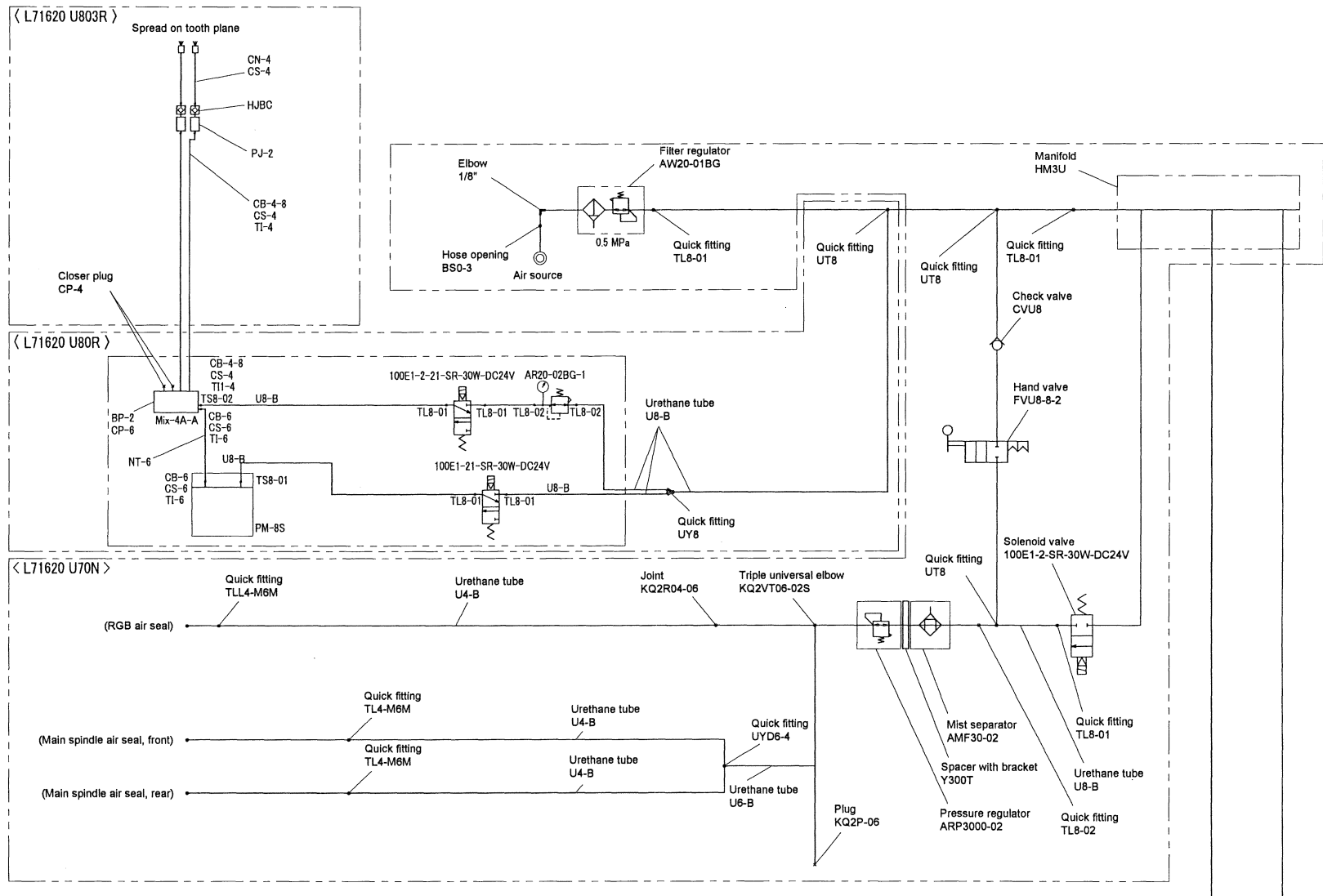


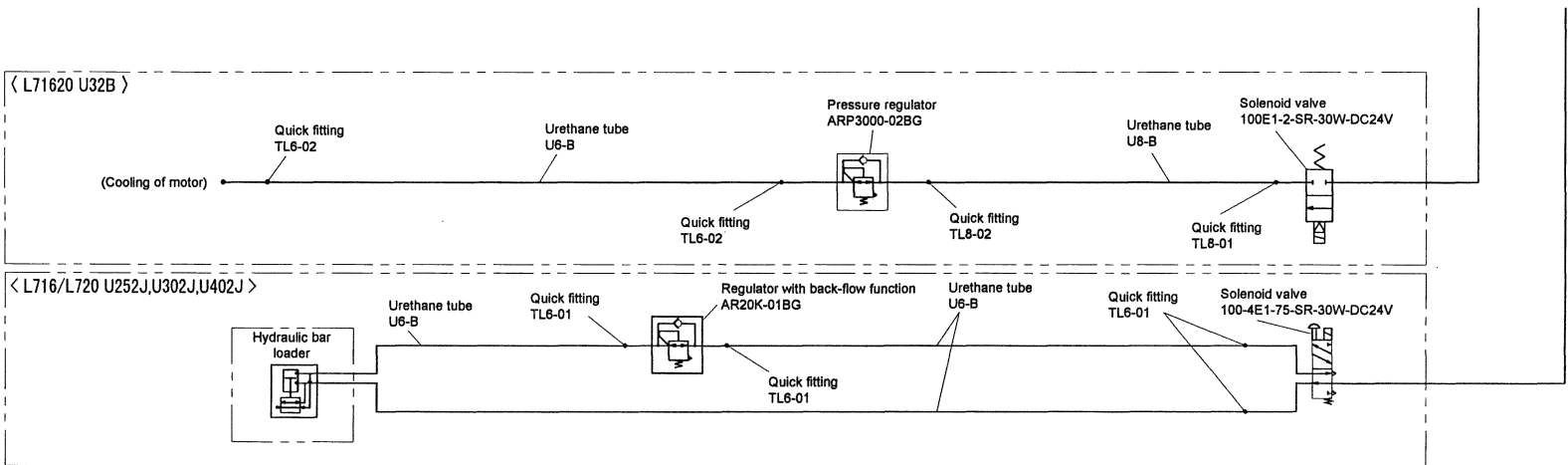
Piping diagram

Pneumatic Piping Diagram (Types VII and VIII)



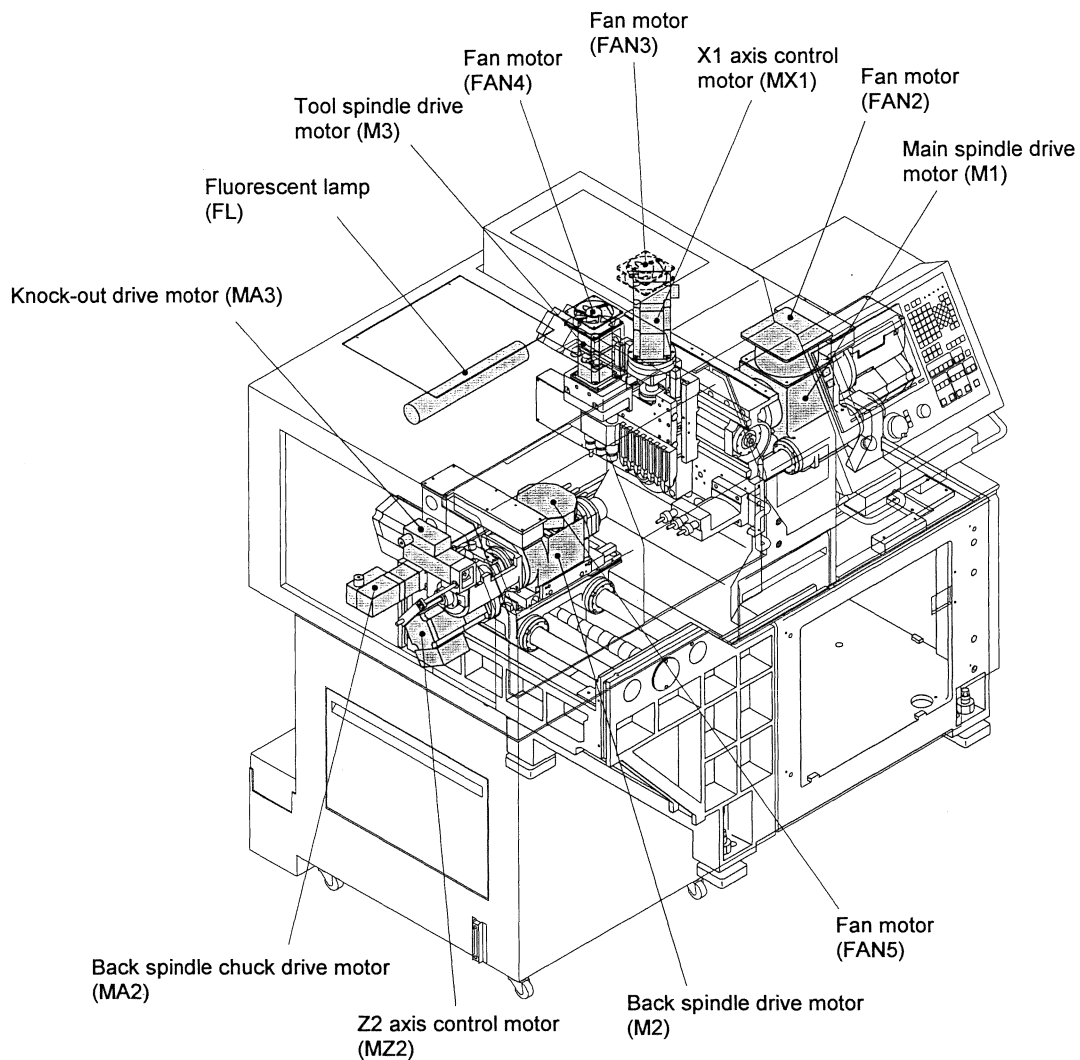






3.13 Electric Device

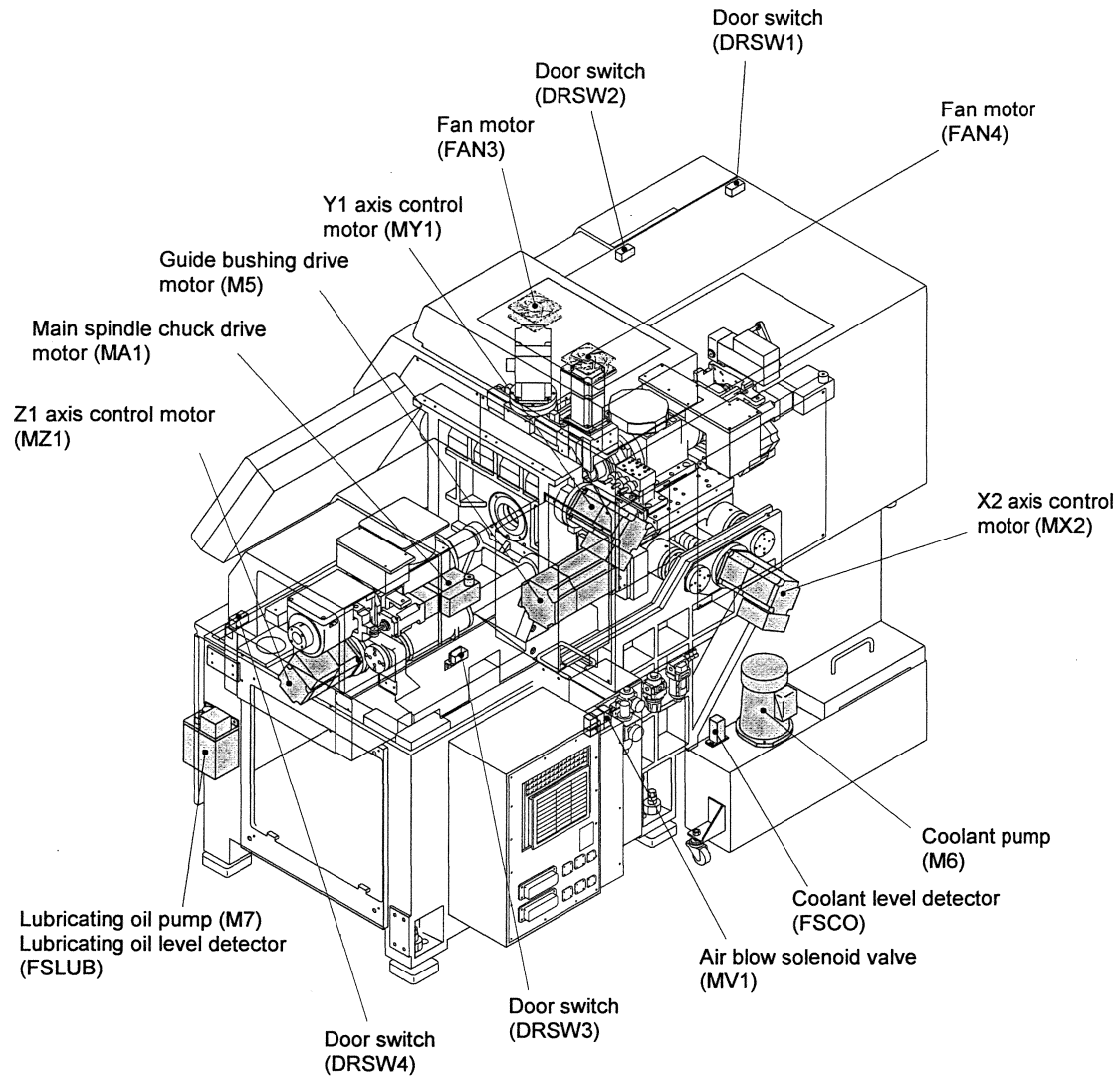
Shown below are the names and locations of electric components (motors, switches, and sensors) of the L16/L20.



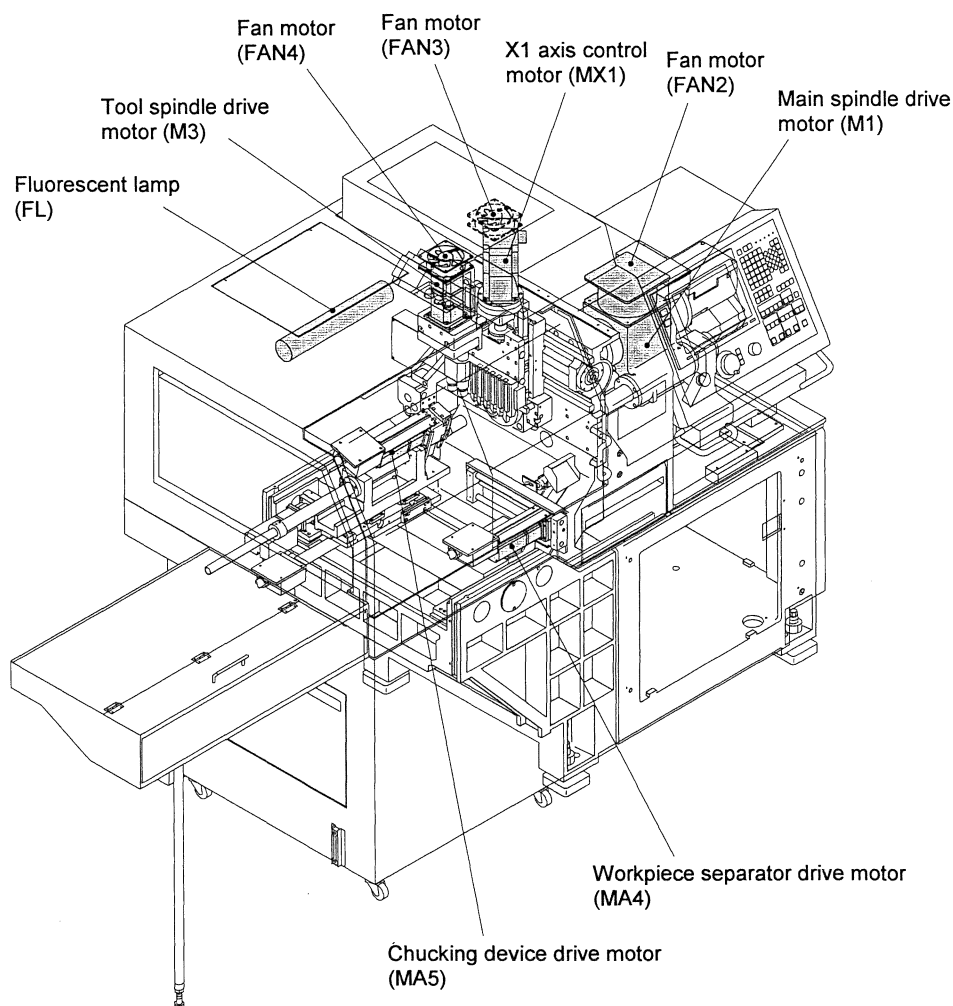
Types VII and VIII Electric Device (front view)

Parameter axis name list

Item	Parameter axis name
Main spindle drive motor (M1)	S1
Guide bushing drive motor (M5)	S5
Back spindle drive motor (M2)	S2
Tool spindle drive motor (M3)	S3
Front tool spindle drive motor (M6)	S6 (Option)
Back tool spindle drive motor (M7)	S7 (Option)
X1 axis control motor (MX1)	X1
Z1 axis control motor (MZ1)	Z1
Y1 axis control motor (MY1)	Y1
X2 axis control motor (MX2)	X2
Z2 axis control motor (MZ2)	Z2
Main spindle chuck drive motor (MA1)	A1
Back spindle chuck drive motor (MA2)	A2
Knock-out drive motor (MA3)	A3



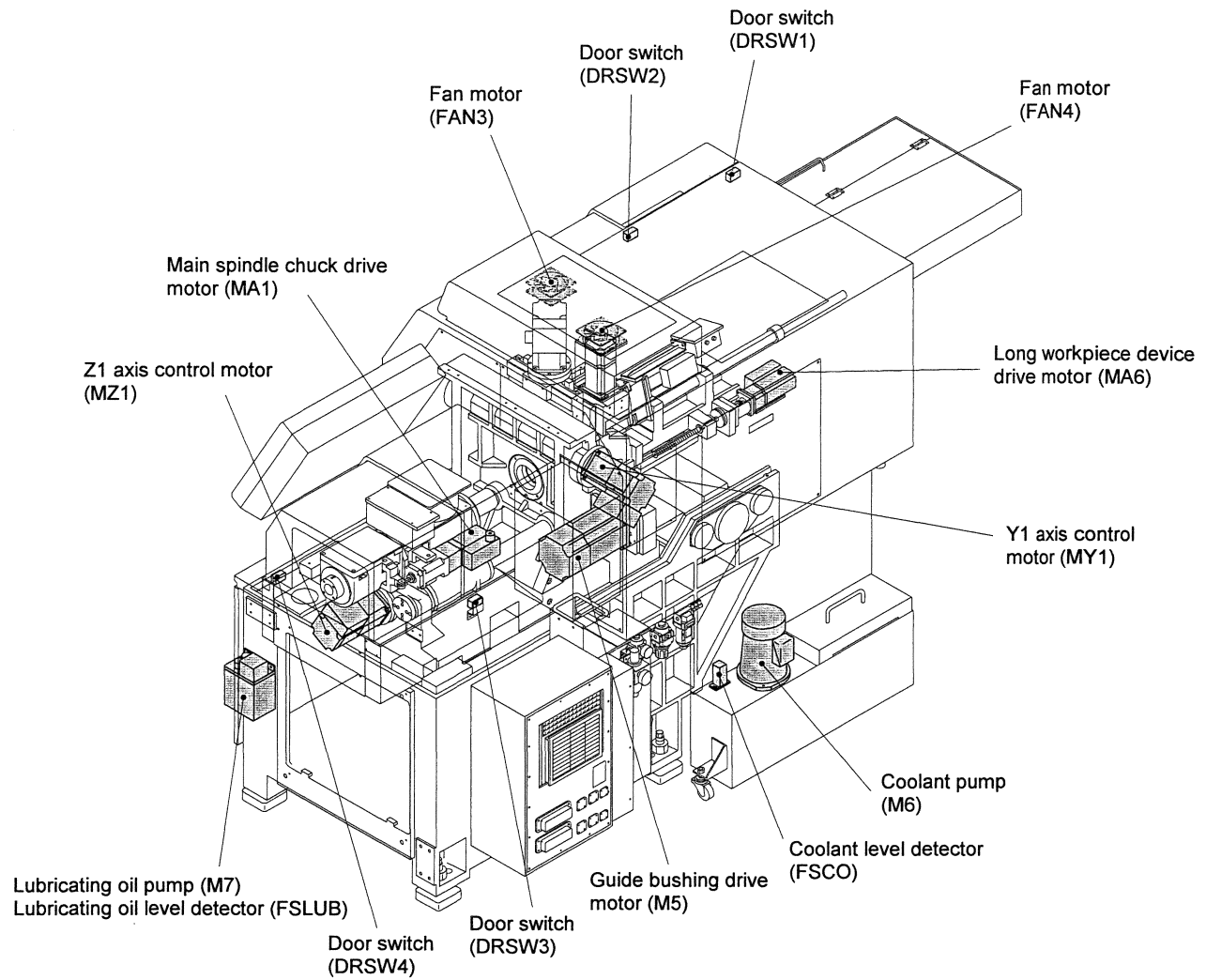
Types VII and VIII Electric Device (rear view)



Type I Electric Device (front view)

Parameter axis name list

Item	Parameter axis name
Main spindle drive motor (M1)	S1
Guide bushing drive motor (M5)	S5
Tool spindle drive motor (M3)	S3
X1 axis control motor (MX1)	X1
Z1 axis control motor (MZ1)	Z1
Y1 axis control motor (MY1)	Y1
Main spindle chuck drive motor (MA1)	A1
Workpiece separator drive motor (MA4)	A4 (Option)
Chucking device drive motor (MA5)	A5 (Option)
Long workpiece device drive motor (MA6)	A6 (Option)



Type I Electric Device (rear view)

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Chapter 4 Scheduled Maintenance

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4.1 Scheduled Maintenance Checks

Periodic maintenance checks of the machine, regardless of the actual failures, are required for prediction or earlier detection of a problem. And it will minimize the loss to the production. This section summarizes the daily, monthly, and biannual maintenance check items.



CAUTION

Periodic maintenance checks are mandatory. If neglected, serious damage to the machine may result.



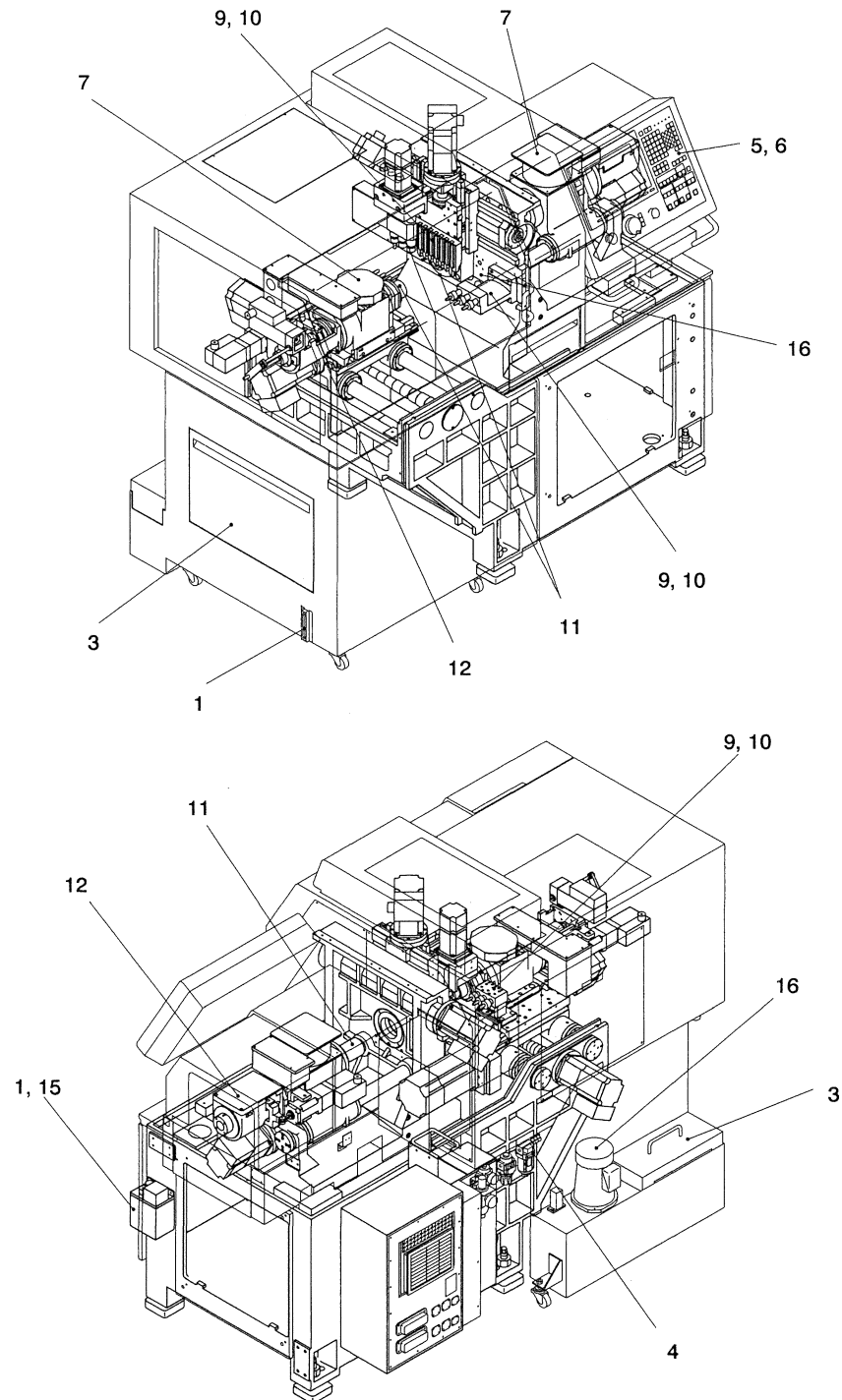
WARNING

Be sure to conduct any work in emergency stop state other than operation check. Working with the machine during operation causes an accident which could result in death or serious personal injury.

4.1.1 Daily

Daily maintenance checks are simple inspections to be performed before and during operation of the machine.

For the L16/L20 machine, perform the checks listed in the table on the next page. Note also that you can detect some abnormal conditions of the machine, including those covered in the table, through your senses, for example, by checking a change in machine noise, temperature, surface conditions of machined workpieces, or in smell during operation. Therefore, be familiar with the normal operating conditions of the machine, and you can accordingly perform the potential but most effective daily inspection only by observing machine conditions during daily operation. Keep in mind that this approach is the most important part of machine maintenance.



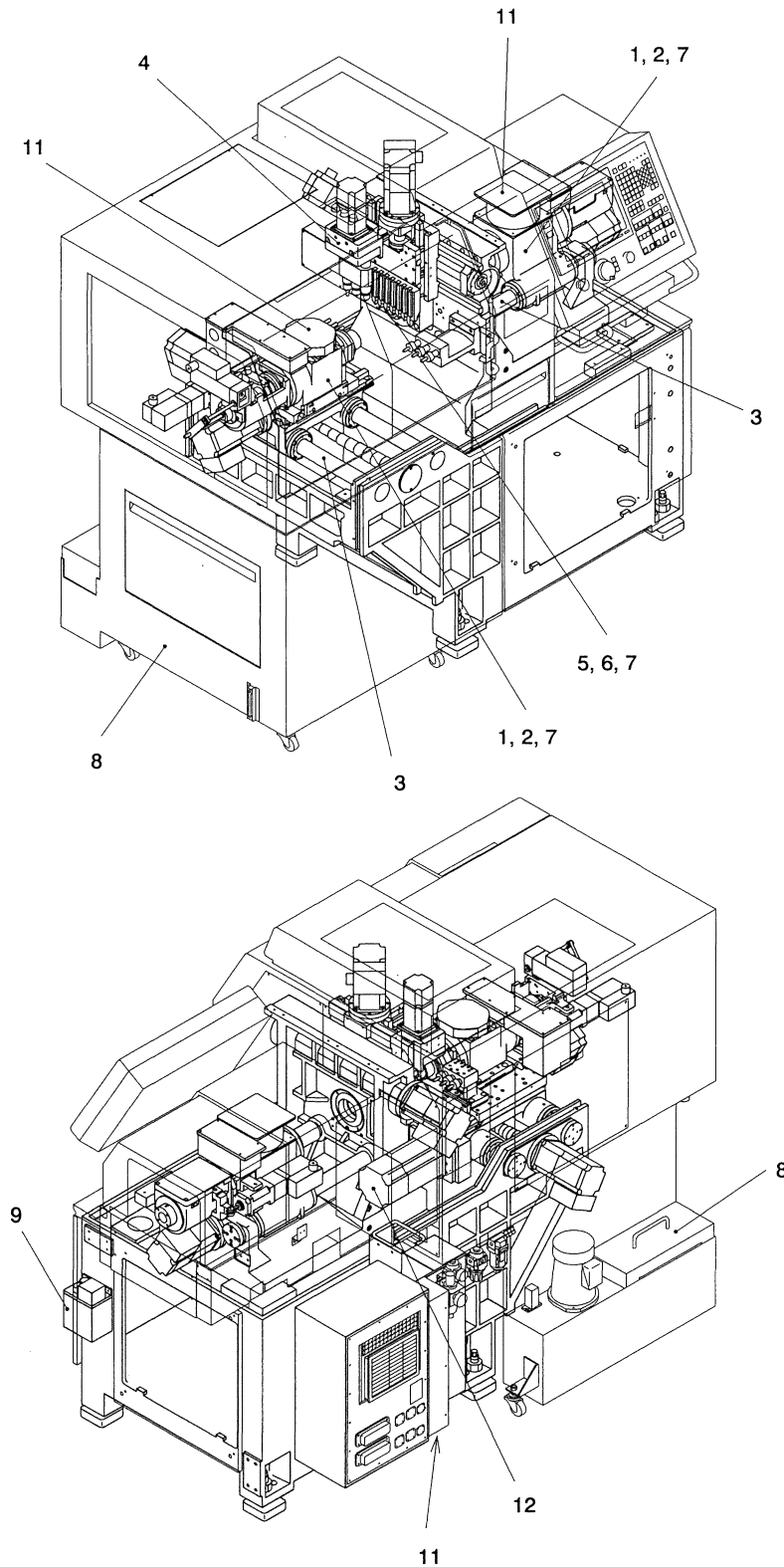
Daily Maintenance Check Points

■ Daily check items

Type	No.	Check item	Check method or point
Before turning the power on	1	Coolant level, lubricating oil level	Check the coolant level with the coolant gauge. Check the level of lubricating oil in the transparent tank to make sure that the tank contains at least one-fourth as much oil as the tank capacity.
	2	Arrangement of tools and measuring instruments	Be careful in particular not to leave any tool or instrument on or near any moving part of the machine.
	3	Removal of chips	Remove chips from the oil pan as soon as possible. Take out the chip receiver box and remove accumulated chips. Be sure to remove chips according to see section <4.1.4 Removing chips>.
	4	Has the air equipment been drained?	Check if water has accumulated in the drain tank of the filter regulator. If so, push the drain button at the lower part using a cloth.
After turning the power on	5	Alarm lamps on the operation panel	Make sure that the LCD displays no alarm and that no alarm lamp is lit on the machine operation panel.
	6	Lamp operation on the control panel	Make sure that all push-button switches and lamps on the operation panel work normally.
	7	Rotation of the main spindle and back spindle cooling fans	Put your hand in front of the outlet to make sure that it is running normally.
	8	Operation of automatic fire extinguisher (if installed)	Check if the lamp on the operation panel of the automatic fire extinguisher lights indicating the normal state. Check that the Start button is not damaged.
After setup	9	Clamping conditions of tools	Check if any fixing screw is loose between the tool and the holder and between the holder and the tool post.
	10	Tool damage	Check for any damage to the cutting edge of each tool.
	11	Adjustment of guide bushing and chuck	Check the clearance between the material and guide bushing, chucking force of the main spindle and the back spindle.
	12	Lubrication of sliding parts of the bobbin	If the sliding parts of the bobbin are dry, apply grease to them.
During machine operation	13	Abnormal noise during operation	Check for abnormal noise from any rotary or sliding part of the machine.
	14	Unusual symptom	Make sure that the machine is operating as it should. Check for abnormal noise, temperature, machine or tool damage, smell.
	15	Lubricating oil pump	Check that the motor shaft in the transparent tank rotates so that the manual pump handle goes up to the top to naturally fall down once per 30 minutes.
	16	Coolant pump	Look into the window in the upper part of the pump to check that the cooling fan is turning in the direction of the arrow. Check also that the coolant nozzle is jetting coolant.

4.1.2 Monthly

The monthly maintenance check is required to find out problems and troubles that are not found out by daily routine checks. Do not omit the monthly maintenance check although it is a little complicated and time-consuming.



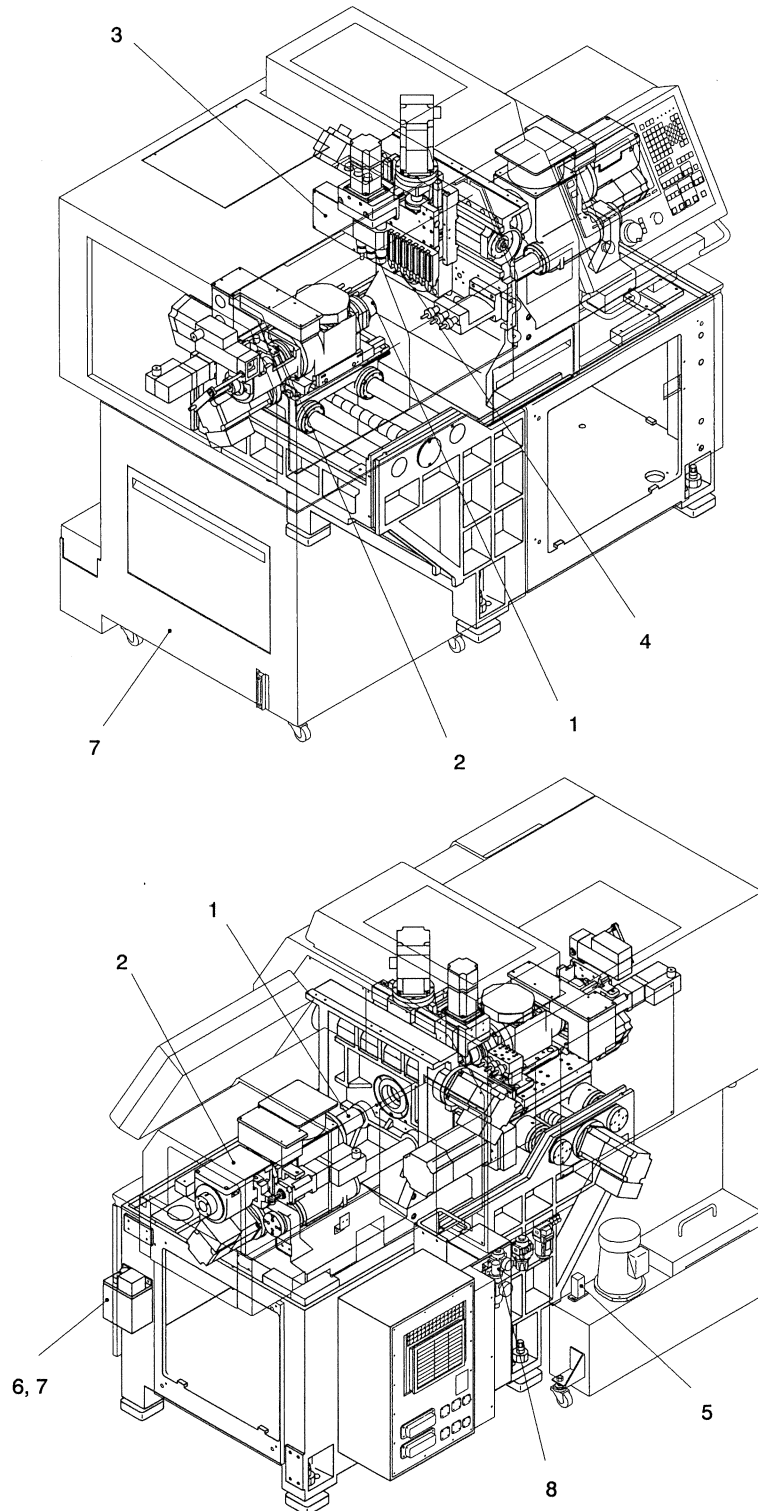
Monthly Maintenance Check Points

■ Monthly check Items

Type	No.	Check item	Check method	Criteria and action
Spindle, back spindle	1	Overheating of the bearing	Stop the spindle after turning it at about 3000 min ⁻¹ for 30 minutes.	Touch the housing with your hand to make sure that it is not hot. Spindle operation is normal if the housing is warm.
	2	Degree of the chuck finger wear	Make a visual check on the chuck finger.	Replace the chuck finger if it is badly worn.
Headstock, tool post feed mechanism	3	The guide bars for spindle stock and opposite tool post.	Visually check the guide bar.	Clean the guide bar if it is dirty.
Gang tool post	4	Lubrication of the tool spindle and spur gear	Remove the tool spindle cover and check for lubrication visually and by touching.	Apply lubricating grease to the gear if it is dry.
Guide bushing device	5	Guide bushing inner sleeve hole	Check the inner sleeve hole visually and by touching.	Make sure there is no defect such as flaw or burr.
	6	Chips clogging the guide bushing front cap	Remove the guide bushing front cap.	Remove chips from the cap.
	7	Chuck and guide bushing statues	Dismount the collect chuck, remove the springs, and then dismount the chuck sleeve, intermediate sleeve, and balance sleeve.	Clean the inside of the spindle and the removed parts. Similarly, clean the guide bushing and the removed parts.
Coolant device	8	Check for chip accumulation in the areas around the coolant pump and in the coolant tank.	Remove the partition from the side on which the coolant pump is mounted. See section <4.1.4 Removing chips>. Draw the coolant tank and check for chip accumulation in the tank.	Remove chip accumulation from the coolant tank and the areas around and under the coolant pump.
Lubricating oil device	9	Pump unit discharge amount	Check the manual pump handle falling speed.	If the handle falls straight down faster, inspect the piping.
	10	Damage or oil leak in lubricating oil piping parts	Visually check the piping parts and pipes.	If oil leaks from a piping joint, replace the oil seal or tighten up the joint. Replace the pipe if it has been cracked or cut.
Checking the cooling system	11	Check if each cooling fan is working normally.	A cooling fan is provided for the main spindle, the back spindle, the guide bushing motor, and each amplifier in the electric box, at the mounting plate of the regenerative resistor, in the operation panel, and on the NC unit. Place your palm near the air outlet of each fan unit to see if the fan is working normally.	If a fan is not working normally, replace it.
Checking the motor wiring	12	Connector status of each motor	Check if the connectors of each motor are firmly tightened.	Retighten loose connectors if any.

4.1.3 Biannual

A biannual maintenance check is to determine the time for replacement of worn parts and parts which rarely become defective. These maintenance checks are essential. Perform following checks every six months in addition to monthly maintenance checks. If it is omitted, a fundamental serious trouble may occur.



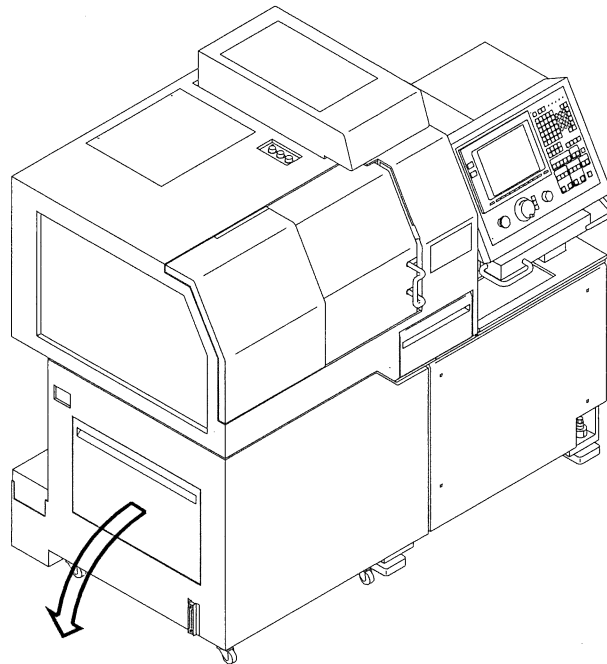
Biannual Maintenance Check Points

■ Biannual check Items

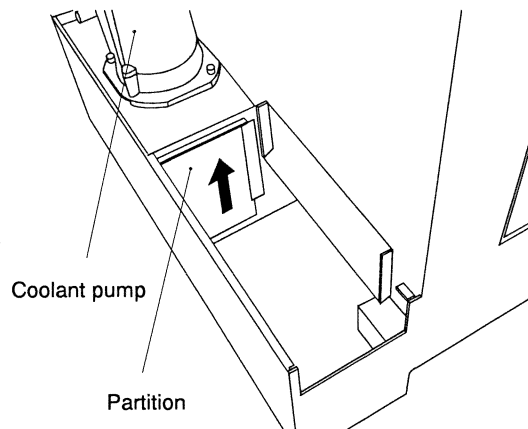
Type	No.	Check item	Check method	Criteria and action
Spindle, back spindle	1	Runout of the spindle straight hole	Apply the dial indicator to the opening of the hole used for receiving the spindle chuck sleeve and slowly turn the spindle once.	Spindle operation is normal if the pointer falls within the tolerance specified in the inspection table supplied with the machine (TIR0.005).
	2	Wear of the chuck bobbin	Visually check the outer circumference of the chuck bobbin.	The chuck bobbin is acceptable if it has not been worn out.
Guide bushing device	3	Slack and tension in the timing belt for driving the guide bushing	<ul style="list-style-type: none"> Remove the belt cover to visually check how much the belt has worn. Press the center part of the belt lightly with your finger for its tension. 	<ul style="list-style-type: none"> Replace the belt if it has been peeled or cracked on the surface. Make sure that the belt is tensioned so that the belt and the pulley may be well engaged without slipping.
	4	Overheating of the bearing or its rattling noise during the thrust	<ul style="list-style-type: none"> Stop the spindle after turning it at about 3000 min⁻¹ for 30 minutes. Push and pull the sleeve manually in the axial direction. 	<ul style="list-style-type: none"> Touch the housing with your hand to check for abnormal heat. Check for abnormal noise during rotation. Check for any play.
Coolant device	5	Operation of the coolant tank float switch	Drain all of the coolant from the tank.	Check that the LCD panel displays a message that warns the empty of coolant.
Lubricating oil device	6	Operation of the pump unit float switch	Drain all of the lubricating oil from the pump unit tank.	Check that the LCD panel displays a message that warns the empty of lubricating oil.
Coolant tank and lubricating oil tank	7	Fine chips, iron chips, oil-cake residues in each tank	Check if chips or oil-cake residues remain at the bottom of the tank after draining oil.	Remove chips and oil-cake residues and charge new oil.
Air sealing device	8	Operation of the pressure switch	Reduce the pressure for air supply	Check that the LCD panel displays a message that warns the abnormal air pressure.

4.1.4 Removing chips

1. Remove larger chips. Open the chip outlet door provided on the lower part of the left side of the machine, rake out chips with the attached chip remover rod, and close the door.



2. Remove fine chips. Remove the oil splash protection cover provided at the back of the left side of the machine, gently lift up the chip receiver box, throw away chips, then remount the chip receiver box and the cover.
Sometimes check whether the filter in the chip receiver box is clogged. Clean the filter with a wire brush if it is clogged.
3. Remove accumulated chips from the areas around and under the coolant pump. Remove the oil cover, the chip receiver box, and the partition on the side on which the coolant pump is mounted. Remove chips around the suction opening of the pump, using a shovel, etc. Return the cover and chip receiver box to the original positions.



4. When the machine is used for a long time period, very fine chips may accumulate at the bottom of the coolant tank.
Draw the coolant tank, remove the chip-accumulated floor plate, and clean it as required.
Be sure to disconnect the wiring connectors and the piping joints before separating the coolant tank from the machine.



WARNING

Never discharge coolant for machining with fine chips accumulated at the bottom of the coolant tank. Chips in coolant may cause a fire or damage to the coolant pump.



CAUTION

Be sure to disconnect the wiring connectors before separating the coolant tank from the machine. Otherwise, the coolant pump cable and the level detection cable may be damaged.

4.2 Lubrication

For trouble-free operation, the machine requires lubrication by additionally supplying or replacing appropriate oils on a regular basis.

This section describes lubrication required for the L16/L20 machine.

4.2.1 Lubrication list

For details of lubrications, see section <4.2.2 Notices for lubrications and oil change>.

Lubricating Position	Frequency	Volume	Lubrication type and name	Status of oils and greases
Slide lubricating oil pump	a	0.8 lit.	Mobil Vactra Oil No.2 or its equivalent (Viscosity: ISO VG68)	Liquid
Coolant tank	a	Depends on tank capacity	See section <4.2.3 Coolant>	Liquid
Gang tool spindle spur gear (Unnecessary for U81R)	b	Adequate	Mobilith SHC220 or its equivalent (Grease of wide application temperature ranges for rolling bearing)	semi-solid (grease)
Bobbin sliding portion (Only for back spindle side)	a	Adequate	Mobilith SHC220 or its equivalent (Grease of wide application temperature ranges for rolling bearing)	semi-solid (grease)
Bar loader (U10J) rod	Weekly	Adequate	Mobil Vactra Oil No.2 or its equivalent (Viscosity: ISO VG68)	Liquid
Oil air lubricating device (Only for U81R)	a	1.8 lit.	Mobil Vactra Oil No.2 or its equivalent (Viscosity: ISO VG68)	Liquid

Lubrication frequency:

- a: Indicates that the components/parts should be lubricated during daily inspection if necessary.
- b: Indicates that the components/parts should be lubricated during monthly inspection if necessary.

Contact the manufacturer for recommended lubricant.

Notes

- The slide lubricating oil pump supplies the lubricating oil to the machine during the power is on. And the discharge amount of it is adjusted at 2 cc/30min.
- The spindle bearing is lubricated with high quality, long life grease (Isoflex NBU15 manufactured by Cluber), requiring no additional lubrication except an appropriate amount of the grease used when the spindle bearing is replaced.
- Dispose of the waste oil according to all national laws and regulations.

4.2.2 Notices for lubrications and oil change

(1) Slide lubricating oil

- When the slide lubricating oil remaining in the tank has come down to Low Level, pour clean oil into the tank through the oil inlet port until the tank is at full capacity.
- Before starting the machine left off for an extended period of time, repeat pulling up and releasing the manual pump handle several times to supply lubricating oil to each part of the machine.

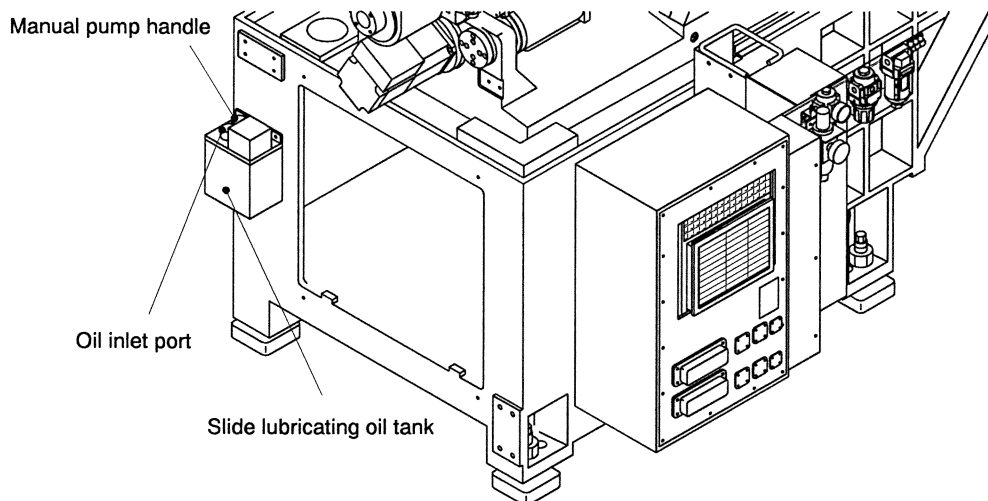
Note

Ask the manufacturer for lubricant for slide equivalent to Exxon Mobil Vactra Oil No. 2.



CAUTION

Do not push the handle down forcibly. Doing so will cause damage to the gear.



Lubricating Oil Pump Unit

(2) Coolant

- The machine tends to become short of coolant in a relatively short time because coolant is discharged along with chips. You should therefore watch the coolant oil level gauge periodically to add coolant as required.



WARNING

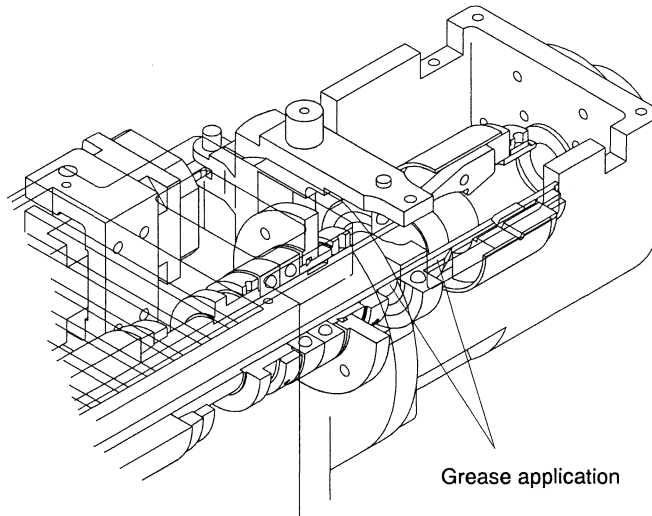
Monitor the level and condition of the coolant in the machine every day. Low or ineffective coolant can result in damage to the tool and a possible fire.

(3) Gang tool post spindle spur gear lubricating

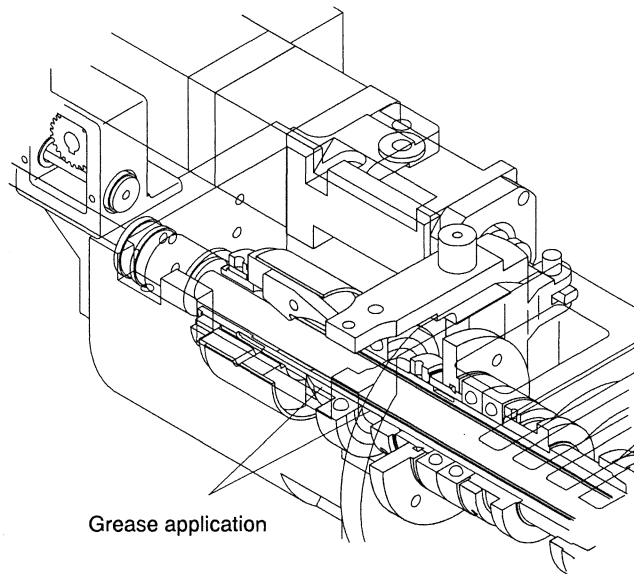
- Remove the tool spindle cover and apply grease to the teeth of the spur gear located inside the tool spindle section.

(4) Bobbin sliding portion

- Apply grease on the sliding portion of the spindle bobbin.
Apply grease on each location with the chuck both opened as well as closed.



Spindle Bobbin Sliding Portion



Back Spindle Bobbin Sliding Portion

(5) Bar loader (U10J) rod

- Pull the rod of the bar loader toward you and apply lubricating oil to the outer periphery.



CAUTION

**Avoid "empty chucking" (chucking with no bar material).
Doing so may cause the machine to malfunction or damage the collet chuck.**



WARNING

**Be sure to make the machine in emergency stop status before applying grease to the bobbin or spindle.
Otherwise, your hand may be caught in the machine, resulting in a severe injury.**

4.2.3 Coolant

4.2.3.1 Applicable machine

Water insoluble coolant (oilness) :Usable with the machine of standard specification

Water soluble coolant :Usable with the machine of special specification (e.g., air sealing)

4.2.3.2 Selection of water insoluble coolant (oilness)

Copper corrosion (100°C, 1h) 1 :Usable with no problem.

Copper corrosion (100°C, 1h) 2 :Basically usable, however, some products have high activity. Contact the manufacturer of coolant before selecting a coolant.

Copper corrosion (100°C, 1h) 3, 4 :Do not use. The machine (including electric and electronics component, resin, and sealant) will remarkably be damaged.

4.2.3.3 Notes on using water insoluble coolant (oilness)

The chemical admixture contained in coolant may be deteriorated by evaporation due to heat generated during cutting or others. Accordingly, the initial performance may not be expected. Provide an appropriate maintenance such as replacement interval according to the instruction of manufacturer.

4.2.3.4 Selection of water soluble coolant

Emulsion (milky white) type :Usable with no problem

Soluble (translucent and transparency) type :Basically usable, however, some products have high permeability. Contact the manufacturer of coolant before selecting a coolant.

Solution (transparency) type :Do not use. The machine (including painted portion, rotating section, resin, and sealant) will remarkably be damaged. Some products are called as a synthetic type.

4.2.3.5 Notes on using water soluble coolant

- To prevent the adherence of rotary section, always open the manual cock of the air seal device when using a water soluble coolant.
- The dilution methods and diluents of water soluble coolants vary depending on the type of coolant. Follow the instructions provided by the manufacturer of each coolant. Be sure to check the coolant diluted state every day to keep the appropriate strength of the coolant solution. When the pH is low (8.0 or less), rust will be generated.
- Water soluble coolants offer protection from rust while the machine surface is wet. Once the machine surface dries, however, it could rust. Apply the rustproof oil while the machine surface is still wet, to prevent rust.
- If the surface of the water soluble coolant appears to be unclean (abnormal), replace the coolant immediately.
- Before starting and after ending operations, remove chips and lightly apply lubricating oil on the sliding parts of the machine.



CAUTION

Water soluble coolants have high degreasing strength due to their alkaline content and this may cause skin inflammation. Be sure to wash your hands with neutral detergent if you get coolant on them. Especially if you have sensitive skin, apply a cream or others to protect your skin.

4.3 Replacement of Worn Parts

Some of the components on this machine have a relatively short operating life. Check the condition of these parts periodically and replace as necessary. The table below lists the part name, model number, manufacturer, inspection frequency, and criteria for replacement. The following sections describe the detailed procedures of replacing these components.

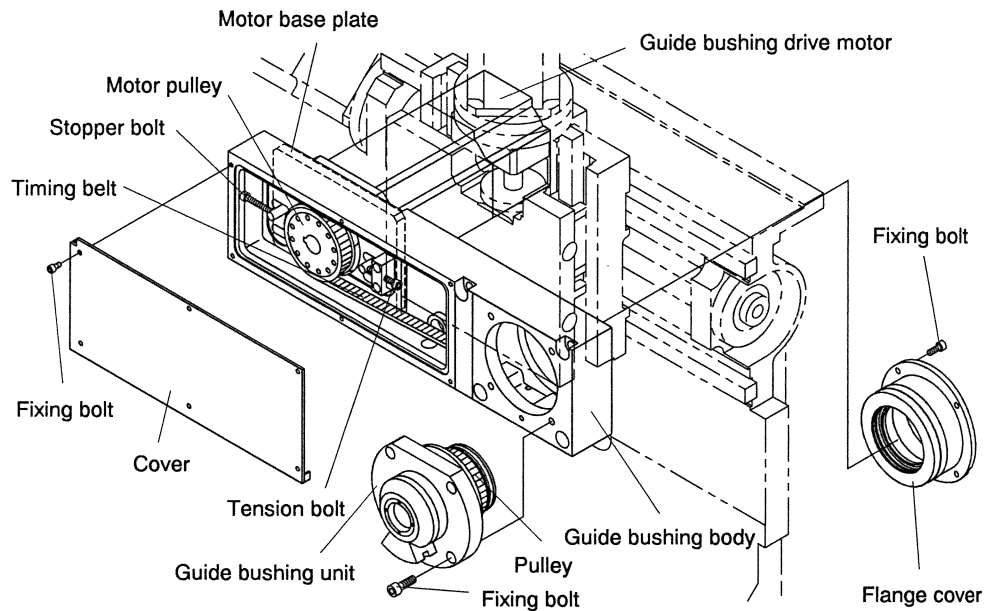
4.3.1 Replacement parts list

See section <4.3.2 Parts replacement> for replacement of the following parts:

Part Name	Model	Manufacturer	Inspection Frequency	Criteria for Replacement
Timing Belt for Driving the Guide Bushing	960-U5GT-14 (Oil-proof, urethane)	Unitta	Every 6 months	Cracked or worn-out
Spindle Collet Chuck	FC034-M	Citizen	Every 3 months in continuous use	Worn-out, damaged chuck inside or Abnormal abrasion
Back Spindle Collet Chuck	FC034-M-K	Citizen	Every 3 months in continuous use	Worn-out, damaged chuck inside or Abnormal abrasion
Guide Bushing	WFG206-M	Citizen	Every 6 months	Cracked or worn-out
Rotary Guide Bushing Bearing	7008CD/P4ADBA	SKF	Every 6 months	Rattle; increasing runout; abnormal noise
Material Feeding Cord	ø4 nylon cord	Citizen	—	Fracture

4.3.2 Parts replacement

4.3.2.1 Timing belt for driving the synchronous rotary guide bushing device



1. Remove the cover.
2. Loosen the bolt fixing the motor base plate of the guide bushing drive motor and the tension bolt, move the motor base plate toward you, and loosen the timing belt.

Note

Do not loosen the stopper bolt which works for the stopper when timing belt is fixed and given a proper tension.

3. Remove the bolts fixing the flange cover provided behind the guide bushing and pull out the flange cover backward.
4. Loosen and remove the fixing bolts from the flange of the guide bushing unit.
5. Holding the flange, push the guide bushing unit gently to a position where the belt can be removed. (The guide bushing unit need not be pushed out.)
6. Remove the old timing belt. If you find belt chips adhering to the pulley, remove them at this time.
7. Engage the new timing belt with the pulley of the guide bushing unit and with the motor pulley.

8. Push the guide bushing unit until it stops and tighten the fixing bolts firmly.
9. Make sure that the timing belt is engaged right with the pulley.
10. Tighten the tension bolt to give a proper tension to the belt. In this case, the motor base plate need not touch the stopper bolt. Be careful not to give any excessive tension to the belt. (The belt has an initial elongation.)
11. Tighten the motor base plate fixing bolt and turn the spindle at 5000 min^{-1} for about eight hours (for running-in).
12. When running-in has been completed, stop the spindle and loosen the motor base plate fixing bolt. Then, tighten the tension bolt until the motor base plate touches the stopper bolt, where the belt is tensioned appropriately.
13. Firmly tighten the fixing bolt of the motor base plate.
14. Remount the flange cover with the oil drain hole facing down, then secure it with the fixing bolts.
15. Remount the cover and the right side cover.



CAUTION

If the flange cover is remounted with the oil drain hole not facing straight down, oil may enter and damage the bearing. Be sure to remount the flange cover with the oil drain hole facing straight down.

4.3.2.2 Spindle collect chuck

See section <7.1 Installing and Adjusting the Chuck> of the Operator's Manual.

4.3.2.3 Back spindle collet chuck

See section <7.3 Setting Up the Back Spindle (Type VIII)> of the Operator's Manual.

4.3.2.4 Guide bushing

See section <7.2 Installing and Adjusting the Guide Bushing Unit> of the Operator's Manual.

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Chapter 5 Troubleshooting

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5.1 Failure Detection

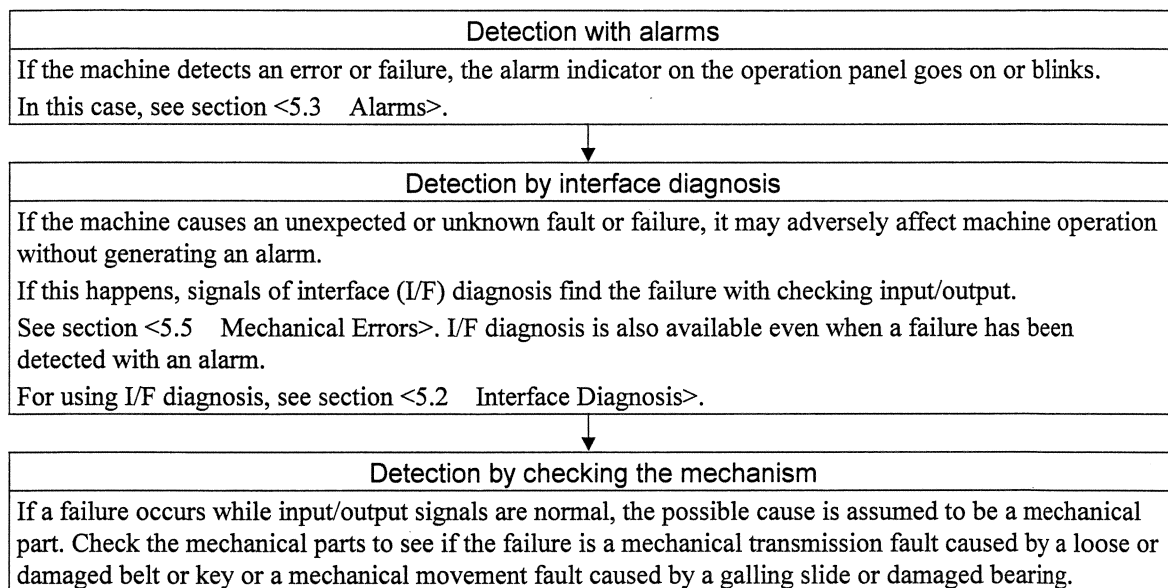
The machine may cause a failure even though proper maintenance, including specified periodic checks, has been performed sufficiently. The machine must be recovered from the failure even in that case. This chapter describes the procedure for identifying the causes of relatively simple machine failures and the action required for recovering the machine from them.

5.1.1 Introduction

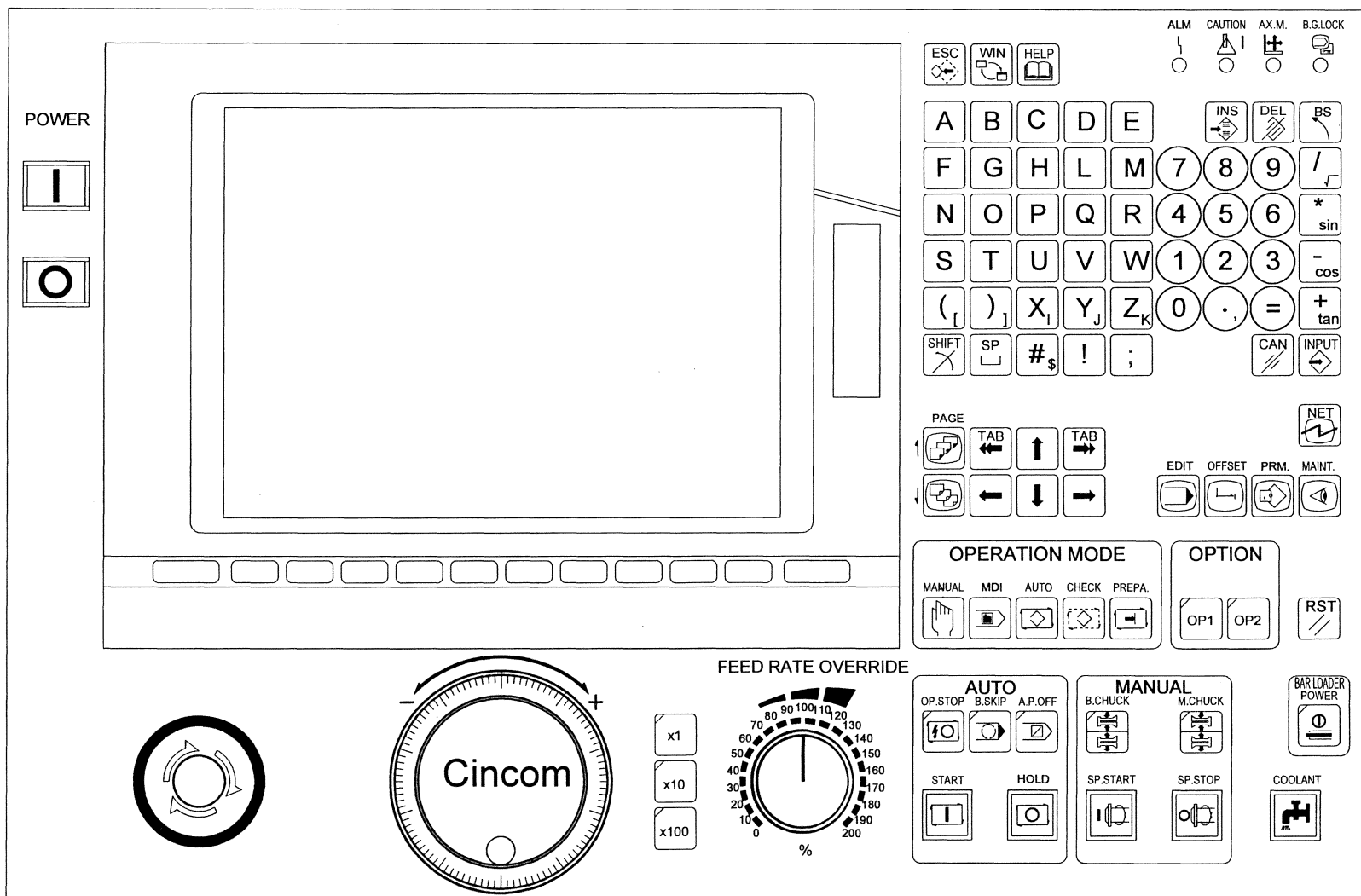
Once the machine causes a failure, you must take immediate action to prevent the failure from resulting in a serious accident. For this purpose, you must first use your senses to check for abnormal appearance of the machine such as damages to its components, abnormal heat generation, parching smells, abnormal noise.

If a trouble is serious and dangerous, immediately turn off the main circuit breaker.

5.1.2 Failure Detecting Procedure



■ Operation Panel




5.2 Interface Diagnosis

The machine is controlled by a programmable logic controller (PLC) built into the NC device. The PLC receives sensor signals (as input signals) and drives parts such relays (using output signals). Checking the states of input and output signals to and from the PLC is called interface (I/F) diagnosis and is performed on the I/F Diagnosis screen. Although I/F diagnosis is very effective to detect machine trouble, the user requires some technical knowledge. This section provides general information for effective use of I/F diagnosis.

5.2.1 Operating the I/F Diagnosis Screen

Display the I/F Diagnosis Screen by following procedure.

Procedure

1. Press the Diagnosis key .

The Diagnosis menu appears.


POS Data	Set SW	Message							
S/W LIST	H/W LIST	SPEC LIST	I/F Diag	History					Menu SEL

2. Press the menu key [I/F Diag]. (Skip this step when the I/F Diagnosis screen has already been displayed.)

The I/F Diagnosis screen will appear.

I/F DIAGNOSIS			0	Comment		
DEV	76543210	HEX	DEV	76543210	HEX	Force OP
X00000	00001011	0B	X00000	00001000	08	Start Control
X00001	11000000	C0	X00001	00000000	00	DEV Data
X00002	00000000	00	X00002	00000000	00	
X00003	00000000	00	X00003	00000000	00	
X00004	10000000	80	X00004	10000000	80	
X00005	00000000	00	X00005	00100000	20	
X00006	00000000	00	X00006	00000000	00	
X00007	00000000	00	X00007	00000000	00	
X00008	00000000	00	X00008	00000000	00	
X00009	00000000	00	X00009	00000000	00	
X00010	00000000	00	X00010	00000000	00	
X00011	00000000	00	X00011	00000000	00	
X00012	00000000	00	X00012	00000000	00	
X00013	00000000	00	X00013	00000000	00	
X00014	00000000	00	X00014	00000000	00	
X00015	00000000	00	X00015	00000000	00	
X00016	00000000	00	X00016	00000000	00	
X00017	00000000	00	X00017	00000000	00	
X00018	00000000	00	X00018	00000000	00	
X00019	00000000	00	X00019	00000000	00	
X00020	00000000	00	X00020	00000000	00	
X00021	00000000	00	X00021	00000000	00	
X00022	00000000	00	X00022	00000000	00	
X00023	00000000	00	X00023	00000000	00	
X00024	00000000	00	X00024	00000000	00	
X00025	00000000	00	X00025	00000000	00	
X00026	00000000	00	X00026	00000000	00	
X00027	00000000	00	X00027	00000000	00	
X00028	00000000	00	X00028	00000000	00	
X00029	00000000	00	X00029	00000000	00	
X00030	00000000	00	X00030	00000000	00	
X00031	00000000	00	X00031	00000000	00	
X00032	00000000	00	X00032	00000000	00	
X00033	00000000	00	X00033	00000000	00	
X00034	00000000	00	X00034	00000000	00	
X00035	00000000	00	X00035	00000000	00	
X00036	00000000	00	X00036	00000000	00	
X00037	00000000	00	X00037	00000000	00	
X00038	00000000	00	X00038	00000000	00	
X00039	00000000	00	X00039	00000000	00	
X00040	00000000	00	X00040	00000000	00	
X00041	00000000	00	X00041	00000000	00	
X00042	00000000	00	X00042	00000000	00	
X00043	00000000	00	X00043	00000000	00	
X00044	00000000	00	X00044	00000000	00	
X00045	00000000	00	X00045	00000000	00	
X00046	00000000	00	X00046	00000000	00	
X00047	00000000	00	X00047	00000000	00	
X00048	00000000	00	X00048	00000000	00	
X00049	00000000	00	X00049	00000000	00	
X00050	00000000	00	X00050	00000000	00	
X00051	00000000	00	X00051	00000000	00	
X00052	00000000	00	X00052	00000000	00	
X00053	00000000	00	X00053	00000000	00	
X00054	00000000	00	X00054	00000000	00	
X00055	00000000	00	X00055	00000000	00	
X00056	00000000	00	X00056	00000000	00	
X00057	00000000	00	X00057	00000000	00	
X00058	00000000	00	X00058	00000000	00	
X00059	00000000	00	X00059	00000000	00	
X00060	00000000	00	X00060	00000000	00	
X00061	00000000	00	X00061	00000000	00	
X00062	00000000	00	X00062	00000000	00	
X00063	00000000	00	X00063	00000000	00	
X00064	00000000	00	X00064	00000000	00	
X00065	00000000	00	X00065	00000000	00	
X00066	00000000	00	X00066	00000000	00	
X00067	00000000	00	X00067	00000000	00	
X00068	00000000	00	X00068	00000000	00	
X00069	00000000	00	X00069	00000000	00	
X00070	00000000	00	X00070	00000000	00	
X00071	00000000	00	X00071	00000000	00	
X00072	00000000	00	X00072	00000000	00	
X00073	00000000	00	X00073	00000000	00	
X00074	00000000	00	X00074	00000000	00	
X00075	00000000	00	X00075	00000000	00	
X00076	00000000	00	X00076	00000000	00	
X00077	00000000	00	X00077	00000000	00	
X00078	00000000	00	X00078	00000000	00	
X00079	00000000	00	X00079	00000000	00	
X00080	00000000	00	X00080	00000000	00	
X00081	00000000	00	X00081	00000000	00	
X00082	00000000	00	X00082	00000000	00	
X00083	00000000	00	X00083	00000000	00	
X00084	00000000	00	X00084	00000000	00	
X00085	00000000	00	X00085	00000000	00	
X00086	00000000	00	X00086	00000000	00	
X00087	00000000	00	X00087	00000000	00	
X00088	00000000	00	X00088	00000000	00	
X00089	00000000	00	X00089	00000000	00	
X00090	00000000	00	X00090	00000000	00	
X00091	00000000	00	X00091	00000000	00	
X00092	00000000	00	X00092	00000000	00	
X00093	00000000	00	X00093	00000000	00	
X00094	00000000	00	X00094	00000000	00	
X00095	00000000	00	X00095	00000000	00	
X00096	00000000	00	X00096	00000000	00	
X00097	00000000	00	X00097	00000000	00	
X00098	00000000	00	X00098	00000000	00	
X00099	00000000	00	X00099	00000000	00	
X00100	00000000	00	X00100	00000000	00	
X00101	00000000	00	X00101	00000000	00	
X00102	00000000	00	X00102	00000000	00	
X00103	00000000	00	X00103	00000000	00	
X00104	00000000	00	X00104	00000000	00	
X00105	00000000	00	X00105	00000000	00	
X00106	00000000	00	X00106	00000000	00	
X00107	00000000	00	X00107	00000000	00	
X00108	00000000	00	X00108	00000000	00	
X00109	00000000	00	X00109	00000000	00	
X00110	00000000	00	X00110	00000000	00	
X00111	00000000	00	X00111	00000000	00	
X00112	00000000	00	X00112	00000000	00	
X00113	00000000	00	X00113	00000000	00	
X00114	00000000	00	X00114	00000000	00	
X00115	00000000	00	X00115	00000000	00	
X00116	00000000	00	X00116	00000000	00	
X00117	00000000	00	X00117	00000000	00	
X00118	00000000	00	X00118	00000000	00	
X00119	00000000	00	X00119	00000000	00	
X00120	00000000	00	X00120	00000000	00	
X00121	00000000	00	X00121	00000000	00	
X00122	00000000	00	X00122	00000000	00	
X00123	00000000	00	X00123	00000000	00	
X00124	00000000	00	X00124	00000000	00	
X00125	00000000	00	X00125	00000000	00	
X00126	00000000	00	X00126	00000000	00	
X00127	00000000	00	X00127	00000000	00	
X00128	00000000	00	X00128	00000000	00	
X00129	00000000	00	X00129	00000000	00	
X00130	00000000	00	X00130	00000000	00	
X00131	00000000	00	X00131	00000000	00	
X00132	00000000	00	X00132	00000000	00	
X00133	00000000	00	X00133	00000000	00	
X00134	00000000	00	X00134	00000000	00	
X00135	00000000	00	X00135	00000000	00	
X00136	00000000	00	X00136	00000000	00	
X00137	00000000	00	X00137	00000000	00	
X00138	00000000	00	X00138	00000000	00	
X00139	00000000	00	X00139	00000000	00	
X00140	00000000	00	X00140	00000000	00	
X00141	00000000	00	X00141	00000000	00	
X00142	00000000	00	X00142	00000000	00	
X00143	00000000	00	X00143	00000000	00	
X00144	00000000	00	X00144	00000000	00	
X00145	00000000	00	X00145	00000000	00	
X00146	00000000	00	X00146	00000000	00	

- Enter device numbers (XOO for input and YOO for output) in the Device input fields on screen (using number keys).

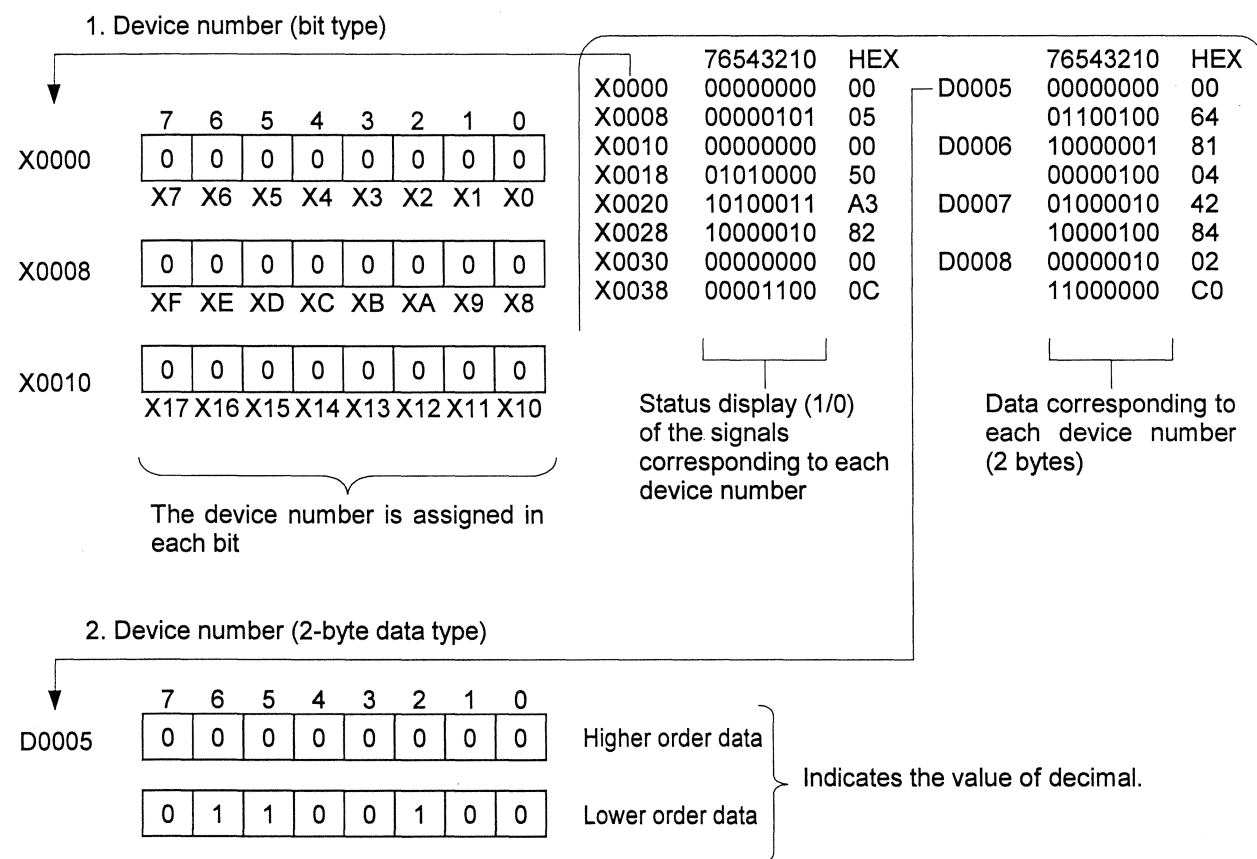
- Press the Input key .

The entered device numbers are displayed.

5.2.2 Device Numbers and Display Data

The device number is made up of a letter from the alphabet and a number or numbers following that letter. Each device number has a specific meaning in the PLC.

There are two kinds of device numbers: bit type device numbers such as X and Y, and data type device numbers such as D and R. Following is an explanation of the device numbers.




A signal changes according to the machine state and thus you can diagnose the machine state based on the signal.

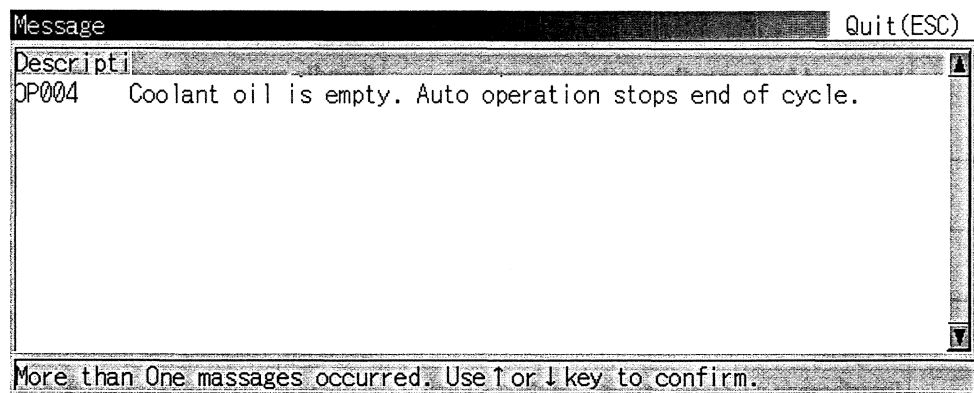
5.3 Alarms

5.3.1 Error and Alarm Messages

If an error or alarm occurs, the warning or alarm indicator on the operation panel goes on or blinks and the message screen appears automatically. Check the message on the screen. The message screen may not appear automatically depending on the content of the error or alarm. In that case, press the menu key [Message] to display the message.

Procedure

1. Press the Menu Up/Down selection key  to enable the submenu (upper row). (Skip this step when the submenu has already been selected.)
2. Press the menu key [Message].
The Message window will then appear.



5.3.2 Alarm Lists

5.3.2.1 List of Messages when the Error lamp Blinks

Alarm Number	Message	Symptom	Action
M01	OPERATION ERROR Error No. nnnn	Alarms during the NC run caused by operator errors or machine failures are displayed. Use the error number to check details.	See the Instruction manual of the NC manufacturer.
M02	NEED R.P. RTN Error No. nnnn	Absolute position detector malfunctions, such as deleting the absolute position data or the detector failure, occurred. Use the error number to check details.	See the Instruction manual of the NC manufacturer.
M03	COLLISION ALARM	Specified command causes an interference between two parts.	See section <5.4.1 Recovery from Interference Check Alarm>.
M04	AREA ALARM	Two parts are in the area where an interference may occur.	See section <5.4.1 Recovery from Interference Check Alarm>.

Alarm No.	Message and Symptom	Action
OP001	Work counter is full. Auto operation stops end of cycle.	Press the Reset key after completion of the current cycle.
OP002	Lubrication oil is empty. Auto operation stops end of cycle.	Add lubricating oil.
OP003	Chip conveyor is overloaded.	See section <5.4.8 Recovery from External Device Alarms>.
OP004	Coolant oil is empty. Auto operation stops end of cycle.	Add coolant.
OP005	External error. Auto operation stops end of cycle.	The additional external device is malfunctioning. Check the device.
OP006	Bar stock is empty. Auto operation stops end of cycle.	Add materials to the bar loader shelf.
OP007	Door is opened. Close the door.	Close the door. Automatic operation cannot be performed with the door opened.
OP008	Zero return mode. Other mode is disable.	Press a key such as Manual Operation, MDI, or Auto.
OP009	Mechanical adjustment mode. Other mode is disable.	Press a key such as Manual Operation, MDI, or Auto.
OP011	Main and back spindle synchronous mode.	Spindle synchronization is cancelled by specifying G113 in the program or by pressing the Reset key when the back spindle stops.
OP012	Bar loader is disconnected. Setting switch No.7 is ON.	Set the setting SW 7 to OFF to enable completion of preparation of the bar loader.
OP013	Override switch is 0%. Then machine can not be moved.	Set the override switch appropriately.
OP014	Tool life is reached. Auto operation stops end of cycle.	Press the Reset key to release the machine from the error. Replace the worn tool.
OP015	Interference check is disabled. Setting switch No.11 is ON.	Move the axis outside the interference area. Then, press the menu key [Interference Off] or remove the check mark from the setting switch "No.11 Interference Check Off", to enable the interference check.
OP041	Door can not be locked. Please shut the door.	Tightly close the door so that it can be locked.
OP042	Remainings Of Super Option:	Indicates the total number of remaining points for super options.
OP043	In Super Option Selection	Indicates the item number of the super option currently being used.
OP046	Spindle not restarted. Press SPINDLE START button.	The spindle is standstill. Restart the spindle with the Spindle start key and run the program with the Start key.
OP050	Intermission of axis movement	The axial movement is intermitted since you release the Start key during the preparation. Press the Start key or close all doors. (For products shipped to EC)
OP056	Loader not ready. Machine stops after this cycle.	The bar loader is not ready. After the machine stops, check the bar loader for condition.
OP057	Dry run valid. Setting switch No. 4 is ON.	The dry run is enabled. Check the switch setting.
OP059	MST lock ON. Setting switch No. 14 is ON.	The auxiliary function is locked. Check the switch setting.
OP060	Mat. change command. Auto operation stops end of cycle.	M55 was issued for single bar loader.

Alarm No.	Message and Symptom	Action
OP063	Bar loader door is open. Close the door.	Close the bar loader door. (For dedicated bar loader)
OP069	Rotation of fan stopped. Auto operation stops end of cycle.	It is likely that the cooling fan is being stopped or the sensor is malfunctioning. After completion of the current cycle, check whether the fan is being stopped due to soiling and/or other causes.
OP070	Please power off. Shutdown test for conductor is needed.	The machine has been turned on for 24 hours. Turn off the power and turn it on again, and check electromagnetic switch for functioning. (For products shipped to EC)
OP102	Oil air lube is empty. Auto operation stops end of cycle.	Refill the oil in the safe condition after completion of the current cycle.
OP200	Illegal interference check data. Reselect tool holder.	The interference check data is illegal. Reset "Bar stock O.D.", "Back spindle chuck position", "Front machining holder name", "Front drilling holder name", and "Back spindle" in the machining data.
OP201	Guide bush and work on back chuck are interfered.	Continuing the operation may cause mechanical interference. Review the program or issue the M code for disabling the interference check (M118).
OP202	Guide bush and work basket on back spindle are interfered.	Same as above.
OP203	Guide bush and Work piece separator are interfered.	Same as above.
OP204	Guide bush and long work supporting unit are interfered.	Same as above.
OP205	Back drill unit and work on back chuck are interfered.	Same as above.
OP206	Back drill unit and back sp. work basket are interfered.	Same as above.
OP207	Back drill unit and back spindle cap are interfered.	Same as above.
OP208	Back drill unit and back spindle cap cover are interfered.	Same as above.
OP209	Back drill unit and back spindle are interfered.	Same as above.
OP212	Back drill sleeve and work on back chuck are interfered.	Same as above.
OP213	Back drill sleeve and back sp. work basket are interfered.	Same as above.
OP214	Back drill sleeve and back spindle cap nut are interfered.	Same as above.
OP215	Back drill sleeve and back sp. cap nut cover are interfered.	Same as above.
OP216	Back drill sleeve and back spindle are interfered.	Same as above.
OP218	Back drill sleeve and front drill sleeve are interfered.	Same as above.
OP234	Front drill holder and back sp. work basket are interfered.	Same as above.

Alarm No.	Message and Symptom	Action
OP235	Front drill holder and work on back chuck are interfered.	Continuing the operation may cause mechanical interference. Review the program or issue the M code for disabling the interference check (M118).
OP236	Front drill holder and back spindle cap are interfered.	Same as above.
OP237	Front drill holder and back Sp. cap nut cover are interfered.	Same as above.
OP239	Front drill holder and workpiece separator are interfered.	Same as above.
OP240	Front drill holder and long work support are interfered.	Same as above.
OP249	Work separator and long work support are interfered.	Same as above.
OP266	Work chute and opposite tool post are interfered.	Same as above.
OP267	Work chute and work on back spindle chuck are interfered.	Same as above.
OP268	Work chute and back spindle work basket are interfered.	Same as above.
OP269	Work chute and back spindle cap are interfered.	Same as above.
OP270	Work chute and front drill sleeve are interfered.	Same as above.
OP271	Work chute and long work supporting unit are interfered.	Same as above.
OP272	Work chute and Workpiece separator are interfered.	Same as above.
OP273	Front drill holder and front drill sleeve are interfered.	Same as above.
OP274	Front drill holder and workpiece separator are interfered.	Same as above.

5.3.2.2 List of Messages Displayed with Alarm Indicator On

Alarm Number	Message and Symptom	Action
EX001	200VAC over current alarm. CB1 or CB2 is activated.	See section <5.4.3 Recovery from Overcurrent Alarm>.
EX002	DC power supply over current alarm. (Fuse F201 or F202)	See section <5.4.3 Recovery from Overcurrent Alarm>.
EX003	Main spindle motor alarm. The drive unit is alarm status.	See section <5.4.5 Troubleshooting after Main Spindle, Back Spindle, and Tool Spindle Alarms>.
EX004	Back spindle motor alarm. The drive unit is alarm status.	See section <5.4.5 Troubleshooting after Main Spindle, Back Spindle, and Tool Spindle Alarms>.
EX005	Gang Tool Spindle Motor Alarm.	See section <5.4.5 Troubleshooting after Main Spindle, Back Spindle, and Tool Spindle Alarms>.
EX006	G/B spindle motor alarm. The drive unit is alarm status.	See section <5.4.6 Troubleshooting after Guide Bushing Spindle Alarm>.
EX008	Opposite tool spindle motor alarm.	See section <5.4.5 Troubleshooting after Main Spindle, Back Spindle, and Tool Spindle Alarms>.
EX009	Back Tool Spindle Motor Alarm.	See section <5.4.5 Troubleshooting after Main Spindle, Back Spindle, and Tool Spindle Alarms>.
EX011	Spindle motor over heat. Main or back spindle over heat.	If there is trouble or abnormal overheat on the spindle, turn the power off and contact the Cincom Service immediately.
EX051	Coolant pump overload alarm. OLS1 is activated.	See section <5.4.2 Recovery from Coolant Pump Overload Alarm>.
EX052	Emergency button alarm. Emergency button is pressed.	Turn the Emergency Stop button clockwise to cancel emergency stop.
EX055	Coolant or medium-pressure pump overload. Thermal activated.	Remove the major cause(s) and reset the thermal relay.
EX101	Bar loader alarm. Bar loader device is in alarm status.	See section <5.4.8 Recovery from External Device Alarms>.
EX102	External alarm 1. Option device is in alarm status.	Check the external device.
EX105	Coolant discharge alarm. Discharge amount is decreased.	See section <5.4.9 Recovery from Other Alarms>.
EX107	Tool bit breakage alarm. Cut off tool is broken.	See section <5.4.9 Recovery from Other Alarms>.
EX108	Cycle time alarm. Machine stops long time.	See section <5.4.9 Recovery from Other Alarms>.
EX109	Main spindle speed fluctuation alarm.	See section <5.4.7 Troubleshooting after Spindle Related Alarms>.
EX110	Back spindle speed fluctuation alarm.	See section <5.4.7 Troubleshooting after Spindle Related Alarms>.
EX111	Door lock alarm. Door can not be locked correctly.	Check whether the door is normally closed. Then, retry to lock the door.
EX112	Main spindle overheat. The spindle abnormally generates heat.	See section <5.4.9 Recovery from Other Alarms>.

Alarm No.	Message and Symptom	Action
EX133	Bar loader is not ready. Bar loader power is not turned on.	See section <5.4.8 Recovery from External Device Alarms>.
EX143	Cut off tool breakage sensor is incorrect.	Check the cut-off tool breakage detection sensor.
EX165	Phase adj. disabled. Turn main/back Sp. more than 1 rev.	Run both spindle and back spindle by at least one rotation, and specify G899 again.
EX200	Work counter full. Counter is reached required quantity.	Press the Reset key.
EX201	Bar stock empty. No bar stock.	See section <5.4.8 Recovery from External Device Alarms>.
EX202	Lubrication oil empty alarm. Supply the oil.	See section <5.4.9 Recovery from Other Alarms>.
EX203	Coolant oil alarm. Supply the oil.	See section <5.4.9 Recovery from Other Alarms>.
EX204	Oil-air lub alarm. Lub oil level is low. Replenish.	See section <5.4.9 Recovery from Other Alarms>.
EX205	External alarm 2. Option device is in alarm status.	Check the optional device.
EX208	Chip conveyor overload. Chip is jammed in the conveyor.	See section <5.4.8 Recovery from External Device Alarms>.
EX210	Bar loader failed to operate normally.	The bar loader failed to supply workpiece normally. Check if it has been caught.
EX211	Tool life alarm. Specified tool's tool life is over.	Press the Reset key and replace the worn tool.
EX212	Bar loader door open alarm. Close the door.	Close the bar loader door. (For dedicated bar loader)
EX213	Material change command. Not allowed for single bar spec.	M55 cannot be used for single bar feeding. Check the program.
EX214	The cooling fan alarm. Fan or sensor are abnormal.	It is likely that the cooling fan is being stopped or the sensor is malfunctioning. Check whether the fan is being stopped due to soiling and/or other causes.
EX300	Illegal spindle power off. Power turned off incorrectly.	The spindle was not turned off with the door opened. Turn the machine main circuit breaker off and remove the cause(s). (For products shipped to EC)
EX301	Abnormal feedrate. Axis feedrate exceeded limit.	The axis feed rate exceeded the safe level with the door opened. Turn the machine main circuit breaker off and remove the cause(s). (For products shipped to EC)
EX302	Servo being turned off. Door opened though not permitted.	Since the door was opened using the door open permit key in an unauthorized manner, the servo power was turned off. Close the door or authorize the key. (For products shipped to EC)

Alarm No.	Message and Symptom	Action
EX303	Cycle start disabled. Started although door is open.	An attempt was made to start Automatic operation with doors opened. Close all doors and start the Automatic operation.
EX304	Illegal door lock signal. Door lock is faulty.	Even when the door was locked, it was unlocked during the operation. Turn the machine main circuit breaker off and remove the cause(s). (For products shipped to EC)
EX305	Safety feedrate exceeded. Exceeded in PH operation.	The feed rate exceeded the safety speed in the handle feed. Press the Reset key and cancel the alarm. (For products shipped to EC)
EX306	Air pressure error	The compressed air pressure is too low or high. Check the setting on the air source or pressure regulator.
EX400	Machine number not registered.	Contact your sales representative.
EX401	Detection of the machine moving.	Contact your sales representative.
EX402	Machine transfer detection alarm.	Contact your sales representative.
EX501	Spindle chuck closed. Open spindle chuck.	Open the spindle chuck and perform start-position operation.
EX502	Cut-off tool number on the Machining Data is not set.	Specify the "cut-off tool number" in the machining data.
EX512	Main spindle chucking force is too strong.	Adjust the main spindle chucking force.
EX513	Back spindle chucking force is too strong.	Adjust the back spindle chucking force.
EX520	Cancel tool nose R compensation (G40)	Specify G40 before T code to cancel tool nose radius compensation.
EX521	Cancel constant surface speed control function. (G97)	Specify G97 to cancel constant surface speed control before specifying the T code.
EX522	You cannot specify this T code.	This T code does not exist. Review the program.
EX524	You cannot specify a value less than "0" for "H" argument.	When specifying the "H" argument for selecting a gang tool, set it to a value greater than "0".
EX526	Illegal argument is specified.	An argument, which must not be specified in T code, was specified in T code. Review the program.
EX531	Use same number for X in T1X00 and T5X00.	In the front/back simultaneous machining, specify the same "X" number for T1X00 and T5X00. Review the program.
EX551	Argument A in G231 block is illegal.	The A argument is not specified in G231.
EX555	Designation of the machining pattern is not allowed.	Cancel the current machining pattern and specify another pattern.
EX580	C axis option for the main spindle is not installed.	To specify the C axis indexing command for main spindle (M18), purchase the C axis option.

Alarm No.	Message and Symptom	Action
EX581	C axis option for the back spindle is not installed.	To specify the C axis indexing command for back spindle (M48), purchase the C axis option.
EX582	Indexing option for the back spindle is not installed.	To specify the C axis indexing command (M78), purchase the back spindle indexing option.
EX583	Indexing angle value must be within 0 to 360.	For M28, M78, M18, and M48, specify indexing angles equal to and greater than "0" and less than "360".
EX584	Illegal indexing command specified.	Indexing unit angle: Specify a multiple of (M28: 1°, M78: 1°) as the spindle indexing angle.
EX590	Back spindle chuck closed.	Open the back chuck before specifying advancing the knock-out bar.
EX591	Back spindle rotating.	Stop the back spindle before specifying advancing the knock-out bar.
EX592	Knock-out can not be advanced to correct position.	See section <5.4.7 Troubleshooting after Spindle Related Alarms>.
EX620	Remnant bar did not retract.	Return the remaining material.
EX621	Remnant bar was not removed.	Pull out the remaining material.
EX622	Bar stock empty	Supply the bar.
EX623	Material is not in correct position.	Check the material position and set the material properly.
EX624	Abnormal bar feeder sensor. Clean the sensor.	Clean the sensor element.
EX625	Abnormal bar feeder sensor. Check the bar feeder sensor.	Check the sensor for staining.
EX701	Tool has not been selected. Select tool.	Select a tool with the cursor on the Preparation screen before executing the preparation for operation.
EX702	Core cannot be selected for \$2.	
EX703	DIA cannot be selected for \$2.	
EX704	Cut-off cannot be selected for \$2.	Select an appropriate T code on the Preparation screen, then perform "cut-off machining."
EX706	You cannot specify "T3000".	T code "T3000" can be specified only for axis control group 2. Review the program.
EX707	No "S" argument is found.	When specifying Tcode "T3000 A1", include the "S" argument.
EX710	Opposite tool post could cause interference.	Specify command M140 after T20's.
EX712	You cannot specify this T code ("T2000").	T code less than "T2000" does not exist. Review the program.
EX713	You cannot specify a T code exceeding "T3000" for \$1	T code exceeding "T3000" can be specified only for axis control group 2. Review the program.
EX714	You cannot specify a T code less than "T2100" for \$2	T code less than "T2100" can be specified only for axis control group 1. Review the program.

Alarm No.	Message and Symptom	Action
EX715	You cannot specify this T code (-"T2900").	T code less than "T2900" does not exist. Review the program.
EX724	The tool nose is over the maximum length.	Check the tool for the protrusion, and correct the tool setting or specify the "Q1" argument in the T code.
EX725	Z1-Z2 Axes are superimposed. Cancel superimpose function.	Specify G810 to cancel the Z1-Z2 superimposition, and then specify T20s command.
EX729	Front mach holder on main chuck work may cause interference.	Move the Y1 axis to a safety position, and then operate the X1 axis.

5.3.2.3 NC Alarm messages

Alarm No.	Message	Symptom	Action
S01	SERVO ALARM:PR Error No. nn	Servo system error. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
S02	INT PARAM ERR Error No. nn	Error in parameters sent to the servo amplifier from the NC.	See the Instruction manual of the NC manufacturer.
S03	SERVO ALARM: NR. Error No. nn	Servo system error. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
S04	SERVO ALARM: AR Servo system error.	Servo system error. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
S51	PARAMETER ALARM Warning No. nn	Illegal value entered for the servo parameters.	See the Instruction manual of the NC manufacturer.
S52	SERVO WARNING Error No. nnnn	Servo system error. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
	Battery voltage drop 009F	The battery voltage, which is supplied to the absolute position detector of servo motor, has dropped.	
Y02	SYSTEM ALARM Error No. nnnn	Error in data transmission between the NC and the servo amplifier. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
Y03	AMP. UNEQUIPPED	Servo amplifier not equipped properly.	See the Instruction manual of the NC manufacturer.
Y05	INT PARAM ERR Error No. nnnn	Error in parameters used to turn the NC power on. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
Y06	mcp_no ERROR Error No. nnnn	Mismatch between the MCP and the axis parameters. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
Y07	AMPLIFIER POWER OFF Servo system error.	Servo system error. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
Y51	PARAMETER ERROR Error No. nnnn	Parameter error occurred while some control axes were moving. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
Znn	xxxxx	NC system alarm. Use the error number to check for details.	See the Instruction manual of the NC manufacturer.
Z52	Battery fault xxxxx	The voltage of the battery which is mounted on the NC control unit has dropped.	See the Instruction manual of the NC manufacturer.

5.3.3 Stop Codes

Stop codes represent the states in which the NC unit has been stopped in a certain condition.

Alarm No.	Message	Symptom	Action
T01	CAN'T CYCLE ST Error No. nnnn	NC can not start automatic operation in the stop status. Use the error number to find more information.	See the Instruction manual for the NC manufacturer.
T02	FEED HOLD Error No. nnnn	A certain condition caused the automatically operating NC unit to halt automatic operation. Use the error number to find more information.	See the Instruction manual for the NC manufacturer.
T03	BLOCK STOP Error No. nnnn	During automatic operation, the NC stopped program execution at the end of 1 block. Use the error number to find more information.	See the Instruction manual for the NC manufacturer.

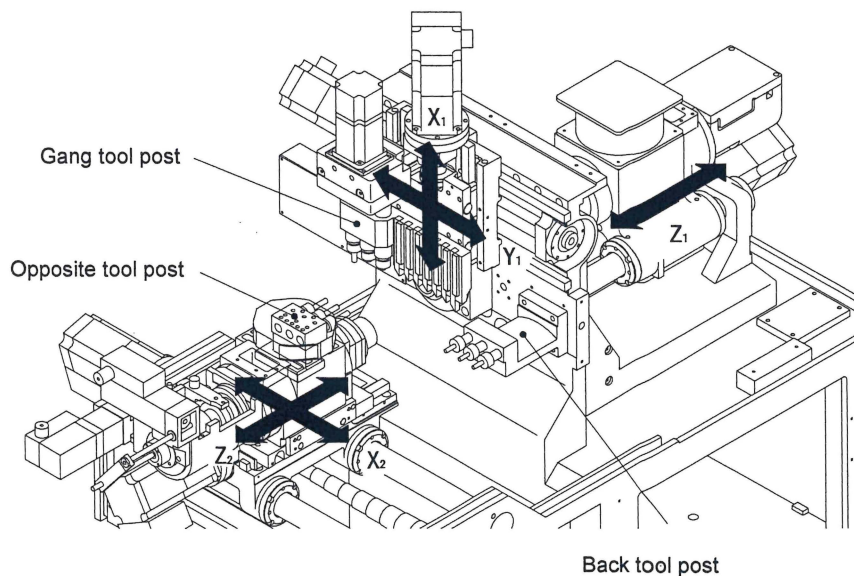
Post-Alarm Actions

This section describes the proper actions required to identify and correct the machine problem. The solutions provided are those to some of the most common problems. Call the Cincom Service Office if the problem cannot be located or is beyond the scope of this manual.

Recovery from Interference Check Alarm

Interference Check

The machine checks for interference among the components.



The interference check function recognizes rough shape of the machine according to the machining data and checks for interference among components by the data.

Be sure to set the machining data correctly.

CAUTION

The C unit does not have exact dimensional or geometrical data on the components L16/L20 machine when checking for interference between them. Accordingly, components may interfere with each other while the interference check has not been generated, or the interference check alarm may be generated while they seem to have no chance of interference. You should therefore perform visual check for interference in combination with the interference check function of the machine.

5.4.1.2 Troubleshooting after M03 Interference Check Alarm


Procedure

1. Press the Reset key .


The error indication disappears.

5.4.1.3 Troubleshooting after M04 Interference Area Alarm

Procedure

1. Press the Manual key .



The Manual key lamp goes on and the Handle Feed screen appears.

2. Press the Menu Up/Down selection key .

The submenu (upper row) will be enabled. (Skip this step when the submenu has already been selected.)

3. Press the menu key [INT.IVLD].

The interference check is disabled.

4. Use the arrow keys  and  to select the axis to be free from interference, then turn the handle to escape the interfering object.
The alarm indicator goes off.

5. Press the menu key [INT.IVLD].

The interference check is enabled.

Notes

- The interference check function can be disabled for only specific components by specifying M118 (interference check disable command) and M119 (interference check enable command) in the program.
- The interference check alarm is generated by an error either in the program or in operation. Try to create and use the program without generating the interference check alarm.

5.4.2 Recovery from Coolant Pump Overload Alarm

5.4.2.1 Troubleshooting after EX051 Coolant Pump Overload Alarm

Procedure



1. Check the thermal relay OLS1.

When the relay has been tripped:

- The coolant motor has been overloaded. Check the oil level and condition of coolant. Also check if the pump has been overloaded by clogging chips, resulting in degradation in suction force.
- The thermal relay has been set to an improper value.

The possible cause of tripping the relay is either of the above two conditions. Remove the cause and go to step 2.

When the relay has not been tripped:

- The possible cause is a disconnected signal line. Remove the cause and go to step 2.

2. Turn the main circuit breaker off, reset the thermal relay, then turn the main circuit breaker on.

The alarm indicator will go off.

Notes

- You can check whether the thermal relay has been tripped depending on the reset lever status. If the relay is tripped, the reset lever pops out, exposing the Δ mark. To release the tripping status, press the reset lever. Turn the adjustment knob to set the preset value. Be sure to turn off the main circuit breaker to operate the thermal relay.
- See Section <5.4.2.2 Resetting a Thermal Relay> for resetting a thermal relay.

5.4.2.2 Resetting a Thermal Relay

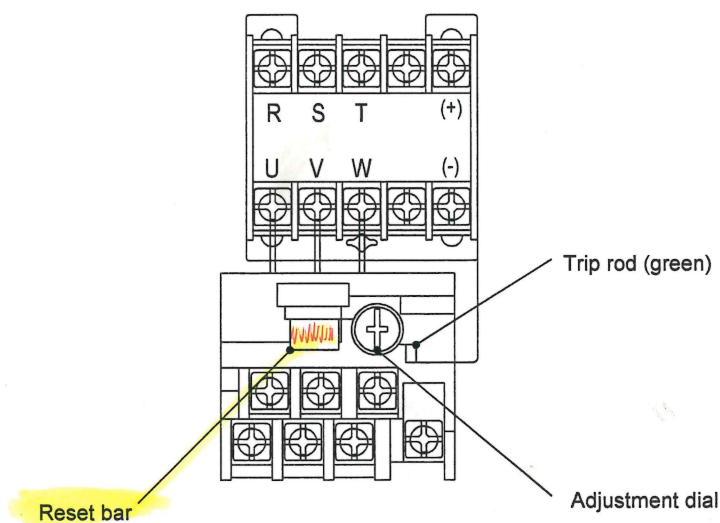
Procedure

**DANGER**

Be sure to turn off the main breaker of the machine before starting the work.

Failure to do so will result in death or serious personal injury from electric shock.

1. Turn off the main breaker of the machine according to the procedure in section <5.1 Turning On/Off the Power> in the Operator's Manual, then open the door of the front electric device box to check the thermal relay.
2. When the thermal relay works, the trip rod (green) becomes invisible. To reset the tripped state, push the reset bar.
3. Close the door of the front electric device box.

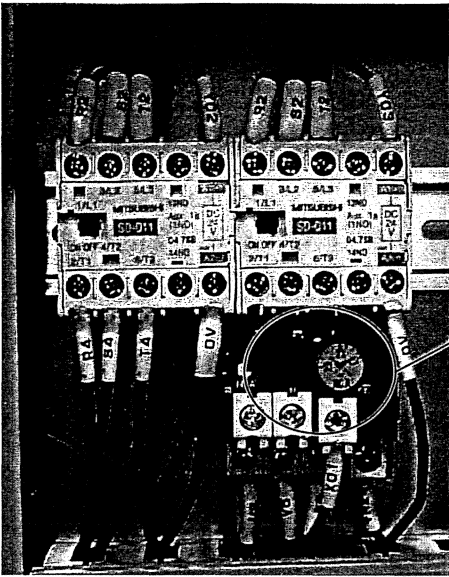


Thermal relay symbol	Setting current	Usage
OLS1	2.1A	For coolant pump motor

Notes

- The thermal relay can be set up with the adjustment dial.
- If the same thermal relay works after operation is restarted, eliminate the main cause of the alarm.

* FRONT PANEL
 BY MAIN
 POWER SWITCH!



Thermal relay OLS1

5.4.3 Recovery from Overcurrent Alarm

5.4.3.1 Troubleshooting after EX001 200VAC Over Current Alarm

Procedure

1. Check the circuit protector CP1.

If CP1 has been tripped (with the handle lower than the ON position but not at the OFF position)

- Check if the 200-volt circuit has been short-circuited.
- Check if a load exceeding the specified current has been connected.

If one has been connected, use a different power supply.

The possible cause of tripping the circuit protector is either of the above two conditions. Remove the cause and go to step 3.

When CP1 has not been tripped (with the handle completely at the ON position)

- Go to step 2.

2. Check the circuit protector CP2.

If CP2 has been tripped (with the handle lower than the ON position but not at the OFF position)

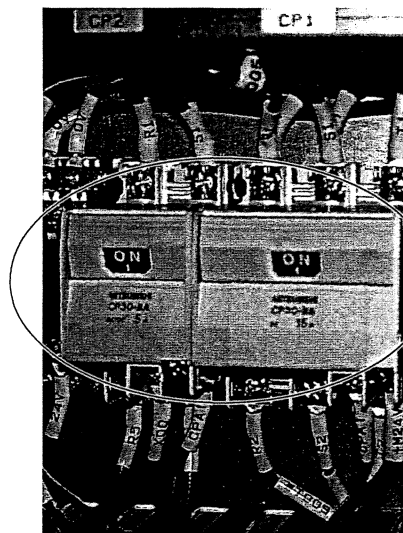
- Check if the fan motor circuit has been short-circuited.
- Check if the fan motor has been locked without running.

The possible cause of tripping the circuit protector is either of the above two conditions. Remove the cause and go to step 3.

When CP2 has not been tripped (with the handle completely at the ON position)

- The possible cause is a disconnected signal line. Remove the cause and go to step 3.

3. Turn the main circuit breaker off first. Set the circuit protector handle down to the OFF position, push the handle back up, then turn the main circuit breaker on.



Circuit protector
CP1, CP2

Circuit protector

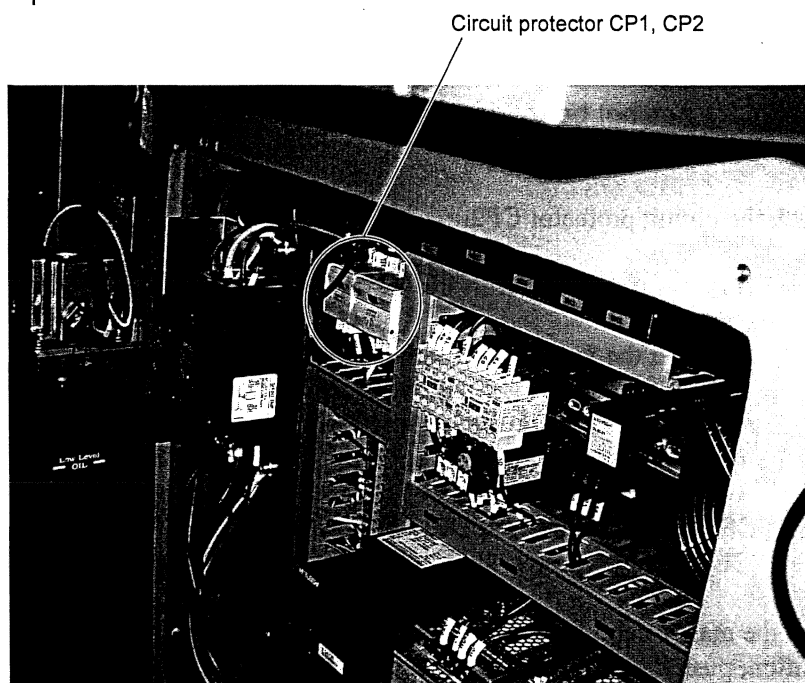
List of Circuit Protectors and Fuses

Symbol	Capacity	Use
CP1	15A	200VAC circuit (Lubricating oil pump, bar loader, coolant pump, chip conveyor, etc.)
CP2	5A	Fan motor

Note

If the same circuit protector is actuated again when the machine restarts, the cause must be removed completely.

Location of circuit protector



5.4.4 Troubleshooting when 24 VDC power supply fails

Procedure

1. Turn off the main breaker of the machine according to the procedure in section <5.1 Turning On/Off the Power> in the Operator's Manual, then open the door of the front electric device box to check the fuse.

When the fuse has burned out:

- Check if any of the DC power lines (24 VDC, 5 VDC or 0V line) is short-circuited.
- Check if the total connected load exceeds the capacity of fuse.

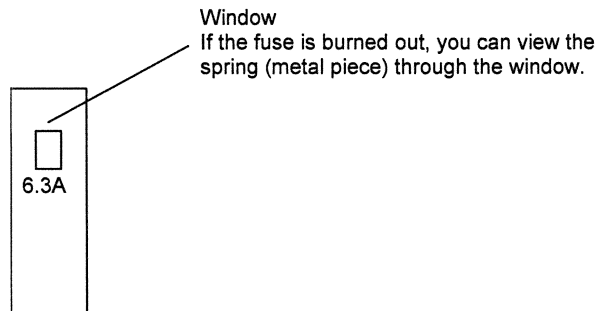
If so, connect another power supply to the machine to supply sufficient power.

The possible cause is either of the above two conditions. Remove the cause and go to step 2.

When the fuse has not burned out:

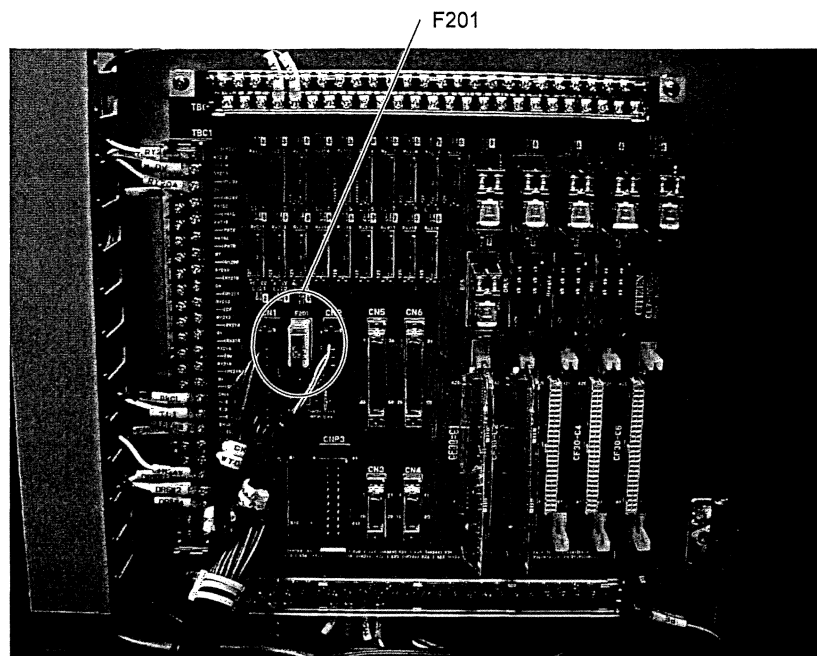
- Any of the DC power lines (24 VDC, 5 VDC or 0V line) may possibly be disconnected. After removing the cause of the fault, proceed to step 3.

2. Remove the burned fuse and replace it with a new one properly. Then go to step 3.
3. Close the door of the front electric device box, then turn on the machine according to the procedure in section <5.1 Turning On/Off the Power> in the Operator's Manual.



Note

If the same status recurs after operation is restarted, remove the main cause of the alarm.



5.4.5 Troubleshooting after Main Spindle, Back Spindle, and Tool Spindle Alarms

EX003	Main spindle motor alarm
EX004	Back spindle motor alarm
EX005	Gang tool spindle motor alarm
EX008	Opposite tool spindle motor alarm
EX009	Back tool spindle motor alarm

When one of the above PC alarms occurs, the machine stops and an NC alarm also occurs. For details and causes of alarms, see the NC Alarm Table of the Instruction manual of the NC manufacturer.

5.4.6 Troubleshooting after Guide Bushing Spindle Alarm

Troubleshooting after EX006 G/B Spindle Motor Alarm

Procedure

1. Check the chucking force of the main spindle.

If the chucking force is insufficient:

- Adjust the chucking force.

When the chucking force is appropriate:

- An NC alarm may occur along with the above PC alarm. For details and causes of alarms, see the NC Alarm Table of the Instruction manual of the NC manufacturer.

5.4.7 Troubleshooting after Spindle Related Alarms

5.4.7.1 Troubleshooting after EX109 Main Spindle Speed Fluctuation Alarm

Procedure

1. Manually rotate the main spindle with the main circuit breaker off.

If the main spindle won't turn or feels extremely heavy:

- The main spindle may have a mechanical failure.

When the main spindle rotates normally:

- Go to step 2.

2. Check if the main spindle is heavily overloaded with the tool (drill) which has been chipped, broken, or worn down.

If the tool (drill) has been chipped, broken, or worn down:

- Replace the tool.

When the tool is normal:

- Go to step 3.

3. Turn on the power supply of the machine and manually turn the main spindle to check if the spindle speed S1 displayed on the screen is 0.

If S1 is 0:

- The encoder cable has been disconnected or the connector is loose.
- The encoder is faulty.
- The NC unit is faulty.

The possible cause is one of the above three conditions.

Visually check the encoder cable for discontinuity and check for looseness of its connector. Call the Cincom Service Office if you find no problem with the encoder cable.

If the S1 value varies:

- Go to step 4.

4. Remove the material first. Execute the spindle speed change detection OFF command (M97) in MDI mode, then execute M3 S1=1000 to turn the spindle at 1000 min^{-1} to check whether the spindle speed S1 on the screen falls within the range of $1000 \pm 100 \text{ min}^{-1}$.

If the S1 value is within $1000 \pm 100 \text{ min}^{-1}$:

- The spindle speed change detection level has not been set to the standard value. For changing the setting, refer to see section <7.6 Command for Detecting Spindle Speed Changes> in the Programmer's Manual.

If the S1 value is outside $1000 \pm 100 \text{ min}^{-1}$ or the main spindle motor alarm is raised:

- The encoder is faulty.
- The spindle speed has not been adjusted appropriately.
- The spindle motor is faulty.
- The encoder cable has been disconnected or the connector is loose.
- The spindle servo amplifier is faulty.
- The NC unit is faulty.

The possible cause is one of the above six conditions.

Visually check the encoder cable for discontinuity and check for looseness of its connector. Call the Cincom Service Office if you find no problem with the encoder cable or if the procedure for recovery from the main spindle motor alarm fails to remove the alarm.

5.4.7.2 Troubleshooting after EX110 Back Spindle Speed Fluctuation Alarm

Procedure

1. Manually turn the back spindle with the main circuit breaker off.

If the back spindle won't turn or feels extremely heavy:

- The back spindle may have a mechanical failure.

When the back spindle turns normally:

- Go to step 2.

2. Check if the back spindle is heavily overloaded with the tool (drill) which has been chipped, broken, or worn down.

If the tool (drill) has been chipped, broken, or worn down:

- Replace or re-polish the tool.

When the tool (drill) is normal:

- Go to step 3.

3. Turn on the power supply of the machine and manually turn the back spindle to check if the spindle speed S2 displayed on the screen is 0.

If S2 is 0:

- The encoder cable has been disconnected or the connector is loose.
- The encoder is faulty.
- The NC unit is faulty.

The possible cause is one of the above three conditions.

Visually check the encoder cable for discontinuity and check for looseness of its connector. Call the Cincom Service Office if you find no problem with the encoder cable.

If the S2 value varies:

- Go to step 4.

4. Remove the workpiece first. Execute the spindle speed change detection OFF command (M87) in MDI mode, then execute M23 S2=1000; to turn the spindle at 1000 min^{-1} to check whether the spindle speed S2 on the screen falls within the range of $1000 \pm 100 \text{ min}^{-1}$.

If the S2 value is within $1000 \pm 100 \text{ min}^{-1}$:

- The spindle speed change detection level has not been set to the standard value. For changing the setting, refer to see section <7.6 Command for Detecting Spindle Speed Changes> in the Programmer's Manual.

If the S2 value is outside $1000 \pm 100 \text{ min}^{-1}$ or the back spindle motor alarm is raised:

- The encoder is faulty.
- The spindle speed has not been adjusted appropriately.
- The back spindle motor is faulty.
- The encoder cable has been disconnected or the connector is loose.
- The back spindle servo amplifier is faulty.
- The NC unit is faulty.

The possible cause is one of the above six conditions.

Visually check the encoder cable for discontinuity and check for looseness of its connector. Call the Cincom Service Office if you find no problem with the encoder cable or if the procedure for recovery from the main spindle motor alarm fails to remove the alarm.

5.4.7.3 Troubleshooting after EX592 Knock-out Can Not Be Advance to Correct Position

Procedure

1. Check if the workpiece has been caught in the back spindle.

If so:

- Remove the workpiece.

If not:

- The diameter of the knock-out jig is larger than the chuck size.
- The knock-out bar has been bent.

Check the knock-out bar which may have been caught for either of the above reasons.

Call the Cincom Service Office if the knock-out bar has no problem.

5.4.8 Recovery from External Device Alarms


5.4.8.1 Troubleshooting after EX133 Bar Loader is Not Ready

Procedure

For a dedicated bar loader:

1. Check the indicator on the Power key  of the bar loader.

When the indicator is off:

- Press the Power key  of the bar loader.

If the indicator is on:

- The NC unit may be faulty. Call the Cincom Service Office.

For another bar loader:

1. Check the power supply of the bar loader.

When the power is off:

- Turn the power on.

If the power is on:

- The cable has been disconnected or erroneously wired.
- The NC unit is faulty.
- The bar loader is faulty.

The possible cause is one of the above three conditions. Follow the bar loader maintenance procedure to check the bar loader and cable. Call the Cincom Service Office if neither of them has any problem.

5.4.8.2 Troubleshooting after EX101 Bar Loader Alarm

Procedure

1. Check the conditions of the bar loader.

If an alarm has been raised:

- Reset the alarm.

If no alarm has been raised:

- The bar loader has been wired erroneously or the cable has been disconnected.
- The NC unit is faulty.

The possible cause is either of the above two conditions. Check the cable. Call the Cincom Service Office if the cable has no problem.

Note

If the machine is equipped with an automatic bar loader (excluding a dedicated bar loader), contact the bar loader manufacturer.

5.4.8.3 Troubleshooting after EX201 Bar Stock Empty

Procedure

1. Check whether there are materials on the bar loader.

When the bar loader has no material:

- Replenish the bar loader with materials.

If the bar loader has materials:

- The stock bar detection sensor is faulty.
- The bar loader has been wired erroneously or the cable has been disconnected.

The possible cause is either of the above two conditions. Check the cable and sensor. Call the Cincom Service Office if neither of them has any problem.

Note

If the machine is equipped with an automatic bar loader (excluding a dedicated bar loader), contact the bar loader manufacturer.

5.4.8.4 Troubleshooting after EX208 Chip Conveyor Overload

Procedure

1. Check if the chip conveyor has been overloaded with clogging chips or other foreign matters.

If the chip conveyor has been overloaded:

- Remove the cause.

When the chip conveyor is normal:

- Refer to the Operator's Manual for the chip conveyor.

Note

The chip conveyor requires cleaning at regular intervals. To clean the conveyor, detach it from the machine body to remove fine chips.

5.4.9 Recovery from Other Alarms

5.4.9.1 Troubleshooting after EX108 Cycle Time Alarm

Procedure

If a program raises a cycle time alarm whenever it is executed

1. Check if the program cycle time is exceeding the set time (the standard setting is 30 minutes).

If the cycle time exceeds the set time:

- Extend the set time.
To measure the actual cycle time, run the program for one cycle with the cycle time check disabled (by setting the "Bit 1" of parameter #1 on the BIT SELECT screen to "1" according to see section <5.6.2 PLC Bit Selection Parameter Setting>).



CAUTION

Disabling the cycle time check prevents the machine from raising an alarm even if the machine causes an unexpected failure. Be sure to enable the cycle time check except when measuring the cycle time for determining the setting.

When the cycle time does not exceed the set time:

- Go to step 2.
2. Run the program for one block, then check the NC operation status display when the machine makes no response with the Start key lamp remains on, to pressing the Start key.

PRG SEL	POS Data	Set SW	Message	T-PATT	Offset	Counter
Modal			Cont.	1 Cycle 1 Block	Last PRT	Menu SEL

Operation status display

Symbol	Status
EMG	Emergency stop
RST	NC reset
RDY	Ready for operation
	Automatic operation
SYN	Being queued for synchronization
CRS	Waiting until axes cross
STP	Being stopped
HLD	Being held

When both of axis control groups 1 and 2 are in the SYN status (being queued for synchronization):

Axis control groups 1 and 2 are being stopped by different queue commands. Modify the program so that the queue commands for axis control groups 1 and 2 are of the same command sequence.

When one of axis control groups 1 and 2 has no status display (automatic operation) and the other has a status display of SYN, or when both of them have no status display:

The block being executed for the axis control group with no status display contains a command for which no completion signal has been issued.

If the same block contains multiple commands which can be specified alone, specify them in different blocks and execute them one by one to identify the command that stops operation.

If the machine stops with a cutting block such as G1, G2, or G3:

A per rotation feed command (G99) may be suspected while neither the spindle nor the back spindle is rotating.

If the cutting block contains no rotation command, insert one before that block. If the cutting block contains one, see section <5.5.2 Main Spindle Does Not Rotate during Automatic Operation> to remove the cause of stopping operation, then run the program again.

If the machine has stopped with an M code:

The M code may be illegal or the condition for completing the M code may not have been satisfied. After making sure that the specified M code is not illegal, check whether the command-specified operation has been performed or not (for example, whether the chuck has been closed completely, stopped prematurely, or left open with M6 specified). Then, take action appropriately depending on the result of the check.

If the machine has stopped with any other command:

Call the Cincom Service Office.

When the program is run to the end:

- The program may not contain M02.
Check the program and insert M02 if it is not included.

If the program sometimes results in an alarm:


- The program stops running at such a G or M code as described above.
- The "door open" signal is issued because of imperfect contact of the door switch while the door has been closed.

Notes

- Select a PLC constant of #3 (in 0.1 seconds) to set the cycle time.
- The cycle time can be set up to 32400 (54 minutes).
- See section <5.6.1 PLC Constant Setting> for how to read the PCL-Data screen.
- The M codes for resetting the cycle time count are M1, M56, M57, and M2.
- The cycle time is checked only in automatic operation mode.

5.4.9.2 Troubleshooting after EX105 Coolant Discharge Alarm

Procedure

1. Press the Reset key  to remove the alarm and adjust the coolant flow rate according to the adjustment instructions for the coolant flow rate detector (U52R), which are provided after this procedure.

If the alarm is raised as soon as you press the coolant switch to adjust the flow rate (Process 3):

- The coolant tank may be short of coolant. Check the oil level and replenish the tank if coolant is short.
- The filter in the coolant tank may have been clogged, preventing coolant from reaching the suction opening of the pump. Clean inside the tank.
- The flow rate sensor may be defective. Fully turn the "set value adjusting potentiometer" counterclockwise. (Process 7)

If the "alarm output indicator LED" does not come on:

- Replace the flow rate sensor because it seems to be defective.

If the "alarm output indicator LED" comes on:

- The flow rate seems to have not been adjusted correctly. Adjust the flow rate over again.

When the flow rate can be adjusted as described in the procedure:

- The filter in the coolant tank may have been clogged, taking time for coolant to return to the suction opening of the pump. Clean inside the tank.
- The flow regulating valve may have been too tightened or the "set value adjusting potentiometer" may have not been adjusted correctly. Leave the coolant supply system as it is for further observation. If the alarm persists, call the Cincom Service Office.

Note

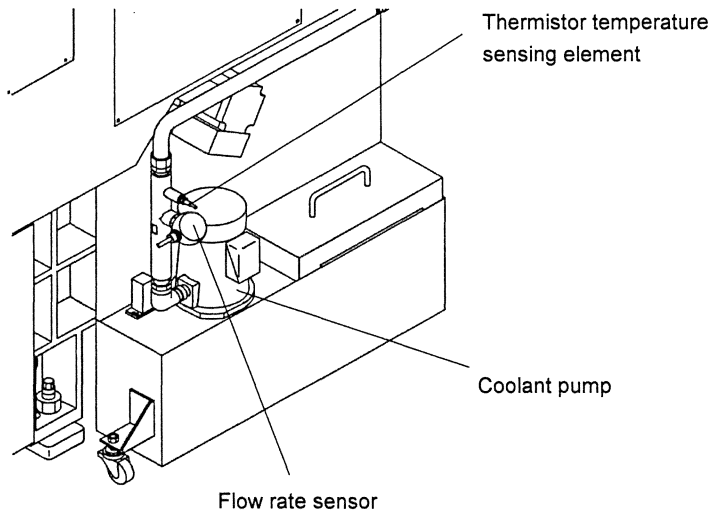
The coolant flow rate detector is an option.

Adjustment of the Coolant Flow Rate Detector (U52R)

If the coolant flow rate becomes too low to be applied to the cutting point for some reason, an accident such as a fire hazard may result. The coolant flow rate detector (U52R) detects the decrease in coolant flow rate to automatically stop operation of the machine.

Notes

- The coolant flow rate varies with temperature. To distinguish between the variation in flow rate under steady conditions and its abnormal decrease, set the alarm generating flow rate to 2/3 or less of the normal service flow rate. The normal service flow rate must assume the valve to be fully opened.
- This device does not operate at a coolant temperature of 15°C or less at startup of the machine. When the machine starts operation early in the morning in winter, for example, the device therefore remains disabled until the coolant temperature rises (to 15°C), requiring the operator to monitor the coolant flow rate. Once the coolant temperature has reached 15°C, the device remains enabled without being disabled even when the temperature is lowered by some factor in the environment, providing its flow rate detecting function.



Names and Functions

The coolant flow rate detector consists of the flow rate sensor and the coolant temperature setting unit.

■ Flow rate sensor

- Flow rate LED indicators

The nine flow rate indicators show the relative current flow rate by their on/off state. (The leftmost indicator is always lit while the flow rate sensor is powered on even when the flow rate is 0.)

- Alarm flow rate LED indicator

This indicator blinks to indicate the preset flow rate limit for alarm. The LED indicating the current alarm flow rate setting keeps on blinking. One of the nine flow rate indication LEDs serves as this setting indication LED.)

- Alarm output LED indicator

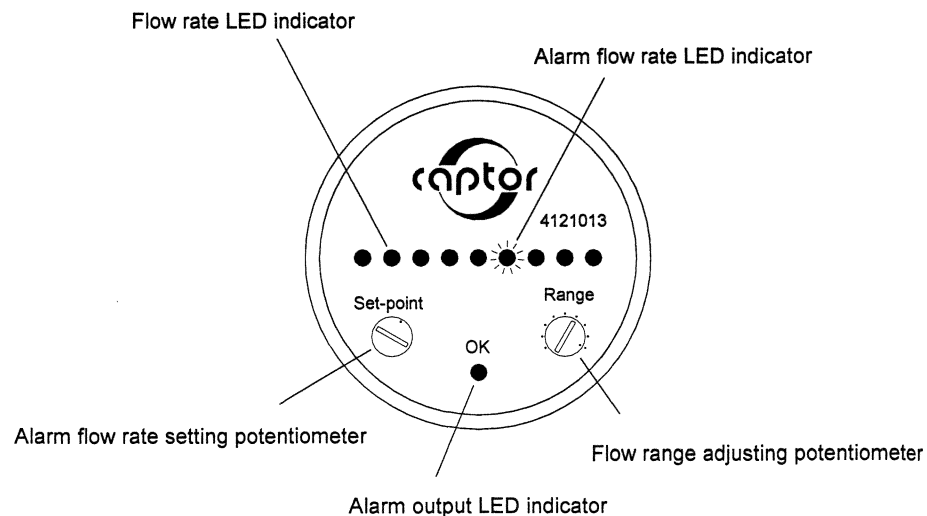
This indicator is on while the flow rate is normal. When the flow rate falls under the preset flow rate, this indicator goes off.

- Potentiometer to set flow rate for alarm

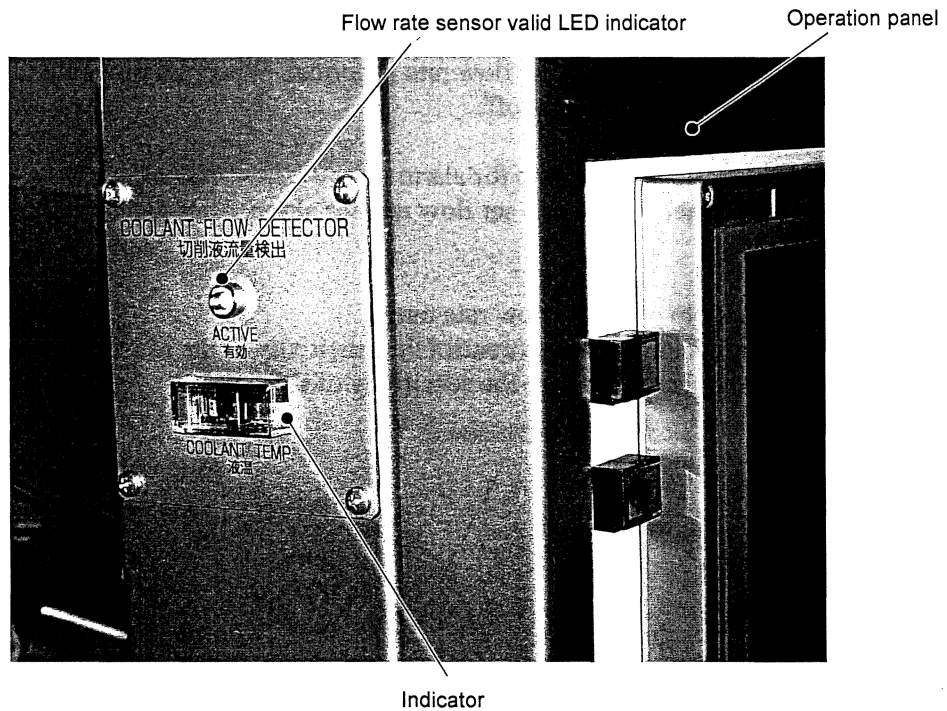
This potentiometer is used to set flow rate for alarm. Turn the control clockwise to increase the flow rate.

- Potentiometer to control a flow rate range

This potentiometer is used to control the sensitivity of the sensor. Turn the control counterclockwise to increase the sensitivity of the sensor.



- Coolant temperature setting unit (consisting of a setting unit, an indicator, and a thermistor thermometer)
 - Flow rate sensor valid LED indicator
This indicator indicates that the flow rate sensor function is enabled. The sensor function can detect flow rate for alarm when it is in the valid flow rate range (15°C or more) but cannot detect it outside the valid flow rate range (when the indicator is off).
 - Indicator
This indicator shows the temperature of the coolant which is always measured by the thermistor thermometer.
 - Setting unit (on the operation panel)
This unit sets a valid temperature range of the flow rate sensor (normally, 15°C).



Adjustment procedure of coolant flow rate detector

Procedure

1. Make sure that the dial on the setting unit points to 15°C.
(Open the operation panel to read the dial scale on the setting unit.)
2. Stop the flow of coolant and turn the power supply on.
When the power supply is turned on, all flow rate LED indicators come on, then all the indicators except the leftmost one go out a few seconds later. Start adjusting the flow rate after they have gone out.
3. Discharge coolant and set the coolant flow rate to the normal value (with the valves fully opened for normal use).
4. Make sure that the indicator shows that the coolant temperature is 15°C or more.
5. Slowly turn the control of the flow rate range adjusting potentiometer until the leading eight or nine flow rate indicators light.
6. Turn the coolant supply valve to reduce the coolant flow rate down to the alarm flow rate (2/3 or the flow rate for normal use) while observing that the coolant is applied to the machining position correctly.
7. Fully turn left (counterclockwise) the control of the flow rate adjusting potentiometer.
8. Slowly turn right (clockwise) the control of the flow rate adjusting potentiometer until the alarm output LED indicator goes off.
9. Set the coolant flow rate back to the normal value and make sure that the alarm output indicator LED comes on.
If the difference between the normal flow rate and the alarm flow rate is little, the alarm output indicator LED may not light even when the coolant flow rate is set back to the normal value and the alarm will not be released. In such a case, turn the power supply off and turn it on back, set the alarm flow rate to a smaller value, then repeat steps 7 to 9.
10. Reduce the flow rate of coolant slowly to make sure that the alarm is generated when the flow rate reaches the flow rate setting.

5.4.9.3 Troubleshooting after EX107 Tool Bit Breakage Alarm

Procedure

1. Make sure there is no material left without being cut off.

If there is material not cut off:

- Replace the cut-off tool.

If there is no material:

- Go to step 2.

2. Check if chips have been jammed around the guide bushing.

If chips have been jammed:

- Remove chips.

When chips have not been jammed:

- The sensor is poorly adjusted.
- The sensor is failed.
- The sensor cable is disconnected.

The possible cause is one of the above three conditions. Check the cable and sensor.
Call the Cincom Service Office if neither of them has any problem.

Note

The cut-off tool breakage detection device is an option.

5.4.9.4 Troubleshooting after EX112 Main Spindle Overheat Alarm

Procedure

1. Check if the fan motor for the spindle cooling system is driving normally.

When the fan motor has stopped:

- Fan motor trouble
- Disconnection of the fan motor power line

When the fan motor is driving:

- Mechanical trouble such as the spindle motor bearing
- Temperature sensor trouble
- Temperature sensor cable disconnection

The possible cause is one of the above three conditions. Call the Cincom Service Office if neither of them has any problem.

5.4.9.5 Troubleshooting after EX202 or EX204 Lubrication Oil Empty Alarm

Procedure

1. Check the lubricating oil level.

If the lubricating oil level is too low:

- Add lubricating oil.

When the lubricating oil level is acceptable:

- The sensor is faulty.
- The cable has been disconnected.

The possible cause is either of the above two conditions. Check the cable and sensor.

Call the Cincom Service Office if neither of them has any problem.

5.4.9.6 Troubleshooting after EX203 Coolant Oil Alarm

Procedure

1. Check coolant level.

If the coolant level is too low:

- Add coolant.

When the coolant level is acceptable:

- Go to step 2.

2. Check chips.

If clogging chips prevent the tank from collecting oil:

- Remove chips.

When chips are not clogging:

- The sensor is faulty.
- The cable has been disconnected.

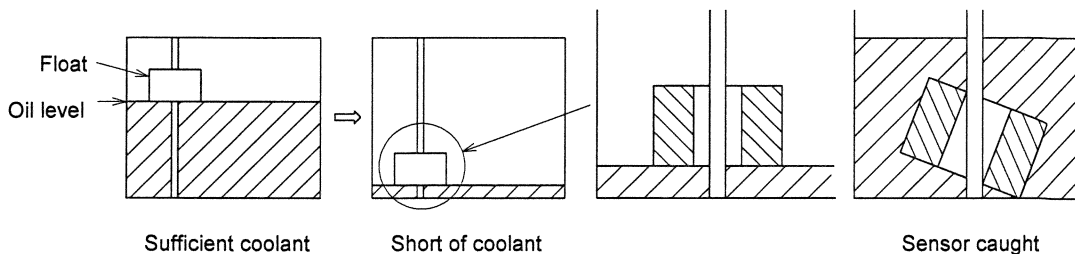
The possible cause is either of the above two conditions. Check the cable and sensor.

Call the Cincom Service Office if neither of them has any problem.

The sensor has a float which goes down as the oil level is lowered, raising an alarm just before the float reaches the bottom of the tank.

Note, however, that the float reaching the bottom of the tank with no coolant left may be slanted and not go up next time the tank is charged with coolant.

Since the sensor raises an alarm even with coolant in the tank, in this case, remove the sensor from the tank and set it back again with the float set horizontally.



5.4.9.7 Troubleshooting after Z52 Battery Fault Alarm

It is required to replace the battery which is used for backup of the NC parameters stored in NC control unit and the machining program.



DANGER

Be sure to turn off the main breaker of the machine before starting the work.

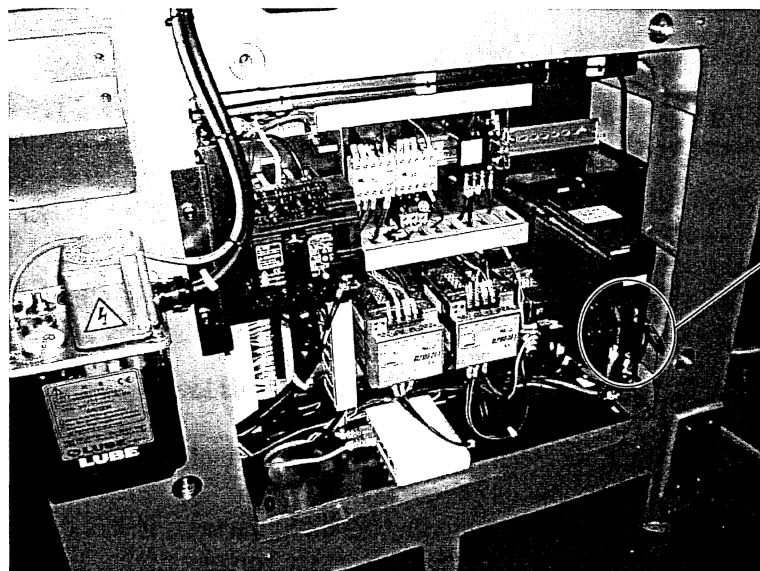
Failure to do so will result in death or serious personal injury from electric shock.

Note

Be sure to complete replacement work within 30 minutes after powering off the NC unit.
If the new battery is not connected within 30 minutes, the backup data will be lost.

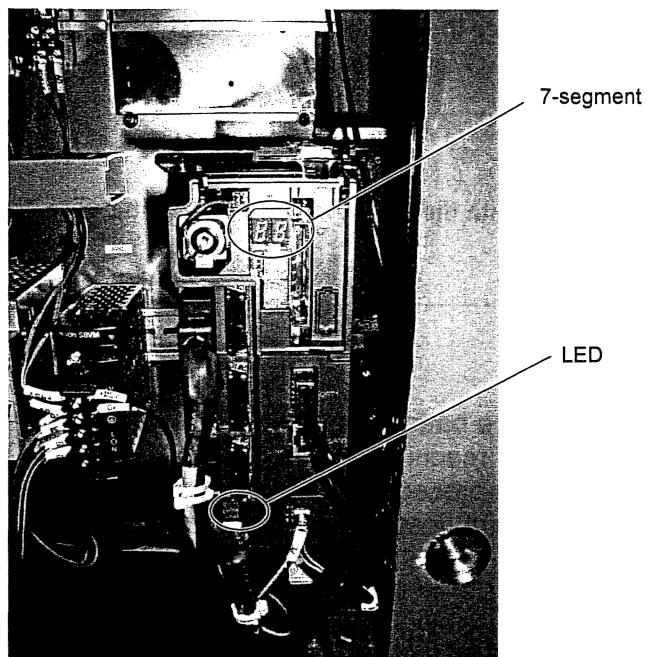
Procedure

1. Turn off the main breaker of the machine according to the procedure in section <5.1 Turning On/Off the Power> in the Operator's Manual, then open the door of the right side electric device box and verify the location of NC control unit.

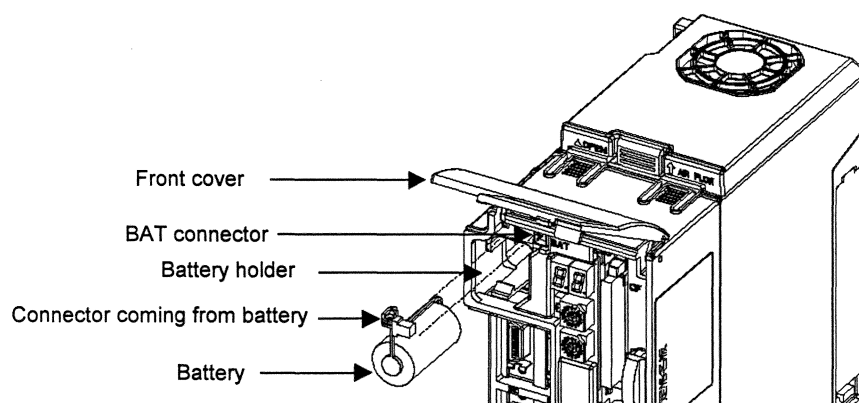


NC control unit

2. Make sure that LEDs and 7-segment indicators on NC control unit are unlit.



3. Pull the right side of the front cover of the NC control unit toward you, and open the front cover.



4. Remove the connector coming from the battery out from the BAT connector on the NC control unit. Then, take the battery out of the battery holder.
5. Put the new battery into the battery holder. Then connect the connector coming from the battery to the BAT connector on the NC control unit.
6. Close the front cover of the NC control unit. Confirm that the cover is securely caught to the claw and click sound is heard.
7. Close the right side door of the electric device box.

Continuous battery backup time:	45,000 hours (at ordinary temperature. Shortened by the temperature deviation)
Useful life of battery:	Approx. 5 years from manufactured date
Battery for replacement:	Q6BAT BK0-C10811H03 (made by Mitsubishi Electric)

5.4.9.8 Troubleshooting after S52 Battery Voltage Drop 009F

It is required to replace the battery which is used for backup of the position data stored in absolute position detector of AC servo motor.

Note

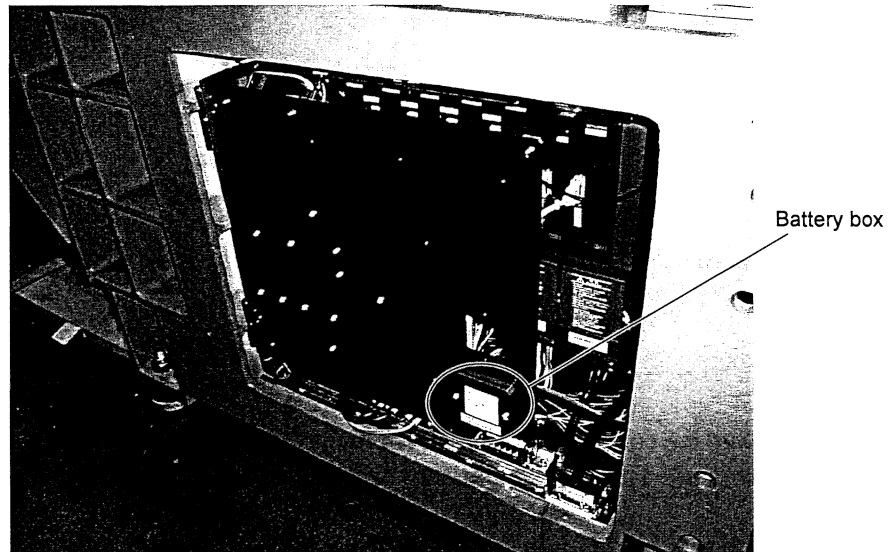
Conduct this work with the NC power being on. Otherwise, the stored absolute position data will be lost.

**DANGER**

Replacement of the battery for backup of servo motor position data shall be conducted with the powers of machine and the NC unit being on. Do not perform any other operation than the procedures described below. Otherwise, you may be electrically shocked, resulting in death or serious personal injury.

Procedure

1. Turn on the main breaker of the machine according to the procedure in section <5.1 Turning On/Off the Power> in the Operator's Manual, then turn on the NC unit and open the door of the front electric device box.
2. Loosen the screw securing the battery box, and remove the cover.



3. Take the old battery out of the battery box, and put the new battery into the box. In this time, pay attention to orientation of the battery.
4. Close the cover of the battery box and tighten the screw to secure the battery box.
5. Close the door of the front electric device box.


Continuous battery backup time:	50,000 hours (at ordinary temperature. Shortened by the temperature deviation)
Useful life of battery:	Approx. 5 years from manufactured date
Battery for replacement:	2CR5 (Lithium battery commercial item)

5.5 Mechanical Errors

This section describes the troubleshooting procedures for mechanical errors or failures which do not result in alarms. If the cause of a problem cannot be identified or the problem cannot be solved, call the Cincom Service Office.

5.5.1 Machine Fails to Start

Procedure


1. Check whether the Start key  is on.

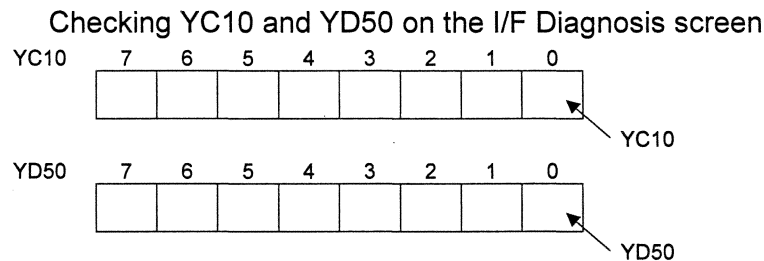
If the indicator is on:

- The override may be 0%.

If the indicator is off:

- Go to step 2.

2. Check YC10 (\$1) and YD50 (\$2) on the I/F Diagnosis screen with the Start key  depressed.



YC10=1, YD50=1

- The NC unit may be faulty.

YC10=0, YD50=0

- Go to step 3.

3. Check whether MDI or AUTO mode has been selected.

If none of those mode has not been selected:

- Select the mode in which the machine can be started automatically.

If MDI or AUTO mode has been selected:

- Go to step 4.

4. Check whether setting switches 18 (\$1 cycle start) and 19 (\$2 cycle start) have been checked.

If the switches have not been checked:

- Check the switches.

If the switches have been checked:


- Go to step 5.

5. Check whether an alarm has occurred.

If an alarm has occurred:

- Reset the alarm.

If no alarm has occurred:

- The Start key  is faulty or the cable has been disconnected.

Notes

- See section <5.2 Interface Diagnosis> for how to read the I/F Diagnosis screen.
- See section <8.2 Set SW> of Operator's Manual for how to read the Set SW screen.

5.5.2 Main Spindle Does Not Rotate during Automatic Operation

Procedure

1. Enter the main spindle rotation command in MDI mode. (M03 S1=1000).

If the spindle rotates:

- The program may contain a command the specified main spindle rotating command may not be in the valid format (for example, with S1=OOOO omitted).

If the spindle does not rotate:

- The NC unit is faulty.
- The motor is faulty.
- The drive unit is faulty.
- The cable has been disconnected.

The possible cause is one of the above four conditions. Check the cable and sensor.
Call the Cincom Service Office if neither of them has any problem.

5.5.3 Back Spindle Does Not Rotate during Automatic Operation

Procedure

1. Enter the back spindle rotation command in MDI mode. (M23 S2 = 1000).

If the back spindle rotates:

- The program may contain a command the specified back spindle rotating command may not be in the valid format (for example, with S2=OOOO omitted).

If the back spindle does not rotate:

- The NC unit is faulty.
- The motor is faulty.
- The drive unit is faulty.
- The cable has been disconnected.

The possible cause is one of the above four conditions. Check the cable and sensor. Call the Cincom Service Office if neither of them has any problem.

5.5.4 Tool Spindle Does Not Rotate during Automatic Operation

Procedure

1. Enter the tool spindle rotation command in MDI mode. (M58 S3 = 1000 (Tool spindle)).

If the tool spindle rotates:

- The tool spindle rotating command specified in the program may not be in the valid format (for example, with S3=OOOO omitted).

If the tool spindle does not rotate:

- The NC unit is faulty.
- The motor is faulty.
- The drive unit is faulty.
- The cable has been disconnected.

The possible cause is one of the above four conditions. Check the cable and sensor. Call the Cincom Service Office if neither of them has any problem.

5.5.5 Guide Bushing Alarms

5.5.5.1 Fretting Problem

Procedure

1. Check the cutting conditions.

1-1. Check whether the spindle speed, feed rate, coolant, and the material and grinding state of the tool are appropriate for the workpiece to be cut.

1-2. Check whether the tools and tool bits are appropriate with proper rigidity without being abnormal, such as being worn down, chipped, or damaged.

If the cutting conditions are inappropriate:

- Change cutting conditions.

When the cutting conditions are appropriate:

- Go to step 2.

2. Check whether the clearance and contact between the guide bushing and the material are appropriate.

If the clearance and contact states are inappropriate:

- Remove and clean the guide bushing and drawbar. Mount them back and perform set clearance adjustment.
- Lap the guide bushing and material to fit them together.
- Replace the guide bushing.

When the clearance and contact states are appropriate:

- Go to step 3.

3. Check whether the machine has no abnormal vibration with no sliding part rattling and with the rotary guide bushing unit maintained normally.

If the machine has a problem:

- Problem with the rotary guide bushing
Check if:
 - the driving timing belt has been worn.
 - the support bearing is abnormal.
- Contact Cincom Service Office if the machine has abnormal vibration, a sliding part is rattling, or if the rotary guide bushing unit is abnormal.

Note

For replacing the belt, refer to the replacement procedure in see section <4.3.2.1 Timing belt for driving the synchronous rotary guide bushing device>.

5.5.5.2 Too Large Machining Diameter Fluctuations

Procedure1

For normal level of dispersion in the diametral or longitudinal direction

1. Check the cutting conditions as in steps 1 to 3 in see section <5.5.5.1 Fretting Problem>

Procedure2

Dispersion found with the lapse of time

1. Large fluctuation in the initial state
 - Check the initial wear of tools.
 - Warm up the machine before re-machining.
2. Long-time dispersion which seems to be thermal variation
 - Check whether the room temperature is kept constant.
 - Check whether turning on and off of air conditioning has any effect on the machine.
 - Check whether the changes in temperature in the morning and evening have any effect on the machine.

Procedure3

1. Check the following items as factors other than the above:
 - Check if ball screws in the mechanical system are abnormal in clearance and bearing.
 - Check if the spindle is abnormal such as having looseness, runout, or end face runout in the thrust and radial directions.
 - Check if the mechanical or driving system is abnormal in any other point.

If the machine is abnormal as above:

- Call the Cincom Service Office.

Note

For replacing the belt, refer to the replacement procedure in see section <4.3.2.1 Timing belt for driving the synchronous rotary guide bushing device>.

5.5.5.3 Poor Machining Roundness

Procedure

1. Check the roundness of the material.
 - If the material is poor in roundness, the machined workpiece is also poor in roundness.
 - Machining a profile or polygonal material results in a workpiece poor in roundness.

If the roundness is appropriate:

- Go to step 2.

2. Check the cutting conditions as in steps 1 and 2 in section <5.5.5.1 Fretting Problem>.

If the cutting conditions are appropriate:

- Go to step 3.

3. For the synchronous rotary guide bushing device, remove the guide bushing and check the runout and looseness of the tapered part of the opening of the sleeve.

- Much runout degrades the roundness of the workpiece machined.

If the runout or looseness is inappropriate:

- Call the Cincom Service Office.

Note

Adjusting the clearance between the guide bushing and material changes the roundness of the material.

5.5.5.4 Abnormal Noise during Rotation

Procedure

1. Noise from the rotary guide bushing
Check if:
 - the driving timing belt has been worn.
 - the support bearing is abnormal.


Note

For replacing the belt, refer to the replacement procedure in section <4.3.2.1 Timing belt for driving the synchronous rotary guide bushing device>.

5.6 Appendix

5.6.1 PLC Constant Setting

Procedure

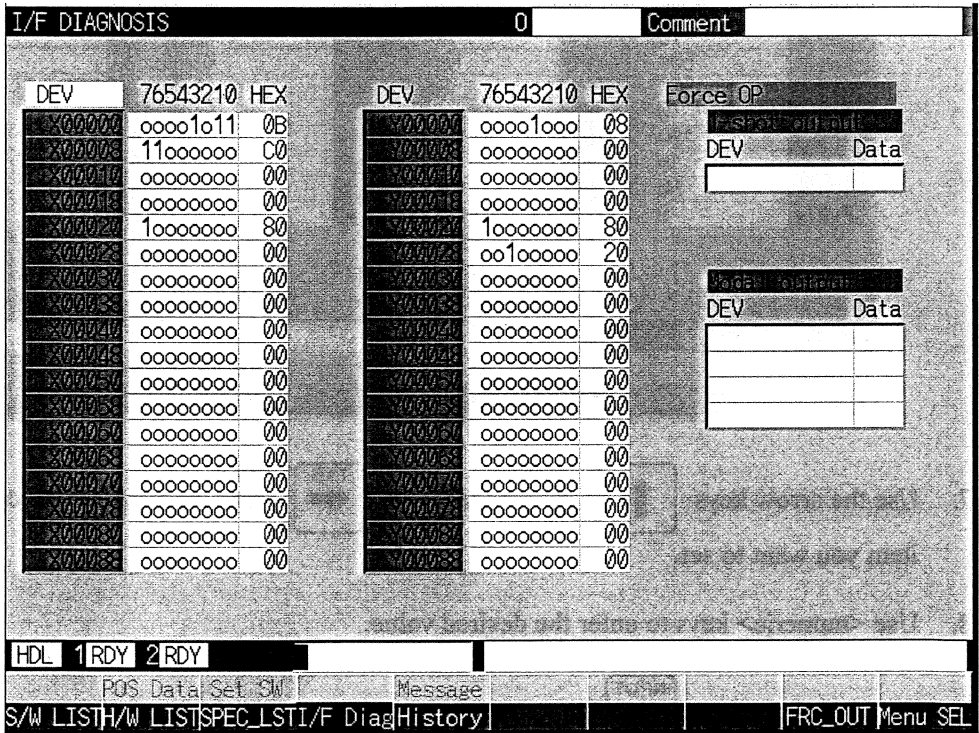
1. Press the Diagnosis key  on the operation panel.

The diagnosis menu appears.





2. Press the menu key [I/F Diag]. (Skip this step when the I/F Diagnosis screen has already been displayed.)

The I/F Diagnosis screen appears.



3. Use <alphanumeric> keys to enter "1001//M" in the input fields.

4. Press the Input key .

5. Press the Parameter key .

The Parameter screen appears.





6. Press the menu key [PLC-Data]. (Skip this step when the PLC Data screen has already been displayed. If the menu key [PLC-Data] is not on the screen, press the menu key [Menu SEL] to display the menu key [PLC-Data].)

PLC-Data screen appears.


PLC CONSTANT PARAMETERS 1/3				0	200	Comment	TEST PROGRAM
No.	Data	No.	Data	No.	Data	No.	Data
18001	0	18018	0	18035	3102000	18052	0
18002	10000	18019	0	18036	1420000	18053	0
18003	18000	18020	1960000	18037	5022000	18054	0
18004	500	18021	100	18038	5626000	18055	0
18005	40	18022	0	18039	0	18056	0
18006	6000	18023	15	18040	0	18057	0
18007	10000	18024	30	18041	0	18058	0
18008	250	18025	7	18042	0	18059	0
18009	12000	18026	5	18043	0	18060	0
18010	70	18027	80	18044	0	18061	0
18011	500	18028	100	18045	0	18062	0
18012	500	18029	10	18046	0	18063	0
18013	0	18030	1	18047	0	18064	0
18014	100	18031	20	18048	0	18065	0
18015	10	18032	5	18049	0	18066	0
18016	60	18033	0	18050	655360	18067	0
18017	0	18034	2426000	18051	0	18068	0

HDL 1 RDY 2 RDY

POS Data	Set SW	Message	Backup				
PLC-Data	MC-VAR	MC-STRCT	OP SEL		ZP EXE	MECH ADJ	Macro
							Menu SEL

7. Use the arrow keys  , or tab keys   to position the cursor on the item you want to set.


8. Use <numeric> keys to enter the desired value.

9. Press the Input key .

10. Repeat steps 7 to 9 until all data is set.

5.6.2 PLC Bit Selection Parameter Setting

Procedure

1. Press the Diagnosis key  on the operation panel.



The diagnosis menu appears.

[illegible]

2. Press the menu key [I/F Diag]. (Skip this step when the I/F Diagnosis screen has already been displayed.)


The I/F Diagnosis screen appears.

I/F DIAGNOSIS			0	Comment		
DEV	76543210	HEX	DEV	76543210	HEX	Force OP
X00000	00001011	0B	X00000	00001000	08	Force OP
X00001	11000000	C0	X00001	00000000	00	DEV Data
X00002	00000000	00	X00002	00000000	00	
X00003	00000000	00	X00003	00000000	00	
X00004	10000000	80	X00004	10000000	80	
X00005	00000000	00	X00005	00100000	20	
X00006	00000000	00	X00006	00000000	00	
X00007	00000000	00	X00007	00000000	00	
X00008	00000000	00	X00008	00000000	00	
X00009	00000000	00	X00009	00000000	00	
X0000A	00000000	00	X0000A	00000000	00	
X0000B	00000000	00	X0000B	00000000	00	
X0000C	00000000	00	X0000C	00000000	00	
X0000D	00000000	00	X0000D	00000000	00	
X0000E	00000000	00	X0000E	00000000	00	
X0000F	00000000	00	X0000F	00000000	00	
X00010	00000000	00	X00010	00000000	00	
X00011	00000000	00	X00011	00000000	00	
X00012	00000000	00	X00012	00000000	00	
X00013	00000000	00	X00013	00000000	00	
X00014	00000000	00	X00014	00000000	00	
X00015	00000000	00	X00015	00000000	00	
X00016	00000000	00	X00016	00000000	00	
X00017	00000000	00	X00017	00000000	00	
X00018	00000000	00	X00018	00000000	00	
X00019	00000000	00	X00019	00000000	00	
X0001A	00000000	00	X0001A	00000000	00	
X0001B	00000000	00	X0001B	00000000	00	
X0001C	00000000	00	X0001C	00000000	00	
X0001D	00000000	00	X0001D	00000000	00	
X0001E	00000000	00	X0001E	00000000	00	
X0001F	00000000	00	X0001F	00000000	00	
HDL 1RDY 2RDY						
POS Data Set SW			Message			
S/W LISTH/W LISTSPEC LSTI/F Diag History			FRC_OUT Menu SEL			

3. Use <alphanumeric> keys to enter "1001//M" in the input fields.

4. Press the Input key .



5. Press the Parameter key .

The Parameter screen appears.

6. Press the menu key [BIT_SEL]. (Skip this step when the Bit Selection parameters screen has already been displayed. If the menu key [BIT_SEL] is not on the screen, press the menu key [Menu SEL] to display the menu key [BIT_SEL].)







The Bit Selection parameters screen appears.




BIT SELECTION PARAMETERS 1/3				0	Comment
No.	Data	No.	Data	No.	Data
6401	00000000	6418	10000000	6435	00000000
6402	01000000	6419	00110111	6436	00000000
6403	00000000	6420	00000000	6437	00000000
6404	00010000	6421	00001000	6438	00000000
6405	01110000	6422	00000000	6439	00000000
6406	10000000	6423	00000000	6440	00000000
6407	10000001	6424	00000000	6441	00000000
6408	00001000	6425	00100000	6442	00000000
6409	11101001	6426	00011000	6443	01000000
6410	00000011	6427	00100010	6444	01000000
6411	00110111	6428	00010000	6445	00000000
6412	10000000	6429	00000000	6446	00000000
6413	00100000	6430	00001000	6447	00000000
6414	00000000	6431	10000001	6448	00000000
6415	00000000	6432	00000000	6449	00000000
6416	00000000	6433	00000000	6450	00000000
6417	00000000	6434	00000000	6451	00000000


HDL 1 RDY 2 RDY

POS Data Set SW Message Backup

ABS_PAR|PLC_TMR|PLC_ADD|PLC_CTR|BIT_SEL|Menu SEL

8. Use the arrow keys  , tab keys  , and Page keys   to position the cursor on the item you want to set.


9. Use <numeric> keys to enter eight bits of data. Or, use the arrow key  or  to position the cursor on the bit you want to set, use the Delete key  to delete the existing value, then enter a new value (0 or 1).

10. Press the Input key .

11. Repeat steps 7 to 9 until all data is set.

5.6.3 Checking the Version of Software

Procedure

1. Press the Diagnosis key .



The diagnosis menu appears.

	POS Data	Set SW		Message						
S/W LIST	H/W LIST	SPEC LIST	I/F Diag	History						Menu SEL


2. Press the menu key [S/W List]. (Skip this step when the S/W List screen has already been displayed.)
The S/W List screen appears, displaying the version of each software program.

S/W LIST		0	Comment
NCMAIN	:	BND-1004W001-A2	
PLC	:	005-001	
NC_OS	:	BND-1000W014-A2	
HMI_OS	:	BND-1004W150-A2	
HMIs	:	BND-1004W101-A2	
HMIs-Control	:	BND-1200W200-A2	
HMITu	:	006-001	
MACRO	:	006-001	
PARAMET	:	004-001	

HDL	1RDY	2RDY	
PC Data Set SW Version			
S/W LIST/H LIST/SPEC LIST/F DiagHistory			Menu SE

5.6.4 Checking the Alarm History

Procedure

1. Press the Diagnosis key .

The diagnosis menu appears.

	POS Data Set SW		Message						
S/W LIST	H/W LIST	SPEC LIST	I/F Diag	History					Menu SEL

2. Press the menu key [History]. (Skip this step when the Alarm History screen has already been displayed.)

The Alarm History screen appears, listing the last 100 alarms generated.


Alarm History		1/2	0	Comment
				All DSP
Date	Time	No.	Description	

Notes

- The Alarm History screen displays the menu keys [All DSP], [NC ALM], and [PLC ALM].
- Pressing the menu key [NC ALM] displays only the alarms generated from the NC unit.
- Pressing the menu key [PLC ALM] displays only the alarms generated from the PLC (ladder diagram and macros).
- Pressing the menu key [All DSP] displays both of the NC and PLC alarms.


5.6.5 Checking the Key-in History

Procedure

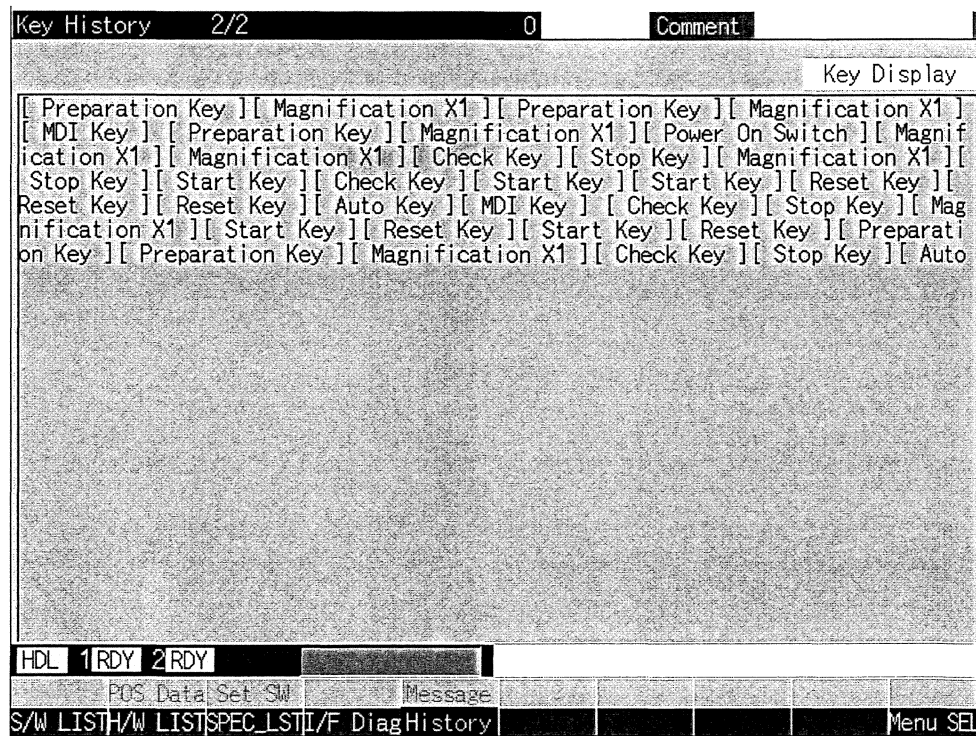
1. Press the Diagnosis key .

The diagnosis menu appears on the screen.



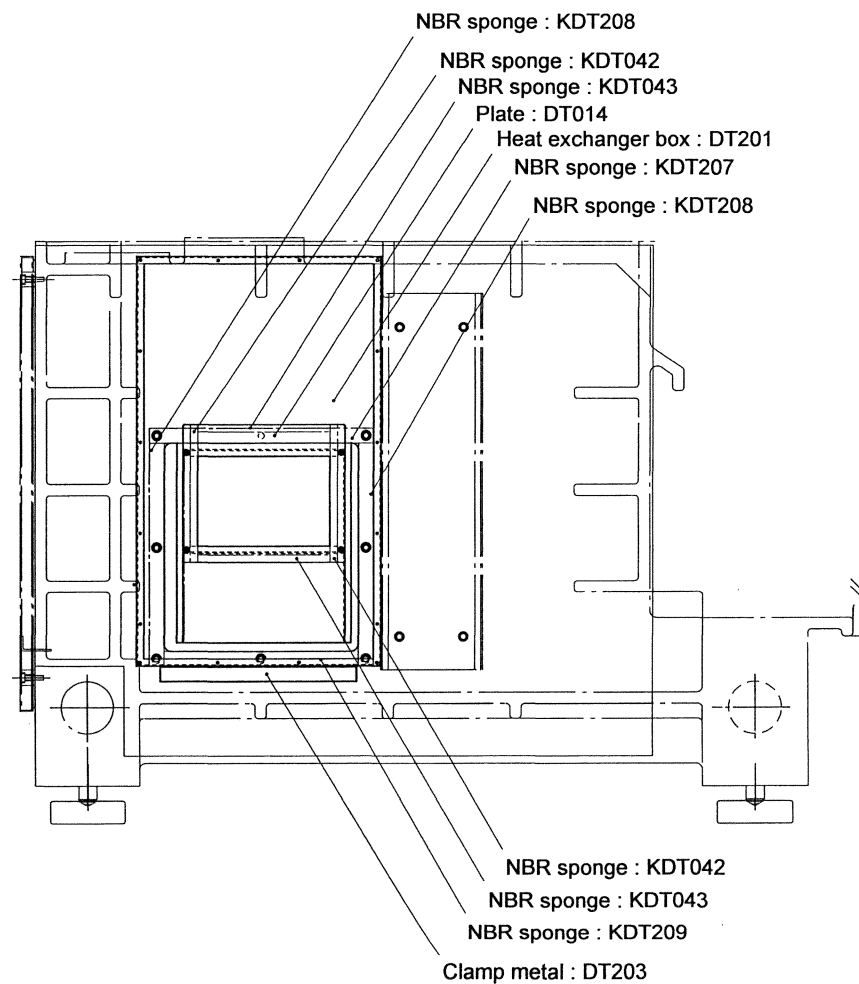
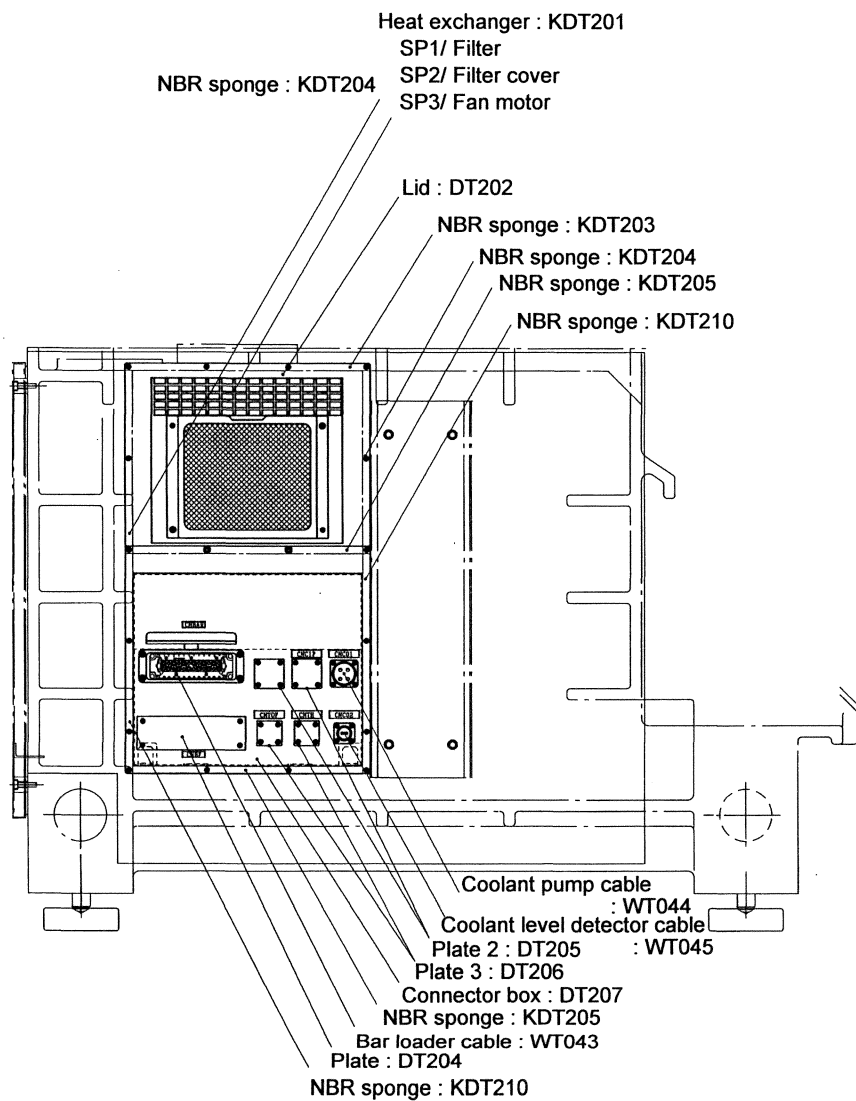
2. Press the menu key [History]. (Skip this step when the Alarm History screen has already been displayed.)
3. Press the Page key .

The Key History screen appears, listing the last 120 keys you have pressed.

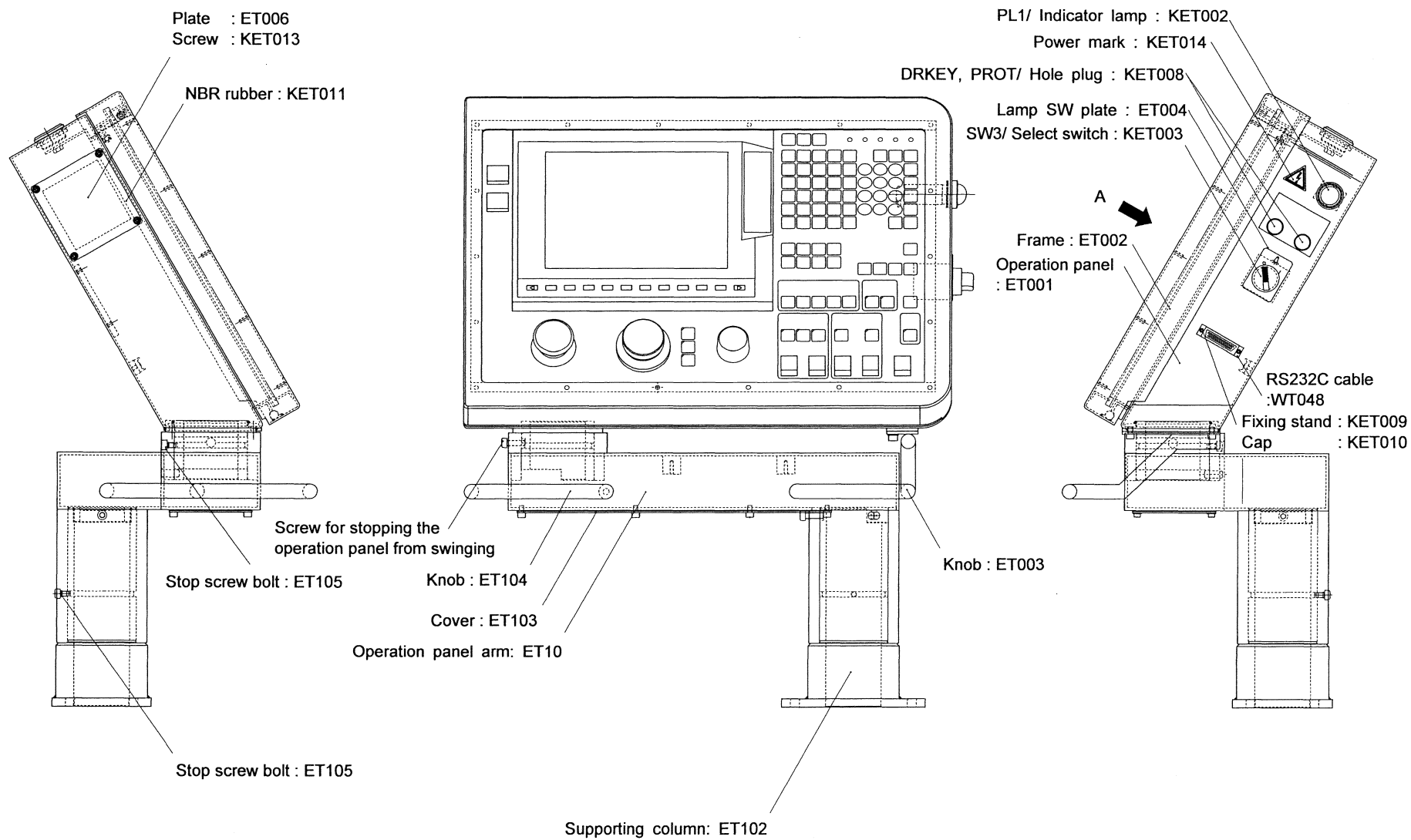


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UNIT6/ 3-axis incorporation ser

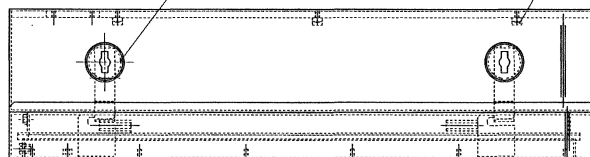


5.6.7 Operation Panel Component Layout



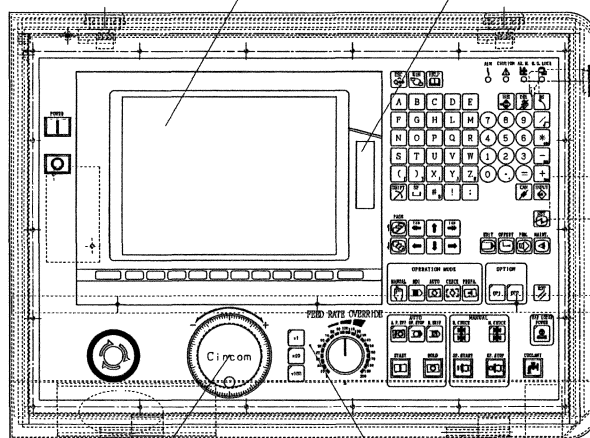
Water proof lock handle : KET006

Tie mount : KET015



LCD/ display : KCT002

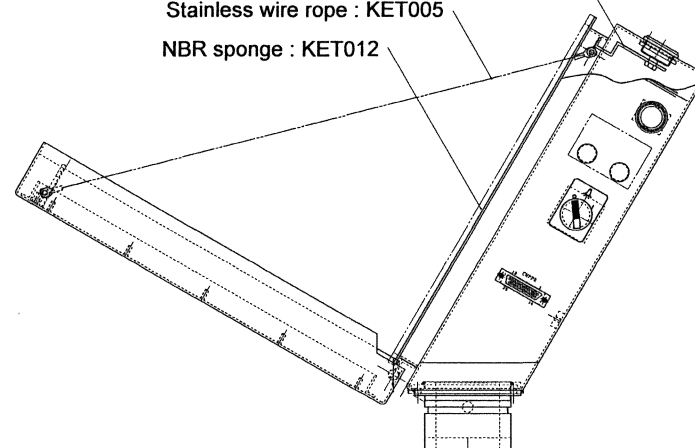
Front CF card I/F : KCT003



Door lock metal : ET005

Stainless wire rope : KET005

NBR sponge : KET012



MPG/ Manual pulse generator : KET004

Sheet keyboard : KET001

Template (Japanese) : L71620 U22T KET001

Template (English) : L71620 U23T KET001

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Product code

C	–	L	7	1	6	2	0	I	VII	VIII			
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Document code

3	E	1	–	0	5	0	3
---	---	---	---	---	---	---	---

6 章 パーツリスト

6. PARTS LIST

6 章 零件目录表

L71620

	目次	CONTENTS		PAGE
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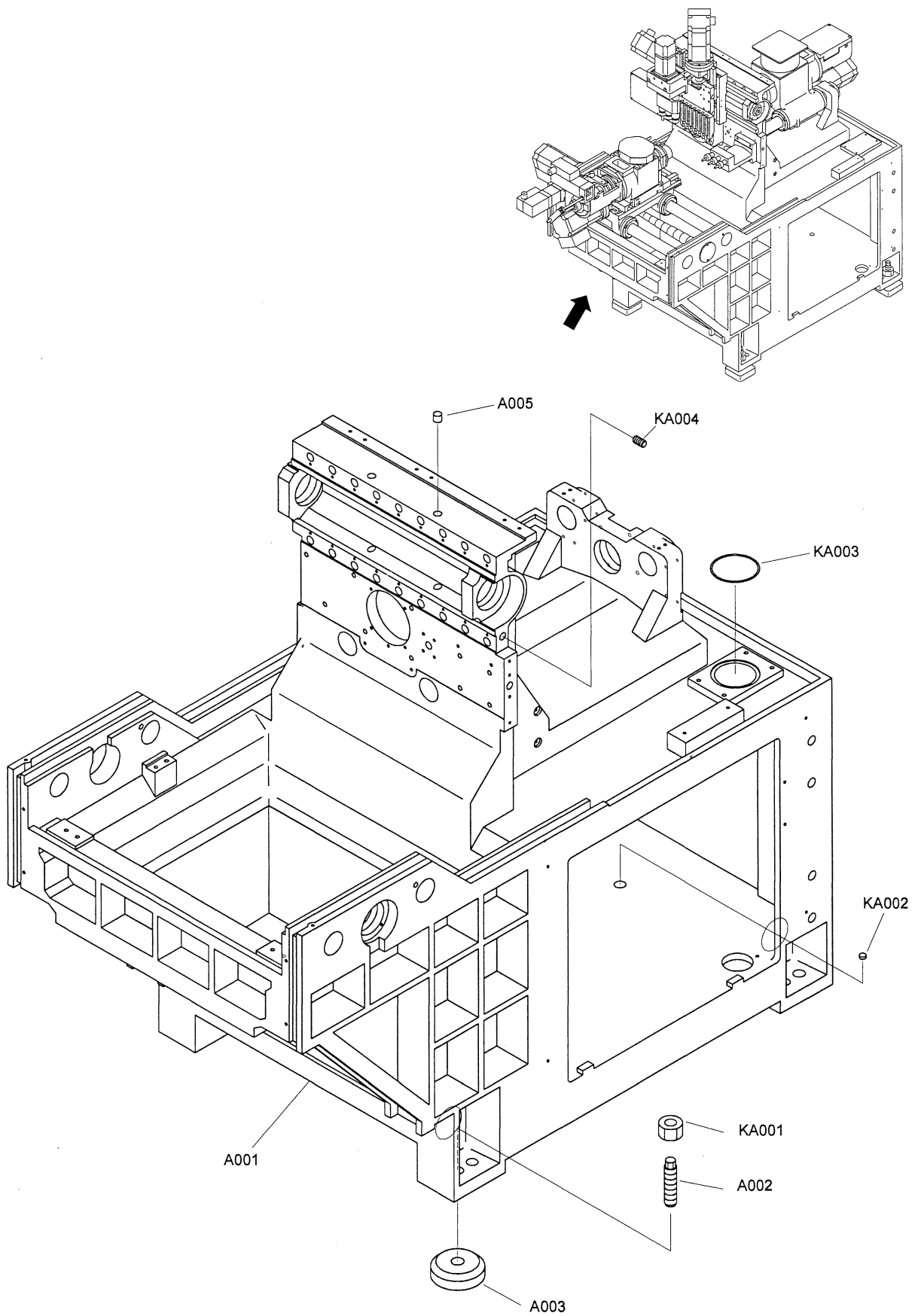
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L71620

ベッド
BED

A000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
A001	ベッド	BED		1	
A002	水平調整ボルト	LEVEL ADJUST BOLT		4	
A003	据付座	MOUNT		4	
A005	塞ぎ栓	PLUG		2	
KA001	六角ナット	NUT	M24	4	
KA002	キャップ	CAP	C14	1	THK
KA003	O リング	O-RING	G90	1	NOK
KA004	六角穴付プラグ	PLUG	ST-PA-1/4	5	IHARA
L71620		ベッド BED		A000	

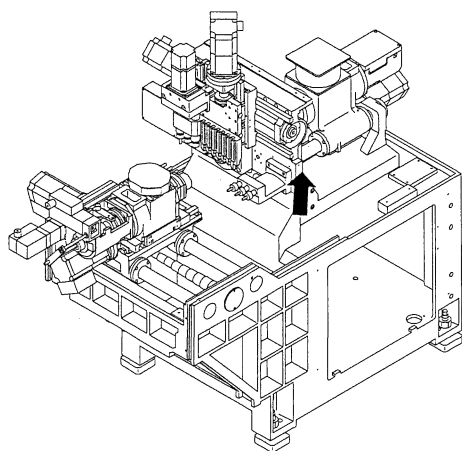
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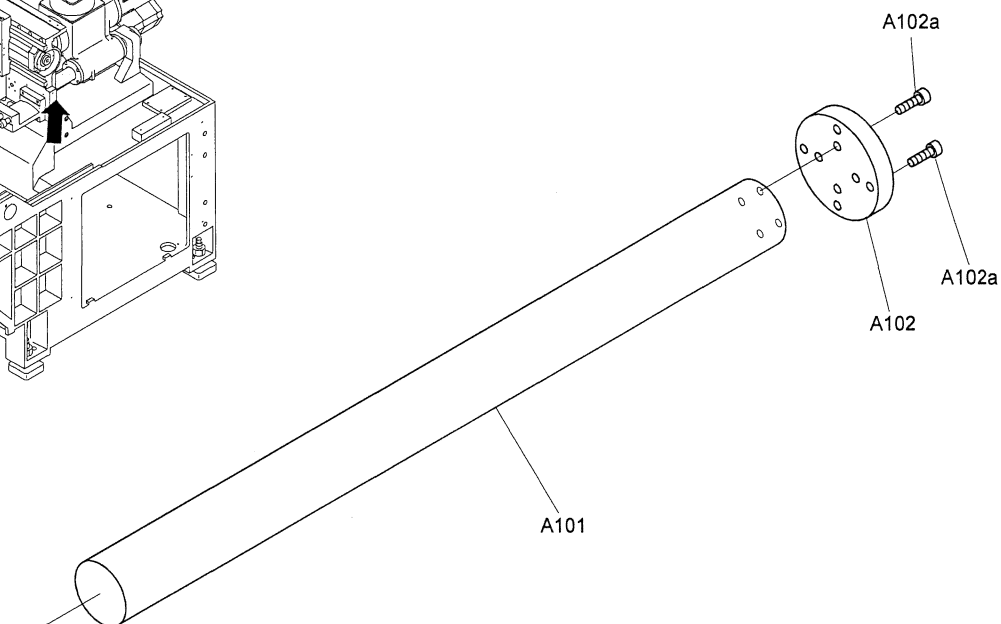
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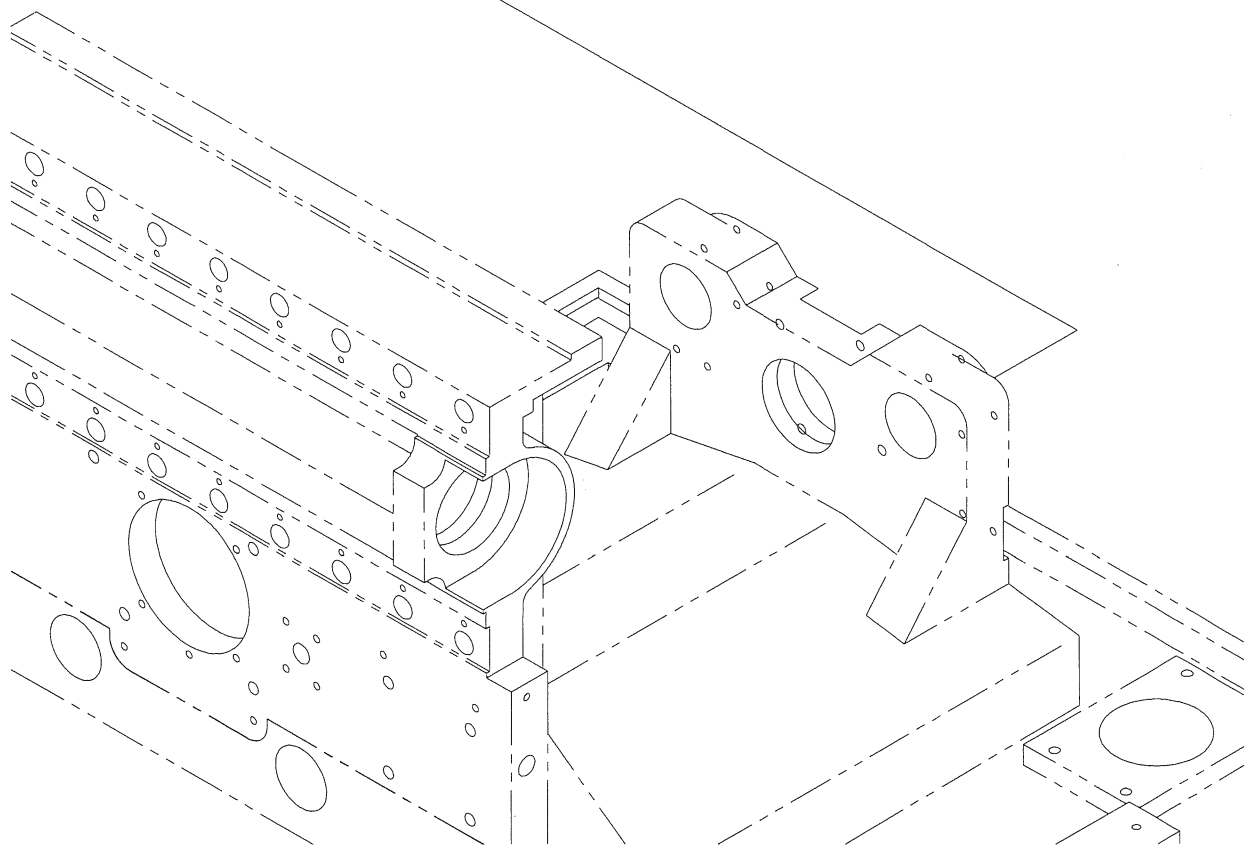
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L71620

Z₁ 軸スライド部
Z₁-AXIS SLIDE

A100

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
A101	ガイドバー	GUIDE BAR	M6x20	2	
A102	ガイドバー取付板	GUIDE PLATE		2	
A102a	六角穴付ボルト	BOLT		16	
L71620	Z ₁ 軸スライド部 Z ₁ -AXIS SLIDE			A100	

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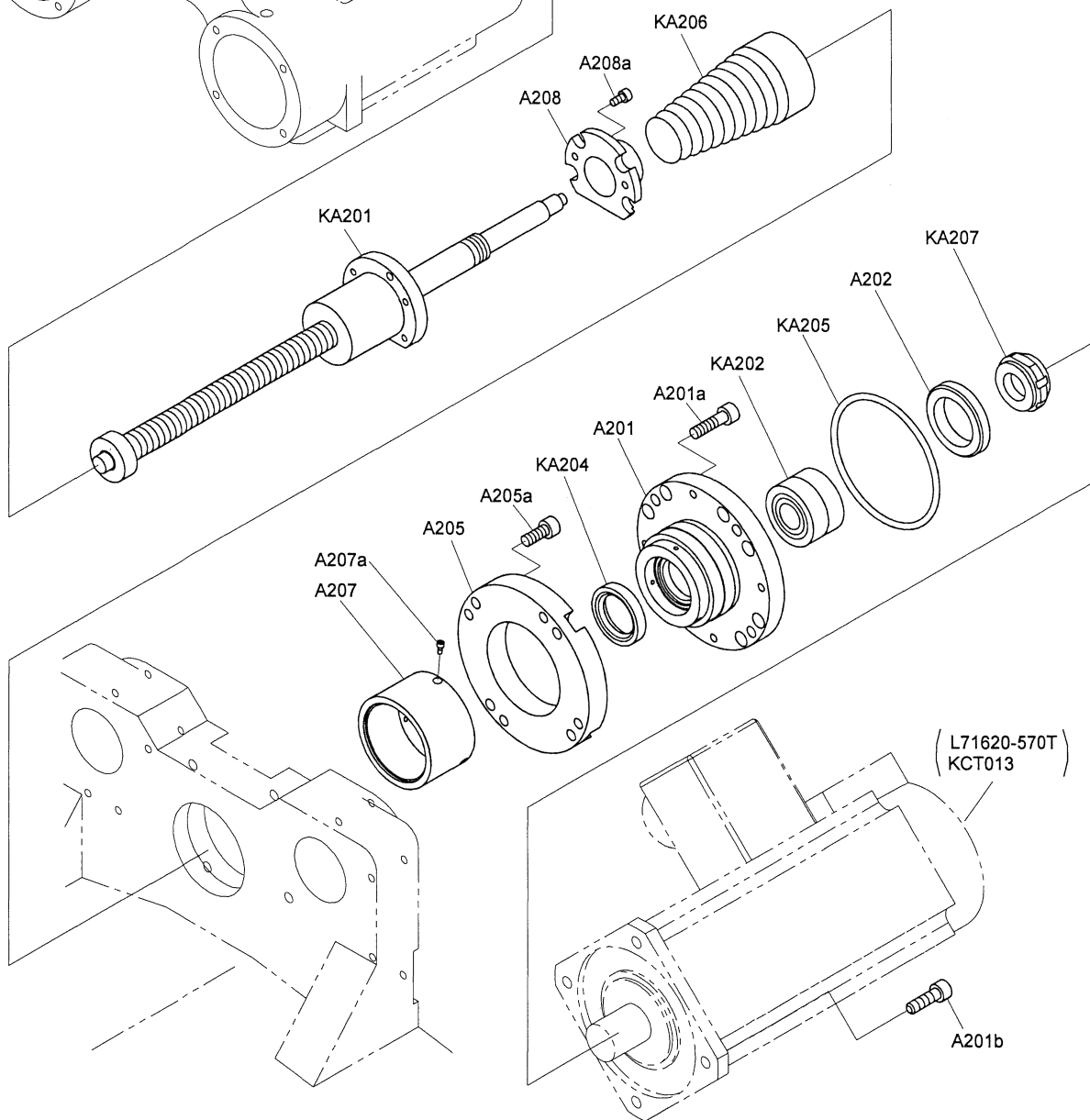
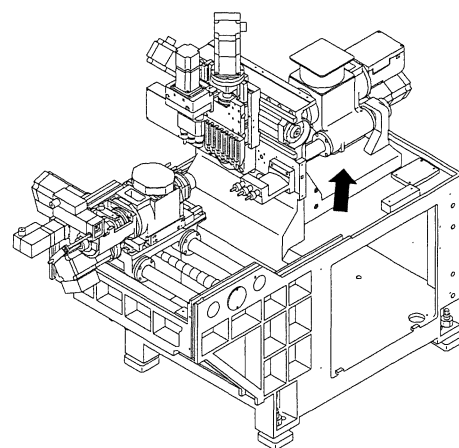
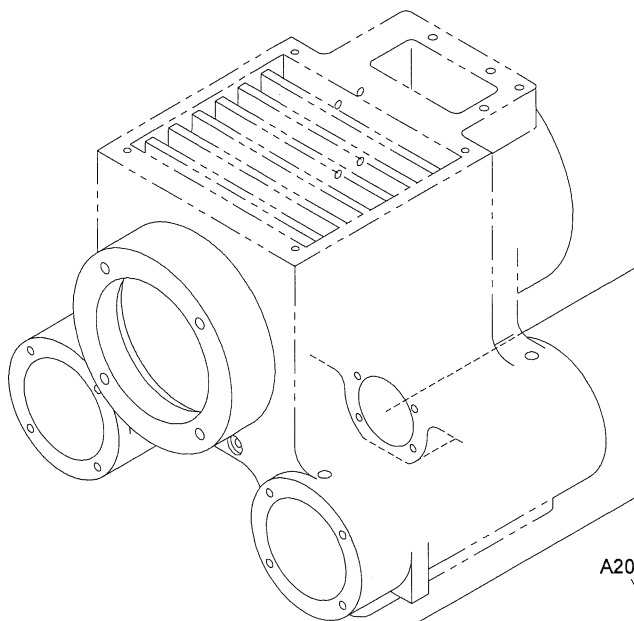
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L71620

Z1 軸送り機構部
Z1-AXIS FEED MECHANISM

A200

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
A201	ボールネジサポート	BALL SCREW SUPPORT		1	
A201a	六角穴付ボルト	BOLT	M8x30	4	
A201b	六角穴付ボルト	BOLT	M6x20	4	
A202	ベアリング押え	FLANGE		1	
A205	スペーサー	SPACER		1	
A205a	六角穴付ボルト	BOLT	M8x20	4	
A207	スクリーカバー受 (外)	SCREW COVER RECEIVER (OUT)		1	
A207a	六角穴付ボルト	BOLT	M3x5	4	
A208	スクリーカバー受 (内)	SCREW COVER RECEIVER (IN)		1	
A208a	六角穴付ボルト	BOLT	M5x10	2	
KA201	ボールネジ	BALL SCREW	BNFN2508HSE -3.5RRG0 +584.5LC5	1	THK
KA202	ボールネジサポート軸受	BEARING	20TAB04DB -2LR/GW	1 set	NACHI
KA204	オイルシール SB 型	OIL SEAL (SB TYPE)	AB1679A3	1	NOK
KA205	O リング	O-RING	S85	1	NOK
KA206	スクリーカバー	SCREW COVER	035-250-030	1	TOKYO SEIMITSU
KA207	ロックナット	LOCK NUT	KTKA20x1.0	1	HATSUJO FUKUDA
L71620		Z1 軸送り機構部 Z1-AXIS FEED MECHANISM		A200	

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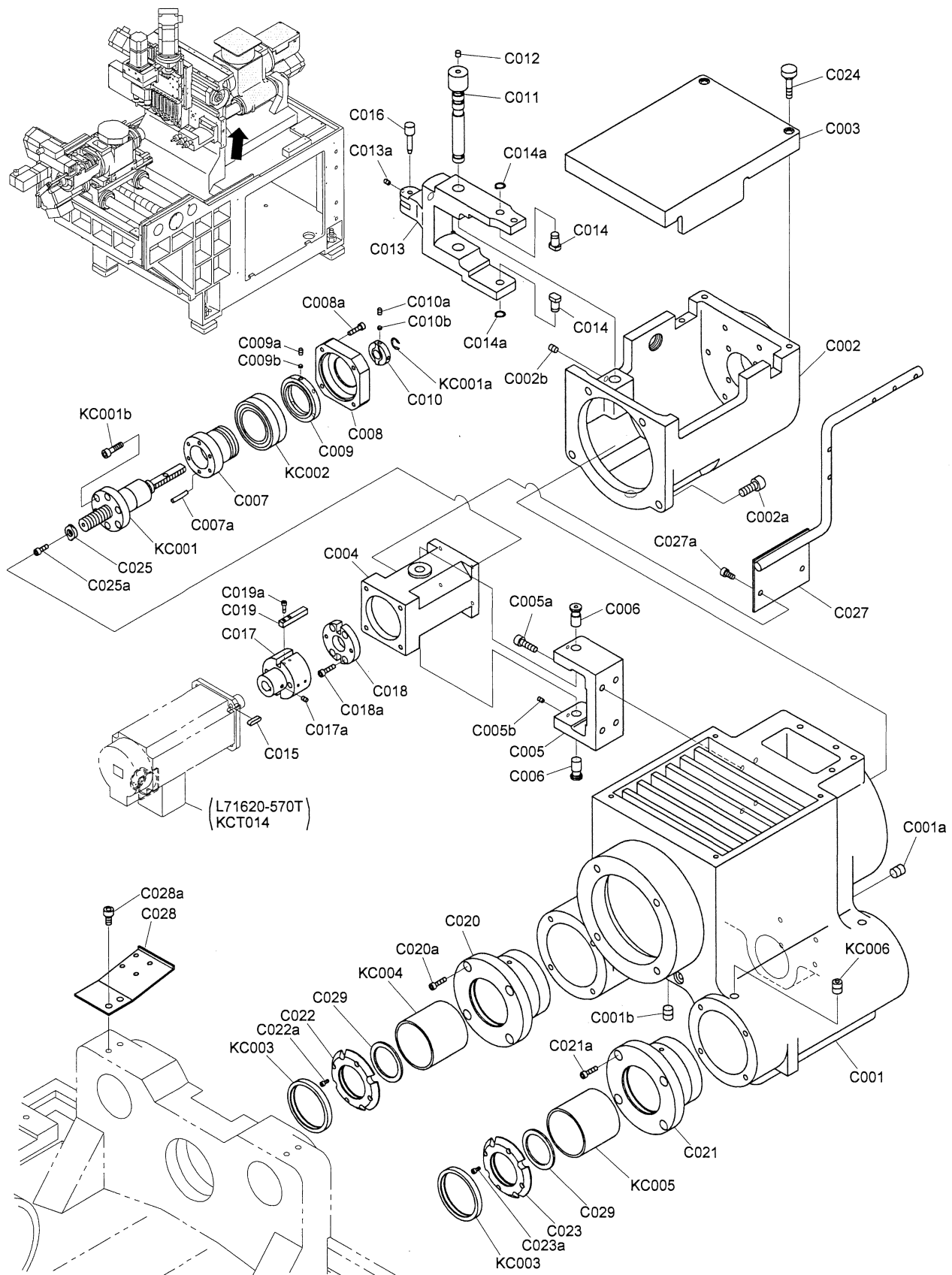
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L71620

主軸台
HEADSTOCK

C000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
C001	主軸台	HEADSTOCK		1	
C001a	六角穴付止メネジ (平先)	SET SCREW	M8x20	1	
C001b	六角穴付止メネジ (平先)	SET SCREW	M6x6	2	
C002	主軸台ブラケット	HEADSTOCK BRACKET		1	
C002a	六角穴付ボルト	BOLT	M8x20	4	
C002b	六角穴付止メネジ (平先)	SET SCREW	M6x8	1	
C003	主軸台カバー	HEADSTOCK COVER		1	
C004	ハウジング	HOUSING		1	
C005	ブラケット	BRACKET		1	
C005a	六角穴付ボルト	BOLT	M6x20	4	
C005b	六角穴付止メネジ (平先)	SET SCREW	M5x8	2	
C006	ピボット	PIVOT		2	
C007	ホルダー	HOLDER		1	
C007a	平行ピン	PIN	ø4x22	2	
C008	ベアリング押え	FLANGE		1	
C008a	六角穴付ボルト	BOLT	M4x16	4	
C009	ナット (JIS1 級ネジ)	NUT		1	
C009a	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
C009b	真チュウ座	SEAT	M4	1	
C010	ストッパー	STOPPER		1	
C010a	六角穴付止メネジ (平先)	SET SCREW	M3x6	2	
C010b	真チュウ座	SEAT	M3	2	
C011	レバー軸	LEVER SHAFT		1	
C012	塞ぎ栓	PLUG		2	
C013	チャッキングレバー	CHUCKING LEVER		1	
C013a	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
C014	チャック作動ピン	PIN		2	
C014a	軸用 C トメワ	RETAINING RING (C TYPE)	8	2	
C015	キー	KEY		1	
C016	連結軸	CONNECTING SHAFT		1	
C017	カップリング	COUPLING		1	
C017a	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
C018	フランジ	FLANGE		1	
C018a	六角穴付ボルト	BOLT	M4x20	4	
C019	キー	KEY		2	
C019a	六角穴付ボルト	BOLT	M3x10	4	
C020	軸受フランジ	BEARING FLANGE		2	
C020a	六角穴付ボルト	BOLT	M6x20	8	
C021	軸受フランジ	BEARING FLANGE		2	
C021a	六角穴付ボルト	BOLT	M6x20	8	
C022	シールリング	RING		2	
C022a	六角穴付ボルト	BOLT	M4x10	8	
C023	シールリング	RING		2	
C023a	六角穴付ボルト	BOLT	M4x10	8	
C024	カバー取付ネジ	COVER SCREW		2	
L71620		主軸台 HEADSTOCK		C000	

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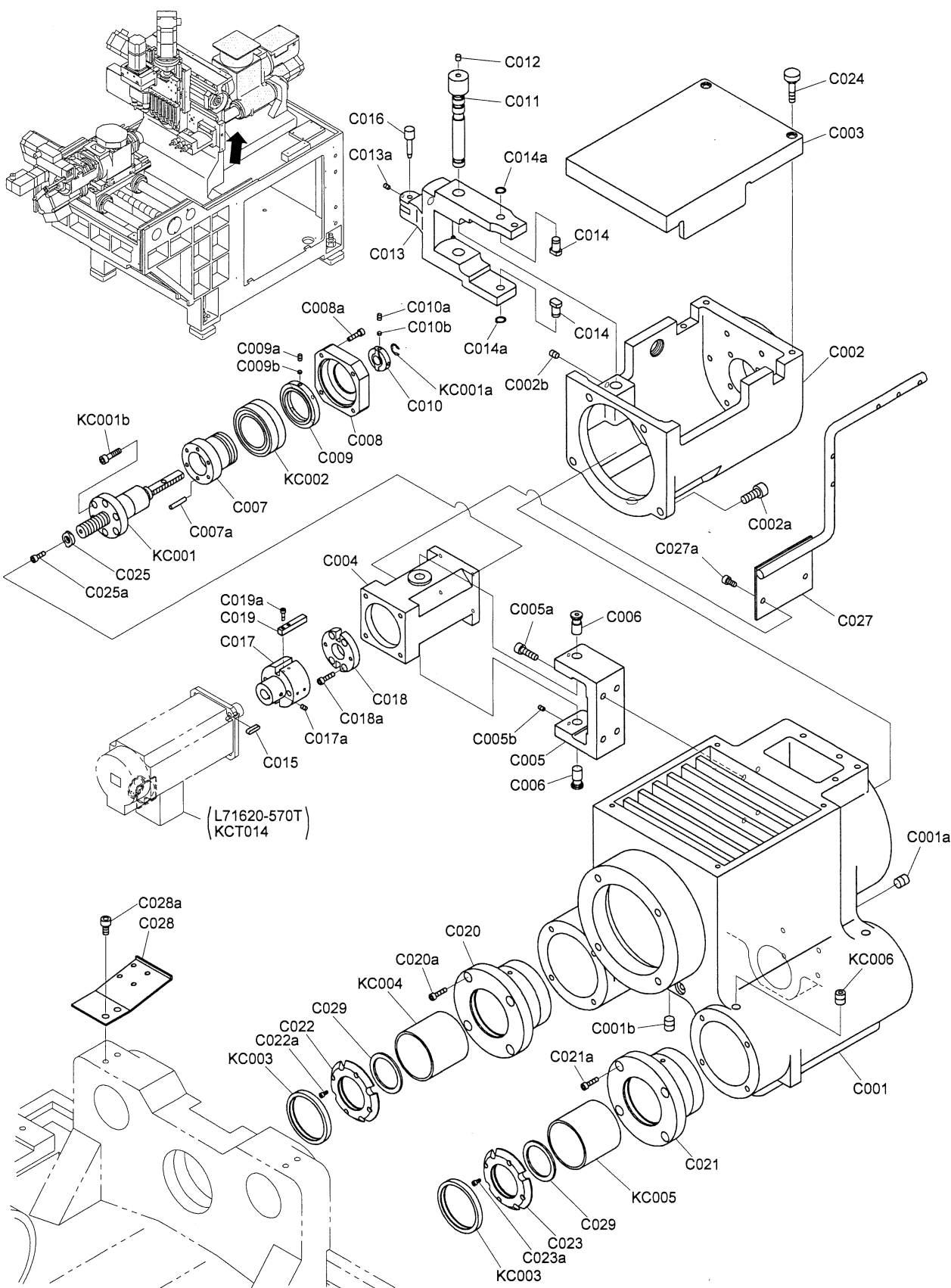
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L71620

主軸台
HEADSTOCK

C000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
C025	カラー	COLLAR		1	
C025a	六角穴付ボルト	BOLT	M4x12	1	
C027	配線ガイド (主軸用)	WIRING GUIDE		1	
C027a	六角穴付ボルト	BOLT	M5x10	2	
C028	配線ガイド 2 (主軸用)	WIRING GUIDE 2		1	
C028a	六角穴付ボルト	BOLT	M6x12	2	
C029	フェルトリング	RING		4	
KC001	転造ボールネジ (予圧タイプ)	BALL BEARING	JPF1404-4RRGO+137LT	1	THK
KC001a	E トメワ	RETAINING RING (E TYPE)	8	1	
KC001b	六角穴付ボルト	BOLT	M5x20	4	
KC002	アンギュラ玉軸受け	BALL BEARING	7907-T2DB /GMP5	1 set	NTN
KC003	ダストシール	DUST SEAL	DSI50x58	4	NOK
KC004	巻きブッシュ	COIL BUSHING	55x2.6x50	2	DAIDO METAL
KC005	巻きブッシュ	COIL BUSHING	55x2.6x50	2	DAIDO METAL
KC006	六角穴付プラグ	PLUG	ST-PA-1/8	4	IHARA
KC1001	ボールネジ	BALL SCREW	R14-4T2-F01-82-137-0.05R	1	PMI
L71620		主軸台 HEADSTOCK		C000	

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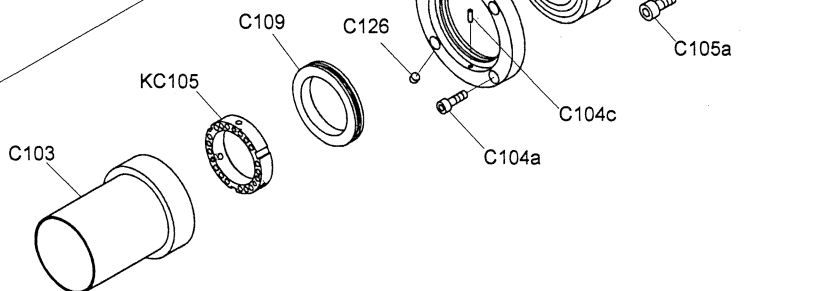
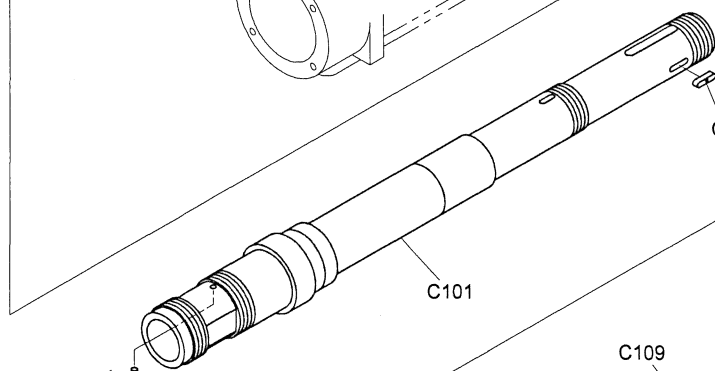
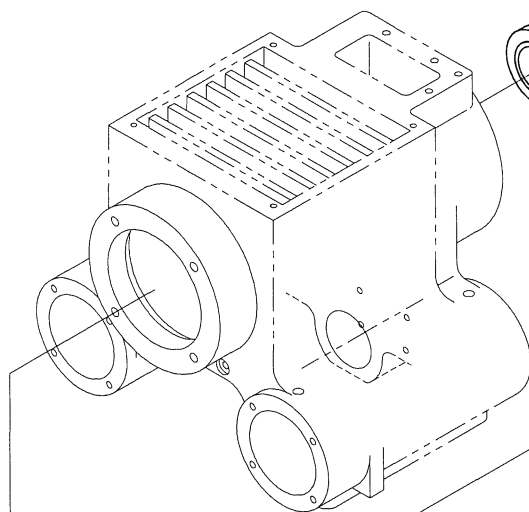
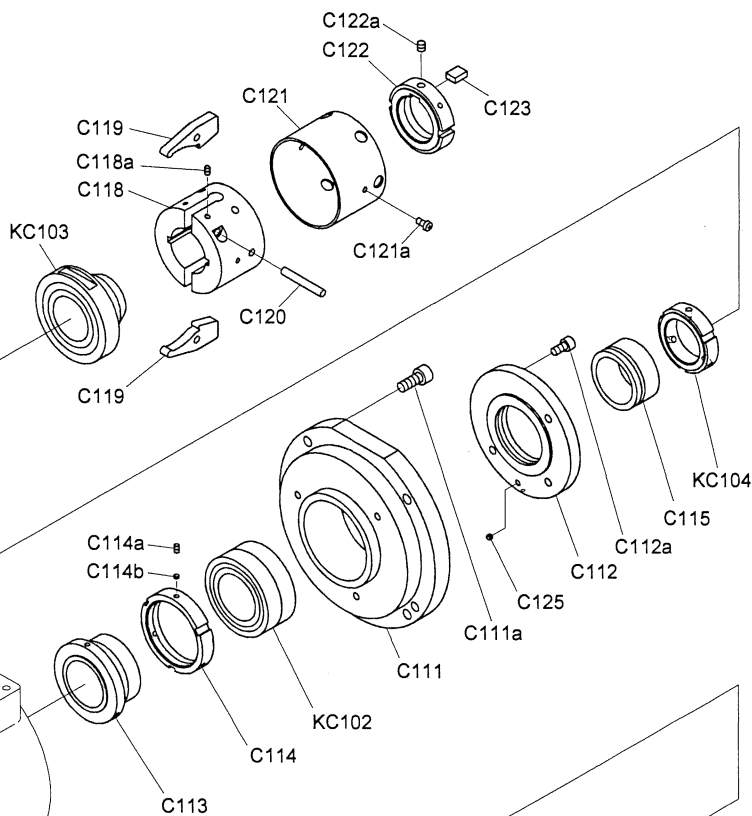
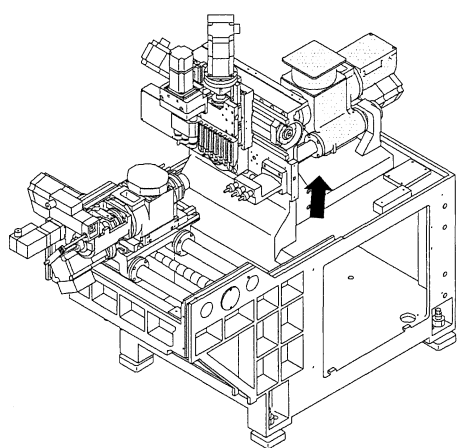
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L71620

主軸
MAIN SPINDLE

C100

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
C101	主軸	SPINDLE		1	
C102	キーピン	KEY PIN		1	
C103	主軸キャップ	SPINDLE CAP		1	
C104	ベアリング押え	FLANGE		1	
C104a	六角穴付ボルト	BOLT	M6x20	4	
C104b	六角穴付止メネジ (平先)	SET SCREW	M4x8	1	
C104c	平行ピン	PIN	ø3x10	1	
C105	ハウジング (前)	HOUSING (FRONT)		1	
C105a	六角穴付ボルト	BOLT	M8x20	4	
C109	スペーサー	SPACER		1	
C110	バランスリング	BALANCE RING		1	
C111	ハウジング (後)	HOUSING (REAR)		1	
C111a	六角穴付ボルト	BOLT	M8x20	4	
C112	シールフランジ	SEAL FLANGE		1	
C112a	六角穴付ボルト	BOLT	M6x12	4	
C113	エンコーダーリング	ENCODER RING		1	
C114	ナット (JIS1 級ネジ)	NUT		1	
C114a	六角穴付止メネジ (平先)	SET SCREW	M4x5	3	
C114b	真チュウ座	SEAT	M4	3	
C115	スペーサー	SPACER		1	
C117	キー	KEY		2	
C118	チャック爪ホルダー	CHUCK FINGER HOLDER		1	
C118a	六角穴付止メネジ (平先)	SET SCREW	M4x5	4	
C119	チャック作動爪	FINGER		2	
C120	レバー軸	LEVER SHAFT		2	
C121	リングカバー	RING COVER		1	
C121a	平小ネジ	SCREW	M4x8	2	
C122	ナット (JIS1 級ネジ)	NUT		1	
C122a	六角穴付止メネジ (平先)	SET SCREW	M6x6	1	
C123	ネジ座	LOCK KEY		1	
C124	ローター	ROTOR		1	
C125	塞ぎ栓	PLUG		1	
C126	塞ぎ栓	PLUG		3	
KC101	高速組合せアンギュラ玉軸受	BALL BEARING	7010CD /PADBB	1 set	SKF
KC102	高速組合せアンギュラ玉軸受	BALL BEARING	7008CD /P4ADBA	1 set	SKF
KC103	ボビン	BOBBIN	38BCV07S1- 2NKE	1	NACHI
KC104	(特) ロックナット	LOCK NUT	FZMV40x1.5SP	1	FUKUDA
KC105	(特) ロックナット	LOCK NUT	FZMV50x1.5SP	1	FUKUDA
L71620	主軸 MAIN SPINDLE			C100	

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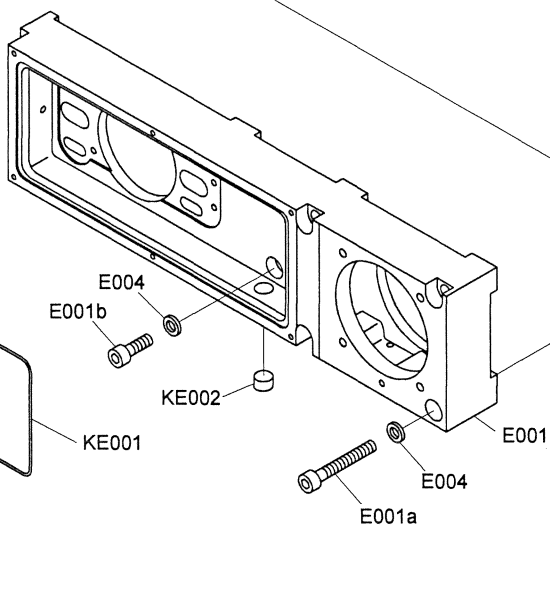
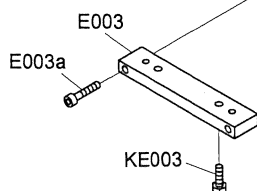
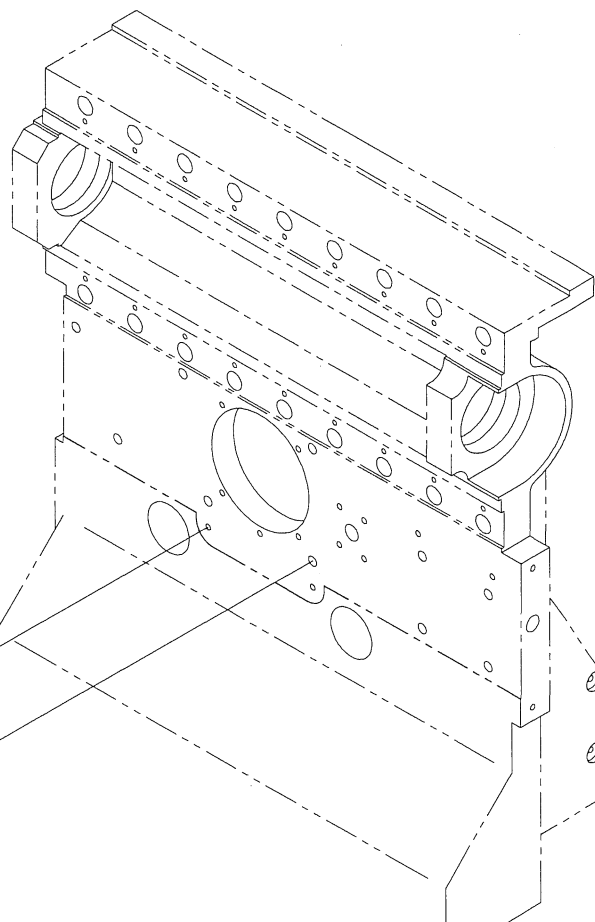
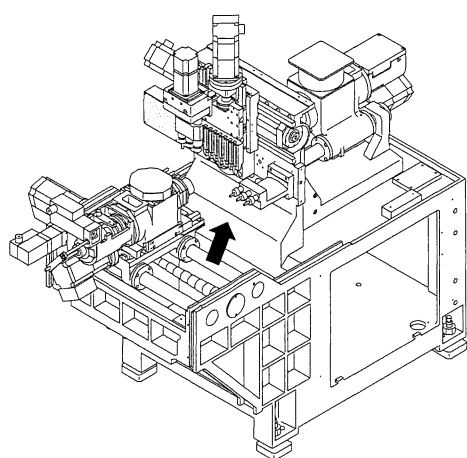
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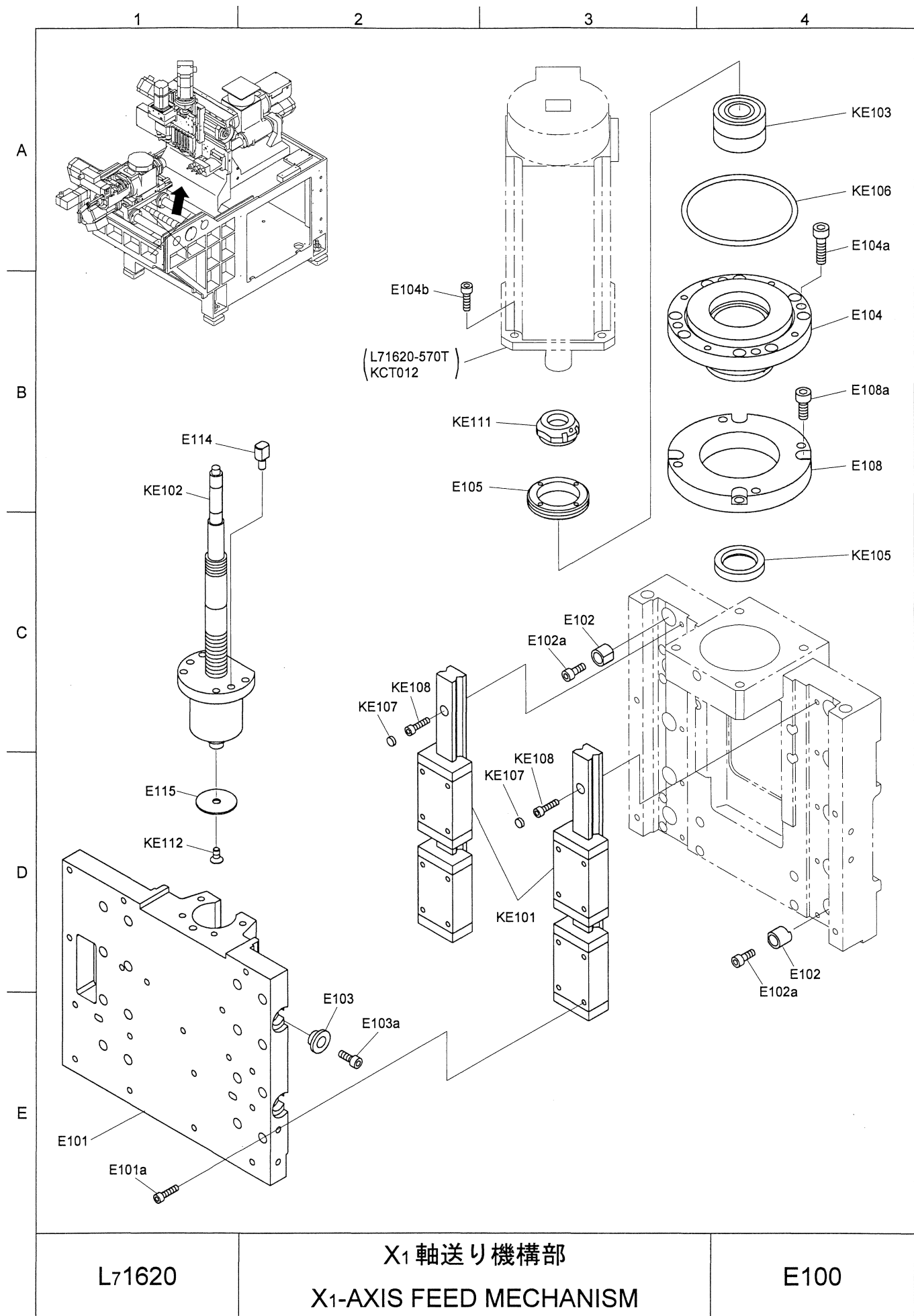


L71620

ガイドブッシュベース
GUIDE BUSHING BASE

E000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
E001	ガイドブッシュ本体	GUIDE BUSHING		1	
E001a	六角穴付ボルト	BOLT	M10x70	4	
E001b	六角穴付ボルト	BOLT	M10x30	2	
E002	フタ	COVER		1	
E002a	六角穴付ボルト	BOLT	M5x12	6	
E003	位置決メブロック	POSITIONING BLOCK		1	
E003a	六角穴付ボルト	BOLT	M6x40	2	
E004	座金	WASHER		6	
KE001	スターロープ	STAR ROPE	NUMBER 2	1	mitsuboshi
KE002	六角穴付プラグ	PLUG	ST-PA-3/8	1	ihara
KE003	六角ボルト	BOLT	M6x25	4	
L71620		ガイドブッシュベース GUIDE BUSHING BASE		E000	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
E101	X スライド	X-SLIDE		1	
E101a	六角穴付ボルト	BOLT	M5x20	16	
E102	コマ	BLOCK		12	
E102a	六角穴付ボルト	BOLT	M6x16	12	
E103	コマ	BLOCK		2	
E103a	六角穴付ボルト	BOLT	M6x16	2	
E104	ボールネジサポート	BALL SCREW SUPPORT		1	
E104a	六角穴付ボルト	BOLT	M8x30	4	
E104b	六角穴付ボルト	BOLT	M6x20	4	
E105	ベアリング押え	NUT		1	
E108	スペーサー	SPACER		1	
E108a	六角穴付ボルト	BOLT	M8x20	4	
E114	ストッパー駒	STOPPER COLLAR		1	
E115	ストッパー	STOPPER		1	
KE101	LM ガイド	LM GUIDE	HSR20LR 2UUCOE +339LP-II	1 set	THK
KE102	ボールネジ	BALL SCREW	DIK2508S- 6RRG0 +421LC5	1	THK
KE103	ボールネジサポート軸受	BALL SCREW SUPPORT BEARING	20TAB04DB -2LR/GM	1 set	NACHI
KE105	オイルシール SB 型	OIL SEAL (SB TYPE)	AB1679A3	1	NOK
KE106	O リング	O-RING	S85	1	NOK
KE107	LM 用キャップ	LM CAP	C5	12	THK
KE108	六角穴付ボルト	BOLT	M5x20	12	UNBRAKO
KE111	ロックナット	LOCK NUT	KTKA20x1.0	1	FUKUDA
KE112	六角穴付皿ボルト	BOLT	M6x12	1	GOSYO
L71620		X1 軸送り機構部 X1-AXIS FEED MECHANISM		E100	

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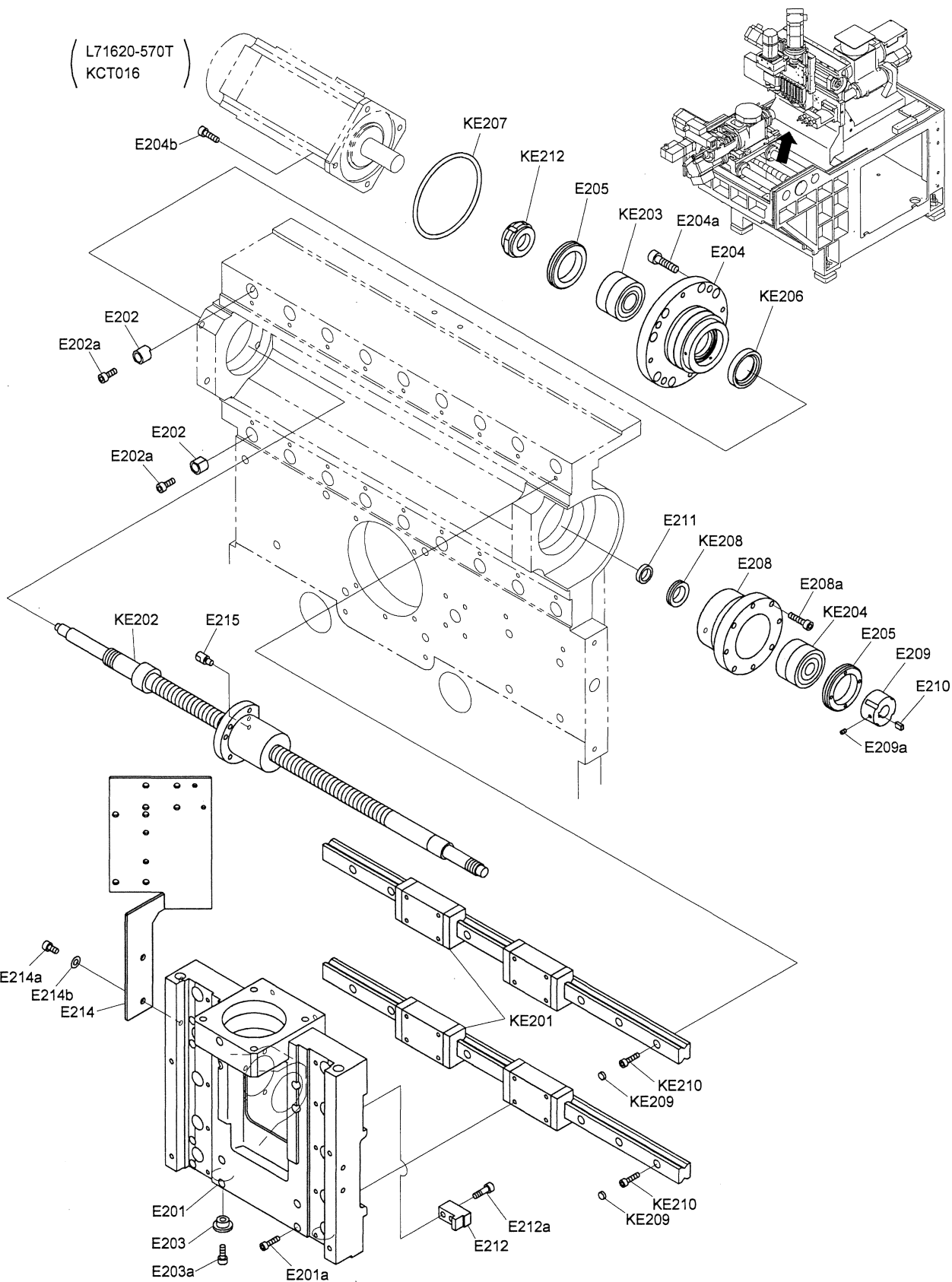
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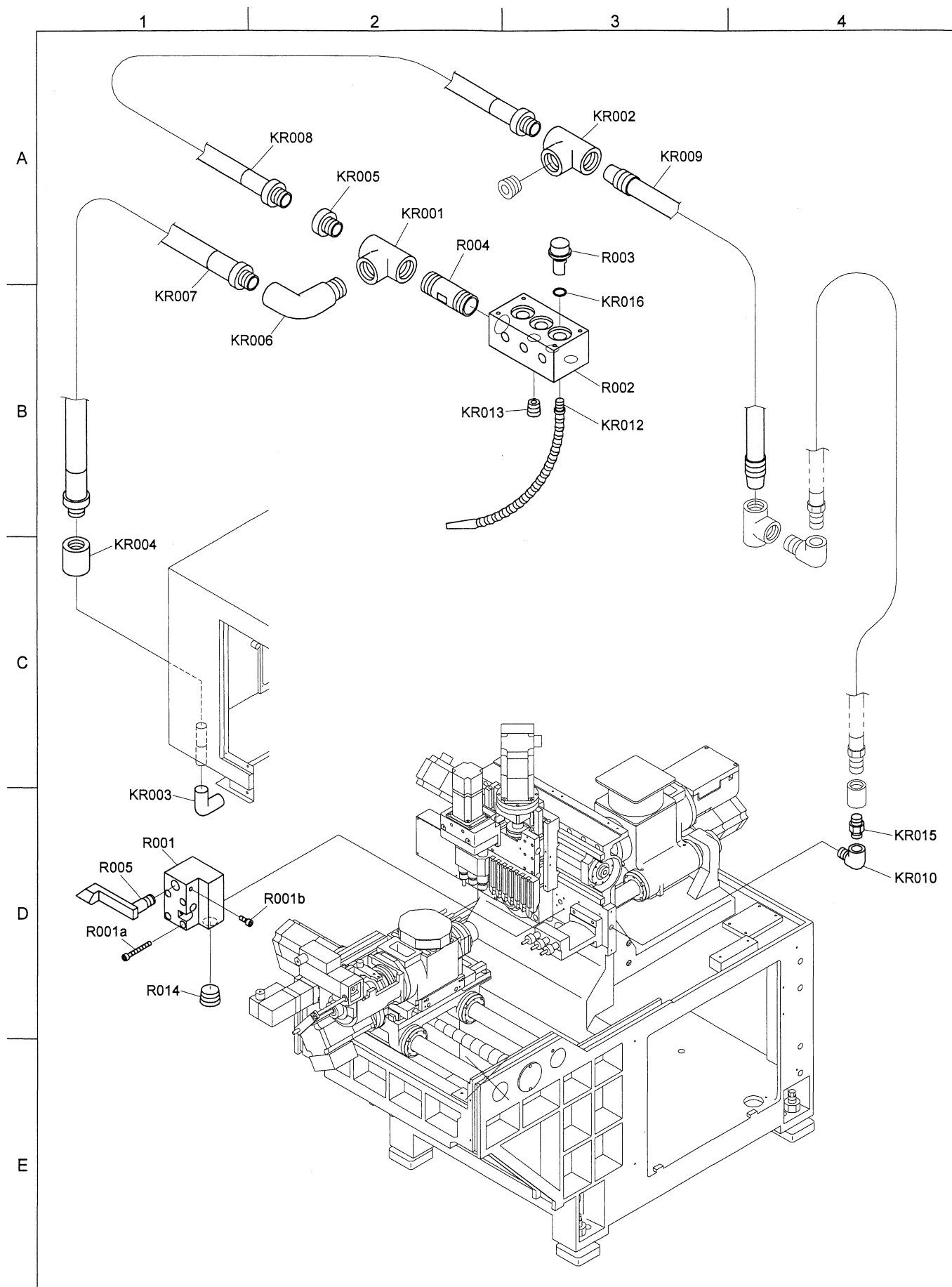


L71620

Y₁ 軸送り機構部
Y₁-AXIS FEED MECHANISM

E200

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
E201	クロススライド	CROSS SLIDE		1	
E201a	六角穴付ボルト	BOLT	M5x20	16	
E202	コマ	BLOCK		18	
E202a	六角穴付ボルト	BOLT	M6x16	18	
E203	コマ	BLOCK		2	
E203a	六角穴付ボルト	BOLT	M6x16	2	
E204	ボールネジサポート	BALL SCREW SUPPORT		1	
E204a	六角穴付ボルト	BOLT	M8x30	4	
E204b	六角穴付ボルト	BOLT	M6x20	4	
E205	ベアリング押え	NUT		2	
E208	ボールネジサポート	BALL SCREW SUPPORT		1	
E208a	六角穴付ボルト	BOLT	M6x25	4	
E209	ナット (JIS1 級)	NUT		1	
E209a	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
E210	ネジ座 (JIS1 級)	LOCK KEY		1	
E211	スペーサー	SPACER		1	
E212	ストッパー駒	STOPPER COLLAR		1	
E212a	六角穴付ボルト	BOLT	M6x20	2	
E214	配線ブラケット	BRACKET		1	
E214a	六角穴付ボルト	BOLT	M6x10	2	
E214b	平座金	WASHER	M6	2	
E215	ストッパー駒	STOPPER		1	
KE201	LM ガイド	LM GUIDE	HSR20LR 2UUCOE +570LP-II	1 set	THK
KE202	ボールネジ	BALL SCREW	DIK2508S- 6RRG0 +740LC5	1	THK
KE203	ボールネジサポート軸受	BALL SCREW SUPPORT BEARING	20TAB04DF -2LRCS110	1 set	NACHI
KE204	ボールネジサポート軸受	BALL SCREW SUPPORT BEARING	15TAB04DF -2LRCS110	1 set	NACHI
KE206	オイルシール SB 型	OIL SEAL (SB TYPE)	AB1679A3	1	NOK
KE207	O リング	O-RING	S85	1	NOK
KE208	V リング	V-RING	V20S	1	FUKUDA
KE209	LM 用キャップ	LM CAP	C5	18	THK
KE210	六角穴付ボルト	BOLT	M5x20	18	UNBRAKO
KE212	ロックナット	LOCK NUT	KTKA 20x1.0	1	FUKUDA
L71620		Y1 軸送り機構部 Y1-AXIS FEED MECHANISM		E200	

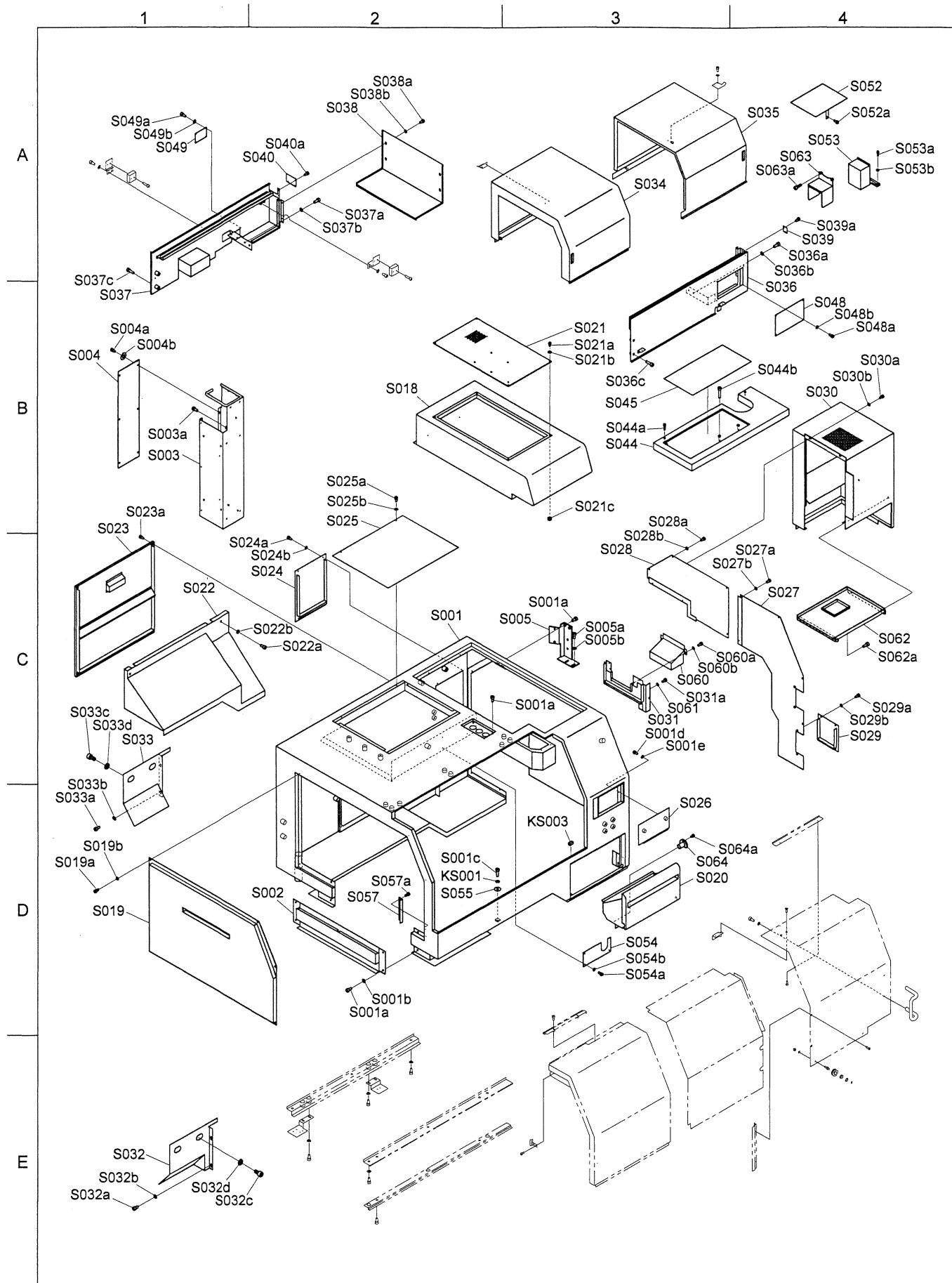


L71620

切削油供給装置
COOLANT SUPPLY DEVICE

R000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
R001	切削油ブロック (1)	COOLANT BLOCK (1)		1	
R001a	六角穴付ボルト	BOLT	M6x50	6	
R001b	六角穴付ボルト	BOLT	M6x16	1	
R002	切削油ブロック (2)	COOLANT BLOCK (2)		1	
R003	ストップバルブ	STOP VALVE		3	
R004	パイプ	PIPE		1	
R005	切削油ノズル	COOLANT NOZZLE		1	
KR001	ティー	TEE	1"	1	
KR002	径違いティー	TEE	1"x1"x1/2"	1	
KR003	エルボ	ELBOW	1"	1	
KR004	ソケット	SOCKET	1"	1	
KR005	ブッシュ	BUSHING	1x3/4"	1	
KR006	めすおすエルボ	ELBOW	1"	1	
KR007	トヨスプリングホース	HOSE	1" L=1000	1	TOYO FLEX
KR008	トヨスプリングホース	HOSE	1" L=800	1	TOYO FLEX
KR009	トヨスプリングホース	HOSE	3/4" L=1100	1	TOYO FLEX
KR010	めすおすエルボ	ELBOW	3/8"	1	
KR012	スナップロッククーラントノズル	COOLANT NOZZLE	1/2"-3/8"-400- 1/2" Y Unit -1/2" PT	3	CAPTAIN INDUSTRIES
KR013	六角穴付プラグ	PLUG	ST-PA-3/8	7	IHARA
KR014	六角穴付プラグ	PLUG	ST-PA-1/2	2	IHARA
KR015	径違いニップル	NIPPLE	3/8" x1/2"	1	
KR016	O リング	O-RING	P16	3	NOK
L71620		切削油供給装置 COOLANT SUPPLY DEVICE		R000	

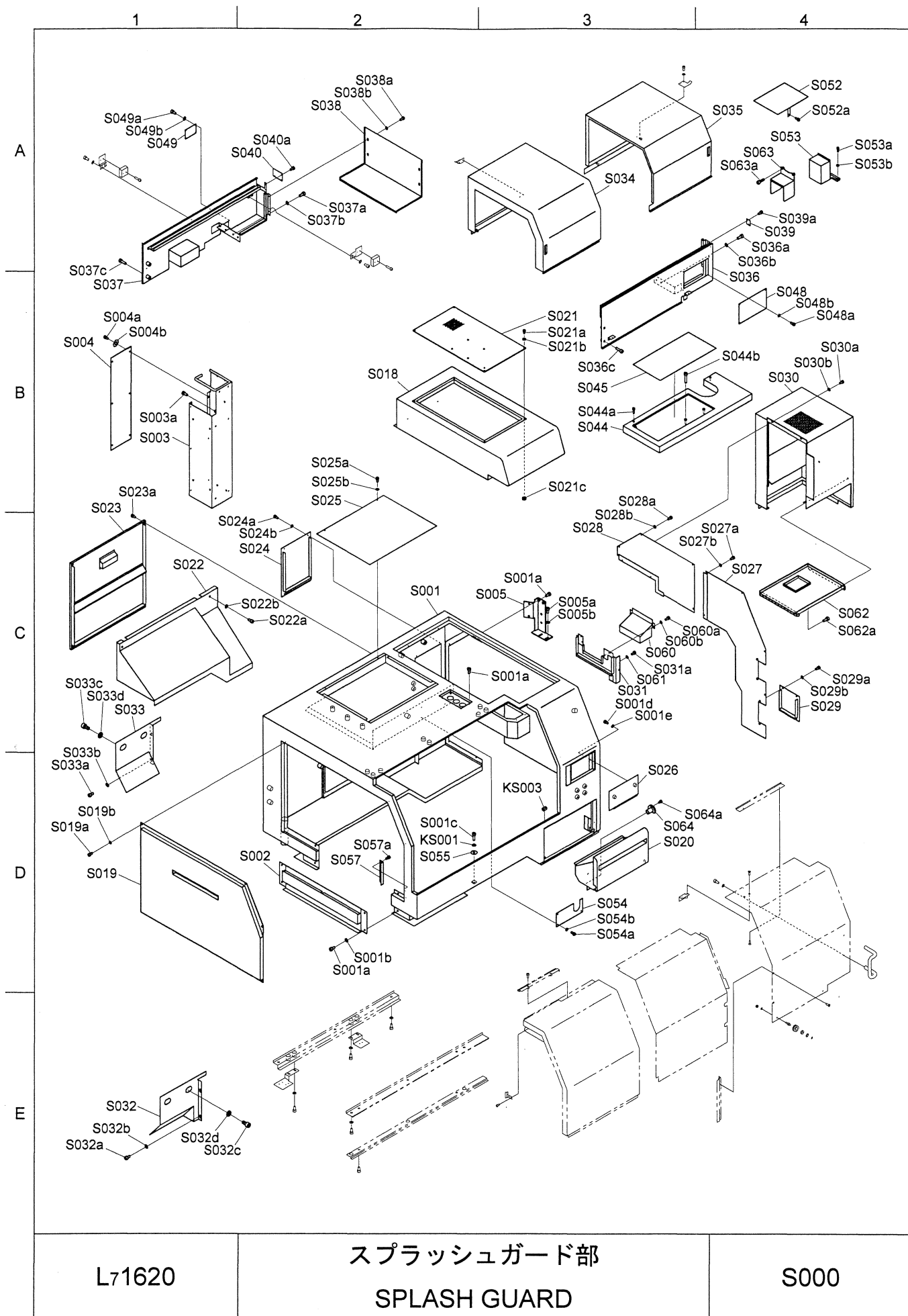


L71620

スプラッシュガード部
SPLASH GUARD

S000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
S001	正面カバー	FRONT COVER		1	
S001a	六角穴付ボルト	BOLT	M6x12	10	
S001b	平座金	WASHER	M6	4	
S001c	六角穴付ボルト	BOLT	M6x20	2	
S001d	六角穴付ボルト	BOLT	M4x8	4	
S001e	平座金	WASHER	M4	4	
S002	補助カバー	ASSISTANCE COVER		1	
S003	ダクト	DUCT		1	
S003a	六角穴付ボルト	BOLT	M6x16	4	
S004	カバー	COVER		1	
S004a	六角穴付ボルト	BOLT	M4x8	6	
S004b	平座金	WASHER	M4	6	
S005	ステー	STAY		1	
S005a	六角穴付ボルト	BOLT	M6x12	2	
S005b	平座金	WASHER	M6	2	
S018	トップカバー	TOP COVER		1	
S019	左側面カバー	LEFT SIDE COVER		1	
S019a	六角穴付ボルト	BOLT	M4x6	5	
S019b	平座金	WASHER	M4	5	
S020	製品受箱	RECEIVER BOX		1	
S021	フィルター押え板	FILTER PLATE		1	
S021a	六角穴付ボルト	BOLT	M4x8	6	
S021b	平座金	WASHER	M4	4	
S021c	六角ナット	NUT	M4	2	
S022	切粉ガイド	CHIP GUIDE		1	
S022a	六角穴付ボルト	BOLT	M6x12	2	
S022b	平座金	WASHER	M6	2	
S023	背面カバー1	REAR COVER 1		1	
S023a	六角穴付ボルト	BOLT	M4x10	4	
S024	背面カバー2	REAR COVER 2		1	
S024a	六角穴付ボルト	BOLT	M4x6	4	
S024b	平座金	WASHER	M4	4	
S025	上面カバー	TOP COVER		1	
S025a	六角穴付ボルト	BOLT	M4x6	2	
S025b	平座金	WASHER	M4	2	
S026	正面フタ	COVER		1	
S027	右側面フタ 1	RIGHT SIDE COVER 1		1	
S027a	六角穴付ボルト	BOLT	M4x6	4	
S027b	平座金	WASHER	M4	4	
S028	右側面フタ 2	RIGHT SIDE COVER 2		1	
S028a	六角穴付ボルト	BOLT	M4x6	4	
S028b	平座金	WASHER	M4	4	
S029	右側面フタ 3	RIGHT SIDE COVER 3		1	
S029a	六角穴付ボルト	BOLT	M4x6	4	
S029b	平座金	WASHER	M4	4	
L71620	スプラッシュガード部 SPLASH GUARD			S000	

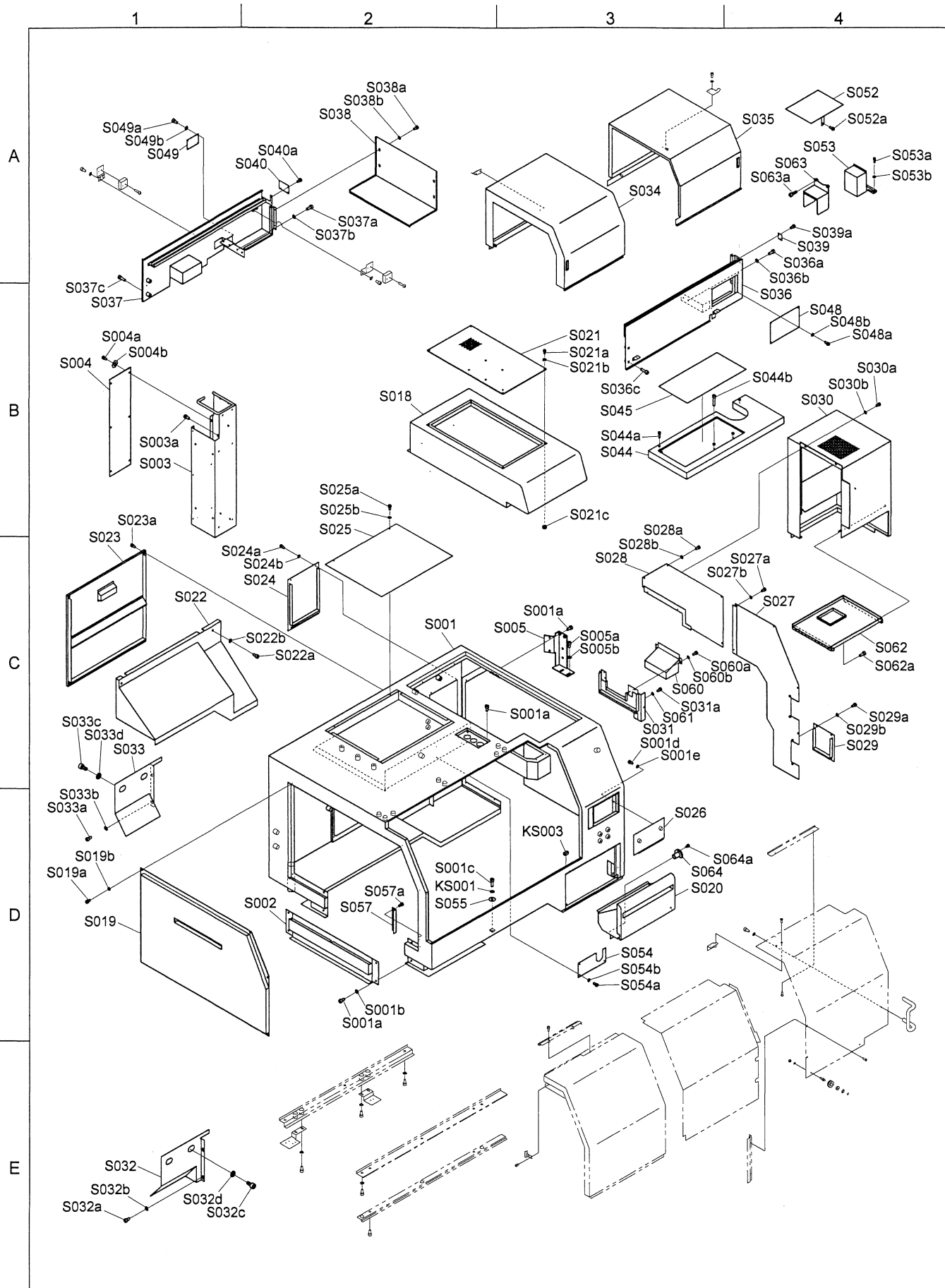


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スプラッシュガード部
SPLASH GUARD

S000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
S030	モーターカバー	MOTOR COVER		1	
S030a	六角穴付ボルト	BOLT	M4x6	4	
S030b	平座金	WASHER	M4	4	
S031	配線ガイド	WIRING GUIDE		1	
S031a	六角穴付ボルト	BOLT	M4x6	3	
S032	防油板 (前)	SPLASH PLATE (FRONT)		1	
S032a	六角穴付ボルト	BOLT	M6x12	2	
S032b	平座金	WASHER	M6	2	
S032c	六角穴付ボルト	BOLT	M4x6	2	
S032d	平座金	WASHER	M4	2	
S033	防油板 (後)	SPLASH PLATE (REAR)		1	
S033a	六角穴付ボルト	BOLT	M6x12	2	
S033b	平座金	WASHER	M6	2	
S033c	六角穴付ボルト	BOLT	M4x6	2	
S033d	平座金	WASHER	M4	2	
S034	引戸 1	SLIDING DOOR 1		1	
S034a	六角穴付ボルト	BOLT	M4x6	2	
S034b	平座金	WASHER	M4	2	
S035	引戸 2	SLIDING DOOR 2		1	
S036	レール (前)	RAIL (FRONT)		1	
S036a	六角穴付ボルト	BOLT	M6x16	2	
S036b	平座金	WASHER	M6	6	
S036c	六角穴付ボルト	BOLT	M6x20	2	
S037	レール (後)	RAIL (REAR)		1	
S037a	六角穴付ボルト	BOLT	M6x16	2	
S037b	平座金	WASHER	M6	2	
S037c	六角穴付ボルト	BOLT	M6x20	2	
S038	右側面カバー	RIGHT SIDE COVER		1	
S038a	六角穴付ボルト	BOLT	M4x6	4	
S038b	平座金	WASHER	M4	4	
S039	ストッパー板	STOPPER		1	
S039a	六角穴付ボルト	BOLT	M4x5	2	
S040	ストッパー板 (後)	STOPPER (REAR)		1	
S040a	六角穴付ボルト	BOLT	M4x5	3	
S044	テーブル	TABLE		1	
S044a	六角穴付ボルト	BOLT	M4x16	2	
S044b	六角穴付ボルト	BOLT	M6x30	2	
S045	テーブルシート	TABLE SHEET		1	
S048	レールカバー	RAIL COVER		1	
S048a	六角穴付ボルト	BOLT	M4x10	4	
S048b	平座金	WASHER	M4	4	
S049	背面カバー3	REAR COVER 3		1	
S049a	六角穴付ボルト	BOLT	M4x6	4	
S049b	平座金	WASHER	M4	4	
L71620		スプラッシュガード部 SPLASH GUARD		S000	

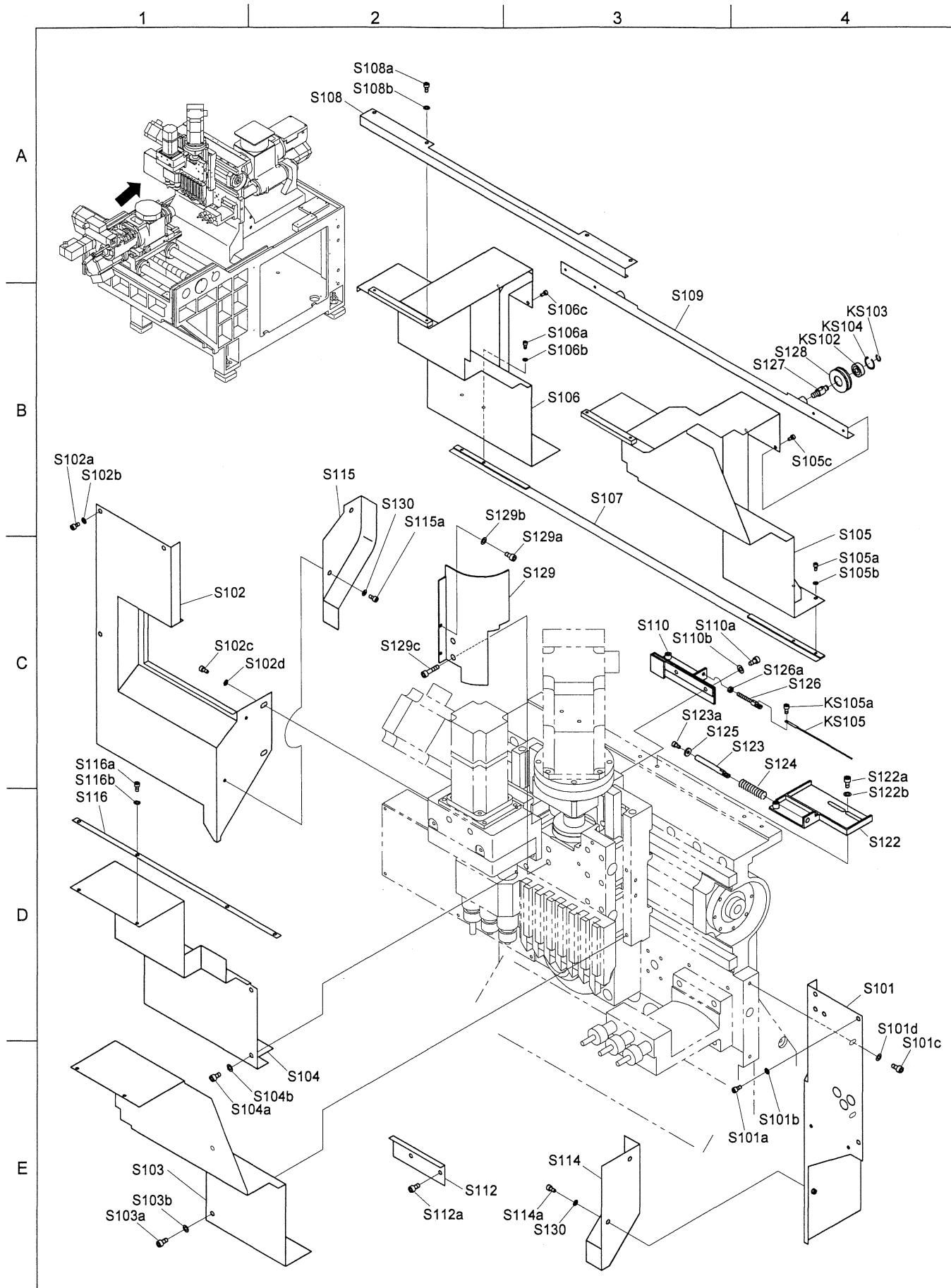


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スプラッシュガード部
SPLASH GUARD

S000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
S052	Z1 軸モーターカバー	Z1-AXIS MOTOR COVER		1	
S052a	六角穴付ボルト	BOLT	M5x10	1	
S053	ボールネジカバー	BALL SCREW COVER		1	
S053a	六角穴付ボルト	BOLT	M6x16	2	
S053b	平座金	WASHER	M6	2	
S054	配管塞ぎ板	PLUG PLATE		1	
S054a	六角穴付ボルト	BOLT	M4x8	3	
S054b	平座金	WASHER	M4	3	
S055	座金	WASHER		2	
S057	防油板 (1)	SPLASH PLATE (1)		1	
S057a	六角穴付ボルト	BOLT	M4x10	2	
S060	配線ガイドカバー	WIRING GUIDE COVER		1	
S060a	六角穴付ボルト	BOLT	M4x6	2	
S060b	平座金	WASHER	M4	2	
S061	座金	WASHER		11	
S062	ステー	STAY		1	
S062a	六角穴付ボルト	BOLT	M4x8	2	
S063	ボールネジカバー	BALL SCREW COVER		1	
S063a	六角穴付ボルト	BOLT	M6x16	2	
S064	ピボット	PIVOT		2	
S064a	六角穴付ボルト	BOLT	M3x6	2	
KS001	シールワッシャー	WASHER	W-6	5	KEEPER
KS002	六角穴付ボタンボルト	BOLT	M6x12	5	GOSHO
KS003	スポンジ	SPONGE	5x10	1	BRIDGESTONE
L71620	スプラッシュガード部 SPLASH GUARD			S000	



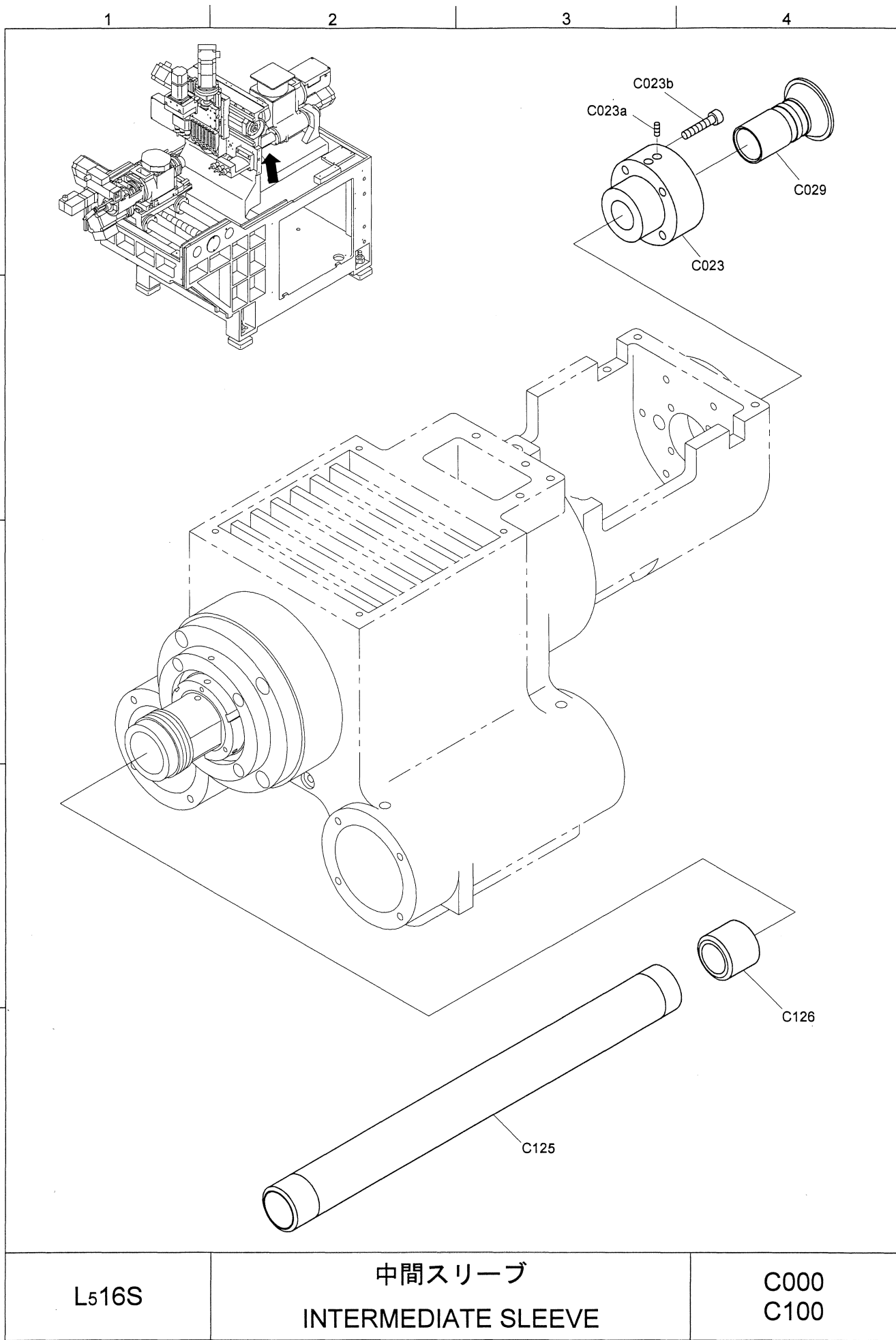
L71620

スライドカバー部
SLIDE COVER

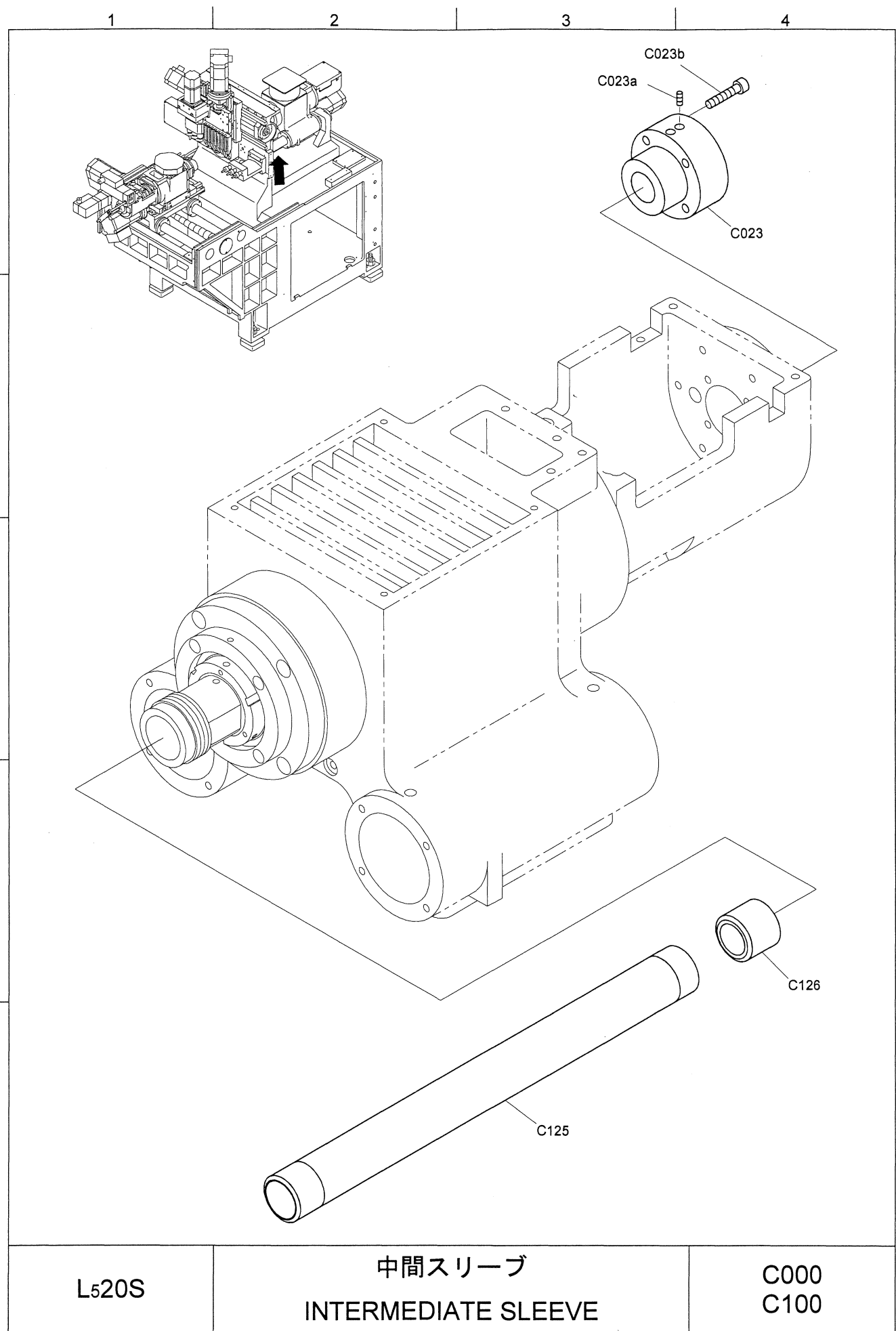
S100

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
S101	刃物台カバー (1)	TOOL POST COVER (1)		1	
S101a	六角穴付ボルト	BOLT	M4x8	3	
S101b	平座金	WASHER	M4	3	
S101c	六角穴付ボルト	BOLT	M6x10	2	
S101d	平座金	WASHER	M6	2	
S102	刃物台カバー (2)	TOOL POST COVER (2)		1	
S102a	六角穴付ボルト	BOLT	M4x8	3	
S102b	平座金	WASHER	M4	3	
S102c	六角穴付ボルト	BOLT	M6x10	2	
S102d	平座金	WASHER	M6	2	
S103	スライド固定カバー (1)	SLIDE COVER (1)		1	
S103a	六角穴付ボルト	BOLT	M6x10	2	
S103b	平座金	WASHER	M6	2	
S104	スライド固定カバー (2)	SLIDE COVER (2)		1	
S104a	六角穴付ボルト	BOLT	M6x10	2	
S104b	平座金	WASHER	M6	2	
S105	スライドカバー (1)	SLIDE COVER (1)		1	
S105a	六角穴付ボルト	BOLT	M4x5	2	
S105b	平座金	WASHER	M4	2	
S105c	六角穴付ボルト	BOLT	M4x8	2	
S106	スライドカバー (2)	SLIDE COVER (2)		1	
S106a	六角穴付ボルト	BOLT	M4x5	2	
S106b	平座金	WASHER	M4	2	
S106c	六角穴付ボルト	BOLT	M4x6	2	
S107	連結板 (1)	CONNECTING PLATE (1)		1	
S108	連結板 (2)	CONNECTING PLATE (2)		1	
S108a	六角穴付ボルト	BOLT	M4x8	4	
S108b	平座金	WASHER	M4	4	
S109	連結板 (3)	CONNECTING PLATE (3)		1	
S110	ガイド	GUIDE		1	
S110a	六角穴付ボルト	BOLT	M6x12	2	
S110b	平座金	WASHER	M6	2	
S112	X スライドフタ	X-SLIDE COVER		1	
S112a	六角穴付ボルト	BOLT	M6x10	2	
S114	切粉シュート (1)	CHIP CHUTE (1)		1	
S114a	六角穴付ボルト	BOLT	M4x10	2	
S115	切粉シュート (2)	CHIP CHUTE (2)		1	
S115a	六角穴付ボルト	BOLT	M4x10	2	
S116	連結板 (4)	CONNECTING PLATE (4)		1	
S116a	六角穴付ボルト	BOLT	M4x8	4	
S116b	平座金	WASHER	M4	4	
S122	ブラケット	BRACKET		1	
S122a	六角穴付ボルト	BOLT	M6x16	2	
L71620		スライドカバー部 SLIDE COVER		S100	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
S122b	平座金	WASHER	M6	2	
S123	バネ受け	SPRING GUIDE		1	
S123a	六角穴付ボルト	BOLT	M5x10	1	
S124	圧縮コイルバネ	SPRING		1	
S125	座金	WASHER		1	
S126	連結ボルト	CONNECTING BOLT		1	
S126a	六角ナット (3 種)	HEX. NUT	M5	2	
S127	プーリー軸	PULLEY SHAFT		2	
S128	プーリー	PULLEY		2	
S129	ボールネジカバー	COVER		1	
S129a	六角穴付ボルト	BOLT	M4x5	2	
S129b	平座金	WASHER	M4	2	
S129c	六角穴付ボルト	BOLT	M6x30	2	
S130	座金	WASHER		4	
KS102	ミニアチュア玉軸受	BALL BEARING	608ZZ	2	NTN
KS103	インバーテッドリング	INVERTED RING	ISTW8	2	OCHIAI
KS104	インバーテッドリング	INVERTED RING	IRTW22	2	OCHIAI
KS105	ステンレスワイヤロープ	STAINLESS WIRE ROPE	TC-120ON1.5 L=368	2	TOYO MINI ROPE
KS105a	六角穴付ボルト	BOLT	M5x8	4	
L71620		スライドカバー部 SLIDE COVER		S100	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
C023	パイプサポート	PIPE SUPPORT		1	
C023a	六角穴付止メネジ (平先)	SET SCREW	M4x10	2	
C023b	六角穴付ボルト	BOLT	M6x30	4	
C029	ブッシュ	BUSHING		1	
C125	中間スリーブ	INTERMEDIATE SLEEVE		1	
C126	バランススリーブ	BALANCE SLEEVE		1	
KS006	機名銘板	NAME PLATE	Cincom16 TYPE ADHESIVE LABEL	1	UNIVERSAL DESIGN
L516S		中間スリーブ INTERMEDIATE SLEEVE		C000 C100	

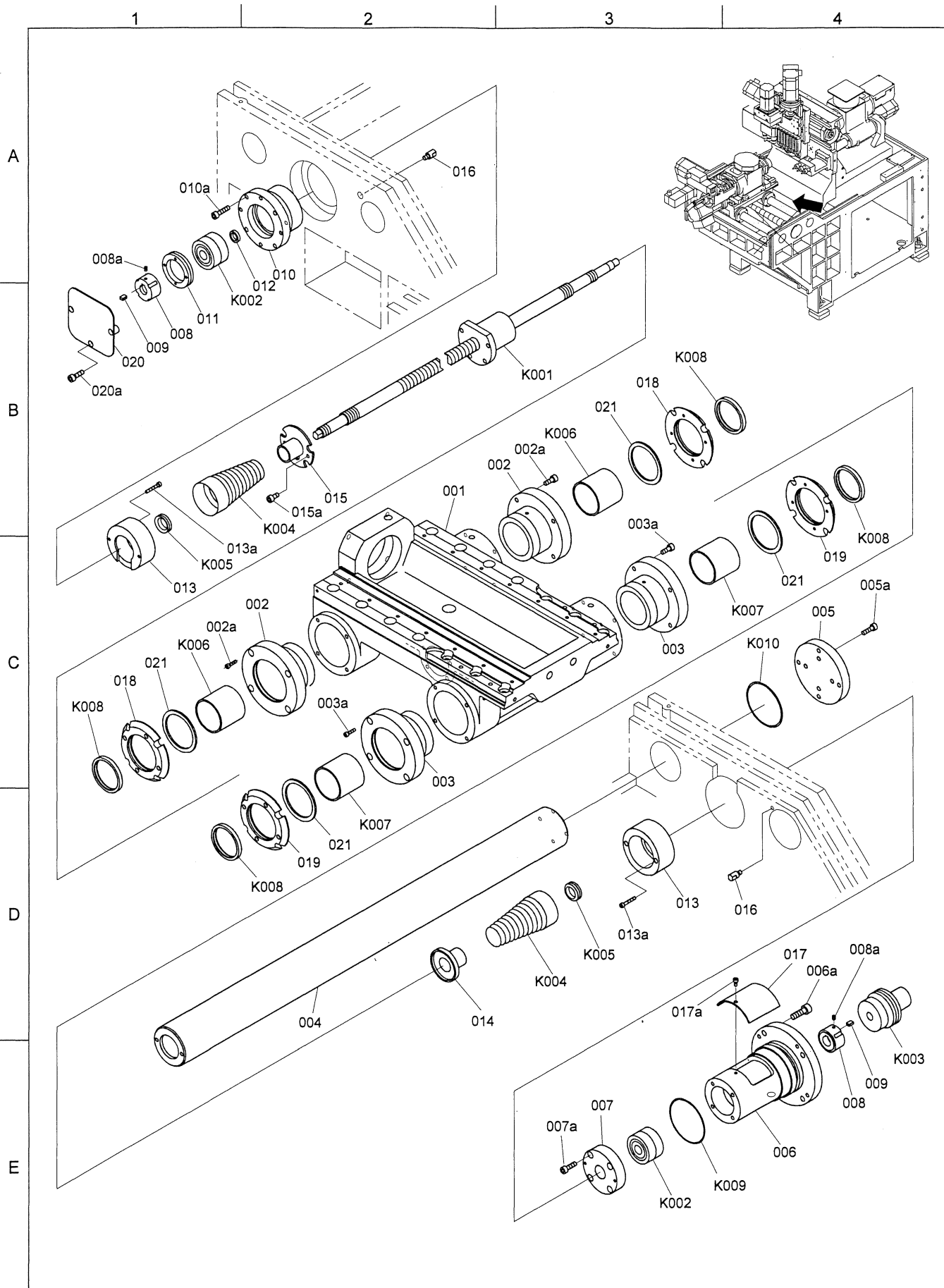


L520S

中間スリーブ
INTERMEDIATE SLEEVE

C000
C100

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
C023	パイプサポート	PIPE SUPPORT		1	
C023a	六角穴付止メネジ (平先)	SET SCREW	M4x10	2	
C023b	六角穴付ボルト	BOLT	M6x30	4	
C125	中間スリーブ	INTERMEDIATE SLEEVE		1	
C126	バランススリーブ	BALANCE SLEEVE		1	
KS006	機名銘板	NAME PLATE	Cincom20 TYPE ADHESIVE LABEL	1	UNIVERSAL DESIGN
L520S		中間スリーブ INTERMEDIATE SLEEVE		C000 C100	



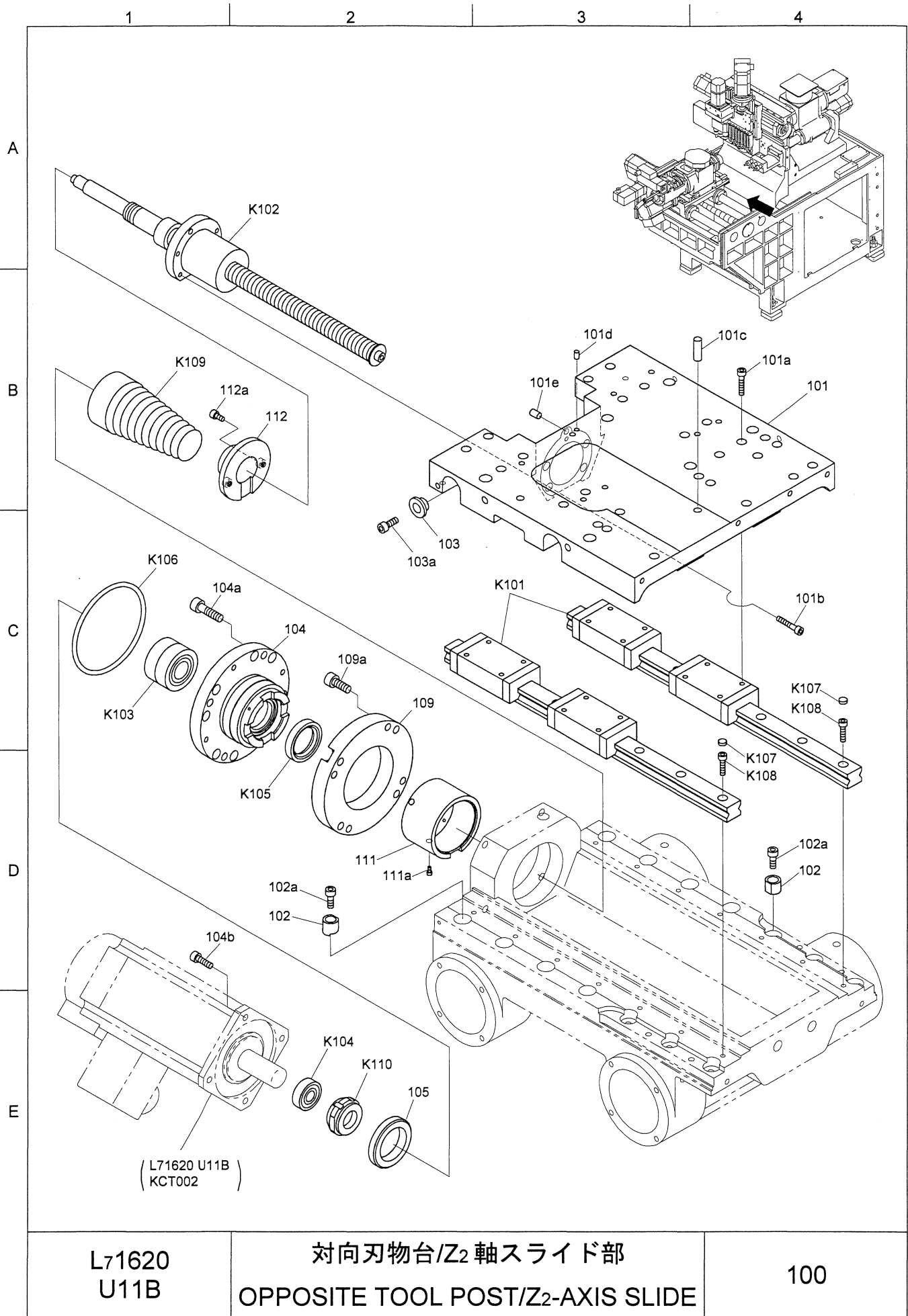
L71620
U11B

対向刃物台/X2 軸スライド部
OPPOSITE TOOL POST/X2-AXIS SLIDE

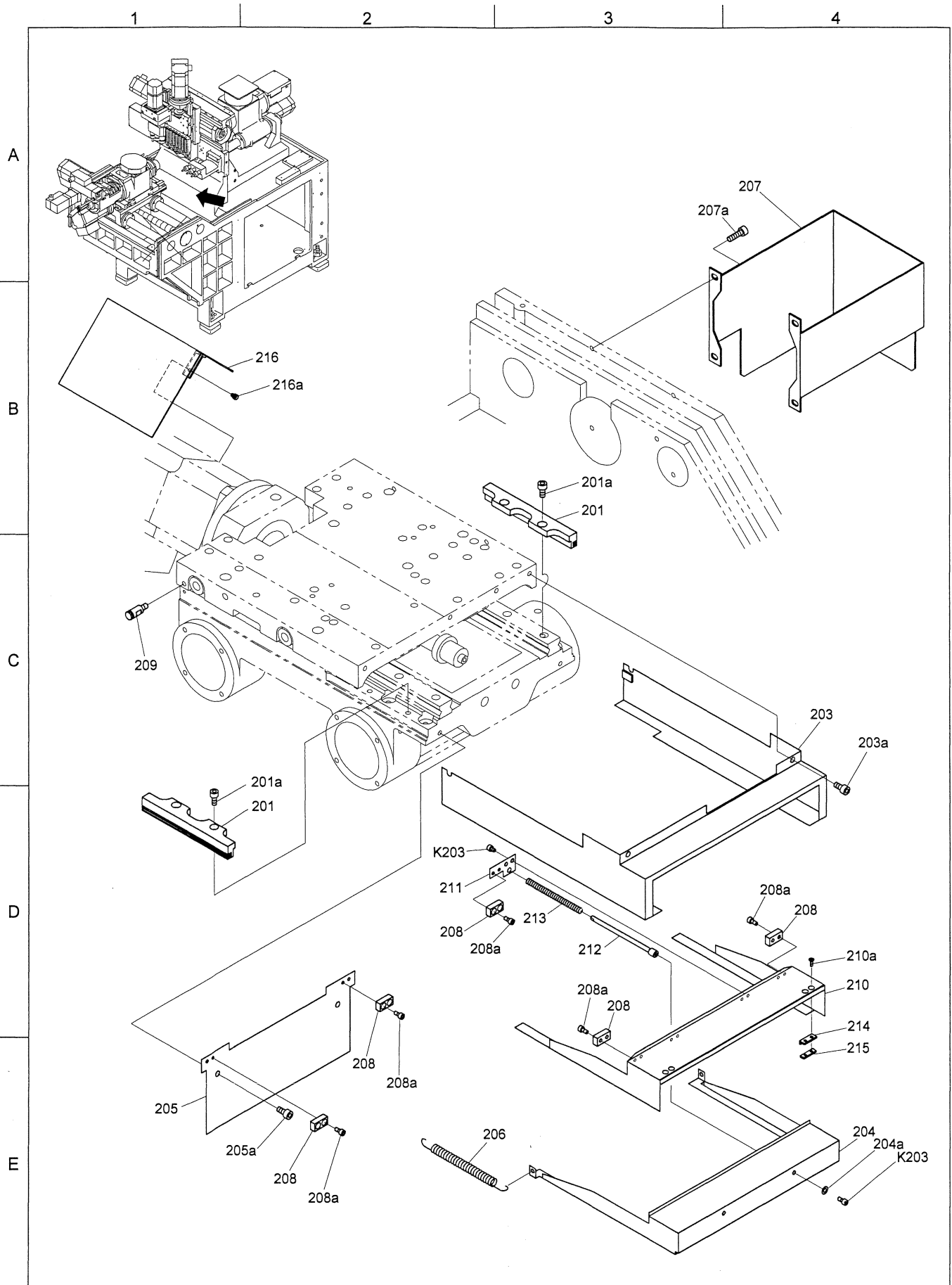
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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	対向クロススライド	OPPOSITE CROSS SLIDE		1	
002	軸受フランジ	BEARING FLANGE		2	
002a	六角穴付ボルト	BOLT	M6x20	8	
003	軸受フランジ	BEARING FLANGE		2	
003a	六角穴付ボルト	BOLT	M6x20	8	
004	ガイドバー	GUIDE		2	
005	ガイドバー取付板	GUIDE PLATE		2	
005a	六角穴付ボルト	BOLT	M6x20	16	
006	モーターブラケット	MOTOR BRACKET		1	
006a	六角穴付ボルト	BOLT	M8x25	4	
007	ベアリング押え	FLANGE		1	
007a	六角穴付ボルト	BOLT	M6x12	4	
008	ナット (JIS1 級)	NUT		2	
008a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
009	ネジ座 (JIS1 級)	LOCK KEY		2	
010	ボールネジサポート	BALL SCREW SUPPORT		1	
010a	六角穴付ボルト	BOLT	M6x25	4	
011	ベアリング押え	FLANGE		1	
012	スペーサー	SPACER		1	
013	スクリーカバー受 (1)	SCREW COVER RECEIVER (1)		2	
013a	六角穴付ボルト	BOLT	M4x25	4	
014	スクリーカバー受 (2)	SCREW COVER RECEIVER (2)		1	
015	スクリーカバー受 (3)	SCREW COVER RECEIVER (3)		1	
015a	六角穴付ボルト	BOLT	M5x10	2	
016	ストッパー駒	STOPPER BLOCK		2	
017	フタ	LID		1	
017a	六角穴付ボルト	BOLT	M4x8	1	
018	シールリング	RING		2	
018a	六角穴付ボルト	BOLT	M4x10	8	
019	シールリング	RING		2	
019a	六角穴付ボルト	BOLT	M4x10	8	
020	カバー	COVER		1	
020a	六角穴付ボルト	BOLT	M6x16	3	
021	フェルトリング	RING		4	
L71620 U11B		対向刃物台/X2 軸スライド部 OPPOSITE TOOL POST/X2-AXIS SLIDE		000	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
K001	ボールネジ	BALL SCREW	BNFN2508HSE -3.5RRG0 +760LC5	1	THK
K002	ボールネジサポート軸受	BEARING	15TAB04DF -2LRCS110	2 sets	NACHI
K003	フォームフレックスカップリング	COUPLING	A3-04LL- 16T05/C13	1	DAIDO SPRAG
K004	スクリーカバー	SCREW COVER	035-500-050	2	TOKYO SEIMITSU HATSUJO
K005	V リング	V-RING	V20S	2	FUKUDA
K006	巻きブッシュ	COIL BUSHING	65x2.6x50	2	DAIDO METAL
K007	巻きブッシュ	COIL BUSHING	65x2.6x50	2	DAIDO METAL
K008	ダストシール	DUST SEAL	LBH65x73	4	NOK
K009	O リング	O-RING	P71	1	
K010	O リング	O-RING	G70	2	
L71620 U11B		対向刃物台/X2 軸スライド部 OPPOSITE TOOL POST/X2-AXIS SLIDE		000	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
101	対向 Z スライド	OPPOSITE Z SLIDE		1	
101a	六角穴付ボルト	BOLT	M5x25	16	
101b	六角穴付ボルト	BOLT	M6x35	4	
101c	平行ピン	PIN	ø8x25	1	
101d	塞ぎ栓	PLUG	ø5x8	1	
101e	塞ぎ栓	PLUG	ø6.8x10	1	
102	コマ	BLOCK		14	
102a	六角穴付ボルト	BOLT	M6x16	14	
103	コマ	BLOCK		2	
103a	六角穴付ボルト	BOLT	M6x16	2	
104	ボールネジサポート	BALL SCREW SUPPORT		1	
104a	六角穴付ボルト	BOLT	M8x30	4	
104b	六角穴付ボルト	BOLT	M6x20	4	
105	ベアリング押え	FLANGE		1	
109	スペーサー	SPACER		1	
109a	六角穴付ボルト	BOLT	M8x20	4	
111	スクリューカバー受 (外)	SCREW COVER RECEIVER (OUT)		1	
111a	六角穴付ボルト	BOLT	M3x5	4	
112	スクリューカバー受 (内)	SCREW COVER RECEIVER (IN)		1	
112a	六角穴付ボルト	BOLT	M5x10	2	
K101	LM ガイド	LM GUIDE	HSR20LR 2UUCOE +422LP-II	1 set	THK
K102	ボールネジ (ø25)	BALL SCREW (ø25)	DIK2508S-6 RRG0+536LC5	1	THK
K103	ボールネジサポート軸受	BEARING	20TAB04DB -2LR/GM	1 set	NACHI
K104	深ミゾ玉軸受	BALL BEARING	6201ZZ	1	NACHI
K105	オイルシール SB 型	OIL SEAL (SB TYPE)	AB1679A3	1	NOK
K106	O リング	O-RING	S85	1	NOK
K107	LM 用キャップ	LM CAP	C5	14	THK
K108	六角穴付ボルト	BOLT	M5x20	14	UNBRAKO
K109	スクリューカバー	SCREW COVER	035-250-030	1	TOKYO SEIMITSU
K110	ロックナット	LOCK NUT	KTKA20x1.0	1	HATSUJO FUKUDA
L71620 U11B		対向刃物台/Z ₂ 軸スライド部 OPPOSITE TOOL POST/Z ₂ -AXIS SLIDE		100	



L71620
U11B

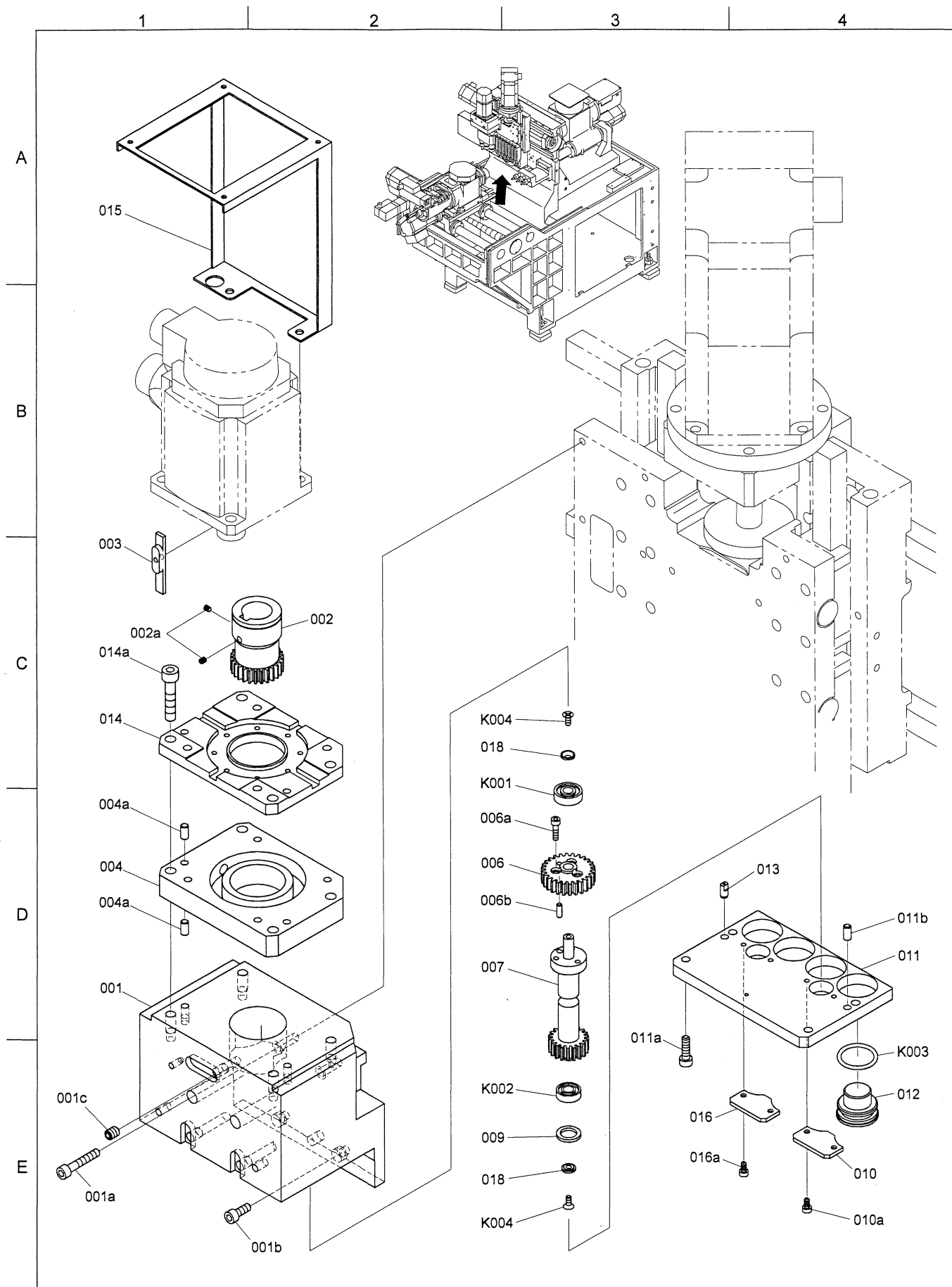
対向刃物台/カバー部
OPPOSITE TOOL POST/COVER

200

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
201	レール	RAIL		2	
201a	六角穴付ボルト	BOLT	M6x12	4	
203	スライドカバー	SLIDE COVER		1	
203a	六角穴付ボルト	BOLT	M6x12	4	
204	スライドカバー	SLIDE COVER		1	
204a	平座金	WASHER	M4	2	
205	下部カバー	BOTTOM COVER		1	
205a	六角穴付ボルト	BOLT	M6x12	2	
206	引張コイルバネ	COIL SPRING		2	
207	モーターカバー	MOTOR COVER		1	
207a	六角穴付ボルト	BOLT	M6x20	4	
208	ウレタンゴム	RUBBER		6	
208a	六角穴付ボルト	BOLT	M4x6	12	
209	バネ掛	HOOK		2	
210	スライドカバー	SLIDE COVER		1	
210a	皿小ネジ	COUNTERSUNK SCREW	M3x6	4	
211	バネ受け	SPRING RECEIVER		2	
212	シャフト	SHAFT		2	
213	圧縮コイルばね	COIL SPRING		2	
214	ウレタンゴム	RUBBER		2	
215	プレート	PLATE		2	
216	Z2 軸モーターカバー	Z2-AXIS MOTOR COVER		1	
216a	六角穴付ボルト	BOLT	M5x10	1	
K203	六角穴付ボタンボルト	BOLT	M4x8	6	GOSHO
L71620 U11B		対向刃物台/カバー部 OPPOSITE TOOL POST/COVER		200	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
KR201	コネクタ	CONNECTOR	PQ8	2	SHOWA
KR202	フロープロパーユニット	FLOW PROPER UNIT	PST2	3	SHOWA
KR203	締付プラグ	PLUG	PA4	18	SHOWA
KR204	スリーブ	SLEEVE	PB4	22	SHOWA
KR205	チューブインサート	TUBE INSERT	AL4	6	SHOWA
KR206	プロパーナット	PROPER NUT	PAN4	4	SHOWA
KR207	ティー	TEE	PK4	6	SHOWA
KR208	フロープロパーユニット	FLOW PROPER UNIT	PST1	4	SHOWA
KR209	ジャンクション	JUNCTION	JD4	1	SHOWA
KR211	正和ナイロンパイプ	NYLON PIPE	ø4 (NYLON) L=3m	1	SHOWA
KR212	保護スプリング	SPRING	FOR ø4 L=3m	1	SHOWA
KR213	アルミニウムパイプ	ALUMINUM PIPE	ALP4 L=1m	1	SHOWA
KR216	エルボ	ELBOW	PH4	1	SHOWA
KR217	フロープロパーユニット	FLOW PROPER UNIT	PSS1	1	SHOWA
KR218	ジャンクションヘッド	JUNCTION HEAD	JHD402	1	SHOWA
KR219	フロープロパーユニット	FLOW PROPER UNIT	PTT2	1	SHOWA
L71620 U11B		対向刃物台/カバー部 OPPOSITE TOOL POST/COVER		R200	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	MX2	モータ	MOTOR	HF75T-SV -S6-A51	1	MITSUBISHI ELECTRIC
KCT002	MZ2	モータ	MOTOR	HF105-SV -S1-A51	1	MITSUBISHI ELECTRIC
KWT001		光ケーブル	OPTICAL CABLE	PF-2HB209- 0.15M-F-1	1	JAE
WT101		X2 軸モータケーブル	CABLE		1	
WT102		Z2 軸モータケーブル	CABLE		1	
KWT101	CNX2 CNZ2	コネクタ	CONNECTOR	CE05-6A22 -15ASD C (D82)	2	DDK
KWT102		防水アングルバックシェル	ANGLE BACK SHELL	CE-22BA-S (D265)	1	DDK
KWT103		防水ストレートバックシェル	STRAIGHT BACK SHELL	CE05-22BS-S-B	1	DDK
KWT104		防水ケーブルクランプ	CABLE CLAMP	CE3057-12A-1 (D265)	1	DDK
KWT105		ハウジング	HOUSING	1-179958-4	2	TYCO ELEC- TRONICS AMP
KWT106		コンタクト	CONTACT	316040-2	8	TYCO ELEC- TRONICS AMP
KWT107		コネクタプラグ	CONNECTOR PLUG	54593-1011	2	MOLEX
KWT108		プラグカバーA	PLUG COVER A	54594-1015	2	MOLEX
KWT109		プラグカバーB	PLUG COVER B	54595-1005	2	MOLEX
KWT110		シェルカバー	SHELL COVER	58935-1000	2	MOLEX
KWT111		シェルボディー	SHELL BODY	58934-1000	2	MOLEX
KWT112		ケーブルクランプ	CABLE CLAMP	58937-0000	2	MOLEX
KWT113		カップリング	COUPLING	N2KM-25-20	1	SANKEI
KWT114		サンフレキ	FLEXIBLE TUBE	NP#25 (1850m)	1	SANKEI
L71620 U11B		対向刃物台 OPPOSITE TOOL POST			CT000 WT000 WT100	



L71620
U30B

回転工具 4 本駆動装置
4 ROTARY TOOLS DRIVING DEVICE

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	工具モーターブラケット	MOTOR BRACKET		1	
001a	六角穴付ボルト	BOLT	M6x35	2	
001b	六角穴付ボルト	BOLT	M6x16	2	
001c	六角穴付止メネジ (平先)	SET SCREW	M8x10	3	
002	平歯車	GEAR		1	
002a	六角穴付止メネジ (平先)	SET SCREW	M5x6	2	
003	キー	KEY		1	
004	モータースペーサー	MOTOR SPACER		1	
004a	平行ピン	PIN	ø6x12	2	
006	ピニオンギア	PINION GEAR		2	
006a	六角穴付ボルト	BOLT	M4x12	3	
006b	平行ピン	PIN	ø4x12	1	
007	ピニオンギア	PINION GEAR		2	
009	スペーサー	SPACER		2	
010	カバー	COVER		1	
010a	六角穴付ボルト	BOLT	M4x8	2	
011	プレート	PLATE		1	
011a	六角穴付ボルト	BOLT	M6x20	4	
011b	平行ピン	PIN	ø6x12	1	
012	キャップ	CAP		4	
013	位置決めピン	POSITIONING PIN		1	
014	モーターベース	MOTOR BASE		1	
014a	六角穴付ボルト	BOLT	M8x40	4	
015	モーターファンブラケット	MOTOR FAN BRACKET		1	
016	カバー	COVER		1	
016a	六角穴付ボルト	BOLT	M4x8	2	
018	座金	WASHER		4	
K001	深溝玉軸受	BEARING	608-2NK P5	2 sets	NACHI
K002	深溝玉軸受	BEARING	698-2NK P5	2 sets	NACHI
K003	O リング	O-RING	P26	4	NOK
K004	六角穴付皿ボルト	BOLT	M4x8	4	GOSHO
K013	ブロックプレート	BLOCK PLATE	HMU-BP	1	KOGANEI
K014	六角穴付テーパネジプラグ	TAPERED PIPE PLUGS	Type GM 1/8-28	1	GOSHO
L71620 U30B		回転工具 4 本駆動装置 4 ROTARY TOOLS DRIVING DEVICE		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	FAN4	ファンモータ	FAN MOTOR	LCH04-A02 -S12D20-TWCS 120□x38t	1	STYLE ELECTRONICS
KBT002		六角穴付ボルト	BOLT	M4x50	4	
KBT003		ファンガード	FAN GUARD	SG-12001T	1	STYLE ELECTRONICS
KCT001	UNIT9	1 軸一体サーボアンプ モジュール	1-AXIS INCORPORATION SERVO AMP. MODULE	MDS-D-V1-20	1	MITSUBISHI ELECTRIC
KCT002	MS3	サーボモータ	SERVO MOTOR	HF105K-S1 -A47	1	MITSUBISHI ELECTRIC
KWT001		光ケーブル	OPTICAL CABLE	PF-2HB209- 0.15M-F-1	1	JAE
WT101		工具主軸モータ動力ケーブル	CABLE		1	
WT102		工具主軸モータ信号ケーブル	CABLE		1	
WT103		ファンケーブル	CABLE		1	
WT105		ファンセンサーケーブル	CABLE		1	
KWT101	CNPS3	コネクタ	CONNECTOR	MS3106A18- 10S (D190)	1	DDK
KWT102	CNSS3	コネクタ	CONNECTOR	MS3106A20- 29S (D190)	1	DDK
KWT103		防水アングルバックシェル	ANGLE BACK SHELL	CE-18BA-S (D265)	1	DDK
KWT104		防水アングルバックシェル	ANGLE BACK SHELL	CE-20BA-S	1	DDK
KWT105	U9CN31L	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC- TRONICS AMP
KWT106		コンタクト	CONTACT	316040-2	4	TYCO ELEC- TRONICS AMP
KWT107	U9CN2L	コネクタプラグ	CONNECTOR PLUG	54599-1019	1	MOLEX
KWT113		カップリング	COUPLING	N2KM-16-20	1	SANKEI
KWT114		サンフレキ	FLEXIBLE TUBE	NP#16 (1300m)	1	SANKEI
KWT115		サンフレキ	FLEXIBLE TUBE	NP#16 (1250m)	1	SANKEI
KWT117		カップリング	COUPLING	H2KM-16-18	1	SANKEI
L71620 U30B		回転工具 4 本駆動装置 4 ROTARY TOOLS DRIVING DEVICE			BT000 CT000 WT000 WT100	

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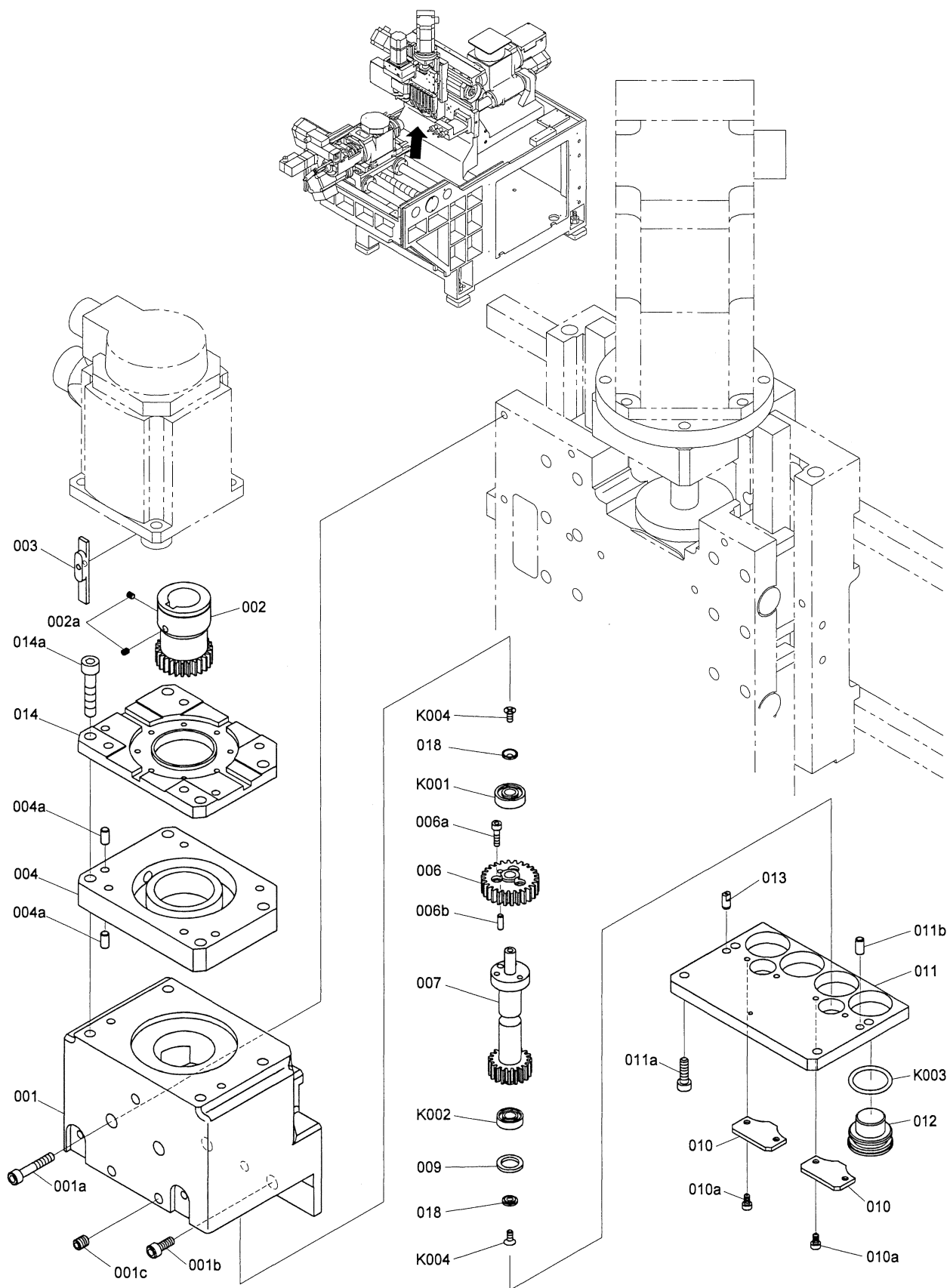
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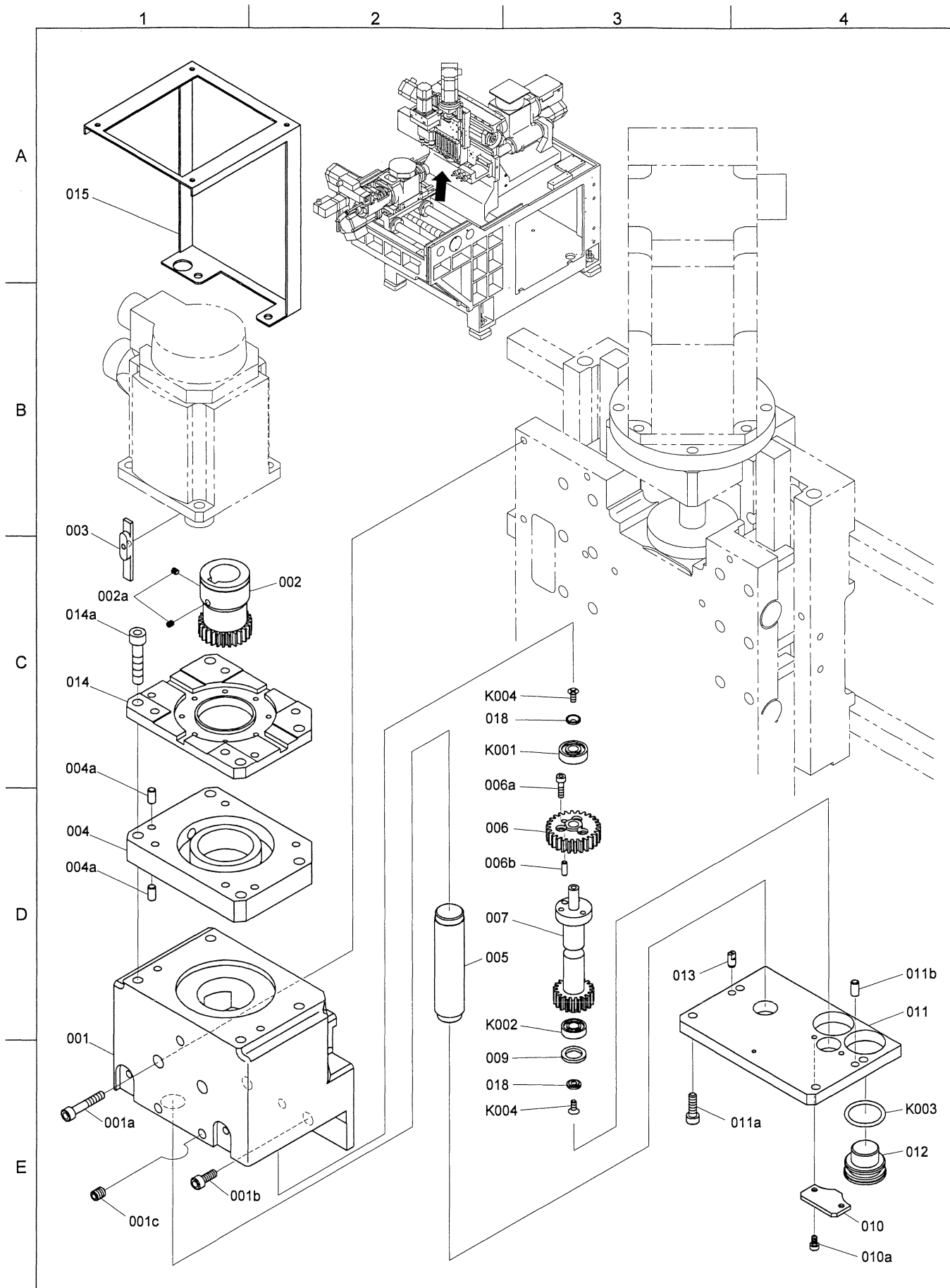
回転工具 4 本駆動装置
4 ROTARY TOOLS DRIVING DEVICE

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	工具モーターブラケット	MOTOR BRACKET		1	
001a	六角穴付ボルト	BOLT	M6x35	2	
001b	六角穴付ボルト	BOLT	M6x16	2	
001c	六角穴付止メネジ (平先)	SET SCREW	M8x10	3	
002	平歯車	GEAR		1	
002a	六角穴付止メネジ (平先)	SET SCREW	M5x6	2	
003	キー	KEY		1	
004	モータースペーサー	MOTOR SPACER		1	
004a	平行ピン	PIN	ø6x12	2	
006	ピニオンギア	PINION GEAR		2	
006a	六角穴付ボルト	BOLT	M4x12	3	
006b	平行ピン	PIN	ø4x12	1	
007	ピニオンギア	PINION GEAR		2	
009	スペーサー	SPACER		2	
010	カバー	COVER		2	
010a	六角穴付ボルト	BOLT	M4x8	4	
011	プレート	PLATE		1	
011a	六角穴付ボルト	BOLT	M6x20	4	
011b	平行ピン	PIN	ø6x12	1	
012	キャップ	CAP		4	
013	位置決めピン	POSITIONING PIN		3	
014	モーターベース	MOTOR BASE		1	
014a	六角穴付ボルト	BOLT	M8x40	4	
018	座金	WASHER		4	
K001	深溝玉軸受	BEARING	608-2NK P5	2 sets	NACHI
K002	深溝玉軸受	BEARING	698-2NK P5	2 sets	NACHI
K003	O リング	O-RING	P26	4	NOK
K004	六角穴付皿ボルト	BOLT	M4x8	4	GOSHO
K013	ブロックプレート	BLOCK PLATE	HMU-BP	1	KOGANEI
K014	六角穴付テーパネジプラグ	TAPERED PIPE PLUGS	Type GM 1/8-28	1	GOSHO
L71620 U31B		回転工具 4 本駆動装置 4 ROTARY TOOLS DRIVING DEVICE		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	FAN4	ファンモータ	FAN MOTOR	LCH04-A02 -S12D20-TWCS 120□x38t	1	STYLE ELECTRONICS
KBT002		六角穴付ボルト	BOLT	M4x50	4	
KBT003		ファンガード	FAN GUARD	SG-12001T	1	STYLE ELECTRONICS
KCT001	UNIT9	1 軸一体サーボアンブ モジュール	1-AXIS INCORPORATION SERVO AMP. MODULE	MDS-D-V1-20	1	MITSUBISHI ELECTRIC
KCT002	MS3	サーボモータ	SERVO MOTOR	HF75K-S1-A48	1	MITSUBISHI ELECTRIC
KWT001		光ケーブル	OPTICAL CABLE	PF-2HB209- 0.15M-F-1	1	JAE
WT101		工具主軸モータ動力ケーブル	CABLE		1	
WT102		工具主軸モータ信号ケーブル	CABLE		1	
WT103		ファンケーブル	CABLE		1	
WT105		ファンセンサーケーブル	CABLE		1	
KWT101	CNPS3	コネクタ	CONNECTOR	MS3106A18- 10S (D190)	1	DDK
KWT102	CNSS3	コネクタ	CONNECTOR	MS3106A20- 29S (D190)	1	DDK
KWT103		防水アングルバックシェル	ANGLE BACK SHELL	CE-18BA-S (D265)	1	DDK
KWT104		防水アングルバックシェル	ANGLE BACK SHELL	CE-20BA-S	1	DDK
KWT105	U9CN31L	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC- TRONICS AMP
KWT106		コンタクト	CONTACT	316040-2	4	TYCO ELEC- TRONICS AMP
KWT107	U9CN2L	コネクタプラグ	CONNECTOR PLUG	54599-1019	1	MOLEX
KWT113		カップリング	COUPLING	N2KM-16-20	1	SANKEI
KWT114		サンフレキ	FLEXIBLE TUBE	NP#16 (1300m)	1	SANKEI
KWT115		サンフレキ	FLEXIBLE TUBE	NP#16 (1250m)	1	SANKEI
KWT117		カップリング	COUPLING	H2KM-16-18	1	SANKEI
L71620 U31B		回転工具 4 本駆動装置 4 ROTARY TOOLS DRIVING DEVICE			BT000 CT000 WT000 WT100	

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U32B

回転工具 2 本駆動装置
2 ROTARY TOOLS DRIVING DEVICE

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	工具モーターブラケット	MOTOR BRACKET		1	
001a	六角穴付ボルト	BOLT	M6x35	2	
001b	六角穴付ボルト	BOLT	M6x16	2	
001c	六角穴付止メネジ (平先)	SET SCREW	M8x10	3	
002	平歯車	GEAR		1	
002a	六角穴付止メネジ (平先)	SET SCREW	M5x6	2	
003	キー	KEY		1	
004	モータースペーサー	MOTOR SPACER		1	
004a	平行ピン	PIN	ø6x12	2	
005	軸	SHAFT		1	
006	ピニオンギア	PINION GEAR		1	
006a	六角穴付ボルト	BOLT	M4x12	3	
006b	平行ピン	PIN	ø4x12	1	
007	ピニオンギア	PINION GEAR		1	
009	スペーサー	SPACER		1	
010	カバー	COVER		1	
010a	六角穴付ボルト	BOLT	M4x8	2	
011	プレート	PLATE		1	
011a	六角穴付ボルト	BOLT	M6x20	4	
011b	平行ピン	PIN	ø6x12	1	
012	キャップ	CAP		2	
013	位置決めピン	POSITIONING PIN		3	
014	モーターベース	MOTOR BASE		1	
014a	六角穴付ボルト	BOLT	M8x40	4	
015	モーターファンブラケット	BRACKET		1	
018	座金	WASHER		2	
K001	深溝玉軸受	BEARING	608-2NK P5	1 set	NACHI
K002	深溝玉軸受	BEARING	698-2NK P5	1 set	NACHI
K003	O リング	O-RING	P26	2	NOK
K004	六角穴付皿ボルト	BOLT	M4x8	2	GOSHO
K013	ブロックプレート	BLOCK PLATE	HMU-BP	1	KOGANEI
K014	六角穴付テーパネジプラグ	TAPERED PIPE PLUGS	Type GM 1/8-28	1	GOSHO
L71620 U32B		回転工具 2 本駆動装置 2 ROTARY TOOLS DRIVING DEVICE		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	FAN4	ファンモータ	FAN MOTOR	LCH04-A02 -S12D20-TWCS 120□x38t	1	STYLE ELECTRONICS
KBT002		六角穴付ボルト	BOLT	M4x50	4	
KBT003		ファンガード	FAN GUARD	SG-12001T	1	STYLE ELECTRONICS
KCT001	MS3	サーボモータ	SERVO MOTOR	HF75K-S1-A48	1	MITSUBISHI ELECTRIC
KWT001		光ケーブル	OPTICAL CABLE	PF-2HB209- 0.15M-F-1	1	JAE
WT101		工具主軸モータ動力ケーブル	CABLE		1	
WT102		工具主軸モータ信号ケーブル	CABLE		1	
WT103		ファンケーブル	CABLE		1	
WT105		ファンセンサーケーブル	CABLE		1	
KWT101	CNPS3	コネクタ	CONNECTOR	MS3106A18- 10S (D190)	1	DDK
KWT102	CNSS3	コネクタ	CONNECTOR	MS3106A20- 29S (D190)	1	DDK
KWT103		防水アングルバックシェル	ANGLE BACK SHELL	CE-18BA-S (D265)	1	DDK
KWT104		防水アングルバックシェル	ANGLE BACK SHELL	CE-20BA-S	1	DDK
KWT105	U7CN31M	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC- TRONICS AMP
KWT106		コンタクト	CONTACT	316040-2	4	TYCO ELEC- TRONICS AMP
KWT107	U7CN2M	コネクタプラグ	CONNECTOR PLUG	54599-1019	1	MOLEX
KWT113		カップリング	COUPLING	N2KM-16-20	1	SANKEI
KWT114		サンフレキ	FLEXIBLE TUBE	NP#16 (1300m)	1	SANKEI
KWT115		サンフレキ	FLEXIBLE TUBE	NP#16 (1250m)	1	SANKEI
KWT117		カップリング	COUPLING	H2KM-16-18	1	SANKEI
L71620 U32B		回転工具 2 本駆動装置 2 ROTARY TOOLS DRIVING DEVICE			BT000 CT000 WT000 WT100	

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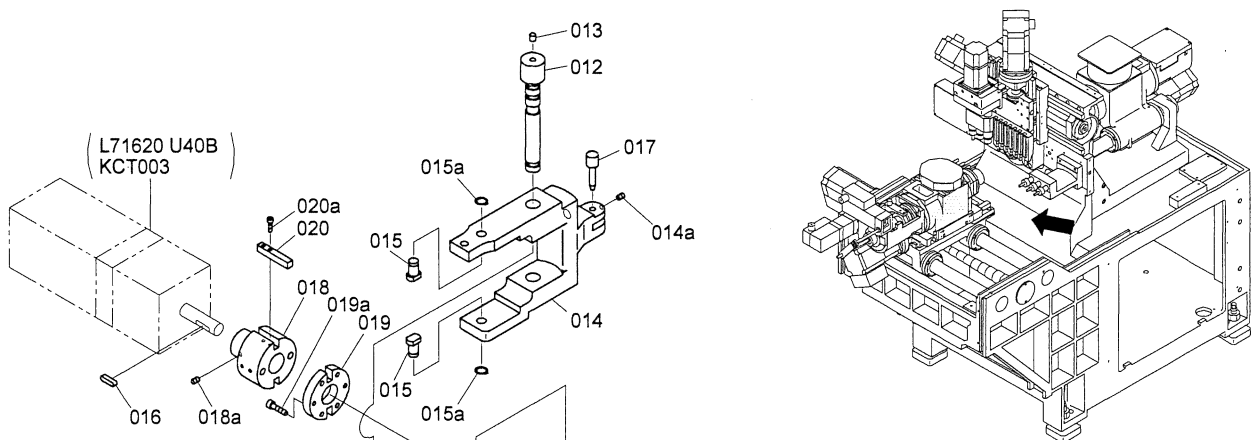
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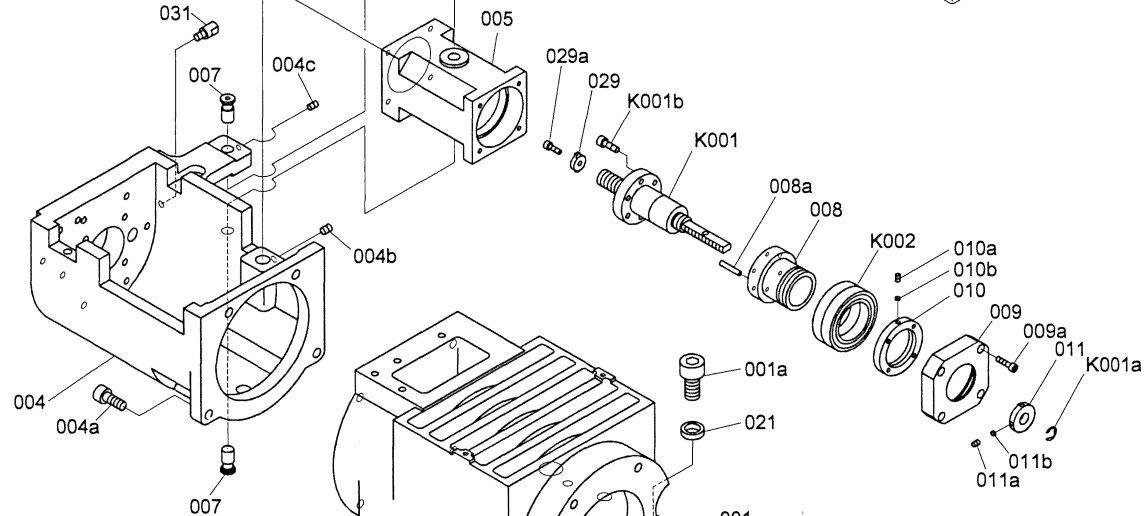
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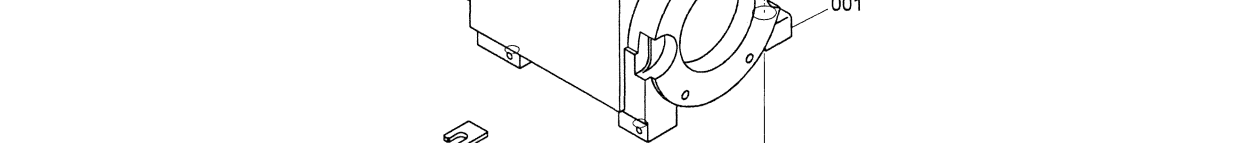
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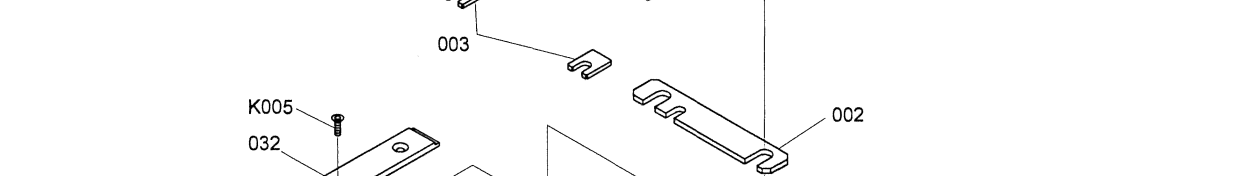
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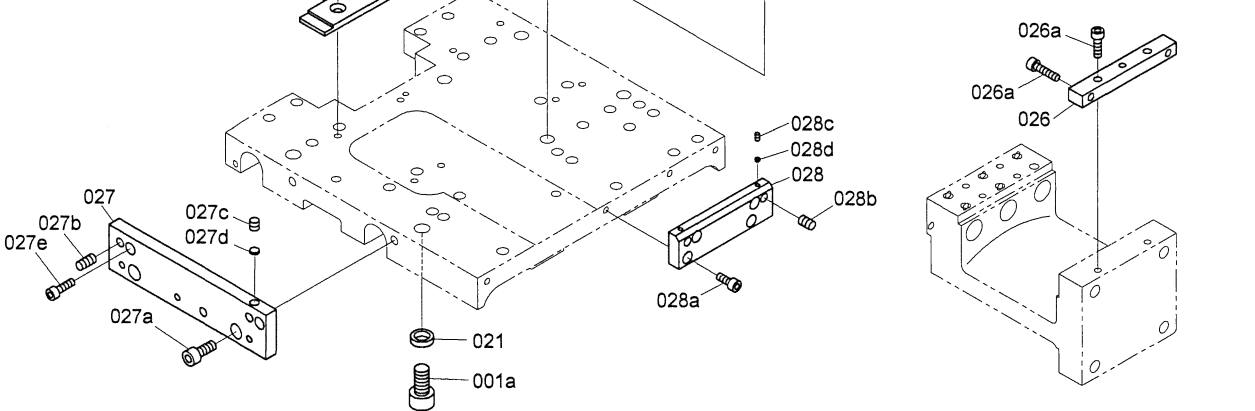
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U40B

背面主軸裝置/背面主軸台
BACK SPINDLE DEVICE/HEADSTOCK

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	背面主軸台	BACK SPINDLE		1	
001a	六角穴付ボルト	BOLT	M12x50	4	
002	スペーサー	SPACER		1	
003	スペーサー	SPACER		2	
004	背面主軸台ブラケット	BACK SPINDLE BRACKET		1	
004a	六角穴付ボルト	BOLT	M8x20	4	
004b	六角穴付止メネジ (平先)	SET SCREW	M6x8	1	
004c	六角穴付止メネジ (平先)	SET SCREW	M5x8	2	
005	ハウジング	HOUSING		1	
007	ピボット	PIVOT		2	
008	ホルダー	HOLDER		1	
008a	平行ピン	PIN	ø4x22	2	
009	ベアリング押え	FLANGE		1	
009a	六角穴付ボルト	BOLT	M4x16	4	
010	ナット (JIS1 級ネジ)	NUT		1	
010a	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
010b	真チュウ座	SEAT	M4	1	
011	ストッパー	STOPPER		1	
011a	六角穴付止メネジ (平先)	SET SCREW	M3x6	2	
011b	真チュウ座	SEAT	M3	2	
012	レバー軸	LEVER SHAFT		1	
013	塞ぎ栓	PLUG		2	
014	チャッキングレバー	CHUCKING LEVER		1	
014a	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
015	チャック作動ピン	PIN		2	
015a	軸用 C トメワ	RETAINING RING (C TYPE)	8	2	
016	キー	KEY		1	
017	連結軸	CONNECTING SHAFT		1	
018	カップリング	COUPLING		1	
018a	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
019	フランジ	FLANGE		1	
019a	六角穴付ボルト	BOLT	M4x20	4	
020	キー	KEY		2	
020a	六角穴付ボルト	BOLT	M3x10	4	
021	座金	WASHER		4	
026	位置決めブロック	POSITIONING BLOCK		1	
026a	六角穴付ボルト	BOLT	M6x25	5	
027	調整プレート	ADJUSTING PLATE		1	
027a	六角穴付ボルト	BOLT	M8x20	2	
027b	六角穴付止メネジ (平先)	SET SCREW	M8x16	2	
027c	六角穴付止メネジ (平先)	SET SCREW	M6x8	2	
027d	真チュウ座	SEAT	M6	2	
027e	六角穴付ボルト	BOLT	M6x20	2	
L71620 U40B		背面主軸装置/背面主軸台 BACK SPINDLE DEVICE/HEADSTOCK		000	

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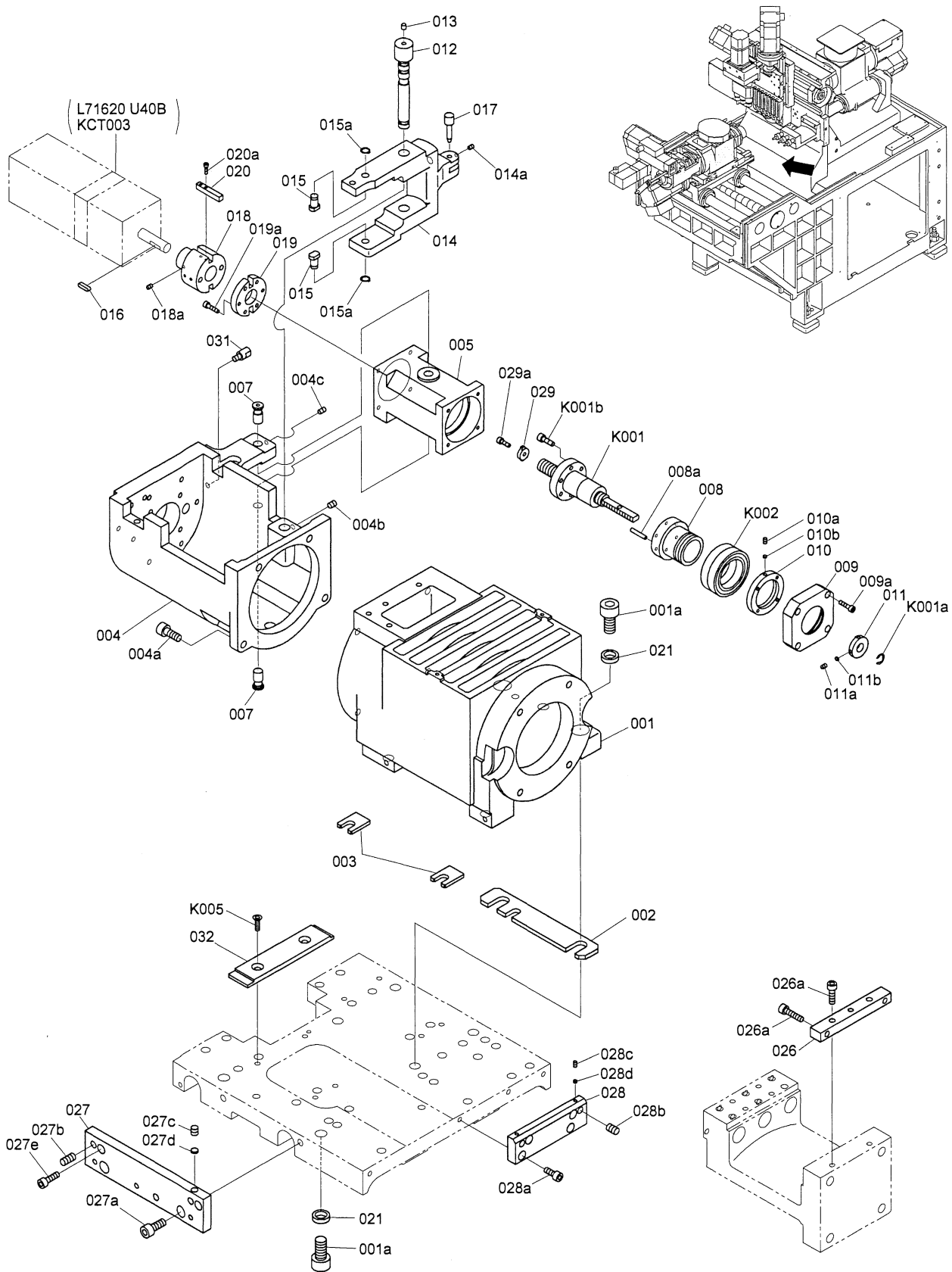
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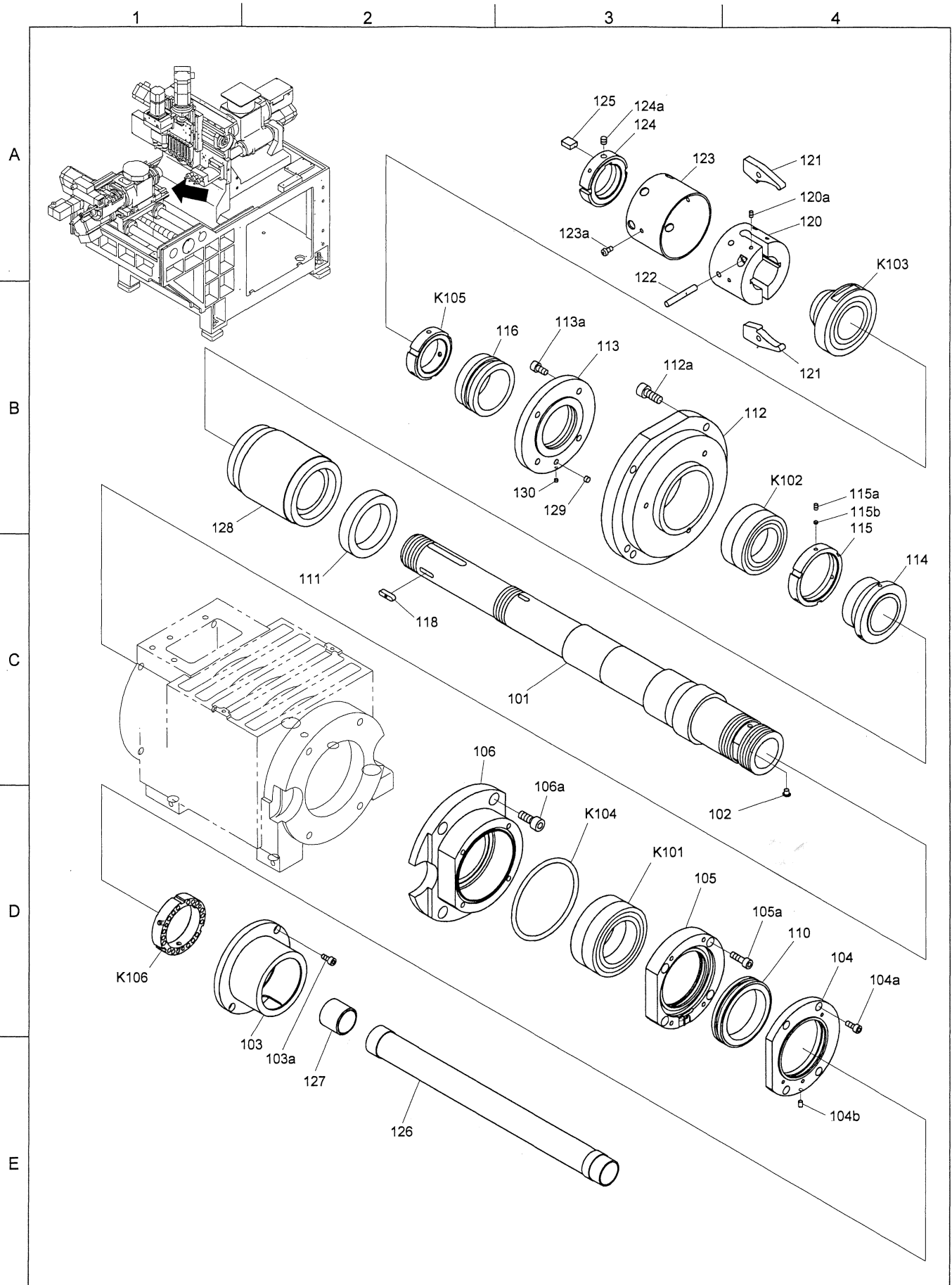


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背面主軸裝置/背面主軸台
BACK SPINDLE DEVICE/HEADSTOCK

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
028	調整ブロック	ADJUSTING BLOCK		1	
028a	六角穴付ボルト	BOLT	M6x15	4	
028b	六角穴付止メネジ (平先)	SET SCREW	M8x12	2	
028c	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
028d	真チュウ座	SEAT	M4	2	
029	カラー	COLLAR		1	
029a	六角穴付ボルト	BOLT	M4x12	1	
031	ストッパー駒	STOPPER BLOCK		1	
032	防油プレート	SPLASH PLATE		1	
K001	転造ボールネジ (予圧タイプ)	BALL SCREW	HJPF1404-4RRG0+137LT	1	THK
K001a	E トメワ	RETAINING RING (E TYPE)	8	1	
K001b	六角穴付ボルト	BOLT	M5x20	4	
K002	アンギュラ玉軸受	BEARING	7907T2DB /GMP5	1 set	NTN
K005	六角穴付皿ボルト	COUNTER SUNK BOLT	M6x12	2	GOSHO
L71620 U40B		背面主軸装置/背面主軸台 BACK SPINDLE DEVICE/HEADSTOCK		000	

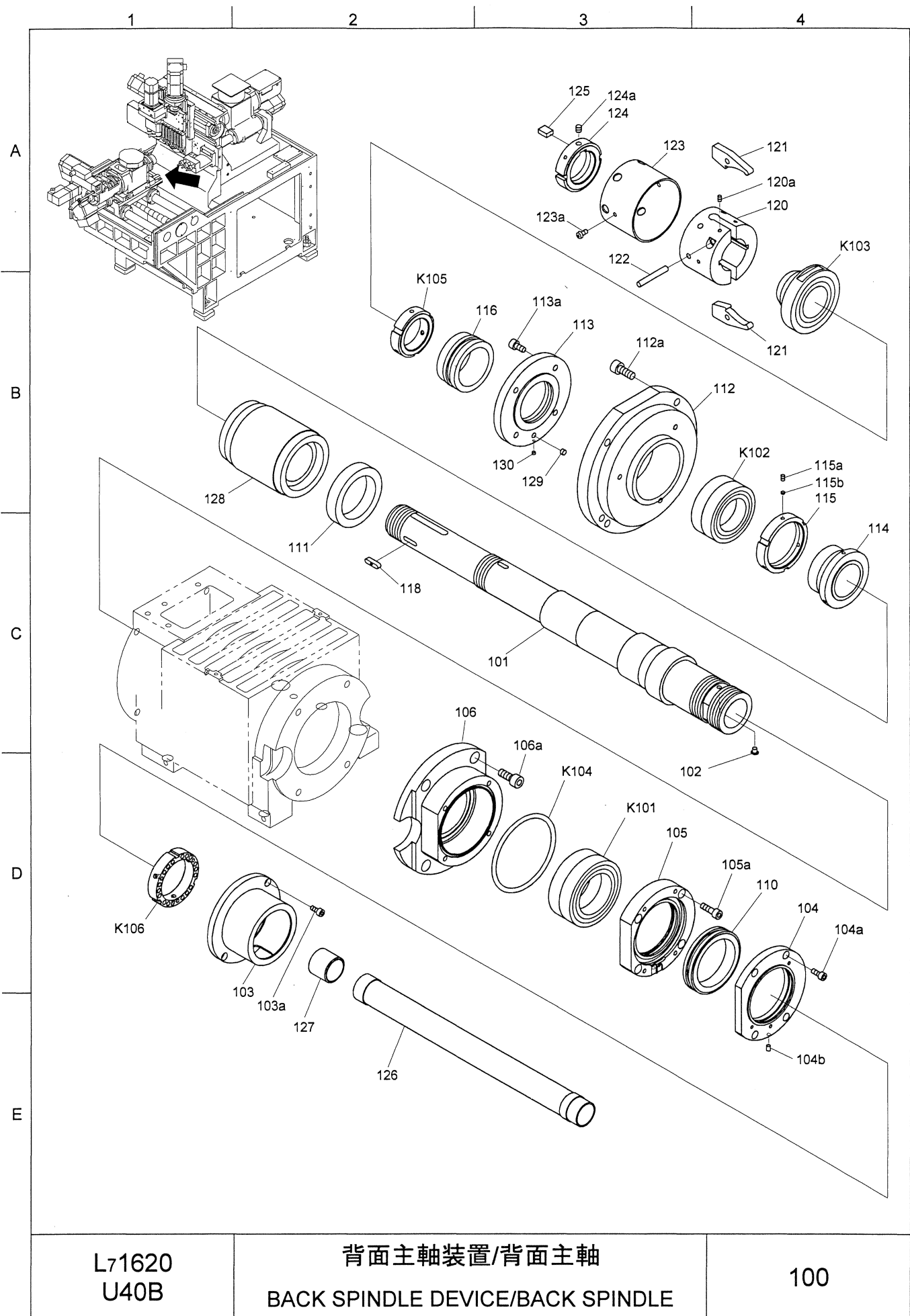


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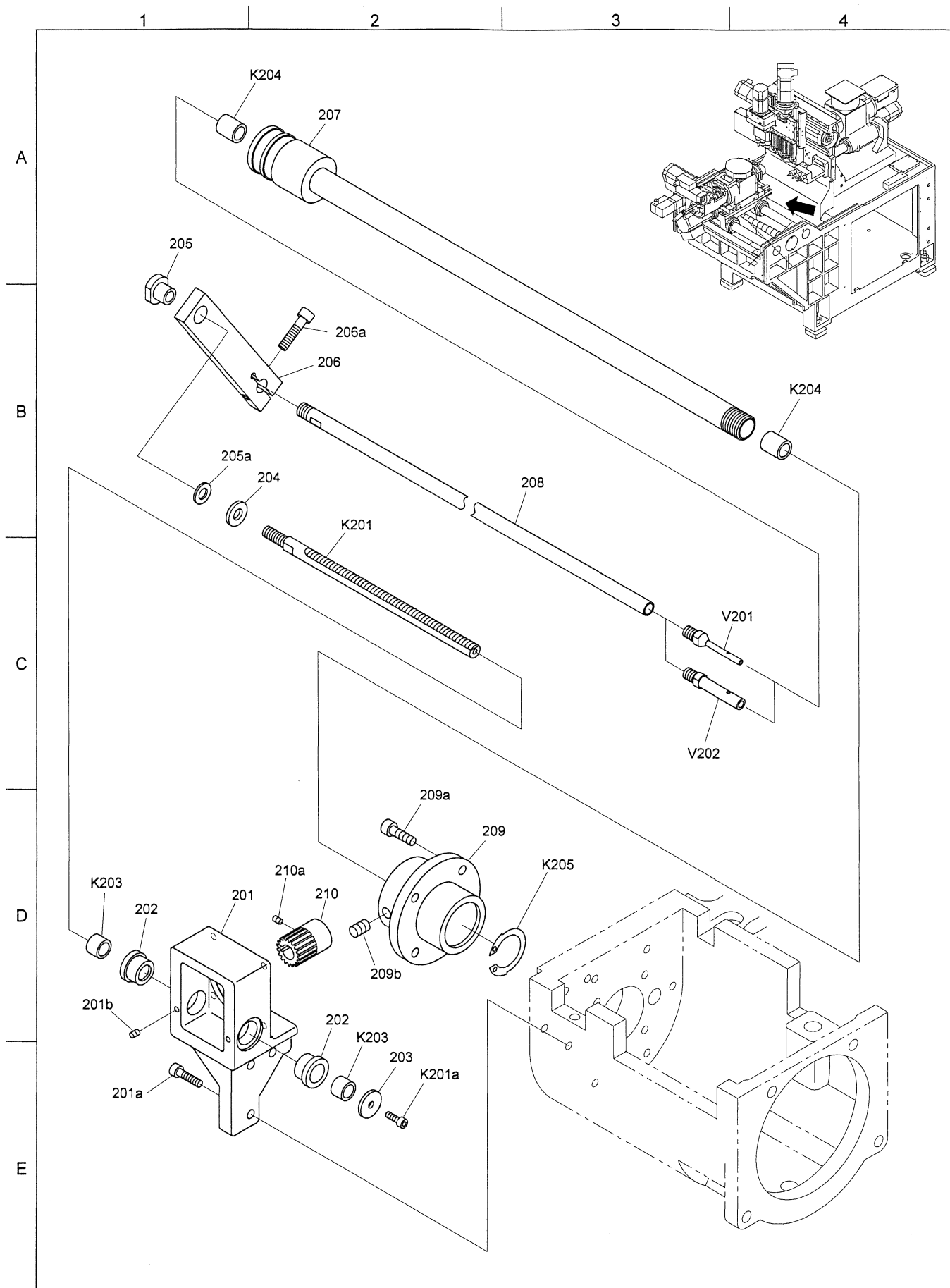
背面主軸裝置/背面主軸
BACK SPINDLE DEVICE/BACK SPINDLE

100

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
101	主軸	HEAD		1	
102	キーピン	KEY PIN		1	
103	主軸キャップ	HEAD CAP		1	
103a	六角穴付ボルト	BOLT	M4x10	2	
104	シールフランジ	SEAL FLANGE		1	
104a	六角穴付ボルト	BOLT	M5x12	4	
104b	塞ぎ栓	PLUG	ø4.2x6	1	
105	ベアリング押え	FLANGE		1	
105a	六角穴付ボルト	BOLT	M6x20	4	
106	ハウジング (前)	HOUSING (FRONT)		1	
106a	六角穴付ボルト	BOLT	M8x20	4	
110	スペーサー	SPACER		1	
111	バランスリング	BALANCE RING		1	
112	ハウジング (後)	HOUSING (REAR)		1	
112a	六角穴付ボルト	BOLT	M8x20	4	
113	シールフランジ	SEAL FLANGE		1	
113a	六角穴付ボルト	BOLT	M6x12	4	
114	エンコーダリング	ENCODER RING		1	
115	ナット (JIS1 級ネジ)	NUT		1	
115a	六角穴付止メネジ (平先)	SET SCREW	M4x5	3	
115b	真チュウ座	SEAT	M4	3	
116	スペーサー	SPACER		1	
118	キー	KEY		2	
120	チャック爪ホルダー	CHUCK FINGER HOLDER		1	
120a	六角穴付止メネジ (平先)	SET SCREW	M4x5	4	
121	チャック作動爪	FINGER		2	
122	レバー軸	LEVER SHAFT		2	
123	リングカバー	RING COVER		1	
123a	平小ネジ	SCREW	M4x8	2	
124	ナット (JIS1 級ネジ)	NUT		1	
124a	六角穴付止メネジ (平先)	SET SCREW	M6x6	1	
125	ネジ座	LOCK KEY		1	
126	中間スリーブ	SLEEVE		1	
127	バランススリーブ	SLEEVE		1	
128	ローター	ROTOR		1	
129	塞ぎ栓	PLUG		1	
130	塞ぎ栓	PLUG		1	
L71620 U40B		背面主軸装置/背面主軸 BACK SPINDLE DEVICE/BACK SPINDLE		100	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
K101	高速組合せアンギュラ玉軸受	BEARING	7010CD /P4ADBB	1 set	SKF
K102	高速組合せアンギュラ玉軸受	BEARING	7008CD /P4ADBA	1 set	SKF
K103	ボビン	BOBBIN	38BCV07S1- 2NKE	1	NACHI
K104	O リング	O-RING	S85	1	NOK
K105	(特)ロックナット	LOCK NUT	FZMV40x1.5SP	1	FUKUDA
K106	(特)ロックナット	LOCK NUT	FZMV50x1.5 SP-B	1	FUKUDA
L71620 U40B		背面主軸装置/背面主軸 BACK SPINDLE DEVICE/BACK SPINDLE		100	

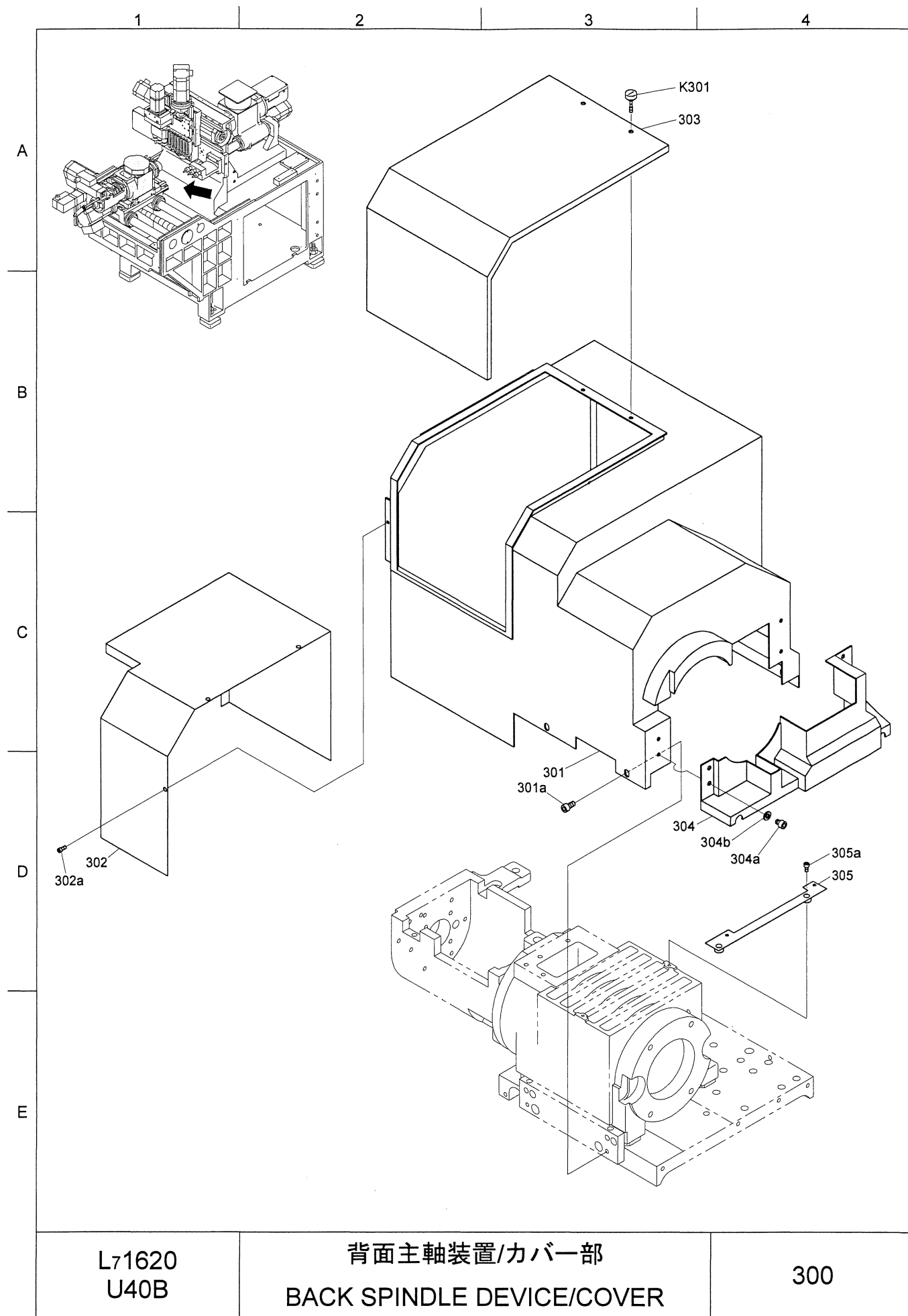


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U40B

背面主軸装置/ノックアウト部
BACK SPINDLE DEVICE/KNOCK-OUT

200

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
201	モーターブラケット	MOTOR BRACKET		1	
201a	六角穴付ボルト	BOLT	M5x20	3	
201b	六角穴付止メネジ (平先)	SET SCREW	M4x6	2	
202	軸受ホルダー	BEARING HOLDER		2	
203	座金	WASHER		1	
204	座金	WASHER		1	
205	連結駒	CONNECTING BLOCK		1	
205a	平座金	WASHER	M8	1	
206	連結板	CONNECTING PLATE		1	
206a	六角穴付ボルト	BOLT	M6x25	1	
207	ガイドスリーブ	GUIDE SLEEVE		1	
208	ノックアウトパイプ	KNOCK-OUT PIPE		1	
209	フランジ	FLANGE		1	
209a	六角穴付ボルト	BOLT	M6x20	4	
209b	六角穴付止メネジ (平先)	SET SCREW	M8x10	2	
210	平歯車	GEAR		1	
210a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
K201	SROS 丸ラック S タイプ	SROS ROUND RACK (S TYPE)	SROS1-500	1	KOHARA GEAR INDUSTRY
K201a	六角穴付ボルト	BOLT	M4x12	1	
K203	含油軸受	BEARING	S10x14x10	2	NTN
K204	含油軸受	BEARING	S10x14x16	2	NTN
K205	インバーテッドリング		IRTW34	1	OCHIAI
V201	ノックアウト治具	KNOCK-OUT JIG		1	
V202	ノックアウト治具	KNOCK-OUT JIG		1	
L71620 U40B		背面主軸装置/ノックアウト部 BACK SPINDLE DEVICE/KNOCK-OUT		200	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
301	背面主軸台カバー (1)	BACK SPINDLE COVER (1)		1	
301a	六角穴付ボルト	BOLT	M6x10	3	
302	背面主軸台カバー (2)	BACK SPINDLE COVER (2)		1	
302a	六角穴付ボルト	BOLT	M4x6	3	
303	フタ	LID		1	
304	背面主軸台カバー (3)	BACK SPINDLE COVER (3)		1	
304a	六角穴付ボルト	BOLT	M4x6	4	
304b	平座金	WASHER	M4	4	
305	ファン取付ブラケット	BRACKET		1	
305a	六角穴付ボルト	BOLT	M4x8	2	
K301	ナールドノブ	KNOB	KS15x10A	2	IMAO MFG
L71620 U40B		背面主軸装置/カバー部 BACK SPINDLE DEVICE/COVER		300	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
KN001	ウレタンチューブ	TUBE	U4-B	2m	KOGANEI
KN002	ウレタンチューブ	TUBE	U6-B	2m	KOGANEI
KN003	クイック継手	QUICK JOINT	TL4-M6M	1	KOGANEI
KN004	クイック継手	QUICK JOINT	UYD6-4	1	KOGANEI
KN005	エルボ	ELBOW	PH4	1	SHOWA YUKI
KN006	締付プラグ	PLUG	PA4	2	SHOWA YUKI
KN007	スリーブ	SLEEVE	PB4	2	SHOWA YUKI
KN008	アルミパイプ	PIPE	ALP4	1m	SHOWA YUKI
KN009	ニップル	NIPPLE	PD4	1	SHOWA YUKI
KN010	クイック継手	QUICK JOINT	TSM4-01	1	KOGANEI
L71620 U40B		背面主軸装置 BACK SPINDLE DEVICE		N000	

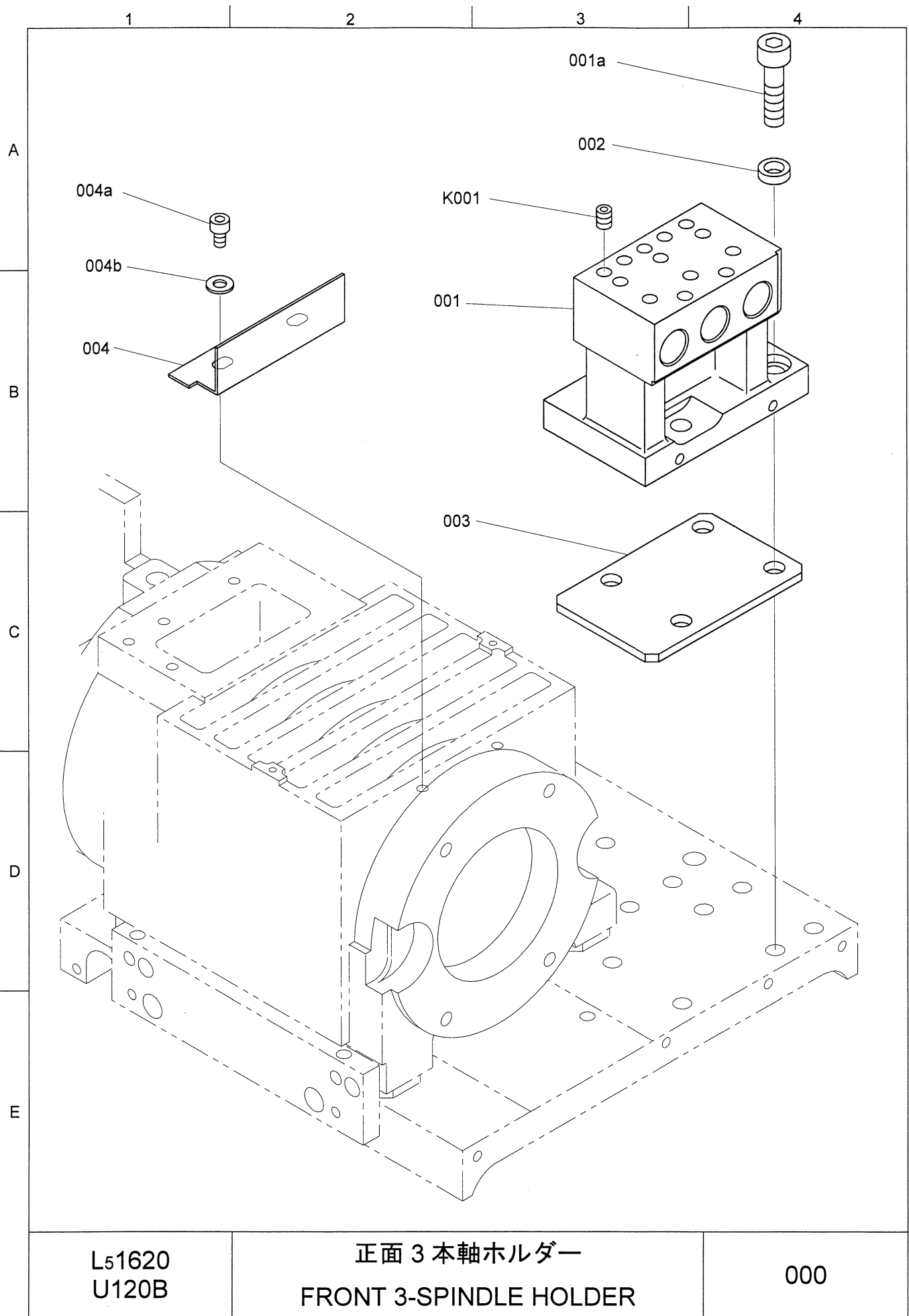
PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
KR201	フロープロパーユニット	FLOW PROPER UNIT	PST1	1	SHOWA
KR202	締付プラグ	PLUG	PA4	1	SHOWA
KR203	スリーブ	SLEEVE	PB4	2	SHOWA
KR204	プロパーナット	PROPER NUT	PAN4	1	SHOWA
KR205	アルミパイプ	PIPE	ALP4 0.5m	1	SHOWA
L71620 U40B		背面主軸装置 BACK SPINDLE DEVICE		R200	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	FAN5	ファンモータ	FAN MOTOR	LCH04-A02 -ZS15D20 -MWCS	1	STYLE ELECTRONICS
KBT001a		六角穴付ボルト	BOLT	M4x12	2	
KBT001b		平座金	WASHER	M4	2	
KBT002		フィンガーガード	FINGER GUARD	SG-150A	1	STYLE ELECTRONICS
KBT002a		六角穴付ボルト	BOLT	M4x16	2	
KBT002b		平座金	WASHER	M4	2	
KBT002c		ナット	NUT	M4	2	
KBT003	THP2	サーマルプロテクタ	THERMAL PROTECTOR	T70AR1U1	1	MATSUSHITA ELECTRIC
KBT004		エッジング	EDGING	CE-024 (170mm)	1	KITAGAWA INDUSTRY
KCT001	UNIT5	1 軸スピンドルアンブ モジュール	1-AXIS SPINDLE AMP. MODULE	MDS-D-SP-40	1	MITSUBISHI ELECTRIC
KCT002	M2	ビルトインスピンドルモータ	BUILT-IN SPINDLE MOTOR	SJ-2B4106T	1	MITSUBISHI ELECTRIC
SP1	(MS2)	主軸検出器	SENSOR	TS5691N1770	(1)	MITSUBISHI ELECTRIC
SP1a		六角穴付ボルト	BOLT	M4x8	2	
KCT003	MA1	AC サーボモータ	AC SERVO MOTOR	HF-KP23JK -S11	2	MITSUBISHI ELECTRIC
KCT009	UNIT8	3 軸一体サーボアンブ モジュール	3-AXIS INCORPORATION SERVO AMP. MODULE	MDS-D-V3 -202020	1	MITSUBISHI ELECTRIC
L71620 U40B		背面主軸装置 BACK SPINDLE DEVICE			BT000 CT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
FT001		中継ボックス	BOX		1	
FT001a		六角穴付ボルト	BOLT	M6x10	2	
FT001b		平座金	WASHER	M6	2	
FT001c		六角穴付ボルト	BOLT	M4x8	4	
FT002		中継ボックスフタ	COVER		1	
FT002a		パインド小ネジ	SCREW	M4x8	8	
FT003		アース用ボス	BOSS		1	
FT003a		六角穴付ボルト	BOLT	M6x20	1	
FT004		温度センサー固定板	PLATE		1	
FT005		配線ブラケット	BRACKET		1	
FT005a		皿小ネジ	SCREW	M6x16	2	
FT006		ケーブル固定板	PLATE		1	
FT006a		六角穴付ボルト	BOLT	M4x8	4	
KFT001	TB4	端子台	TERMINAL	L71620-TB3-0	1	KASUGA ELECTRIC
KFT002		NBR スポンジ	NBR SPONGE	t2.0xw10 (348mm)	2	BRIDGESTONE
KFT003		NBR スポンジ	NBR SPONGE	t2.0xw10 (83mm)	2	BRIDGESTONE
KFT004		NBR ゴム	NBR RUBBER	t1.0	1	TIGERS POLYMER
KFT005		シールワッシャー	SEAL WASHER	W4	12	KEEPER
KFT006		セムス B (小)	SCREW	M4x12	2	
KWT001		光ケーブル	OPTICAL CABLE	PF-2HB209- 0.15M-F-1	1	JAE
L71620 U40B		背面主軸装置 BACK SPINDLE DEVICE			FT000 WT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
WT101		背面主軸モータ動力ケーブル	CABLE		1	
WT102		背面主軸モータ信号ケーブル	CABLE		1	
WT103		ファンケーブル	CABLE		1	
WT104		アースケーブル	CABLE		1	
WT105		サーマルプロテクタ延長ケーブル	CABLE		1	
WT106		A2 軸モータ動力ケーブル	CABLE		1	
WT107		A2 軸モータ信号ケーブル	CABLE		1	
WT108		A3 軸モータ動力ケーブル	CABLE		1	
WT109		A3 軸モータ信号ケーブル	CABLE		1	
WT110		ファンセンサーケーブル	CABLE		1	
KWT101	M2CNPG	ハウジング	HOUSING	172169-1	1	TYCO ELEC- TRONICS AMP
KWT102		ピン	PIN	170363-1	7	TYCO ELEC- TRONICS AMP
KWT104	U9CN31S U9CN31M U9CN31L	ハウジング	HOUSING	1-179958-4	3	TYCO ELEC- TRONICS AMP
KWT105		コンタクト	CONTACT	316040-2	8	TYCO ELEC- TRONICS AMP
KWT106		コンタクト	CONTACT	316041-2	4	TYCO ELEC- TRONICS AMP
KWT107	U9CN2S U9CN2M U9CN2L	コネクタプラグ	CONNECTOR PLUG	54593-1011	3	MOLEX
KWT108		プラグカバーA	PLUG COVER A	54594-1015	3	MOLEX
KWT109		プラグカバーB	PLUG COVER B	54595-1005	3	MOLEX
KWT110		シェルカバー	SHELL COVER	58935-1000	3	MOLEX
KWT111		シェルボディー	SHELL BODY	58934-1000	3	MOLEX
KWT112		ケーブルクランプ	CABLE CLAMP	58937-0000	3	MOLEX
KWT113		ストレートコネクタ	CONNECTOR	N2BG32	1	SANKEI
KWT114		回転型コネクタ	ROTARY CONNECTOR	N2RBG32	2	SANKEI
KWT115		サンフレキ	FLEXIBLE TUBE	NP#32 (1020m)	1	SANKEI
KWT116		サンフレキ	FLEXIBLE TUBE	NP#32 (1040m)	1	SANKEI
KWT117	CNPA2 CNPA3	ハウジング	HOUSING	JN4FT04SJ1	2	JAE
KWT118		コンタクト	CONTACT	ST-TMH-S-C1B -100- (A534G)	8	JAE
KWT119	CNSA2 CNSA3	コネクタ	CONNECTOR	1674320-1	2	TYCO ELEC- TRONICS AMP
KWT120		コンタクト	CONTACT	1674333-1	18	TYCO ELEC- TRONICS AMP
L71620 U40B		背面主軸装置 BACK SPINDLE DEVICE			WT100	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KWT121		絶縁キャップ	INSULATED CAP	OA-QM5	3	OHM ELECTRIC
KWT122		絶縁キャップ	INSULATED CAP	OA-QM4	2	OHM ELECTRIC
KWT123		キャプコン	CAPCON	OA-W15M-07	1	OHM ELECTRIC
L71620 U40B		背面主軸装置 BACK SPINDLE DEVICE			WT100	

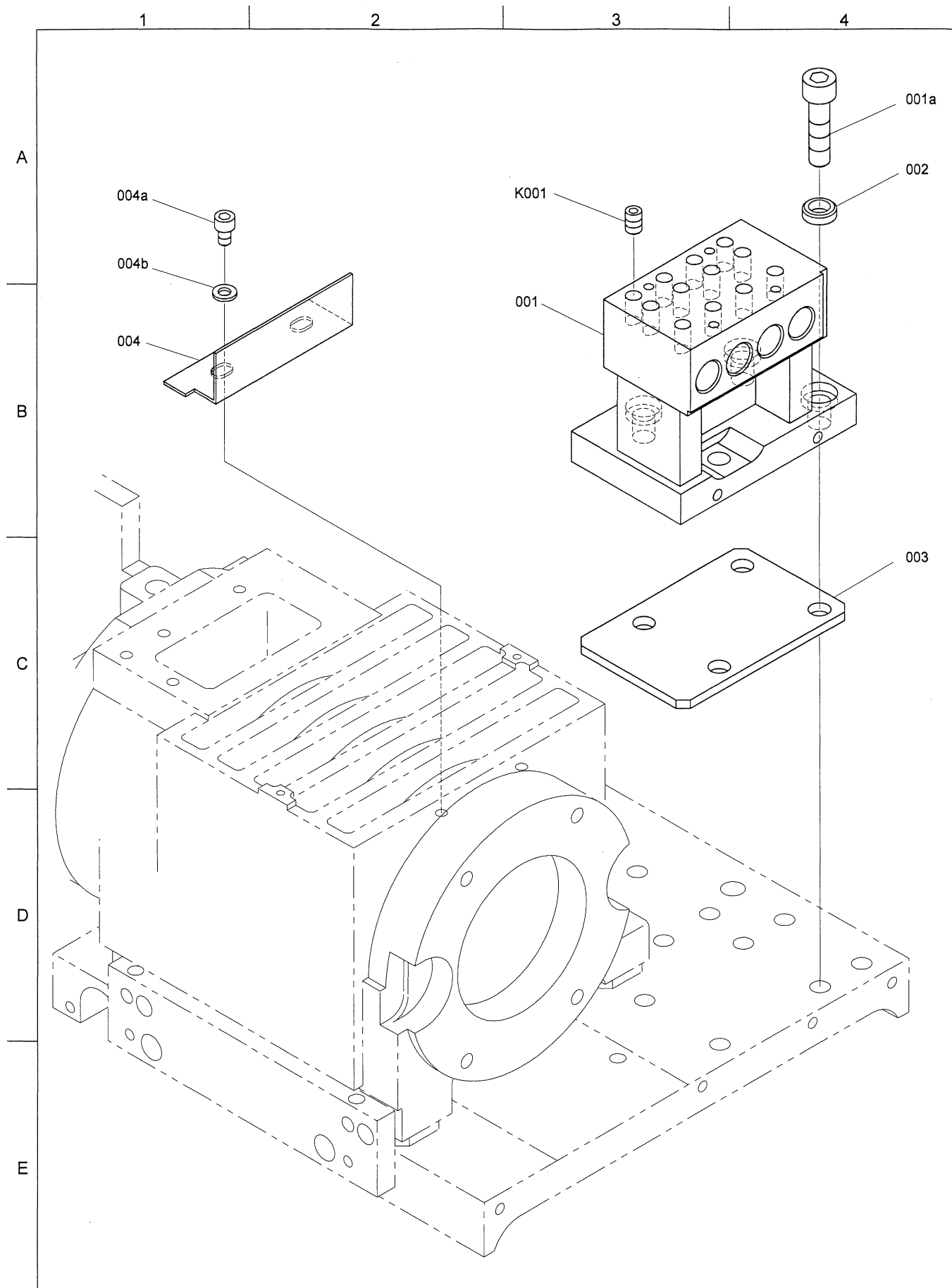


PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	3 本軸ホルダー	3-SPINDLE HOLDER		1	
001a	六角穴付ボルト	BOLT	M10x40	4	
002	座金	WASHER		4	
003	スペーサー	SPACER		1	
004	防油板	SPLASH PLATE		1	
004a	六角穴付ボルト	BOLT	M6x10	2	
004b	平座金	WASHER	M6	2	
K001	エーストップ	SET SCREW	ASF812	9	JEC INDUSTRY
L51620 U120B		正面 3 本軸ホルダー FRONT 3-SPINDLE HOLDER		000	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	本体	BODY		1	
001a	六角穴付ボルト	BOLT	M10x40	3	
001b	六角ボルト	BOLT	M10x40	1	
002	スペーサー	SPACER		1	
003	スペーサー	SPACER		1	
004	ギヤボックス	GEAR BOX		1	
004a	六角穴付ボルト	BOLT	M6x25	4	
004b	平行ピン	PIN	ø6x12	1	
004c	六角穴付ボルト	BOLT	M5x12	2	
005	平歯車	GEAR		1	
005a	六角穴付止メネジ (平先)	SET SCREW	M5x6	2	
006	平歯車	GEAR		1	
007	アイドルギヤ	GEAR		1	
008	スペーサー	SPACER		1	
009	キー	KEY		1	
010	座金	WASHER		3	
011	座金	WASHER		1	
012	キャップ	CAP		2	
013	モータープレート	MOTOR PLATE		1	
013a	六角穴付ボルト	BOLT	M5x16	4	
013b	六角穴付ボルト	BOLT	M5x12	2	
014	片ロスパナ	WRENCH		1	
015	位置決めピン	POSITIONING PIN		1	
016	注意銘板 (和文用)	CAUTION PLATE (J)		1	
017	注意銘板 (英文用)	CAUTION PLATE (E)		1	
K001	深ミゾ玉軸受	BALL BEARING	6900LLU	2	NTN
K002	エーストップ	SET SCREW	ASF812	7	JEC INDUSTRY
K003	O リング	O-RING	P20	2	NOK
K004	波ワッシャー	WAVE WASHER	BWW-608	1	OCHIAI
K005	六角穴付ボルト	BOLT	M8x8	2	GOSHO
K006	打込ネジ鉋	THUMBTACK	#0x4.8mm	4	TKS
FT001	配線ブラケット	WIRING BRACKET		1	
FT001a	六角穴付ボルト	BOLT	M6x10	4	
L71620 U121B		正面回転工具駆動装置 FRONT ROTARY TOOL DRIVING DEVICE		000 FT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	UNIT9	2 軸一体サーボアンプ モジュール	2-AXIS INCORPORATION SERVO AMP. MODULE	MDS-D-V2- 2020	1	mitsubishi ELECTRIC
KCT002	MS6	AC サーボモータ	AC SERVO MOTOR	HF-KP43JK-S6	1	mitsubishi ELECTRIC
WT101		回転工具モータ動力ケーブル	CABLE		1	
WT102		回転工具モータ信号ケーブル	CABLE		1	
KWT101	CNPS4	ハウジング	HOUSING	JN4FT04SJ1	(1)	JAE
KWT102		コンタクト	CONTACT	ST-TMH-S- C1B-100- (A534G)	(4)	JAE
KWT103	U8CN31M	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC- TRONICS AMP
KWT104		コンタクト	CONTACT	316040-2	4	TYCO ELEC- TRONICS AMP
KWT105	CNSS4	コネクタ	CONNECTOR	1674320-1	(1)	TYCO ELEC- TRONICS AMP
KWT106		コンタクト	CONTACT	1674333-1	(9)	TYCO ELEC- TRONICS AMP
KWT107	U8CN2M	コネクタプラグ	CONNECTOR PLUG	54593-1011	(1)	MOLEX
KWT108		プラグカバーA	PLUG COVER A	54594-1015	(1)	MOLEX
KWT109		プラグカバーB	PLUG COVER B	54595-1005	(1)	MOLEX
KWT110		シェルカバー	SHELL COVER	58935-1000	(1)	MOLEX
KWT111		シェルボディー	SHELL BODY	58934-1000	(1)	MOLEX
KWT112		ケーブルクランプ	CABLE CLAMP	58937-0000	(1)	MOLEX
KWT113		ストレートコネクタ	CONNECTOR	N2BG-25	1	SANKEI
KWT114		回転型コネクタ	CONNECTOR	N2RBG-25	1	SANKEI
KWT115		サンフレキ	FLEXIBLE TUBE	NP#25 (1180mm)	1	SANKEI
L71620 U121B		正面回転工具駆動装置 FRONT ROTARY TOOL DRIVING DEVICE			CT000 WT100	

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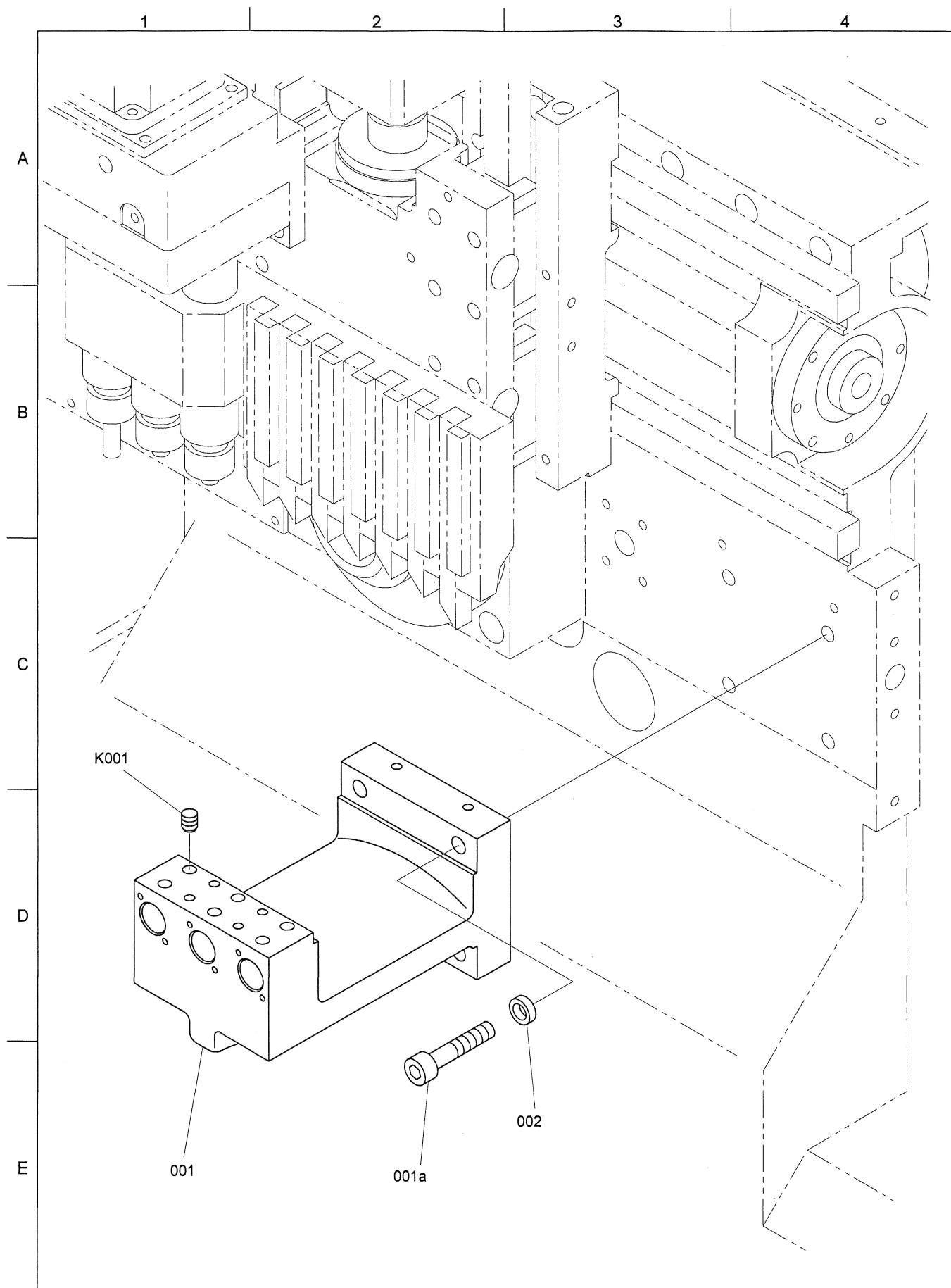


L71620
U122B

正面 4 本軸ホルダー
FRONT 4-SPINDLE HOLDER

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	4 本軸ホルダー	4-SPINDLE HOLDER		1	
001a	六角穴付ボルト	BOLT	M10x40	4	
002	座金	WASHER		4	
003	スペーサー	SPACER		1	
004	防油板	SPLASH PLATE		1	
004a	六角穴付ボルト	BOLT	M6x10	2	
004b	平座金	WASHER	M6	2	
K001	エーストップ	SET SCREW	ASF812	12	JEC INDUSTRY
L71620 U122B		正面 4 本軸ホルダー FRONT 4-SPINDLE HOLDER		000	

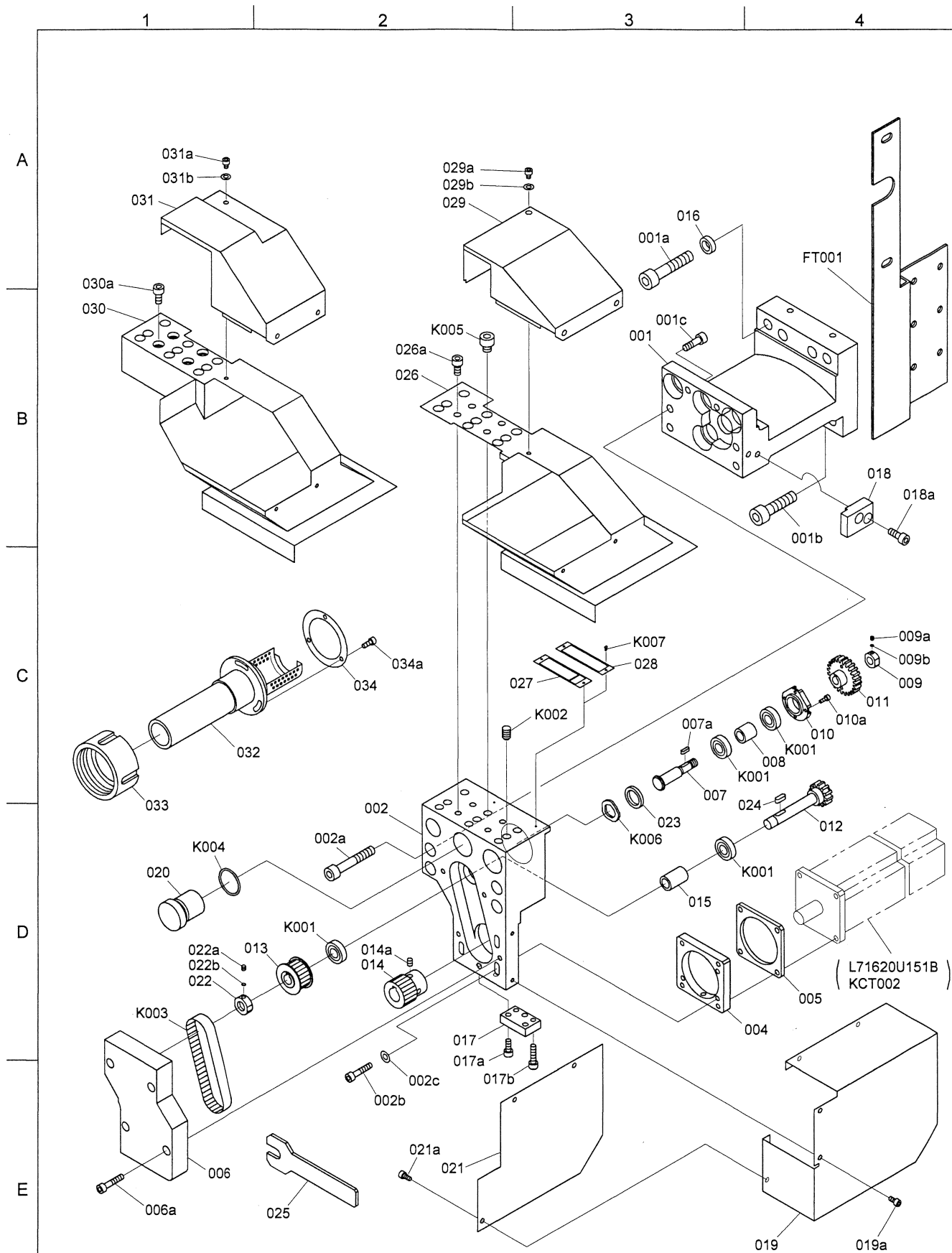


L51620
U150B

背面 3 本軸ホルダー
BACK 3-SPINDLE HOLDER

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	背面 3 本軸ホルダー	BACK 3-SPINDLE HOLDER		1	
001a	六角穴付ボルト	BOLT	M10x50	4	
002	座金	WASHER		4	
K001	エーストップ	SET SCREW	ASF812	6	JEC INDUSTRY
L51620 U150B		背面 3 本軸ホルダー BACK 3-SPINDLE HOLDER		000	

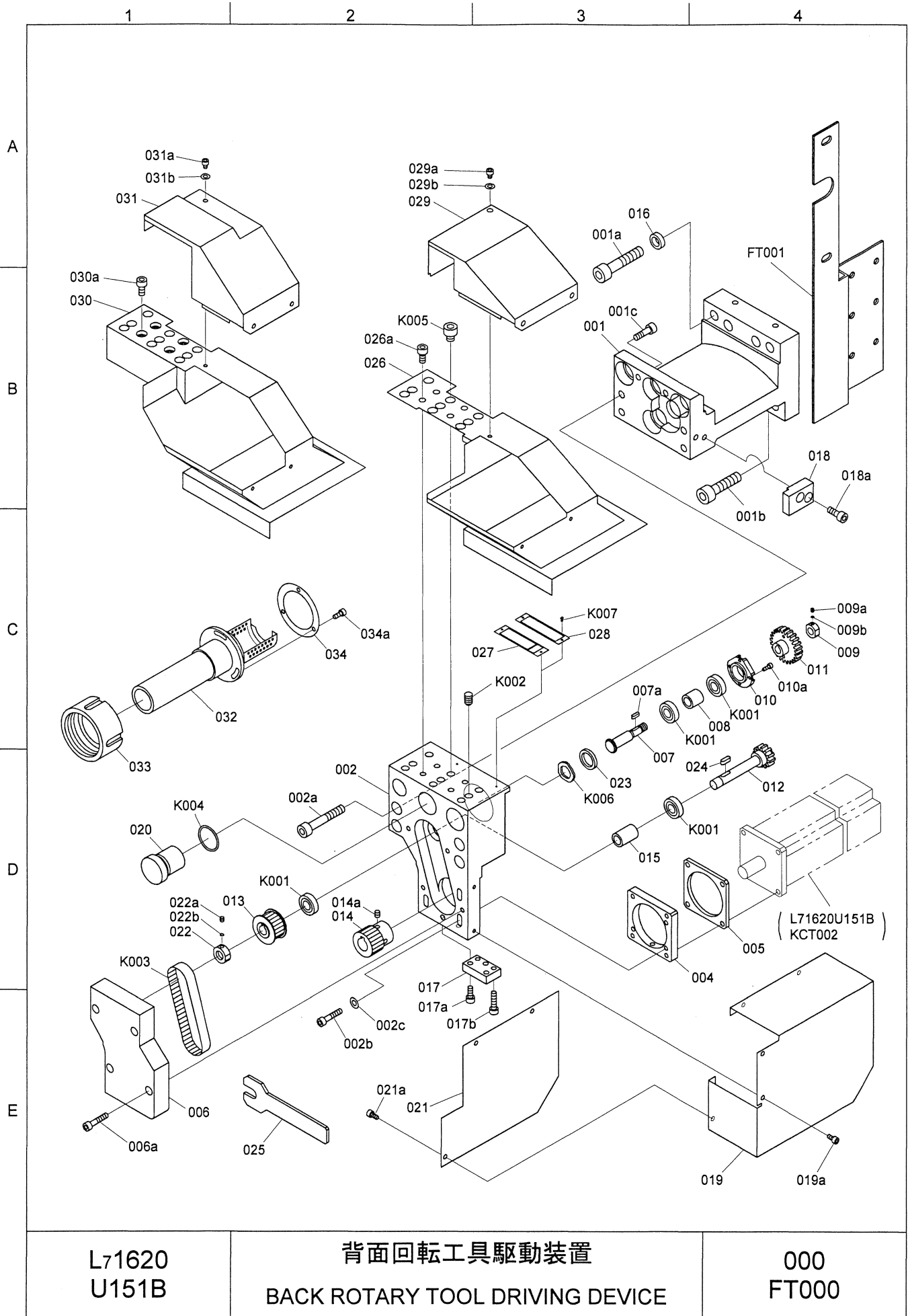


L71620
U151B

背面回転工具駆動装置
BACK ROTARY TOOL DRIVING DEVICE

000
FT000

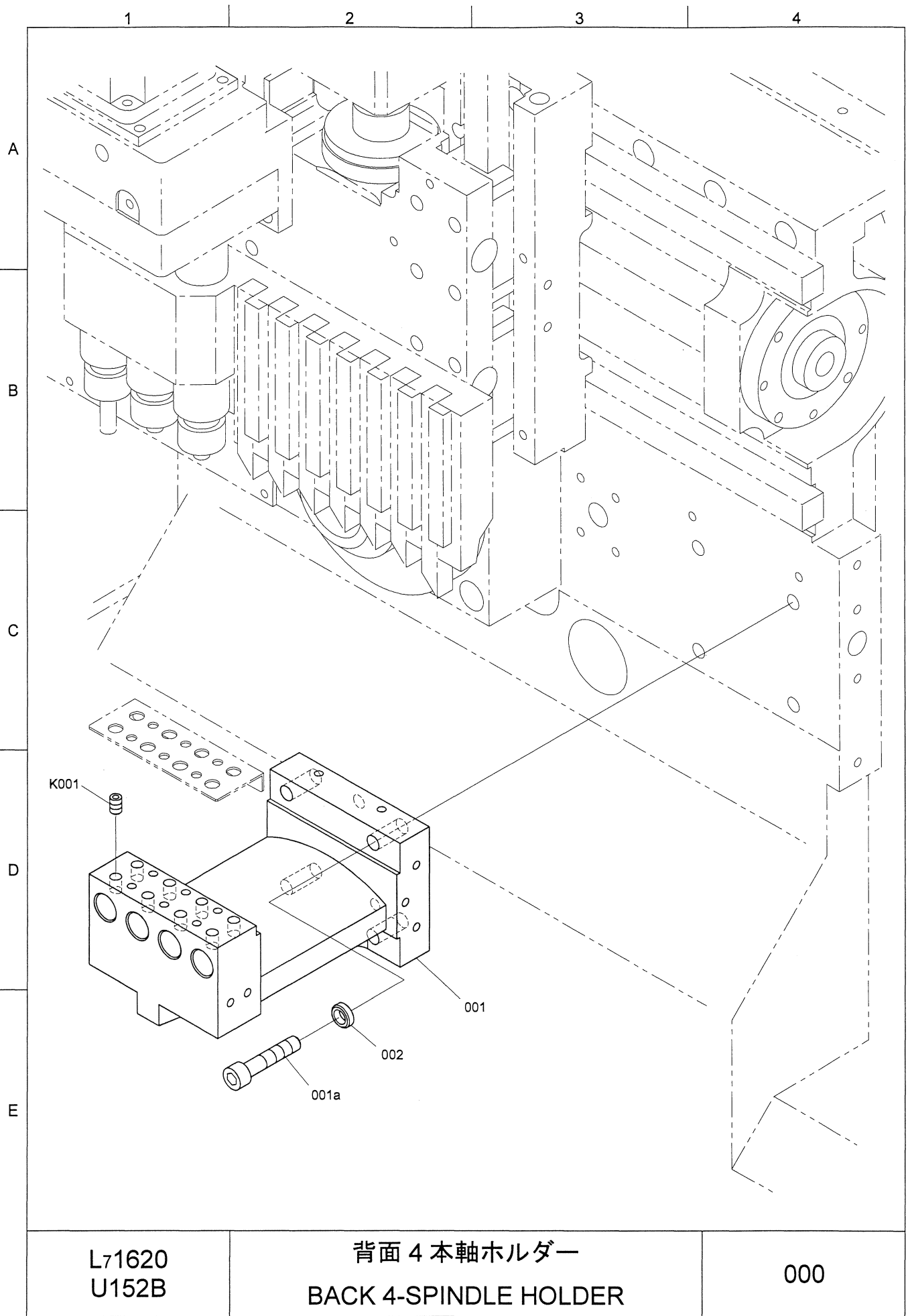
PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ベース	BASE		1	
001a	六角穴付ボルト	BOLT	M10x50	3	
001b	六角穴付ボルト	BOLT	M10x40	1	
001c	六角穴付ボルト	BOLT	M6x20	2	
002	3 本軸ヘッド	HEAD		1	
002a	六角穴付ボルト	BOLT	M8x50	4	
002b	六角穴付ボルト	BOLT	M5x25	3	
002c	平座金	WASHER	M5	3	
004	プレート	PLATE		1	
005	スペーサー	SPACER		1	
006	カバー	COVER		1	
006a	六角穴付ボルト	BOLT	M5x25	4	
007	軸	SHAFT		1	
007a	キー (両丸)	KEY	3x3x10	1	
008	スペーサー	SPACER		1	
009	ナット	NUT		1	
009a	六角穴付止メネジ (平先)	SET SCREW	M3x3	1	
009b	真鍮座	SEAT	M3	1	
010	ベアリング押え	FLANGE		1	
010a	六角穴付ボルト	BOLT	M3x8	4	
011	平歯車	GEAR		1	
012	平歯車	GEAR		1	
013	タイミングプーリー	TIMING PULLEY		1	
014	モータープーリー	MOTOR PULLEY		1	
014a	六角穴付止メネジ (平先)	SET SCREW	M5x6	2	
015	スペーサー	SPACER		1	
016	座金	WASHER		4	
017	調整ブロック	ADJUSTING BLOCK		1	
017a	六角穴付ボルト	BOLT	M5x12	2	
017b	六角穴付ボルト	BOLT	M5x20	3	
018	位置決め駒	POSITIONING BLOCK		1	
018a	六角穴付ボルト	BOLT	M6x16	2	
019	カバー	COVER		1	
019a	六角穴付ボルト	BOLT	M4x8	2	
020	キャップ	CAP		2	
021	カバー	COVER		1	
021a	六角穴付ボルト	BOLT	M4x8	3	
022	ナット (JIS1 級)	NUT		1	
022a	六角穴付止メネジ (平先)	SET SCREW	M4x4	1	
022b	真鍮座	SEAT	M4	1	
023	スペーサー	SPACER		1	
024	キー	KEY		1	
025	片口スパナ	WRENCH		1	
026	製品シュート (1)	CHUTE (1)		1	
026a	六角穴付ボルト	BOLT	M6x10	4	
027	注意銘板 (和文用)	CAUTION PLATE (J)		1	
L71620 U151B	背面回転工具駆動装置 BACK ROTARY TOOL DRIVING DEVICE			000 FT000	



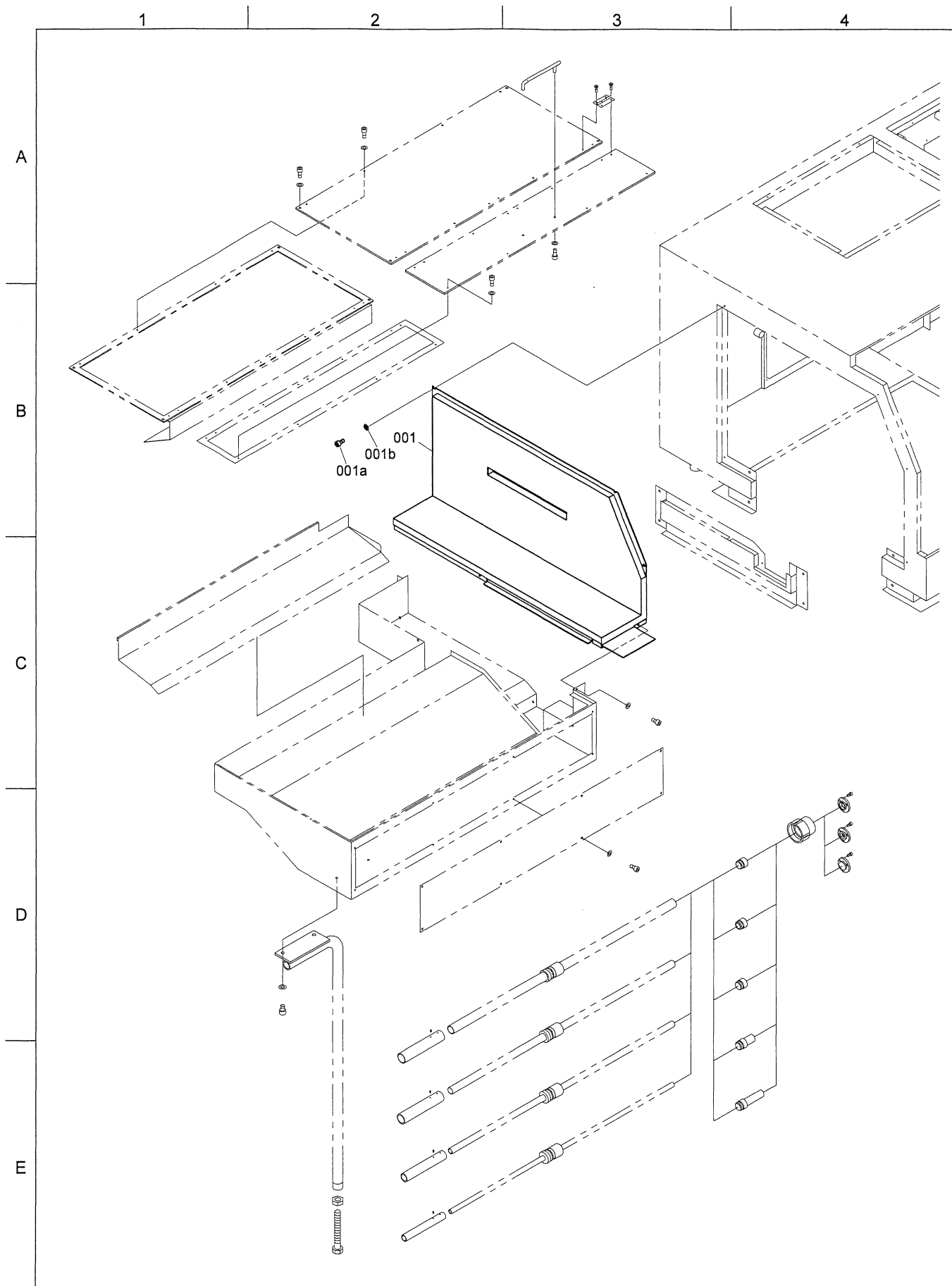
PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
028	注意銘板 (英文用)	CAUTION PLATE (E)		1	
029	フタ (1)	LID (1)		1	
029a	六角穴付ボルト	BOLT	M4x5	3	
029b	平座金	WASHER	M4	3	
030	製品シュート (2)	CHUTE (2)		1	
030a	六角穴付ボルト	BOLT	M6x12	4	
031	フタ (2)	LID (2)		1	
031a	六角穴付ボルト	BOLT	M4x5	3	
031b	平座金	WASHER	M4	3	
032	製品受けカゴ	RECEIVER		1	
033	ナット	NUT		1	
034	リングワッシャー	RING WASHER		1	
034a	六角穴付ボルト	BOLT	M4x10	3	
K001	ラジアル玉軸受	BEARING	6900LLU	4	NTN
K002	エーストップ	SET SCREW	ASF812	7	JEC INDUSTRY
K003	タイミングベルト	TIMING BELT	234-3GT-12	1	UNITTA
K004	O リング	O-RING	P20	2	NOK
K005	六角穴付ボルト	BOLT	M8x8	2	GOSHO
K006	波ワッシャー	WAVE WASHER	BWW-608	1	OCHIAI
K007	打込ネジ鉋	THUMB TACK	#0x4.8mm	2	TKS
FT001	配線ブラケット	WIRING BRACKET		1	
L71620 U151B		背面回転工具駆動装置 BACK ROTARY TOOL DRIVING DEVICE		000 FT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	UNIT9	2軸一体サーボアンプ	2-AXIS INCORPORATION	MDS-D-V2-	1	MITSUBISHI
		モジュール	SERVO AMP. MODULE	2020		ELECTRIC
KCT002	MS7	AC サーボモータ	AC SERVO MOTOR	HF-KP43JK	1	MITSUBISHI
				-S6		ELECTRIC
WT101		回転工具モータ動力ケーブル	CABLE		1	
WT102		回転工具モータ信号ケーブル	CABLE		1	
KWT101	CNPS6	ハウジング	HOUSING	JN4FT04SJ1	1	JAE
KWT102		コンタクト	CONTACT	ST-TMH-S-	4	JAE
				C1B-100-		
				(A534G)		
KWT103	U8CN31M	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC-
						TRONICS AMP
KWT104		コンタクト	CONTACT	316040-2	4	TYCO ELEC-
						TRONICS AMP
KWT105	CNSS6	コネクタ	CONNECTOR	1674320-1	1	TYCO ELEC-
						TRONICS AMP
KWT106		コンタクト	CONTACT	1674333-1	9	TYCO ELEC-
						TRONICS AMP
KWT107	U8CN2M	コネクタプラグ	CONNECTOR PLUG	54593-1011	1	MOLEX
KWT108		プラグカバーA	PLUG COVER A	54594-1015	1	MOLEX
KWT109		プラグカバーB	PLUG COVER B	54595-1005	1	MOLEX
KWT110		シェルカバー	SHELL COVER	58935-1000	1	MOLEX
KWT111		シェルボディー	SHELL BODY	58934-1000	1	MOLEX
KWT112		ケーブルクランプ	CABLE CLAMP	58937-0000	1	MOLEX
L71620 U151B		背面回転工具駆動装置 BACK ROTARY TOOL DRIVING DEVICE			CT000 WT100	

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	背面 4 本軸ホルダー	BACK 4-SPINDLE HOLDER		1	
001a	六角穴付ボルト	BOLT	M10x50	4	
002	座金	WASHER		4	
K001	エーストップ	SET SCREW	ASF812	8	JEC INDUSTRY
L71620 U152B		背面 4 本軸ホルダー BACK 4-SPINDLE HOLDER		000	

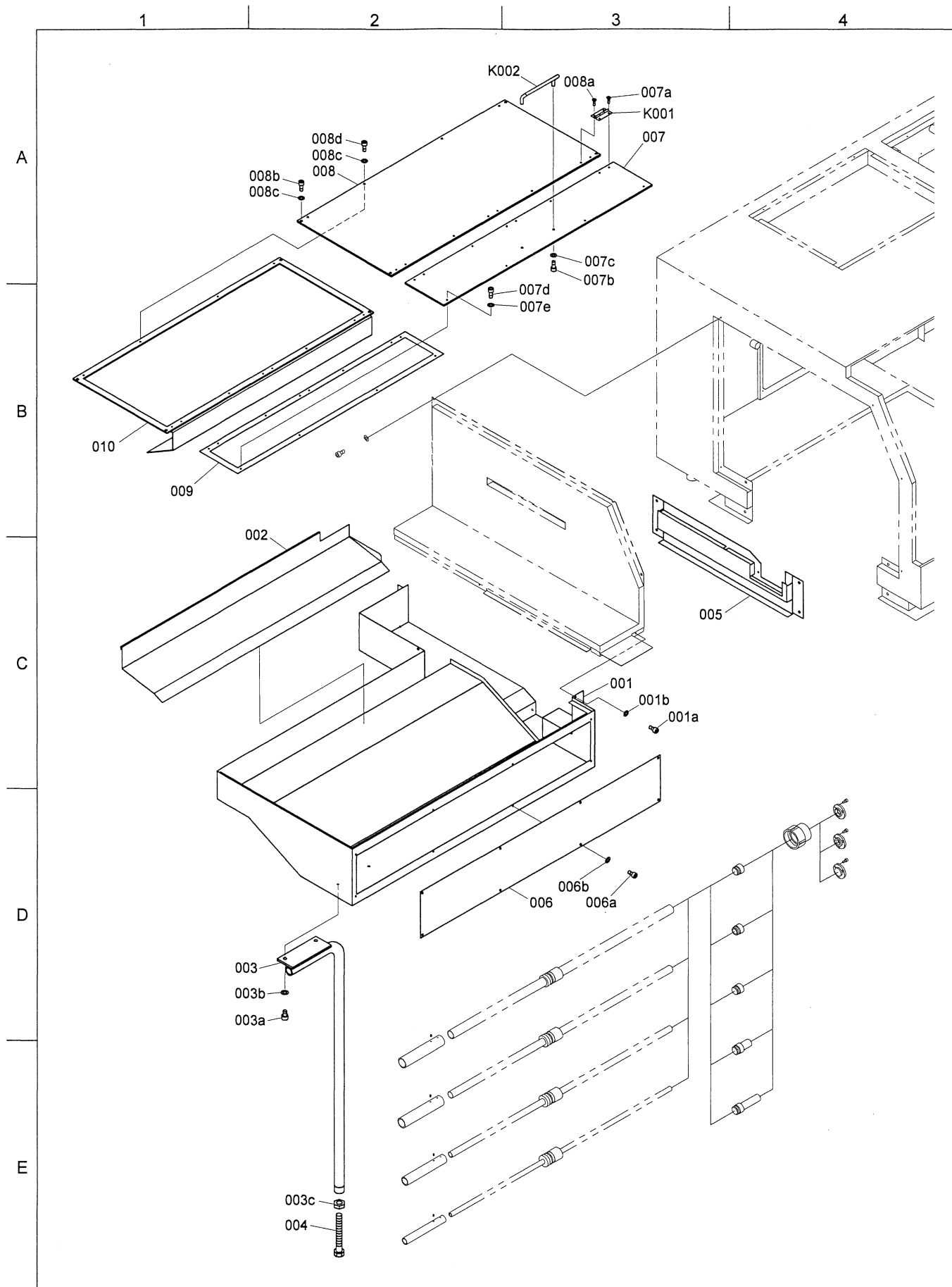


L71620
U420B

背面長物装置用左側面カバー
LEFT SIDE COVER FOR
BACK SPINDLE LONG WORKPIECE DEVICE

000

PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	左側面カバー	LEFT SIDE COVER	1	
001a	六角穴付ボルト	BOLT	M4x6 3	
001b	平座金	WASHER	M4 3	
L71620 U420B		背面長物装置用左側面カバー LEFT SIDE COVER FOR BACK SPINDLE LONG WORKPIECE DEVICE		000

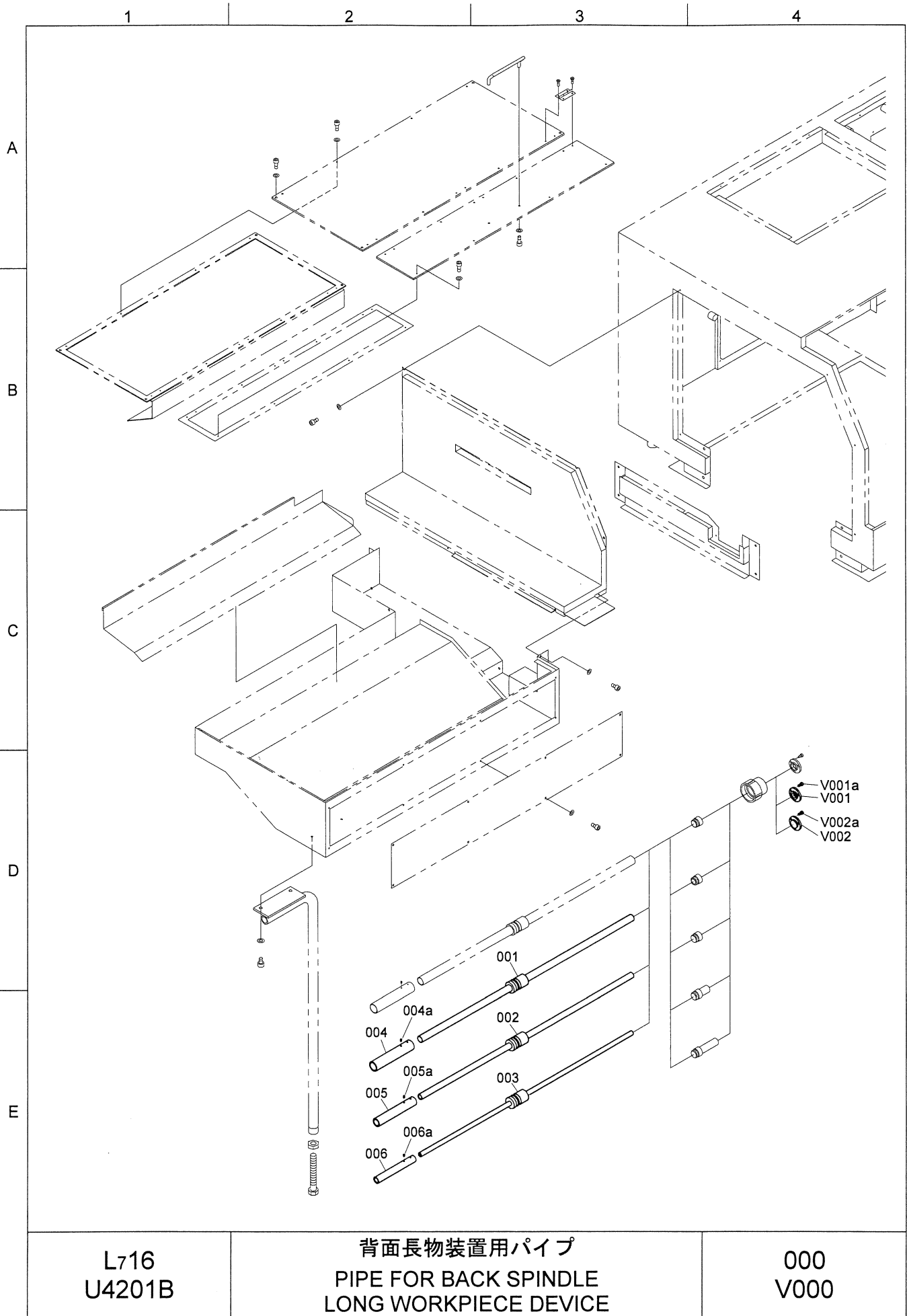


L71620
U440B

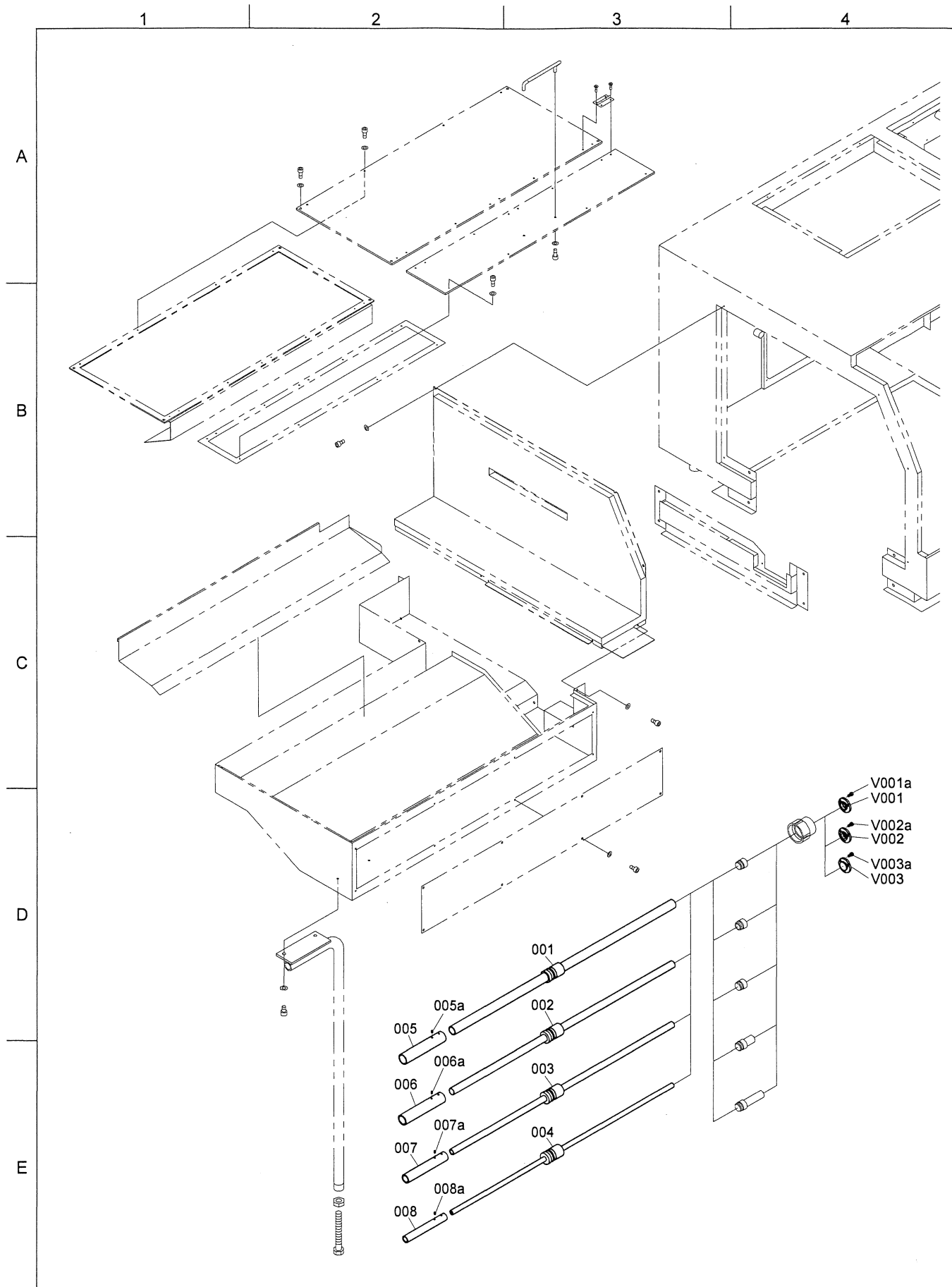
背面長物装置用製品受棚
RECEIVER BOX FOR
BACK SPINDLE LONG WORKPIECE DEVICE

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	製品受棚	RECEIVER BOX		1	
001a	六角穴付ボルト	BOLT	M4x6	5	
001b	平座金	WASHER	M4	5	
002	製品シュート	WORKPIECE CHUTE		1	
003	支柱	SUPPORTING COLUMN		1	
003a	六角穴付ボルト	BOLT	M6x12	2	
003b	平座金	WASHER	M6	2	
003c	六角ナット (1 種)	NUT	M16	1	
004	高サ調節ネジ	ADJUSTING SCREW		1	
005	補助カバー	ASSISTANCE COVER		1	
006	メクラフタ	COVER		1	
006a	六角穴付ボルト	BOLT	M4x6	8	
006b	平座金	WASHER	M4	8	
007	カバー (1)	COVER (1)		1	
007a	サラ小ネジ	FLUSH BOLT	M3x10	6	
007b	六角穴付ボルト	BOLT	M5x12	2	
007c	平座金	WASHER	M5	2	
007d	六角穴付ボルト	BOLT	M4x8	6	
007e	平座金	WASHER	M4	6	
008	カバー (2)	COVER (2)		1	
008a	サラ小ネジ	FLUSH BOLT	M3x10	6	
008b	六角穴付ボルト	BOLT	M4x12	4	
008c	平座金	WASHER	M4	10	
008d	六角穴付ボルト	BOLT	M4x8	6	
009	補強板 (1)	PLATE (1)		1	
010	補強板 (2)	PLATE (2)		1	
K001	平型蝶番	HINGE	B-1100-4	3	TAKIGEN
K002	ステンレス丸棒取手	KNOB	A-1075-4	1	TAKIGEN
L71620 U440B		背面長物装置用製品受棚 RECEIVER BOX FOR BACK SPINDLE LONG WORKPIECE DEVICE		000	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ワークストックパイプ (ø16 用)	WORKPIECE STOCK PIPE (ø16)		1	
002	ワークストックパイプ (ø12 用)	WORKPIECE STOCK PIPE (ø12)		1	
003	ワークストックパイプ (ø8 用)	WORKPIECE STOCK PIPE (ø8)		1	
004	サポートパイプ (ø16 用)	SUPPORT PIPE (ø16)		1	
004a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
005	サポートパイプ (ø12 用)	SUPPORT PIPE (ø12)		1	
005a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
006	サポートパイプ (ø8 用)	SUPPORT PIPE (ø8)		1	
006a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
V001	ブッシュ (ø16 用)	BUSHING (ø16)		1	
V001a	六角穴付ボルト	BOLT	M3x6	3	
V002	ブッシュ	BUSHING		3	
V002a	六角穴付ボルト	BOLT	M3x6	9	
L716 U4201B		背面長物装置用パイプ PIPE FOR BACK SPINDLE LONG WORKPIECE DEVICE		000 V000	

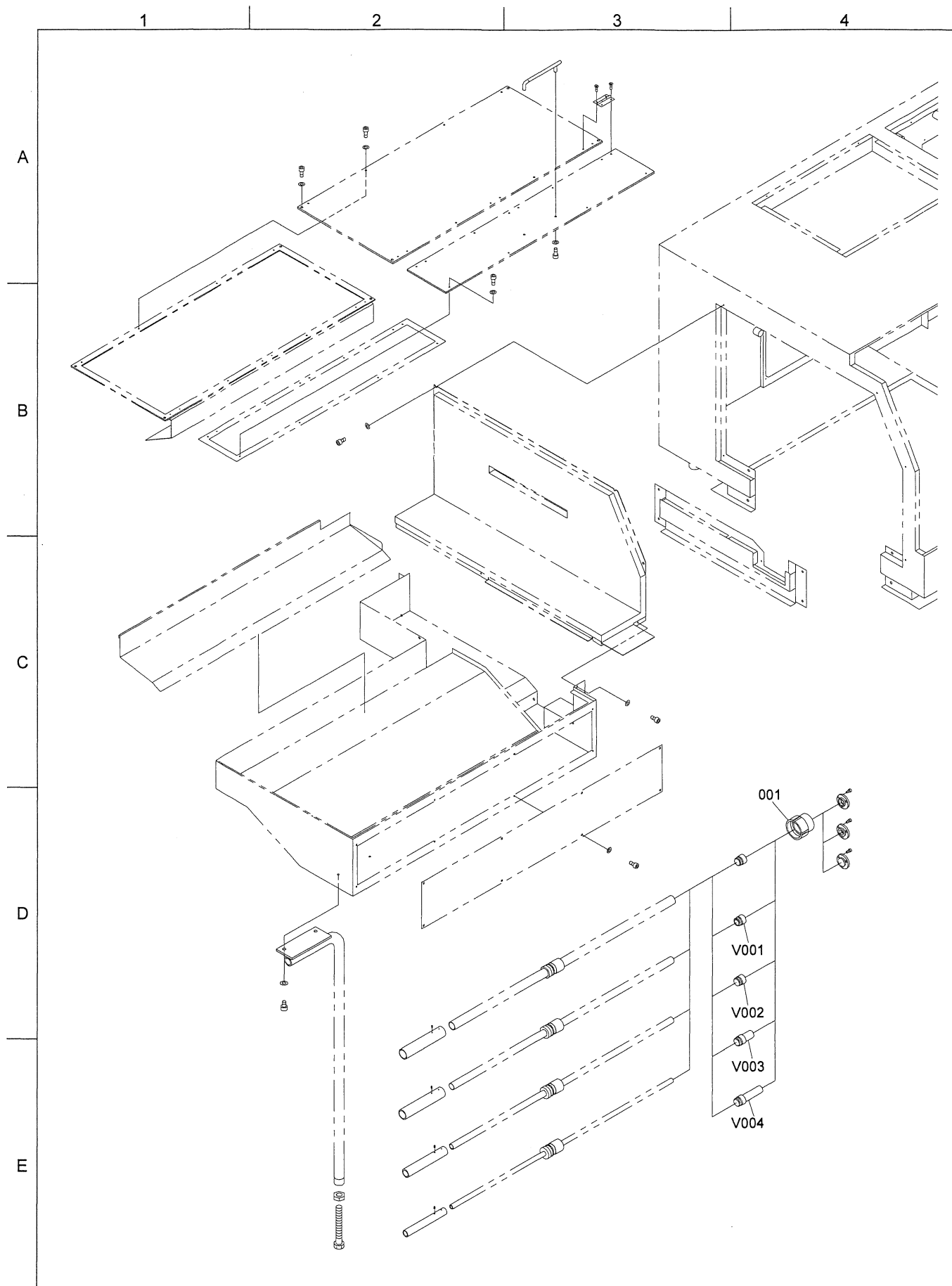


L720
U4201B

背面長物装置用パイプ
PIPE FOR BACK SPINDLE
LONG WORKPIECE DEVICE

000
V000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ワークストックパイプ (φ20 用)	WORKPIECE STOCK PIPE (φ20)		1	
002	ワークストックパイプ (φ16 用)	WORKPIECE STOCK PIPE (φ16)		1	
003	ワークストックパイプ (φ12 用)	WORKPIECE STOCK PIPE (φ12)		1	
004	ワークストックパイプ (φ8 用)	WORKPIECE STOCK PIPE (φ8)		1	
005	サポートパイプ (φ20 用)	SUPPORT PIPE (φ20)		1	
005a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
006	サポートパイプ (φ16 用)	SUPPORT PIPE (φ16)		1	
006a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
007	サポートパイプ (φ12 用)	SUPPORT PIPE (φ12)		1	
007a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
008	サポートパイプ (φ8 用)	SUPPORT PIPE (φ8)		1	
V001	ブッシュ (φ20 用)	BUSHING (φ20)		1	
V001a	六角穴付ボルト	BOLT	M3x6	3	
V002	ブッシュ (φ16 用)	BUSHING (φ16)		1	
V002a	六角穴付ボルト	BOLT	M3x6	3	
V003	ブッシュ	BUSHING		3	
V003a	六角穴付ボルト	BOLT	M3x6	9	
L720 U4201B		背面長物装置用パイプ PIPE FOR BACK SPINDLE LONG WORKPIECE DEVICE		000 V000	

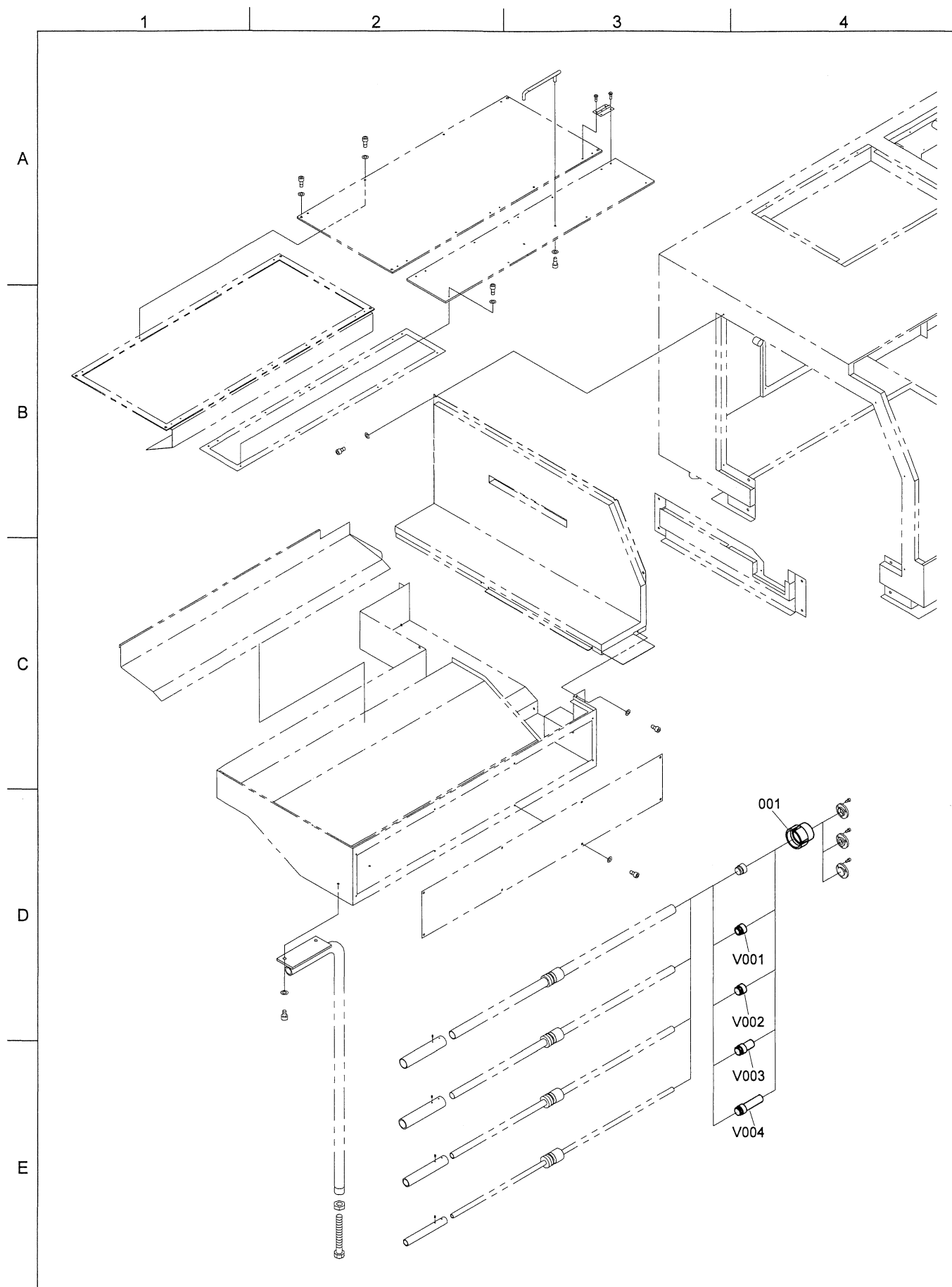


L71620
U4202B

背面長物装置用キャップナット
CAP NUT FOR BACK SPINDLE
LONG WORKPIECE DEVICE

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V000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	キャップナット	CAP NUT		1	
V001	カラー (ø16 用)	COLLAR (ø16)		1	
V002	振れ止め	SUPPORT		3	
V003	振れ止め	SUPPORT		1	
V004	振れ止め	SUPPORT		3	
L71620 U4202B		背面長物装置用キャップナット CAP NUT FOR BACK SPINDLE LONG WORKPIECE DEVICE		000 V000	

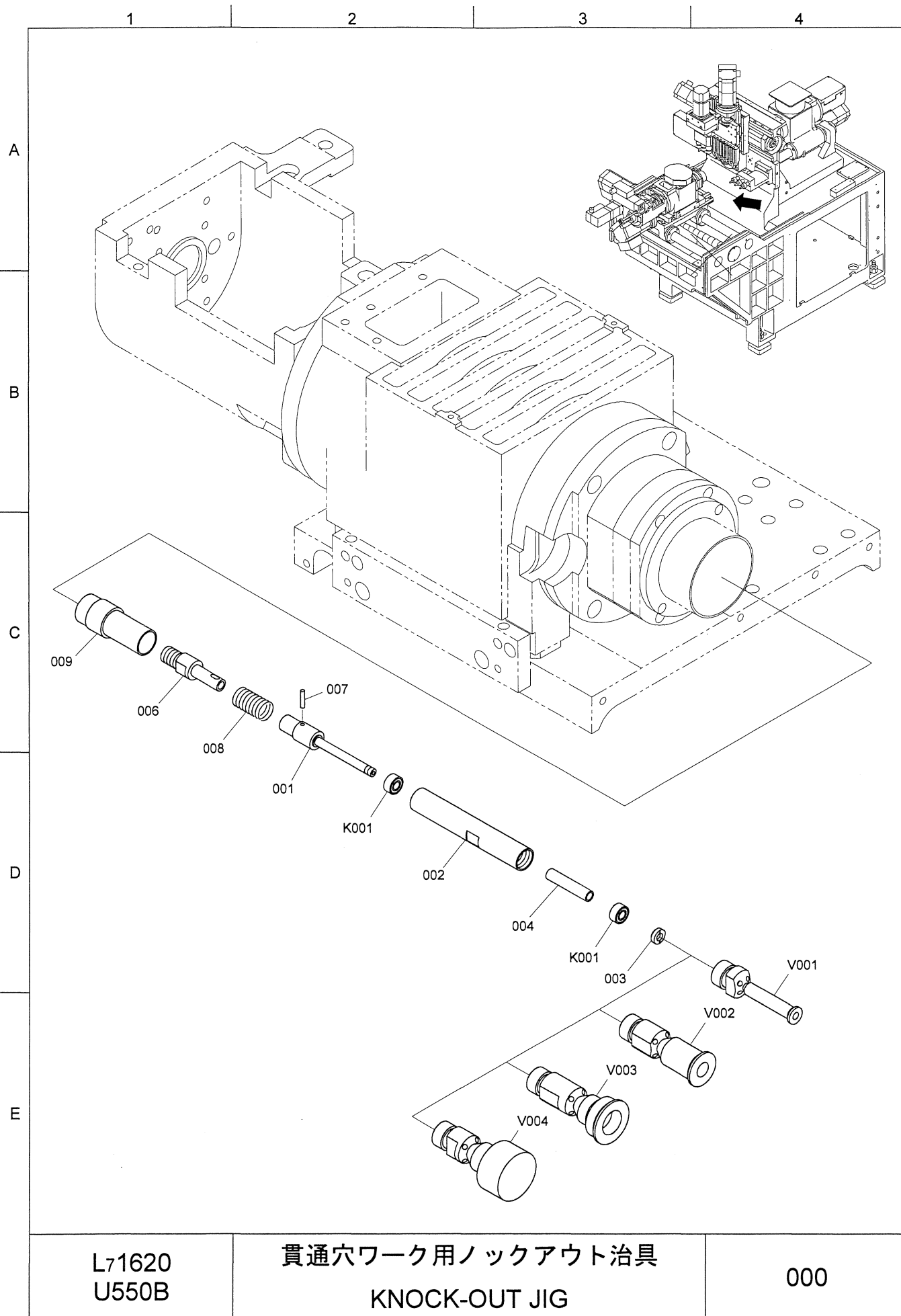


L71620
U4203B

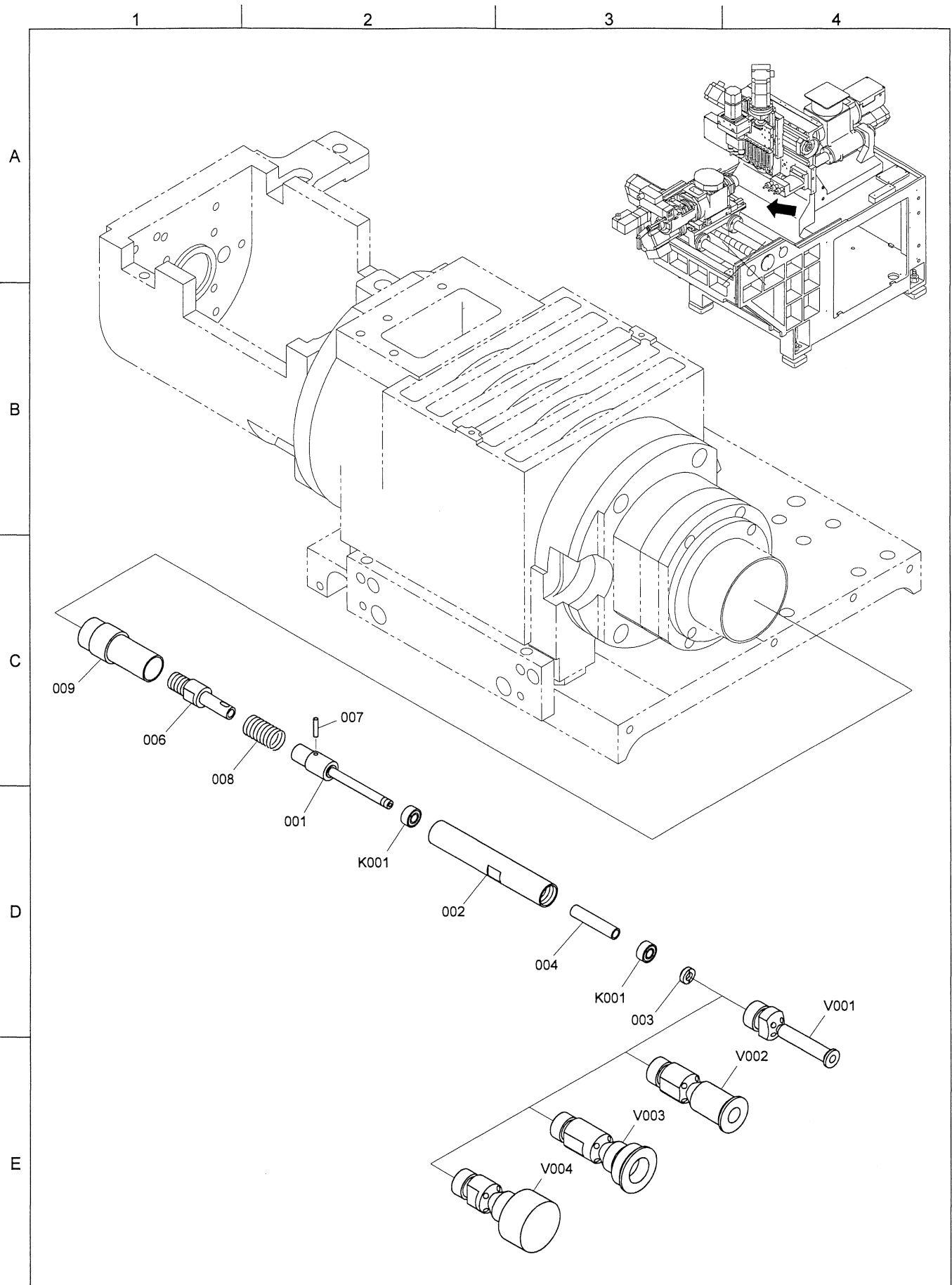
背面長物装置用キャップナット (輸出用)
CAP NUT FOR BACK SPINDLE
LONG WORKPIECE DEVICE

000
V000

PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	キャップナット CAP NUT		1	
V001	カラー (ø16 用) COLLAR (ø16)		1	
V002	振れ止め SUPPORT		3	
V003	振れ止め SUPPORT		1	
V004	振れ止め SUPPORT		3	
L71620 U4203B		背面長物装置用キャップナット (輸出用) CAP NUT FOR BACK SPINDLE LONG WORKPIECE DEVICE		000 V000



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	固定軸	FIXING SHAFT		1	
002	ハウジング	HOUSING		1	
003	ナット	NUT		1	
004	スペーサー	SPACER		1	
006	連結軸	CONNECTING SHAFT		1	
007	ピン	PIN		1	
008	圧縮コイルばね	SPRING		1	
009	カラー	COLLAR		1	
K001	ミニアチュア玉軸受	BALL BEARING	W684AZZ	2	NTN
V001	ノックアウト治具 (ø8 用)	KNOCK-OUT JIG (ø8)		1	
V002	ノックアウト治具 (ø16 用)	KNOCK-OUT JIG (ø16)		1	
V003	ノックアウト治具 (ø20 用)	KNOCK-OUT JIG (ø20)		1	
V004	ノックアウト治具 (ブランク)	KNOCK-OUT JIG (BLANK)		1	
L71620 U550B		貫通穴ワーク用ノックアウト治具 KNOCK-OUT JIG		000	

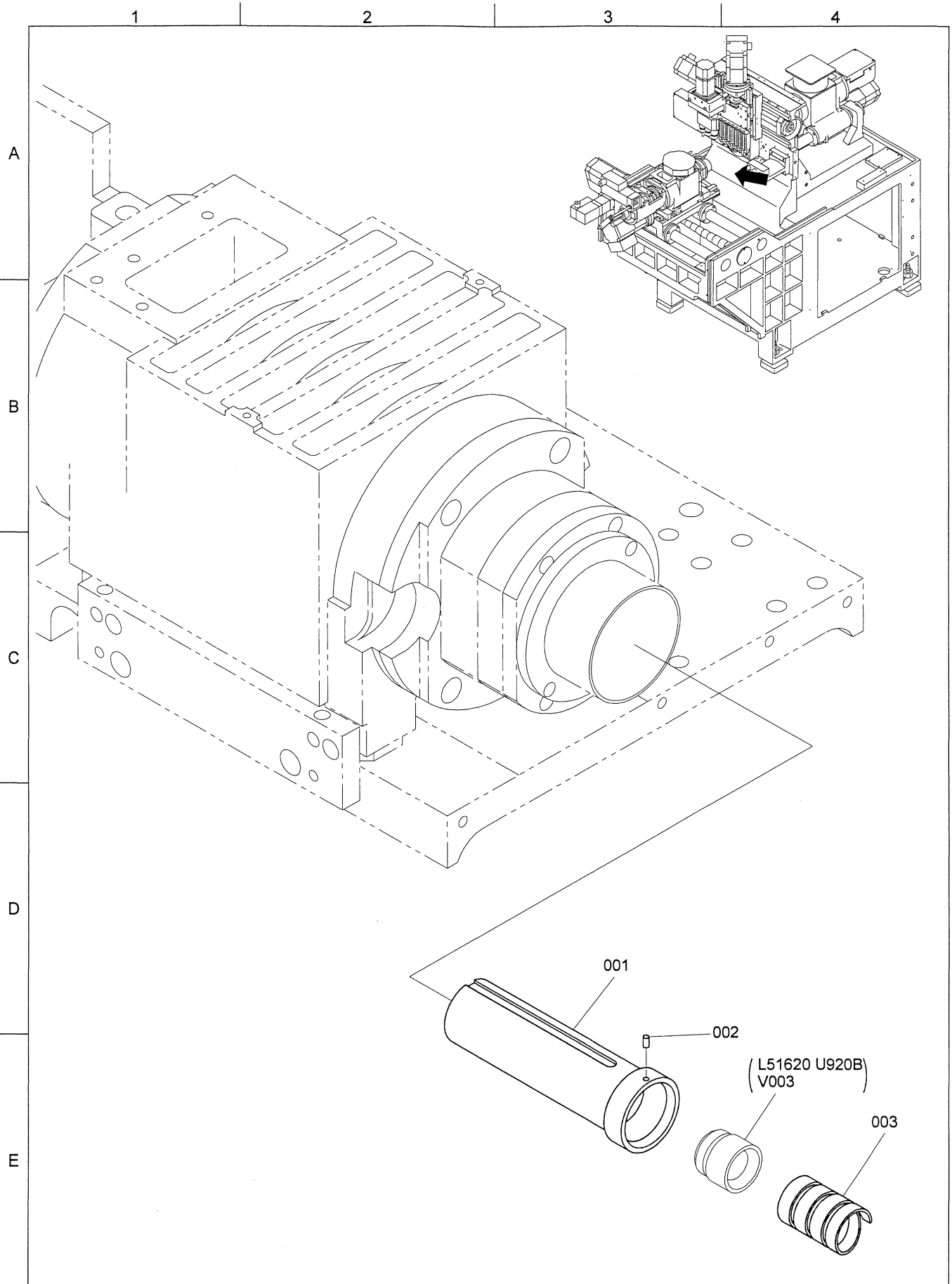


L71620
U551B

貫通穴ワーク用ロックアウト治具 (輸出用)
KNOCK-OUT JIG

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	固定軸	FIXING SHAFT		1	
002	ハウジング	HOUSING		1	
003	ナット	NUT		1	
004	スペーサー	SPACER		1	
006	連結軸	CONNECTING SHAFT		1	
007	ピン	PIN		1	
008	圧縮コイルばね	SPRING		1	
009	カラー	COLLAR		1	
K001	ミニアチュア玉軸受	BALL BEARING	W684AZZ	2	NTN
V001	ノックアウト治具 (ø8 用)	KNOCK-OUT JIG (ø8)		1	
V002	ノックアウト治具 (ø16 用)	KNOCK-OUT JIG (ø16)		1	
V003	ノックアウト治具 (ø20 用)	KNOCK-OUT JIG (ø20)		1	
V004	ノックアウト治具 (ブランク)	KNOCK-OUT JIG (BLANK)		1	
L71620 U551B		貫通穴ワーク用ノックアウト治具 (輸出用) KNOCK-OUT JIG		000	



L51620 U620B	異形材用チャックスリーブ BACK CHUCK SLEEVE FOR NON-CONFORMED MATERIAL	000
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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	異形材用背面チャックスリーブ	CHUCK SLEEVE		1	
002	位置決めピン	POSITIONING PIN		1	
003	角パネ	SPRING		1	
L51620 U620B		異形材用チャックスリーブ BACK CHUCK SLEEVE FOR NON-CONFORMED MATERIAL		000	

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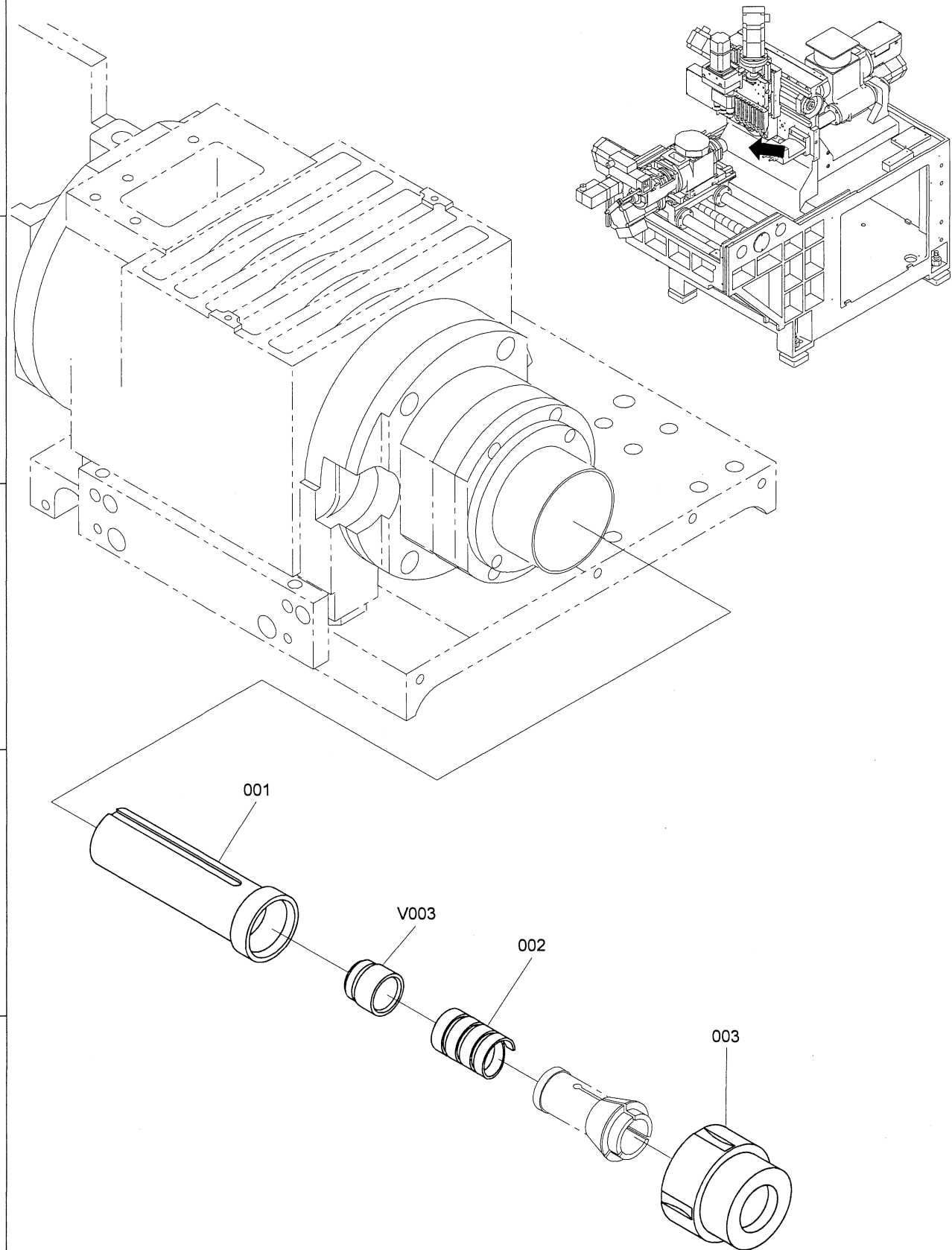
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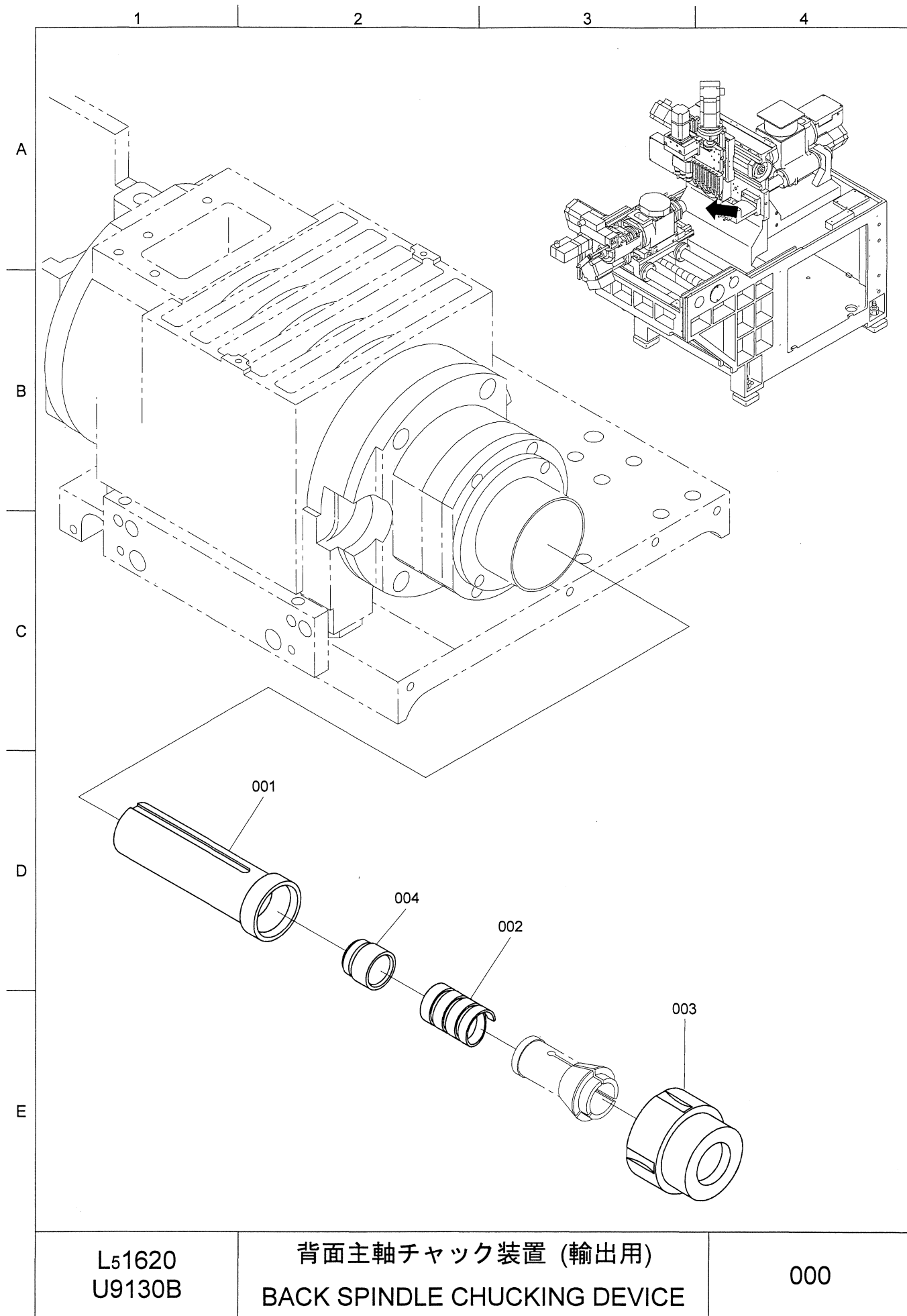


L51620
U920B

背面主轴チャック装置
BACK SPINDLE CHUCKING DEVICE

000

PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	チャックスリーブ	CHUCK SLEEVE	1	
002	角バネ	SPRING	1	
003	キャップナット	CAP NUT	1	
V003	カラー (ø20 用)	COLLAR (ø20)	1	
L51620 U920B		背面主軸チャック装置 BACK SPINDLE CHUCKING DEVICE		000



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	チャックスリーブ	CHUCK SLEEVE		1	
002	角バネ	SPRING		1	
003	キャップナット	CAP NUT		1	
004	カラー	COLLAR		1	
L51620 U9130B			背面主軸チャック装置 (輸出用) BACK SPINDLE CHUCKING DEVICE		000

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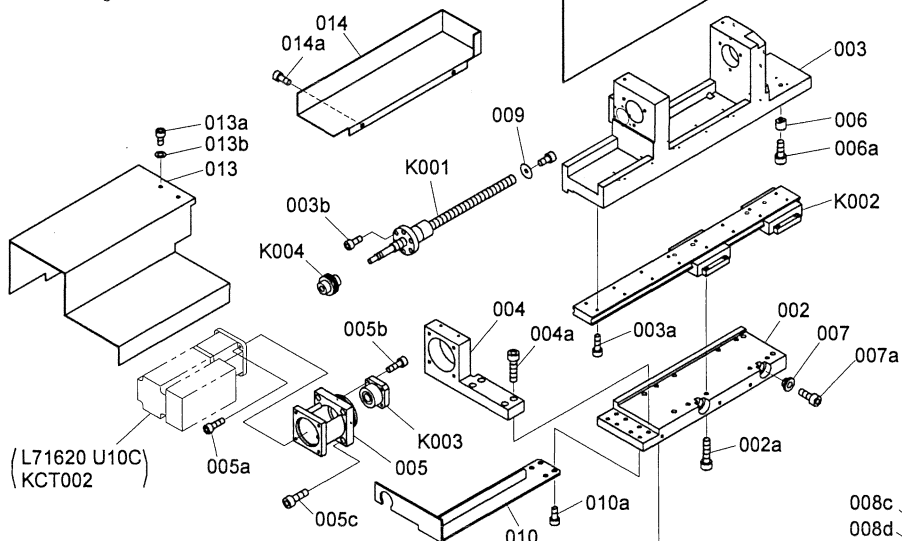
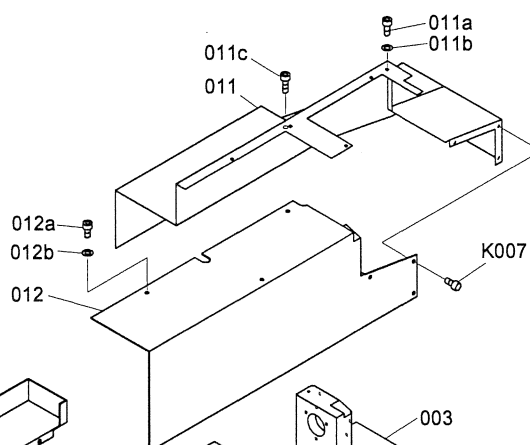
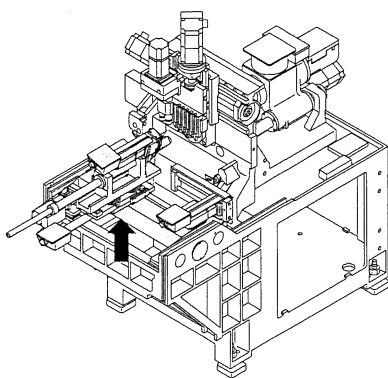
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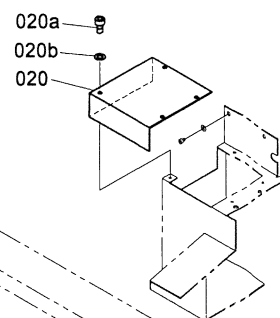
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(L71620 U10C)
(KCT002)

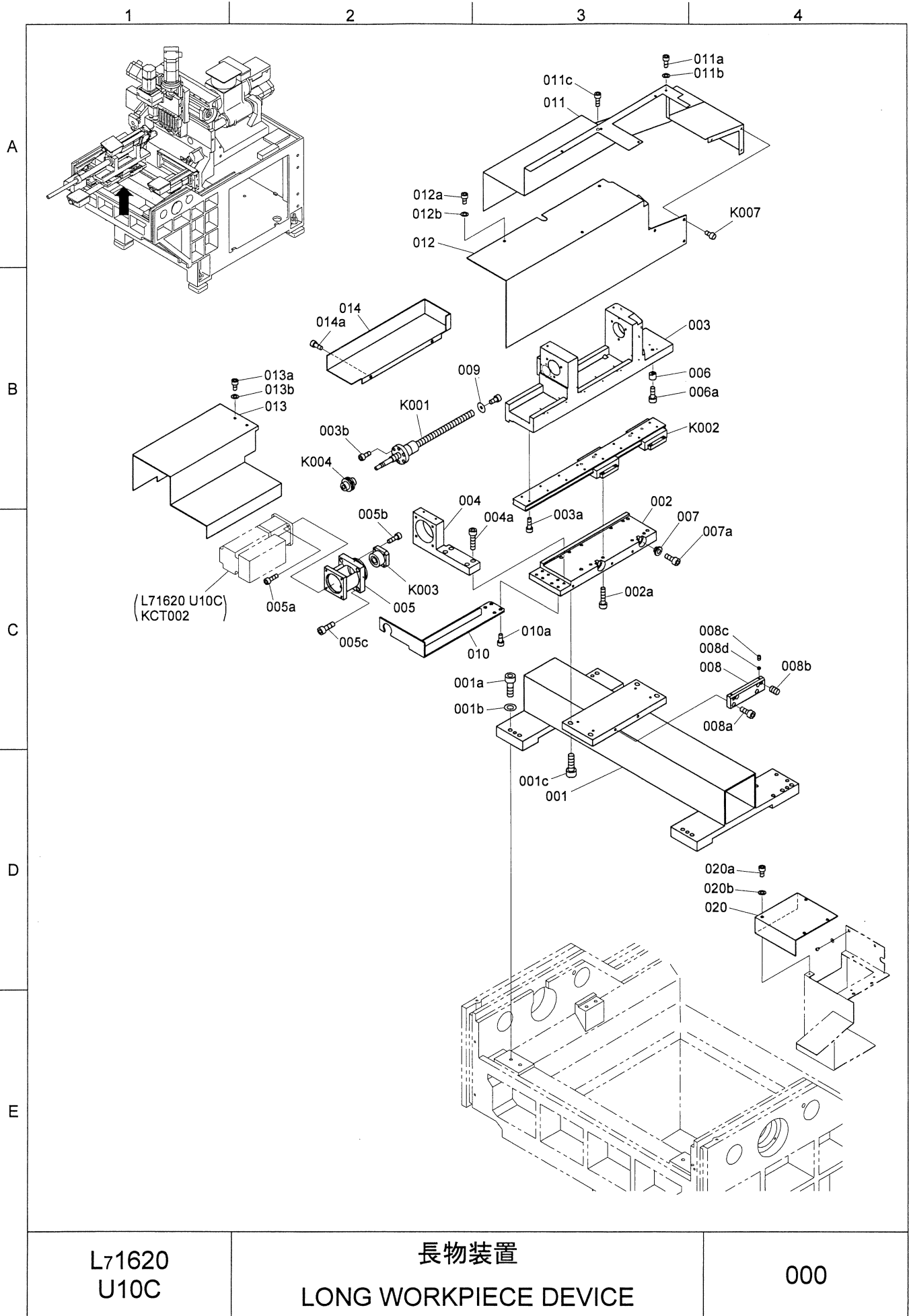


L71620
U10C

長物装置
LONG WORKPIECE DEVICE

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ベース	BASE		1	
001a	六角穴付ボルト	BOLT	M8x40	8	
001b	平座金	WASHER	M8	8	
001c	六角穴付ボルト	BOLT	M8x25	4	
002	テーブル	TABLE		1	
002a	六角穴付ボルト	BOLT	M6x25	8	
003	本体	BODY		1	
003a	六角穴付ボルト	BOLT	M4x16	16	
003b	六角穴付ボルト	BOLT	M4x12	6	
004	モーターブラケット	MOTOR BRACKET		1	
004a	六角穴付ボルト	BOLT	M6x25	4	
005	モーターフランジ	MOTOR FLANGE		1	
005a	六角穴付ボルト	BOLT	M5x16	4	
005b	六角穴付ボルト	BOLT	M4x16	4	
005c	六角穴付ボルト	BOLT	M6x25	4	
006	コマ	BLOCK		4	
006a	六角穴付ボルト	BOLT	M6x16	4	
007	コマ	BLOCK		2	
007a	六角穴付ボルト	BOLT	M6x16	2	
008	調整ブロック	BLOCK		1	
008a	六角穴付ボルト	BOLT	M6x15	4	
008b	六角穴付止メネジ (平先)	SET SCREW	M8x12	2	
008c	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
008d	真チゅう座	SEAT	M4	2	
009	座金	WASHER		1	
010	ブラケット	BRACKET		1	
010a	六角穴付ボルト	BOLT	M6x12	4	
011	本体カバー (後)	COVER (REAR)		1	
011a	六角穴付ボルト	BOLT	M4x8	2	
011b	平座金	WASHER	M4	2	
011c	六角穴付ボルト	BOLT	M4x25	2	
012	本体カバー (前)	COVER (FRONT)		1	
012a	六角穴付ボルト	BOLT	M4x8	3	
012b	平座金	WASHER	M4	3	
013	モーターカバー	COVER		1	
013a	六角穴付ボルト	BOLT	M4x8	2	
013b	平座金	WASHER	M4	2	
014	ボールネジカバー	COVER		1	
014a	六角穴付ボルト	BOLT	M6x10	2	
015	シム	SHIM		1	
016	シム	SHIM		1	
017	シム	SHIM		1	
018	シム	SHIM		1	
019	シム	SHIM		1	
L71620 U10C	長物装置 LONG WORKPIECE DEVICE			000	

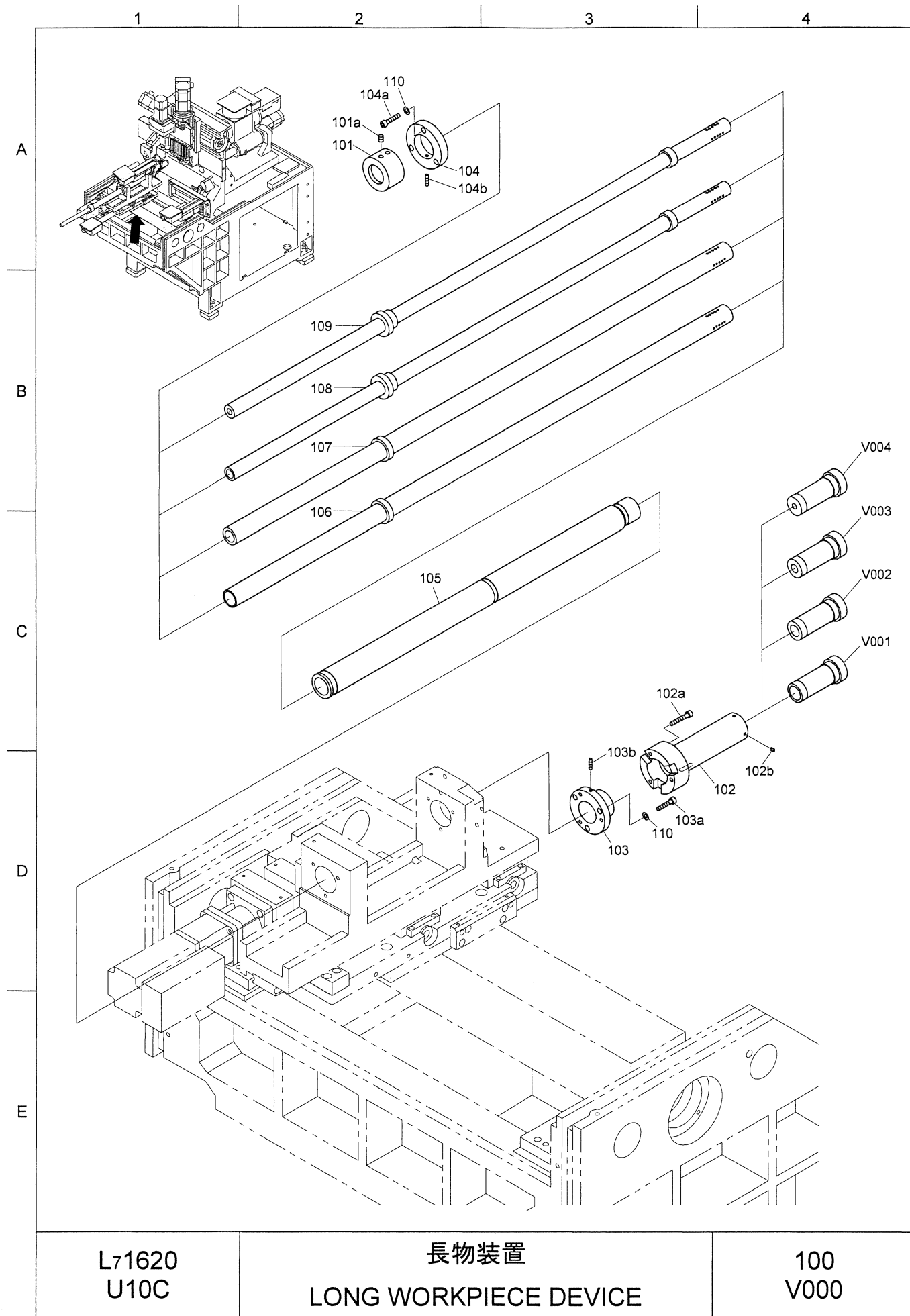


L71620
U10C

長物装置
LONG WORKPIECE DEVICE

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
020	フタ	LID		1	
020a	六角穴付ボルト	BOLT	M4x6	4	
020b	平座金	WASHER	M4	4	
K001	転造ボールネジ (予圧タイプ)	BALL SCREW	JPF1405-4RRG0+350LC7T	1	THK
K002	LM ガイド	LM GUIDE	HRW27CA2UU+460L	1	THK
K003	サポートユニット	SUPPORT UNIT	FK10	1	THK
K004	マイクロカップリング	COUPLING	A3-02-EPEP-8BC/11KP	1	DAIDOH
K007	バインド小ネジ	SCREW	M4x8	3	
L71620 U10C		長物装置 LONG WORKPIECE DEVICE		000	



L71620
U10C

長物装置
LONG WORKPIECE DEVICE

100
V000

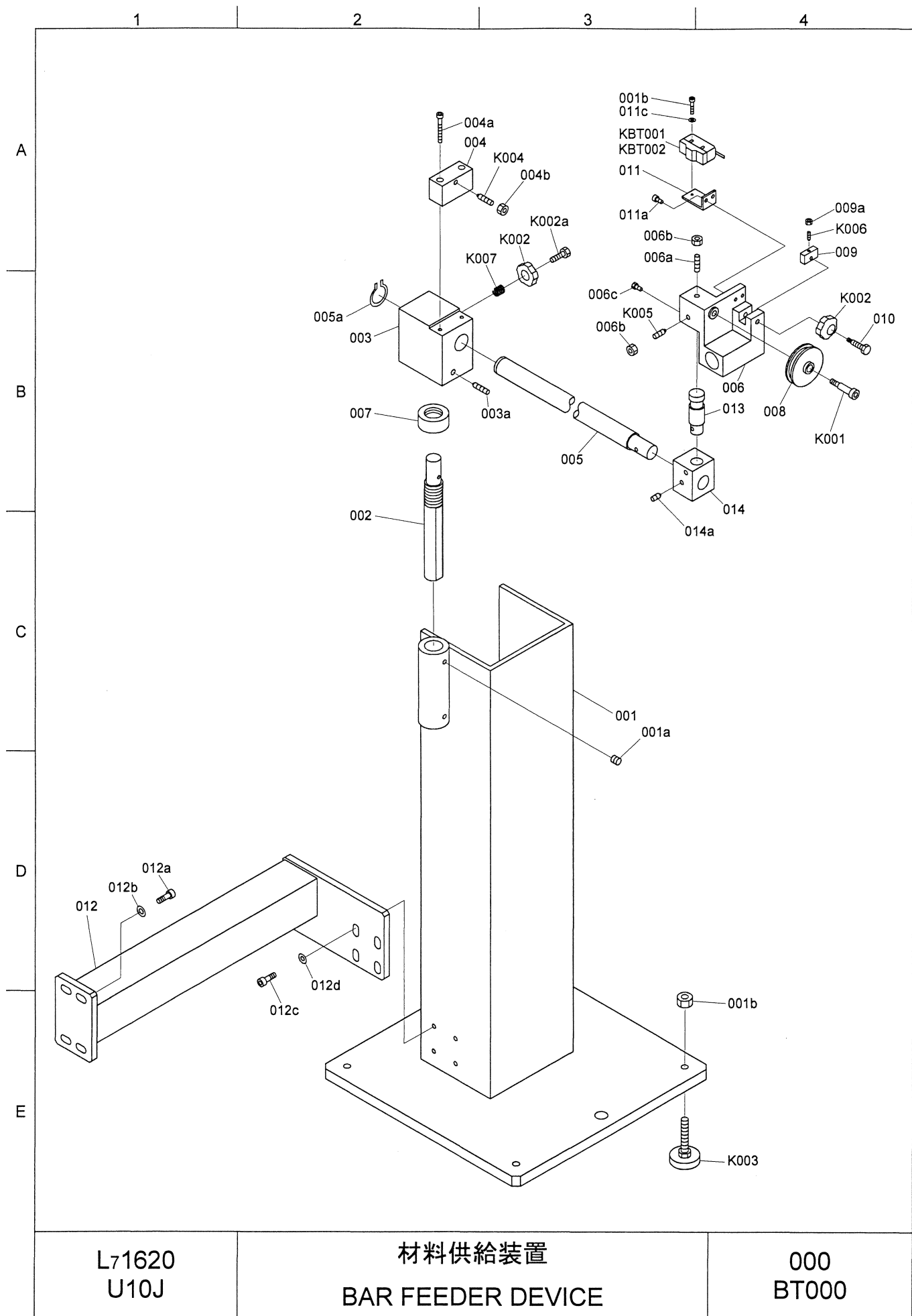
PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
101	ジョイント	JOINT		1	
101a	六角穴付止メネジ (平先)	SET SCREW	M6x8	2	
102	パイプサポート	PIPE SUPPORT		1	
102a	六角穴付ボルト	BOLT	M5x30	3	
102b	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
103	フランジ (前)	FLANGE (FRONT)		1	
103a	六角穴付ボルト	BOLT	M5x25	3	
103b	六角穴付止メネジ (平先)	SET SCREW	M4x16	1	
104	フランジ (後)	FLANGE (REAR)		1	
104a	六角穴付ボルト	BOLT	M5x25	3	
104b	六角穴付止メネジ (平先)	SET SCREW	M4x16	1	
105	ガイドパイプ	GUIDE PIPE		1	
106	ワークストックパイプ (φ20 用)	WORKPIECE STOCK PIPE (φ20)		1	
107	ワークストックパイプ (φ16 用)	WORKPIECE STOCK PIPE (φ16)		1	
108	ワークストックパイプ (φ12 用)	WORKPIECE STOCK PIPE (φ12)		1	
109	ワークストックパイプ (φ8 用)	WORKPIECE STOCK PIPE (φ8)		1	
110	座金	WASHER		6	
V001	振れ止め先端 (φ20 用)	CENTER (φ20)		1	
V002	振れ止め先端 (φ16 用)	CENTER (φ16)		1	
V003	振れ止め先端 (φ12 用)	CENTER (φ12)		1	
V004	振れ止め先端 (φ8 用)	CENTER (φ8)		1	
L71620 U10C		長物装置 LONG WORKPIECE DEVICE		100 V000	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
KR201	ジャンクション	JUNCTION	JD3	1	SHOWA
KR202	フロープロパーユニット	FLOW PROPER UNIT	PSS1	2	SHOWA
KR203	締付プラグ	FIXING PLUG	PA4	5	SHOWA
KR204	スリーブ	SLEEVE	PB4	5	SHOWA
KR205	チューブインサート	TUBE INSERT	AL4	1	SHOWA
KR207	ナイロンパイプ	NYLON PIPE	ø4 NYLON 3m	1	SHOWA
KR208	保護スプリング	PROTECTION SPRING	FOR ø4 3m	1	SHOWA
KR209	アルミパイプ	ALUMINUM PIPE	ALP4 1m	1	SHOWA
KR210	コネクタ	CONNECTOR	PM4	2	SHOWA
L71620 U10C		長物装置 LONG WORKPIECE DEVICE		R200	

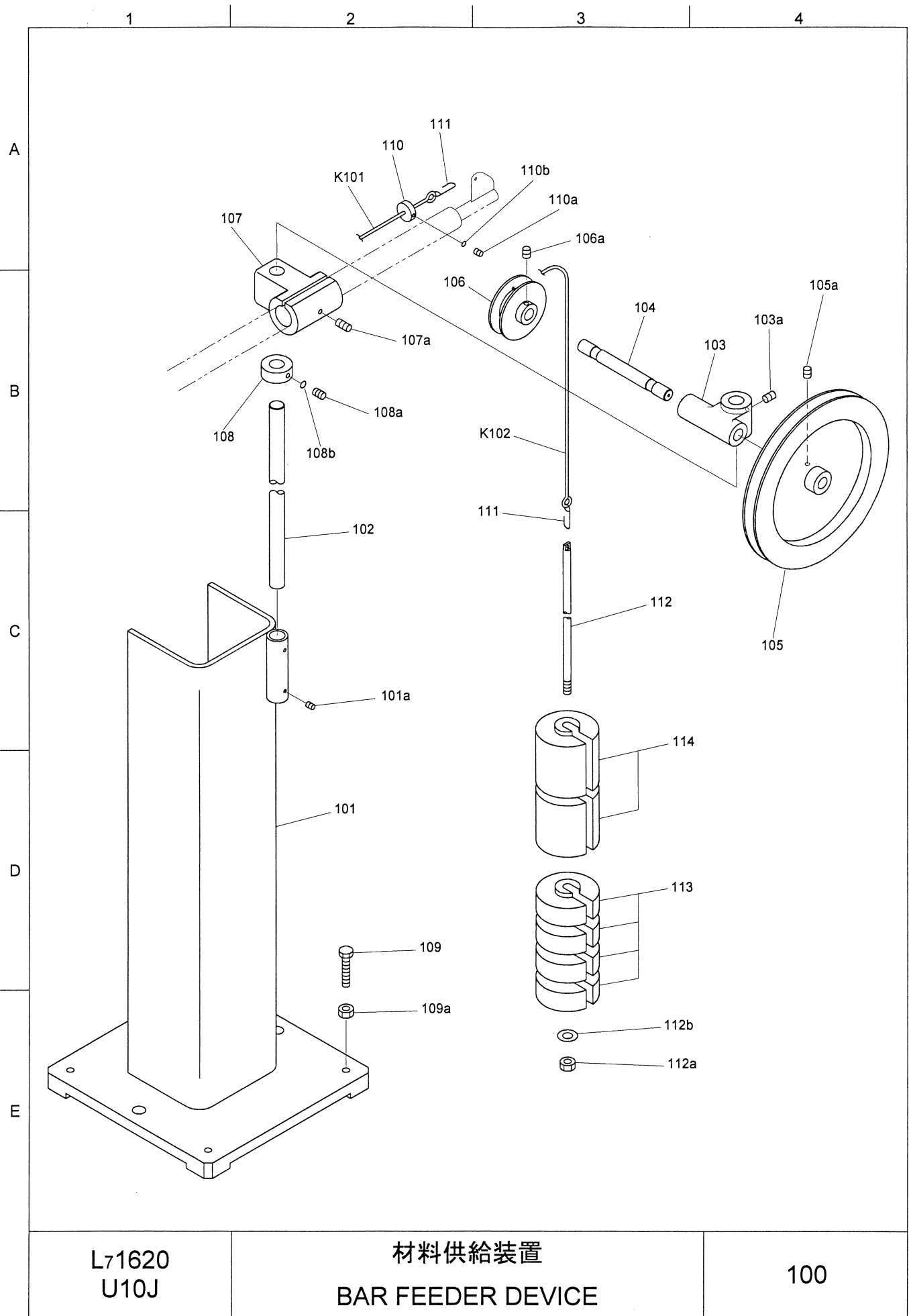
PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	UNIT8	1 軸スピンドルアンプ モジュール	1-AXIS SPINDLE AMP. MODULE	MDS-D-V1-20	1	MITSUBISHI ELECTRIC
KCT002	MA6	AC サーボモータ	AC SERVO MOTOR	HF-KP23JK -S11	1	MITSUBISHI ELECTRIC
WT101		A6 軸モータ動力ケーブル	CABLE		1	
WT102		A6 軸モータ信号ケーブル	CABLE		1	
KWT101	U8CN31L	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC- TRONICS AMP
KWT102		コンタクト	CONTACT	316040-2	4	TYCO ELEC- TRONICS AMP
KWT103	U8CN2L	コネクタプラグ	CONNECTOR PLUG	54593-1011	1	MOLEX
KWT104		プラグカバーA	PLUG COVER A	54594-1015	1	MOLEX
KWT105		プラグカバーB	PLUG COVER B	54595-1005	1	MOLEX
KWT106		シェルカバー	SHELL COVER	58935-1000	1	MOLEX
KWT107		シェルボディー	SHELL BODY	58934-1000	1	MOLEX
KWT108		ケーブルクランプ	CABLE CLAMP	58937-0000	1	MOLEX
KWT109		ストレートコネクタ	CONNECTOR	N2BG25	1	SANKEI
KWT110		サンフレキ	FLEXIBLE TUBE	NP#25 1600mm	1	SANKEI
KWT111	CNPA6	ハウジング	HOUSING	JN4FT04SJ1	1	JAE
KWT112		コンタクト	CONTACT	ST-TMH-S-C1B -100- (A534G)	4	JAE
KWT113	CNSA6	コネクタ	CONNECTOR	1674320-1	1	TYCO ELEC- TRONICS AMP
KWT114		コンタクト	CONTACT	1674333-1	9	TYCO ELEC- TRONICS AMP
L71620 U10C		長物装置 LONG WORKPIECE DEVICE			CT000 WT100	

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BT000

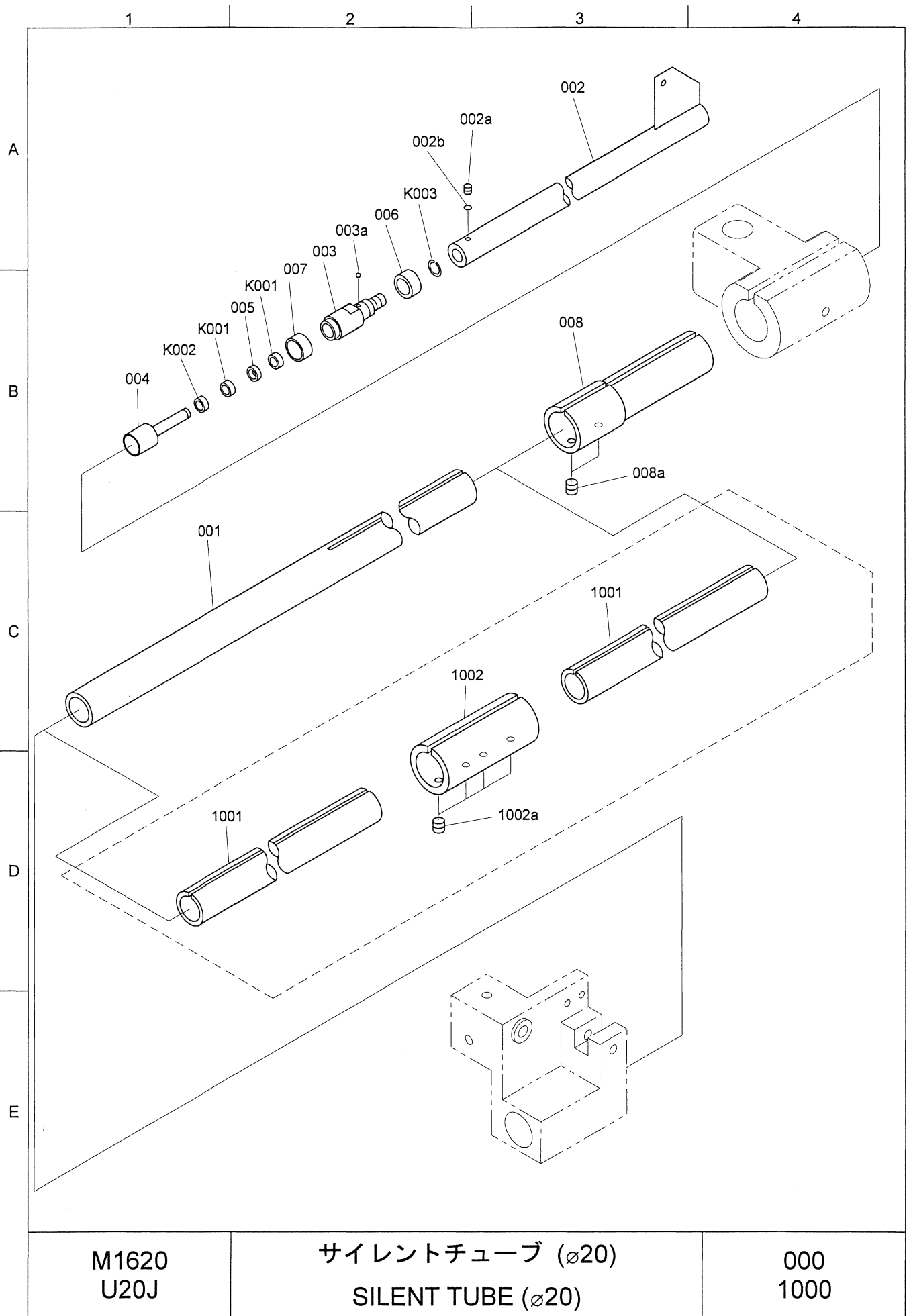
PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
001		送り台取付台	FEEDER MOUNTING STAND		1	
001a		六角穴付止メネジ (平先)	SET SCREW	M8x12	2	
001b		六角ナット	NUT	M12	4	
002		支柱	SUPPORTING COLUMN		1	
003		材料送り台	MATERIAL FEEDER		1	
003a		六角穴付止メネジ (トガリ先)	SET SCREW	M8x30	2	
004		位置決めブロック	POSITIONING BLOCK		1	
004a		六角穴付ボルト	BOLT	M6x50	2	
004b		六角ナット	NUT	M8	1	
005		ロッド	ROD		1	
005a		軸用 C トメワ	RETAINING RING (C TYPE)	30	1	
006		チューブブラケット	TUBE BRACKET		1	
006a		六角穴付止メネジ (平先)	SET SCREW	M8x30	1	
006b		六角ナット	NUT	M8	2	
006c		六角ボルト	BOLT	M6x10	1	
007		調整ナット	ADJUSTING NUT		1	
008		プーリー	PULLEY		1	
009		クランプゴマ	CLAMP PIECE		1	
009a		六角ナット	NUT	M5	1	
010		クランプネジ	CLAMP PIECE		1	
011		LS 取付板	LS MOUNTING PLATE		1	
011a		六角穴付ボルト	BOLT	M6x12	2	
011b		六角穴付ボルト	BOLT	M4x25	2	
011c		平座金	WASHER	M4	2	
012		本体固定アーム	FIXING ARM		1	
012a		六角穴付ボルト	BOLT	M10x25	4	
012b		平座金	WASHER	M10	4	
012c		六角穴付ボルト	BOLT	M8x25	4	
012d		平座金	WASHER	M8	4	
013		ロッド	ROD		1	
014		パイプサポート	PIPE SUPPORT		1	
014a		六角穴付止メネジ (トガリ先)	SET SCREW	M8x12	4	
K001		ストッパーボルト	STOPPER BOLT	TYPE ST 13 L=30mm	1	GOSHO
K002		マテックススーパーノブ	KNOB	SK-38 YELLOW	2	NABEYA BYTECH
K002a		六角ボルト	BOLT	M8x20	1	
K003		アジャスターフット	ADJUSTER FOOT	TM-73-I-Z-4	4	TOCHIGIYA
K004		六角穴付止メネジ (棒先)	SET SCREW	M8x28	1	GOSHO
K005		六角穴付止メネジ (棒先)	SET SCREW	M8x20	1	GOSHO
K006		六角穴付止メネジ (棒先)	SET SCREW	M5x16	1	GOSHO
K007		ヘリサート	HELICAL INSERT	M8x10	1	
K008		警告ラベル	WARNING LABEL	JW18	1	TOIN
K009		警告ラベル	WARNING LABEL	JW19	2	TOIN
L71620 U10J		材料供給装置 BAR FEEDER DEVICE			000 BT000	



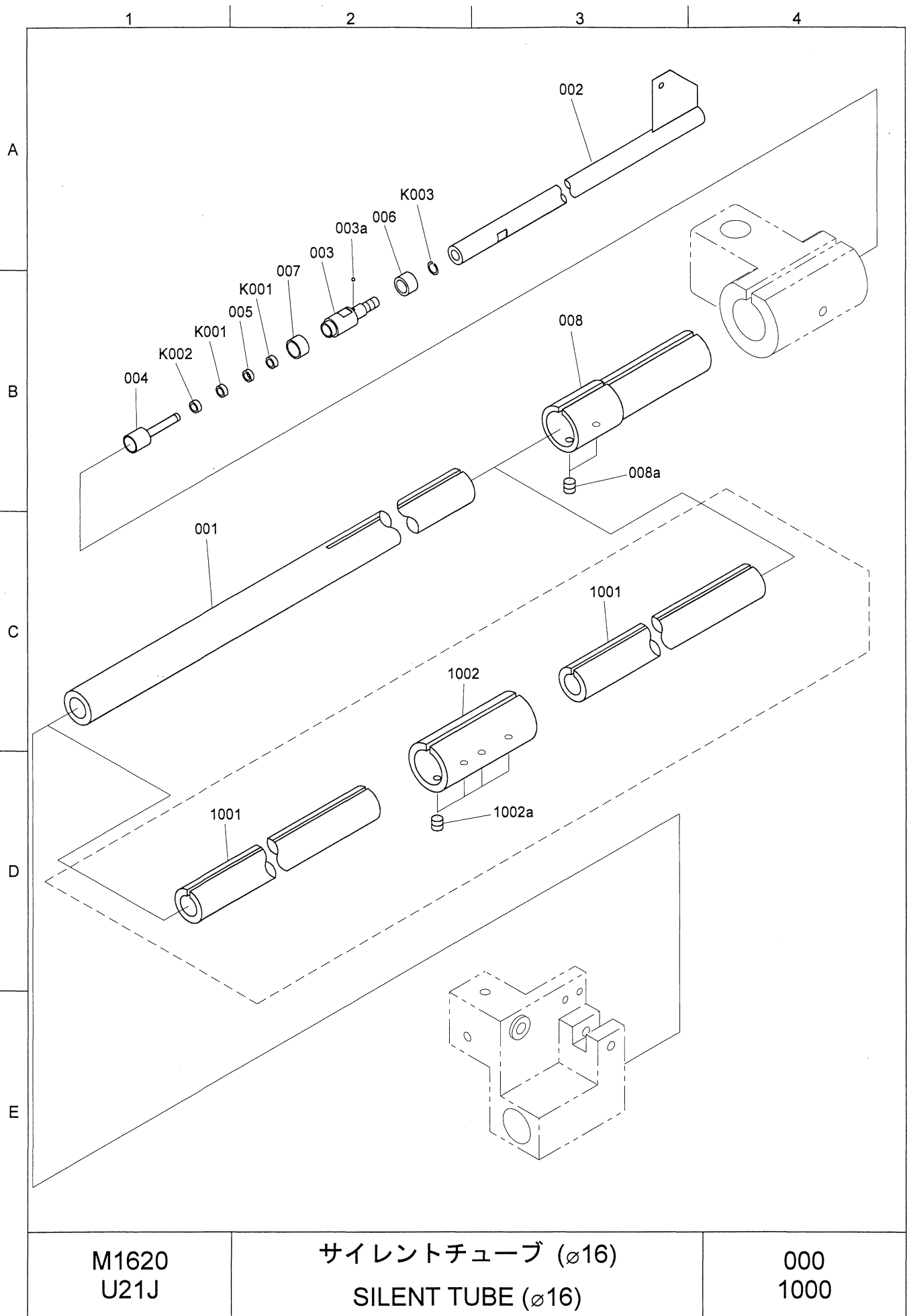
PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
K1008	WKBP	警告ラベル	WARNING LABEL	EW18	1	TOIN
K1009		警告ラベル	WARNING LABEL	EW19	2	TOIN
K2008		警告ラベル	WARNING LABEL	CW18	1	TOIN
K2009		警告ラベル	WARNING LABEL	CW19	2	TOIN
KBT001		リミットスイッチ	LIMIT SWITCH	Z-15GW-B	1	OMRON
KBT002		保護カバー	COVER	AP-B	1	OMRON
L71620 U10J		材料供給装置 BAR FEEDER DEVICE			000 BT000	



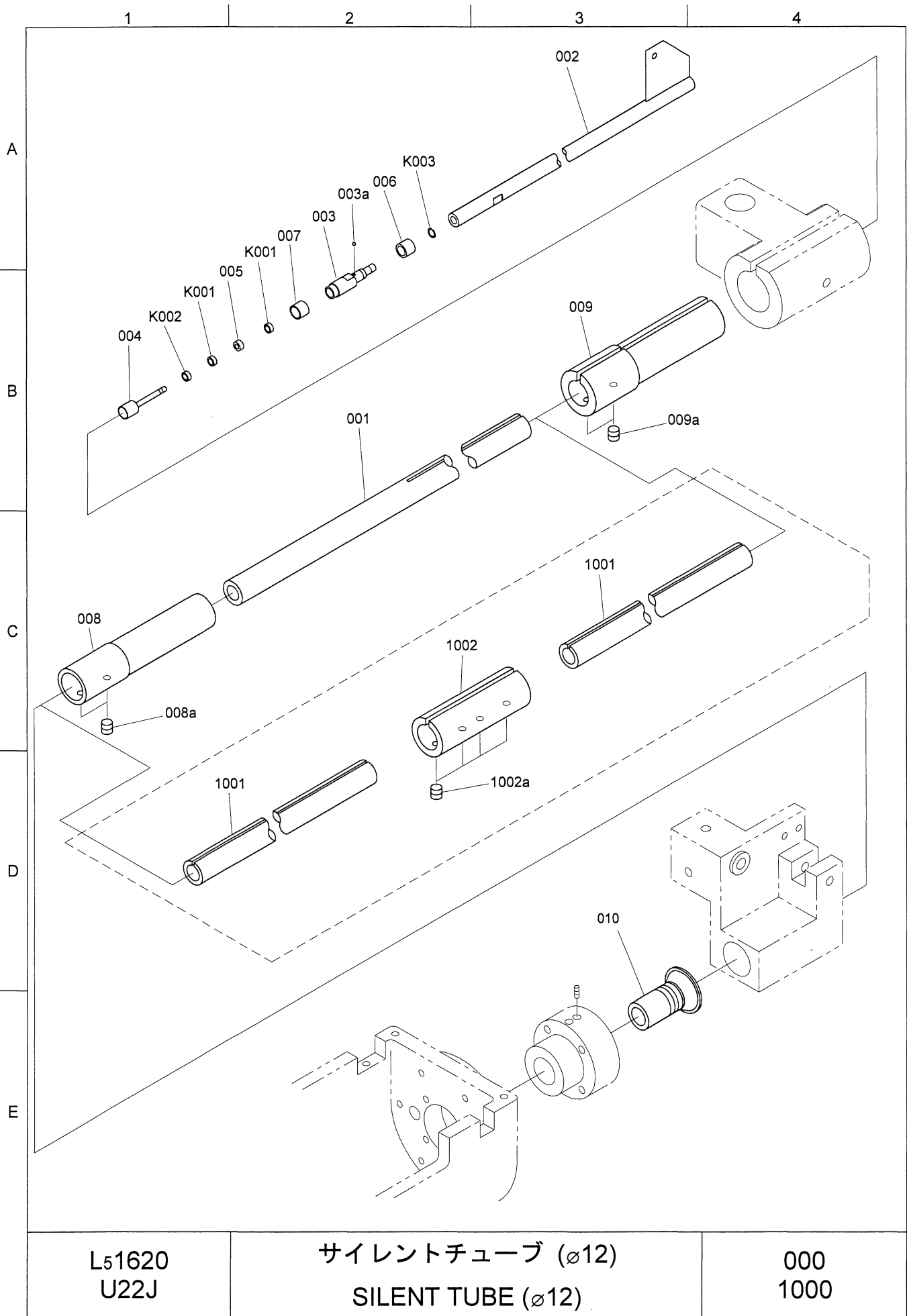
PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
101	重錘取付台	WEIGHT MOUNTING STAND		1	
101a	六角穴付止メネジ (平先)	SET SCREW	M6x8	2	
102	支柱	SUPPORTING COLUMN		1	
103	プーリーブラケット	BRACKET		1	
103a	六角穴付止メネジ (平先)	SET SCREW	M8x12	1	
104	プーリー軸	PULLEY SHAFT		1	
105	大プーリー	PULLEY		1	
105a	六角穴付止メネジ (平先)	SET SCREW	M8x10	1	
106	小プーリー	PULLEY		1	
106a	六角穴付止メネジ (平先)	SET SCREW	M8x10	1	
107	チューブサポート	TUBE SUPPORT		1	
107a	六角穴付止メネジ (平先)	SET SCREW	M8x16	1	
108	カラー	COLLAR		1	
108a	六角穴付止メネジ (平先)	SET SCREW	M8x12	1	
108b	真チュウ座	SEAT	M8	1	
109	六角ボルト	BOLT		4	
109a	六角ナット	NUT	M12	4	
110	コード固定カラー	FIXING COLLAR		1	
110a	六角穴付止メネジ (平先)	SET SCREW	M6x8	2	
110b	真チュウ座	SEAT	M6	2	
111	フック	HOOK		2	
112	重錘通し棒	BAR		1	
112a	六角ナット (3 種)	NUT	M12	2	
112b	平座金	WASHER	M16	1	
113	重錘	WEIGHT		4	
114	重錘	WEIGHT		2	
K101	ナイロンコード	NYLON CORD	ø4x9500	1	
K102	ナイロンコード	NYLON CORD	ø4x2000	1	
L71620 U10J		材料供給装置 BAR FEEDER DEVICE		100	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	パイプ	PIPE		1	
002	材料送り棒	MATERIAL BAR FEEDER		1	
002a	六角穴付止メネジ (平先)	SET SCREW	M4x4	1	
002b	真鍮座	SEAT	M4	1	
003	スリーブ (φ20)	SLEEVE (φ20)		1	
003a	鋼球	BALL	1/8 (φ3.1750)	3	
004	センター (φ20)	CENTER (φ20)		1	
005	スペーサー	SPACER		1	
006	押えリング	RING		1	
007	カバー	COVER		1	
008	チューブサポート	TUBE SUPPORT		1	
008a	六角穴付止メネジ (平先)	SET SCREW	M6x6	2	
K001	シュル型ニードルベアリング	NEEDLE BEARING	TLA810Z	2	IKO
K002	スラスト玉軸受	BEARING	SST-1680DSG	1	NMB
K003	インバーテッドリング	INVERTED RING	ISTW-14	1	OCHIAI
1001	パイプ	PIPE		2	
1002	継ぎ	JOINT		1	
1002a	六角穴付止メネジ (平先)	SET SCREW	M6x6	4	
M1620 U20J		サイレントチューブ (φ20) SILENT TUBE (φ20)		000 1000	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	パイプ	PIPE		1	
002	材料送り棒	MATERIAL BAR FEEDER		1	
003	スリーブ (ø16)	SLEEVE (ø16)		1	
003a	鋼球	BALL	3/32 (ø2.3812)	3	
004	センター (ø16)	CENTER (ø16)		1	
005	スペーサー	SPACER		1	
006	押えリング	RING		1	
007	カバー	COVER		1	
008	チューブサポート	TUBE SUPPORT		1	
008a	六角穴付止メネジ (平先)	SET SCREW	M6x6	2	
K001	シユル型ニードルベアリング	NEEDLE BEARING	TLA69ZZ	2	IKO
K002	スラスト玉軸受	BEARING	SST-1260DSG	1	NMB
K003	インバーテッドリング	INVERTED RING	ISTW-10	1	OCHIAI
1001	パイプ	PIPE		2	
1002	継ぎ	JOINT		1	
1002a	六角穴付止メネジ (平先)	SET SCREW	M6x6	4	
M1620 U21J		サイレントチューブ (ø16) SILENT TUBE (ø16)		000 1000	

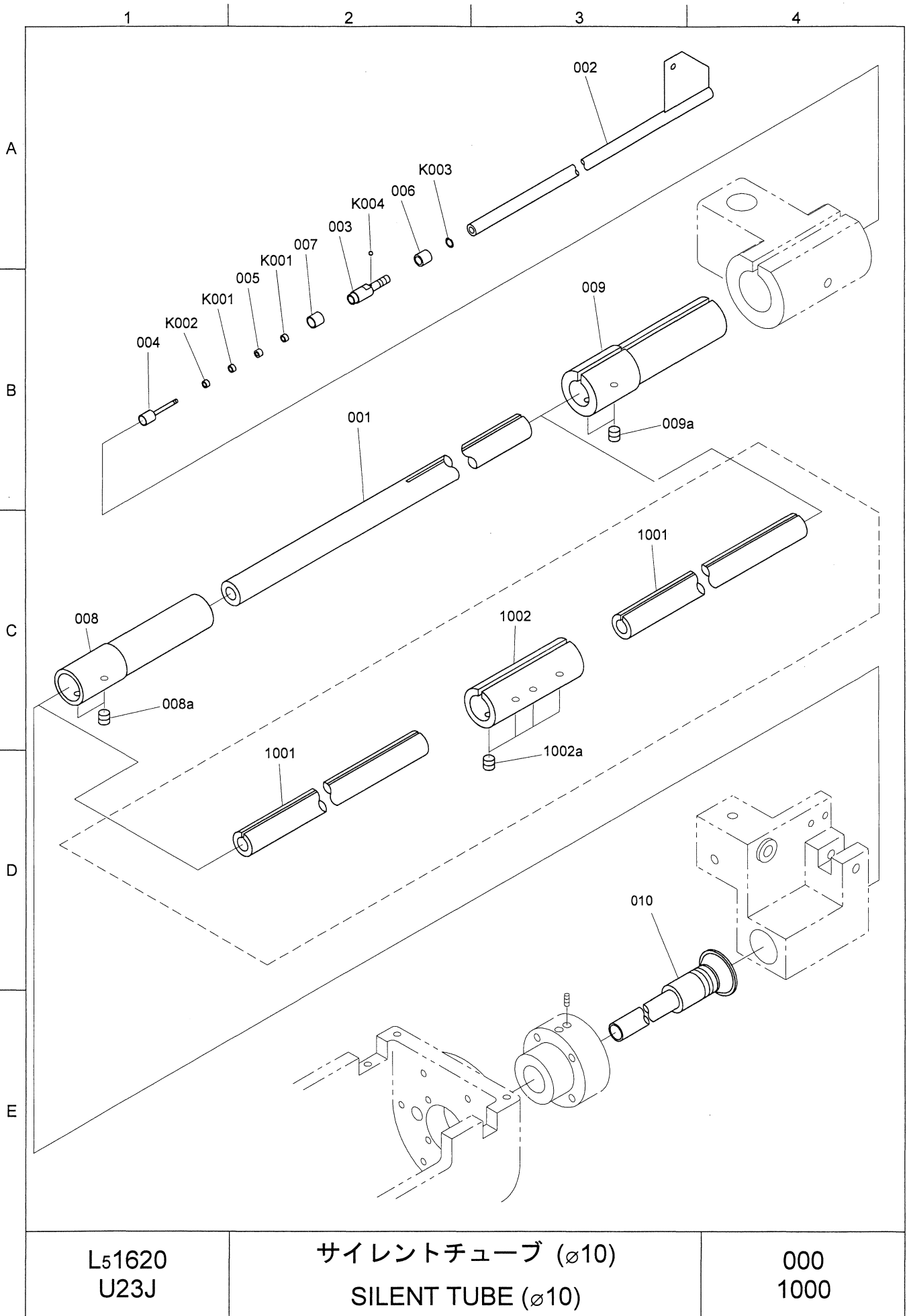


L51620
U22J

サイレントチューブ (ø12)
SILENT TUBE (ø12)

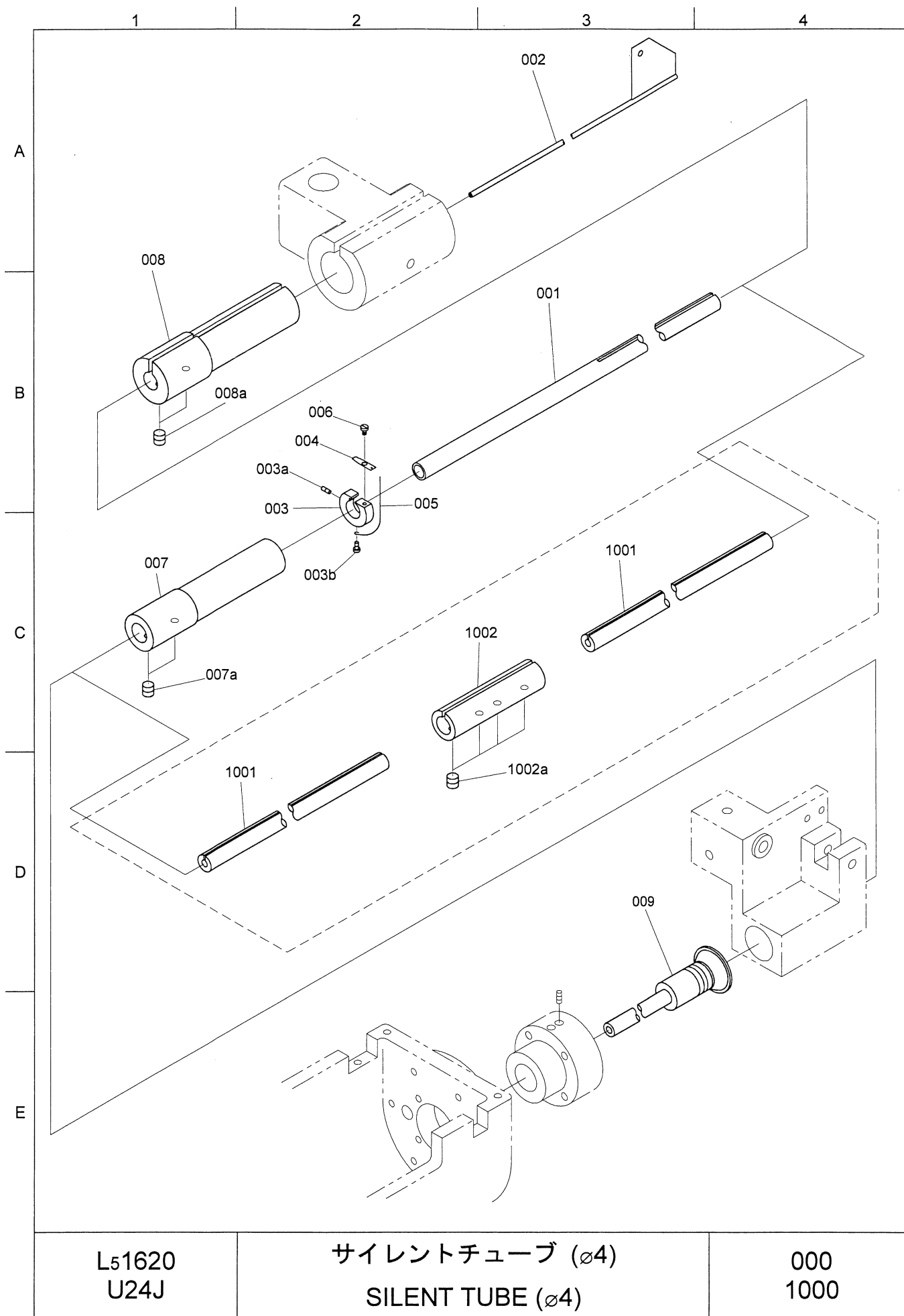
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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	パイプ	PIPE		1	
002	材料送り棒	MATERIAL BAR FEEDER		1	
003	スリーブ (φ12)	SLEEVE (φ12)		1	
003a	鋼球	BALL	3/32 (φ2.3812)	3	
004	センター (φ12)	CENTER (φ12)		1	
005	スペーサー	SPACER		1	
006	押えリング	RING		1	
007	カバー	COVER		1	
008	チューブサポート	TUBE SUPPORT		1	
008a	六角穴付止メネジ (平先)	SET SCREW	M6x6	2	
009	チューブサポート	TUBE SUPPORT		1	
009a	六角穴付止メネジ (平先)	SET SCREW	M6x6	2	
010	振れ止めブッシュ	STOPPER BUSHING		1	
K001	シュル型ニードルベアリング	NEEDLE BEARING	TLA48ZN	2	IKO
K002	スラスト玉軸受	BEARING	SST-1040DSG	1	NMB
K003	インバーテッドリング	INVERTED RING	ISTW-8	1	OCHIAI
1001	パイプ	PIPE		2	
1002	継ぎ	JOINT		1	
1002a	六角穴付止メネジ (平先)	SET SCREW	M6x6	4	
L51620 U22J		サイレントチューブ (φ12) SILENT TUBE (φ12)		000 1000	



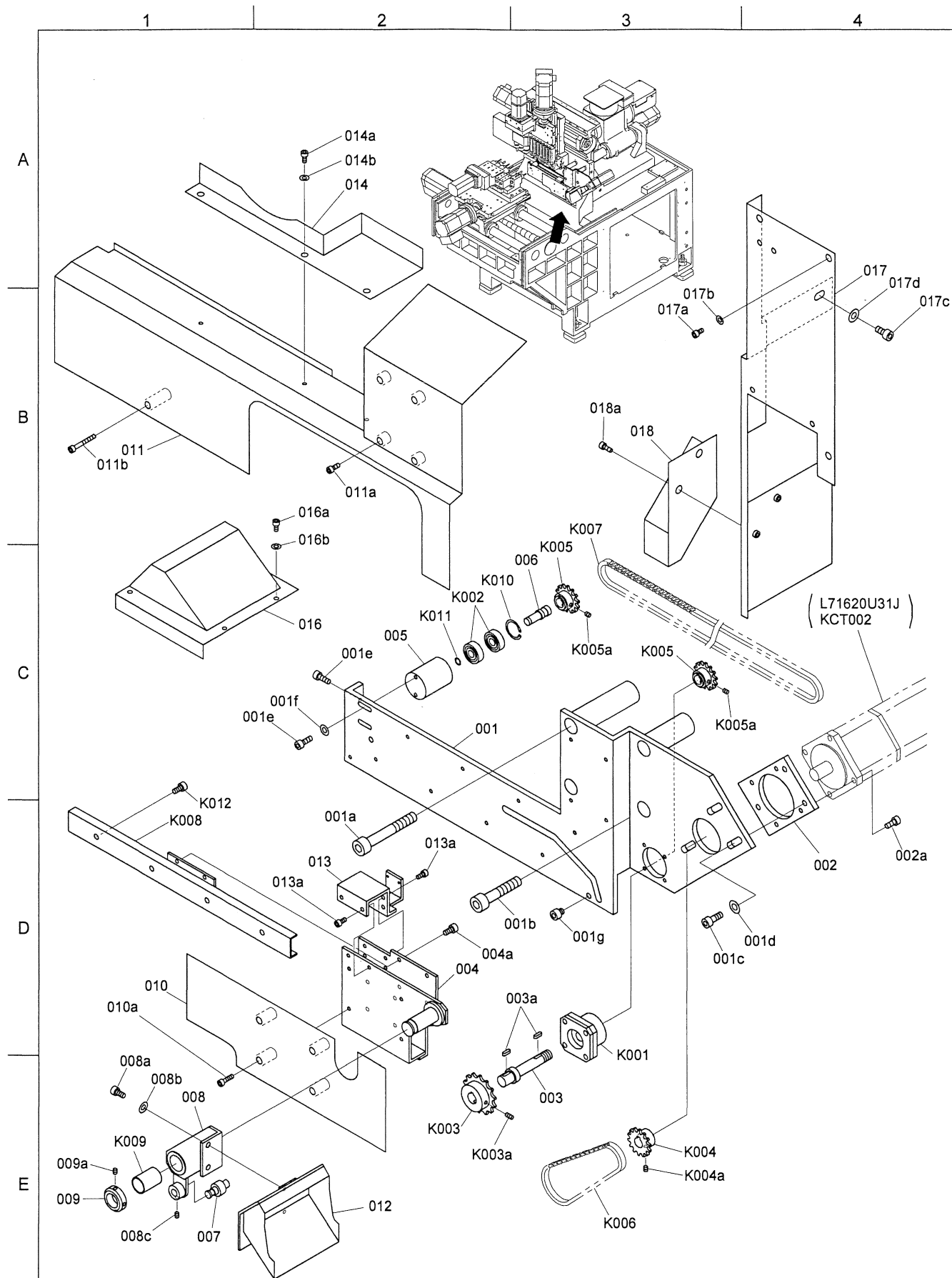
L51620 U23J	サイレントチューブ (φ10) SILENT TUBE (φ10)	000 1000
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PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	パイプ	PIPE	1	
002	材料送り棒	MATERIAL BAR FEEDER	1	
003	スリーブ (ø10)	SLEEVE (ø10)	1	
004	センター (ø10)	CENTER (ø10)	1	
005	スペーサー	SPACER	1	
006	押えリング	RING	1	
007	カバー	COVER	1	
008	チューブサポート	TUBE SUPPORT	1	
008a	六角穴付止メネジ (平先)	SET SCREW	2	
009	チューブサポート	TUBE SUPPORT	1	
009a	六角穴付止メネジ (平先)	SET SCREW	2	
010	振れ止めパイプ	STOPPER PIPE	1	
K001	シュル型ニードルベアリング	NEEDLE BEARING	2	NTN
K002	スラスト玉軸受	BEARING	1	NMB
K003	インバーテッドリング	INVERTED RING	1	OCHIAI
K004	鋼球	BALL	3	
1001	パイプ	PIPE	2	
1002	継ぎ	JOINT	1	
1002a	六角穴付止メネジ (平先)	SET SCREW	4	
L51620 U23J		サイレントチューブ (ø10) SILENT TUBE (ø10)		000 1000



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	パイプ	PIPE		1	
002	材料送り棒	MATERIAL BAR FEEDER		1	
003	抜け止めホルダー	HOLDER		10	
003a	六角穴付止メネジ (平先)	SET SCREW	M3x8	10	
003b	平小ネジ	SCREW	M3x6	10	
004	押え板	PLATE		10	
005	戻シバネ	SPRING		10	
006	ピボットネジ	PIVOT SCREW		10	
007	チューブサポート	TUBE SUPPORT		1	
007a	六角穴付止メネジ (平先)	SET SCREW	M6x8	2	
008	チューブサポート	TUBE SUPPORT		1	
008a	六角穴付止メネジ (平先)	SET SCREW	M6x6	2	
009	振れ止めパイプ	STOPPER PIPE		1	
1001	パイプ	PIPE		2	
1002	継ぎ	JOINT		1	
1002a	六角穴付止メネジ (平先)	SET SCREW	M6x6	4	
L51620 U24J		サイレントチューブ (ø4) SILENT TUBE (ø4)		000 1000	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	取付ベース	BASE		1	
001a	六角穴付ボルト	BOLT	M10x70	2	
001b	六角穴付ボルト	BOLT	M10x50	2	
001c	六角穴付ボルト	BOLT	M6x16	3	
001d	平座金	WASHER	M6	3	
001e	六角穴付ボルト	BOLT	M4x16	3	
001f	平座金	WASHER	M4	2	
001g	六角穴付ボルト	BOLT	M6x6	2	
002	モータープレート	MOTOR PLATE		1	
002a	六角穴付ボルト	BOLT	M5x12	4	
003	軸	SHAFT		1	
003a	キー (両丸)	KEY	3 ^{+0.02} _{+0.01} x3x10	2	
004	スライド板	SLIDE PLATE		1	
004a	六角穴付ボルト	BOLT	M4x6	8	
005	軸受ホルダー	BEARING HOLDER		1	
006	軸	SHAFT		1	
007	ピン	PIN		1	
008	アーム	ARM		1	
008a	六角穴付ボルト	BOLT	M4x10	2	
008b	平座金	WASHER	M4	2	
008c	六角穴付止メネジ (平先)	SET SCREW	M4x5	1	
009	スラストリング	RING		1	
009a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
010	スライドカバー	SLIDE COVER		1	
010a	六角穴付ボルト	BOLT	M4x16	4	
011	固定カバー	FIXING COVER		1	
011a	六角穴付ボルト	BOLT	M4x12	4	
011b	六角穴付ボルト	BOLT	M4x30	1	
012	パーツキャッチャー	PARTS CATCHER		1	
013	補強板	PLATE		1	
013a	六角穴付ボルト	BOLT	M4x6	6	
014	防油板	SPLASH PLATE		1	
014a	六角穴付ボルト	BOLT	M4x6	3	
014b	平座金	WASHER	M4	3	
016	製品シュート	CHUTE		1	
016a	六角穴付ボルト	BOLT	M4x6	4	
016b	平座金	WASHER	M4	4	
017	刃物台カバー (1)	TOOL POST COVER (1)		1	
017a	六角穴付ボルト	BOLT	M4x8	3	
017b	平座金	WASHER	M4	3	
017c	六角穴付ボルト	BOLT	M6x10	1	
017d	平座金	WASHER	M6	1	
018	切粉シュート	CHIP CHUTE		1	
018a	六角穴付ボルト	BOLT	M4x10	2	
L71620 U31J		ワークセパレーター WORKPIECE SEPARATOR		000	



L71620
U31J

ワークセパレーター
WORKPIECE SEPARATOR

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
K001	サポートユニット	SUPPORT UNIT	FK10	1	THK
K002	ミニチュア玉軸受	BEARING	608ZZ	2	NTN
K003	スプロケット	SPROCKET	RS25	1	TSUBAKI
K003a	六角穴付止メネジ (平先)	SET SCREW	M4x8	2	
K004	スプロケット	SPROCKET	RS25	1	TSUBAKI
K004a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
K005	スプロケット	SPROCKET	RS25	2	TSUBAKI
K005a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
K006	チェーン	CHAIN	RS25 52 LINK	1	TSUBAKI
K007	チェーン	CHAIN	RS25 136 LINK	1	TSUBAKI
K008	スライドパック	SLIDE PACK	FBW2560RUU +320L	2	THK
K009	M ライナ軸受	BEARING	R-ML1625	1	NTN
K010	インバーテッドリング	INVERTED RING	IRTW22	1	OCHIAI
K011	インバーテッドリング	INVERTED RING	ISTW8	1	OCHIAI
K012	六角穴付ボタンボルト	BOLT	M4x6	8	
L71620 U31J		ワークセパレーター WORKPIECE SEPARATOR		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	UNIT6	3 軸一体サーボアンプ モジュール	3-AXIS INCORPORATION SERVO AMP. MODULE	MDS-D-V3 -202020	1	MITSUBISHI ELECTRIC
KCT002	MA4	AC サーボモータ	AC SERVO MOTOR	HF-KP23JK -S11	1	MITSUBISHI ELECTRIC
WT101		A4 軸モータ動力ケーブル	CABLE		1	
WT102		A4 軸モータ信号ケーブル	CABLE		1	
KWT101	U7CN31S	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC- TRONICS AMP
KWT102		コンタクト	CONTACT	316040-2	4	TYCO ELEC- TRONICS AMP
KWT103	U7CN2S	コネクタプラグ	CONNECTOR PLUG	54593-1011	1	MOLEX
KWT104		プラグカバーA	PLUG COVER A	54594-1015	1	MOLEX
KWT105		プラグカバーB	PLUG COVER B	54595-1005	1	MOLEX
KWT106		シェルカバー	SHELL COVER	58935-1000	1	MOLEX
KWT107		シェルボディー	SHELL BODY	58934-1000	1	MOLEX
KWT108		ケーブルクランプ	CABLE CLAMP	58937-0000	1	MOLEX
KWT109		ストレートコネクタ	CONNECTOR	N2BG25	1	SANKEI
KWT110		サンフレキ	FLEXIBLE TUBE	NP#25 (700mm)	1	SANKEI
KWT111	CNPA4	ハウジング	HOUSING	JN4FT04SJ1	1	JAE
KWT112		コンタクト	CONTACT	ST-TMH-S-C1B -100- (A534G)	4	JAE
KWT113	CNSA4	コネクタ	CONNECTOR	1674320-1	1	TYCO ELEC- TRONICS AMP
KWT114		コンタクト	CONTACT	1674333-1	9	TYCO ELEC- TRONICS AMP
L71620 U31J		ワークセパレーター WORKPIECE SEPARATOR			CT000 WT100	

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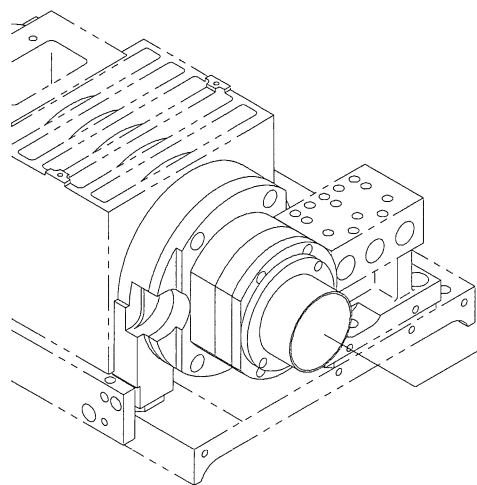
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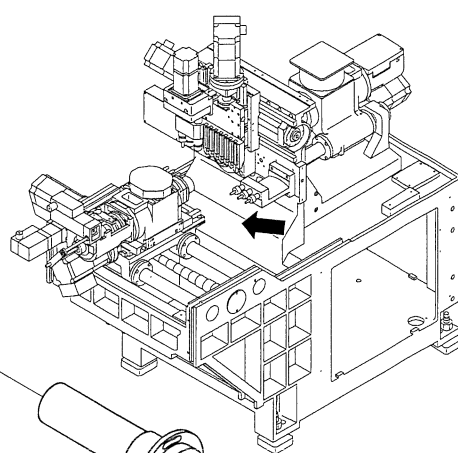
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L71620
U32J

ワークセパレーター
WORKPIECE SEPARATOR

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	製品シュート (1)	CHUTE (1)		1	
001a	六角穴付ボルト	BOLT	M6x10	4	
001b	六角穴付ボルト	BOLT	M4x6	4	
002	製品シュート (2)	CHUTE (2)		1	
002a	六角穴付ボルト	BOLT	M6x12	4	
002b	六角穴付ボルト	BOLT	M4x6	4	
003	製品受けかご	RECEIVER		1	
004	ナット	NUT		1	
005	リングワッシャ	RING WASHER		1	
005a	六角穴付ボルト	BOLT	M4x10	3	
006	フタ (1)	LID (1)		1	
006a	六角穴付ボルト	BOLT	M4x5	3	
006b	平座金	WASHER	M4	3	
007	フタ (2)	LID (2)		1	
007a	六角穴付ボルト	BOLT	M4x5	3	
007b	平座金	WASHER	M4	3	
L71620 U32J		ワークセパレーター WORKPIECE SEPARATOR		000	

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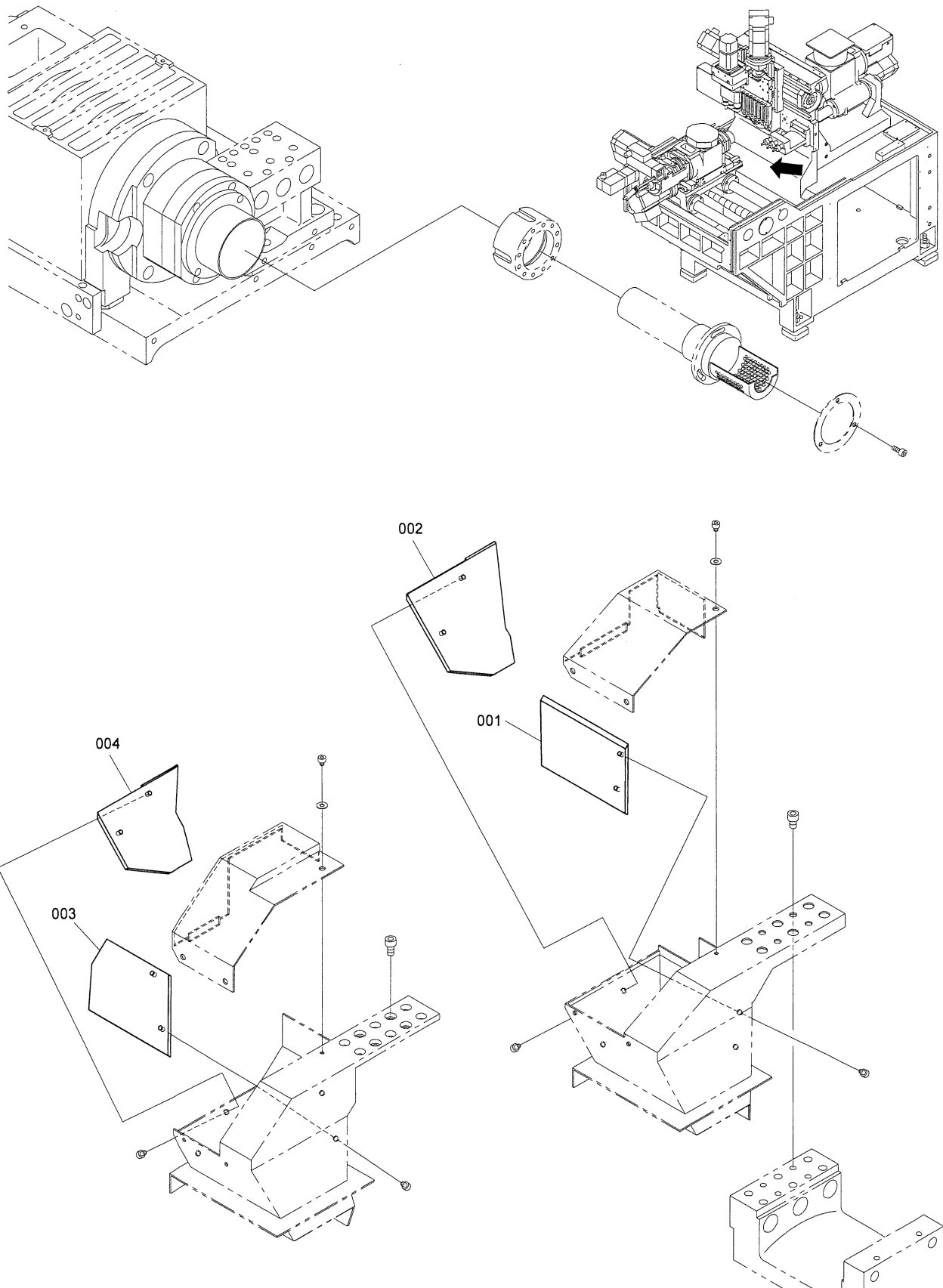
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L71620
U321J

キズ防止板
CUSHION BOARD

000

PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	シュート (1) CHUTE (1)		1	
002	シュート (2) CHUTE (2)		1	
003	シュート (3) CHUTE (3)		1	
004	シュート (4) CHUTE (4)		1	
L71620 U321J	キズ防止板 CUSHION BOARD		000	

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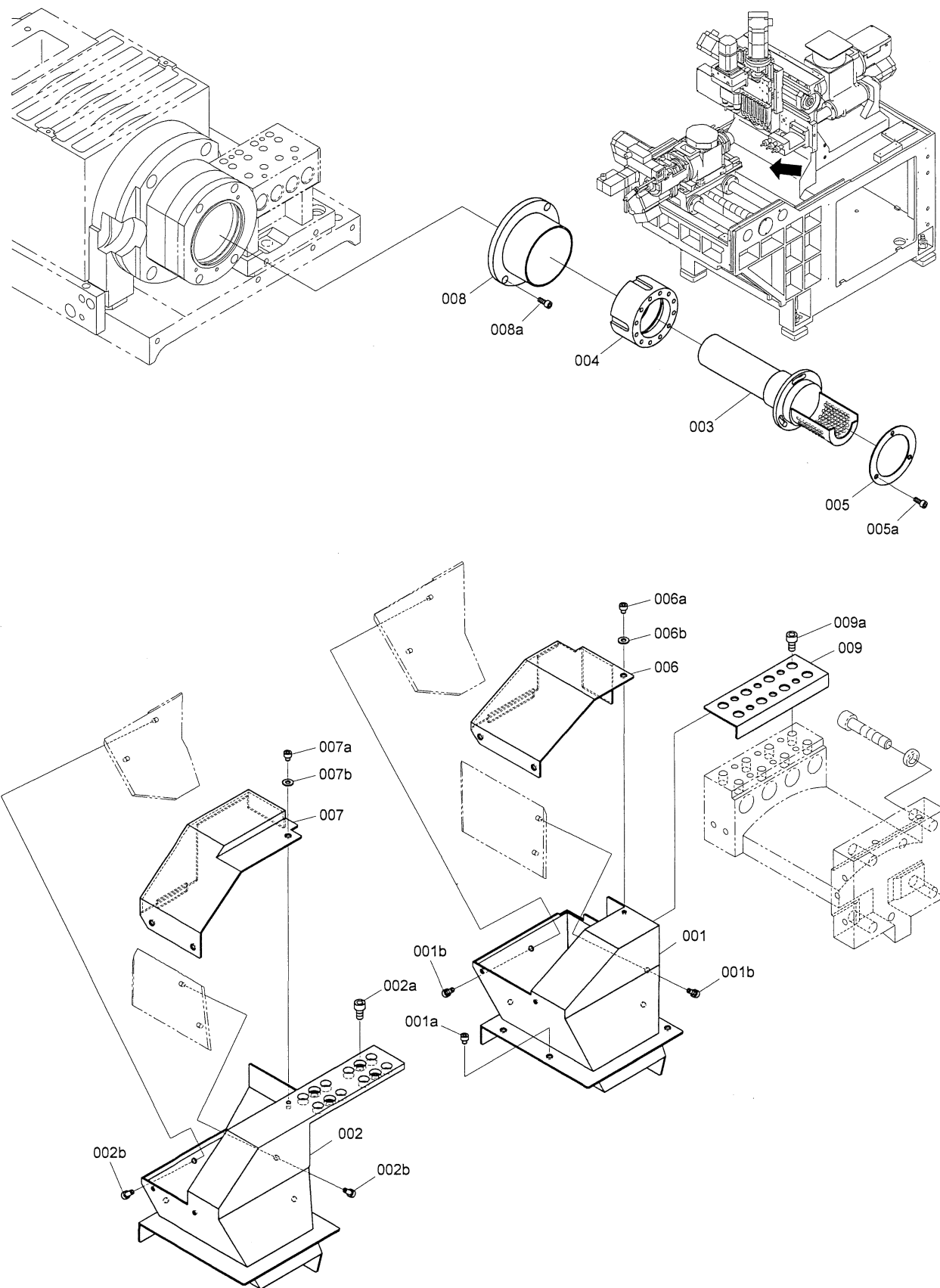
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L71620
U33J

ワークセパレーター
WORKPIECE SEPARATOR

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	製品シュート (1)	CHUTE (1)		1	
001a	六角穴付ボルト	BOLT	M4x5	3	
001b	六角穴付ボルト	BOLT	M4x6	4	
002	製品シュート (2)	CHUTE (2)		1	
002a	六角穴付ボルト	BOLT	M6x12	4	
002b	六角穴付ボルト	BOLT	M4x6	4	
003	製品受けかご	RECEIVER		1	
004	ナット	NUT		1	
005	リングワッシャ	RING WASHER		1	
005a	六角穴付ボルト	BOLT	M4x10	3	
006	フタ (1)	LID (1)		1	
006a	六角穴付ボルト	BOLT	M4x5	3	
006b	平座金	WASHER	M4	3	
007	フタ (2)	LID (2)		1	
007a	六角穴付ボルト	BOLT	M4x5	3	
007b	平座金	WASHER	M4	3	
008	主軸キャップ	SPINDLE CAP		1	
008a	六角穴付ボルト	BOLT	M4x10	2	
009	ドリルホルダーストッパー	DRILL HOLDER STOPPER		1	
009a	六角穴付ボルト	BOLT	M6x10	6	
L71620 U33J		ワークセパレーター WORKPIECE SEPARATOR		000	

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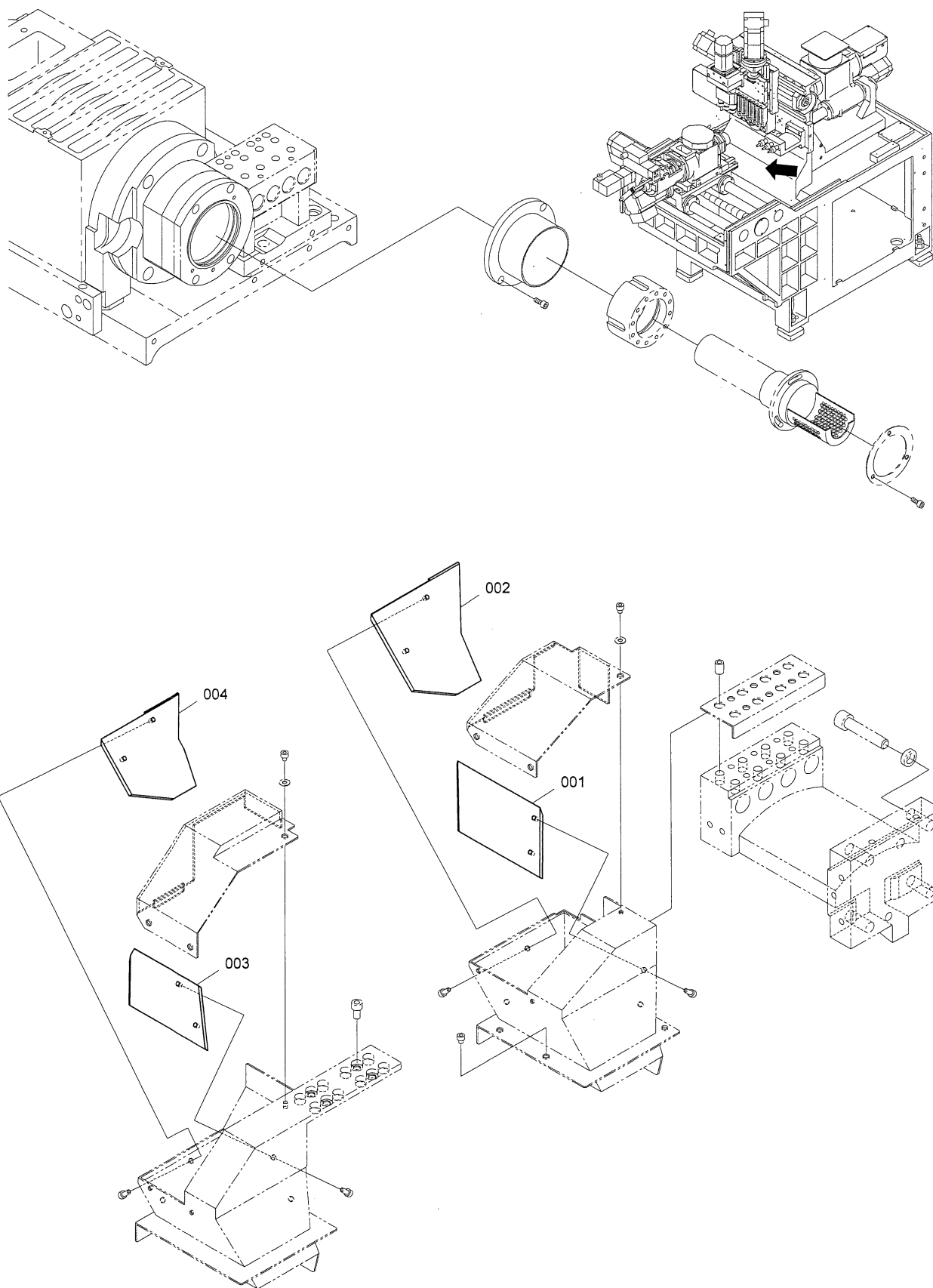
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L71620
U331J

キズ防止板
CUSHION BOARD

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PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	シュート(1)CHUTE (1)		1	
002	シュート(2)CHUTE (2)		1	
003	シュート(3)CHUTE (3)		1	
004	シュート(4)CHUTE (4)		1	
L71620 U331J	キズ防止板 CUSHION BOARD		000	

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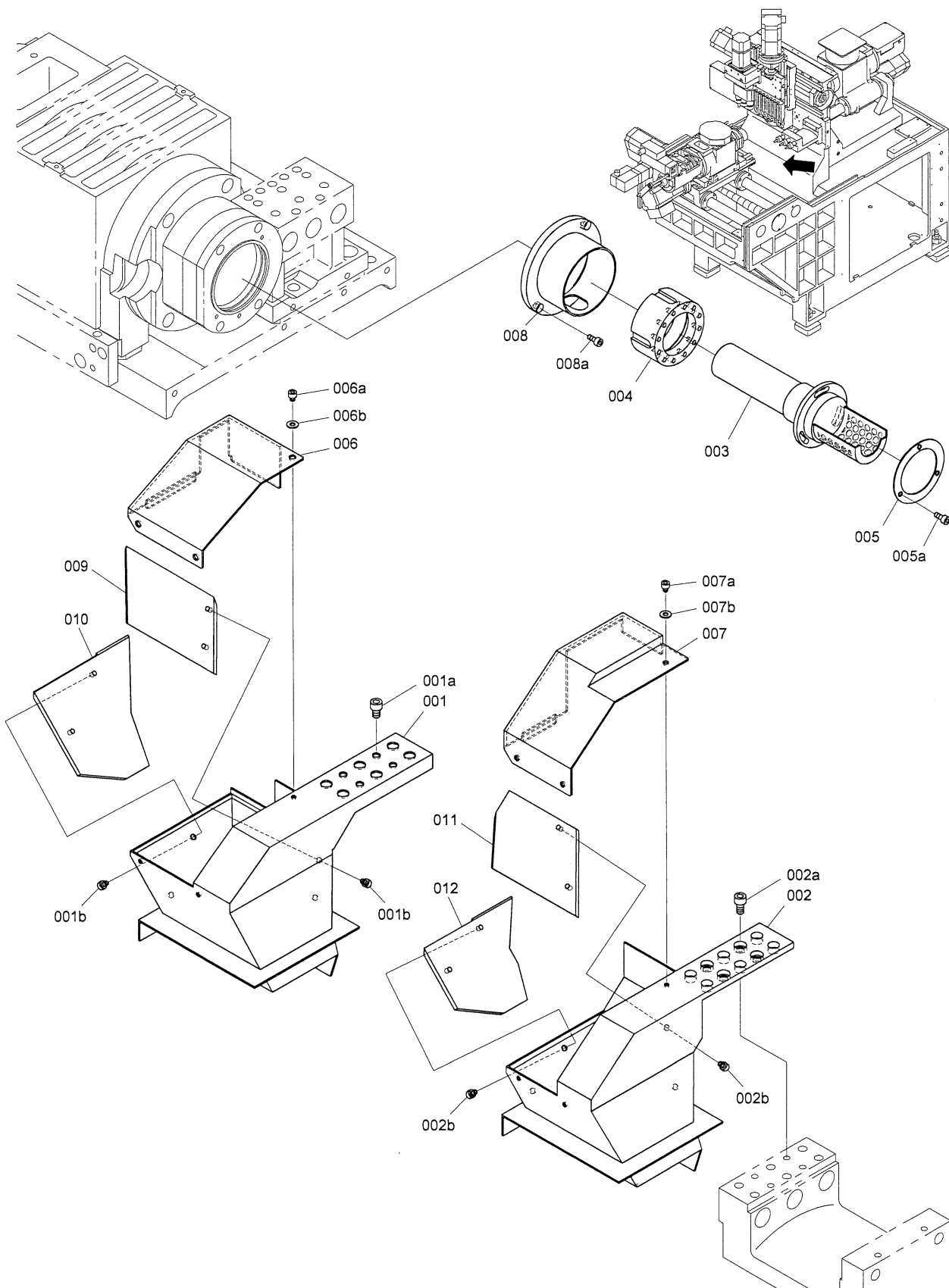
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L71620
U322J

ワークセパレーター (キズ防止)
WORKPIECE SEPARATOR

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	製品シュート (1)	WORKPIECE CHUTE (1)		1	
001a	六角穴付ボルト	BOLT	M6x10	4	
001b	六角穴付ボルト	BOLT	M4x6	4	
002	製品シュート (2)	WORKPIECE CHUTE (2)		1	
002a	六角穴付ボルト	BOLT	M6x12	4	
002b	六角穴付ボルト	BOLT	M4x6	4	
003	製品受けカゴ	WORKPIECE BASKET		1	
004	ナット	NUT		1	
005	リングワッシャ	RING WASHER		1	
005a	六角穴付ボルト	BOLT	M4x10	3	
006	フタ (1)	COVER (1)		1	
006a	六角穴付ボルト	BOLT	M4x5	3	
006b	平座金	WASHER	M4	3	
007	フタ (2)	COVER (2)		1	
007a	六角穴付ボルト	BOLT	M4x5	3	
007b	平座金	WASHER	M4	3	
008	主軸キャップ	SPINDLE CAP		1	
008a	六角穴付ボルト	BOLT	M4x10	2	
009	シュート (1)	CHUTE (1)		1	
010	シュート (2)	CHUTE (2)		1	
011	シュート (3)	CHUTE (3)		1	
012	シュート (4)	CHUTE (4)		1	
L71620 U322J		ワークセパレーター (キズ防止) WORKPIECE SEPARATOR		000	

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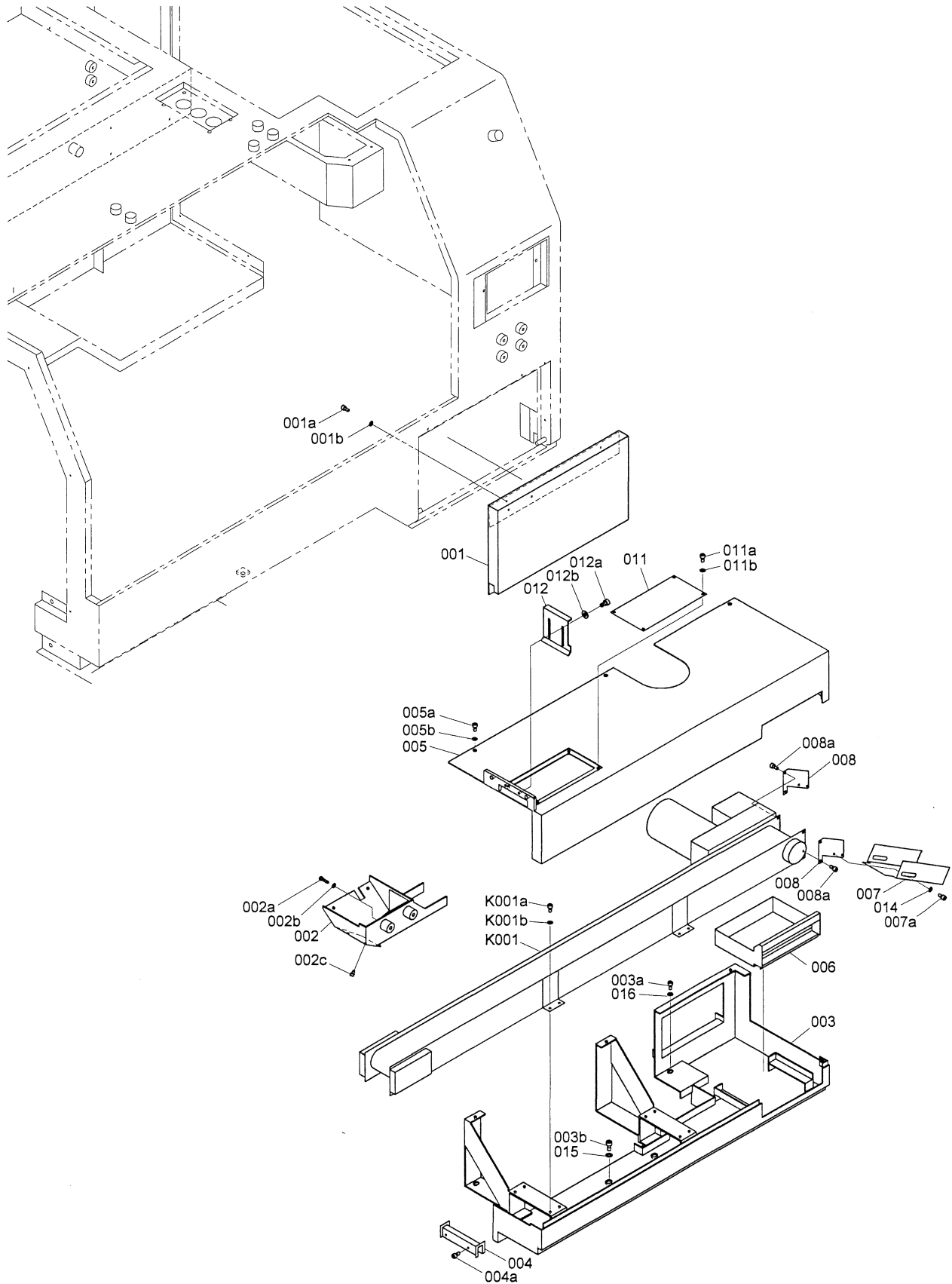
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L71620
U35J

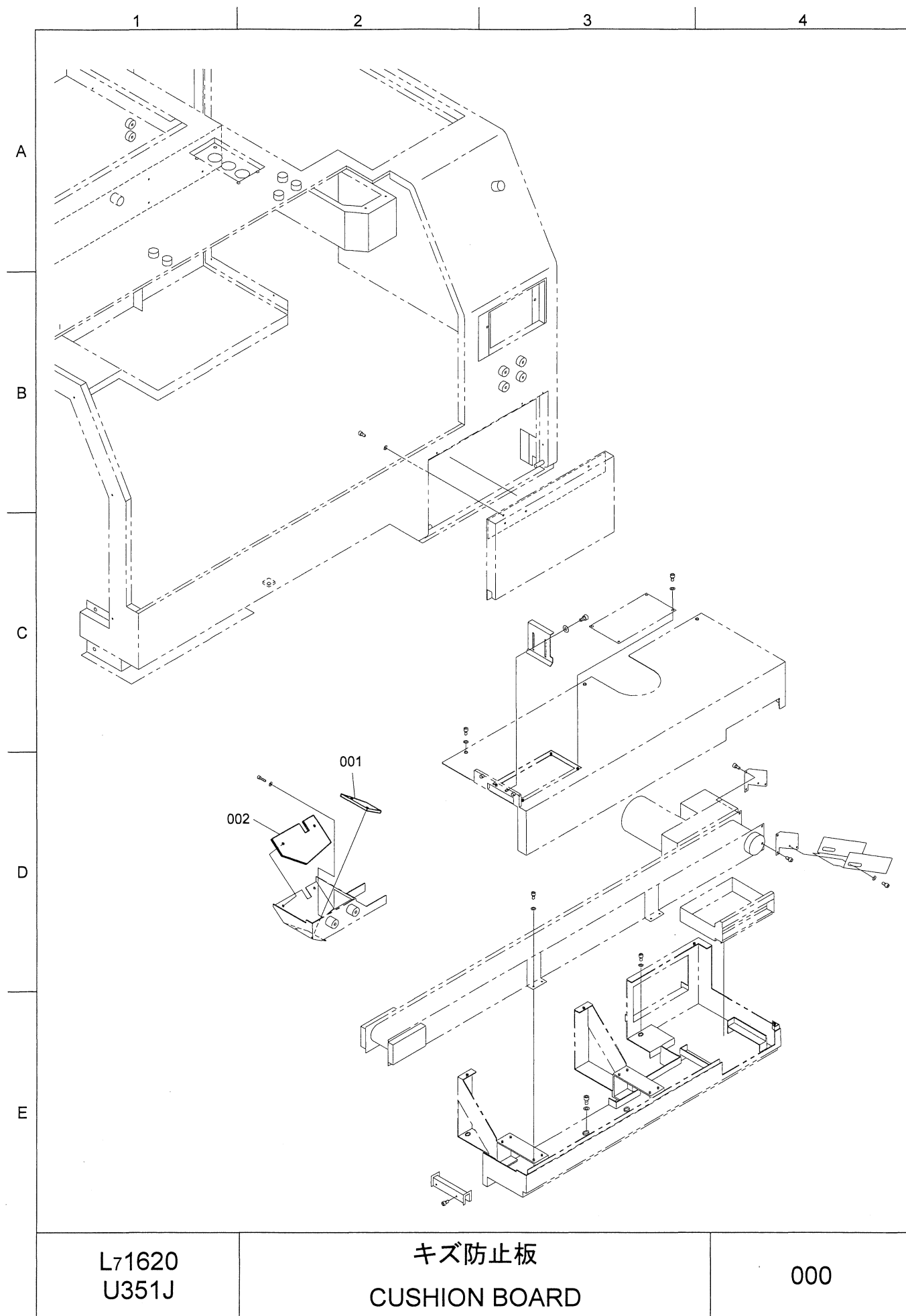
ワークコンベア
WORKPIECE CONVEYOR

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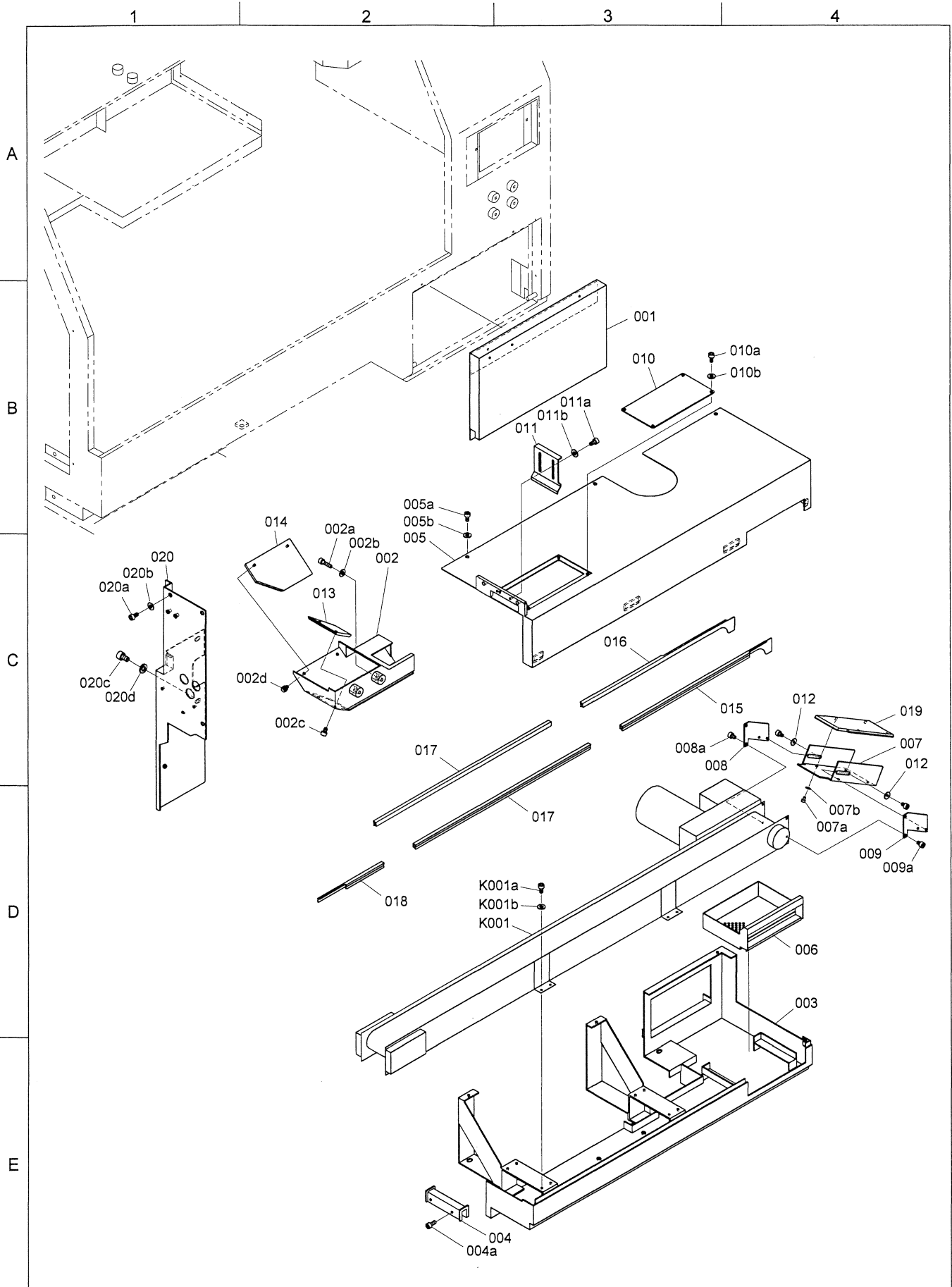
PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	前面カバー	FRONT SIDE COVER		1	
001a	六角穴付ボルト	BOLT	M4x10	2	
001b	平座金	WASHER	M4	2	
002	製品受け	RECEIVER		1	
002a	六角穴付ボルト	BOLT	M4x16	2	
002b	平座金	WASHER	M4	2	
002c	六角穴付ボルト	BOLT	M4x6	4	
003	コンベアブラケット	CONVEYOR BRACKET		1	
003a	六角穴付ボルト	BOLT	M4x6	2	
003b	六角穴付ボルト	BOLT	M6x16	2	
004	油受け	OIL PAN		1	
004a	六角穴付ボルト	BOLT	M4x10	2	
005	コンベアカバー	CONVEYOR COVER		1	
005a	六角穴付ボルト	BOLT	M4x8	6	
005b	平座金	WASHER	M4	6	
006	切粉受け	CHIP PAN		1	
007	コンベアシュート	CONVEYOR CHUTE		1	
007a	六角穴付ボルト	BOLT	M4x6	4	
008	シュートブラケット	CHUTE BRACKET		2	
008a	六角穴付ボルト	BOLT	M4x6	4	
011	カバー	COVER		1	
011a	六角穴付ボルト	BOLT	M4x8	4	
011b	平座金	WASHER	M4	4	
012	カバー	COVER		1	
012a	六角穴付ボルト	BOLT	M4x8	2	
012b	平座金	WASHER	M4	2	
014	座金	WASHER	M4	4	
015	座金	WASHER	M6	2	
016	座金	WASHER	M4	2	
K001	ワークコンベア	WORKPIECE CONVEYOR	FOR L71620	1	MARUYASU
K001a	六角穴付ボルト	BOLT	M4x10	8	
K001b	平座金	WASHER	M4	8	
L71620 U35J		ワークコンベア WORKPIECE CONVEYOR		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KDT001	RY3	リレー	RELAY	G2R-2-SD	1	OMRON
KDT002		ソケット	SOCKET	P2RF-08	1	OMRON
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PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	シュート (1) CHUTE (1)		1	
002	シュート (2) CHUTE (2)		1	
L71620 U351J		キズ防止板 CUSHION BOARD		000



L71620
U352J

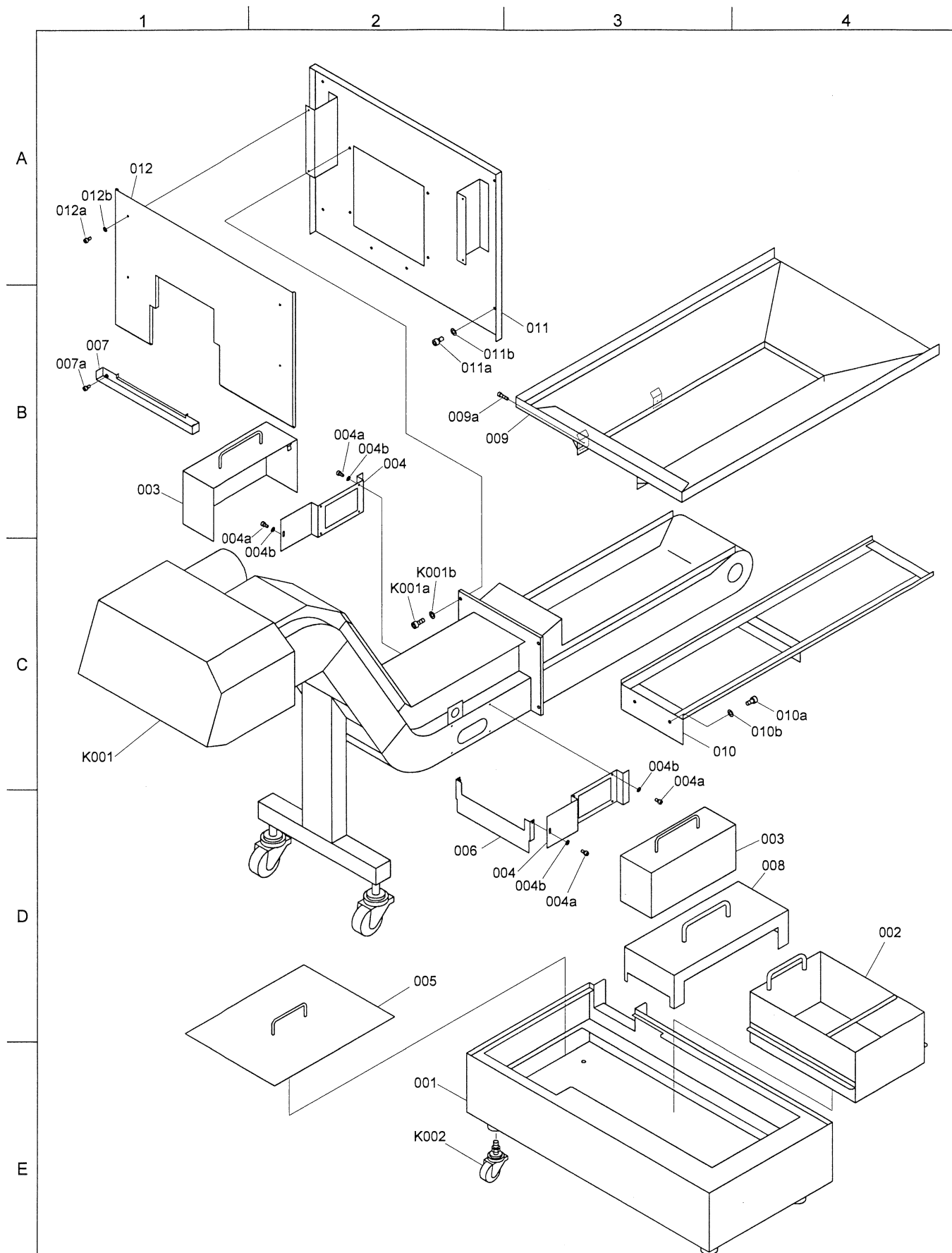
ワークコンベア
WORKPIECE CONVEYOR

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS	
001	前面カバー	FRONT COVER		1		
002	製品受け	WORKPIECE CHUTE		1		
002a	六角穴付ボルト	BOLT	M4x16	2		
002b	平座金	WASHER	M4	2		
002c	六角穴付ボルト	BOLT	M4x6	4		
003	コンベアブラケット	BRACKET		1		
004	油受け	OIL PAN		1		
004a	六角穴付ボルト	BOLT	M4x10	2		
005	コンベアカバー	COVER		1		
005a	六角穴付ボルト	BOLT	M4x8	6		
005b	平座金	WASHER	M4	6		
006	切粉受け	CHIP PAN		1		
007	コンベアシュート	CHUTE		1		
007a	六角穴付ボルト	BOLT	M4x6	4		
007b	平座金	WASHER	M4	4		
008	シュートブラケット	CHUTE BRACKET		1		
008a	六角穴付ボルト	BOLT	M4x6	2		
009	シュートブラケット	CHUTE BRACKET		1		
009a	六角穴付ボルト	BOLT	M4x6	2		
010	カバー	COVER		1		
010a	六角穴付ボルト	BOLT	M4x8	4		
010b	平座金	WASHER	M4	4		
011	カバー	COVER		1		
011a	六角穴付ボルト	BOLT	M4x8	2		
011b	平座金	WASHER	M4	2		
012	座金	WASHER		4		
013	シュート (1)	CHUTE (1)		1		
014	シュート (2)	CHUTE (2)		1		
015	キズ防止ガイド (A)	GUIDE PLATE (A)		1		
016	キズ防止ガイド (B)	GUIDE PLATE (B)		1		
017	キズ防止ガイド (C)	GUIDE PLATE (C)		2		
018	キズ防止ガイド (D)	GUIDE PLATE (D)		1		
019	シュート	CHUTE		1		
020	刃物台カバー (1)	TOOL POST COVER (1)		1		
020a	六角穴付ボルト	BOLT	M4x8	3		
020b	平座金	WASHER	M4	3		
020c	六角穴付ボルト	BOLT	M6x10	2		
020d	平座金	WASHER	M6	2		
K001	ワークコンベア	WORKPIECE CONVEYOR	FOR L71620	1		MARUYASU
K001a	六角穴付ボルト	BOLT	M4x10	8		
K001b	平座金	WASHER	M4	8		
L71620 U352J		ワークコンベア WORKPIECE CONVEYOR			000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KDT001	RY3	リレー	RELAY	G2R-2-SD DC24V	1	OMRON
KDT002		ソケット	SOCKET	P2RF-08	1	OMRON
L71620 U352J		ワークコンベア WORKPIECE CONVEYOR			DT000	

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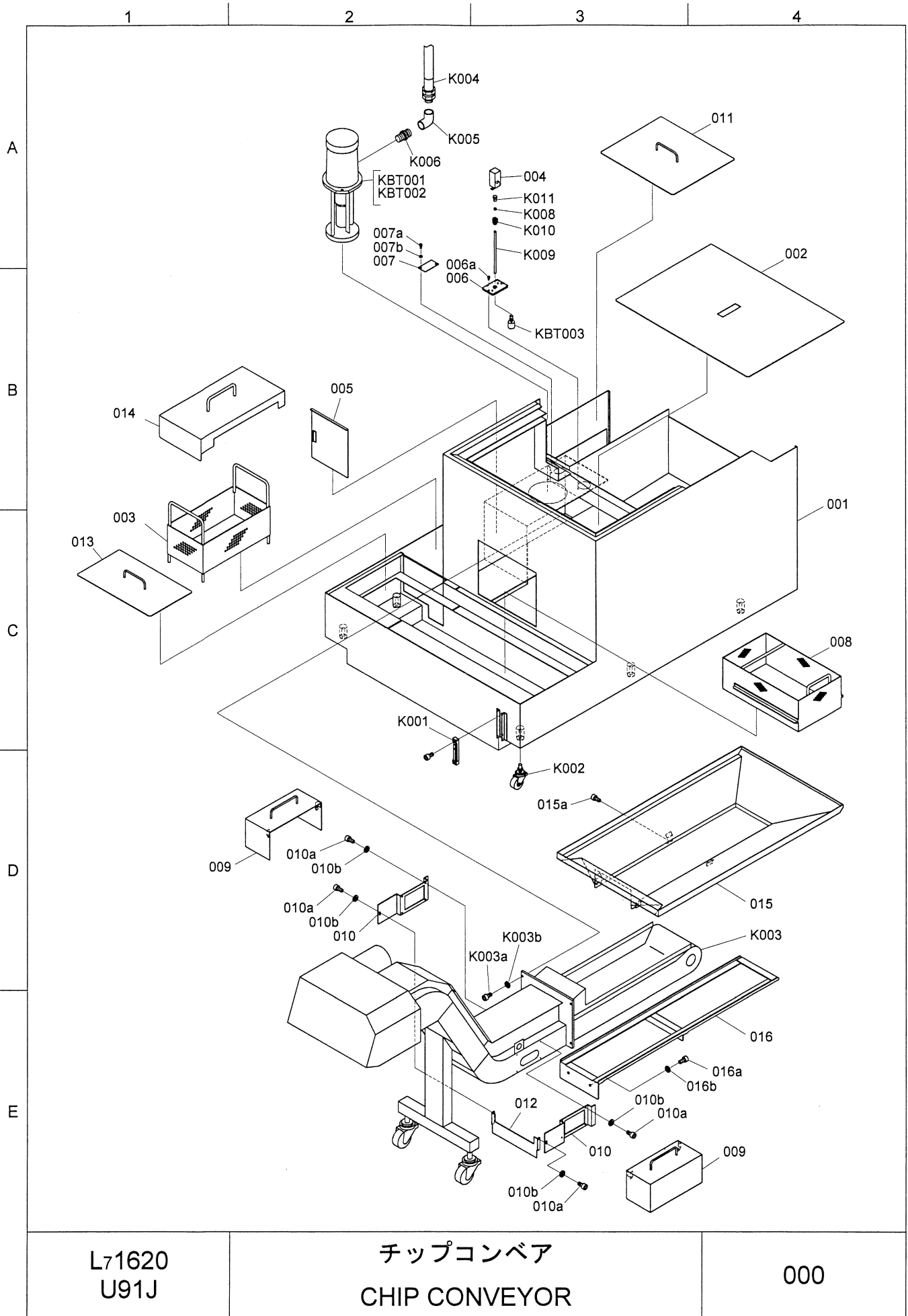


L71620
U90J

チップコンベア
CHIP CONVEYOR

000
WT000
WT100

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
001		切削油タンク	COOLANT TANK		1	
002		切粉受箱	CHIP RECEIVER BOX		1	
003		コンベアカバー	CONVEYOR COVER		2	
004		コンベアブラケット	CONVEYOR BRACKET		2	
004a		六角穴付ボルト	BOLT	M4x8	10	
004b		平座金	WASHER	M4	10	
005		フタ	LID		1	
006		防油板 (1)	SPLASH PLATE (1)		1	
007		防油板 (2)	SPLASH PLATE (2)		1	
007a		六角穴付ボルト	BOLT	M4x10	2	
008		切削油タンクカバー	COOLANT TANK COVER		1	
009		切粉シュート	CHIP CHUTE		1	
009a		六角穴付ボルト	BOLT	M4x16	2	
010		レール	RAIL		1	
010a		六角穴付ボルト	BOLT	M6x10	2	
010b		平座金	WASHER	M6	2	
011		コンベアフランジ	CONVEYOR FLANGE		1	
011a		六角穴付ボルト	BOLT	M6x10	5	
011b		平座金	WASHER	M6	5	
012		化粧板	COVER		1	
012a		六角穴付ボルト	BOLT	M4x6	4	
012b		平座金	WASHER	M4	4	
K001		チップコンベア	CHIP CONVEYOR	L71620U90J	1	CMTN
				-CON		
K001a		六角穴付ボルト	BOLT	M6x16	4	
K001b		平座金	WASHER	M6	4	
K002		キャスター	CASTER	415EA-N50	4	HAMMER CASTER
KWT001	CNCIP	コネクタ	CONNECTOR	MS3102A 20-15S	1	JAE
KWT101	CNCIP	コネクタ	CONNECTOR	MS3106B 20-15P	1	JAE
KWT102		ケーブルクランプ	CABLE CLAMP	MS3057-12A	1	JAE
L71620 U90J		チップコンベア CHIP CONVEYOR			000 WT000 WT100	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	切削油タンク	COOLANT TANK		1	
002	フタ	LID		1	
003	切粉受箱	CHIP RECEIVER BOX		1	
004	リード線カバー	LEAD WIRE COVER		1	
005	仕切板	PLATE		1	
006	スイッチ取付板	SWITCH MOUNTING PLATE		1	
006a	六角穴付ボルト	BOLT	M5x10	2	
007	フタ	LID		1	
007a	六角穴付ボルト	BOLT	M6x12	2	
007b	平座金	WASHER	M6	2	
008	切粉受箱	CHIP RECEIVER BOX		1	
009	コンベアカバー	CONVEYOR COVER		2	
010	コンベアブラケット	CONVEYOR BRACKET		2	
010a	六角穴付ボルト	BOLT	M4x8	10	
010b	平座金	WASHER	M4	10	
011	フタ	LID		1	
012	防油板 (1)	SPLASH PLATE (1)		1	
013	フタ	LID		1	
014	切削油タンクカバー	COOLANT TANK COVER		1	
015	切粉シュート	CHIP CHUTE		1	
015a	六角穴付ボルト	BOLT	M4x16	2	
016	レール	RAIL		1	
016a	六角穴付ボルト	BOLT	M6x10	2	
016b	平座金	WASHER	M6	2	
K001	クランプ型油面計	OIL GAUGE	ø6x100	1	MARUWA
K002	自在キャスター	CASTER	415EA-N50	6	HAMMER CASTER
K003	チップコンベア	CHIP CONVEYOR	L71620U90J- CON	1	CMTN
K003a	六角穴付ボルト	BOLT	M6x16	4	
K003b	平座金	WASHER	M6	4	
K004	トヨスプリングホース	HOSE	1"	1	TOYO FLEX
K005	エルボ	ELBOW	1"	1	
K006	ニップル	NIPPLE	1"	1	
K008	スリーブ	SLEEVE	PB6	1	SHOWA
K009	アルミパイプ	ALUMINUM PIPE	ALP6 L=0.2m	1	SHOWA
K010	コネクタ	CONNECTOR	PM106	1	SHOWA
K011	締付プラグ	PLUG	PA6	1	SHOWA
L71620 U91J		チップコンベア CHIP CONVEYOR		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	M6	クーラントポンプ	COOLANT PUMP	HCP-410F	1	HALS LUBE
KBT002		スーパーシール	SUPER SEAL	NW-12R	1	NIX, INC.
KBT003		フロートスイッチ	FLOAT SWITCH	OLV2B2	1	SYOWA YUKI
L71620 U91J		チップコンベア CHIP CONVEYOR			BT000	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
WT001		チップコンベア盤内ケーブル CABLE		1	
KWT001	CNCIP	コネクタ CONNECTOR	MS3102A 20-15S	1	JAE
L71620 U91J		チップコンベア CHIP CONVEYOR		WT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
WT101		切削油ポンプケーブル	CABLE		1	
WT102		切削油レベル検出ケーブル	CABLE		1	
WT103		チップコンベアケーブル	CABLE		1	
KWT101	CNC01	コネクタ	CONNECTOR	MS3106B 20-4P	1	JAE
KWT102	CNC02	コネクタ	CONNECTOR	MS3106B 12S-3P	1	JAE
KWT103	CNCIP	コネクタ	CONNECTOR	MS3106B 20-15P	1	JAE
KWT104		ケーブルクランプ	CABLE CLAMP	MS3057-12A	2	JAE
KWT105		ケーブルクランプ	CABLE CLAMP	MS3057-4A	1	JAE
L71620 U91J		チップコンベア CHIP CONVEYOR			WT100	

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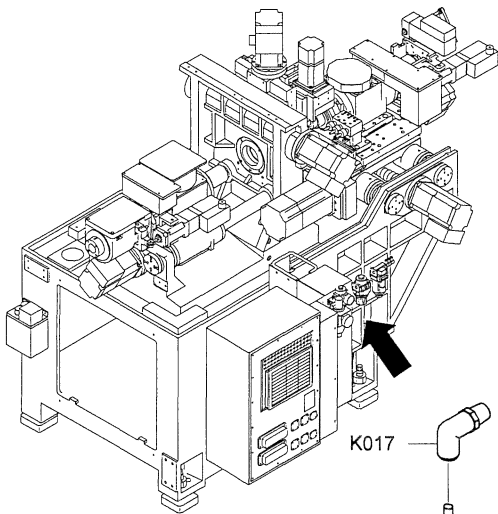
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K001

K008

K025

K025

K014

K014

K016

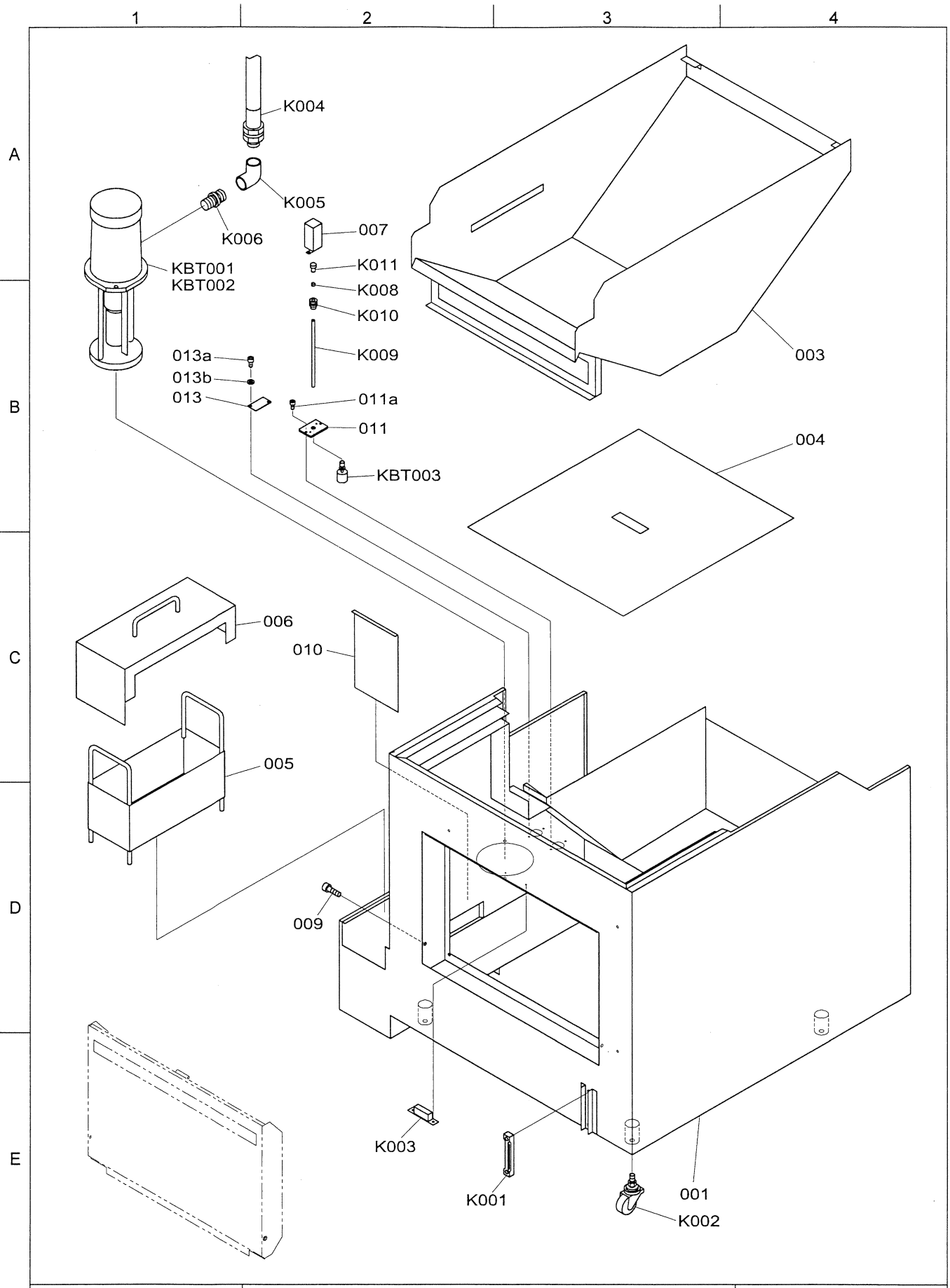
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L71620
U70N

エアシール用空圧装置
PNEUMATIC DEVICE FOR AIR SEAL

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ブラケット	BRACKET		1	
001a	六角穴付ボルト	BOLT	M6x16	4	
K001	電磁弁	ELECTRO-MAGNETIC VALVE	100E1-2-SR -30W-DC24V	1	KOGANEI
K001a	六角穴付ボルト	BOLT	M4x30	2	
K002	デジタル圧力スイッチ	DIGITAL PRESSURE SWITCH	ZSE40F-01-62 -M	1	SMC
K003	ミストセパレータ	MIST SEPARATOR	AFM30-02	1	SMC
K004	直動精密減圧弁	REGULATOR	ARP3000-02	1	SMC
K005	ブラケット付スペーサ	SPACER	Y300T	1	SMC
K005a	六角穴付ボルト	BOLT	M6x10	2	
K006	クイック継手	QUICK JOINT	TLL4-M6M	1	KOGANEI
K008	クイック継手	QUICK JOINT	TL8-01	3	KOGANEI
K009	クイック継手	QUICK JOINT	TL8-02	1	KOGANEI
K011	トリプルユニバーサルエルボ	TRIPLE ELBOW ADAPTER	KQ2VT06-02S	1	SMC
K012	ワンタッチ継手	JOINT	KQ2R04-06	1	SMC
K013	プラグ	PLUG	KQ2P-06	1	SMC
K014	ウレタンチューブ	TUBE	U8-B	1m	KOGANEI
K015	ウレタンチューブ	TUBE	U4-B	5m	KOGANEI
K016	ウレタンチューブ	TUBE	U6-B	2m	KOGANEI
K017	クイック継手	QUICK JOINT	TL4-M6M	2	KOGANEI
K018	クイック継手	QUICK JOINT	UYD6-4	1	KOGANEI
K019	フィルタレギュレータ	FILTER REGULATOR	AW20-01BG	1	SMC
K019a	六角穴付ボルト	BOLT	M5x8	2	
K020	マニホールド	MANIFOLD	HM3U	1	KOGANEI
	stn.1		BP		
	stn.2		BP		
	stn.3		BP		
K020a	六角穴付ボルト	BOLT	M5x8	4	
K021	ホース口	HOSE NIPPLE	BS0-3	1	TOYO
K022	めすおすエルボ	ELBOW	1/8"	1	
K023	ブロックプレート	BLOCK PLATE	HMU-BP	1	KOGANEI
K024	ハンドバルブ	HAND VALVE	FVU8-8-2	1	KOGANEI
K025	クイック継手	QUICK JOINT	UT8	2	KOGANEI
K026	チェックバルブ	CHECK VALVE	CVU8	1	KOGANEI
L71620 U70N		エアシール用空圧装置 PNEUMATIC DEVICE FOR AIR SEAL		000	

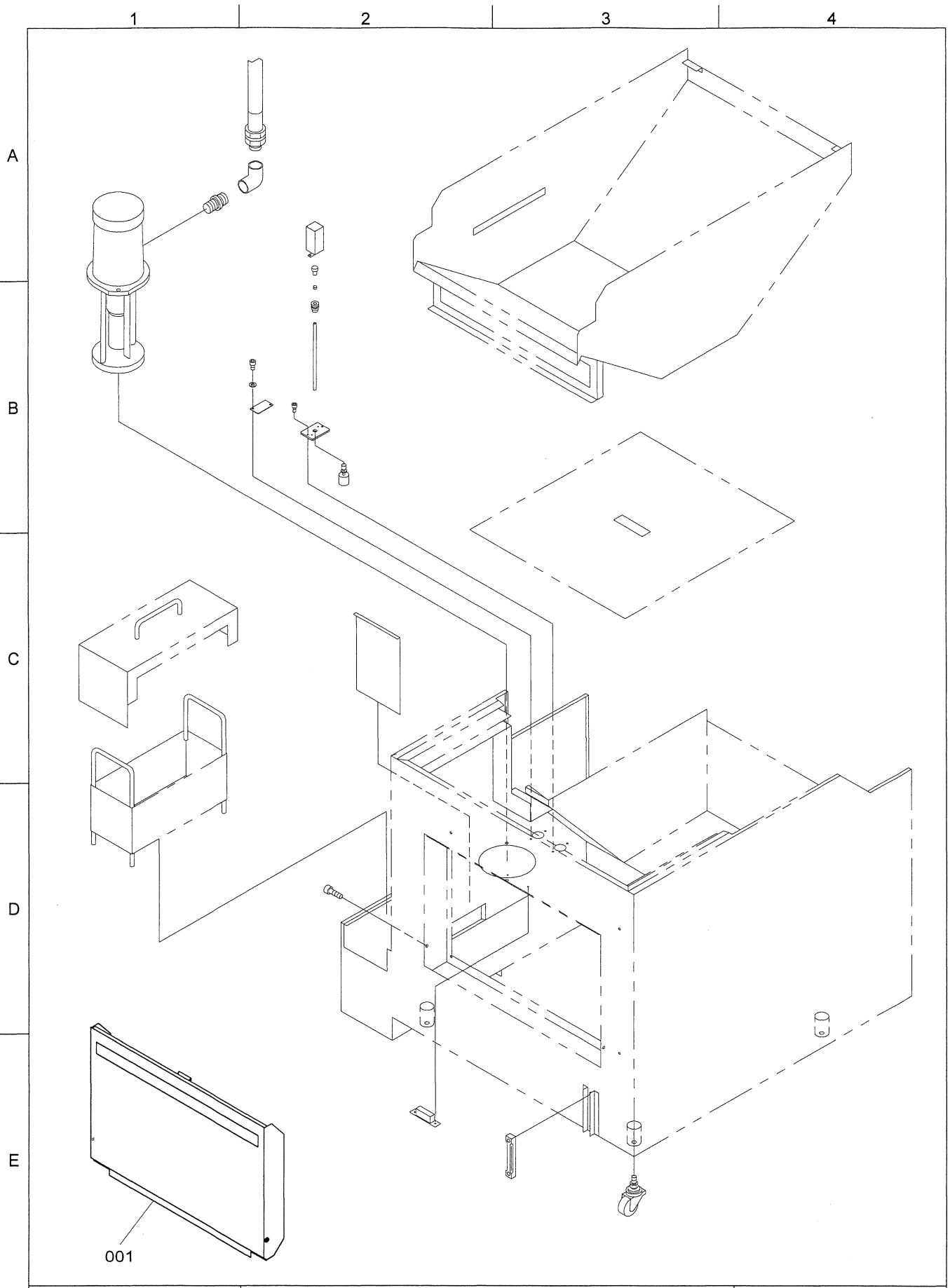


L71620
U10R

切削油タンク装置
COOLANT TANK DEVICE

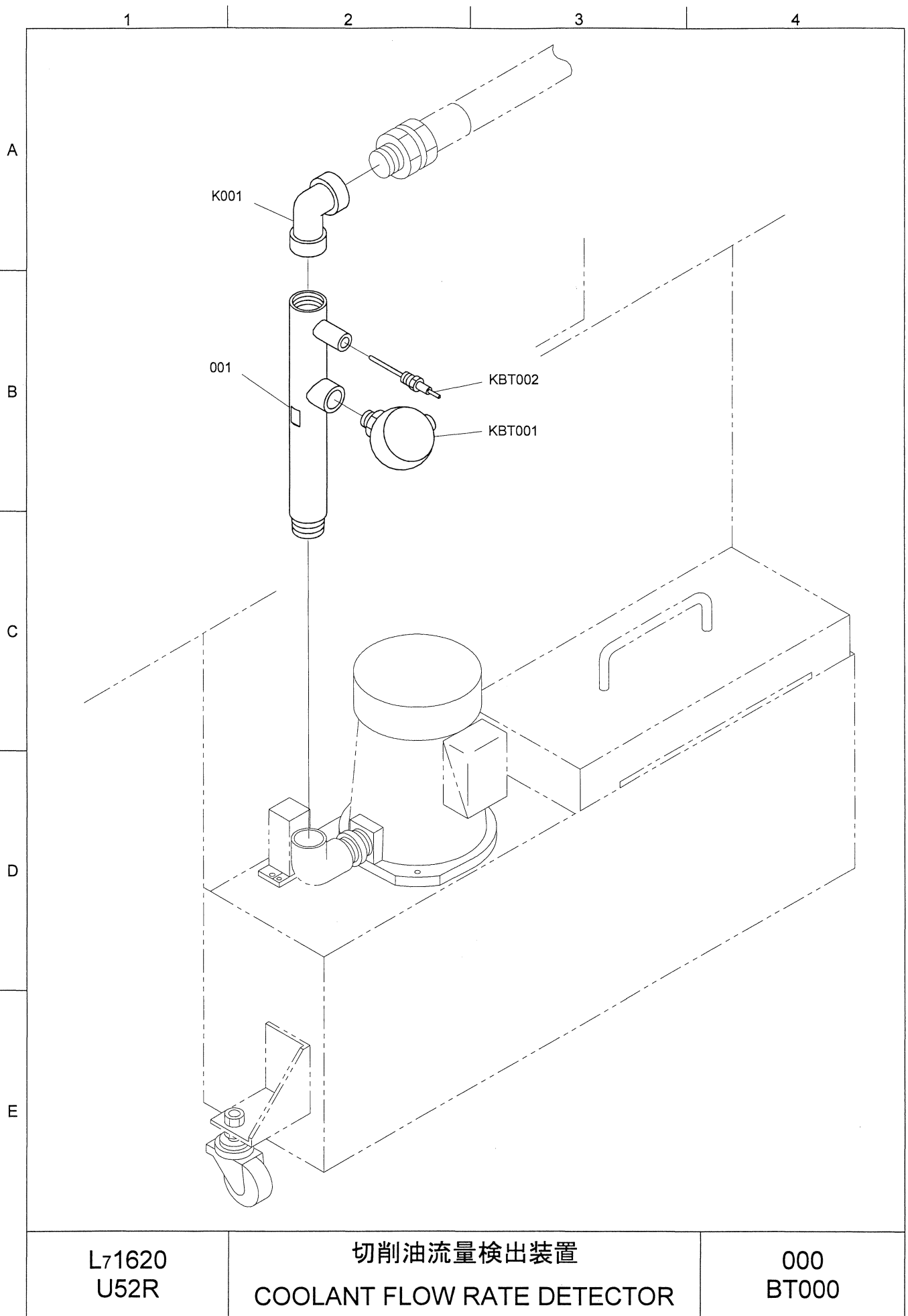
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BT000
WT100

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
001		切削油タンク	COOLANT TANK		1	
003		切粉シュート	CHIP CHUTE		1	
004		フタ	LID		1	
005		切粉受箱	CHIP RECEIVER BOX		1	
006		切削油タンクカバー	COOLANT TANK COVER		1	
007		リード線カバー	LEAD WIRE COVER		1	
009		ピボット	PIVOT		2	
010		仕切板	PLATE		1	
0011		スイッチ取付板	SWITCH MOUNTING PLATE		1	
0011a		六角穴付ボルト	BOLT	M5x10	2	
013		フタ	LID		1	
013a		六角穴付ボルト	BOLT	M6x12	2	
013b		平座金	WASHER	M6	2	
K001		クランプ型油面計	OIL GAUGE	ø6x100	1	MARUWA
K002		自在キャスター	CASTER	415EA-N50	4	HAMMER CASTER
K003		ステンレスローラー締め	ROLLER TIGHT	C-1052	1	TAKIGEN
K004		トヨスプリングホース	HOSE	1"	1	TOYO FLEX
K005		エルボ	ELBOW	1"	1	
K006		ニップル	NIPPLE	1"	1	
K008		スリーブ	SLEEVE	PB6	1	SHOWA YUKI
K009		アルミパイプ	PIPE	ALP6 L=0.2m	1	SHOWA YUKI
K010		コネクター	CONNECTOR	PM106	1	SHOWA YUKI
K011		締付プラグ	FIXING PLUG	PA6	1	SHOWA YUKI
KBT001	M6	クーラントポンプ	COOLANT PUMP	HCP-410F	1	HALS LUBE
KBT002		スーパーシール	SUPER SEAL	NW-12R	1	NIX, INC.
KBT003		フロートスイッチ	FLOAT SWITCH	OLV2B2	1	SHOWA YUKI
KWT101	CNC01	コネクタ	CONNECTOR	MS3106B 20-4P	1	JAE
KWT102	CNC02	コネクタ	CONNECTOR	MS3106B 12S	1	JAE
				-3P		
KWT103		ケーブルクランプ	CABLE CLAMP	MS3057-12A	1	JAE
KWT104		ケーブルクランプ	CABLE CLAMP	MS3057-4A	1	JAE
L71620 U10R		切削油タンク装置 COOLANT TANK DEVICE			000 BT000 WT100	



<p>L71620 U102R</p>	<p>切粉取出し口トビラ CHIP DOOR</p>	<p>000</p>
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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	扉	DOOR		1	
L71620 U102R		切粉取出しロトビラ CHIP DOOR		000	



PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
001		センサー継手パイプ	PIPE		1	
K001		エルボ	ELBOW	1"	1	
KBT001	FLC1	フローキャプター	FLOW CAPTOR	4121.13	1	SKA
KBT002	TH1	サーミスタ	THERMISTOR	E52-THE6D	1	OMRON
L71620 U52R		切削油流量検出装置 COOLANT FLOW RATE DETECTOR			000 BT000	

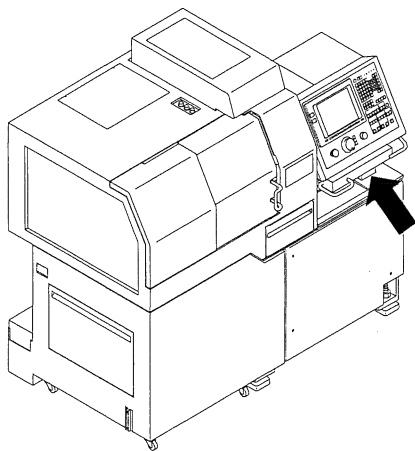
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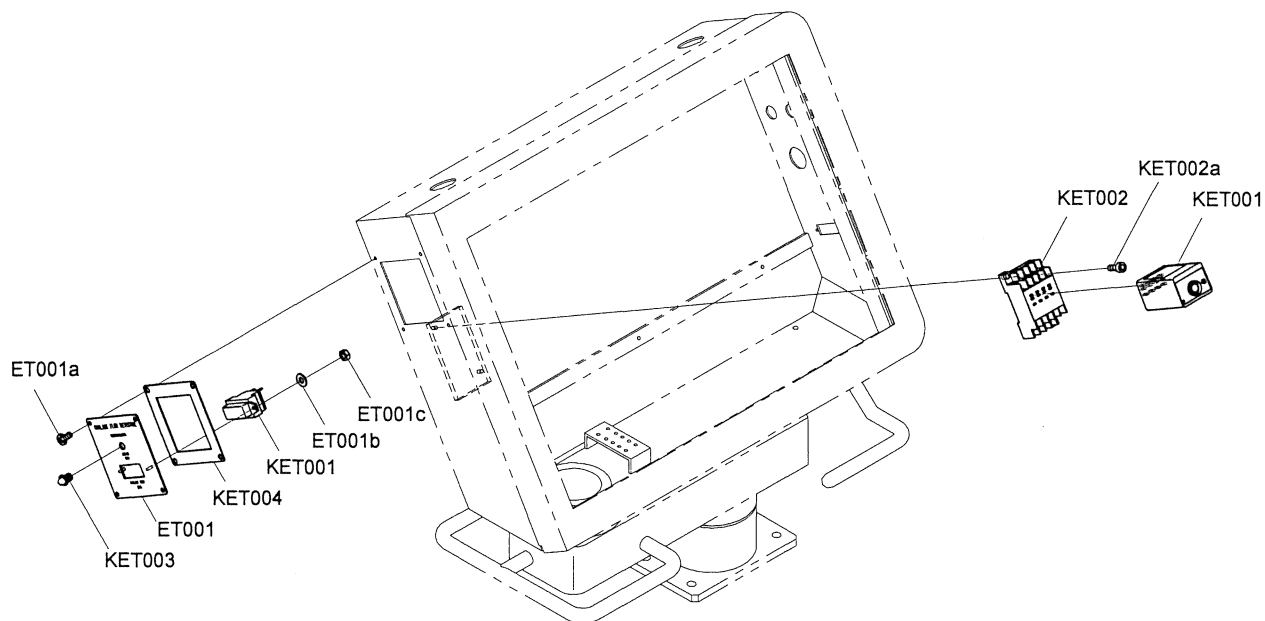


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L71620
U52R

切削油流量検出装置
COOLANT FLOW RATE DETECTOR

ET000
WT000

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
ET001		油温計パネル	PANEL		1	
ET001a		パインド小ネジ	SCREW	M4x8	4	
ET001b		平座金	WASHER	M3	2	
ET001c		ナット	NUT	M3	2	
KET001	UNIT16	電子サーモ	ELECTRONICS THERMOSTAT	E5L-AS3	1	OMRON
	THM					
KET002	SL3	ソケット	SOCKET	PTF14A	1	OMRON
KET002a		六角穴付ボルト	BOLT	M4x12	2	
KET003		LED 表示灯	LED	AP08-2RE2	1	FUJI ELECTRIC
KET004		NBR ゴム	NBR RUBBER	t1.0	1	BRIDGESTONE
KWT001	CNC0F	レセプタクル	RECEPTACLE	MS3102A14S -2SX	1	JAE
KWT002	CNTH	レセプタクル	RECEPTACLE	MS3102A14S -7S	1	JAE
L71620 U52R		切削油流量検出装置 COOLANT FLOW RATE DETECTOR			ET000 WT000	

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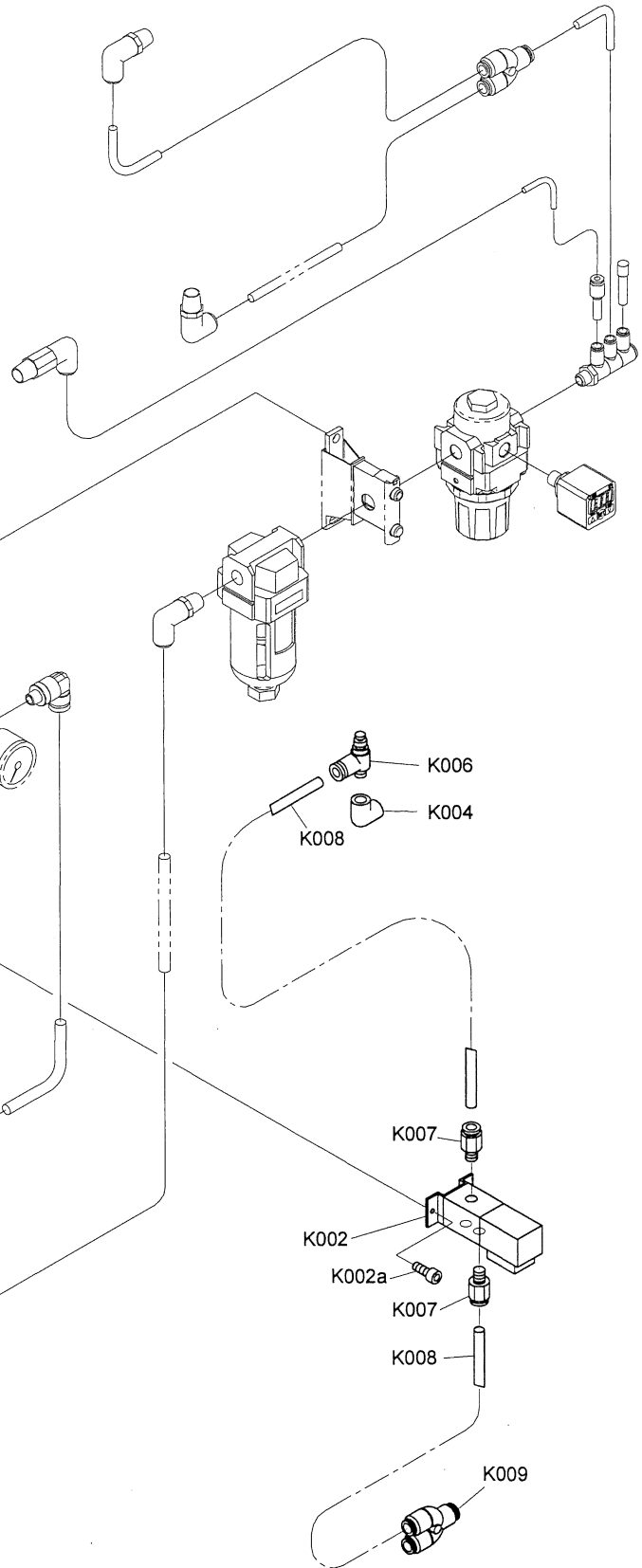
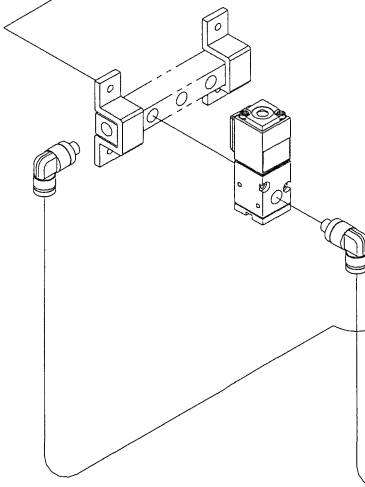
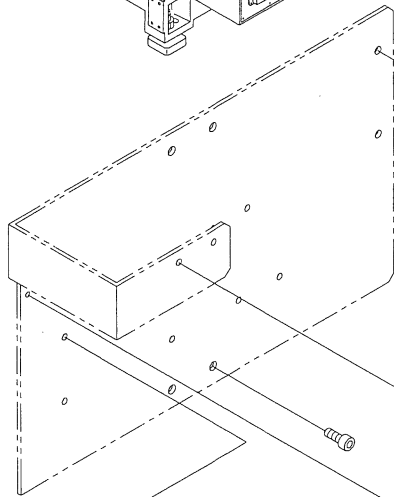
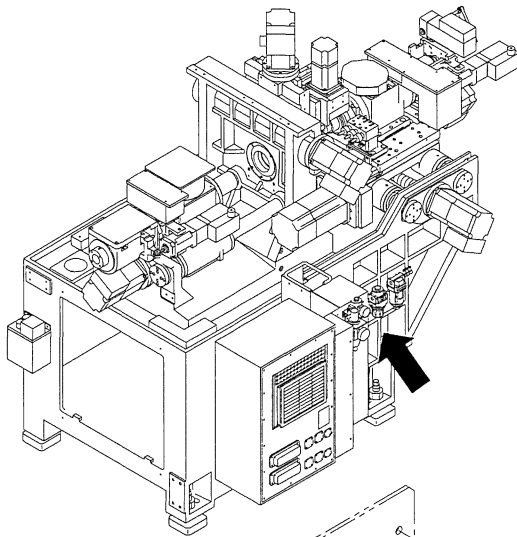
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L71620
U60R

背面エアブロー装置
BACK AIR BLOW UNIT

000
DT300
WT100

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
K002		電磁弁	VALVE	100E1-2-21-SR -30W-DC24V	1	KOGANEI
K002a		六角穴付ボルト	BOLT	M4x6	2	
K004		エルボ	ELBOW	1/8"	1	
K006		スピードコントローラ	SPEED CONTROLLER	SC8-01B	1	KOGANEI
K007		クイック継手	QUICK JOINT	TS8-01	2	KOGANEI
K008		ウレタンチューブ	TUBE	U8-B (L=6m)	1	KOGANEI
K009		クイック継手	QUICK JOINT	UY8	1	KOGANEI
KDT301	Ry204	リレー	RELAY	RB105-DE	1	FUJI ELECTRIC
WT101		電磁弁ケーブル	CABLE		1	
L71620 U60R		背面エアブロー装置 BACK AIR BLOW UNIT			000 DT300 WT100	

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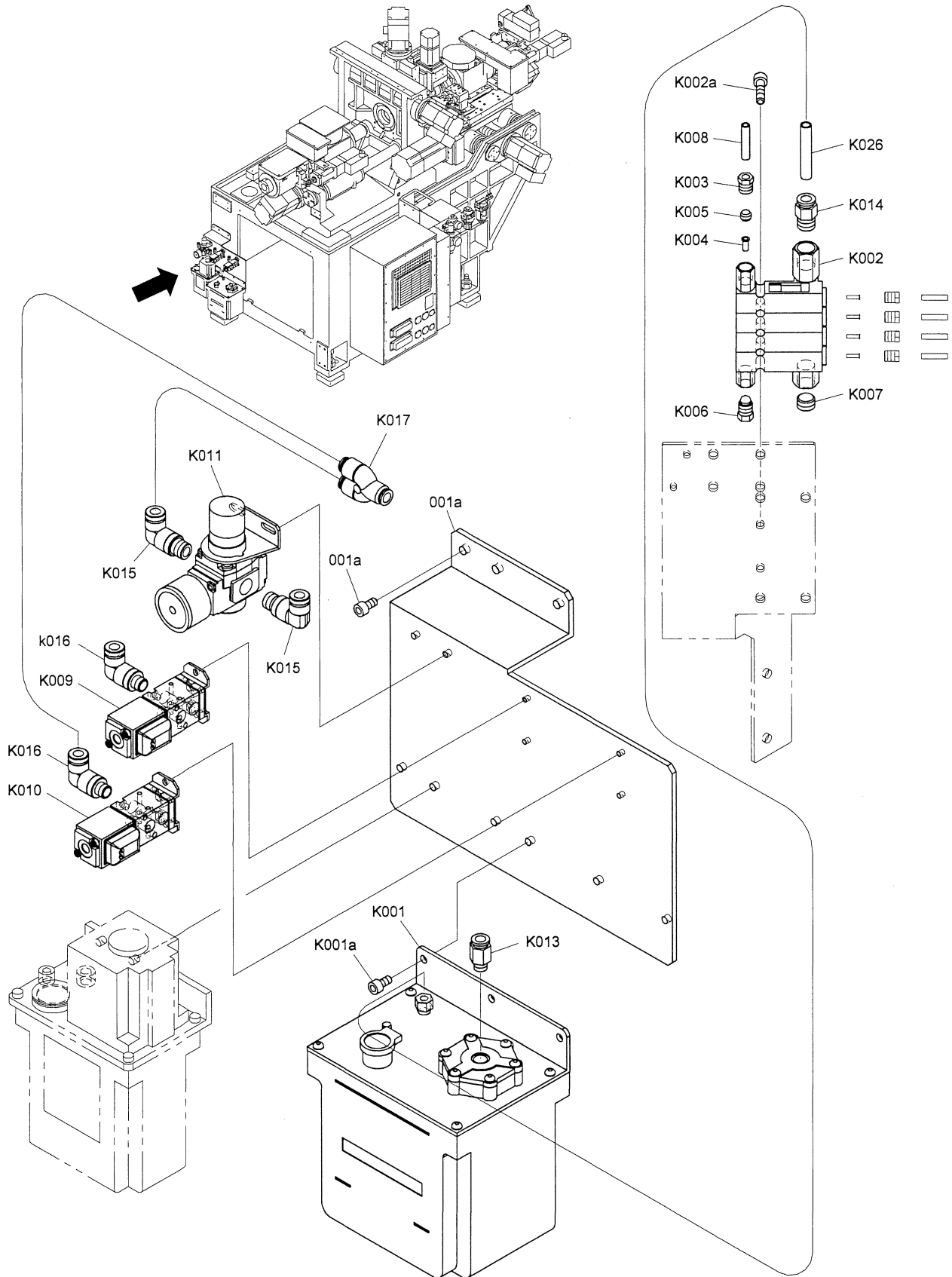
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L71620
U81R

オイルエア潤滑装置
OIL AIR DEVICE

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ブラケット	BRACKET		1	LUBE
001a	六角穴付ボルト	BOLT	M6x12	3	LUBE
K001	オイルポンプ	OIL PUMP	PM-8S	1	LUBE
K001a	六角穴付ボルト	BOLT	M6x12	3	
K002	ミキシングバルブ	MIXING VALVE	MIX-4A-A	1	LUBE
K002a	六角穴付ボルト	BOLT	M6x25	2	
K003	コンプレッションブッシング	BUSHING	CB-6	2	LUBE
K004	チューブインサート	INSERT	TI-6	2	LUBE
K005	コンプレッションスリーブ	SLEEVE	CS-6	2	LUBE
K006	クローサプラグ	PLUG	CP-6	1	LUBE
K007	ブランキングプラグ	PLUG	BP-2	1	LUBE
K008	ナイロンパイプ	NYLON PIPE	NT-6	6m	LUBE
K009	電磁弁	SOLENOID VALVE	100E1-2-21-SR-30W-DC24V	1	KOGANEI
K009a	六角穴付ボルト	BOLT	M4x6	2	
K010	電磁弁	SOLENOID VALVE	100E1-21-SR-30W-DC24V	1	KOGANEI
K010a	六角穴付ボルト	BOLT	M4x6	2	
K011	レギュレータ	REGULATOR	AR20-02BG-1	1	SMC
K011a	六角穴付ボルト	BOLT	M5x8	2	
K012	ウレタンチューブ	TUBE	U8-B	6m	KOGANEI
K013	クイック継手	QUICK JOINT	TS8-01	1	KOGANEI
K014	クイック継手	QUICK JOINT	TS8-02	1	KOGANEI
K015	クイック継手	QUICK JOINT	TL8-02	2	KOGANEI
K016	クイック継手	QUICK JOINT	TL8-01	4	KOGANEI
K017	クイック継手	QUICK JOINT	UY8	2	KOGANEI
L71620 U81R		オイルエア潤滑装置 OIL AIR DEVICE		000	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
KDT301	Ry208 Ry209	リレー RELAY	RB104-DE	2	FUJI ELECTRIC
L71620 U81R		オイルエア潤滑装置 OIL AIR DEVICE		DT300	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
WT101		電磁弁ケーブル CABLE		1	
WT102		電磁弁ケーブル CABLE		1	
WT103		潤滑油レベル検知ケーブル CABLE		1	
L71620 U81R		オイルエア潤滑装置 OIL AIR DEVICE		WT100	

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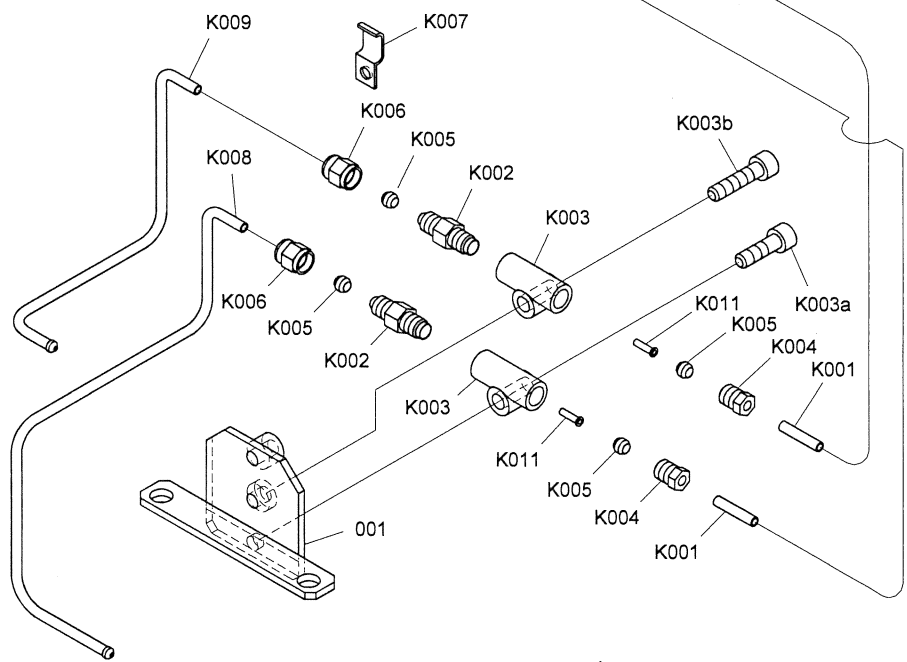
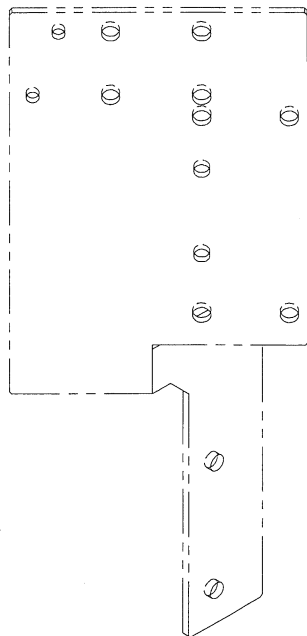
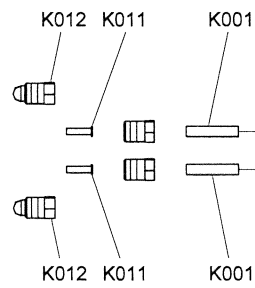
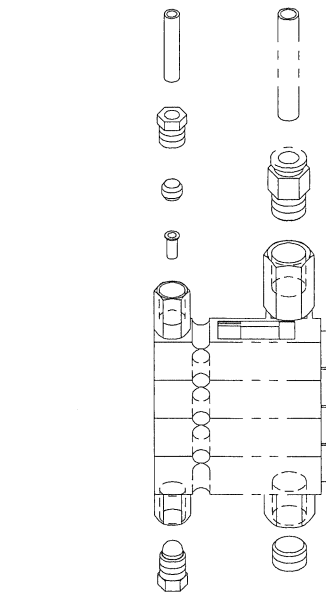
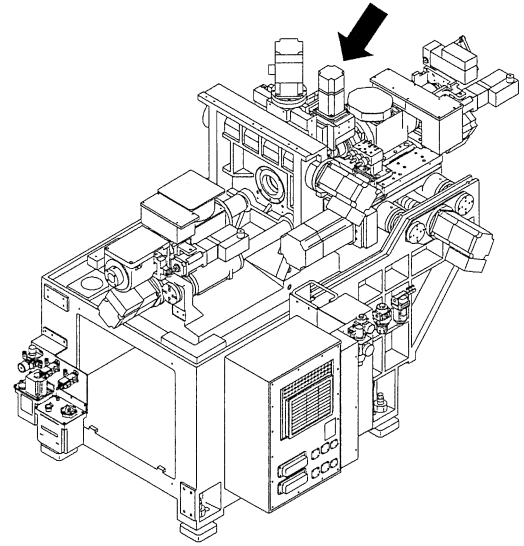
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L71620
U811R

オイルエア配管 (I 型用)
OIL AND AIR PIPING

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ブラケット	BRACKET		1	
K001	ナイロンチューブ	NYLON TUBE	NT-4 0.4m	2	LUBE
K002	ラインチェックバルブ	LINE CHECK VALVE	HJBC	2	LUBE
K003	ジャンクション	JUNCTION	PJ-2	2	LUBE
K003a	六角穴付ボルト	BOLT	M6x20	2	
K003b	六角穴付ボルト	BOLT	M6x25	2	
K004	コンプレッションブッシング	BUSHING	CB-4-8	2	LUBE
K005	コンプレッションスリーブ	SLEEVE	CS-4	4	LUBE
K006	コンプレッションナット	NUT	CN-4	2	LUBE
K007	パイプクリップ	PIPE CLIP	PC-4-3	1	LUBE
K008	配管 (1)	PIPING (1)	STN-4-400	1	LUBE
K009	配管 (2)	PIPING (2)	STN-4-400	1	LUBE
K011	チューブインサート	TUBE INSERT	TI-4	4	LUBE
K012	クローサプラグ	PLUG	CP-4	2	LUBE
L71620 U811R		オイルエア配管 (I 型用) OIL AND AIR PIPING		000	

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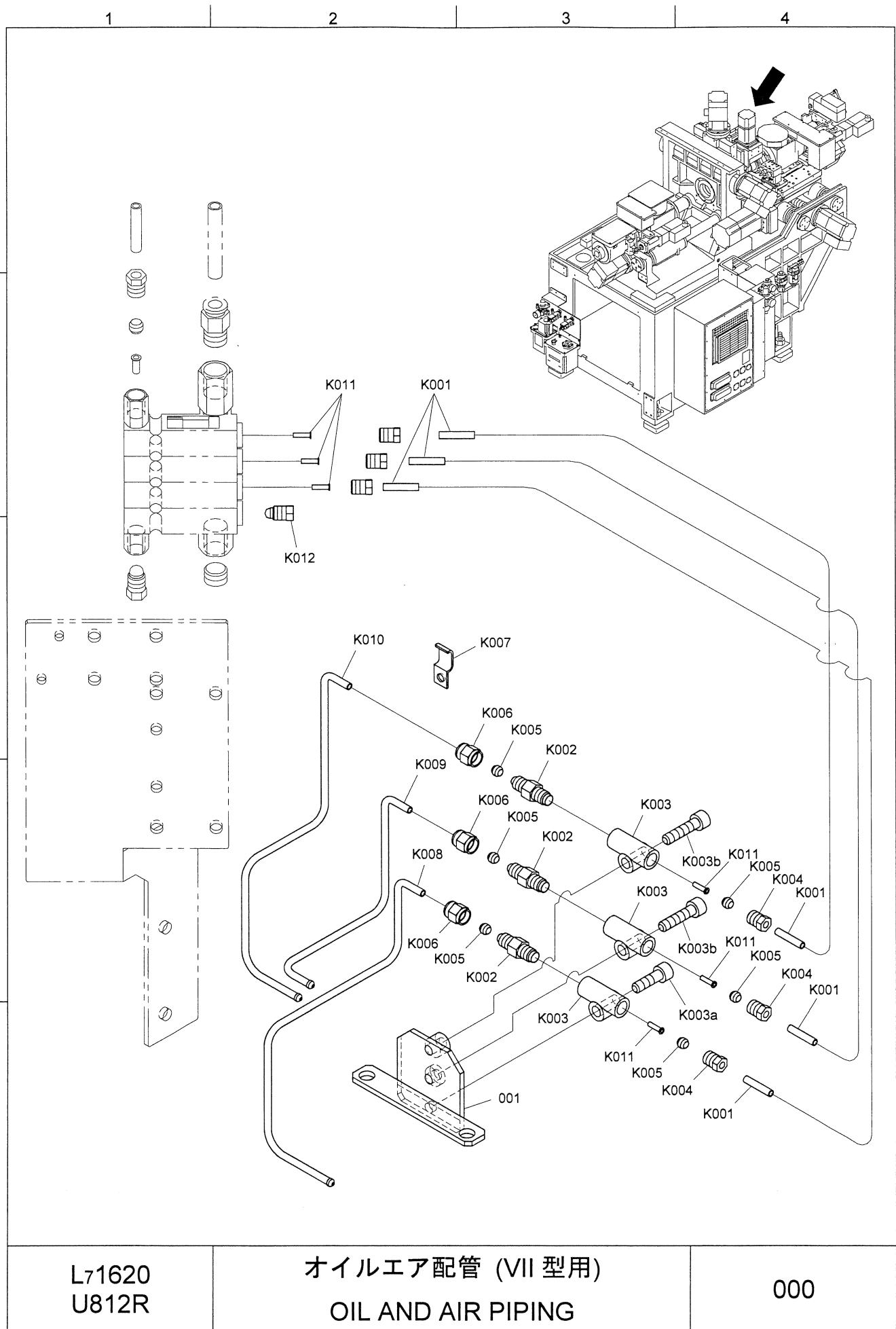
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L71620
U812R

オイルエア配管 (VII 型用)
OIL AND AIR PIPING

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ブラケット	BRACKET		1	
K001	ナイロンチューブ	NYLON TUBE	NT-4	3	LUBE
K002	ラインチェックバルブ	LINE CHECK VALVE	HJBC	3	LUBE
K003	ジャンクション	JUNCTION	PJ-2	3	LUBE
K003a	六角穴付ボルト	BOLT	M6x20	3	
K003b	六角穴付ボルト	BOLT	M6x25	6	
K004	コンプレッションブッシング	BUSHING	CB-4-8	3	LUBE
K005	コンプレッションスリーブ	SLEEVE	CS-4	6	LUBE
K006	コンプレッションナット	NUT	CN-4	3	LUBE
K007	パイプクリップ	PIPE CLIP	PC-4-3	1	LUBE
K008	配管 (1)	PIPING (1)	STN-4-400	1	LUBE
K009	配管 (2)	PIPING (2)	STN-4-400	1	LUBE
K010	配管 (3)	PIPING (3)	STN-4-400	1	LUBE
K011	チューブインサート	TUBE INSERT	TI-4	6	LUBE
K012	クローサプラグ	PLUG	CP-4	1	LUBE
L71620 U812R		オイルエア配管 (VII 型用) OIL AND AIR PIPING		000	

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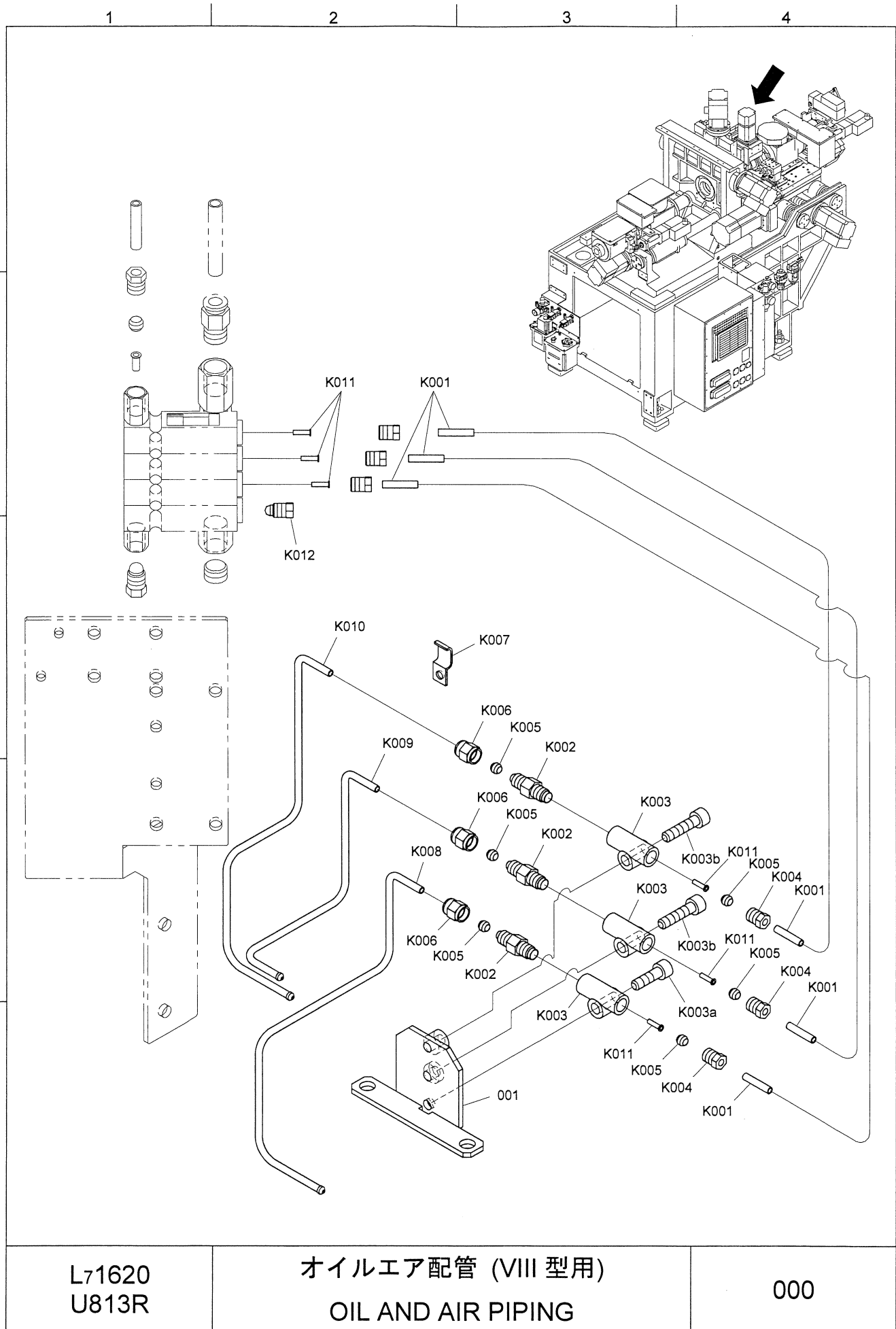
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L71620
U813R

オイルエア配管 (VIII 型用)
OIL AND AIR PIPING

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ブラケット	BRACKET		1	
K001	ナイロンチューブ	NYLON TUBE	NT-4	3	LUBE
K002	ラインチェックバルブ	LINE CHECK VALVE	HJBC	3	LUBE
K003	ジャンクション	JUNCTION	PJ-2	3	LUBE
K003a	六角穴付ボルト	BOLT	M6x20	3	
K003b	六角穴付ボルト	BOLT	M6x25	6	
K004	コンプレッションブッシング	BUSHING	CB-4-8	3	LUBE
K005	コンプレッションスリーブ	SLEEVE	CS-4	6	LUBE
K006	コンプレッションナット	NUT	CN-4	3	LUBE
K007	パイプクリップ	PIPE CLIP	PC-4-3	1	LUBE
K008	配管 (1)	PIPING (1)	STN-4-400	1	LUBE
K009	配管 (2)	PIPING (2)	STN-4-400	1	LUBE
K010	配管 (3)	PIPING (3)	STN-4-400	1	LUBE
K011	チューブインサート	TUBE INSERT	TI-4	6	LUBE
K012	クローサプラグ	PLUG	CP-4	1	LUBE
L71620 U813R		オイルエア配管 (VIII 型用) OIL AND AIR PIPING		000	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
KET001		和文テンプレート TEMPLATE	AB12X-0460/ 002	1	FUJI ELECTRIC
L71620 U22T		シートキーテンプレート(和文) SHEET KEYBOARD TEMPLATE (JAPANESE)		ET000	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
KET001		英文テンプレート TEMPLATE	AB12X-0460/ 003	1	FUJI ELECTRIC
L71620 U23T		シートキーテンプレート(英文) SHEET KEYBOARD TEMPLATE (ENGLISH)		ET000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	CF30-C5	リモート I/O カード	I/O CARD	HR371	1	MITSUBISHI ELECTRIC
L71620 U83T		B コード I/F B CODE I/F			CT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KWT001	CNC16	プラグ	PLUG	10150-3000VE	1	SUMITOMO 3M
KWT002		シェル	SHELL	10350-52Y0-008	1	SUMITOMO 3M
L71620 U83T		B コード I/F B CODE I/F			WT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KDT001		ブロードバンドルーター	BROADBAND ROUTER	NP-BBRM	1	IO DATA
KDT002		LAN ケーブル	LAN CABLE	NWGMC5E-STN-SUMB-BL-3	1	MISUMI
L71620 U963T		アルカートネット装置 ALKARTNET DEVICE			DT000	

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	モーターベース	MOTOR BASE		1	
001a	六角穴付ボルト	BOLT	M8x25	4	
001b	平座金	WASHER	M8	4	
002	ピン	PIN		2	
003	駒	BLOCK		1	
003a	六角穴付ボルト	BOLT	M6x20	2	
004	モータープーリー	MOTOR PULLEY		1	
004a	六角穴付止メネジ (平先)	SET SCREW	M6x10	1	
005	プレート	PLATE		1	
K001	パワーグリップ GT ベルト	POWER GRIP GT BELT	960-U5GT-14	1	
K002	六角穴付ボルト	BOLT	M6x35	1	YUNITTA
K003	六角穴付ボルト	BOLT	M6x50	1	
K003a	六角ナット	NUT	M6	1	
L71620 U40Z		ロータリーガイドブッシュ駆動装置 ROTARY GUIDE BUSHING DRIVE DEVICE		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	M3	スピンドルモータ	SPINDLE MOTOR	SJ-VL1.5-02GT	1	mitsubishi electric
WT101		ガイドブッシュ主軸モータ	CABLE		1	
WT102		動力ケーブル				
WT102		ガイドブッシュ主軸モータ	CABLE		1	
		信号ケーブル				
WT103		ファンケーブル	CABLE		1	
WT104		電磁弁ケーブル	CABLE		1	
WT105		ケーブル固定板	PLATE		1	
KWT101	M3CNPg	ハウジング	HOUSING	172169-1	1	TYCO ELECTRONICS AMP
KWT102		ピン	PIN	170363-1	9	TYCO ELECTRONICS AMP
KWT104	U5CN31M	ハウジング	HOUSING	1-179958-4	1	TYCO ELECTRONICS AMP
KWT105		コンタクト	CONTACT	316041-2	4	TYCO ELECTRONICS AMP
KWT106	U5CN2L	コネクタプラグ	CONNECTOR PLUG	54593-1011	1	MOLEX
KWT107		プラグカバーA	PLUG COVER A	54594-1015	1	MOLEX
KWT108		プラグカバーB	PLUG COVER B	54595-1005	1	MOLEX
KWT109		シェルカバー	SHELL COVER	58935-1000	1	MOLEX
KWT110		シェルボディー	SHELL BODY	58934-1000	1	MOLEX
KWT111		ケーブルクランプ	CABLE CLAMP	58937-0000	1	MOLEX
KWT112		コネクタ	CONNECTOR	N29BG-32	1	SANKEI
KWT113		サンフレキ	FLEXIBLE TUBE	NP#32	1	SANKEI
KWT114		NBR ゴム	NBR RUBBER	t1.0	1	TIGERS POLYMER
L71620 U40Z		ロータリーガイドブッシュ駆動装置 ROTARY GUIDE BUSHING DRIVE DEVICE			CT000 WT100	

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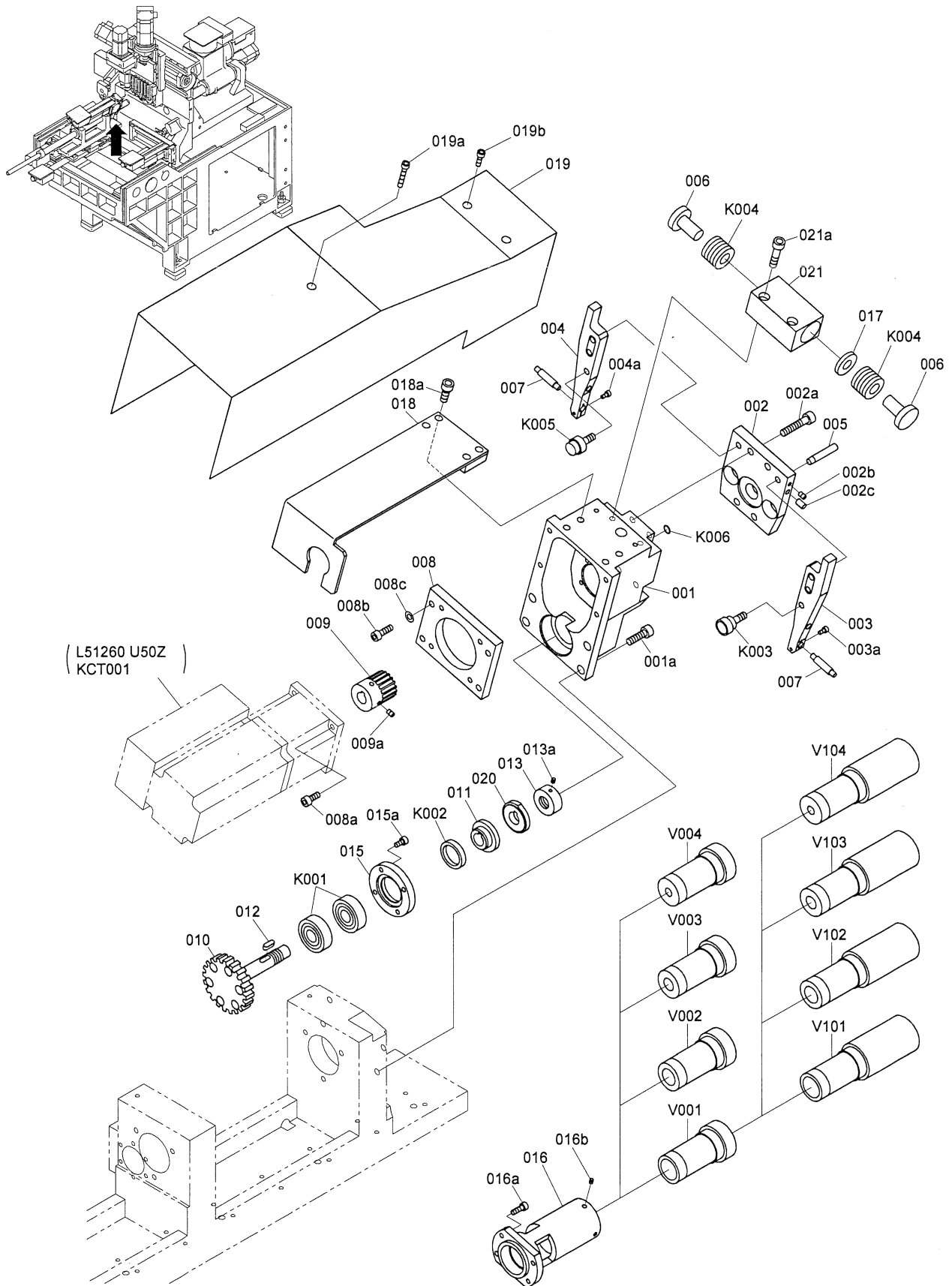
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L71620
U50Z

素材チャック装置
CHUCK DEVICE

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V000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	チャック本体	BODY		1	
001a	六角穴付ボルト	BOLT	M6x20	4	
002	チャック爪ホルダー	CHUCK FINGER HOLDER		1	
002a	六角穴付ボルト	BOLT	M6x16	4	
002b	六角穴付止メネジ (平先)	SET SCREW	M4x6	2	
002c	塞ぎ栓	PLUG	ø5x8	1	
003	チャック爪	CHUCK FINGER		1	
003a	六角穴付ボルト	BOLT	M3x6	1	
004	チャック爪	CHUCK FINGER		1	
004a	六角穴付ボルト	BOLT	M3X6	1	
005	レバー軸	LEVER SHAFT		2	
006	ピストン	PISTON		2	
007	駒	BLOCK		2	
008	モータープレート	MOTOR PLATE		1	
008a	六角穴付ボルト	BOLT	M5x12	4	
008b	六角穴付ボルト	BOLT	M5x16	4	
008c	平座金	WASHER	M5	4	
009	平歯車	WASHER		1	
009a	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
010	平歯車	GEAR		1	
011	カム	CAM		1	
012	キー	KEY		1	
013	ナット	NUT		1	
013a	六角穴付止メネジ (平先)	SET SCREW	M5x5	1	
013b	真チュウ座	SEAT	M5	1	
015	外輪押え	OUTER RING		1	
015a	六角穴付ボルト	BOLT	M4x10	4	
016	パイプサポート	PIPE SUPPORT		1	
016a	六角穴付ボルト	BOLT	M4x12	4	
016b	六角穴付止メネジ (平先)	SET SCREW	M4x5	2	
017	座金	WASHER		1	
018	ブラケット	BRACKET		1	
018a	六角穴付ボルト	BOLT	M6x20	4	
019	カバー	COVER		1	
019a	六角穴付ボルト	BOLT	M4x20	2	
019b	六角穴付ボルト	BOLT	M4x8	1	
020	カム	CAM		1	
021	ブロック	BLOCK		1	
021a	六角穴付ボルト	BOLT	M5x25	2	
K001	ラジアル玉軸受	BEARING	6201ZZ	2	NACHI
K002	ニードルベアリング用シール	BEARING SEEL	OS20264F	1	IKO
K003	カムフォロア	CAM FOLLOWER	CF6UUR-A	1	THK
L71620 U50Z		素材チャック装置 CHUCK DEVICE		000 V000	

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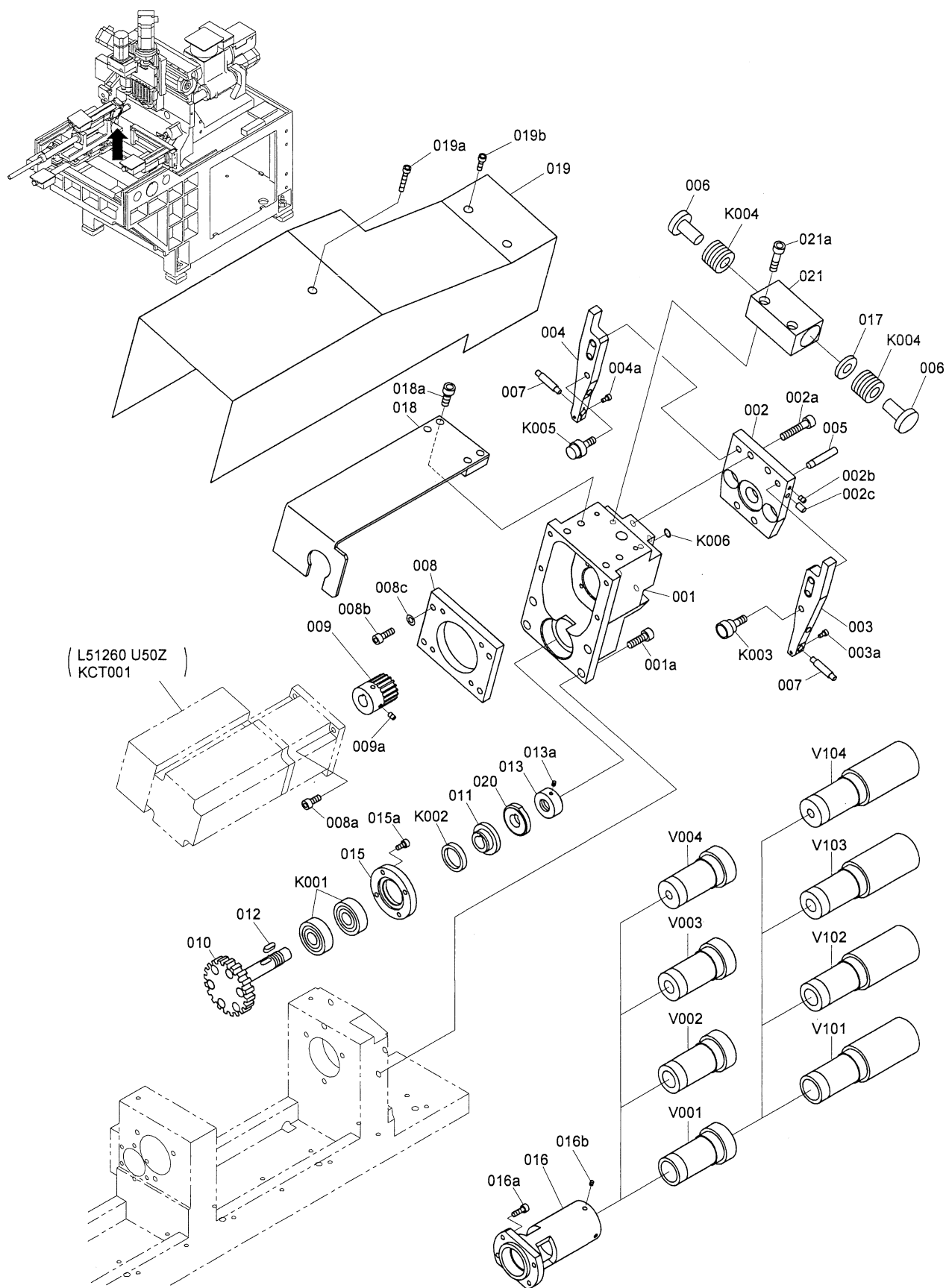
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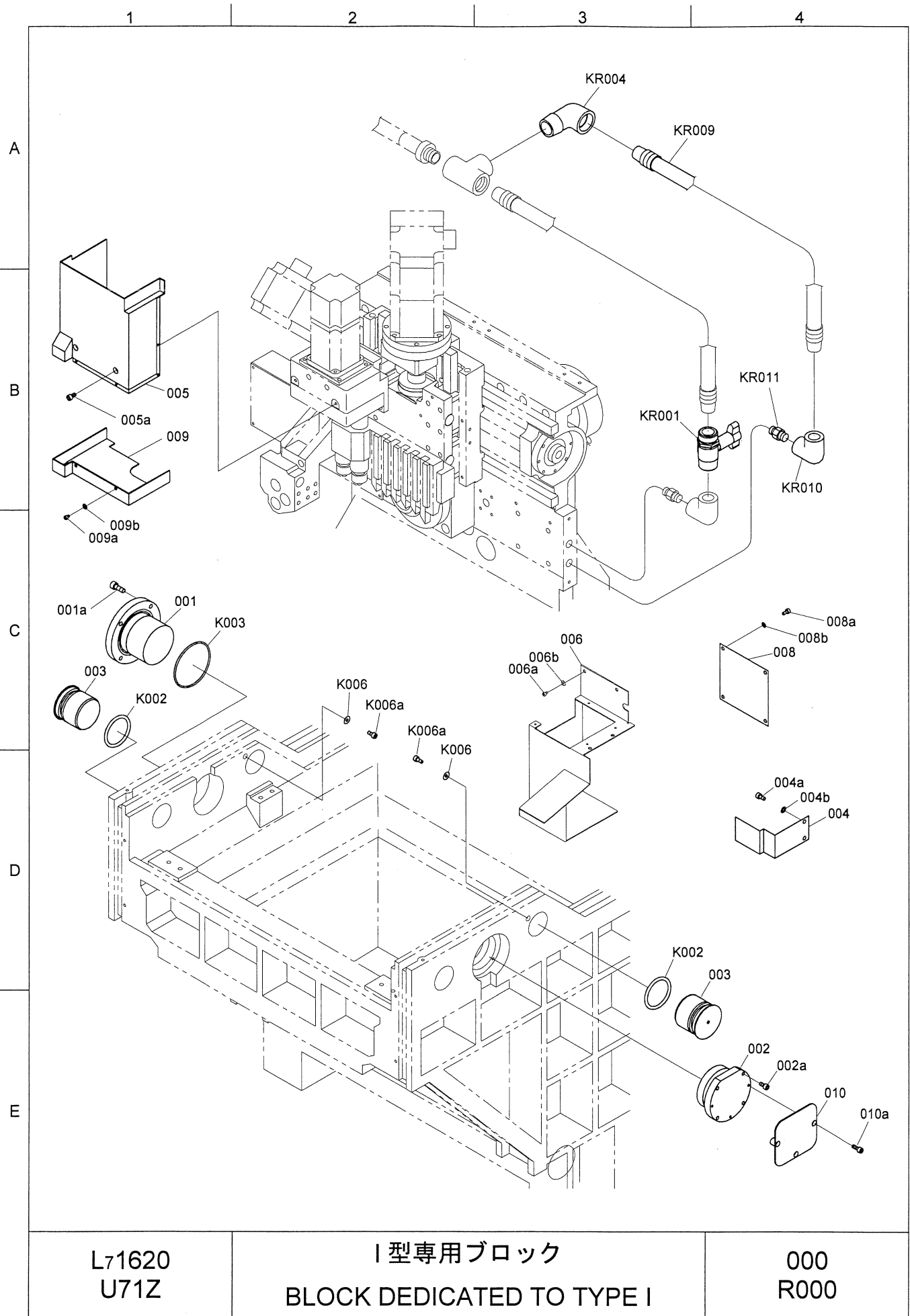
素材チャック装置
CHUCK DEVICE

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
K004	ベルビルスプリング	SPRING	JISH $\phi 22.5$ x $\phi 11.2$ x t1.25	34	IWATA DENKO
K005	カムフォロア	CAM FOLLOWER	CF6UUR-A	1	
K006	O リング	O-RING	P5	2	
V001	振れ止め先端 ($\phi 20$ 用)	CENTER ($\phi 20$)		1	
V002	振れ止め先端 ($\phi 16$ 用)	CENTER ($\phi 16$)		1	
V003	振れ止め先端 ($\phi 12$ 用)	CENTER ($\phi 12$)		1	
V004	振れ止め先端 ($\phi 8$ 用)	CENTER ($\phi 8$)		1	
V101	振れ止め先端 ($\phi 20$ 用)	CENTER ($\phi 20$)		1	
V102	振れ止め先端 ($\phi 16$ 用)	CENTER ($\phi 16$)		1	
V103	振れ止め先端 ($\phi 12$ 用)	CENTER ($\phi 12$)		1	
V104	振れ止め先端 ($\phi 8$ 用)	CENTER ($\phi 8$)		1	
L71620 U50Z		素材チャック装置 CHUCK DEVICE		000 V000	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
KR201	ジャンクション	JUNCTION	JD3	1	SHOWA
KR202	フロープロパーユニット	FLOW PROPER UNIT	PSS2	1	SHOWA
KR203	締付プラグ	PLUG	PA4	3	SHOWA
KR204	スリーブ	SLEEVE	PB4	4	SHOWA
KR205	チューブインサート	TUBE INSERT	AL4	4	SHOWA
KR206	プロパーナット	PROPER NUT	PAN4	1	SHOWA
KR207	正和ナイロンパイプ	NYLON PIPE	ø4 (11 NYLON) 2m	1	SHOWA
KR208	保護スプリング	SPRING	FOR ø4 2m	1	SHOWA
KR209	エルボ	ELBOW	PH4A	1	SHOWA
L71620 U50Z		素材チャック装置 CHUCK DEVICE		R200	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	UNIT8	2軸一体サーボアンプ モジュール	2-AXIS INCORPORATION SERVO AMP. MODULE	NSD-D-V2 -2020	1	MITSUBISHI ELECTRIC
KCT002	MA5	AC サーボモータ	AC SERVO MOTOR	HF-KP23JK -S11	1	MITSUBISHI ELECTRIC
KWT001		光ケーブル	OPTICAL CABLE	PF-2HB209 -0.15M-F-1	1	JAE
KWT101	U8CN31M	ハウジング	HOUSING	1-179958-4	1	TYCO ELEC- TRONICS AMP
KWT102		コンタクト	CONTACT	316040-2	4	TYCO ELEC- TRONICS AMP
KWT103	U8CN2M	コネクタプラグ	CONNECTOR PLUG	54593-1011	1	MOLEX
KWT104		プラグカバーA	PLUG COVER A	54594-1015	1	MOLEX
KWT105		プラグカバーB	PLUG COVER B	54595-1005	1	MOLEX
KWT106		シェルカバー	SHELL COVER	58935-1000	1	MOLEX
KWT107		シェルボディー	SHELL BODY	58934-1000	1	MOLEX
KWT108		ケーブルクランプ	CABLE CLAMP	58937-0000	1	MOLEX
KWT109		ストレートコネクタ	CONNECTOR	N2BG25	1	SANKEI
KWT110		サンフレキ	FLEXIBLE TUBE	NP#25 1000mm	1	SANKEI
KWT111	CNPA5	ハウジング	HOUSING	JN4FT04SJ1	1	JAE
KWT112		コンタクト	CONTACT	ST-TMH-S-C1B -100- (A534G)	4	JAE
KWT113	CNSA5	コネクタ	CONNECTOR	1674320-1	1	TYCO ELEC- TRONICS AMP
KWT114		コンタクト	CONTACT	1674333-1	9	TYCO ELEC- TRONICS AMP
L71620 U50Z		素材チャック装置 CHUCK DEVICE			CT000 WT000 WT100	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ボールネジ部フタ (1)	BALL SCREW COVER (1)		1	
001a	六角穴付ボルト	BOLT	M8x16	4	
002	ボールネジ部フタ (2)	BALL SCREW COVER (2)		1	
002a	六角穴付ボルト	BOLT	M6x25	4	
003	ガイドバー部フタ	GUIDE COVER		4	
004	刃物台カバー (1)	TOOL POST COVER (1)		1	
004a	六角穴付ボルト	BOLT	M6x10	2	
004b	平座金	WASHER	M6	2	
005	X1 軸カバー	X1-AXIS COVER		1	
005a	六角穴付ボルト	BOLT	M6x12	2	
006	製品受カバー	RECEIVER COVER		1	
006a	六角穴付ボルト	BOLT	M4x6	4	
006b	平座金	WASHER	M4	4	
008	右側面フタ 4	RIGHT SIDE COVER 4		1	
008a	六角穴付ボルト	BOLT	M4x6	4	
008b	平座金	WASHER	M4	4	
009	X1 軸カバー (下)	COVER (LOWER)		1	
009a	六角穴付ボルト	BOLT	M4x5	2	
009b	平座金	WASHER	M4	2	
010	カバー	COVER		1	
010a	六角穴付ボルト	BOLT	M6x16	3	
K002	O リング	O-RING	P55	4	NOK
K003	O リング	O-RING	G90	1	NOK
K004	レゴナット用スパナ	WRENCH	E-16-M	1	REGO fix
K005	片ロスパナ	WRENCH	22	1	
K006	シールワッシャー	SEAL WASHER	W6	2	KEEPER
K006a	六角穴付ボルト	BOLT	M6x10	2	
K007	モデルナンバーシール	MODEL NUMBER SEAL	"7M1"	1	UNIVERSAL DESIGN
KR001	S ボールバルブ	VALVE	S4	1	
KR004	めすおすエルボ	ELBOW	1/2"	2	
KR009	トヨスプリングボース	HOSE	1/2"	1	TOYO FLEX
KR010	径違いエルボ	ELBOW	1/2"x1/4"	1	
KR011	ニップル	NIPPLE	1/4"	1	
L71620 U71Z		I 型専用ブロック BLOCK DEDICATED TO TYPE I		000 R000	

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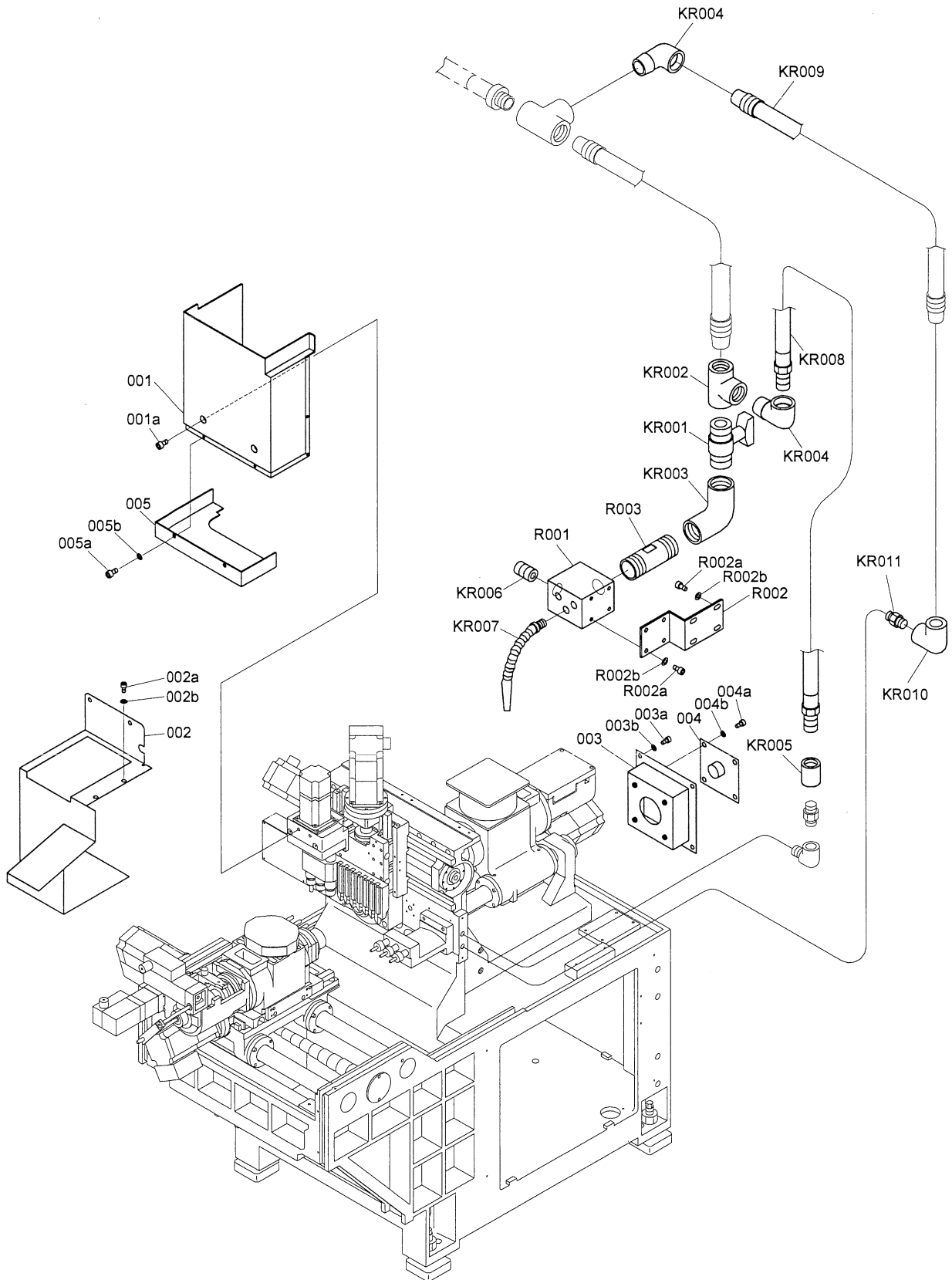
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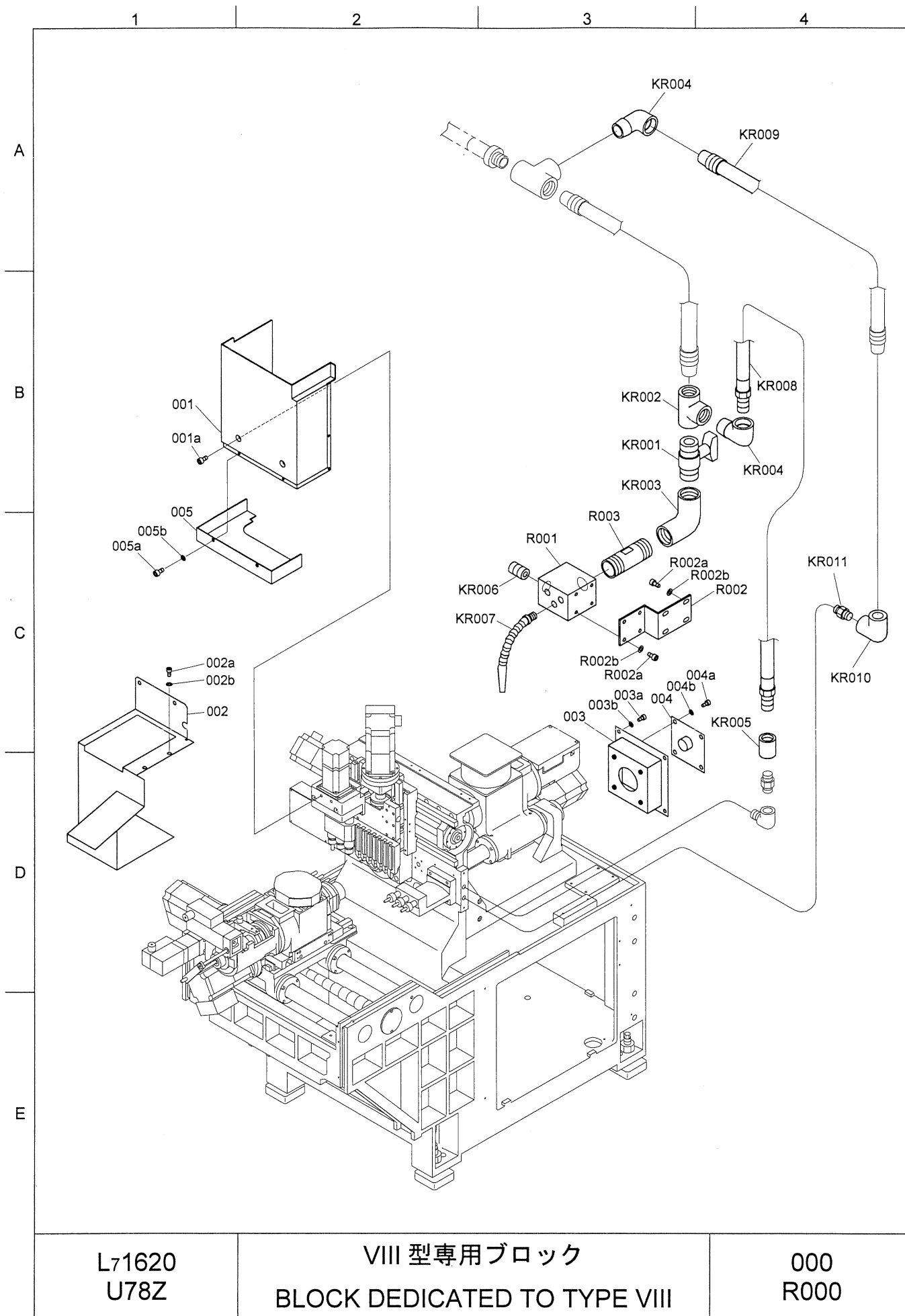


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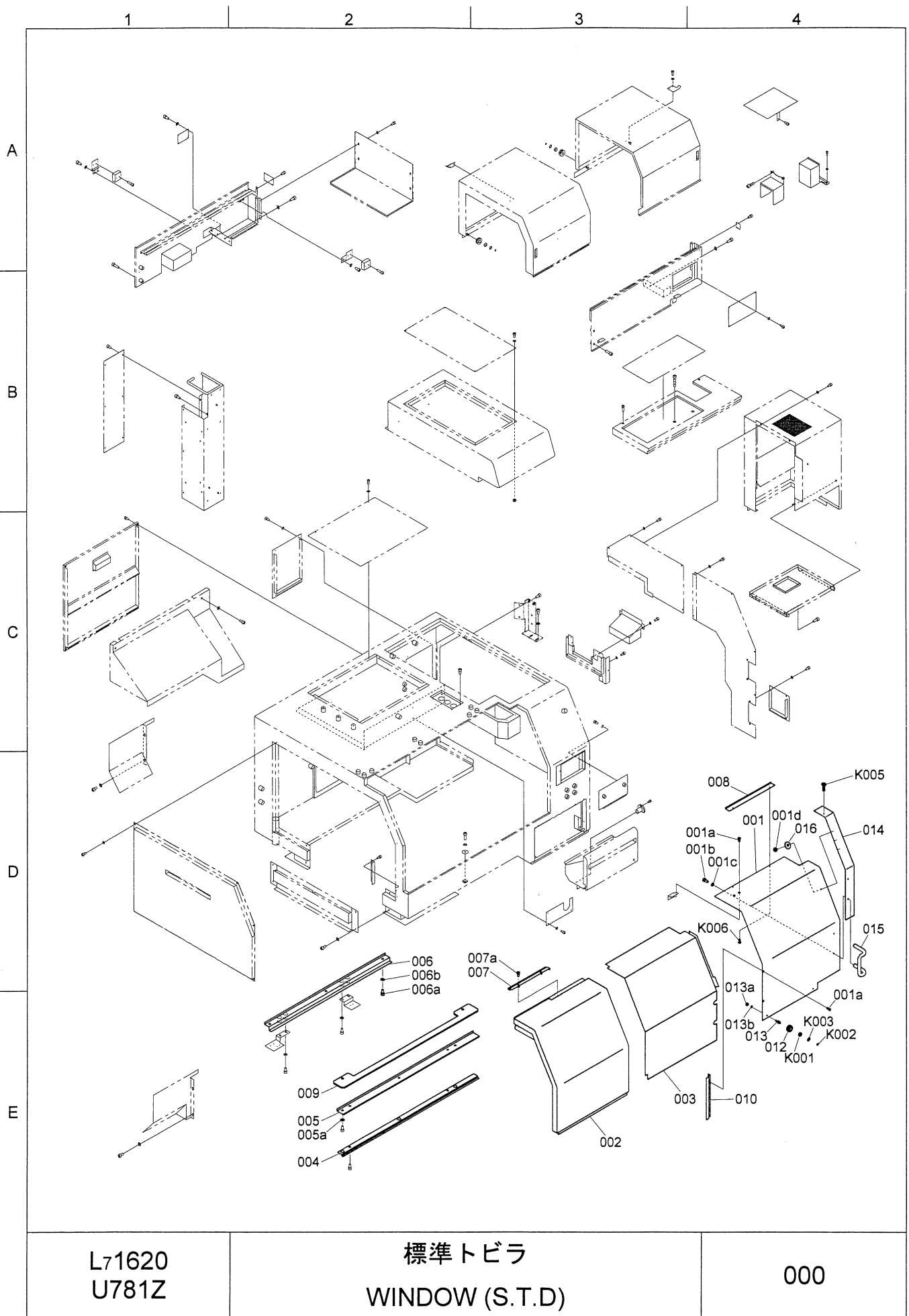
VII 型専用ブロック
BLOCK DEDICATED TO TYPE VII

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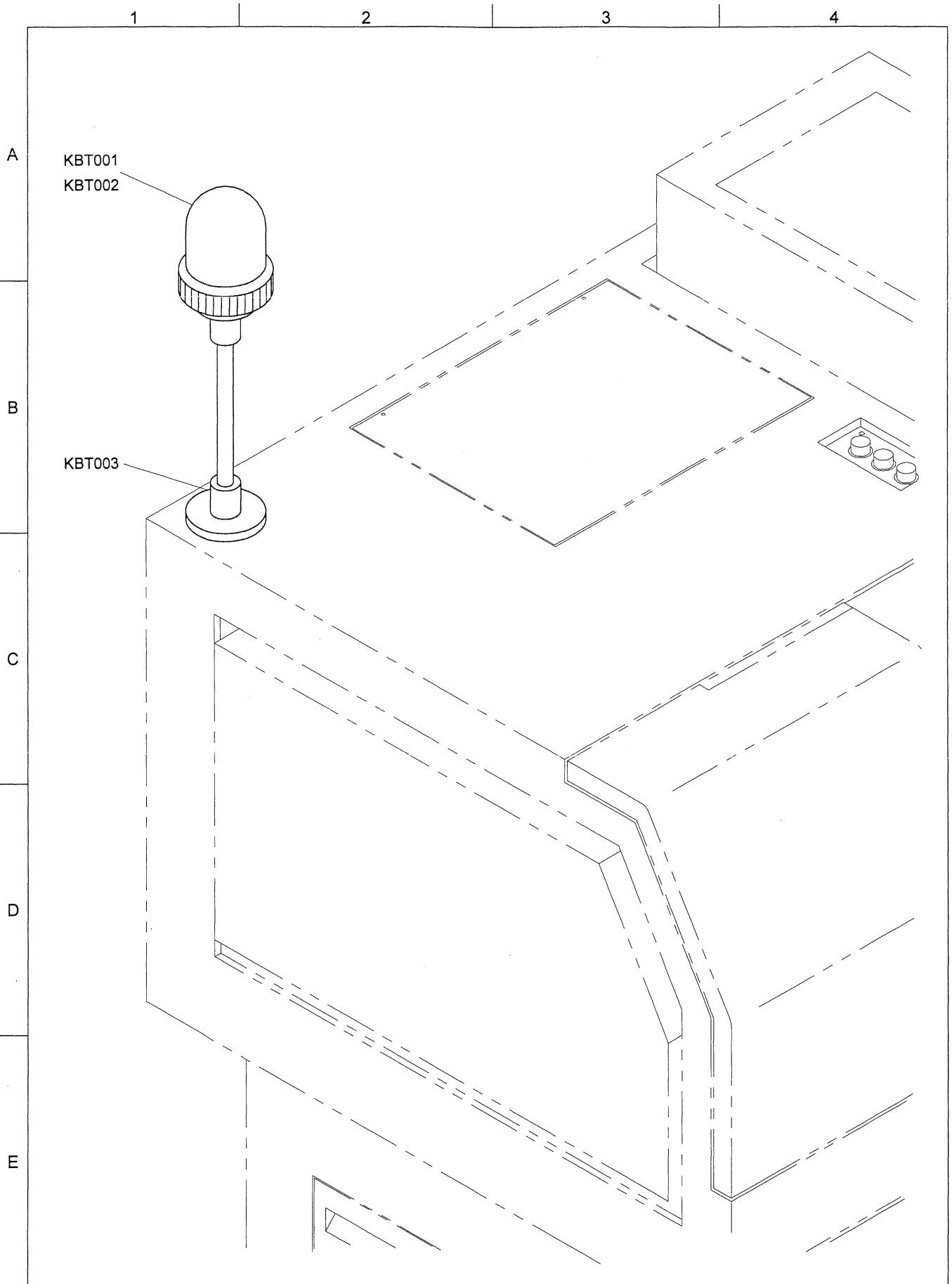
PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	X1 軸カバー	X1-AXIS COVER		1	
001a	六角穴付ボルト	BOLT	M6x12	2	
002	製品受カバー	RECEIVER COVER		1	
002a	六角穴付ボルト	BOLT	M4x6	4	
002b	平座金	WASHER	M4	4	
003	右側面フタ 4	RIGHT SIDE COVER 4		1	
003a	六角穴付ボルト	BOLT	M4x6	4	
003b	平座金	WASHER	M4	4	
004	バルブカバー	VALVE COVER		1	
004a	六角穴付ボルト	BOLT	M4x10	4	
004b	平座金	WASHER	M4	4	
005	X1 軸カバー (下)	X1-AXIS COVER (LOWER)		1	
005a	六角穴付ボルト	BOLT	M4x5	2	
005b	平座金	WASHER	M4	2	
K001	モデルナンバーシール	MODEL NUMBER SEAL	"7M7"	1	UNIVERSAL DESIGN
R001	切削油ブロック	COOLANT BLOCK		1	
R002	切削油ブラケット	COOLANT BRACKET		1	
R002a	六角穴付ボルト	BOLT	M6x12	8	
R002b	平座金	WASHER	M6	8	
R003	パイプ	PIPE		1	
KR001	S ボールバルブ	VALVE	S4	1	KITZ
KR002	径違いティー	TEE	3/4"x3/4"x1/2"	1	
KR003	エルボ	ELBOW	3/4"	1	
KR004	めすおすエルボ	ELBOW	1/2"	2	
KR005	ソケット	SOCKET	1/2"	1	
KR006	六角穴付プラグ	PLUG	ST-PA-1/2	2	IHARA
KR007	スナップロッククーラントノズル	NOZZLE	1/2"-3/8" -200-3/8"	3	CAPTAIN INDUSTRIES
KR008	トヨスプリングホース	HOSE	1/2" L=430mm	1	TOYO FLEX
KR009	トヨスプリングボース	HOSE	1/2" L=1700mm	1	TOYO FLEX
KR010	径違いエルボ	ELBOW	1/2"x1/4"	1	
KR011	ニップル	NIPPLE	1/4"	1	
L71620 U77Z		VII 型専用ブロック BLOCK DEDICATED TO TYPE VII		000 R000	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	X1 軸カバー	X1-AXIS COVER		1	
001a	六角穴付ボルト	BOLT	M6x12	2	
002	製品受カバー	RECEIVER COVER		1	
002a	六角穴付ボルト	BOLT	M4x6	4	
002b	平座金	WASHER	M4	4	
003	右側面フタ 4	RIGHT SIDE COVER 4		1	
003a	六角穴付ボルト	BOLT	M4x6	4	
003b	平座金	WASHER	M4	4	
004	バルブカバー	VALVE COVER		1	
004a	六角穴付ボルト	BOLT	M4x10	4	
004b	平座金	WASHER	M4	4	
005	X1 軸カバー (下)	X1-AXIS COVER (LOWER)		1	
005a	六角穴付ボルト	BOLT	M4x5	2	
005b	平座金	WASHER	M4	2	
K001	モデルナンバーシール	MODEL NUMBER SEAL	"7M8"	1	UNIVERSAL DESIGN
R001	切削油ブロック	COOLANT BLOCK		1	
R002	切削油ブラケット	COOLANT BRACKET		1	
R002a	六角穴付ボルト	BOLT	M6x12	8	
R002b	平座金	WASHER	M6	8	
R003	パイプ	PIPE		1	
KR001	S ボールバルブ	VALVE	S4	1	KITZ
KR002	径違いティー	TEE	3/4"x3/4"x1/2"	1	
KR003	エルボ	ELBOW	3/4"	1	
KR004	めすおすエルボ	ELBOW	1/2"	2	
KR005	ソケット	SOCKET	1/2"	1	
KR006	六角穴付プラグ	PLUG	ST-PA-1/2	2	IHARA
KR007	スナップロッククーラントノズル	NOZZLE	1/2"-3/8" -200-3/8"	3	CAPTAIN INDUSTRIES
KR008	トヨスプリングホース	HOSE	1/2" L=430mm	1	TOYO FLEX
KR009	トヨスプリングボース	HOSE	1/2" L=1700mm	1	TOYO FLEX
KR010	径違いエルボ	ELBOW	1/2"x1/4"	1	
KR011	ニップル	NIPPLE	1/4"	1	
L71620 U78Z		VIII 型専用ブロック BLOCK DEDICATED TO TYPE VIII		000 R000	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	マド	WINDOW		1	
001a	皿小ネジ	SCREW	M4x8	4	
001b	六角穴付ボルト	BOLT	M6x16	2	
001c	平座金	WASHER	M6	2	
001d	六角ナット	NUT	M4	4	
002	トビラ	DOOR		1	
003	シャッター	SHUTTER		1	
004	レール 1	RAIL 1		1	
005	レール 2	RAIL 2		1	
005a	平座金	WASHER	M6	3	
006	レール 3	RAIL 3		1	
006a	六角穴付ボルト	BOLT	M6x12	3	
006b	平座金	WASHER	M6	3	
007	抜け止め	SEAT		1	
007a	六角穴付ボルト	BOLT	M4x10	2	
008	ガイド	GUIDE		1	
009	プレート	PLATE		1	
010	防油板 (2)	SPLASH PLATE (2)		1	
012	ローラー	ROLLER		2	
013	ローラー軸	ROLLER SHAFT		2	
013a	六角ナット	NUT	M6	2	
013b	平座金	WASHER	M6	2	
014	補助プレート	PLATE		1	
015	取手	HANDLE		1	
016	座金	WASHER		4	
K001	マイクロベアリング	BEARING	606ZZ	6	NACHI
K002	インバーテッドリング	INVERTED RING	ISTW6	6	OCHIAI
K003	インバーテッドリング	INVERTED RING	IRTW17	6	OCHIAI
K004	六角穴付ボタンボルト	BUTTON BOLT	M6x12	5	GOSHO
K005	皿小ネジ	SCREW	SSAR-M4-12	1	MISUMI
K006	低頭六角穴付ボルト	LOW HEAD CAP SCREW	CBS4x8	4	MISUMI
L71620 U781Z		標準トビラ WINDOW (S.T.D)		000	

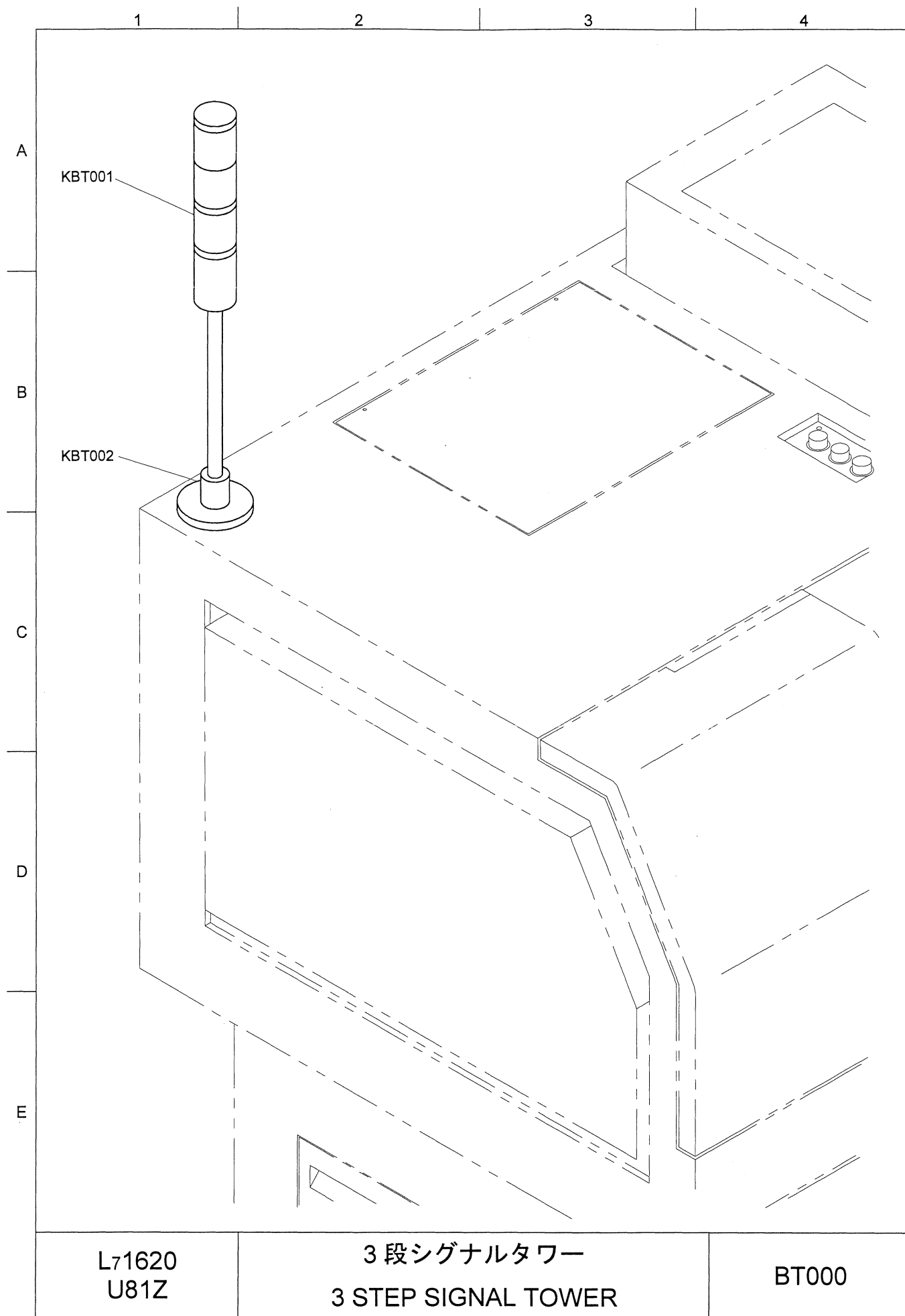


L71620 U80Z	パトライト表示 PATROL LIGHT	BT000
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PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	SL1	パトライト	PATROL LIGHT	SKH-102A YELLOW	1	PATLITE
KBT002	SL1	パトライト	PATROL LIGHT	SKH-102A RED	1	PATLITE
SP1		電球	LIGHT BULB	D02401003A	1	PATLITE
KBT003		取付けポール	POLE	SZ-30T	1	PATLITE
L71620 U80Z		パトライト表示 PATROL LIGHT			BT000	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
KDT301	Ry207	リレー RELAY	RB104-DE	1	FUJI ELECTRIC
L71620 U80Z		パトライト表示 PATROL LIGHT		DT300	

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PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	SL2	シグナルタワー	SIGNAL TOWER	STFP-302	1	PATLITE
SP1		電球	LIGHT BULB	D03001006A	1	PATLITE
KBT002		円形取付け台	POLE	SZ-010	1	PATLITE
L71620 U81Z		3 段シグナルタワー 3 STEP SIGNAL TOWER			BT000	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
KDT301	Ry205 Ry206 Ry207	リレー RELAY	RB104-DE	3	FUJI ELECTRIC
L71620 U81Z		3 段シグナルタワー 3 STEP SIGNAL TOWER		DT300	

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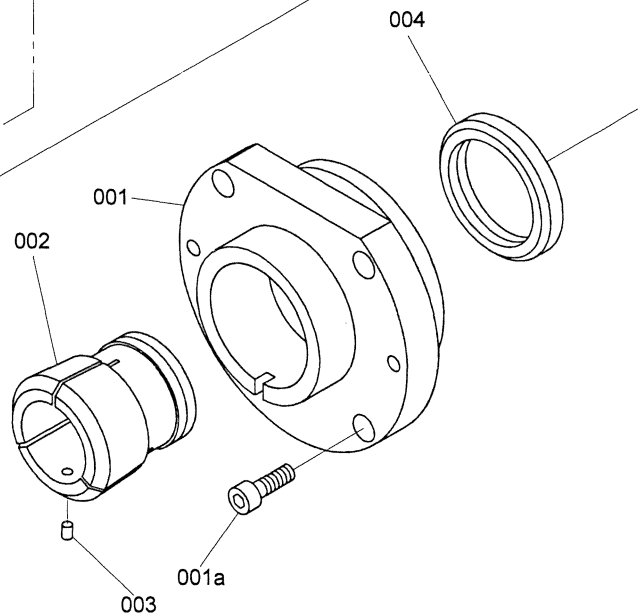
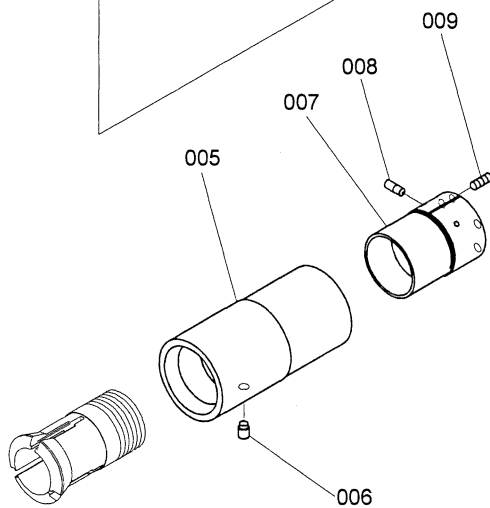
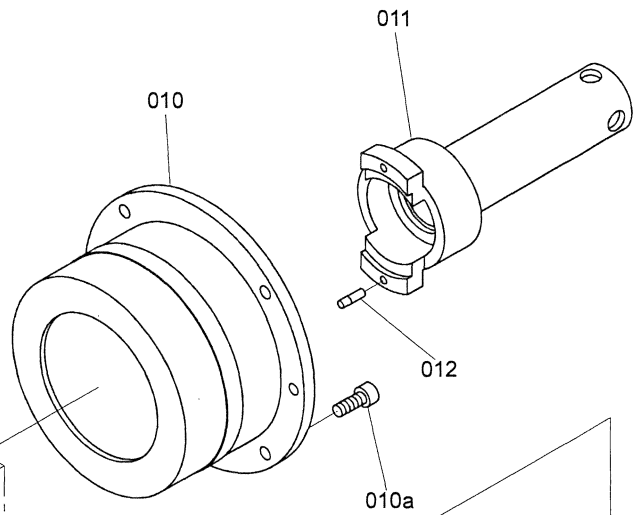
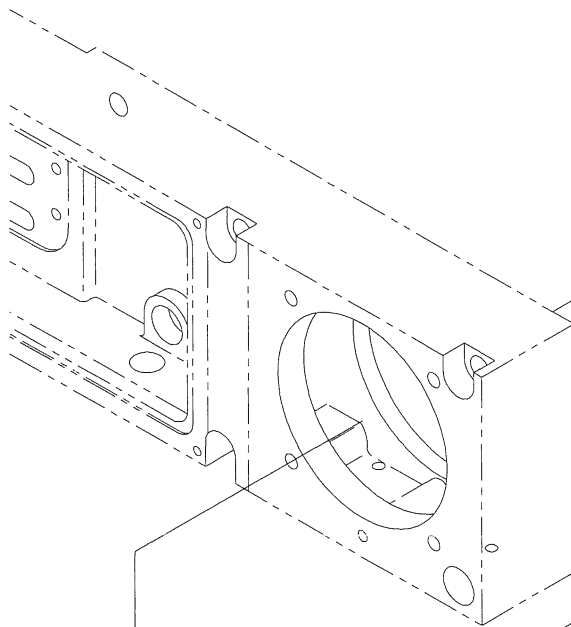
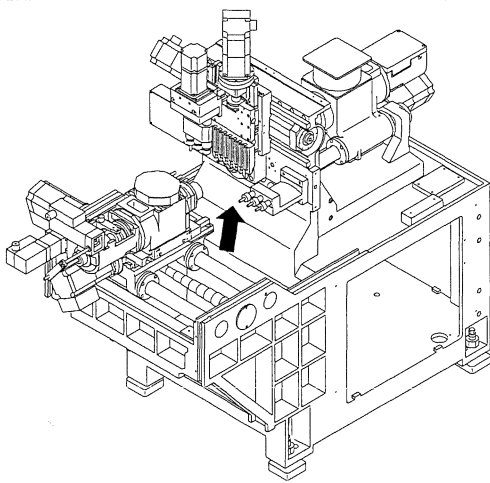
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固定型ガイドブッシュ装置
FIXED GUIDE BUSHING DEVICE

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ガイドブッシュホルダー	GUIDE BUSHING HOLDER		1	
001a	六角穴付ボルト	BOLT	M8x25	4	
002	スリーブホルダー	SLEEVE HOLDER		1	
003	キー	KEY		1	
004	ナット	NUT		1	
005	ガイドブッシュスリーブ	GUIDE BUSHING SLEEVE		1	
006	キー	KEY		1	
007	ドローバー	DRAW BAR		1	
008	押しピン	PIN		1	
009	クランプネジ	CLAMP SCREW		1	
010	フランジカバー	FLANGE COVER		1	
010a	六角穴付ボルト	BOLT	M6x16	4	
011	スパナ	WRENCH		1	
012	ピン	PIN		2	
L51620 U120Z		固定型ガイドブッシュ装置 FIXED GUIDE BUSHING DEVICE		000	

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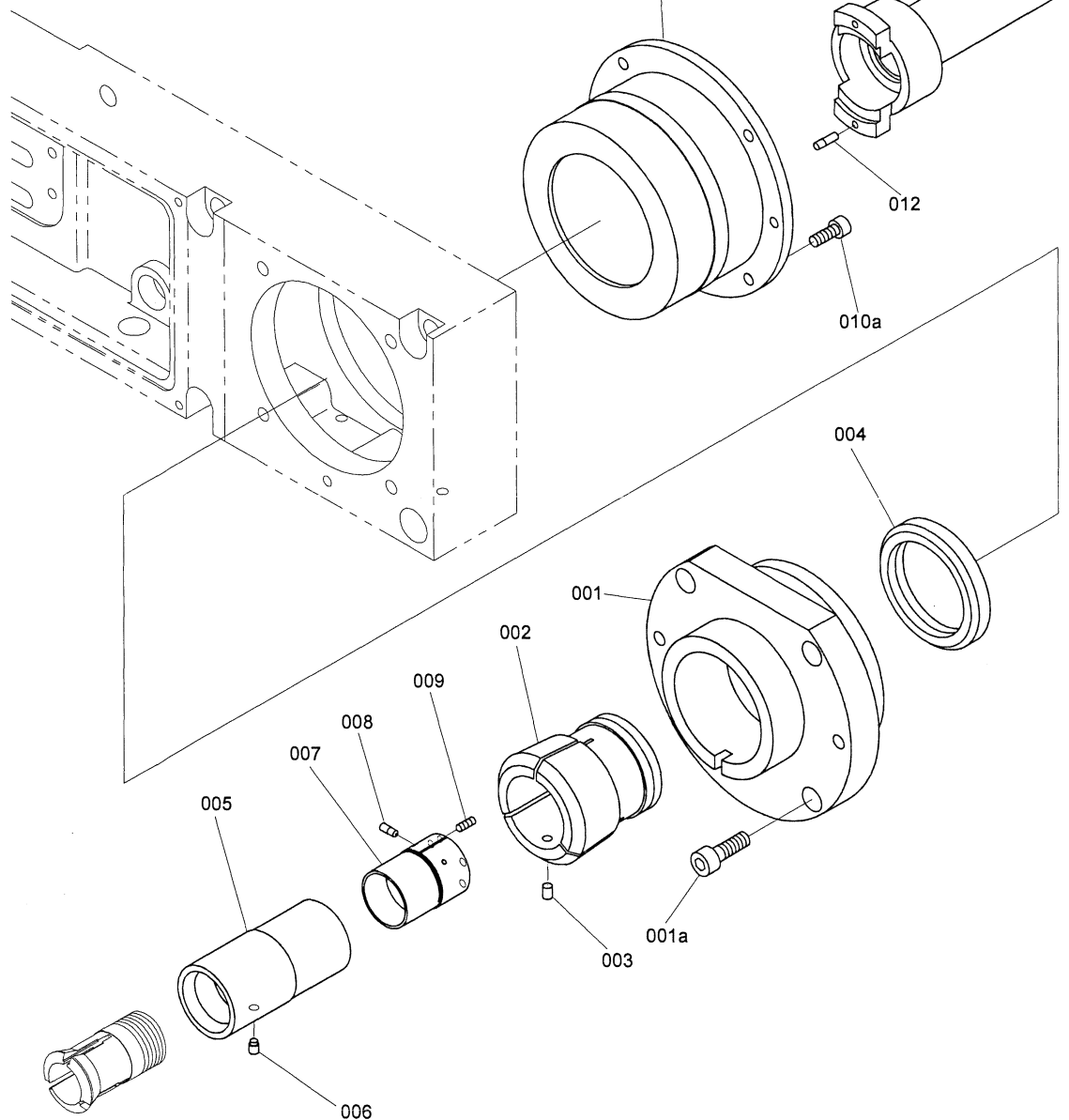
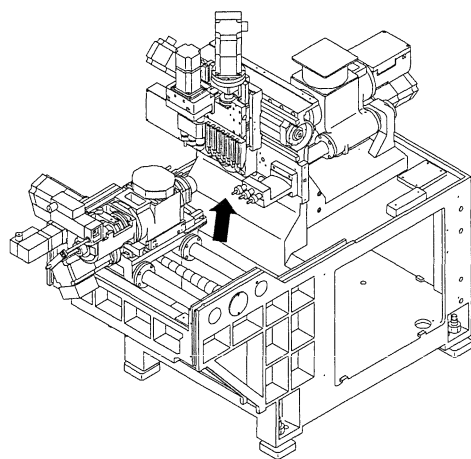
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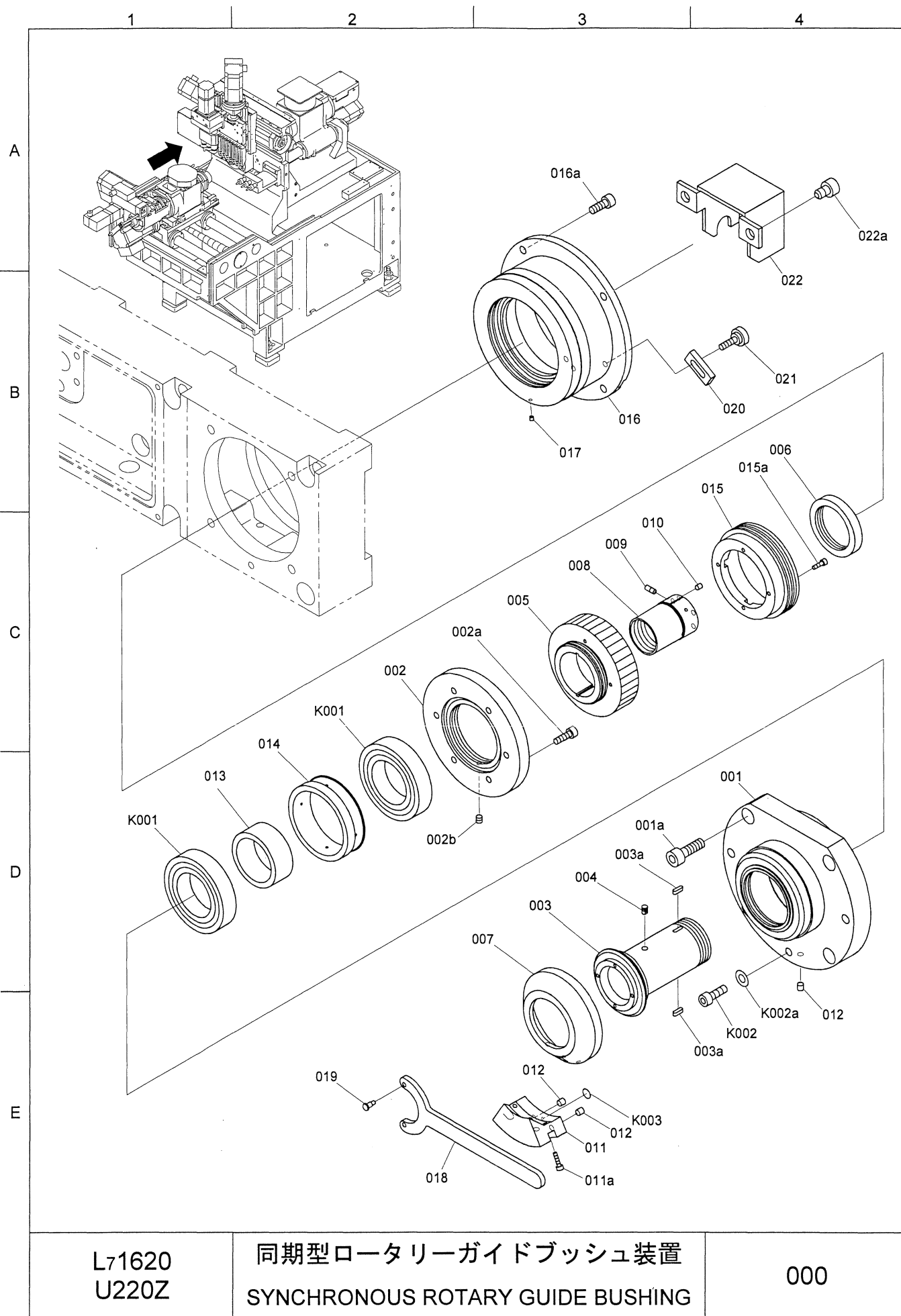
L51620
U1120Z

固定型ガイドブッシュ装置 (輸出用)
FIXED GUIDE BUSHING DEVICE

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ガイドブッシュホルダー	GUIDE BUSHING HOLDER		1	
001a	六角穴付ボルト	BOLT	M8x25	4	
002	スリーブホルダー	SLEEVE HOLDER		1	
003	キー	KEY		1	
004	ナット	NUT		1	
005	ガイドブッシュスリーブ	GUIDE BUSHING SLEEVE		1	
006	キー	KEY		1	
007	ドローバー	DRAW BAR		1	
008	押しピン	PIN		1	
009	クランプネジ	CLAMP SCREW		1	
010	フランジカバー	FLANGE COVER		1	
010a	六角穴付ボルト	BOLT	M6x16	4	
011	スパナ	WRENCH		1	
012	ピン	PIN		2	
L51620 U1120Z		固定型ガイドブッシュ装置 (輸出用) FIXED GUIDE BUSHING DEVICE		000	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ガイドブッシュホルダー	GUIDE BUSHING HOLDER	M8x25	1	
001a	六角穴付ボルト	BOLT		4	
002	スリーブホルダー	SLEEVE HOLDER		1	
003	キー	KEY		1	
004	ナット	NUT		1	
005	ガイドブッシュスリーブ	GUIDE BUSHING SLEEVE		1	
006	キー	KEY		1	
007	ドローバー	DRAW BAR		1	
008	押しピン	PIN		1	
009	クランプネジ	CLAMP SCREW		1	
010	フランジカバー	FLANGE COVER	1		
010a	六角穴付ボルト	BOLT	M6x16	4	
011	スパナ	WRENCH		1	
012	ピン	PIN		2	
L51620 U1150Z		固定型ガイドブッシュ装置 (輸出用) FIXED GUIDE BUSHING DEVICE		000	

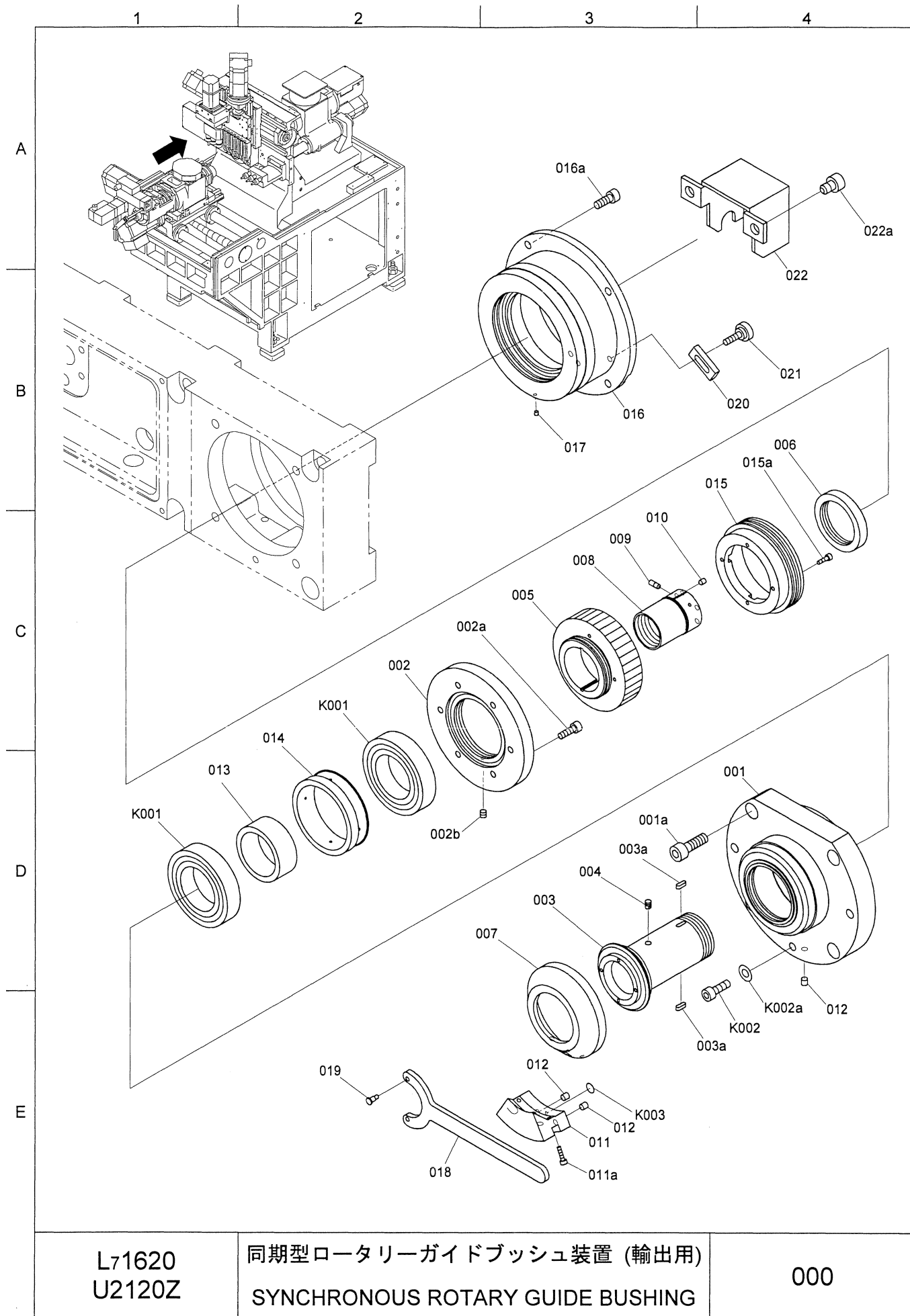


L71620
U220Z

同期型ロータリーガイドブッシュ装置
SYNCHRONOUS ROTARY GUIDE BUSHING

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ガイドブッシュホルダー	GUIDE BUSHING HOLDER		1	
001a	六角穴付ボルト	BOLT	M8x25	4	
002	ベアリング押さえ	FLANGE		1	
002a	六角穴付ボルト	BOLT	M5x16	6	
002b	六角穴付止めネジ (平先)	SET SCREW	M4x6	1	
003	ガイドブッシュスリーブ	GUIDE BUSHING SLEEVE		1	
003a	キー (両丸)	KEY	3 ^{+0.02} / _{+0.01} x3x10	2	
004	キー	KEY		1	
005	タイミングプーリー	TIMING PULLEY		1	
006	ナット	NUT		1	
007	キャップ	CAP		1	
008	ドローバー	DRAW BAR		1	
009	押しピン	PIN		1	
010	クランプネジ	CLAMP SCREW		1	
011	カバー	COVER		1	
011a	六角穴付ボルト	BOLT	M3x12	2	
012	塞ぎ栓	PLUG		3	
013	内輪スペーサー	INNER SPACER		1	
014	外輪スペーサー	OUTER SPACER		1	
015	シールフランジ	SEAL FLANGE		1	
015a	六角穴付ボルト	BOLT	M3x10	4	
016	フランジカバー	FLANGE COVER		1	
016a	六角穴付ボルト	BOLT	M6x16	4	
017	塞ぎ栓	PLUG		1	
018	カニ目スパナ	WRENCH		1	
019	ピン	PIN		2	
020	プレート	PLATE		1	
021	クランプボルト	CLAMP BOLT		1	
022	継ぎ手カバー	COVER		1	
022a	六角穴付ボルト	BOLT	M4x6	2	
K001	高速用組合せアンギュラ玉軸受	BEARING	7008CD /P4ADBA	1 set	SKF
K002	六角穴付ボルト	BOLT	M6x10	1	
K002a	平座金	WASHER	M6	1	
K003	O リング	O-RING	P5	1	
L71620 U220Z		同期型ロータリーガイドブッシュ装置 SYNCHRONOUS ROTARY GUIDE BUSHING		000	

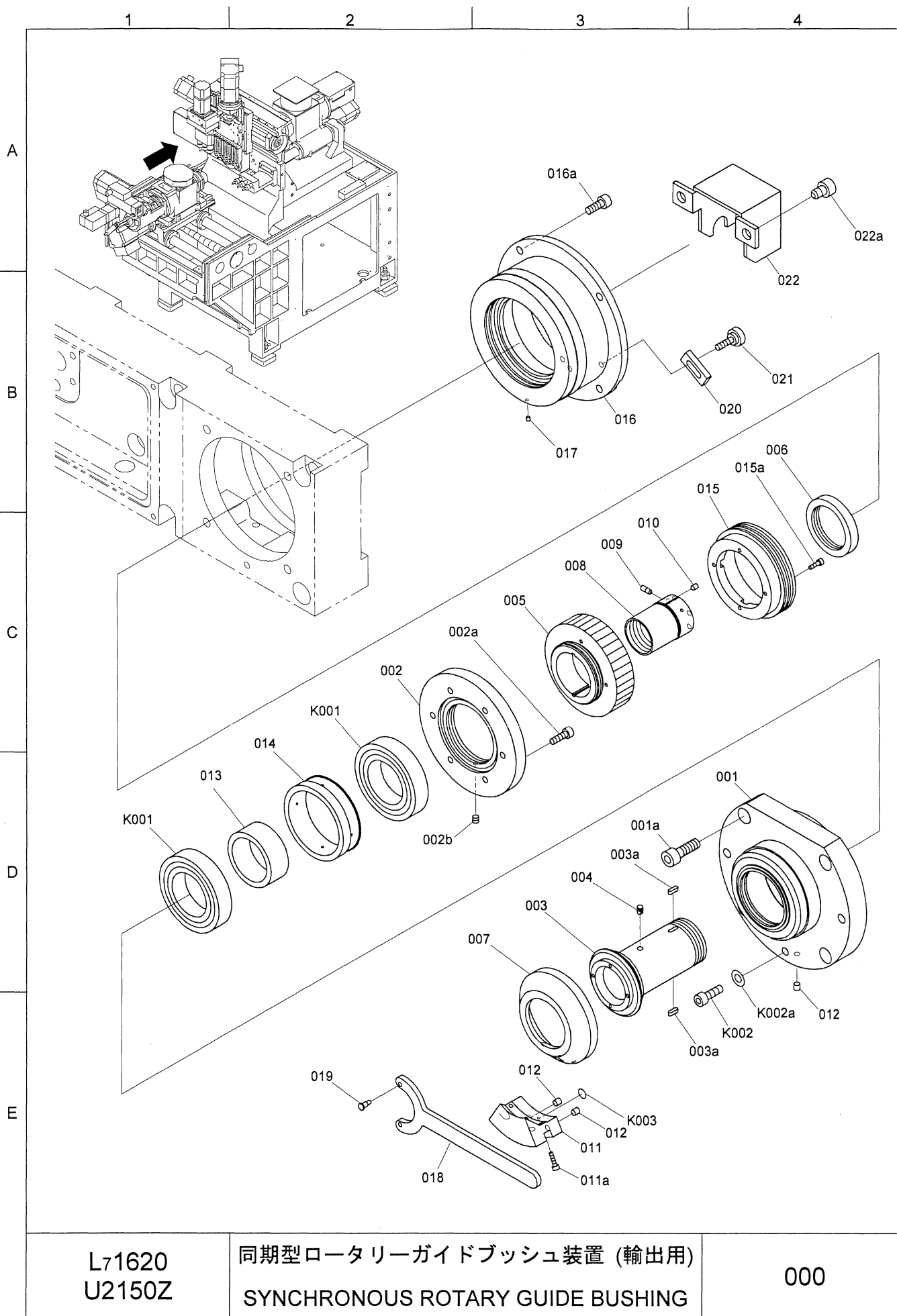


L71620
U2120Z

同期型ロータリーガイドブッシュ装置 (輸出用)
SYNCHRONOUS ROTARY GUIDE BUSHING

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ガイドブッシュホルダー	GUIDE BUSHING HOLDER		1	
001a	六角穴付ボルト	BOLT	M8x25	4	
002	ベアリング押さえ	FLANGE		1	
002a	六角穴付ボルト	BOLT	M5x16	6	
002b	六角穴付止めネジ (平先)	SET SCREW	M4x6	1	
003	ガイドブッシュスリーブ	GUIDE BUSHING SLEEVE		1	
003a	キー (両丸)	KEY	3 $\begin{smallmatrix} +0.02 \\ +0.01 \end{smallmatrix}$ x3x10	2	
004	キー	KEY		1	
005	タイミングプーリー	TIMING PULLEY		1	
006	ナット	NUT		1	
007	キャップ	CAP		1	
008	ドローバー	DRAW BAR		1	
009	押しピン	PIN		1	
010	クランプネジ	CLAMP SCREW		1	
011	カバー	COVER		1	
011a	六角穴付ボルト	BOLT	M3x12	2	
012	塞ぎ栓	PLUG		3	
013	内輪スペーサー	INNER SPACER		1	
014	外輪スペーサー	OUTER SPACER		1	
015	シールフランジ	SEAL FLANGE		1	
015a	六角穴付ボルト	BOLT	M3x10	4	
016	フランジカバー	FLANGE COVER		1	
016a	六角穴付ボルト	BOLT	M6x16	4	
017	塞ぎ栓	PLUG		1	
018	カニ目スパナ	WRENCH		1	
019	ピン	PIN		2	
020	プレート	PLATE		1	
021	クランプボルト	CLAMP BOLT		1	
022	継ぎ手カバー	COVER		1	
022a	六角穴付ボルト	BOLT	M4x6	2	
K001	高速用組合せアンギュラ玉軸受	BEARING	7008CD /P4ADBA	1 set	SKF
K002	六角穴付ボルト	BOLT	M6x10	1	
K002a	平座金	WASHER	M6	1	
K003	O リング	O-RING	P5	1	
L71620 U2120Z		同期型ロータリーガイドブッシュ装置 (輸出用) SYNCHRONOUS ROTARY GUIDE BUSHING		000	

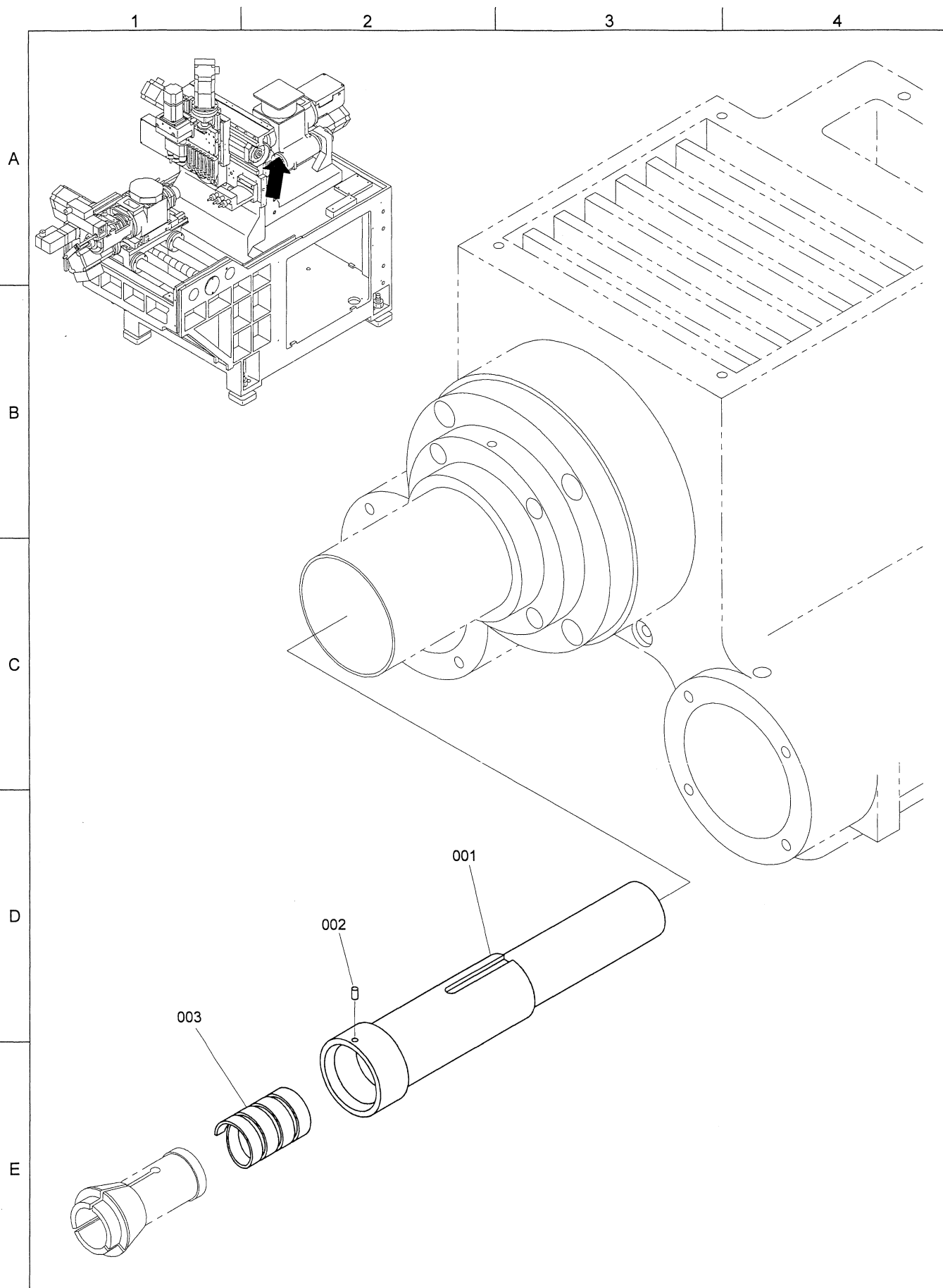


L71620
U2150Z

同期型ロータリーガイドブッシュ装置 (輸出用)
SYNCHRONOUS ROTARY GUIDE BUSHING

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	ガイドブッシュホルダー	GUIDE BUSHING HOLDER		1	
001a	六角穴付ボルト	BOLT	M8x25	4	
002	ベアリング押さえ	FLANGE		1	
002a	六角穴付ボルト	BOLT	M5x16	6	
002b	六角穴付止めネジ (平先)	SET SCREW	M4x6	1	
003	ガイドブッシュスリーブ	GUIDE BUSHING SLEEVE		1	
003a	キー (両丸)	KEY	3 $\begin{smallmatrix} +0.02 \\ +0.01 \end{smallmatrix}$ x3x10	2	
004	キー	KEY		1	
005	タイミングプーリー	TIMING PULLEY		1	
006	ナット	NUT		1	
007	キャップ	CAP		1	
008	ドローバー	DRAW BAR		1	
009	押しピン	PIN		1	
010	クランプネジ	CLAMP SCREW		1	
011	カバー	COVER		1	
011a	六角穴付ボルト	BOLT	M3x12	2	
012	塞ぎ栓	PLUG		3	
013	内輪スペーサー	INNER SPACER		1	
014	外輪スペーサー	OUTER SPACER		1	
015	シールフランジ	SEAL FLANGE		1	
015a	六角穴付ボルト	BOLT	M3x10	4	
016	フランジカバー	FLANGE COVER		1	
016a	六角穴付ボルト	BOLT	M6x16	4	
017	塞ぎ栓	PLUG		1	
018	カニ目スパナ	WRENCH		1	
019	ピン	PIN		2	
020	プレート	PLATE		1	
021	クランプボルト	CLAMP BOLT		1	
022	継ぎ手カバー	COVER		1	
022a	六角穴付ボルト	BOLT	M4x6	2	
K001	高速用組合せアンギュラ玉軸受	BEARING	7008CD /P4ADBA	1 set	SKF
K002	六角穴付ボルト	BOLT	M6x10	1	
K002a	平座金	WASHER	M6	1	
K003	O リング	O-RING	P5	1	
L71620 U2150Z		同期型ロータリーガイドブッシュ装置 (輸出用) SYNCHRONOUS ROTARY GUIDE BUSHING		000	

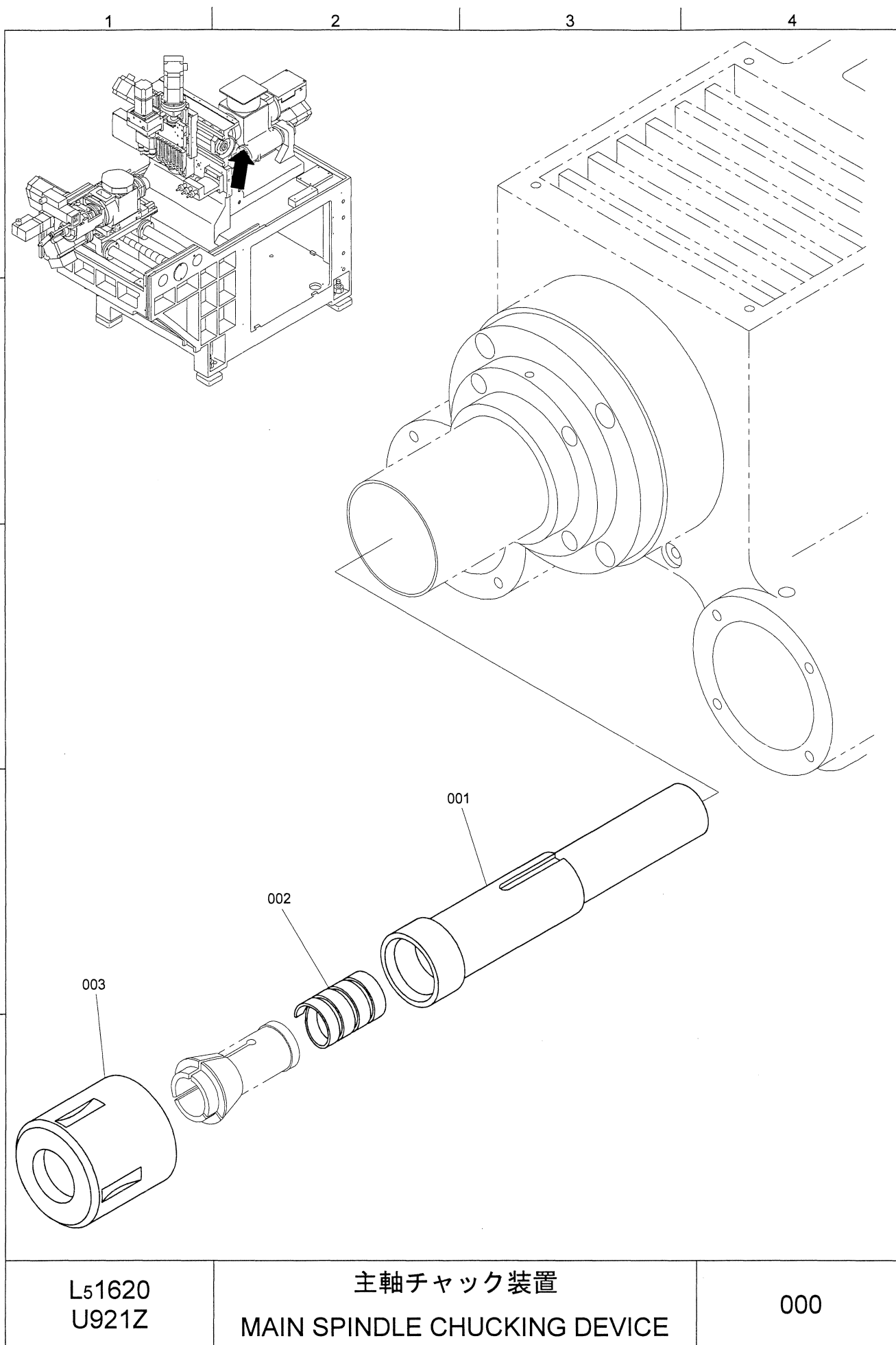


L51620
U621Z

異形材用チャックスリーブ
CHUCK SLEEVE
FOR NON-CONFORMED MATERIAL

000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	チャックスリーブ	CHUCK SLEEVE		1	
002	位置決めピン	POSITIONING PIN		1	
003	角バネ	SPRING		1	
L51620 U621Z		異形材用チャックスリーブ CHUCK SLEEVE FOR NON-CONFORMED MATERIAL		000	



PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
001	チャックスリーブ	CHUCK SLEEVE	1	
002	角バネ	SPRING	1	
003	キャップナット	CAP NUT	1	
L51620 U921Z		主軸チャック装置 MAIN SPINDLE CHUCKING DEVICE		000

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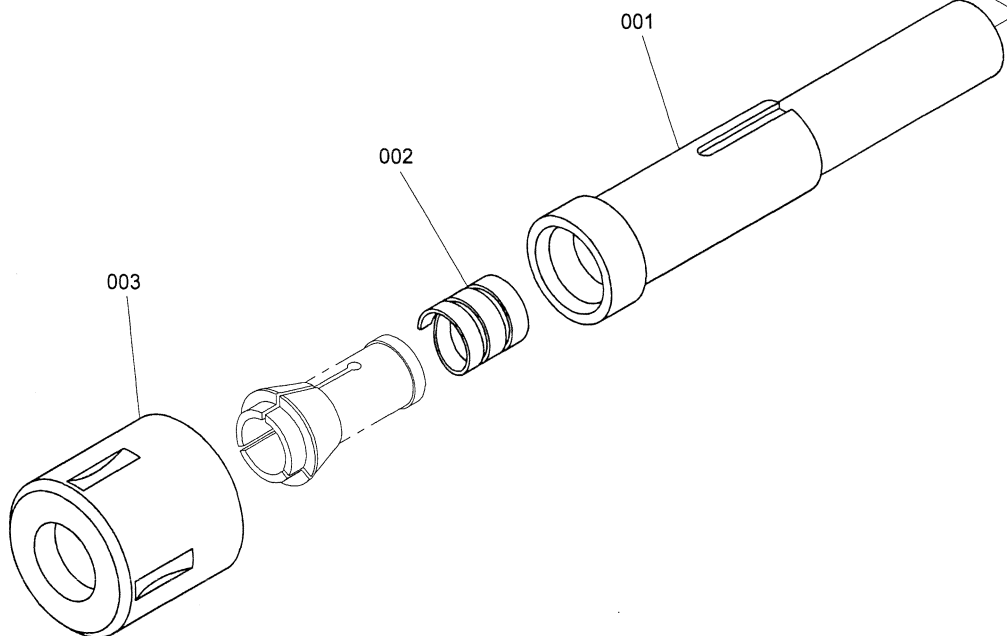
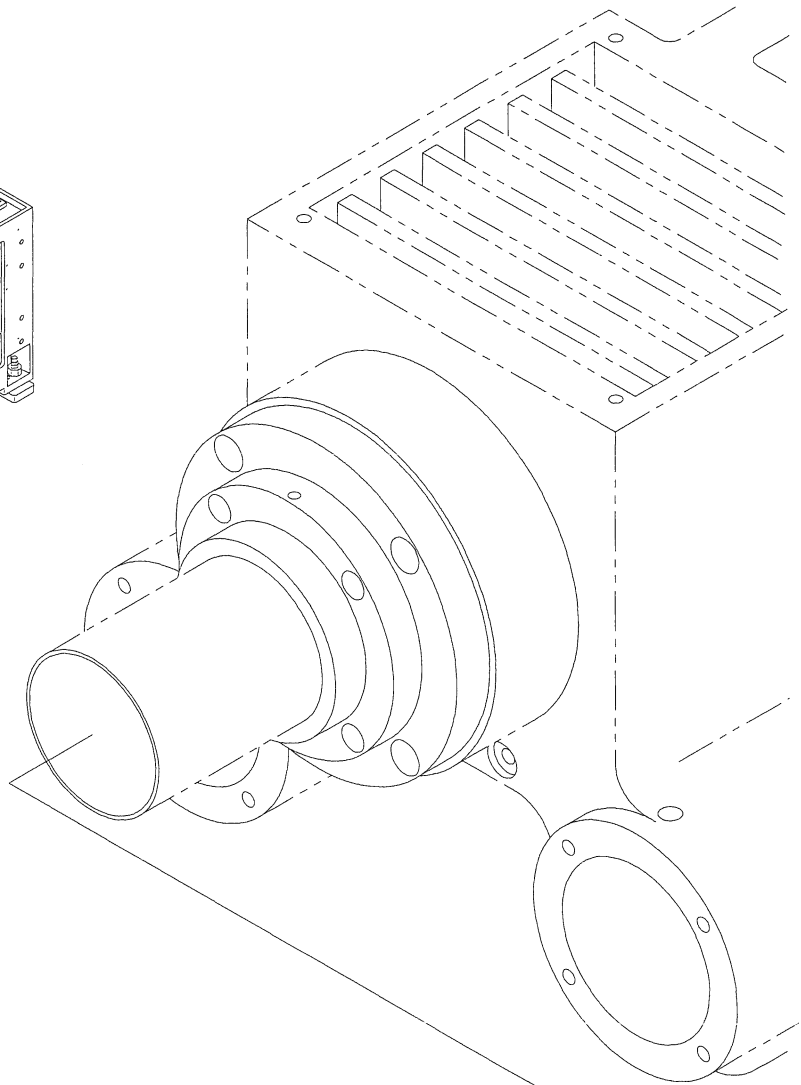
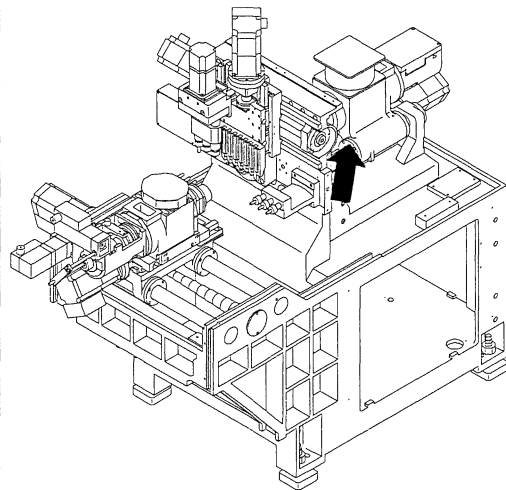
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L51620
U9131Z

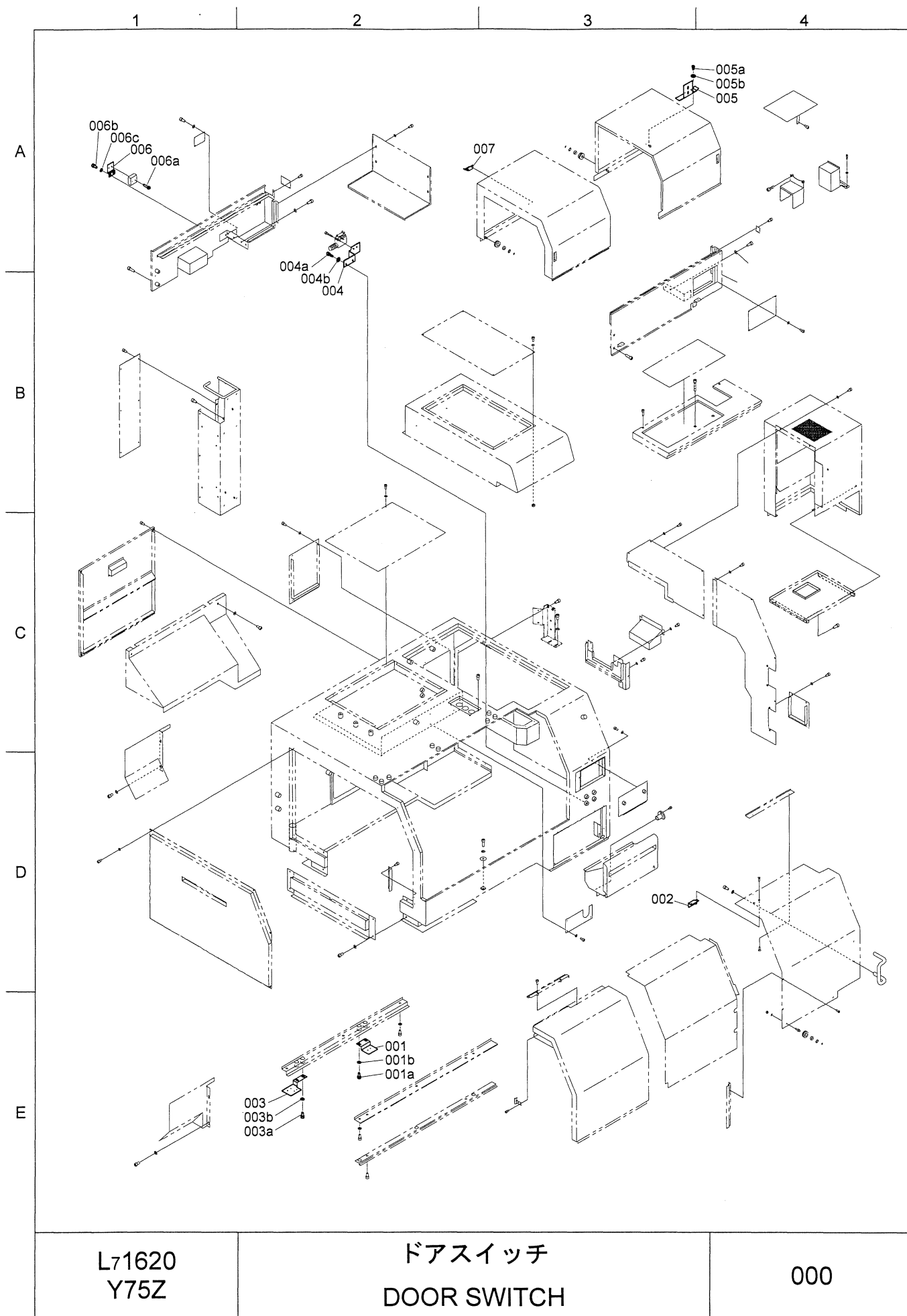
主軸チャック装置 (輸出用)
MAIN SPINDLE CHUCKING DEVICE

000

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PARTS NO.	PARTS NAME	TYPE	Q'TY	REMARKS
K001	機械銘板 PLATE	"CITIZEN"	1	YATABE NAME PLATE CO., LTD
K002	社名シール LABEL	CITIZEN 261	1	UNIVERSAL DESIGN
K003	ブランドバッヂ BADGE	Cincom	1	UNIVERSAL DESIGN
K004	危険ラベル DANGER LABEL	JD01	2	TOIN
K005	警告ラベル WARNING LABEL	JW201	1	TOIN
K006	警告ラベル WARNING LABEL	JW01	2	TOIN
K007	警告ラベル WARNING LABEL	JW02	1	TOIN
K008	警告ラベル WARNING LABEL	JW03	1	TOIN
K009	警告ラベル WARNING LABEL	JW04	1	TOIN
K010	警告ラベル WARNING LABEL	JW05	1	TOIN
K011	警告ラベル WARNING LABEL	JW07	1	TOIN
K012	警告ラベル WARNING LABEL	JW11	1	TOIN
K013	アースシール GROUND SEAL	A-001	1	CMTN
L71620 Y70S		警告ラベル WARNING LABEL		000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
K101	機械銘板	PLATE	"CITIZEN"	1	YATABE NAME PLATE CO., LTD
K102	社名シール	LABEL	CITIZEN 261	1	UNIVERSAL DESIGN
K103	ブランドバッヂ	BADGE	Cincom	1	UNIVERSAL DESIGN
K104	危険ラベル	DANGER LABEL	ED01	2	TOIN
K105	警告ラベル	WARNING LABEL	EW201	1	TOIN
K106	警告ラベル	WARNING LABEL	EW01	2	TOIN
K107	警告ラベル	WARNING LABEL	EW02	1	TOIN
K108	警告ラベル	WARNING LABEL	EW03	1	TOIN
K109	警告ラベル	WARNING LABEL	EW04	1	TOIN
K110	警告ラベル	WARNING LABEL	EW05	1	TOIN
K111	警告ラベル	WARNING LABEL	EW07	1	TOIN
K112	警告ラベル	WARNING LABEL	EW11	1	TOIN
K113	アースシール	GROUND SEAL	A-002	1	CMTN
L71620 Y70S		警告ラベル WARNING LABEL		100	



PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	LS 取付板 (右)	LIMIT SWITCH MOUNTING PLATE (R)		1	
001a	六角穴付ボルト	BOLT	M6x12	2	
001b	平座金	WASHER	M6	2	
002	ドグ (右)	DOG (R)		1	
003	LS 取付板 (左)	LIMIT SWITCH MOUNTING PLATE (L)		1	
003a	六角穴付ボルト	BOLT	M6x12	2	
003b	平座金	WASHER	M6	2	
004	LS 取付板 (1)	LIMIT SWITCH MOUNTING PLATE (1)		1	
004a	六角穴付ボルト	BOLT	M6x16	2	
004b	平座金	WASHER	M6	2	
005	LS ドグ 1	LS DOG 1		1	
005a	六角穴付ボルト	BOLT	M4x6	2	
005b	平座金	WASHER	M4	2	
006	LS 取付板 (2)	LIMIT SWITCH MOUNTING PLATE (2)		1	
006a	六角穴付ボルト	BOLT	M4x20	2	
006b	六角穴付ボルト	BOLT	M6x12	2	
006c	平座金	WASHER	M6	2	
007	LS ドグ	LS DOG		1	
L71620 Y75Z		ドアスイッチ DOOR SWITCH		000	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
KBT001	DRSW1 DRSW2 DRSW3 DRSW4	リミットスイッチ LIMIT SWITCH	SHL-W255	4	OMRON
KBT001a		六角穴付ボルト BOLT	M4x25	8	
L71620 Y75Z		ドアスイッチ DOOR SWITCH		BT000	

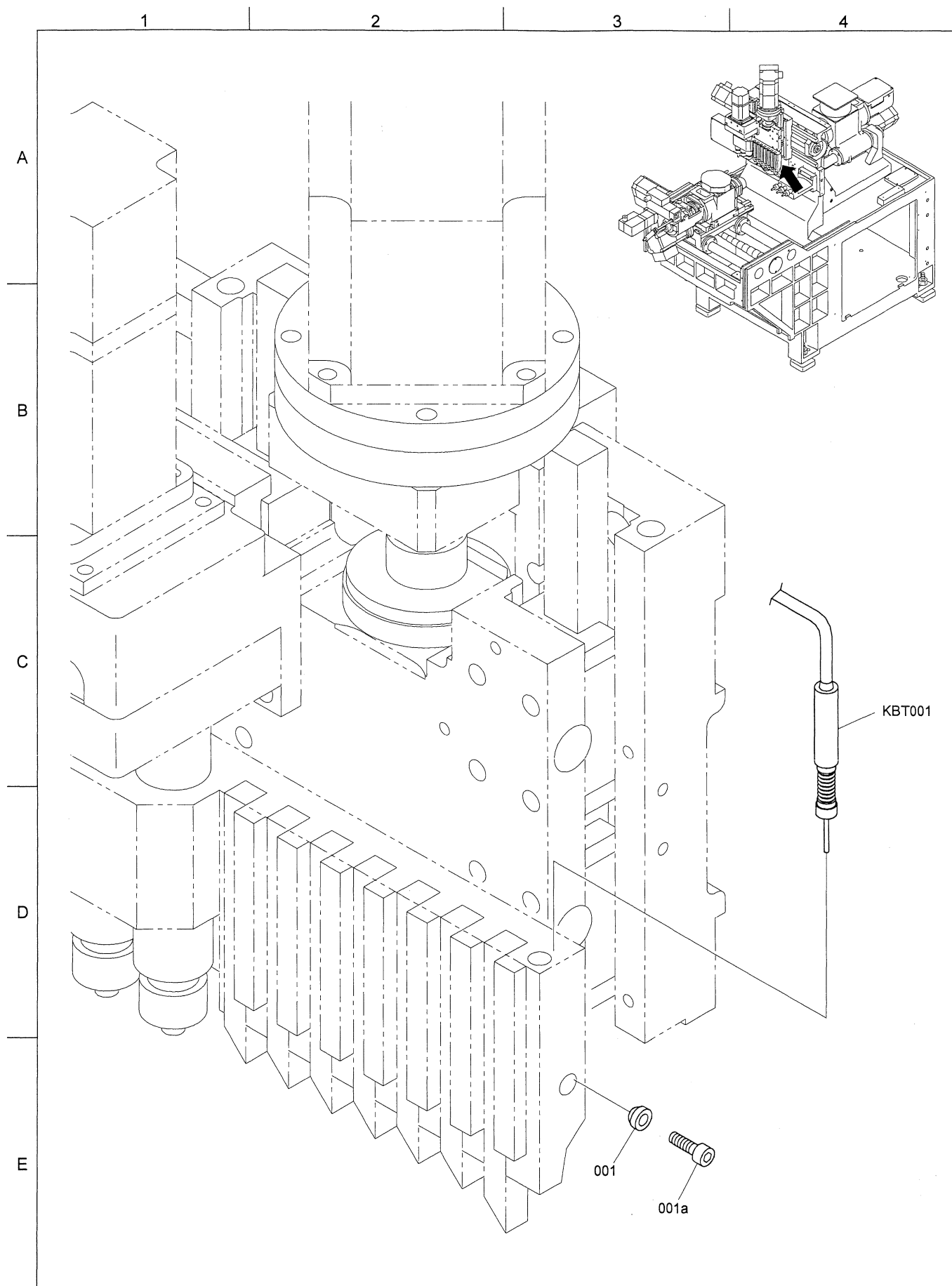
PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
WT101		スイッチケーブル	CABLE		1	
WT102		スイッチケーブル	CABLE		1	
WT103		スイッチケーブル	CABLE		1	
WT104		スイッチケーブル	CABLE		1	
L71620 Y75Z		ドアスイッチ DOOR SWITCH			WT100	

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	スイッチブラケット (1)	SWITCH BRACKET (1)		1	
001a	六角穴付ボルト	BOLT	M6x12	2	
002	ナット板	PLATE		4	
003	キーブラケット (1)	KEY BRACKET (1)		1	
003a	六角穴付ボルト	BOLT	M4x6	2	
004	スイッチブラケット (2)	SWITCH BRACKET (2)		1	
004a	六角穴付ボルト	BOLT	M6x12	2	
005	キーブラケット (2)	KEY BRACKET (2)		1	
006	スイッチブラケット (3)	SWITCH BRACKET (3)		1	
006a	六角穴付ボルト	BOLT	M6x20	2	
006b	平座金	WASHER	M6	2	
007	キーブラケット (3)	KEY BRACKET (3)		1	
007a	六角穴付ボルト	BOLT	M4x8	2	
008	ブラケット	BRACKET		3	
008a	六角穴付ボルト	BOLT	M4x8	6	
008b	六角穴付ボルト	BOLT	M4x12	6	
008c	平座金	WASHER	M4	12	
009	スイッチブラケット (4)	SWITCH BRACKET (4)		1	
009a	六角穴付ボルト	BOLT	M6x20	2	
009b	平座金	WASHER	M6	2	
010	スイッチカバー	SWITCH COVER		4	
010a	六角穴付ボルト	BOLT	M4x6	8	
011	キーブラケット (4)	KEY BRACKET (4)		1	
011a	六角穴付ボルト	BOLT	M4x8	2	
011b	平座金	WASHER	M4	2	
012	ブラケット (4)	BRACKET (4)		1	
012a	六角穴付ボルト	BOLT	M4x8	2	
012b	平座金	WASHER	M4	4	
012c	六角穴付ボルト	BOLT	M4x10	2	
K001	六角穴付ボルト	BOLT	M5x40	16	
L71620 Y76Z		ドアロック DOOR LOCK		000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	DRLK1 DRLK2 DRLK3 DRLK4	セーフティスイッチ	SAFETY SWITCH	TP4-4141A024 MC2074	4	EUCHNER
KBT002		ストレートアクチュエータ	STRAIGHT ACTUATOR	No.059226	4	EUCHNER
KBT003		ケーブルグランド	CABLE GLAND	EKPM20/06	4	EUCHNER
KDT301	Ry307	リレー	RELAY	G2R-2-SD	1	OMRON
L71620 Y76Z		ドアロック DOOR LOCK			BT000 DT300	

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PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	トビラ	DOOR		1	
001a	六角穴付ボルト	BOLT	M6x16	2	
001b	平座金	WASHER	M6	2	
001c	六角ナット	NUT	M4	4	
001d	平座金	WASHER	M4	8	
002	トビラ	DOOR		1	
002b	六角穴付ボルト	BOLT	M6x12	2	
002c	平座金	WASHER	M6	2	
003	シャッター	SHUTTER		1	
004	レール 1	RAIL 1		1	
005	レール 2	RAIL 2		1	
005a	平座金	WASHER	M6	3	
006	レール 3	RAIL 3		1	
006a	六角穴付ボルト	BOLT	M6x12	3	
006b	平座金	WASHER	M6	3	
007	抜け止め	SEAT		1	
007a	六角穴付ボルト	BOLT	M4x10	2	
008	ガイド	GUIDE		1	
009	プレート	PLATE		1	
012	ローラー	ROLLER		6	
013	ローラー軸	ROLLER SHAFT		2	
013a	六角ナット	NUT	M6	2	
013b	平座金	WASHER	M6	2	
014	補助プレート	PLATE		1	
015	取手	HANDLE		2	
016	座金	WASHER		4	
017	マド	WINDOW		2	
018	取手	HANDLE		2	
018a	六角穴付ボルト	BOLT	M6x10	4	
K001	マイクロベアリング	BEARING	606ZZ	6	NACHI
K002	インバーテッドリング	INVERTED RING	ISTW6	6	OCHIAI
K003	インバーテッドリング	INVERTED RING	IRTW17	6	OCHIAI
K004	六角穴付ボタンボルト	BUTTON BOLT	M6x12	5	GOSHO
K005	皿小ネジ	SCREW	SSARA-M4-12	1	MISUMI
K006	低頭六角穴付ボルト	SCREW	CBS4x10	4	MISUMI
L71620 Y761Z		ドアロック用トビラ WINDOW (DOOR LOCK)		000	



L71620
Y90Z

突切りバイト折れ検出装置
CUT-OFF TOOL BREAKAGE DETECTOR

000
BT000
WT000

PARTS NO.	PARTS NAME		TYPE	Q'TY	REMARKS
001	クランプ駒	BLOCK		1	
001a	六角穴付ボルト	BOLT	M5x16	1	
KBT001	タッチセンサー	SENSOR	P10DL-01-11	1	METROL
KWT001	ヒューズホルダー	FUSE HOLDER	F-7160	1	SATO PARTS
KWT002	ヒューズ	FUSE	F-1065	1	SATO PARTS
L71620 Y90Z		突切りバイト折れ検出装置 CUT-OFF TOOL BREAKAGE DETECTOR		000 BT000 WT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KBT001	FL1	照明装置	ILLUMINATOR	KE/418G (591-054-006) 24 VDC	1	FKB
SP1		蛍光灯	LAMP	213-920-008	(1)	FKB
KBT002		保持金具	RETAINING METAL	599-001-002	2	FKB
KBT003	FAN1	ファンモータ	FAN MOTOR	MRS18-DUL 180□x90t	1	ORIENTAL MOTOR
KBT003a		六角穴付ボルト	BOLT	M5x12	4	
KBT003b		平座金	WASHER	M5	4	
KBT004		ファンガード	FAN GUARD	FG18D	1	ORIENTAL MOTOR
KBT004a		六角穴付ボルト	BOLT	M5x16	4	
KBT004b		平座金	WASHER	M5	4	
KBT004c		ナット	NUT	M5	4	
KBT005	THP1	サーマルプロテクタ	THERMAL PROTECTOR	T70AR1U1	1	MATSUSHITA ELECTRIC
KBT006		スーパーシール	SUPER SEAL	NW-12R	1	NIX, INC.
KBT007	FAN3	ファンモータ	FAN MOTOR	LCH04-A02- S12D20-TWCS 120□x38t	1	STYLE ELECTRON
KBT008		ファンガード	FAN GUARD	SG-12001T	1	STYLE ELECTRON
KBT008a		平座金	WASHER	M4	4	
KBT008b		ナット	NUT	M4	4	
KBT009		六角穴付ボルト	BOLT	M4x50	4	
L71620 -570T		機械関係 MACHINE, etc.			BT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KCT001	UNIT1	制御ユニット	CONTROL UNIT	FCA730LUC-N	1	mitsubishi ELECTRIC
KCT002	LCD	表示器	DISPLAY	FCU7-DA211-C01	1	mitsubishi ELECTRIC
KCT002a		ナベ小セムス B (大)	SCREW	M5x8	4	
KCT003		前面 CF カード I/F	FRONT CF CARD I/F	FCU7-EP102-1	1	mitsubishi ELECTRIC
KCT004	CF30-S1 CF30-S2 CF30-C1 CF30-C2	リモート I/O カード	I/O CARD	HR371	4	mitsubishi ELECTRIC
KCT005	LF	AC リアクトル	AC REACTOR	D-AL11K	1	mitsubishi ELECTRIC
KCT005a		ナベ小セムス B (大)	SCREW	M5x10	4	
KCT006	UNIT3	パワーサプライモジュール	POWER SUPPLY MODULE	MDS-D-CV-110	1	mitsubishi ELECTRIC
KCT006a		ナベ小セムス B (大)	SCREW	M5x16	2	
KCT007	UNIT4	2 軸一体スピンドルアンブ モジュール	2-AXIS INCORPORATION SPINDLE AMP. MODULE	MDS-D-SP2-8040	1	mitsubishi ELECTRIC
KCT007a		ナベ小セムス B (大)	SCREW	M5x16	2	
KCT008	UNIT6	3 軸一体サーボアンブ モジュール	3-AXIS INCORPORATION SERVO AMP. MODULE	MDS-D-V3-202020	1	mitsubishi ELECTRIC
KCT008a		ナベ小セムス B (大)	SCREW	M5x16	2	
KCT009	UNIT7	2 軸一体サーボアンブ モジュール	2-AXIS INCORPORATION SERVO AMP. MODULE	MDS-D-V2-2020	1	mitsubishi ELECTRIC
KCT009a		ナベ小セムス B (大)	SCREW	M5x16	2	
KCT010	MS1	ビルトインスピンドルモータ	BUILT-IN SPINDLE MOTOR	SJ-2B4105T	1	mitsubishi ELECTRIC
SP1		ロータ	ROTOR	SJ-2B4105-RT	1	mitsubishi ELECTRIC
SP2		ステータ	STATOR	SJ-2B4105-ST	1	mitsubishi ELECTRIC
SP3		主軸検出器	SENSOR	TS5691N1170	1	mitsubishi ELECTRIC
SP3a		ナベ小セムス B (大)	SCREW	M5x8	4	
KCT012	MX1	AC サーボモータ	AC SERVO MOTOR	HF75B-SV-S1-A51	1	mitsubishi ELECTRIC
KCT013	MZ1	AC サーボモータ	AC SERVO MOTOR	HF105-SV-S1-A51	1	mitsubishi ELECTRIC
KCT014	MA1	AC サーボモータ	AC SERVO MOTOR	HF-KP23JK-S11	1	mitsubishi ELECTRIC
KCT015	UNIT10	バッテリーケース	BATTERY CASE	FCU6-BTBOX	1	mitsubishi ELECTRIC
KCT015a		皿小ネジ	SCREW	M4x10	2	
KCT016	MY1	AC サーボモータ	AC SERVO MOTOR	HF105-SV-S4-A51	1	mitsubishi ELECTRIC
L71620 -570T		NC 関係 NC, etc.			CT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
DT001		アンプ取付板	PLATE		1	
DT001a		六角穴付ボルト	BOLT	M6x10	2	
DT001b		平座金	WASHER	M6	2	
DT002		右側面板	PLATE		1	
DT002a		六角穴付ボルト	BOLT	M6x10	4	
DT002b		平座金	WASHER	M6	4	
DT003		基盤取付板	PLATE		1	
DT004		正面カバー	COVER		1	
DT004a		六角穴付ボルト	BOLT	M6x30	4	
DT005		側面カバー	COVER		1	
DT005a		六角穴付ボルト	BOLT	M6x30	4	
DT006		オプション取付板	PLATE		1	
DT006a		六角穴付ボルト	BOLT	M6x10	2	
DT006b		平座金	WASHER	M6	2	
DT007		AC リアクトル取付板	PLATE		1	
DT007a		六角穴付ボルト	BOLT	M6x16	4	
DT007b		平座金	WASHER	M6	4	
DT008		ブラケット	BRACKET		1	
DT010		クランプ金具	CLAMP METAL		2	
DT011		ショートバー	SHORT BAR		8	
DT012		ショートバー	SHORT BAR		4	
DT013		ファンモータ取付板	PLATE		1	
KDT001	CP1	サーキットプロテクタ	CIRCUIT PROTECTOR	CP30-BA3P2-M10A	1	mitsubishi electric
KDT002	CP2	サーキットプロテクタ	CIRCUIT PROTECTOR	CP30-BA2P2-M5A	1	mitsubishi electric
KDT003	MC1 (OLS1)	電磁開閉器	ELECTROMAGNETIC SWITCH	MSOD-Q11CXKP 2.1A	1	mitsubishi electric
KDT004	MC2	電磁接触器	ELECTROMAGNETIC CONTACTOR	SD-Q11	1	mitsubishi electric
KDT005	SK1	主回路サージ吸収ユニット	SURGE ABSORPTION UNIT	UN-SA33	1	mitsubishi electric
KDT006	SK2 SK3 SK4	スパークキラー	SPARK KILLER	XEB1201	3	OKAYA electric
KDT007	LSP1	サージプロテクタ	SURGE PROTECTOR	R.C.M-601BUZ-4	1	OKAYA electric
KDT007a		ナベ小セムス B (大)	SCREW	M4x10	1	
KDT008	AVR1 AVR2	スイッチングパワーサプライ	POWER SUPPLY	DLP180-24-1 180W 7.5A	2	DENSEI LAMBDA
KDT009	AVR3	スイッチングパワーサプライ	POWER SUPPLY	S8VM-03005CD 30W 6A	1	OMRON
KDT010	RY1 RY2 RY4	パワーリレー	RELAY	G2R-2-SD 24V DC	3	OMRON
L71620 -570T		制御盤 CONTROL BOARD			DT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KDT011		ソケット	SOCKET	P2RF-08	3	OMRON
KDT012		抜き差し蝶番	HINGE	B-1519-3-L	2	TAKIGEN
KDT013	L001	DIN レール	DIN RAIL	TXDA2 (L=265mm)	1	KASUGA ELECTRIC
KDT013a		ナベ小セムス B (大)	SCREW	M4x8	2	
KDT014	L002	DIN レール	DIN RAIL	TXDA2 (L=220mm)	1	KASUGA ELECTRIC
KDT014a		ナベ小セムス B (大)	SCREW	M4x8	2	
KDT015	L003	DIN レール	DIN RAIL	TXDA2 (L=135mm)	1	KASUGA ELECTRIC
KDT015a		ナベ小セムス B (大)	SCREW	M4x8	2	
KDT016	L004	DIN レール	DIN RAIL	TXDA2 (L=110mm)	1	KASUGA ELECTRIC
KDT016a		ナベ小セムス B (大)	SCREW	M4x8	2	
KDT017	DU001	KD ダクト	KD DUCT	KD46-16-T (L=265mm)	1	KOUWA KASEI
KDT017a		ナベ小セムス B (大)	SCREW	M4x8	2	
KDT018	DU002	KD ダクト	KD DUCT	KD46-16-T (L=235mm)	1	KOUWA KASEI
KDT018a		ナベ小セムス B (大)	SCREW	M4x8	2	
KDT019	DU003	KD ダクト	KD DUCT	KD26-16-T (L=380mm)	1	KOUWA KASEI
KDT019a		ナベ小セムス B (大)	SCREW	M4x8	3	
KDT020	DU004	KD ダクト	KD DUCT	KD26-16-T (L=220mm)	2	KOUWA KASEI
KDT020a	DU005	ナベ小セムス B (大)	SCREW	M4x8	4	
KDT021	DU006	KD ダクト	KD DUCT	KD26-16-T (L=135mm)	1	KOUWA KASEI
KDT021a		ナベ小セムス B (大)	SCREW	M4x8	2	
KDT022	TB1	端子台	TERMINAL	B312-TB1-0	1	KASUGA ELECTRIC
KDT022a		ナベ小セムス B (大)	SCREW	M4x14	2	
KDT023	T2B	端子台	TERMINAL	L71620-TB2-0	1	KASUGA ELECTRIC
KDT023a		ナベ小セムス B (大)	SCREW	M4x14	2	
KDT024	TB5	端子台	TERMINAL	L71620-TB5-0	1	KASUGA ELECTRIC
KDT025		NBR スポンジ	NBR SPONGE	t5x10 (L=805mm)	1	BRIDGESTONE
KDT026		NBR スポンジ	NBR SPONGE	t5x10 (L=665mm)	2	BRIDGESTONE
KDT027		NBR スポンジ	NBR SPONGE	t5x10 (L=590mm)	2	BRIDGESTONE
L71620 -570T		制御盤 CONTROL BOARD			DT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KDT028		NBR スポンジ	NBR SPONGE	t5x10 (L=565mm)	1	BRIDGESTONE
KDT029		NBR スポンジ	NBR SPONGE	t5x10 (L=545mm)	2	BRIDGESTONE
KDT030		NBR スポンジ	NBR SPONGE	t5x10 (L=120mm)	2	BRIDGESTONE
KDT031		NBR スポンジ	NBR SPONGE	10x10 (L=119mm)	1	BRIDGESTONE
KDT032		NBR スポンジ	NBR SPONGE	10x10 (L=99mm)	1	BRIDGESTONE
KDT033		NBR スポンジ	NBR SPONGE	10x10 (L=62mm)	2	BRIDGESTONE
KDT034		NBR スポンジ	NBR SPONGE	10x10 (L=50mm)	2	BRIDGESTONE
KDT035		ファンモータ	FAN MOTOR	4715MS-20T- B50-B00	1	NMB
KDT036		ファンガード	FAN GUARD	PG-47-01	2	NMB
KDT037		六角穴付ボルト	BOLT	M4x50	4	
KDT038		PCB サポート	P.C.B. SUPPORT	PCB-6S	11	NIX, INC.
KDT039		シールワッシャ	SEAL WASHER	W6S1	8	KEEPER
KDT040	THS3	サーマルプロテクタ	THERMAL PROTECTOR	MQT8K 55XC	1	MATSUO ELECTRIC
KDT041	L005	DIN レール	DIN RAIL	TXDA2 (L=130mm)	1	KASUGA ELECTRIC
KDT042		NBR スポンジ	NBR SPONGE	t20x10 (L=185mm)	2	BRIDGESTONE
KDT043		NBR スポンジ	NBR SPONGE	t20x10 (L=177mm)	2	BRIDGESTONE
L71620 -570T		制御盤 CONTROL BOARD			DT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
DT101		ブレーカ取付板	BRACKET		1	
DT101a		六角穴付ボルト	BOLT	M6x10	2	
DT101b		皿小セムス B (大)	SCREW	M5x8	2	
KDT101	NFB1	漏電遮断器	LEAKAGE BREAKER	EG53AC/ 40-30MA-F F=200V AC	1	FUJI ELECTRIC
KDT102		端子カバー	TERMINAL COVER	BZ6TS10C3	1	FUJI ELECTRIC
L71620 -570T		ブレーカー部 BREAKER			DT100	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
DT201		熱交換器ボックス	BOX		1	
DT201a		六角穴付ボルト	BOLT	M6x10	8	
DT201b		平座金	WASHER	M6	8	
DT202		熱交換器ボックスフタ	LID		1	
DT202a		六角穴付ボルト	BOLT	M4x8	16	
DT203		クランプ金具	CLAMP METAL		4	
DT203a		六角穴付ボルト	BOLT	M4x8	2	
DT203b		平座金	WASHER	M4	2	
DT204		メクラ板	PLATE		1	
DT204a		六角穴付ボルト	BOLT	M4x12	4	
DT205		メクラ板 2	PLATE		2	
DT206		メクラ板 3	PLATE		2	
DT207		コネクタボックス	CONNECTOR BOX		1	
KDT201		熱交換器	HEAT EXCHANGER	NFX-05BR-2B	1	DAIWA DENGYO
KDT201a		ナット	NUT	M5	10	
KDT201b		平座金	WASHER	M5	10	
SP1		フィルター	FILTER	ML-07C	(1)	DAIWA DENGYO
SP2		フィルターカバー	FILTER COVER	FC-05B	(1)	DAIWA DENGYO
SP3		ファンモータ	FAN MOTOR	UZS-15D20	(2)	DAIWA DENGYO
KDT202		シールワッシャー	SEAL WASHER	W4	16	KEEPER
KDT203		NBR スポンジ	NBR SPONGE	t15xw15 (L=265mm)	4	BRIDGESTONE
KDT204		NBR スポンジ	NBR SPONGE	t2.0xw10	2	BRIDGESTONE
KDT205		NBR スポンジ	NBR SPONGE	t2.0xw10	1	BRIDGESTONE
KDT206		NBR スポンジ	NBR SPONGE	t2.0xw10	1	BRIDGESTONE
KDT207		NBR スポンジ	NBR SPONGE	t2.0xw20	1	BRIDGESTONE
KDT208		NBR スポンジ	NBR SPONGE	t2.0xw20	2	BRIDGESTONE
KDT209		NBR スポンジ	NBR SPONGE	t2.0xw20	1	BRIDGESTONE
KDT210		NBR スポンジ	NBR SPONGE	t2.0xw20	2	BRIDGESTONE
L71620 -570T		熱交換器 HEAT EXCHANGER			DT200	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KDT301		プリント基板	PRINTED BOARD	L7-PCB01-2	1	TAKAGI SANGYO
KDT302	TBC1 TBC2 TBC3	端子台	TERMINAL	PS7-50A	3	YOSHIDA ELECTRIC
KDT303	CN5 CN6	リセプタクル	RECEPTACLE	10250-6202JL	2	SUMITOMO 3M
KDT304	CN3 CN4	リセプタクル	RECEPTACLE	10220-6202JL	2	SUMITOMO 3M
KDT305	CF30C1~ CF30C5	ソケット	SOCKET	9150-4500SC	5	SUMITOMO 3M
KDT306	CN1	基盤取付タブヘッダー	TAB HEADER	2-178313-2	1	TYCO ELEC- TRONICS AMP
KDT307	CNP1	基盤取付タブヘッダー	TAB HEADER	1-178314-2	1	TYCO ELEC- TRONICS AMP
KDT308	CNP2 CNP3	基盤取付タブヘッダー	TAB HEADER	178328-2	2	TYCO ELEC- TRONICS AMP
KDT309	CN2	基盤取付タブヘッダー	TAB HEADER	1-178313-2	1	TYCO ELEC- TRONICS AMP
KDT310	RY301~ RY309	ソケット	SOCKET	P2R-08P	9	OMRON
KDT311	RY301~ RY306	パワーリレー	RELAY	G2R-2-SD (24V DC)	6	OMRON
KDT312	RY201~ RY219	ソケット	SOCKET	TP04	19	FUJI ELECTRIC
KDT313	RY201 RY202 RY204 RY217	リレー	RELAY	RB104-DE (24V DC)	4	FUJI ELECTRIC
KDT314	L201~ L219	LED	LED	SLR342MG	28	ROHM
KDT315	L220 L221	LED	LED	SLR342YY	2	ROHM
KDT316	L222	LED	LED	SLR342VR	1	ROHM
KDT317	D201~ D219 D402~ D419 D507A D507B D508A D508B	ダイオード	DIODE	D1N20	37	SHINDENGEN
KDT318	THY201	サイリスタ	THYRISTOR	8P4M	1	NEC
KDT319	Z201	ツェナーダイオード	DIODE	RD6.2EB	1	NEC
L71620 -570T		リレー基盤 RELAY BOARD			DT300	

PARTS NO.	SYMBOL	PARTS NAME	TYPE	Q'TY	REMARKS
KDT320	R201~ R220, R222 R301~ R309	抵抗 RESISTOR	CFPS1/ 4CT52A2201G	30	KOA
KDT321	R401	抵抗 RESISTOR	CFPS1/ 4CT52A1001G	1	KOA
KDT322	R221	抵抗 RESISTOR	CFPS1/ 4CT52A4700G	1	KOA
KDT323	R403	抵抗 RESISTOR	CFPS1/ 4CT52A1000G	1	KOA
KDT324	R402	抵抗 RESISTOR	CFPS1/ 4CT52A0220G	1	KOA
KDT325	C201	フィルムコンデンサ FILM CAPACITOR	DFDD2G334K-	1	NIHON KEMIKON
KDT326	P1	端子板 TERMINAL PLATE	F2CM DIC-152-2P	1	HONDA TSUSHIN
KDT327		短絡プラグ SHORT CIRCUIT PLUG	DIC128	1	HONDA TSUSHIN
KDT328	CF30-C1~ CF30-C5	カードコーナーホルダ CARD CORNER HOLDER	KGCH-20-0	10	KITAGAWA
KDT329	F201	ヒューズホルダ FUSE HOLDER	MPH-4V	1	DAITO
KDT330	F201	ヒューズ FUSE	MP63	1	DAITO
L71620 -570T		リレー基盤 RELAY BOARD		DT300	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
ET001		操作盤	OPERATION BOX		1	
ET001a		E 形トメワ	RETAINING RING (E TYPE)	4	2	
ET001b		セムス B (大)	SCREW	M4x8	10	
ET002		操作盤枠	FRAME		1	
ET003		取手	KNOB		1	
ET003a		六角穴付ボルト	BOLT	M6x10	2	
ET003b		平座金	WASHER	M6	2	
ET004		蛍光灯 SW 銘板	PLATE		1	
ET005		ドアロック金具	DOOR LOCK METAL		1	
ET006		メクラ板	PLATE		1	
KET001		シートキーボード	SHEET KEYBOARD	AB12C-0460/AE1	1	FUJI ELECTRIC
KET002	PL1	表示灯	INDICATOR LAMP	DR22DOL-E3W	1	FUJI ELECTRIC
KET003	SW3	セレクトスイッチ	SELECT SWITCH	AR22PR-210B	1	FUJI ELECTRIC
KET004	MAP	手動パルス発生器	MANUAL PULSE GENERATOR	OSM-01-2GA-Z9 (FS-896)	1	NEMICON
KET004a		平座金	WASHER	M3	3	
KET004b		バネ座金	SPRING WASHER	M3	3	
KET004c		ナット	NUT	M3	3	
KET005		ステンレスワイヤーロープ	STAINLESS WIRE ROPE	TM-173 (NYLON COATING)	1	TOCHIGIYA
KET005a		六角穴付ボルト	BOLT	M5x10	2	
KET006		防水ロックハンドル	LOCK HANDLE	A-60-B	2	TAKIGEN
KET007		スプリング付ロックハンドル	SPRING LOCK HANDLE	A-61-H	1	TAKIGEN
KET008		ホールプラグ	HOLE PLUG	CP-30-HP-7	2	TAKIGEN
KET009		固定台	FIXING STAND	D20418-J2	2	JAE
KET009a		ナベ小セムス A	SCREW	M2.6x6	4	
KET010		ダストキャップ	CAP	DB-59-J2	1	JAE
KET011		NBR ゴム	NBR RUBBER	t1.0	1	TIGERS POLYMER
KET012		NBR スポンジ	NBR SPONGE	t5x10 (1712mm)	1	BRIDGESTONE
KET013		バインド小ネジ	SCREW	M4x8	4	
KET014		電源マーク	POWER MARK	20MM	1	NIKKOUKAI
L71620 -570T		操作盤 OPERATION BOX			ET000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
ET101		操作盤アーム	OPERATION BOX ARM		1	
ET102		支柱	SUPPORTING COLUMN		1	
ET103		フタ	COVER		1	
ET104		取手	KNOB		1	
ET105		抜け止めボルト	BOLT		2	
KET101		NBR ゴム	NBR RUBBER	t1.0	1	TIGERS POLYMER
L71620 -570T		操作盤アーム部 ARM			ET100	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
FT001		中継ボックス	BOX		1	
FT001a		六角穴付ボルト	BOLT	M6x10	3	
FT001b		平座金	WASHER	M6	3	
FT002		中継ボックスフタ	LID		1	
FT002a		六角穴付ボルト	BOLT	M4x8	6	
FT003		クランプ金具	CLAMP METAL		2	
FT003a		六角穴付ボルト	BOLT	M4x8	2	
FT003b		平座金	WASHER	M4	2	
FT004		アース用ボス	GROUND BOSS		1	
FT004a		六角穴付ボルト	BOLT	M6x25	1	
FT005		温度センサー固定板	SENSOR FIXED PLATE		1	
KFT001	TB3	端子台	TERMINAL	L71620-TB3-0	1	KASUGA ELECTRIC
KFT002		NBR スポンジ	NBR SPONGE	t2.0xw10	2	BRIDGESTONE
KFT003		NBR スポンジ	NBR SPONGE	t2.0xw10	2	BRIDGESTONE
KFT004		NBR スポンジ	NBR SPONGE	10x20 (108mm)	1	BRIDGESTONE
KFT005		シールワッシャー	SEAL WASHER	W4	6	KEEPER
KFT006		セムス B (小)	SCREW	M4x12	2	
L71620 -570T		中継ボックス INTERMEDIATE BOX			FT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
WT037		バスケーブル	CABLE		1	
WT038		IF 基盤電源ケーブル	CABLE		1	
WT039		IF 基盤電源ケーブル	CABLE		1	
WT040		NC 電源ケーブル	CABLE		1	
WT041		LCD 電源ケーブル	CABLE		1	
WT042		シートキー電源ケーブル	CABLE		1	
WT043		給材機ケーブル	CABLE		1	
WT044		切削油ポンプケーブル	CABLE		1	
WT045		切削油レベル検出ケーブル	CABLE		1	
WT046		操作盤信号ケーブル	CABLE		1	
WT047		手動パルス発生器ケーブル	CABLE		1	
WT048		RS232C ケーブル	CABLE		1	
WT049		非常停止ケーブル	CABLE		1	
WT050		RIO ケーブル	CABLE		1	
WT051		ブレーキ制御ケーブル	CABLE		1	
WT052		バッテリーケーブル	CABLE		1	
WT053		バッテリーケーブル	CABLE		1	
WT054		ファンモータ信号ケーブル	CABLE		1	
KWT001	CN20	ハウジング	HOUSING	1-178128-3	1	TYCO ELEC- TRONICS AMP
KWT002	CNS11 CN2 RI02	ハウジング	HOUSING	1-178288-3	3	TYCO ELEC- TRONICS AMP
KWT003	CNP1	ハウジング	HOUSING	1-178288-4	1	TYCO ELEC- TRONICS AMP
KWT004	CN2 DCIN1 DCIN2	ハウジング	HOUSING	2-178288-3	3	TYCO ELEC- TRONICS AMP
KWT005	CNP2/ CNP3	ハウジング	HOUSING	178289-8	1	TYCO ELEC- TRONICS AMP
KWT006		コンタクト	CONTACT	1-175216-2	9	TYCO ELEC- TRONICS AMP
KWT007		コンタクト	CONTACT	1-175218-2	33	TYCO ELEC- TRONICS AMP
KWT008	CNC01	コネクタ	CONNECTOR	MS3102A 20-4S	1	JAE
KWT009	CNC02	コネクタ	CONNECTOR	MS3102A 12S- 3S	1	JAE
KWT010	CNPPR	コネクタ	CONNECTOR	DB-25S-N	1	JAE
KWT011		光ケーブル	OPTICAL CABLE	PF-2HB209- 1M-F-1	1	JAE
KWT012		光ケーブル	OPTICAL CABLE	PF-2HB209- 0.15M-F-1	2	JAE
KWT013	SIO ENC OPI	プラグ	PLUG	10120-3000VE	3	SUMITOMO 3M
L71620 -570T		ケーブル CABLE			WT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KWT014	CNS14	シェル	SHELL	10320-52F0-008	3	SUMITOMO 3M
KWT015		プラグ	PLUG	10126-3000VE	1	SUMITOMO 3M
KWT016		シェル	SHELL	10326-42A0-008	1	SUMITOMO 3M
KWT017	BT	プラグ	PLUG	10120-6000EL	1	SUMITOMO 3M
KWT018		シェル	SHELL	1032-3210-000	1	SUMITOMO 3M
KWT019		コネクタ	CONNECTOR	DF1B-2S-2.5R	5	HIROSE ELECTRIC
KWT020	CNBAR	ソケットコンタクト	SOCKET CONTACT	DF1B-R24A	10	HIROSE ELECTRIC
KWT021		ターミナル	TERMINAL	09330242716	1	HARTING
KWT022		ハウジング	HOUSING	09300240304	1	HARTING
KWT023	EMGIN	コードピン	CORD PIN	09300009901	2	HARTING
KWT024		LAN ケーブル	LAN CABLE	NWGMCS5E-STN-SUMB-BL-3	1	MISUMI
KWT025		USB ケーブル	USB CABLE	PCUSBCAA-03 (0.9m TYPE A)		MISUMI
KWT026		ハウジング	HOUSING	51030-0330	1	MOLEX
KWT027		メスターミナル	TERMINAL	50084-8160	2	MOLEX
KWT031		タブハウジング	HOUSING	178964-7	1	TYCO ELECTRONICS AMP
KWT032		LAN ケーブル	LAN CABLE	NWGMCS5E-STN-SUMB-BL-2	1	MISUMI
KWT033		モジュラカプラ	MODULAR COUPLER	NW080-RJ45-C5-WH	1	MISUMI
KWT034		クランプフィルタ	CLAMP FILTER	ZCAT3035-1330	1	TDK
L71620-570T		ケーブル CABLE			WT000	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
WT101		メイン主軸モータ動力ケーブル	CABLE		1	
WT102		メイン主軸モータ信号ケーブル	CABLE		1	
WT103		X1 軸モータケーブル	CABLE		1	
WT104		Y1 軸モータケーブル	CABLE		1	
WT105		Z1 軸モータケーブル	CABLE		1	
WT106		A1 軸モータ動力ケーブル	CABLE		1	
WT107		A1 軸モータ信号ケーブル	CABLE		1	
WT108		潤滑油ポンプケーブル	CABLE		1	
WT109		蛍光灯ケーブル	CABLE		1	
WT110		サーマルプロテクタ延長ケーブル	CABLE		1	
WT111		ファンケーブル	CABLE		1	
WT112		ファンケーブル	CABLE		1	
WT113		ファンケーブル	CABLE		1	
WT114		ファンセンサーケーブル	CABLE		1	
WT115		ファンセンサーケーブル	CABLE		1	
KWT101		モータ信号ケーブル	MOTOR SIGNAL CABLE		1	MITSUBISHI ELECTRIC
(SP1)	CNSS4	コネクタ	CONNECTOR	1674320-1	(1)	TYCO ELECTRONICS AMP
(SP2)		コンタクト	CONTACT	1674333-1	(9)	TYCO ELECTRONICS AMP
KWT102	M1CNPG	ハウジング	HOUSING	172169-1	1	TYCO ELECTRONICS AMP
KWT103		ピン	PIN	170363-1	7	TYCO ELECTRONICS AMP
KWT105	U4CN31L U9CN31L U6CN31S U6CN31M U6CN31L	ハウジング	HOUSING	1-179958-4	5	TYCO ELECTRONICS AMP
KWT106		コンタクト	CONTACT	316040-2	16	TYCO ELECTRONICS AMP
KWT107		コンタクト	CONTACT	316041-2	4	TYCO ELECTRONICS AMP
KWT108		モータ電源ケーブル	MOTOR POWER CABLE	MR-PWS1CBL 10M-A1-H	1	MITSUBISHI ELECTRIC
(SP1)	CNPA1	ハウジング	HOUSING	JN4FT04SJ1	(1)	JAE
(SP2)		コンタクト	CONTACT	ST-TMH-S-C1B -100- (A534G)	(4)	JAE
L71620 -570T		ケーブル CABLE			WT100	

PARTS NO.	SYMBOL	PARTS NAME		TYPE	Q'TY	REMARKS
KWT109		防水アングルバックシェル	ANGLE BACK SHELL	CE-22BA-S (D265)	3	DDK
KWT110		防水ケーブルクランプ	CABLE CLAMP	CD3057-12A-1 (D265)	2	DDK
KWT111	CNX1 CNZ1 CNY1	コネクタ	CONNECTOR	CE05-6A22- 15ASD-C (D82)	3	DDK
KWT112	U4CN2L U9CN2L U6CN2S U6CN2L U6CN2M	コネクタプラグ	CONNECTOR PLUG	54593-1011	5	MOLEX
KWT113		プラグカバーA	PLUG COVER A	54594-1015	5	MOLEX
KWT114		プラグカバーB	PLUG COVER B	54595-1005	5	MOLEX
KWT115		シェルカバー	SHELL COVER	58935-1000	5	MOLEX
KWT116		シェルボディ	SHELL BODY	58934-1000	5	MOLEX
KWT117		ケーブルクランプ	CABLE CLAMP	58937-0000	5	MOLEX
KWT118		カップリング	COUPLING	N2KM-25-20	1	SANKEI
KWT119		サンフレキ	FLEXIBLE TUBE	NP#25 (1100mm)	1	SANKEI
KWT120		サンフレキ	FLEXIBLE TUBE	NP#32 (1200mm)	1	SANKEI
KWT121		コネクタ	CONNECTOR	N29BG-32	1	SANKEI
KWT122		絶縁キャップ	INSULATED CAP	OA-QM5	3	OHM ELECTRIC
KWT123		絶縁キャップ	INSULATED CAP	OA-QM4	2	OHM ELECTRIC
L71620 -570T		ケーブル CABLE			WT100	

製品コード
Product Code

C	-	L	7	1	6	2	0	I	VII	VIII			
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ドキュメントコード
Document Code

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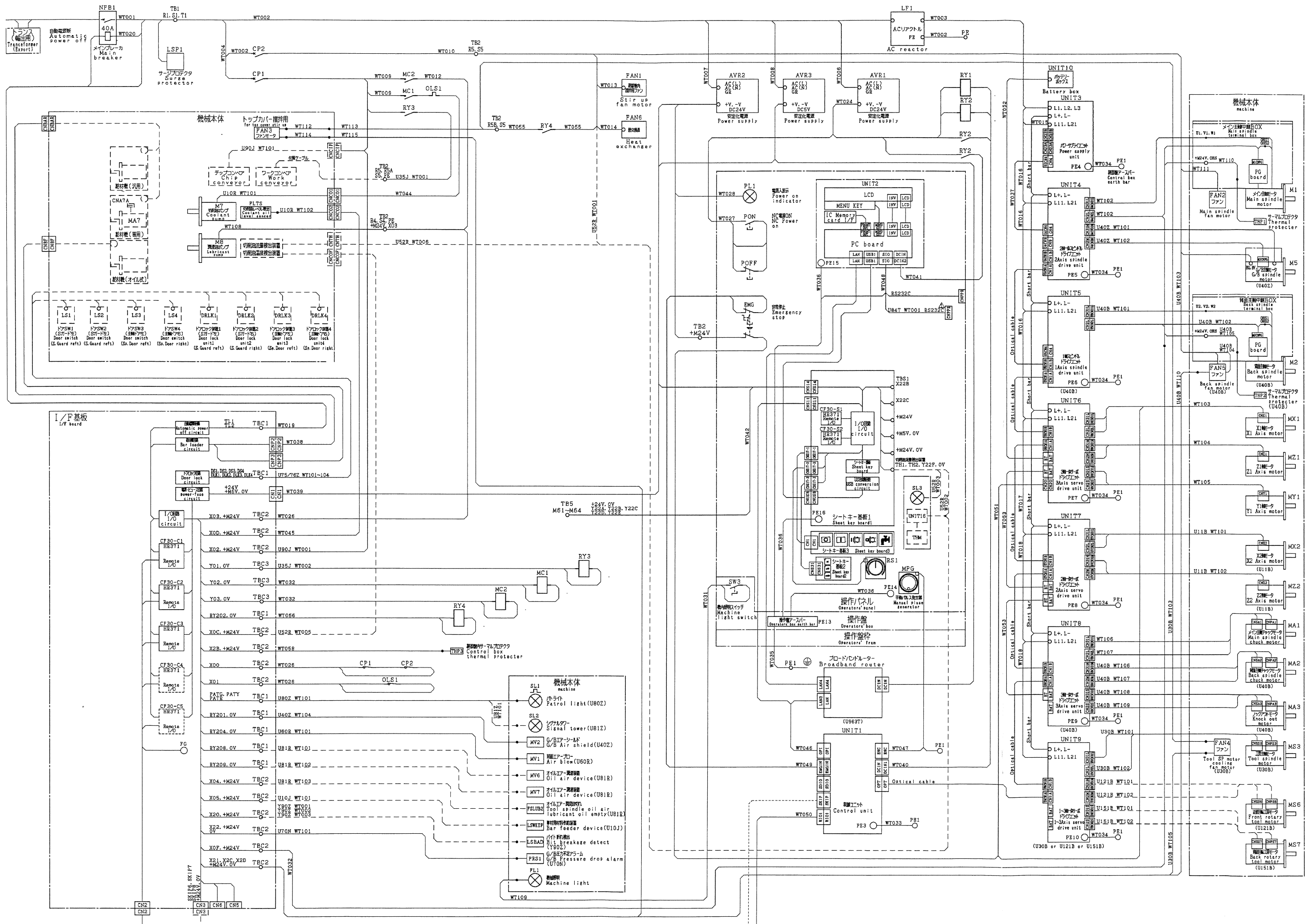
7章 電気配線図

7. WIRING DIAGRAM

7章 线路图

Code No.	C-L71620 I VII VIII 3J1-0702 3E1-0702 3C1-0702	MFG No.	L71620/0867 ~	Issue Date	2006.8
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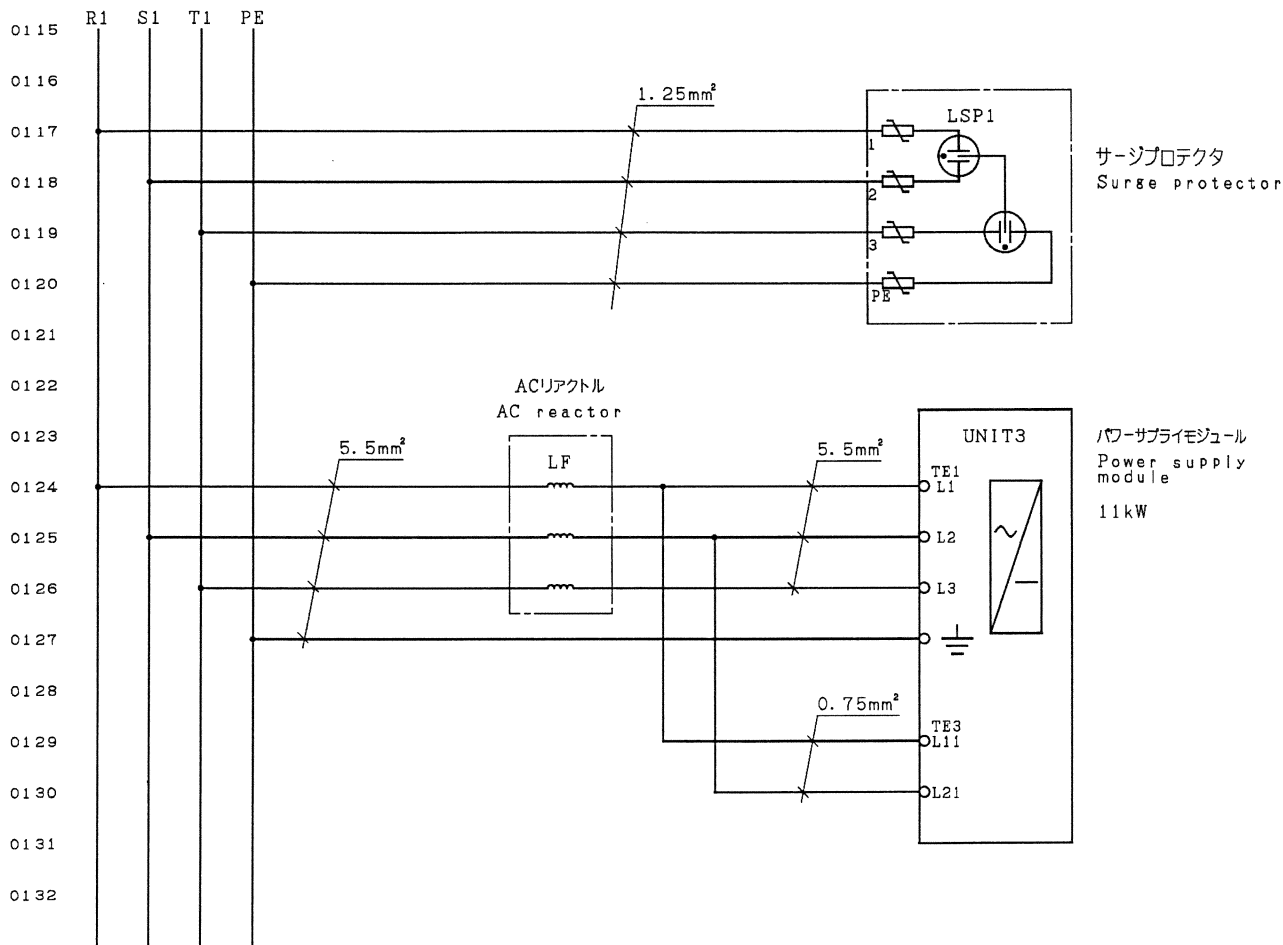
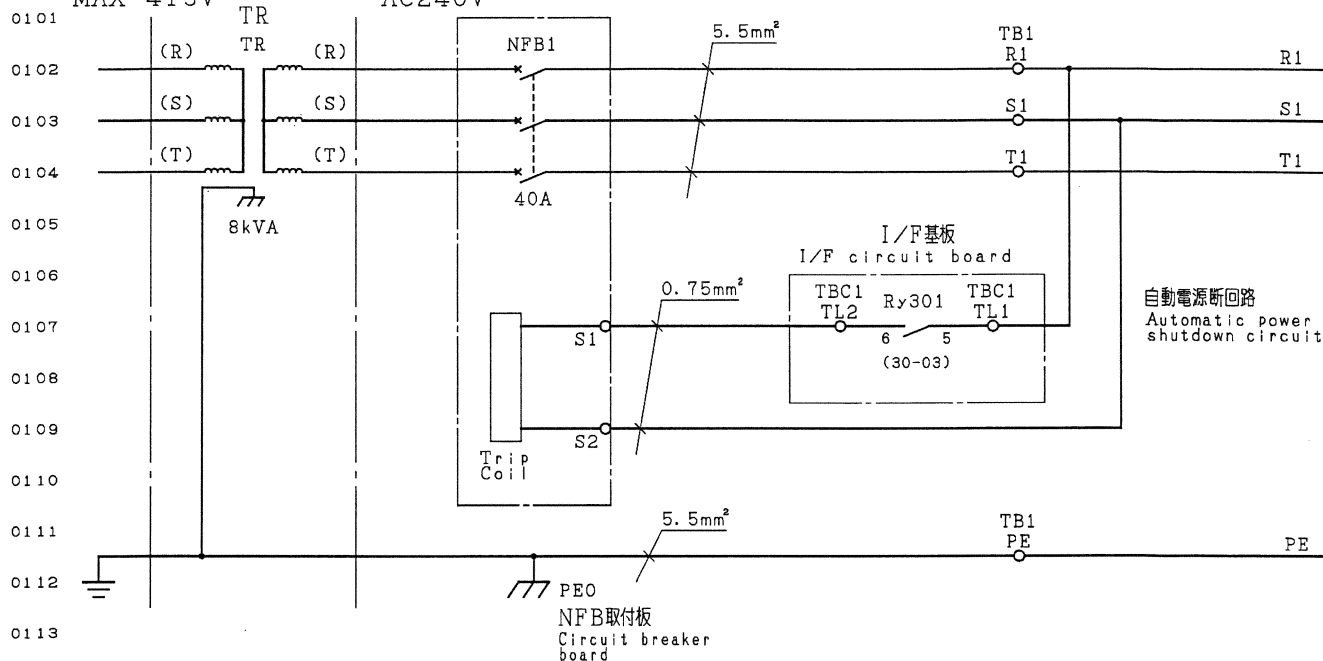
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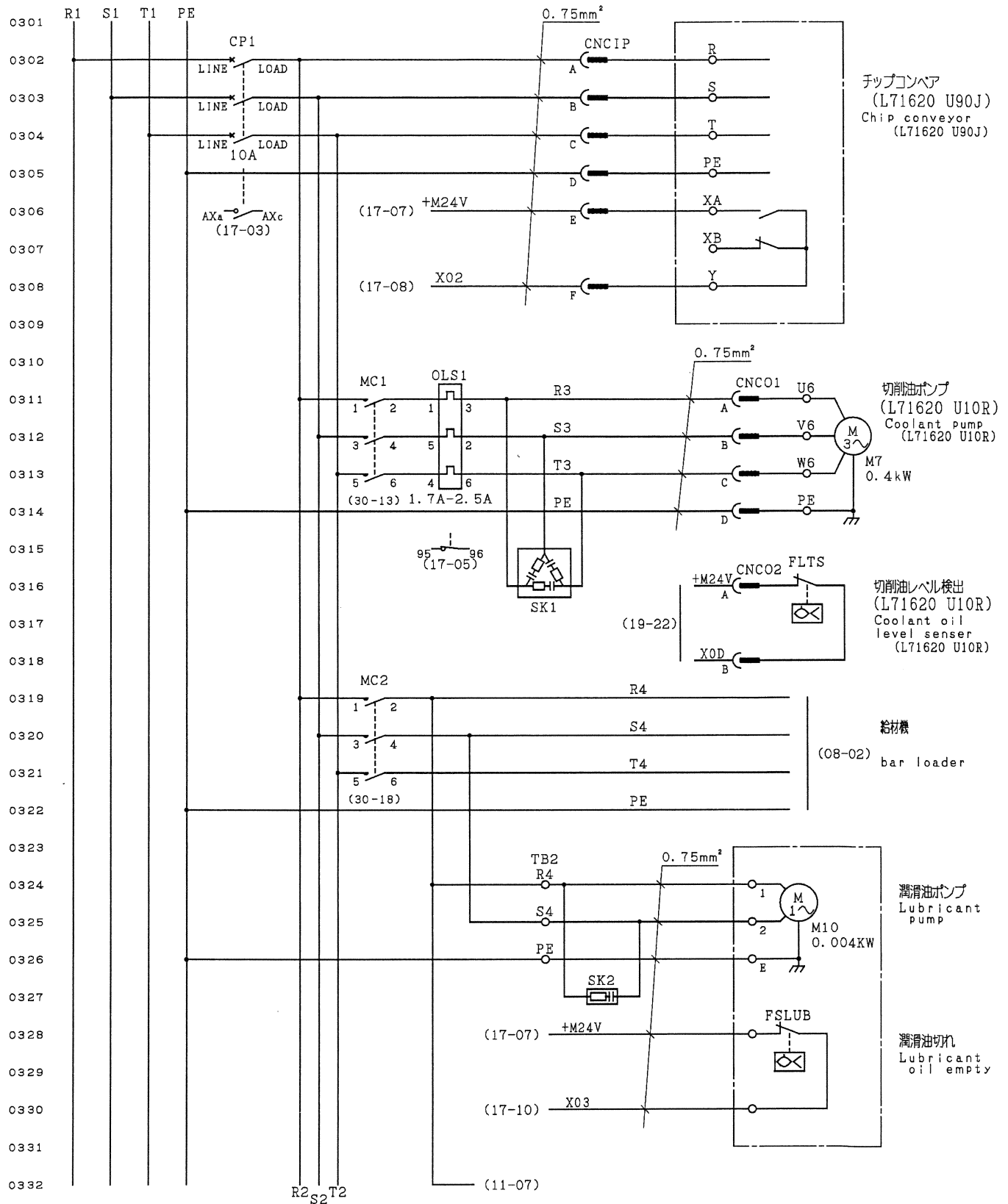


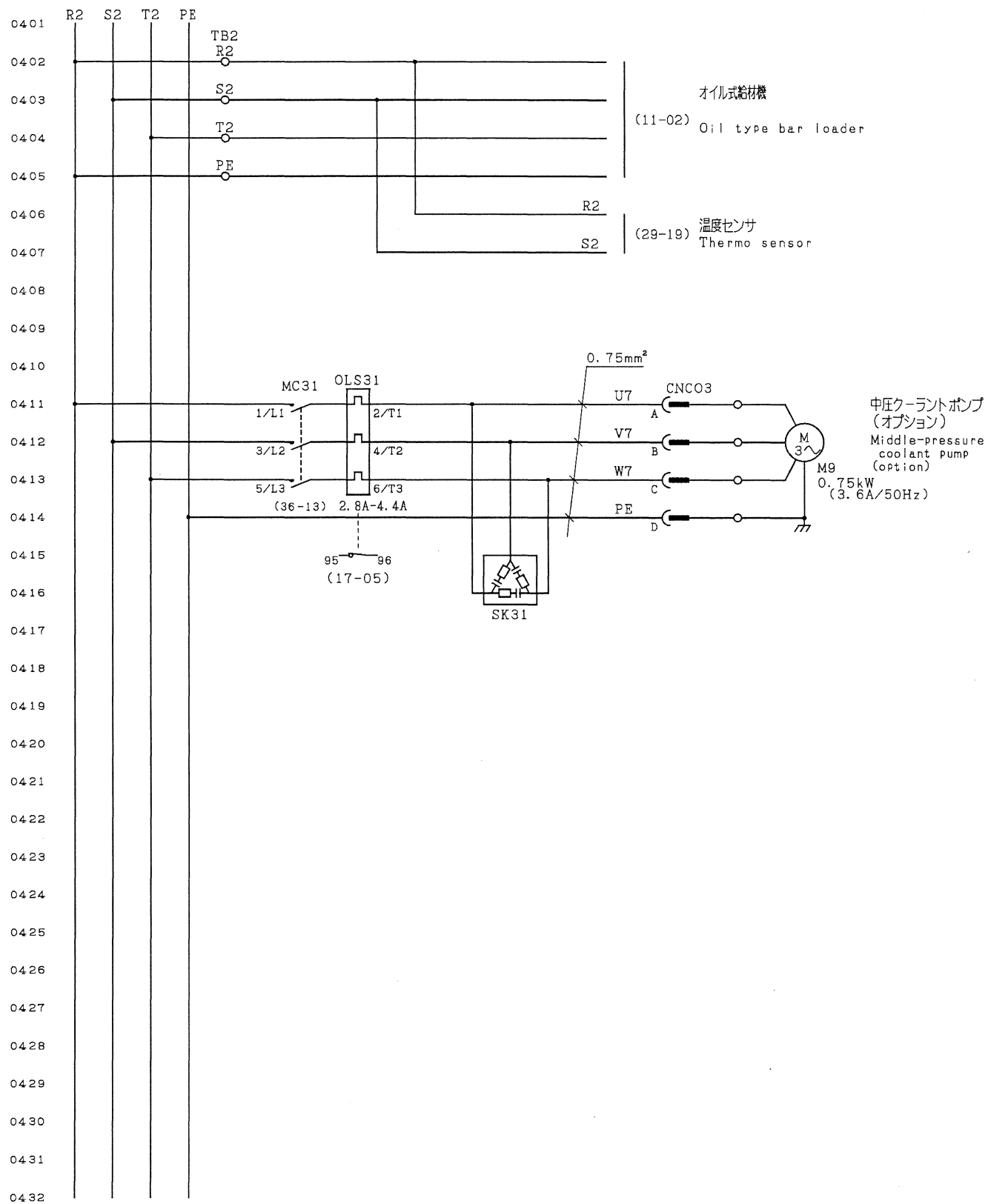
主電源が200V以外の時
Only with mains voltage
over or below 200V

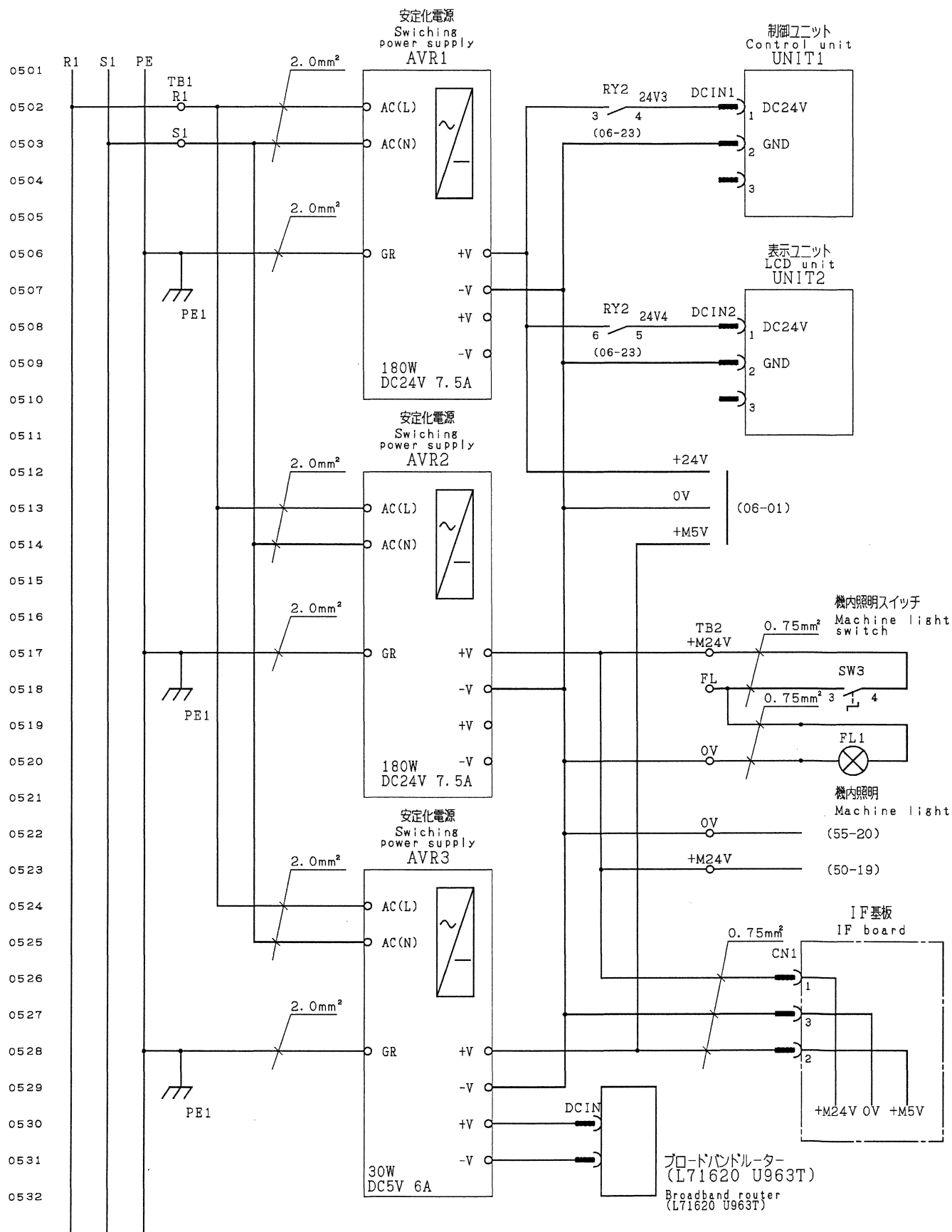
3~50/60Hz
MAX 415V

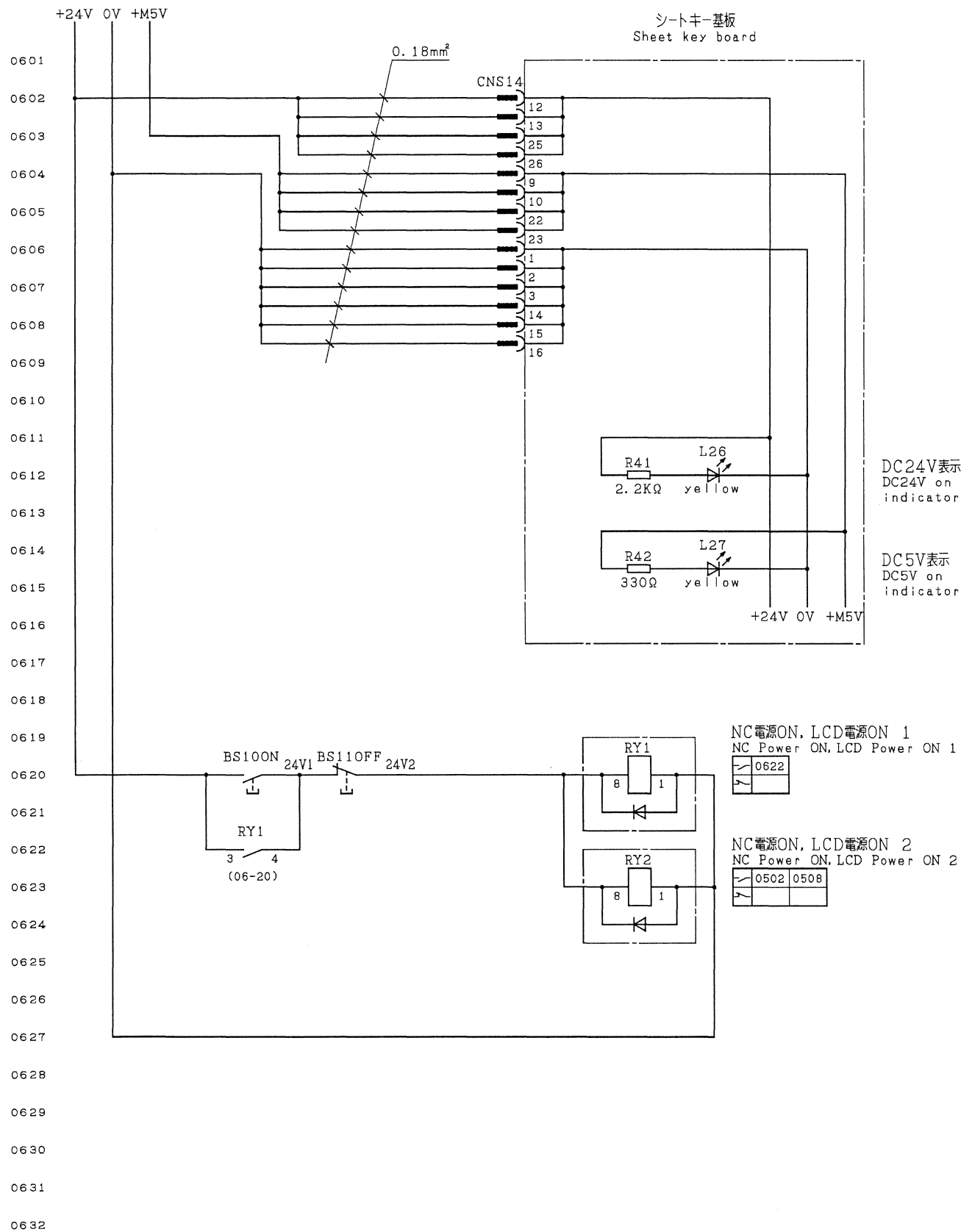
3~50/60Hz
AC240V



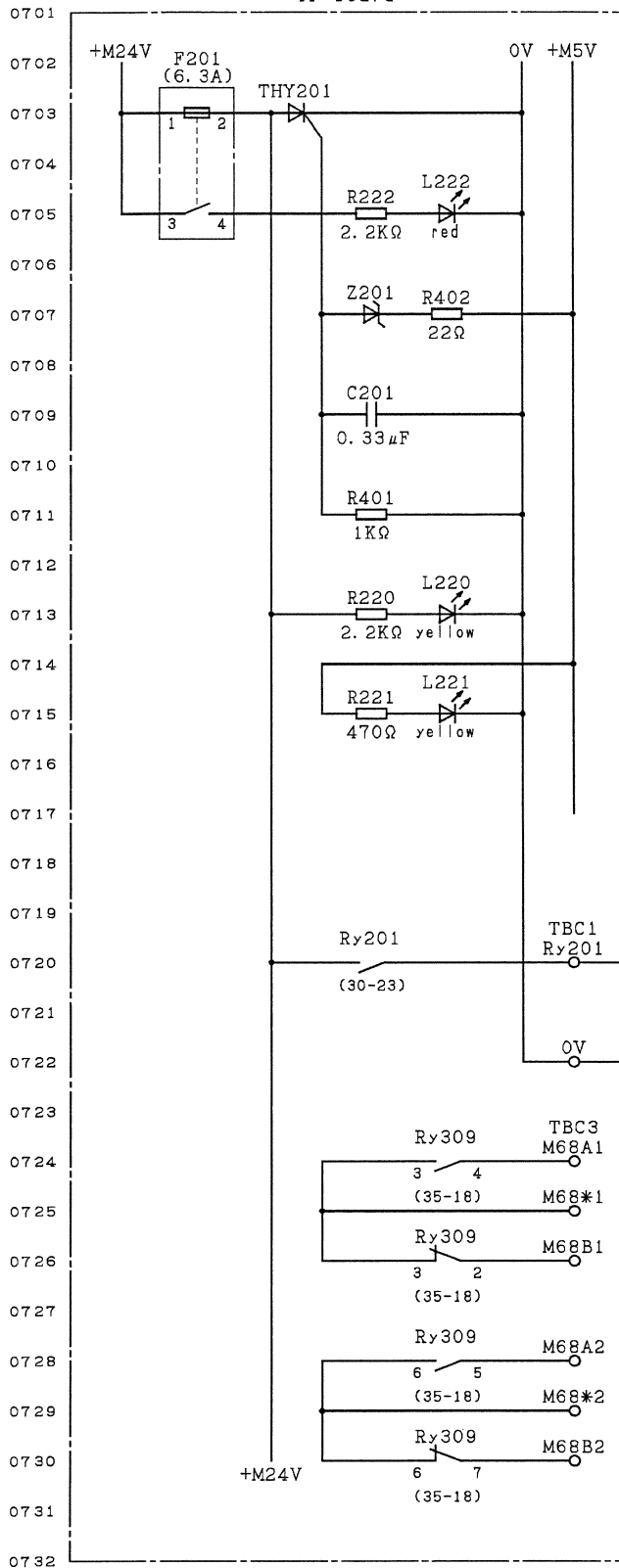








IF基板
IF board



ヒューズ切れ表示
Fuse Indicate

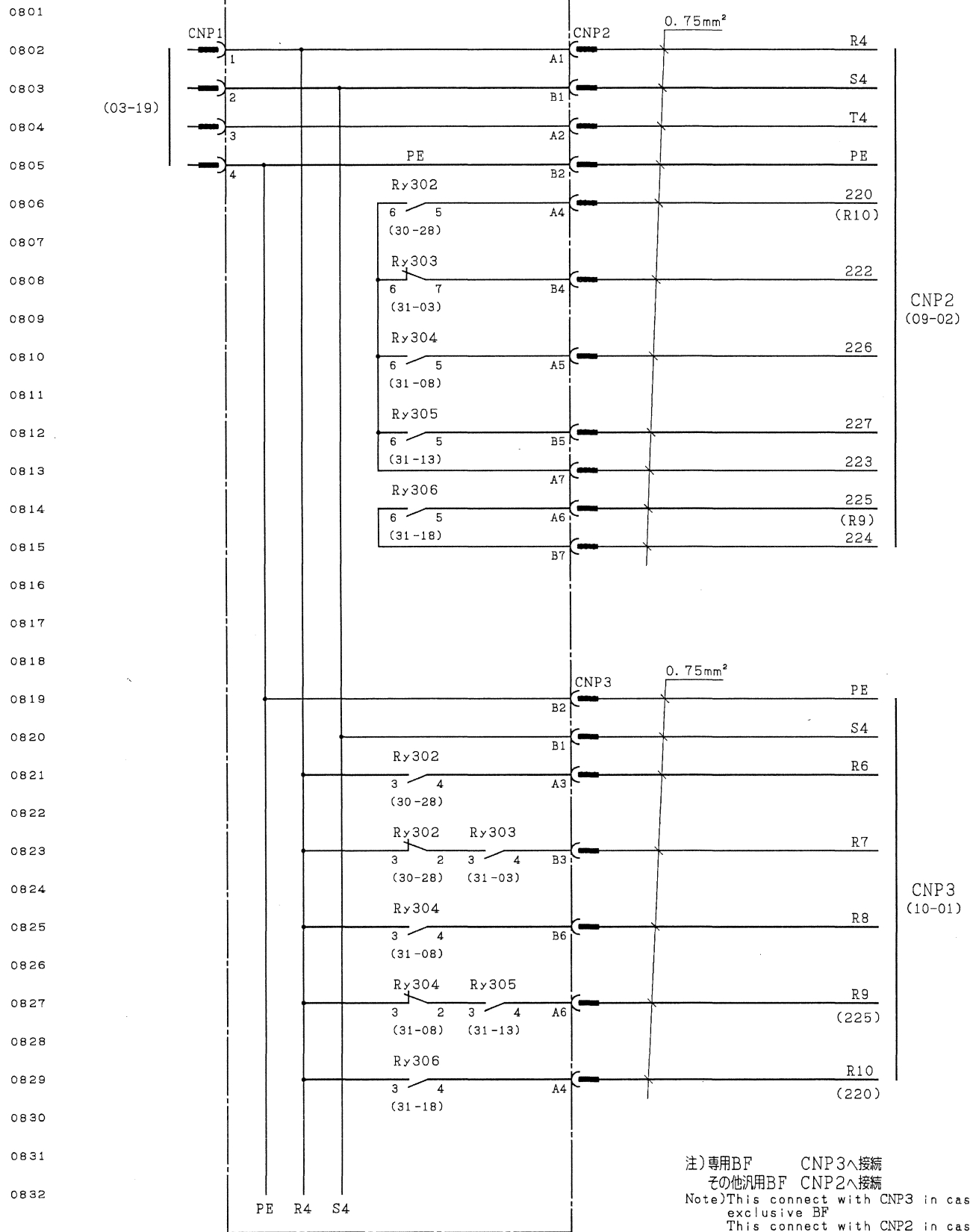
DC24V表示
DC24V on
Indicate

DC5V表示
DC5V on
Indicate

G/Bアーシールド
(L71620 U40Z)
G/B Air shield
(L71620 U40Z)

M68接点
M68 Contacts

I/F基板
I/F circuit board

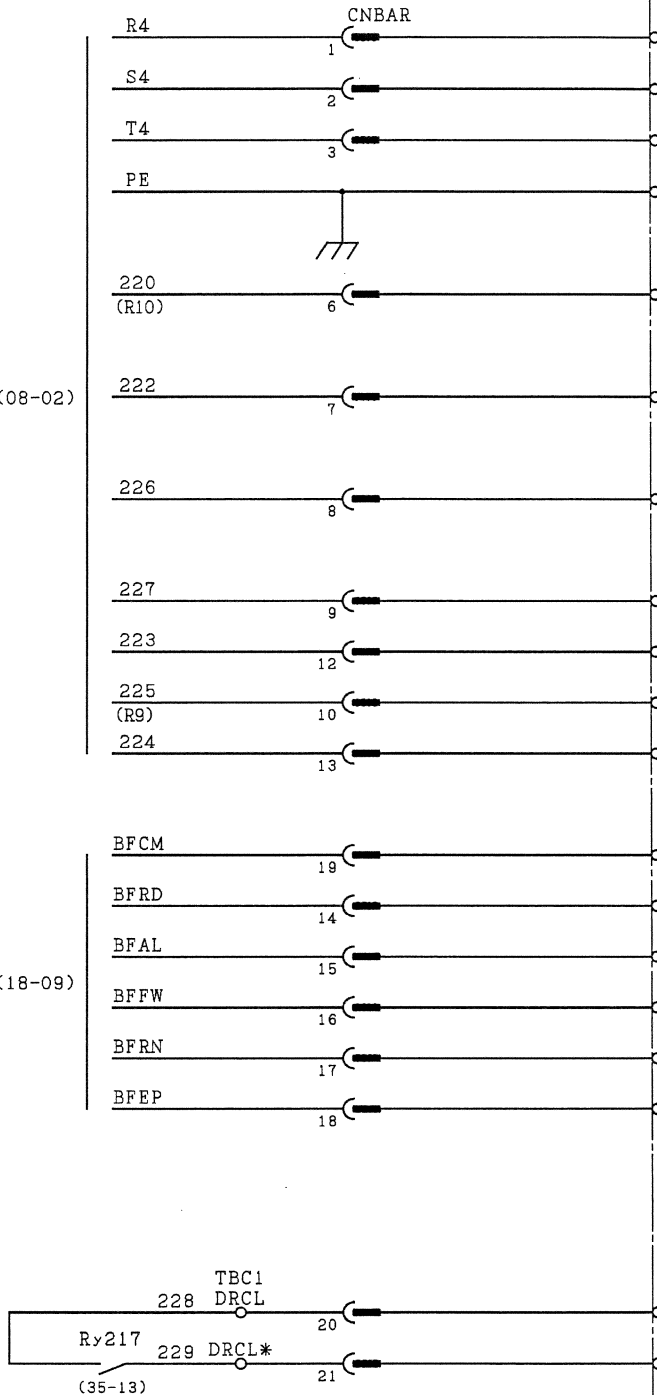


給材自動供給装置
Bar loader

0901
0902
0903
0904
0905
0906
0907
0908
0909
0910
0911
0912
0913
0914
0915
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0929
0930
0931
0932

(08-02)

(18-09)



給材機モーター (汎用)
Bar loader motor
(General)

電源
Power

給材機 動作開始
Bar loader start

給材機 トルク切り換え
Bar loader torque

給材機 非常停止
Bar loader
emergency stop

給材機 製品カウント
Bar loader count

給材機コモン1
Bar loader common1

給材機 送り停止
Bar loader feed stop

給材機コモン2
Bar loader common2

給材機コモン
Bar loader common

給材機準備完了
Bar loader ready

給材機アラーム
Bar loader alarm

給材機送り込みバー前進端
Bar loader reday
for retract

給材機材料交換中
Bar loader running

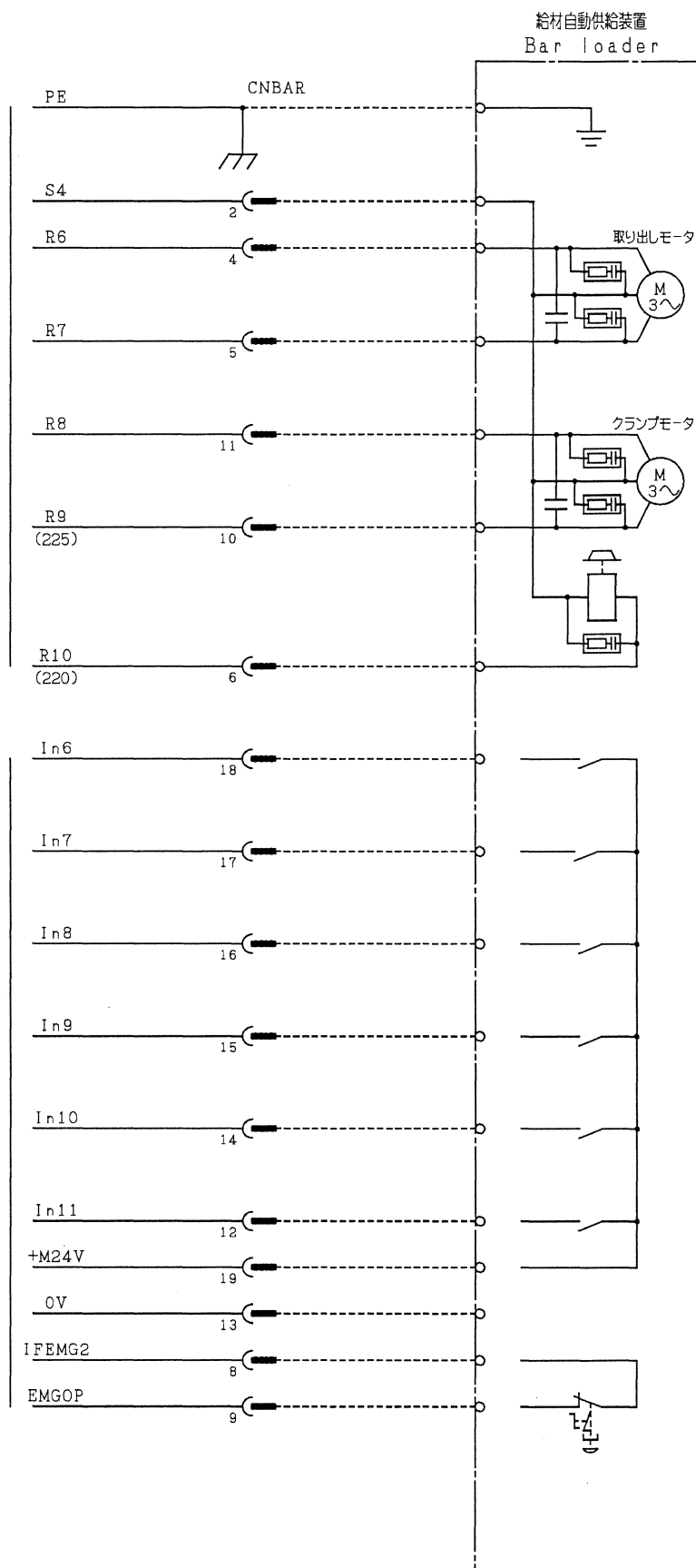
材料切れ
Work empty

ドア閉信号
Door close signal

1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1020
1021
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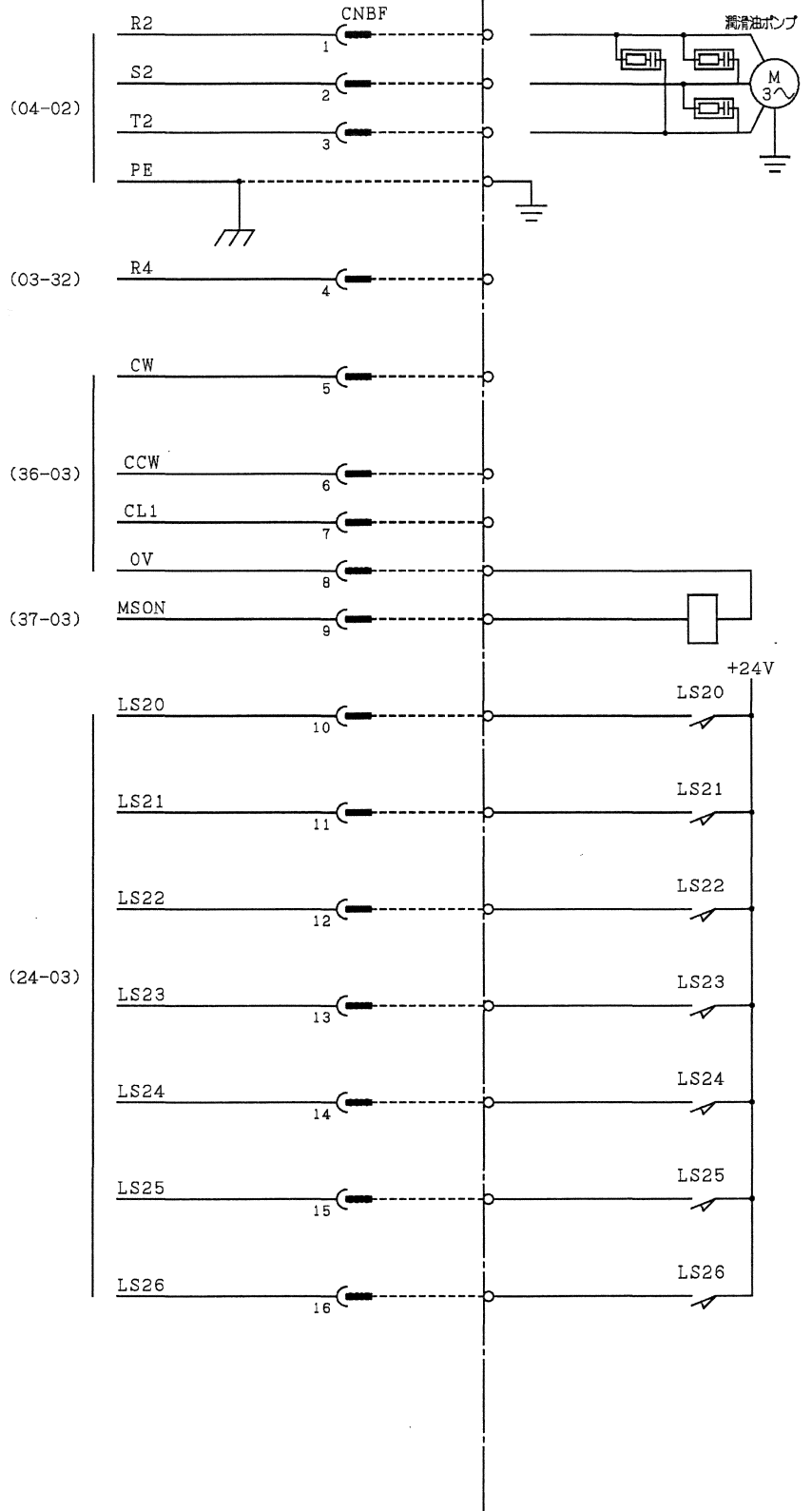
(08-19)

(18-15)



給材自動供給装置
Bar loader

1101
1102
1103
1104
1105
1106
1107
1108
1109
1110
1111
1112
1113
1114
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1120
1121
1122
1123
1124
1125
1126
1127
1128
1129
1130
1131
1132



給材機モーター (オイル式専用)
(U252J, U302J, U402J)
Bar loader motor
(Oil type only)
(U252J, U302J, U402J)

カム2モータブレーキ解除
Cam2 motor brake release

カム2モータ正転
Cam2 motor forward

カム2モータ逆転
Cam2 motor reverse
潤滑油ポンプカム
Lubricant pump

メカ式先端検出ON
Machine detect
of the tip ON

原点位置
The starting point

全閉全開
All close and all open

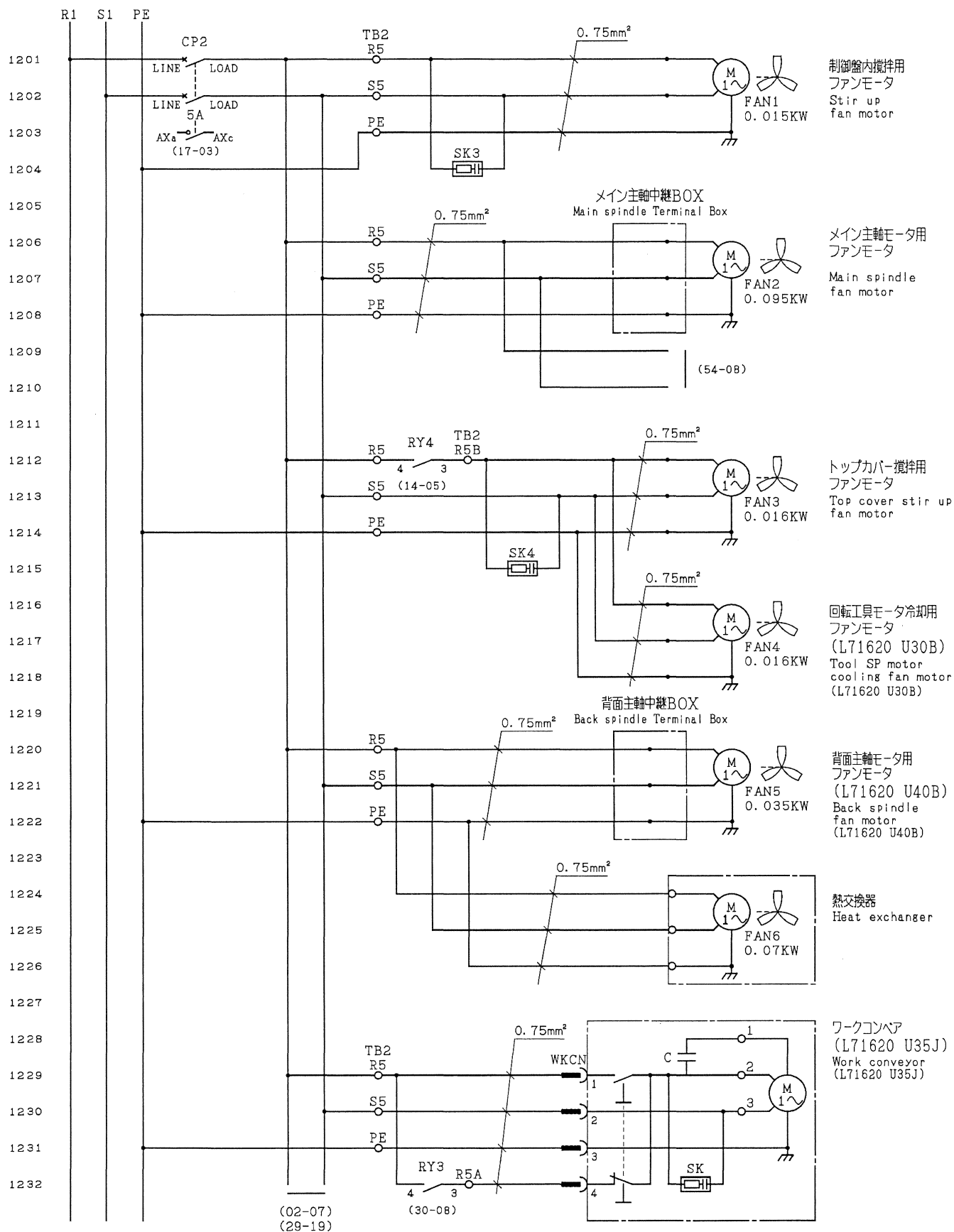
振れ止め1
Vibration stop1

振れ止め2
Vibration stop2

振れ止め3
Vibration stop3

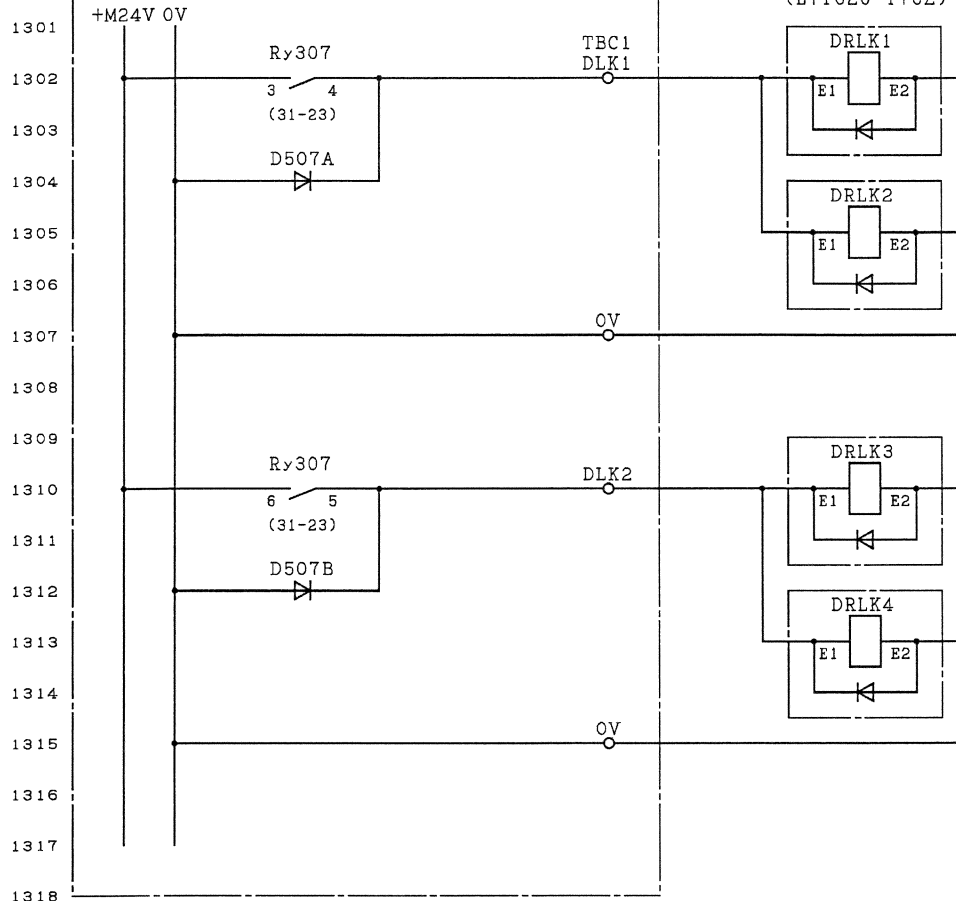
ドアスイッチ
Door switch

材料先端検出
Detect the tip
of material



I/F基板
I/F board

ドアロック装置
Door lock unit
(L71620 Y76Z)



ドアロック装置1
Door lock unit 1

1909	2009		

ドアロック装置2
Door lock unit 2

1907	2007		

ドアロック装置3
Door lock unit 3

1905	2005		

ドアロック装置4
Door lock unit 4

1903	2003		

1319

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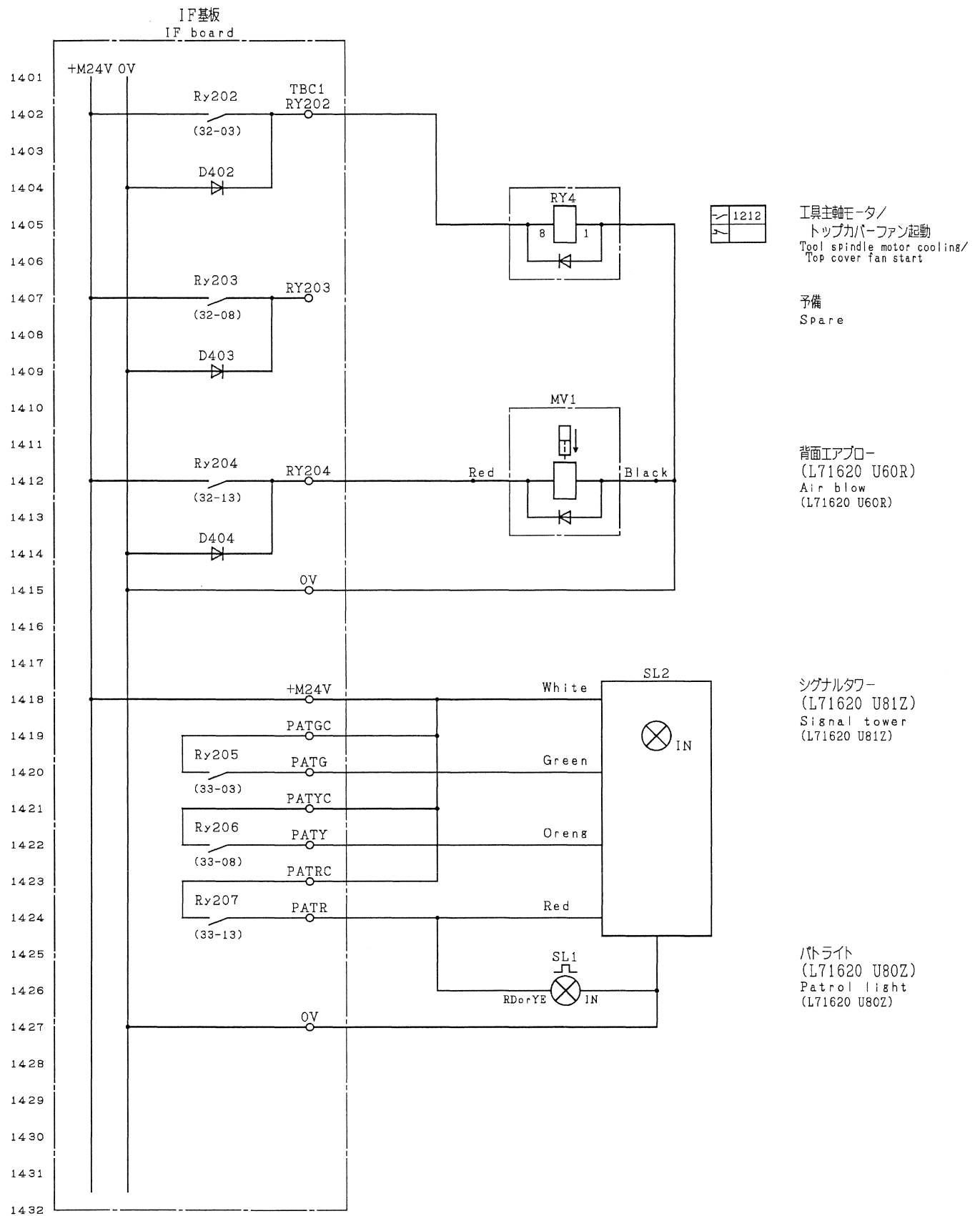
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1329

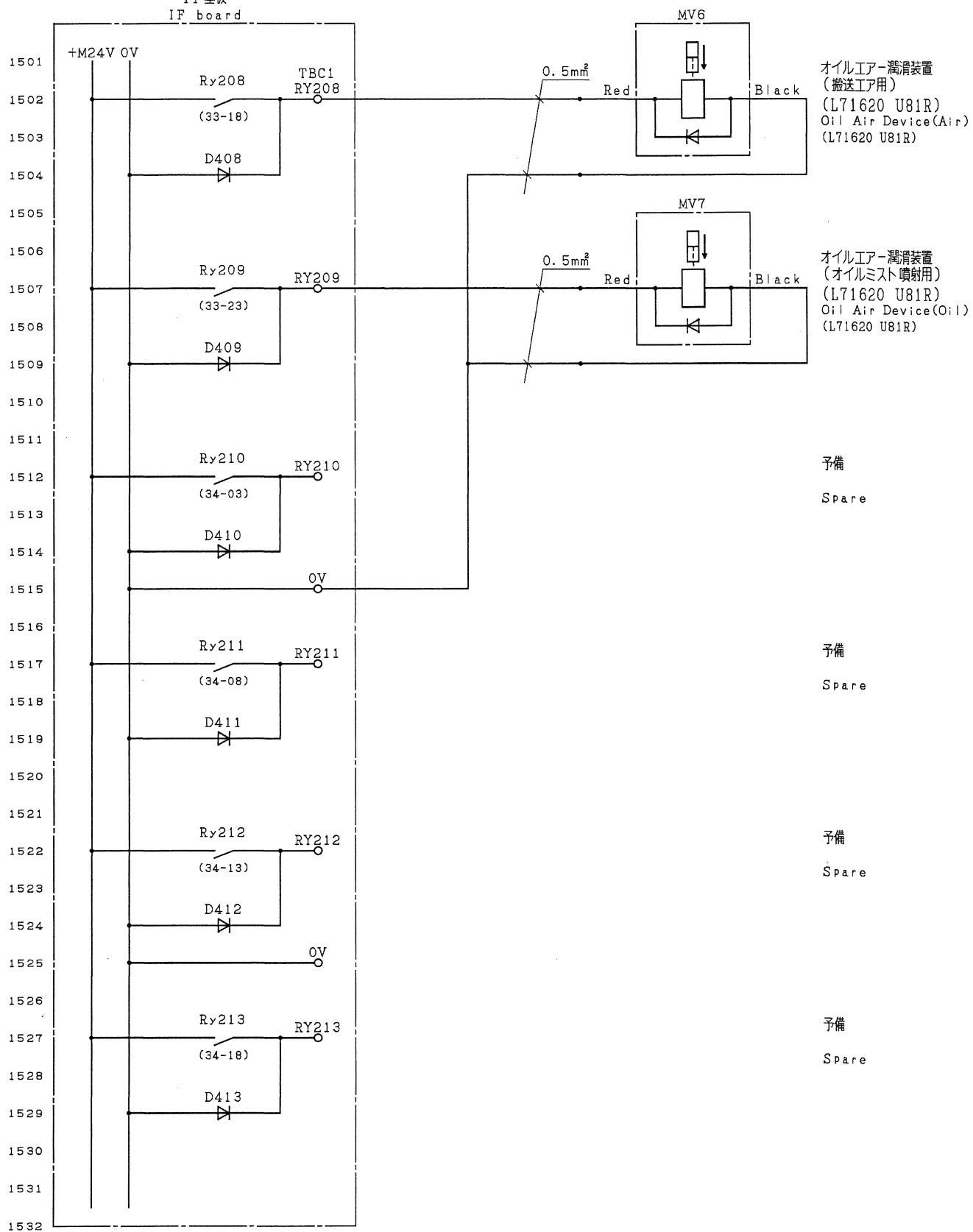
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1331

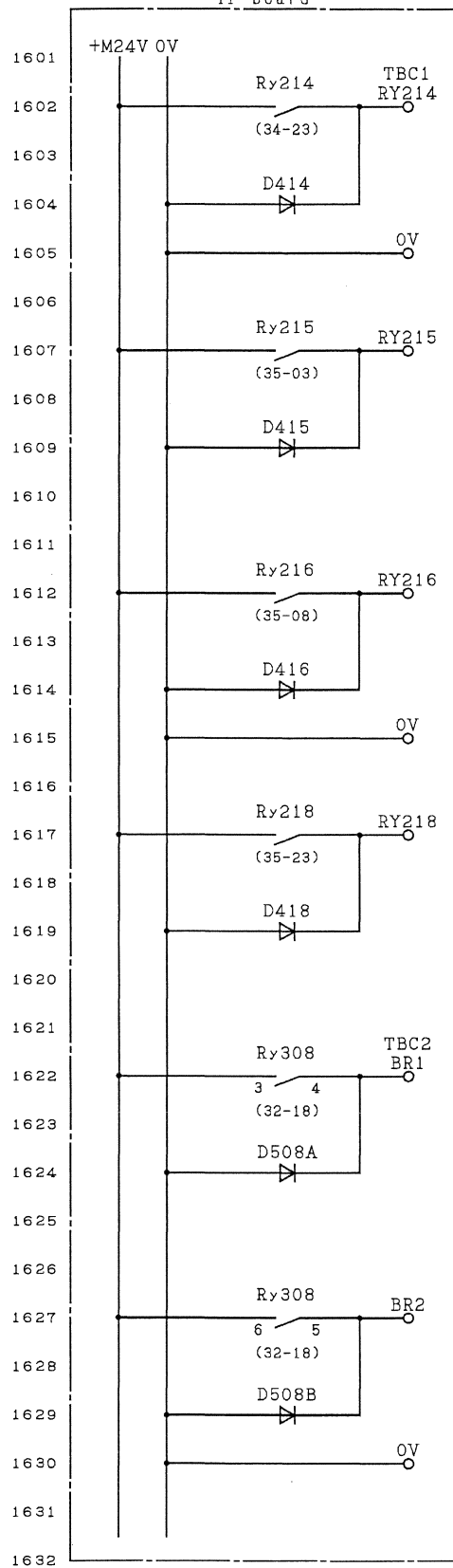
1332



IF基板
IF board



IF基板
IF board



予備

Spare

予備

Spare

予備

Spare

予約

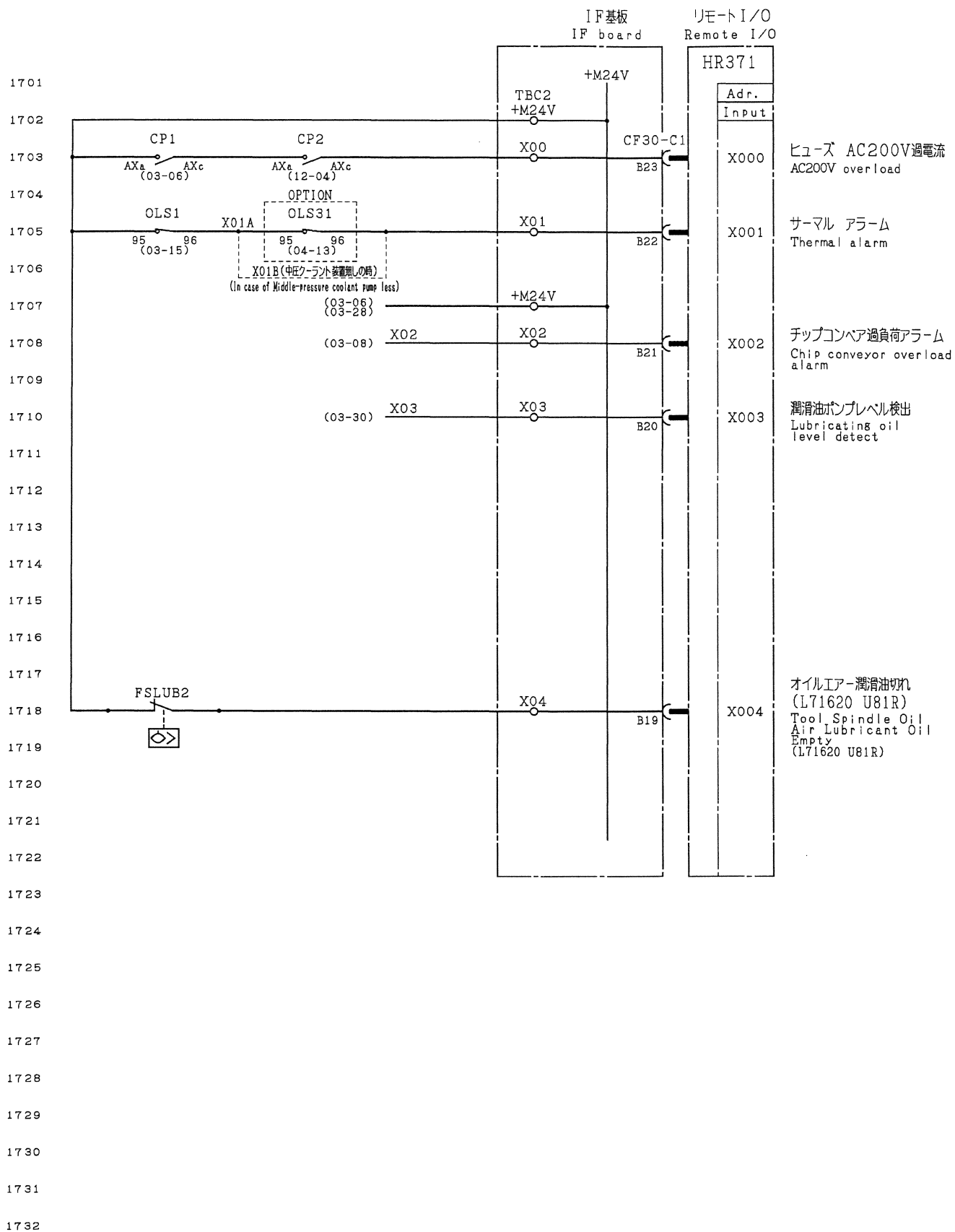
Reserve

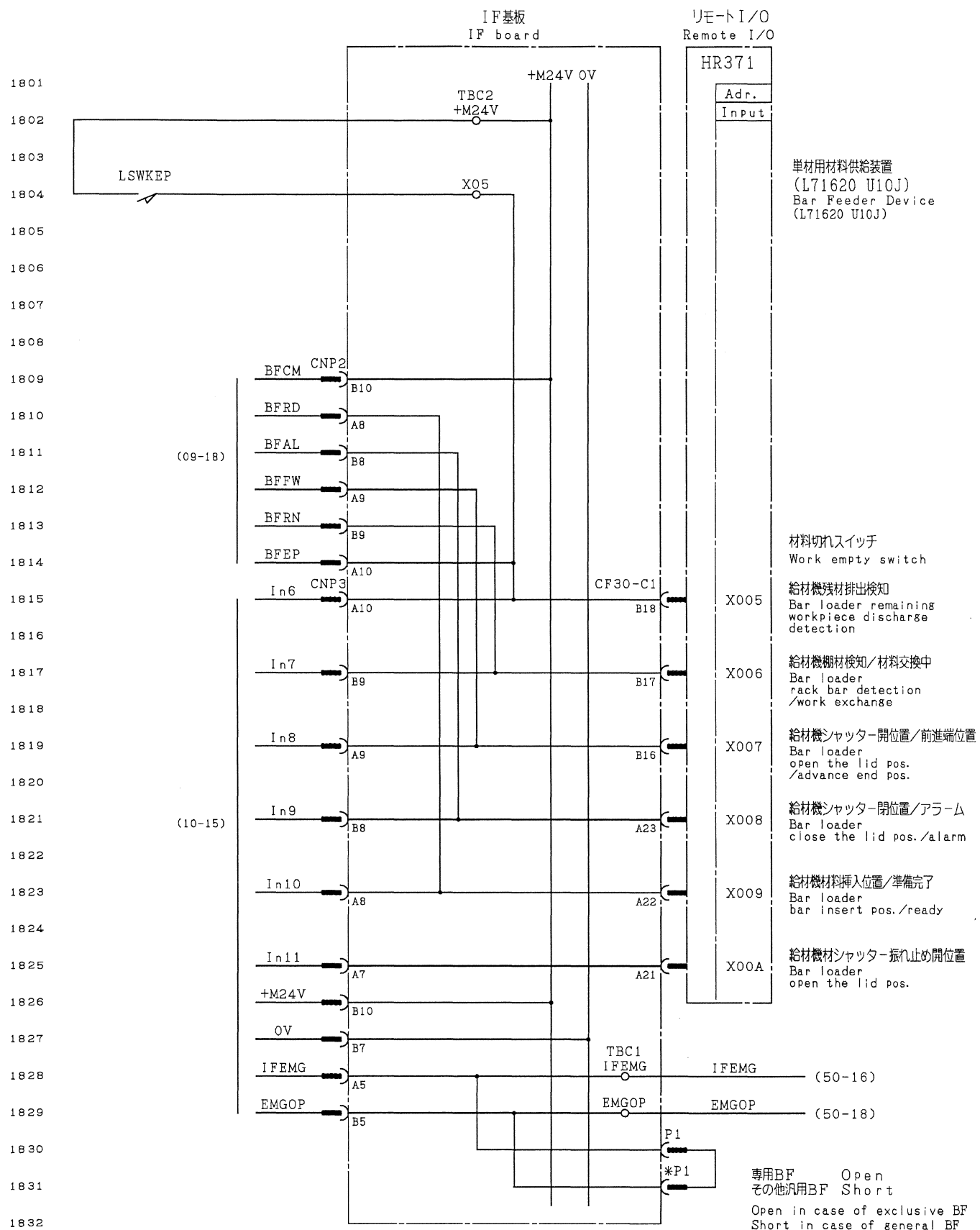
予備

Spare

予備

Spare





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1902
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1930
1931
1932

ドアロック装置
Door lock unit
(L71620 Y76Z)

IF基板
IF board

リモートI/O
Remote I/O

HR371

Adr.
Input

DRLK4

11 12
(13-13)

DRLK3

11 12
(13-10)

DRLK2

11 12
(13-05)

DRLK1

11 12
(13-02)

+M24V 0V

TBC1
+M24V

DL4

DL3

DL2

DL1

CF30-C1

A20

X00B

ドアロック信号
Door lock signal

FLC1

Brown

CNCOF

B

Blue

C

Black

A

TBC2
+M24V

0V

X0C

A19

X00C

切削油流量検出
(L71620 U52R)
Coolant oil flowing
detect sensor
(L71620 U52R)

+M24V
(03-16)

X0D

X0D

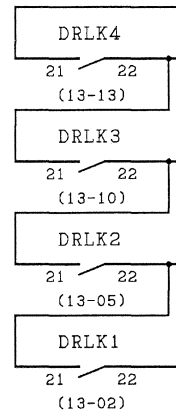
A18

X00D

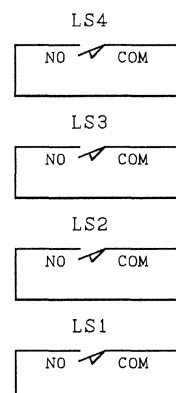
切削油レベル検出
Coolant oil level
detect

2001
2002
2003
2004
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2008
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2011
2012
2013
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2018
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2032

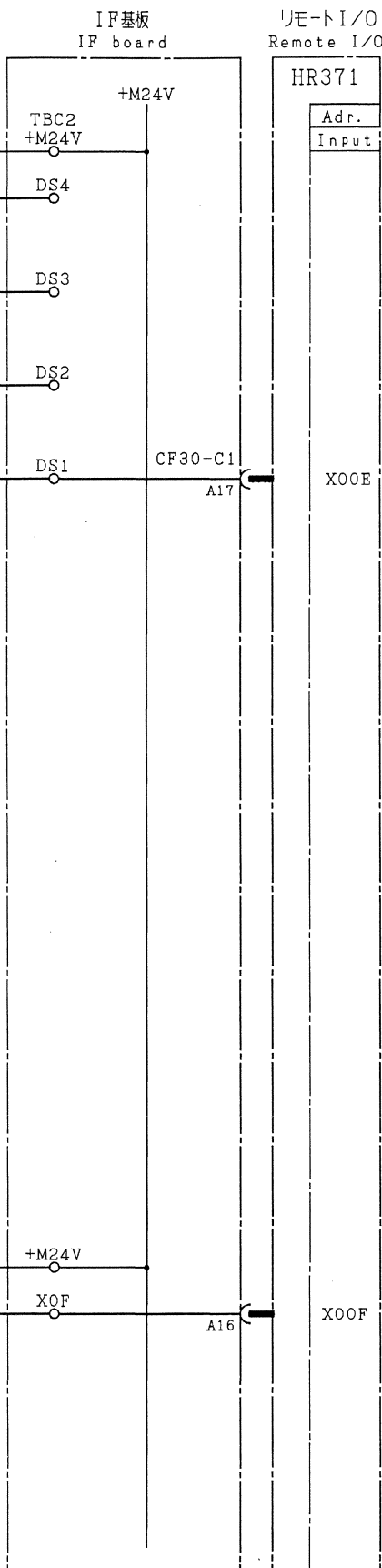
ドアロック装置
Door lock unit
(L71620 Y76Z)



ドアスイッチ
Door switch
(L71620 Y75Z)

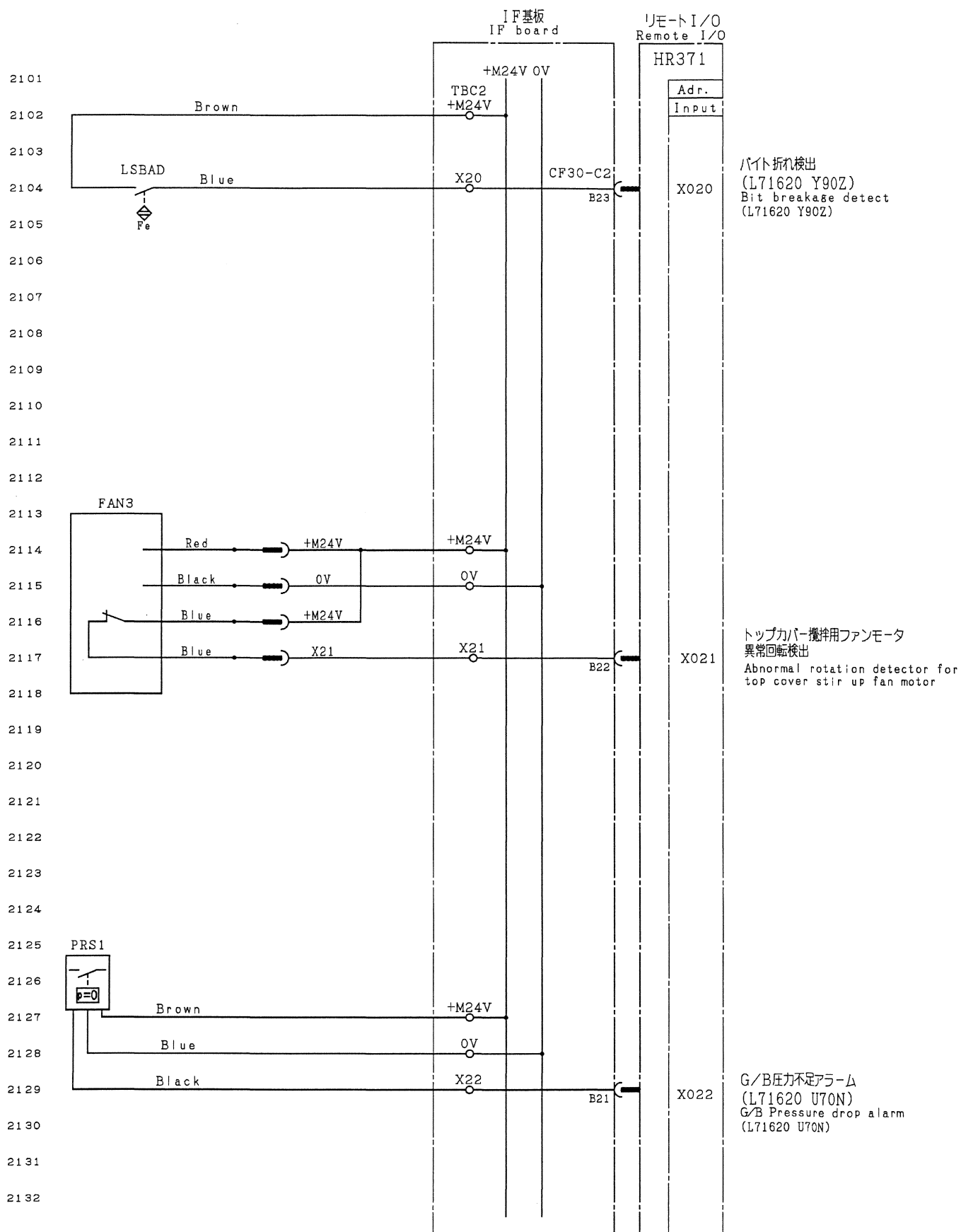


(52-13)
(53-14)

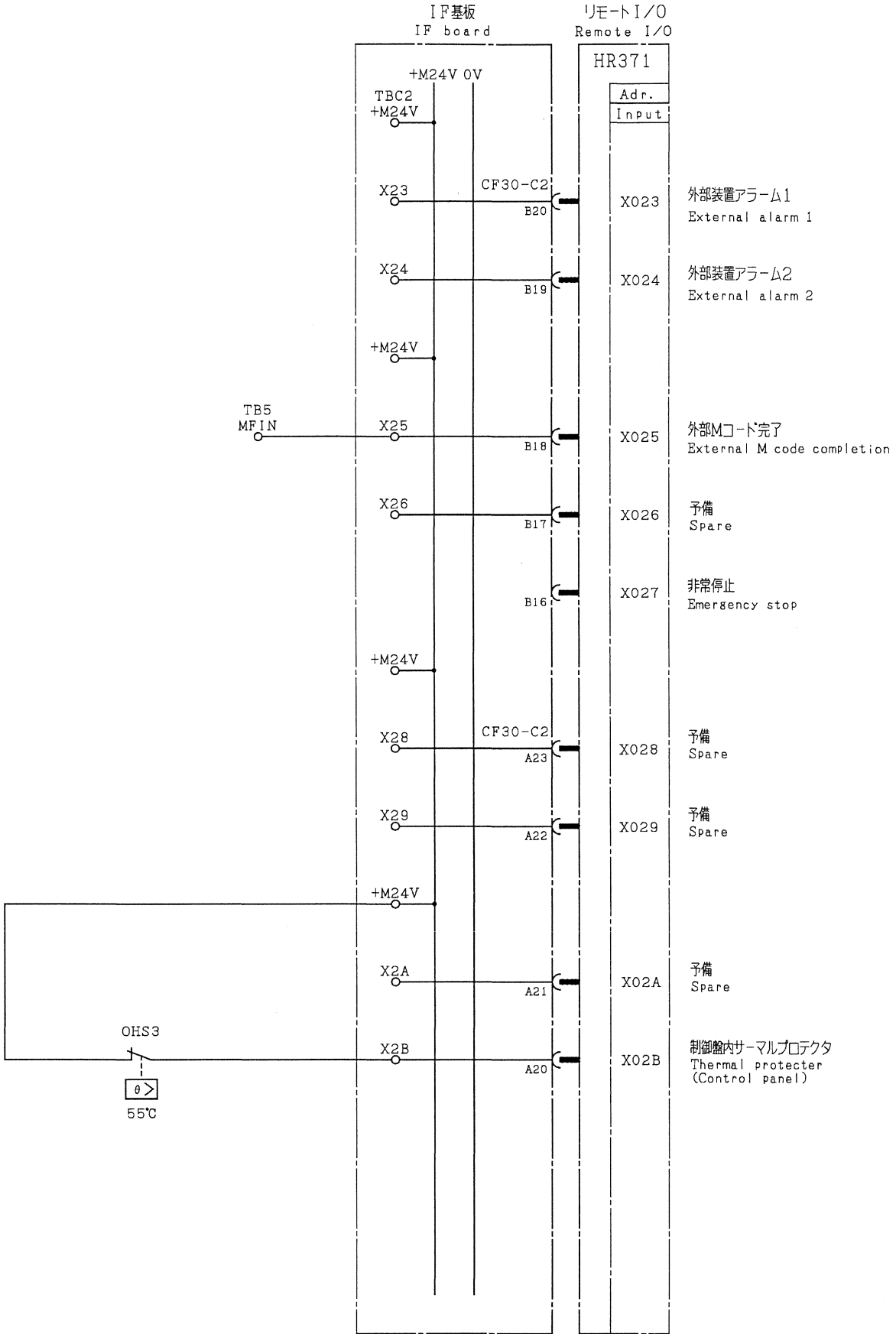


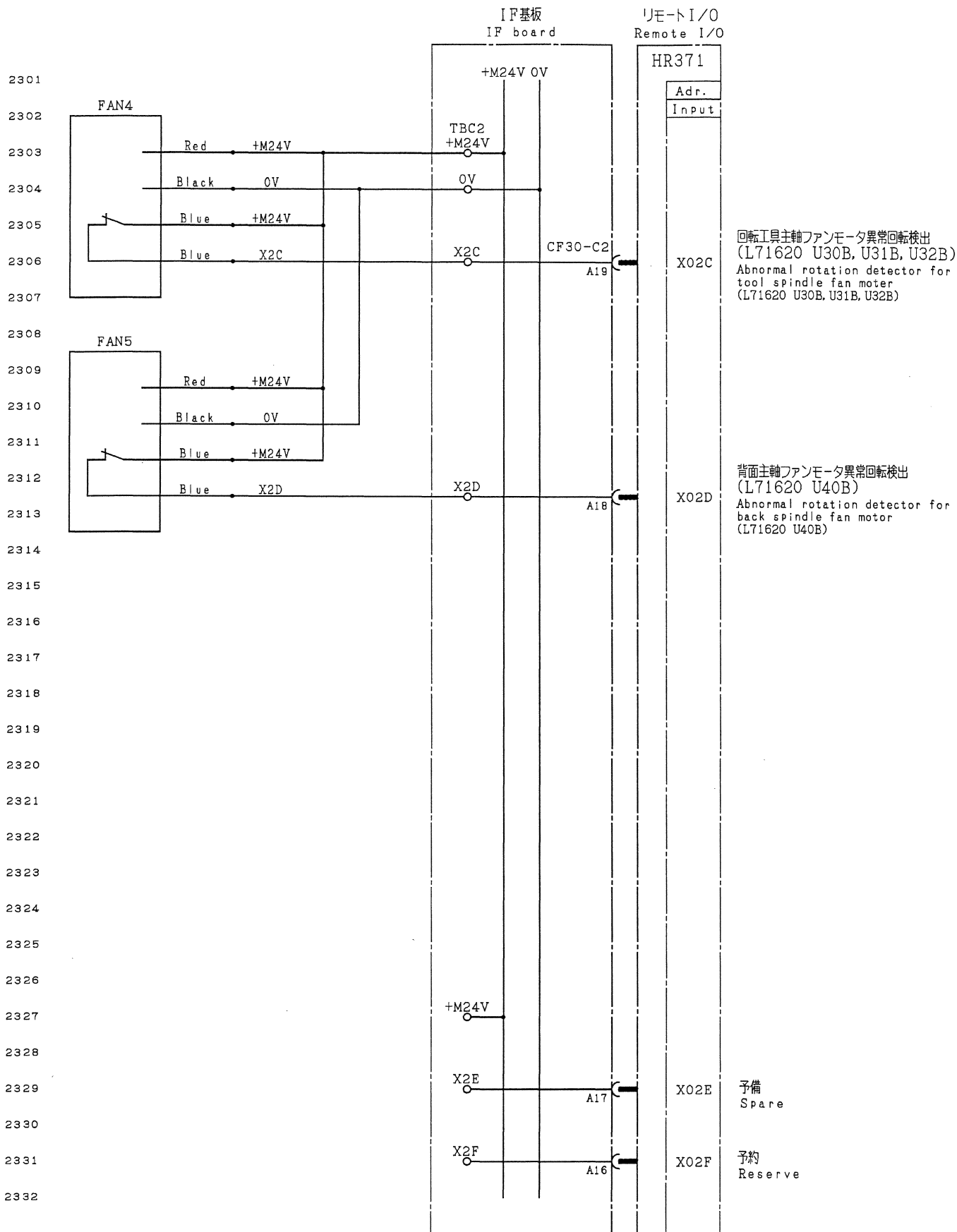
ドア閉
Door close

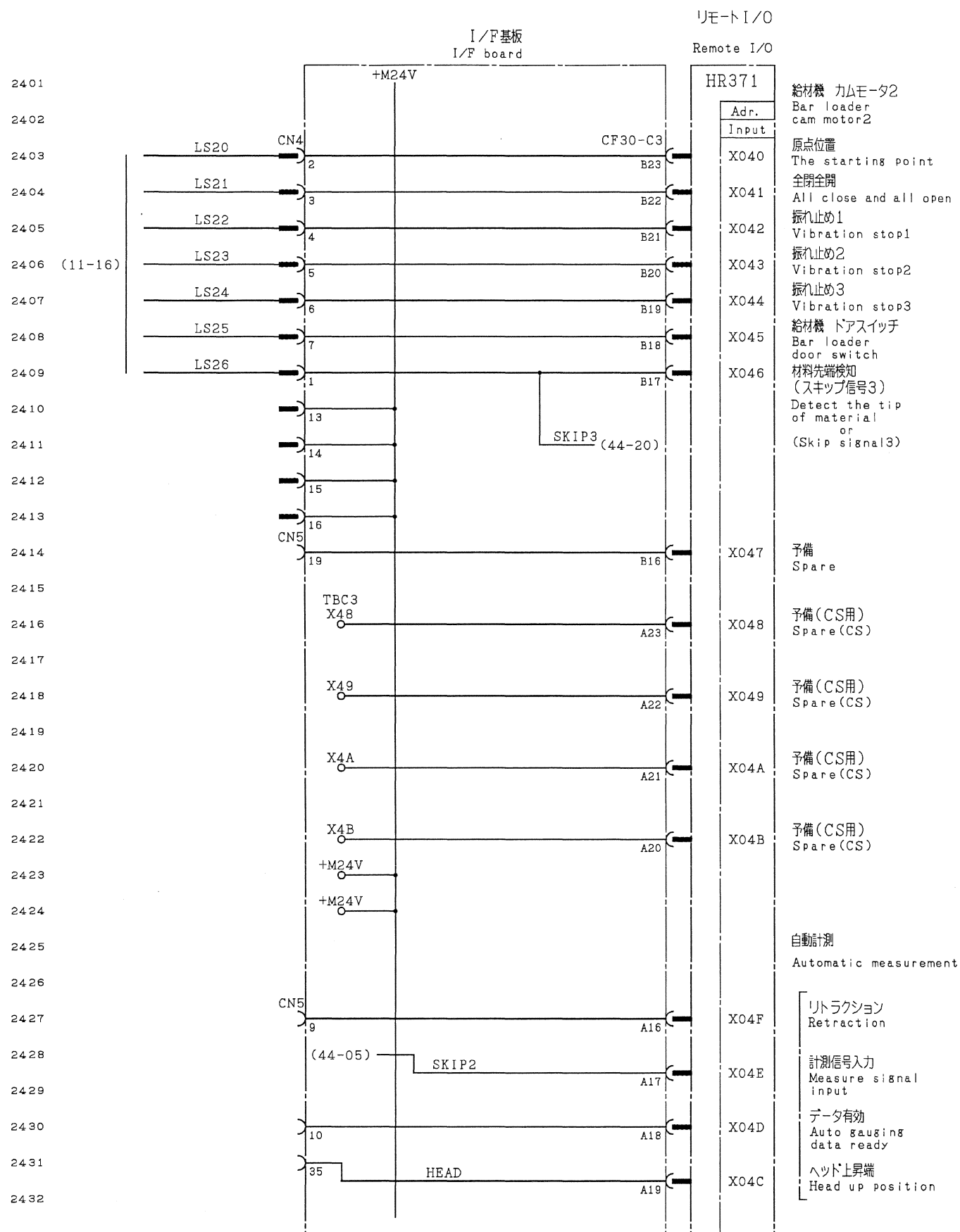
メイン/背面主軸
サーマルプロテクタ
Main/back spindle
Thermal Protector



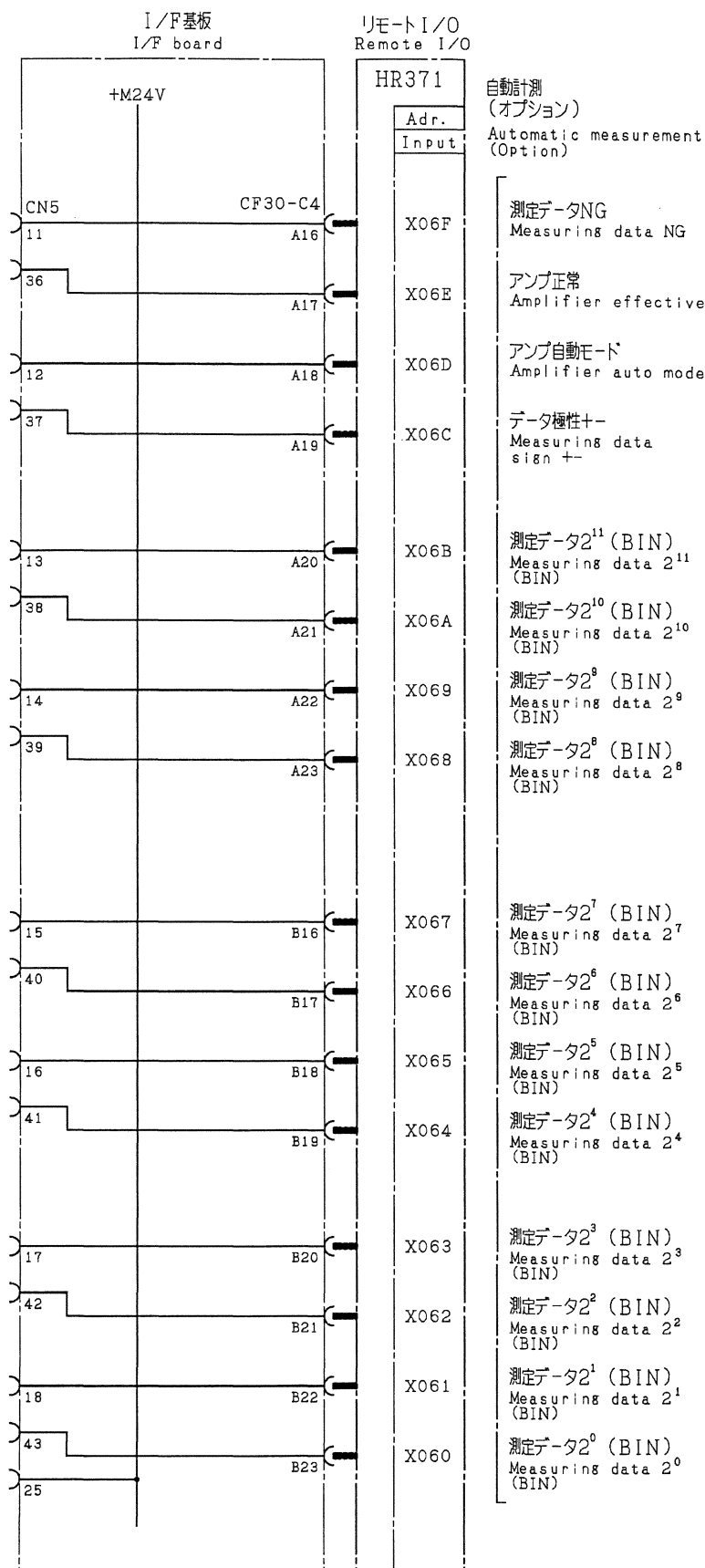
2201
2202
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2208
2209
2210
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2232







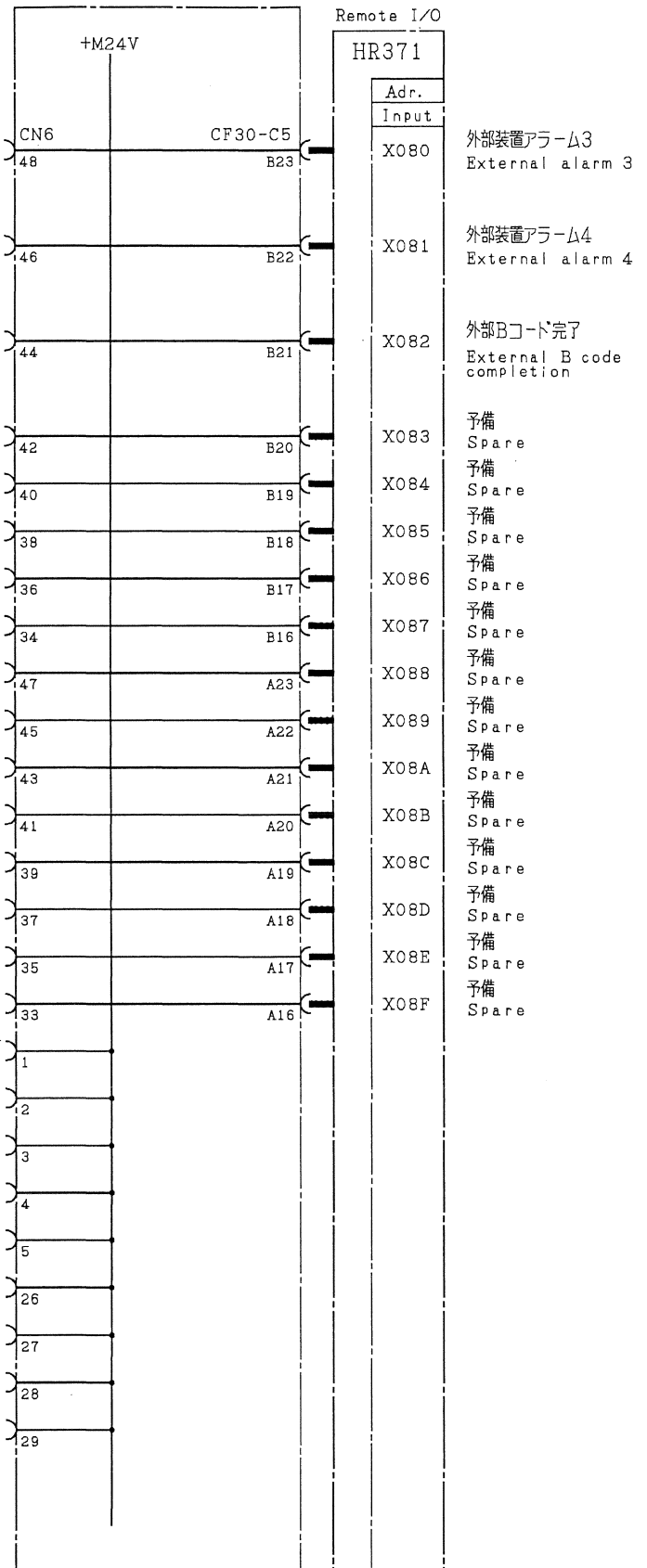
2501
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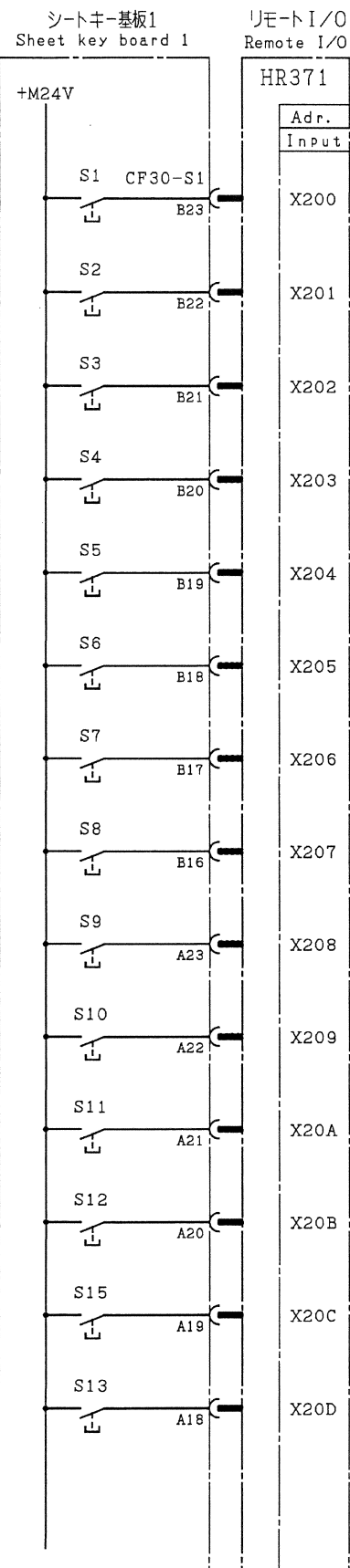
2601
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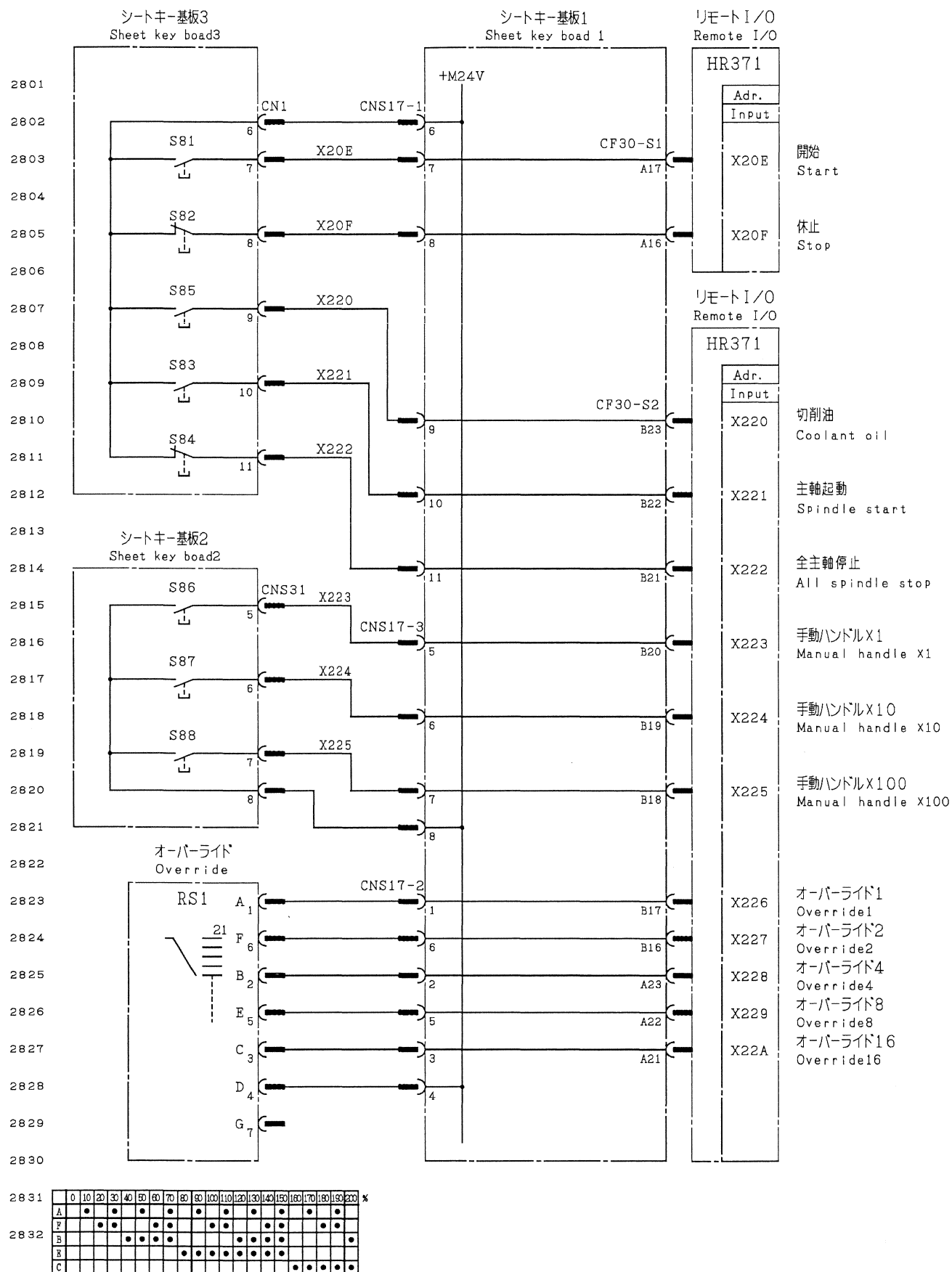
I/F 基板
I/F board

リモートI/O



2701
2702
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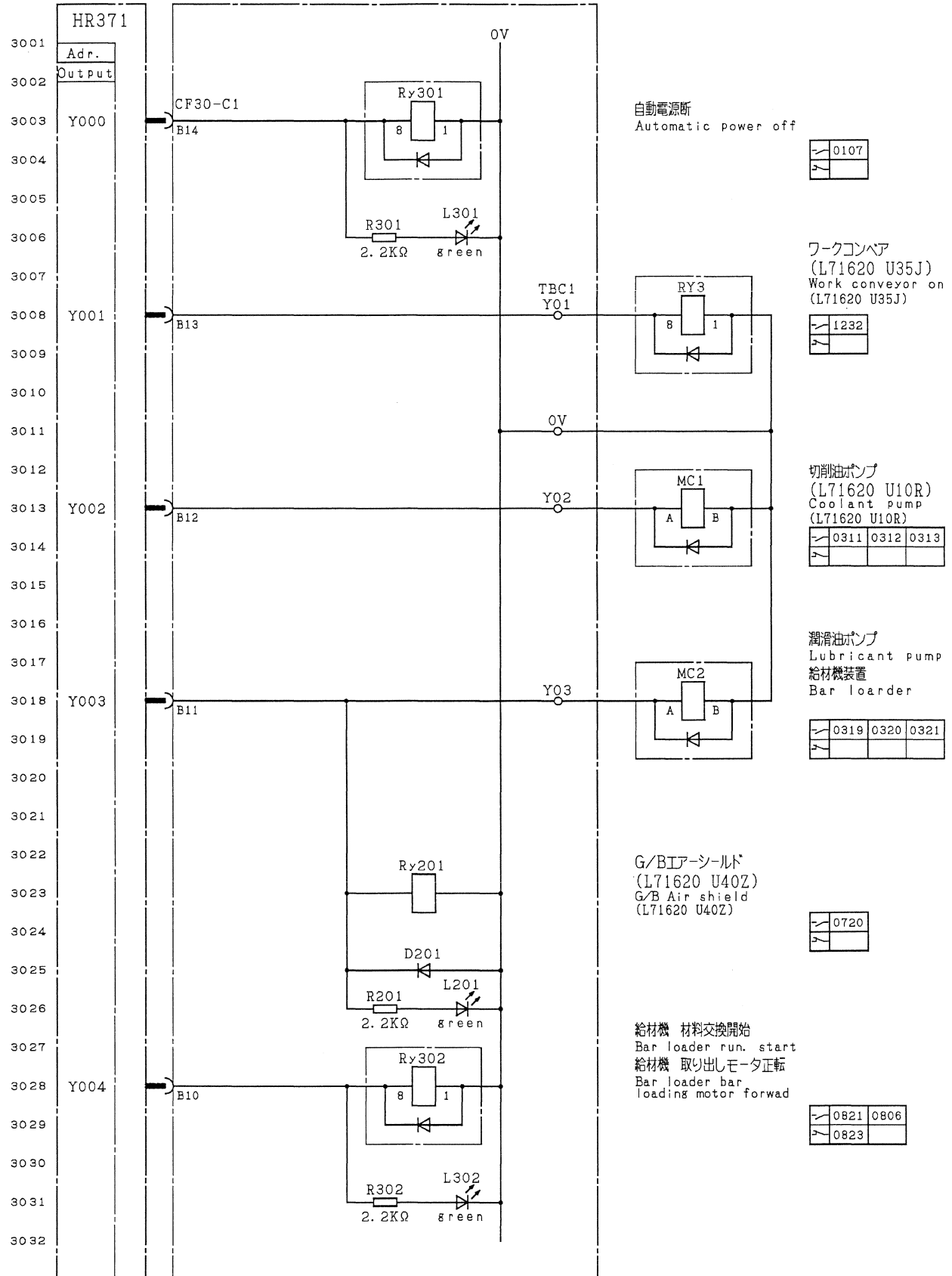






リモートI/O
Remote I/O

IF基板
IF board



リモートI/O
Remote I/O

IF基板
IF board

HR371

3101
3102
3103
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3105
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3129
3130
3131
3132

Adr.
Output

Y005

Y006

Y007

Y008

Y009

CF30-C1

B09

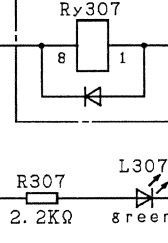
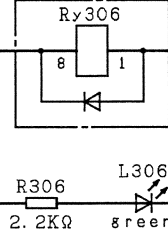
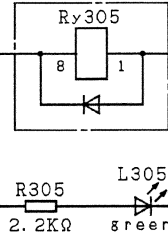
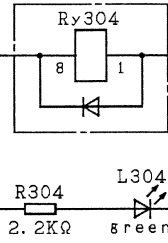
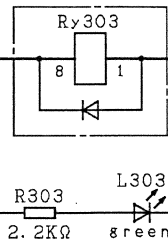
B08

B07

A14

A13

0V



給材機 トルク切り換え
Bar loader torque
change
給材機 取り出しモータ逆転
Bar loader bar
loading motor reverse

0823	
	0808

給材機 非常停止
Bar loader
emergency stop
給材機 着脱モータ正転
Bar loader
unloading motor
forward

0825	0810
0827	

給材機 製品カウント
Bar loader count
給材機 着脱モータ逆転
Bar loader
unloading motor
reverse

0827	0812

給材機 送り停止
Bar loader feed stop
給材機 取り出しモータブレーキ解除
Bar loader
bar loading motor
brake release

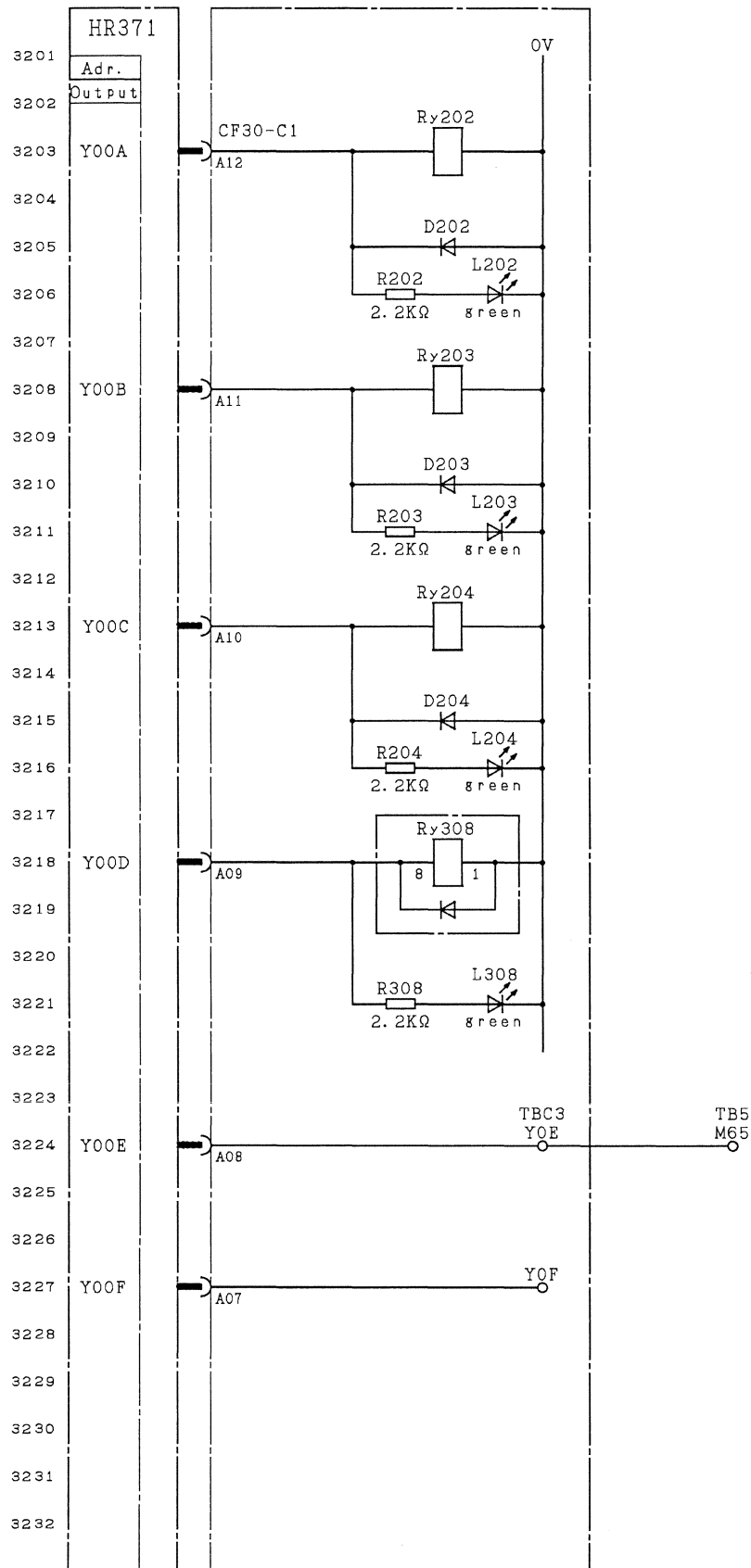
0829	0814

ドアロックオン
(L71620 Y76Z)
Door lock on
(L71620 Y76Z)

1302	1310

リモートI/O
Remote I/O

IF基板
IF board



工具主軸モータ冷却
Cool for tool spindle motor

1402	

予備
Spare

1407	

エアブロー
(L71620 U60R)
Air blow
(L71620 U60R)

1412	

予備
Spare

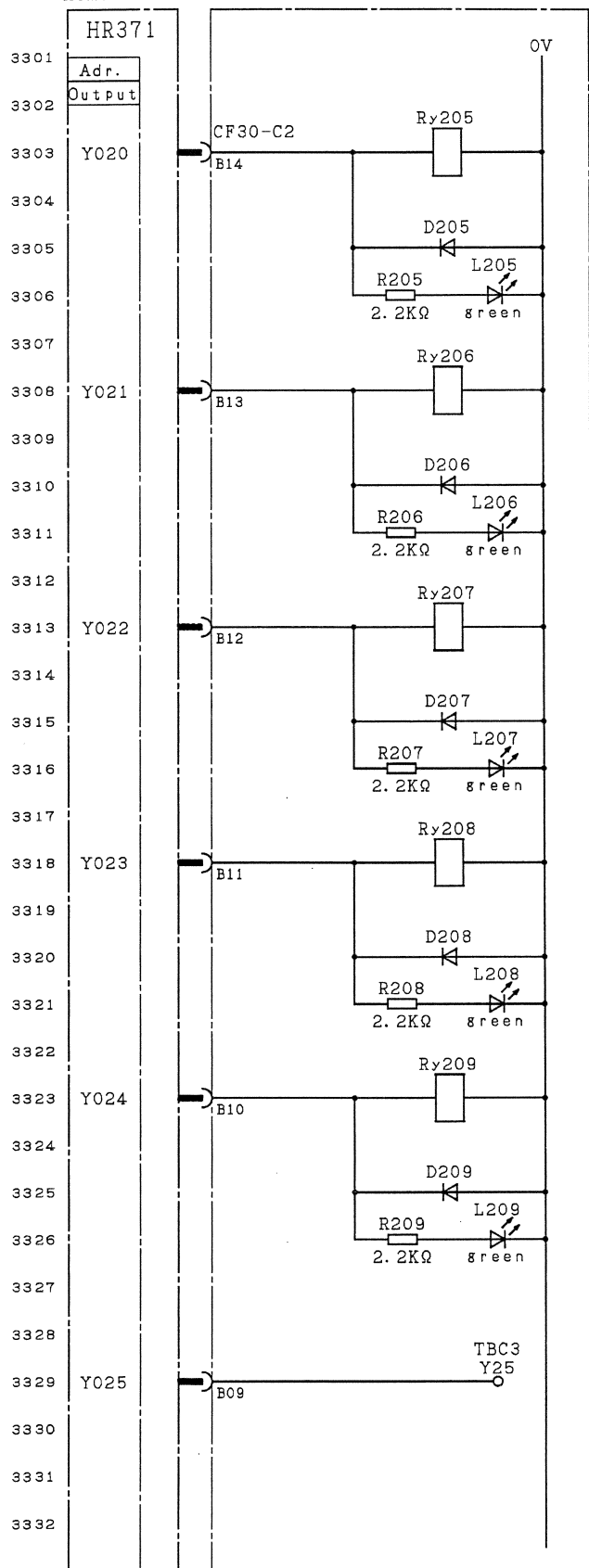
1622	1627

外部M65信号
External M65 signal

外部カウンタ(オプション)
External counter(Option)

リモートI/O
Remote I/O

IF基板
IF board



シグナルタワー(緑)
(L71620 U81Z)
Signal tower(Green)
(L71620 U81Z)

1420

シグナルタワー(黄)
(L71620 U81Z)
Signal tower(Yellow)
(L71620 U81Z)

1422

シグナルタワー(赤)
パトライト(赤または黄)
(L71620 U80Z または U81Z)
Signal tower(Red)
Patrol light(Red or Yellow)
(L71620 U80Z or U81Z)

1424

オイルエア-潤滑装置
(搬送工用)
(L71620 U81R)
Oil Air Device(Air)
(L71620 U81R)

1502

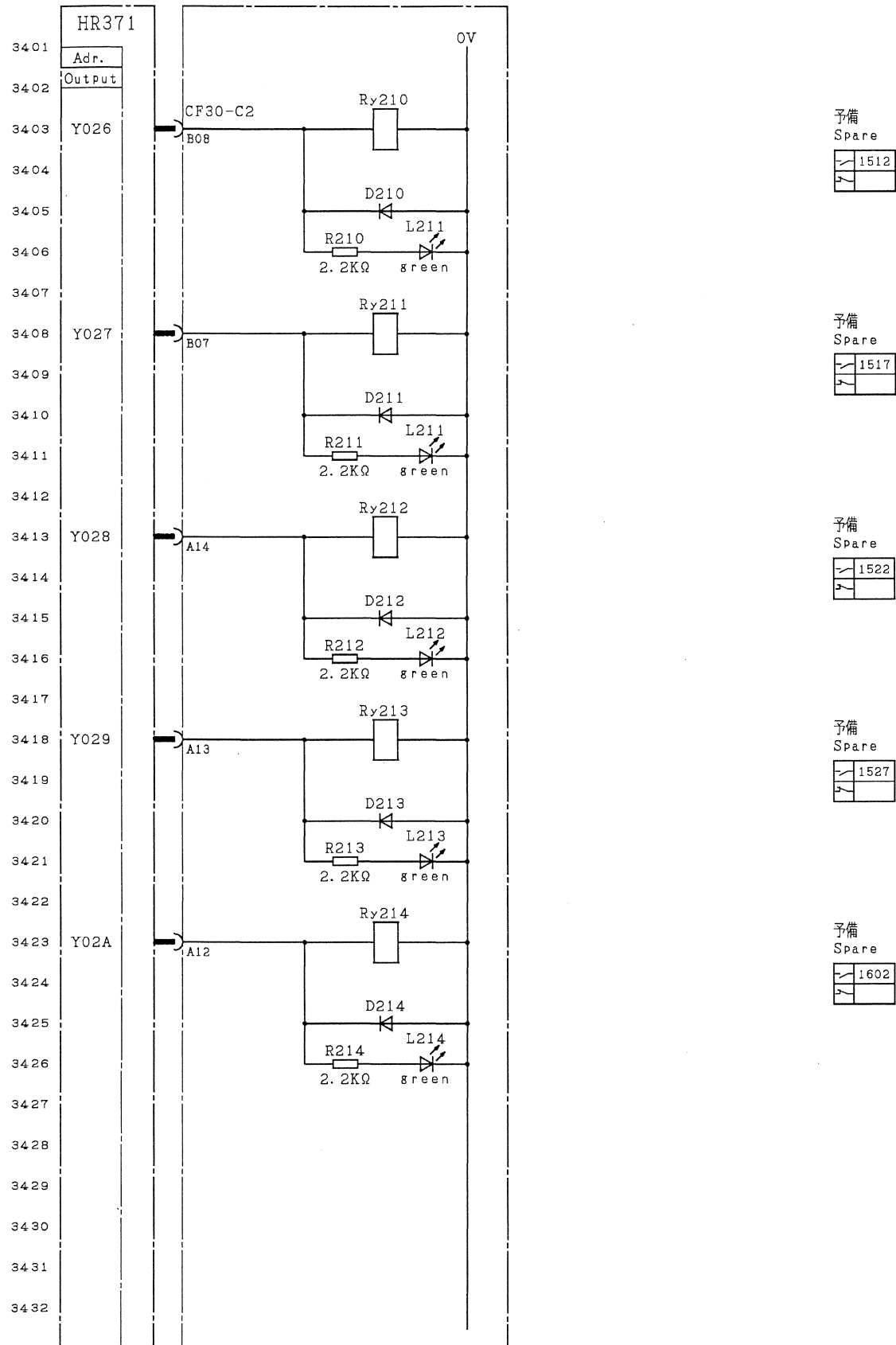
オイルエア-潤滑装置
(オイルミスト噴射用)
(L71620 U81R)
Oil Air Device(Oil)
(L71620 U81R)

1507

予備
Spare

リモート I/O
Remote I/O

IF基板
IF board



リモートI/O
Remote I/O

IF基板
IF board

HR371

3501

Adr.

3502

Output

3503

Y02B

3504

3505

3506

3507

3508

Y02C

3509

3510

3511

3512

3513

Y02D

3514

3515

3516

3517

3518

Y02E

3519

3520

3521

3522

3523

Y02F

3524

3525

3526

3527

3528

3529

3530

3531

3532

0V

CF30-C2

A11

Ry215

D215

R215

2.2KΩ

L215

green

Ry216

D216

R216

2.2KΩ

L216

green

Ry217

8

1

D217

R217

2.2KΩ

L217

green

Ry309

8

1

D217

R309

2.2KΩ

L309

green

Ry218

D218

R218

2.2KΩ

L218

green

予備

Spare

1607

予備

Spare

1612

ドア閉給材機始動許可

Door close signal BF start

0928

外部M68信号

External M68 signal

0724	0728
0726	0730

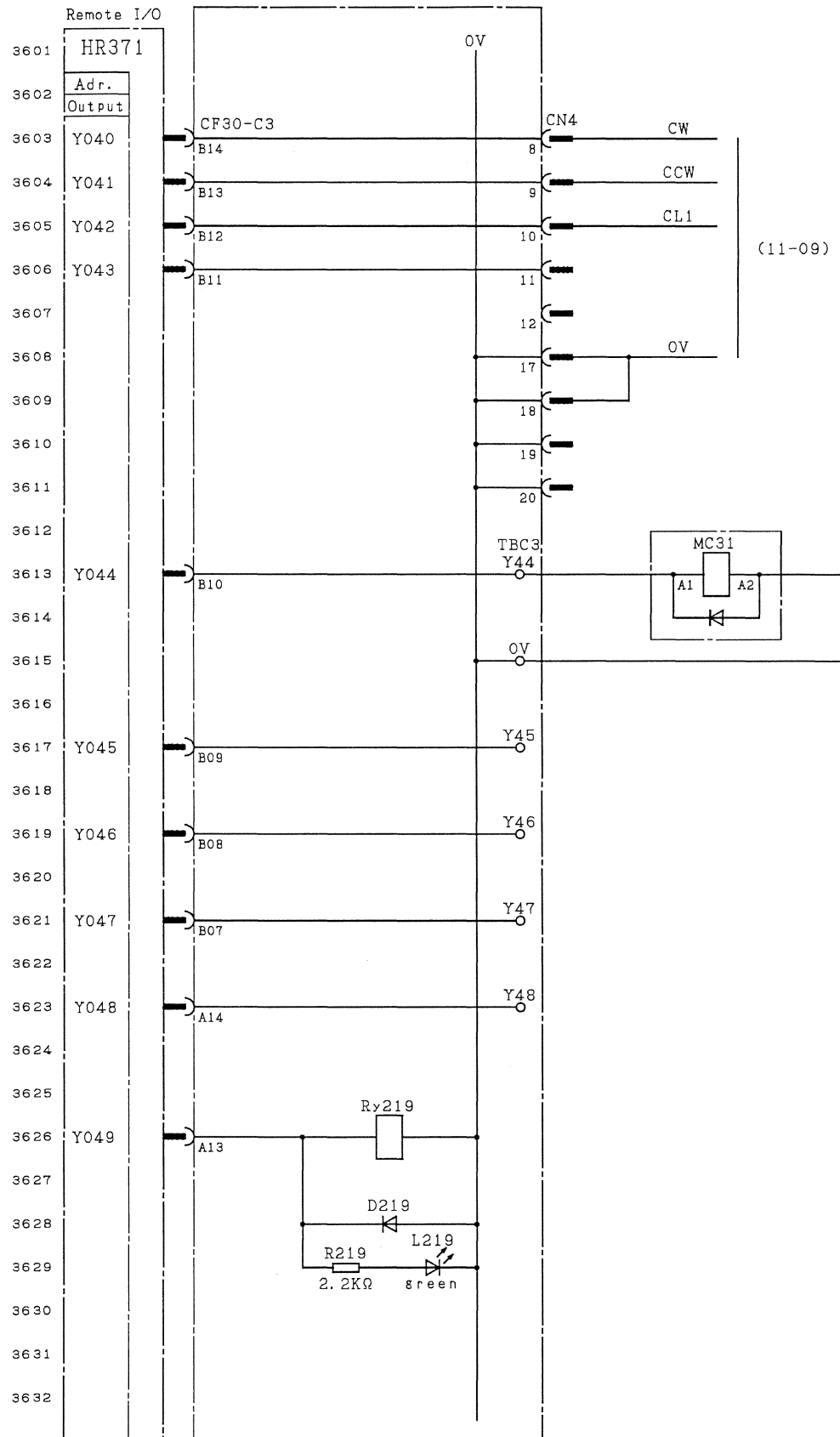
予約

Reserve

1617

リモートI/O

I/F基板
I/F Board



中圧切削油ポンプオン
(オプション)
Middle-pressure coolant
pump on
(Option)

0411	0412	0413

予備
Spare

予備
Spare

予備
Spare

予備
Spare

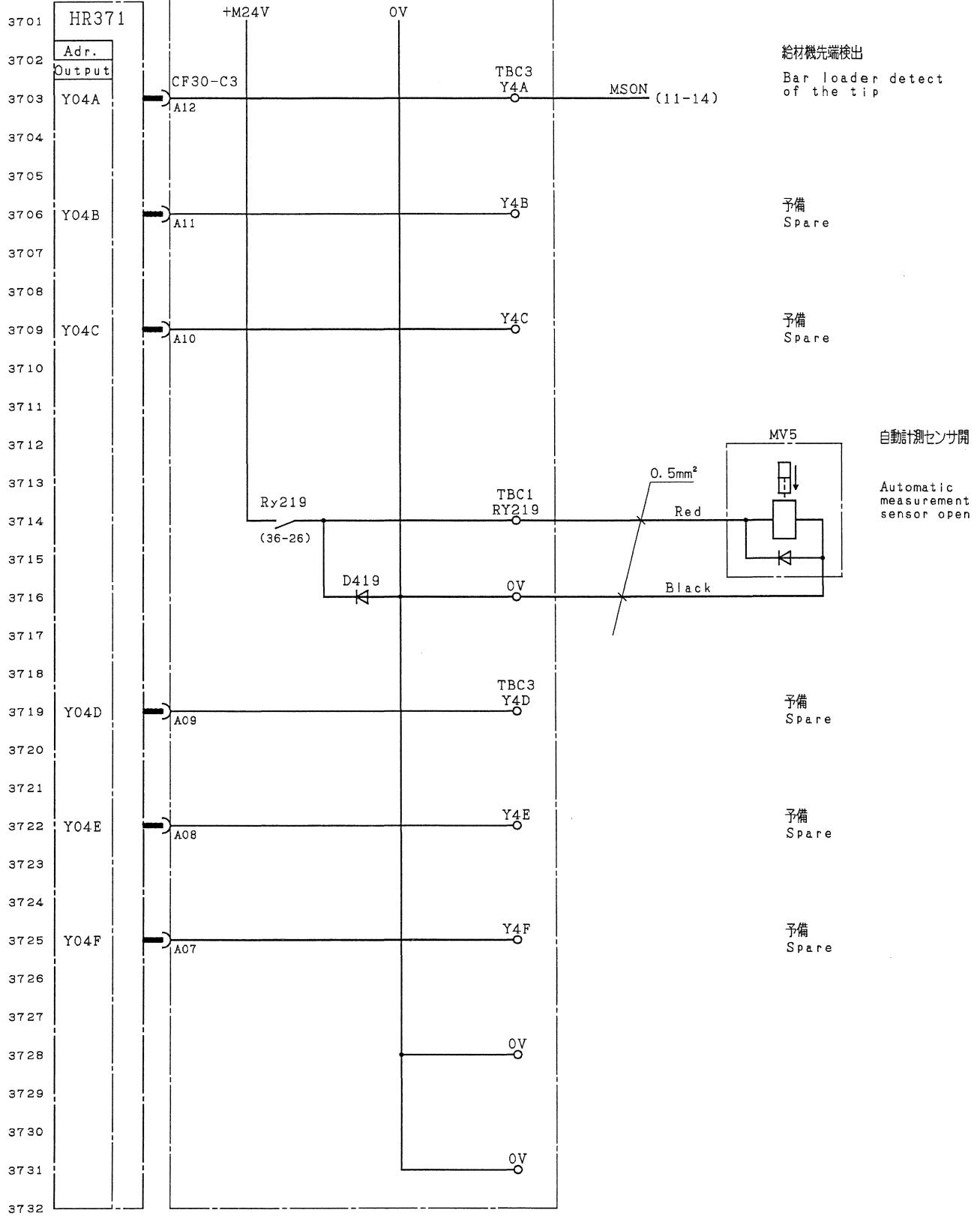
自動計測ヘッド開
(オプション)
Automatic measurement
head open
(Option)

3714

リモートI/O

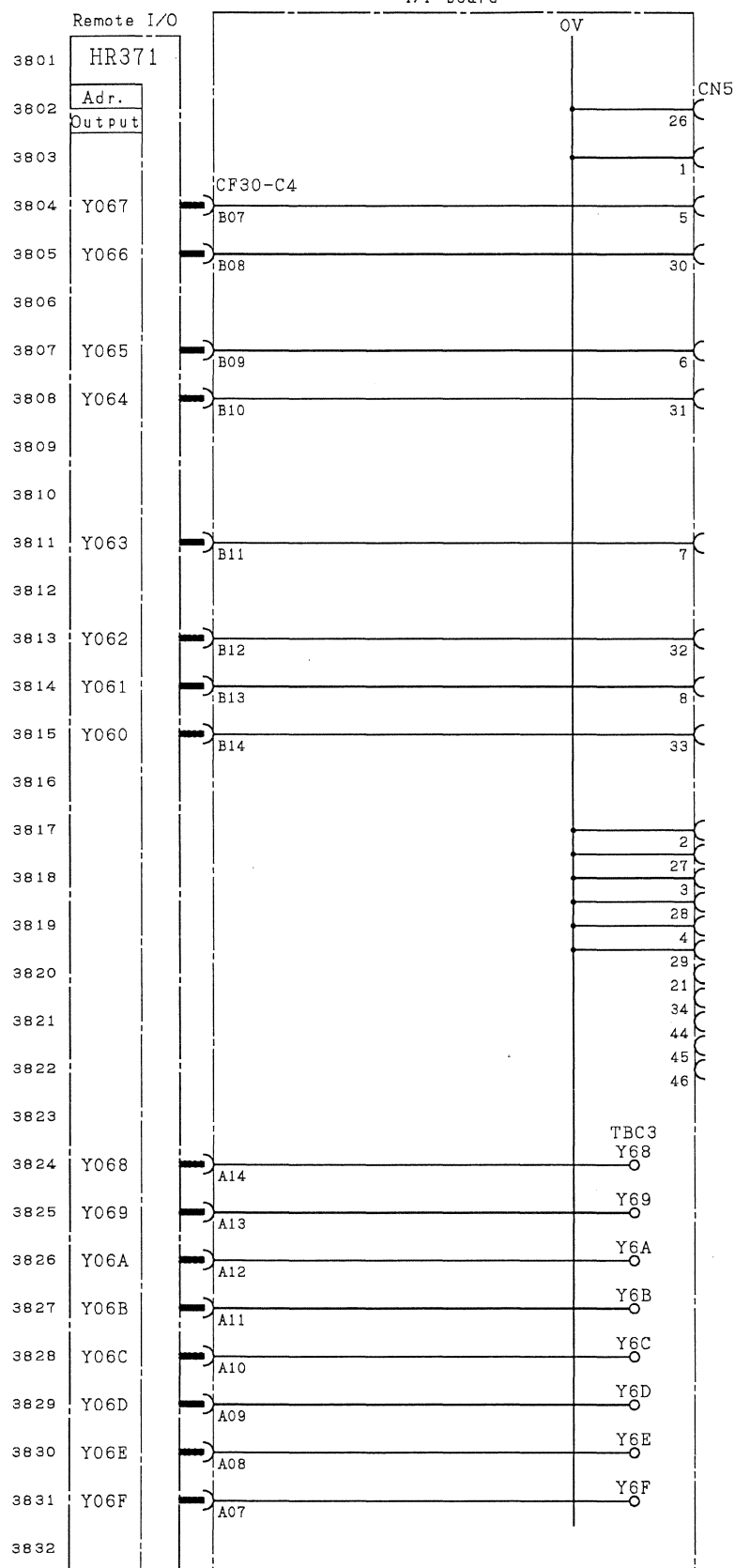
I/F基板
I/F board

Remote I/O



リモートI/O

I/F基板
I/F board



自動計測
(オプション)

Automatic measurement
(Option)

アンプ自動モード
Amplifier auto mode

データ要求
Measuring data
demand

計測開始
Measuring start

ゼロイング開始
Zeroing start

リトラクション要求
Retraction demand

予備
Spare

予備
Spare

予備
Spare

予備
Spare

予備
Spare

予備
Spare

予備
Spare

予備
Spare

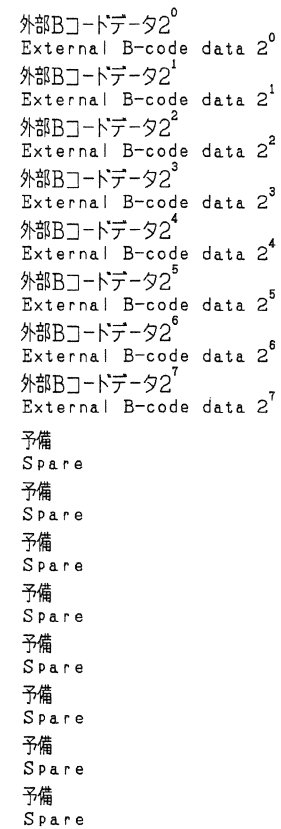
予備
Spare

予備
Spare

予備
Spare

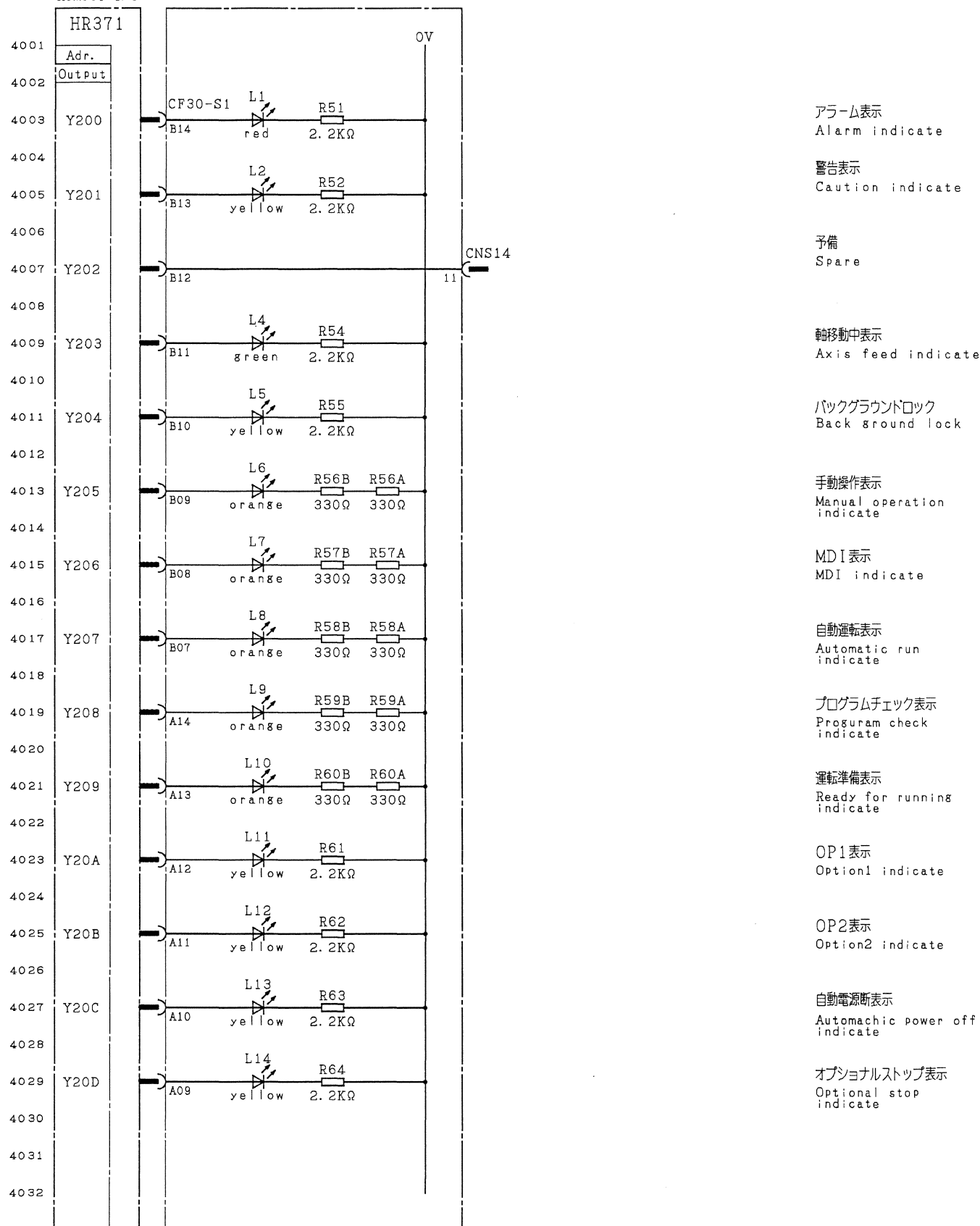
I/F 基板
I/F board

OV



リモート I/O
Remote I/O

シートキー基板1
Sheet key board 1



アラーム表示
Alarm indicate

警告表示
Caution indicate

予備
Spare

軸移動中表示
Axis feed indicate

バックグラウンドロック
Back ground lock

手動操作表示
Manual operation indicate

MDI 表示
MDI indicate

自動運転表示
Automatic run indicate

プログラムチェック表示
Program check indicate

運転準備表示
Ready for running indicate

OP1 表示
Option1 indicate

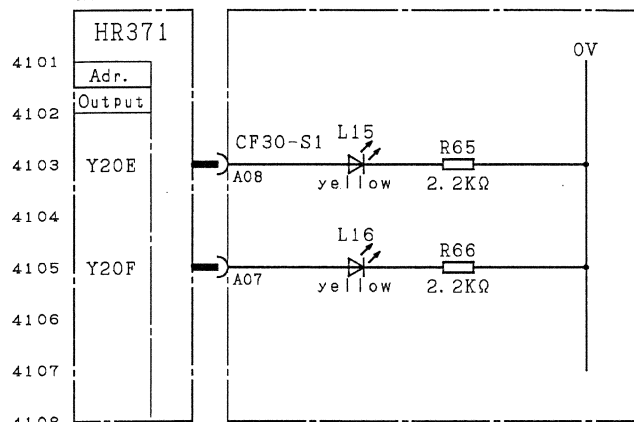
OP2 表示
Option2 indicate

自動電源断表示
Automatic power off indicate

オプションナルストップ表示
Optional stop indicate

リモートI/O
Remote I/O

シートキー基板1
Sheet key board 1



ブロックスキップ表示
Block skip indicate

背面主軸チャック表示
Back spindle
chuck indicate

4109

4110

4111

4112

4113

4114

4115

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4117

4118

4119

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4129

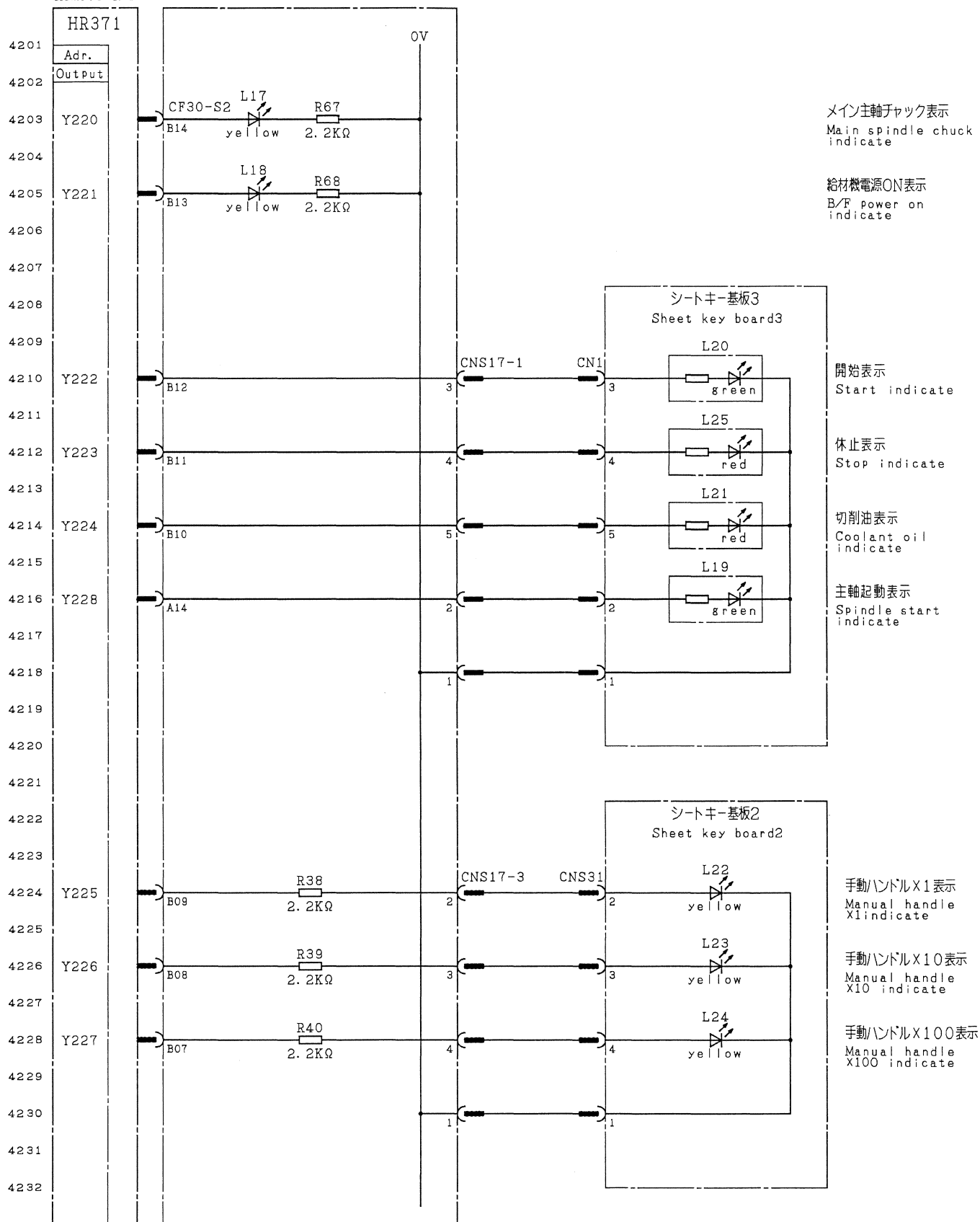
4130

4131

4132

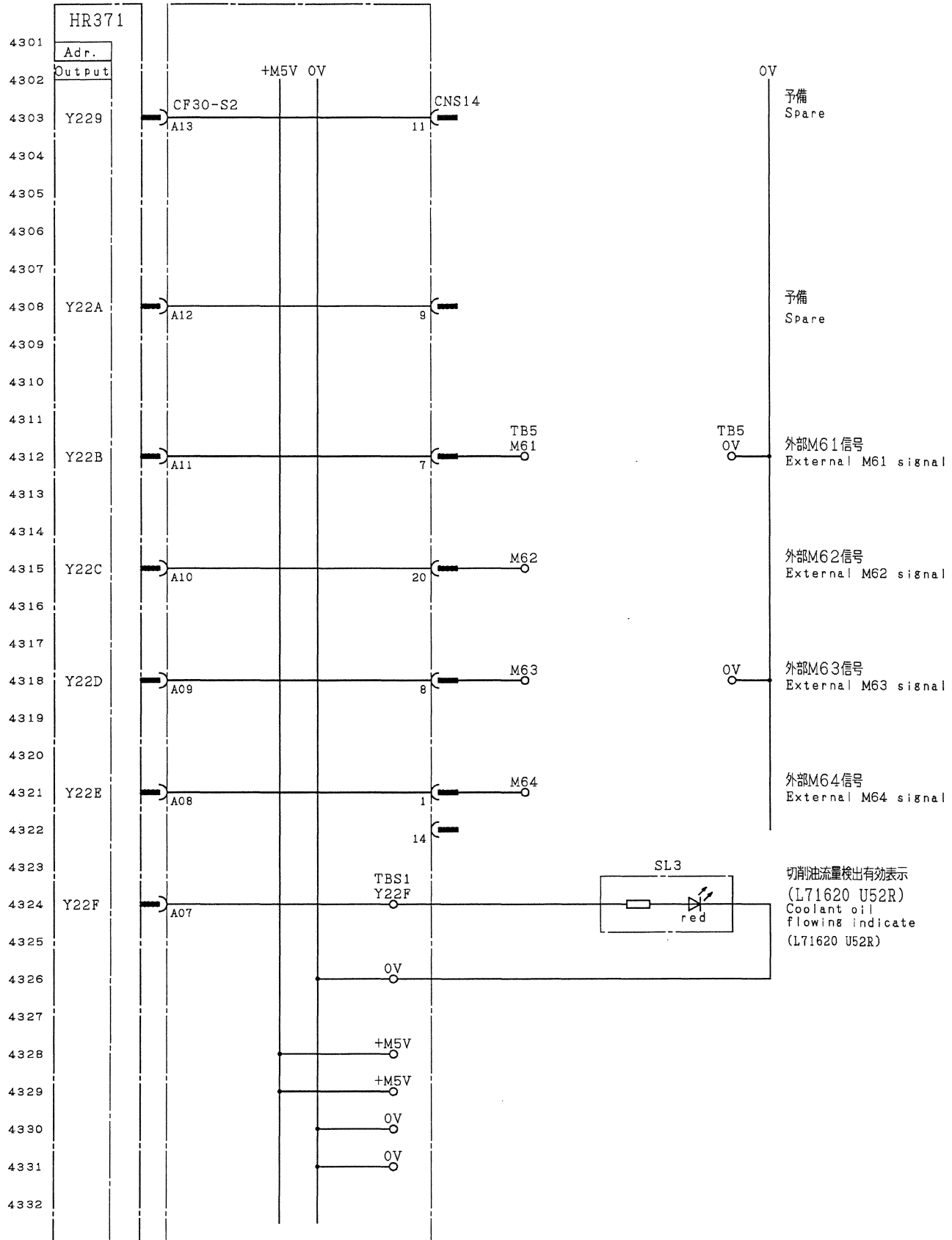
リモートI/O
Remote I/O

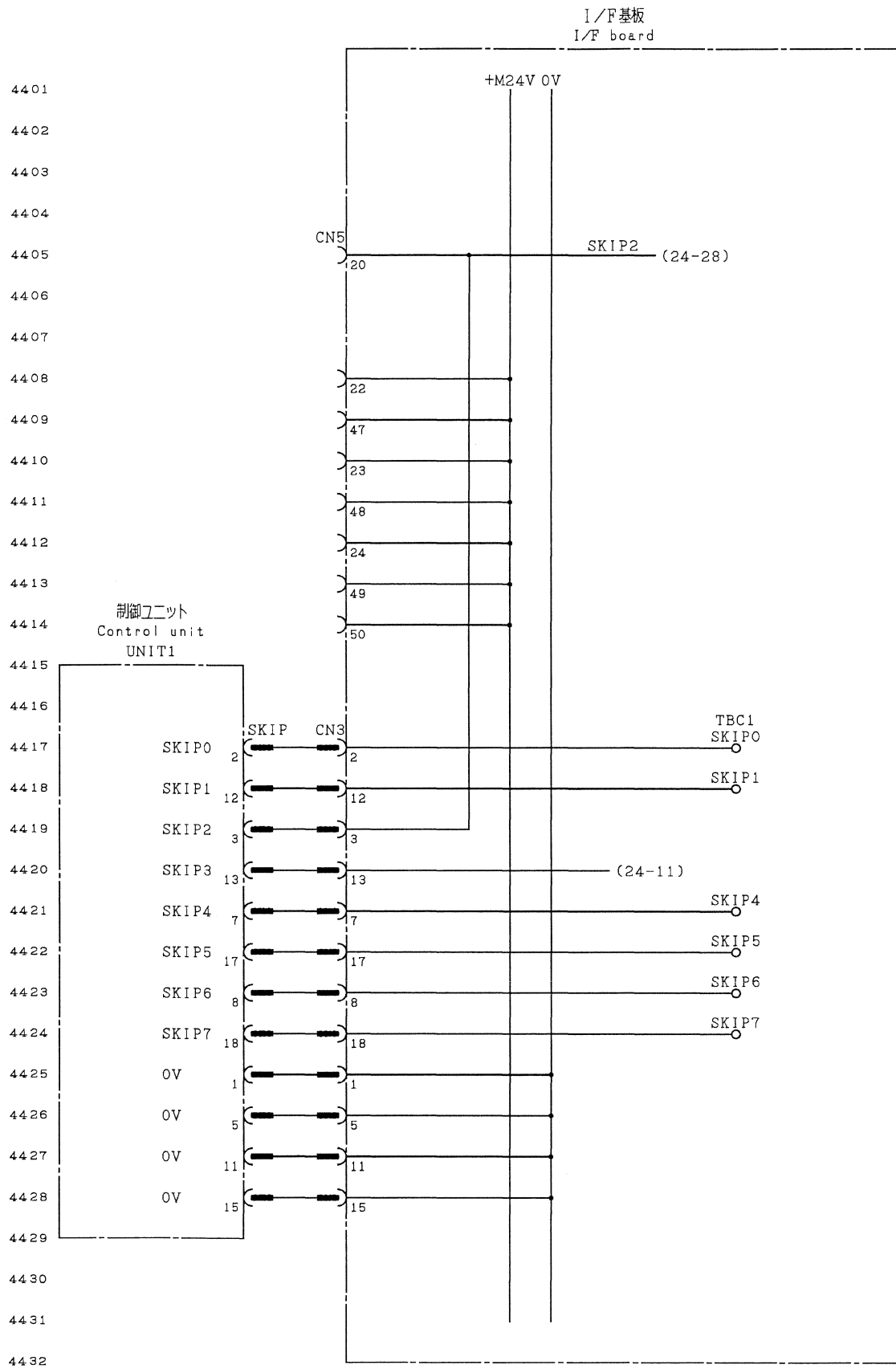
シートキー基板1
Sheet key board 1

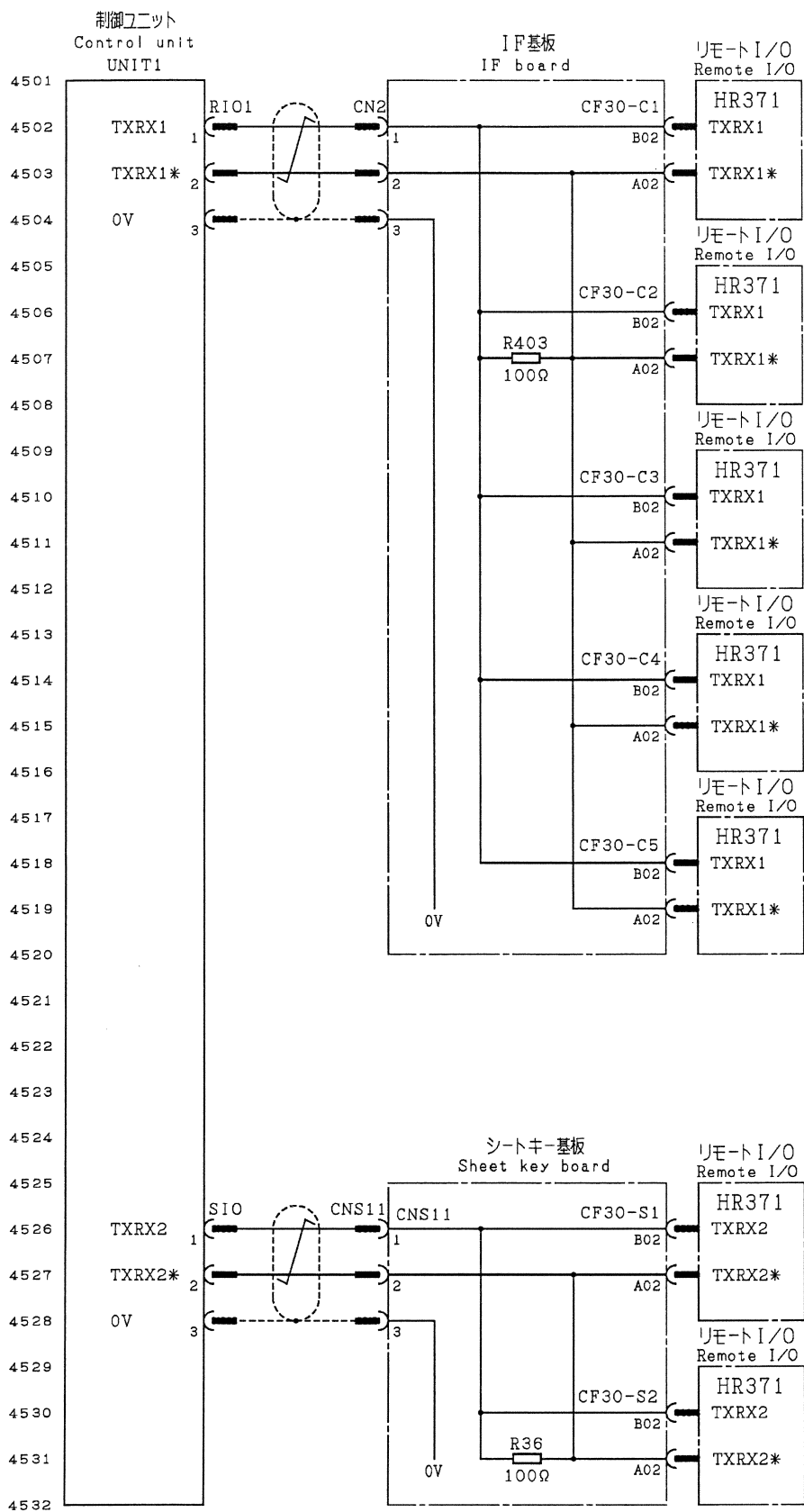


リモートI/O
Remote I/O

シートキー基板1
Sheet key board 1







4601

4602

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4609

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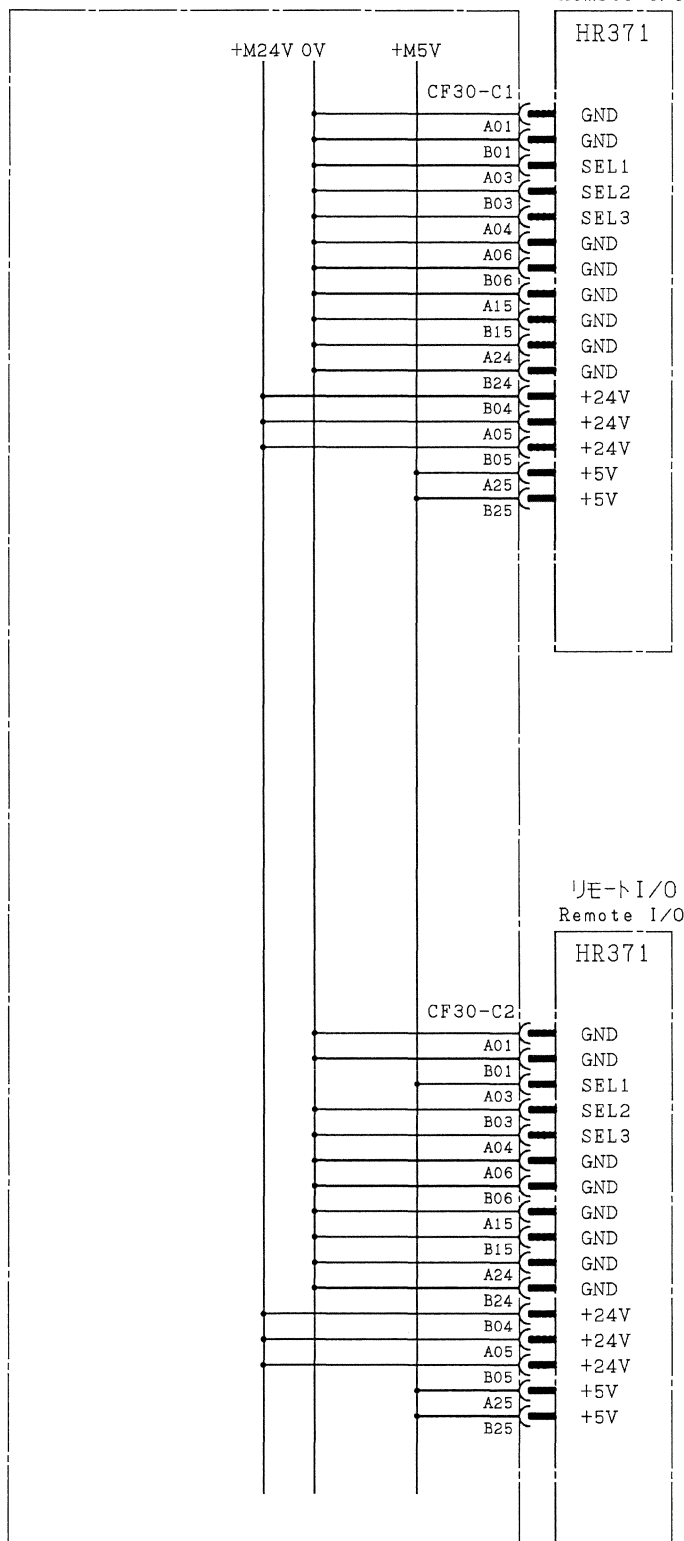
4628

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4632

IF基板
IF boardリモートI/O
Remote I/OリモートI/O CF10コネクタ第1局選択
Select the I/O card No.1
in CF10 connectorリモートI/O
Remote I/O

HR371

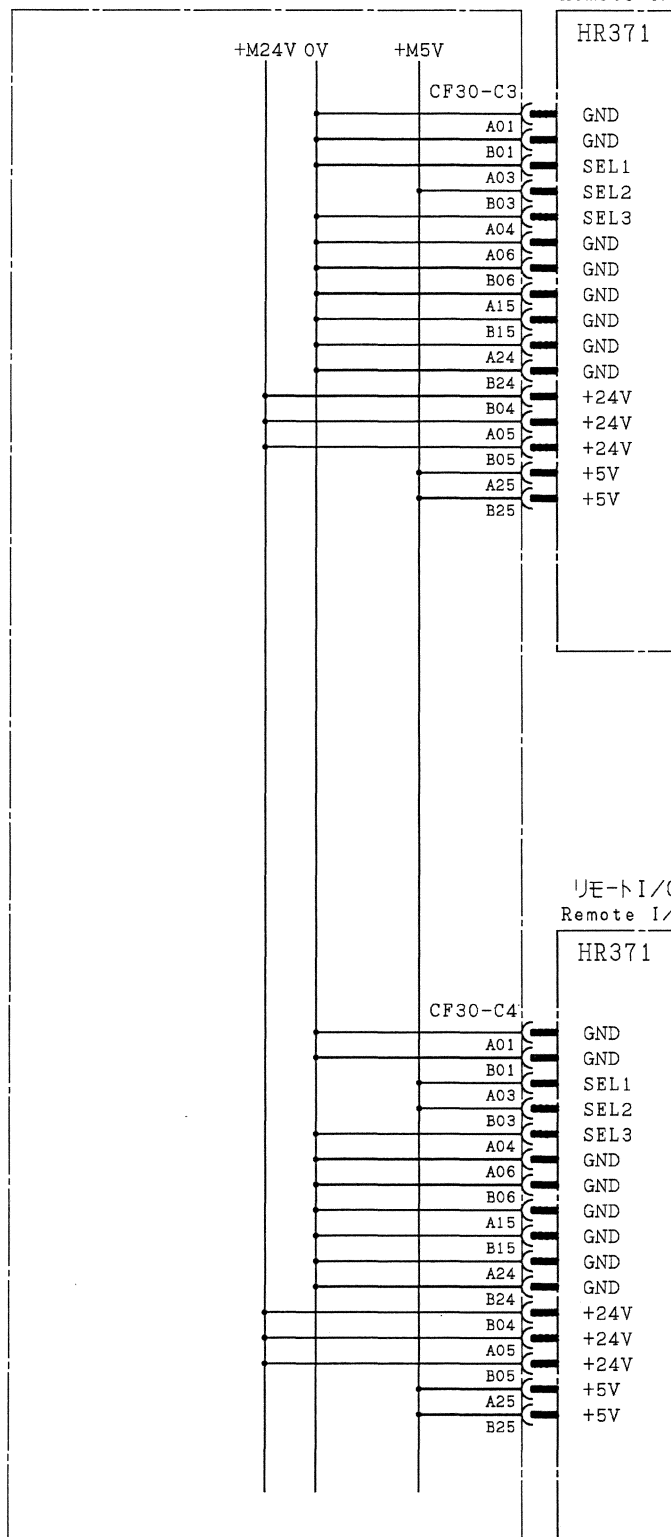
CF30-C2

GND
GND
SEL1
SEL2
SEL3
GND
GND
GND
GND
GND
+24V
+24V
+24V
+5V
+5VリモートI/O CF10コネクタ第2局選択
Select the I/O card No.2
in CF10 connector

4701
4702
4703
4704
4705
4706
4707
4708
4709
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IF基板
IF board

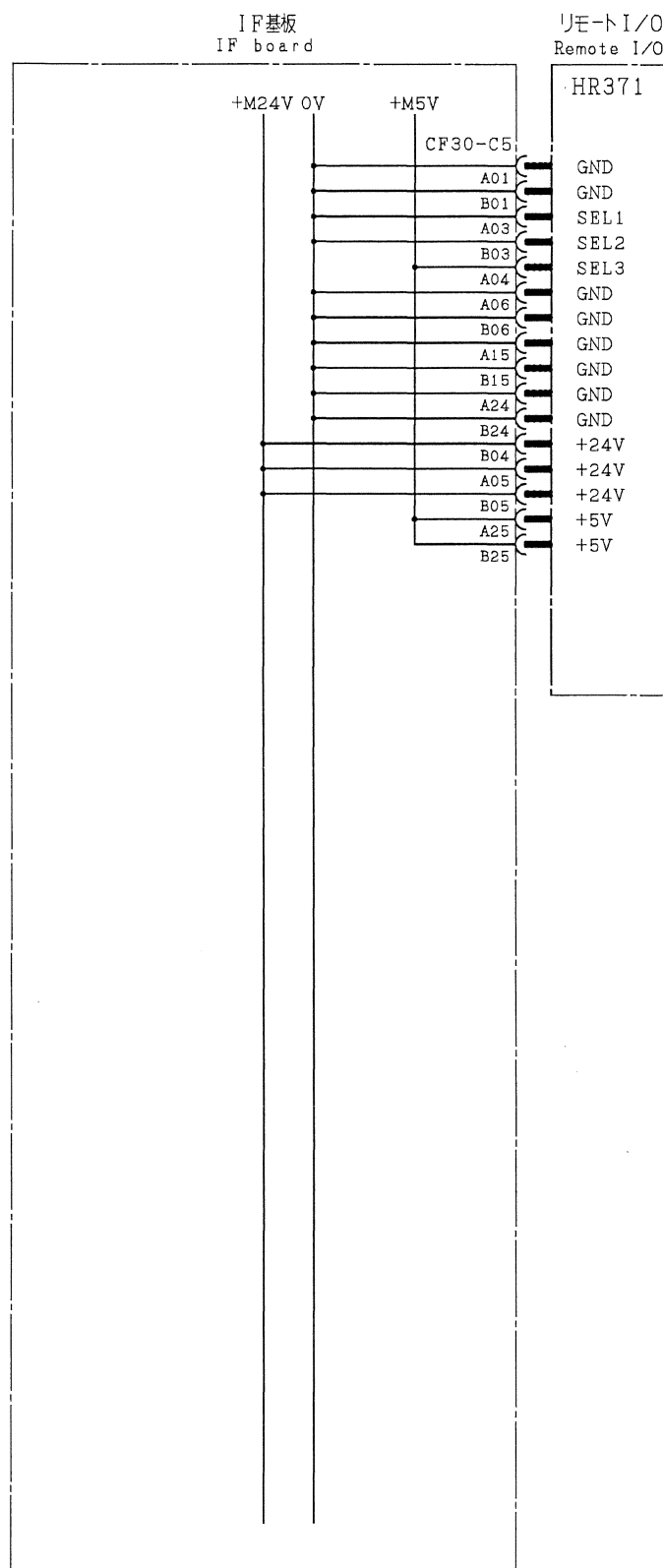
リモートI/O
Remote I/O



リモートI/O CF10コネクタ第3局選択
Select the I/O card No. 3
in CF10 connector

リモートI/O CF10コネクタ第4局選択
Select the I/O card No. 4
in CF10 connector

4801
4802
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リモートI/O CF10コネクタ第5局選択
(L71620U83T)
Select the I/O card No. 5
in CF10 connector
(L71620U83T)

4901

4902

4903

4904

4905

4906

4907

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4909

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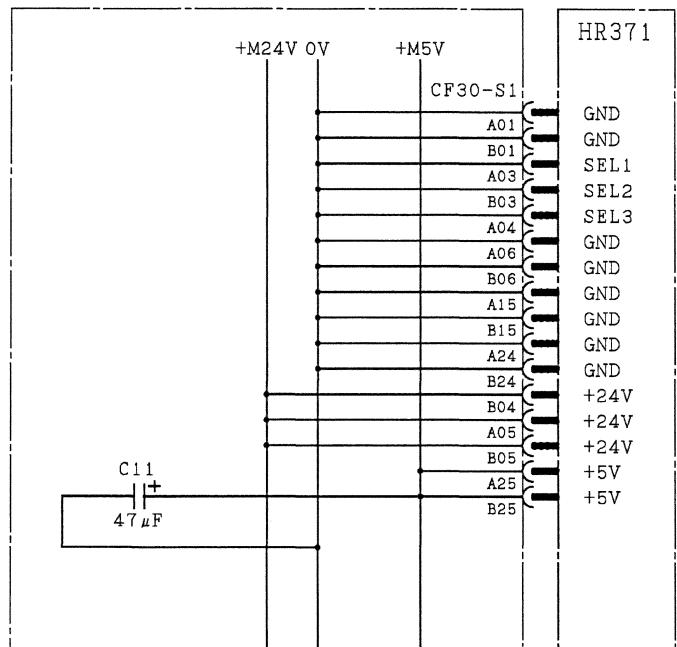
4930

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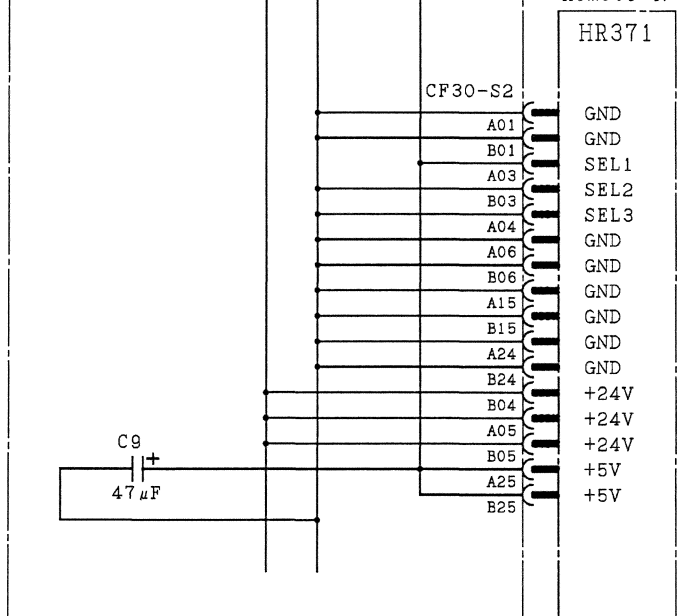
シートキー基板
Sheet key board

リモートI/O
Remote I/O

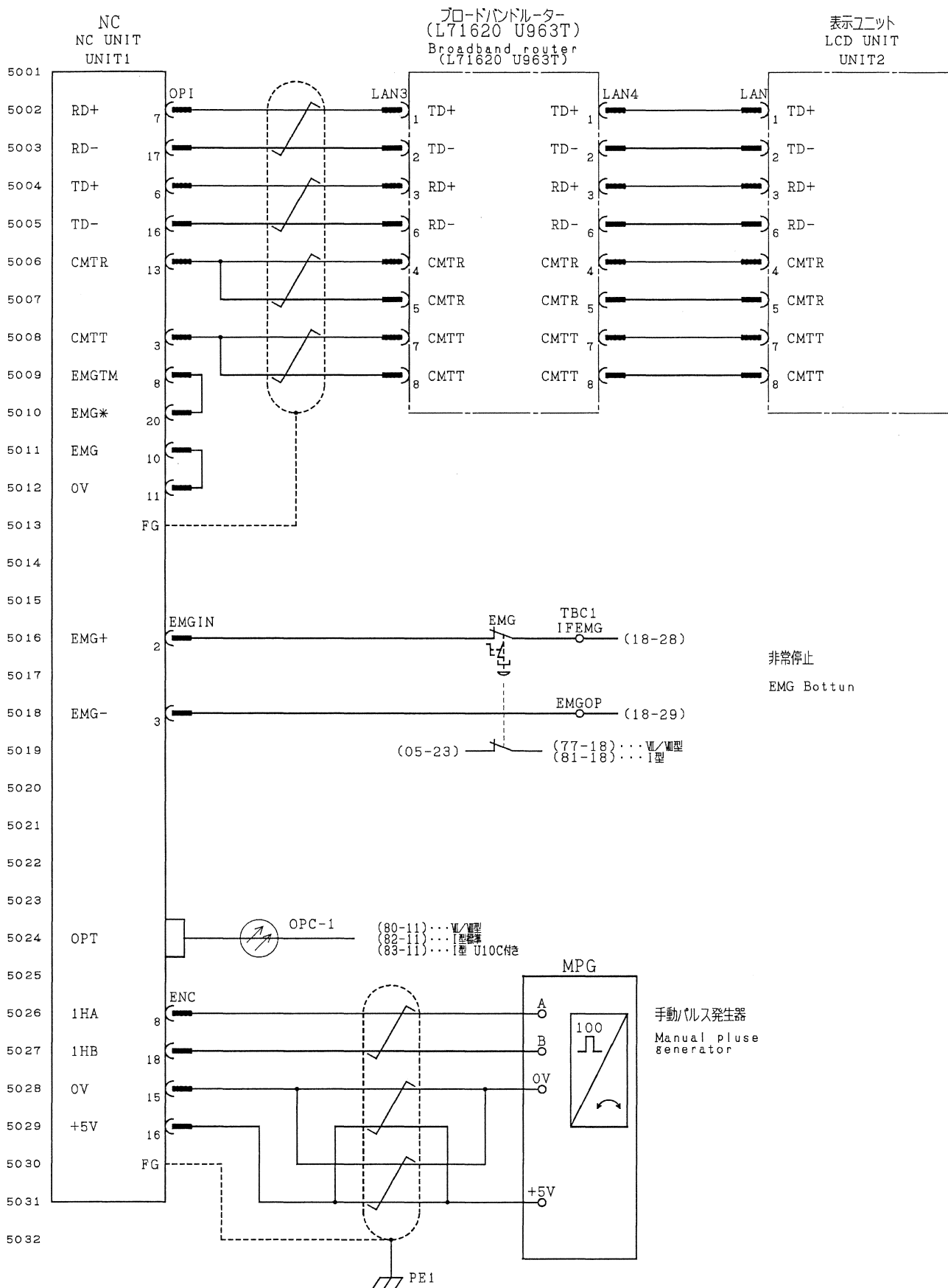


リモートI/O CF11コネクタ第1局選択
Select the I/O card No.1
in CF11 connector

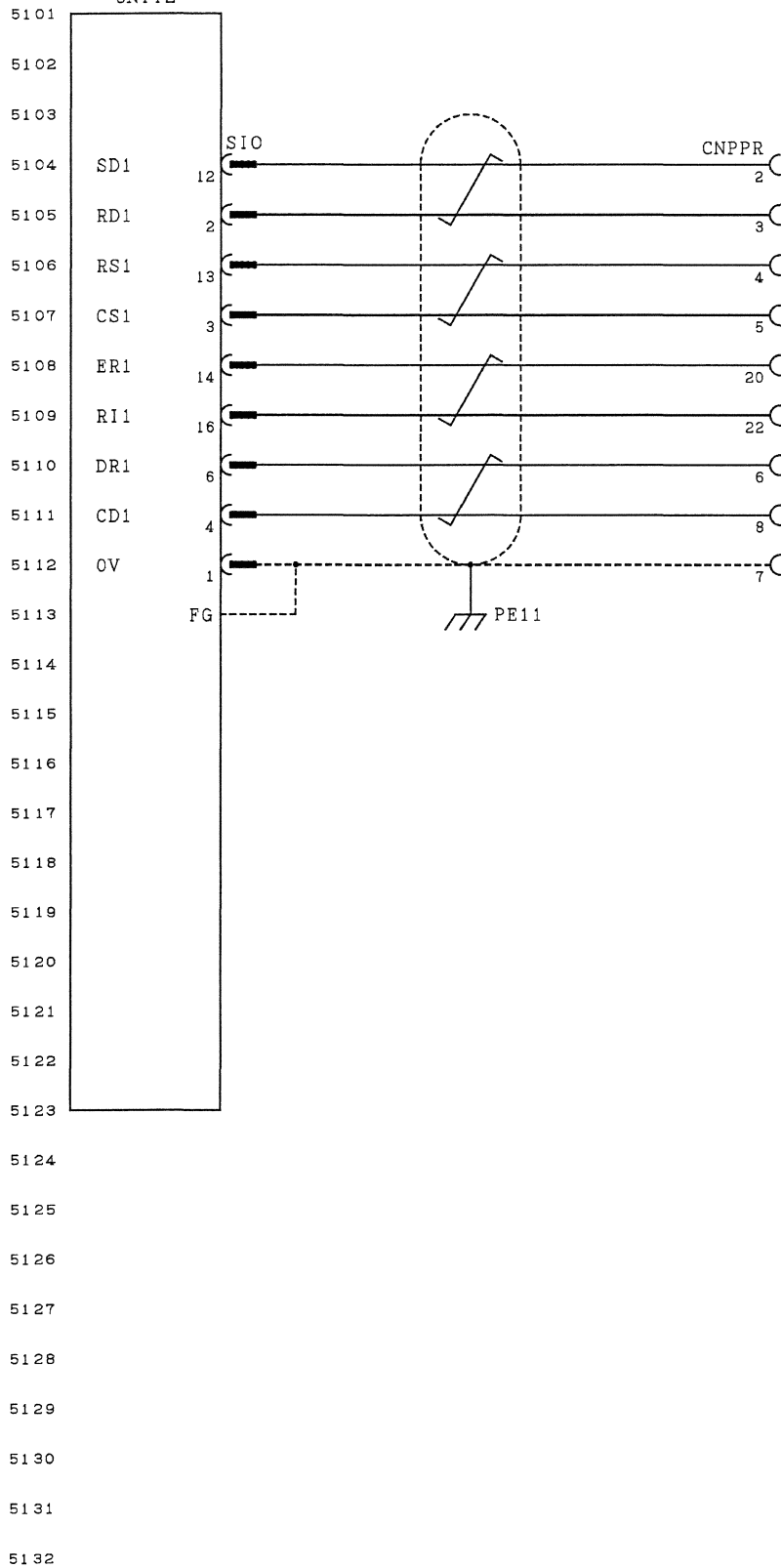
リモートI/O
Remote I/O



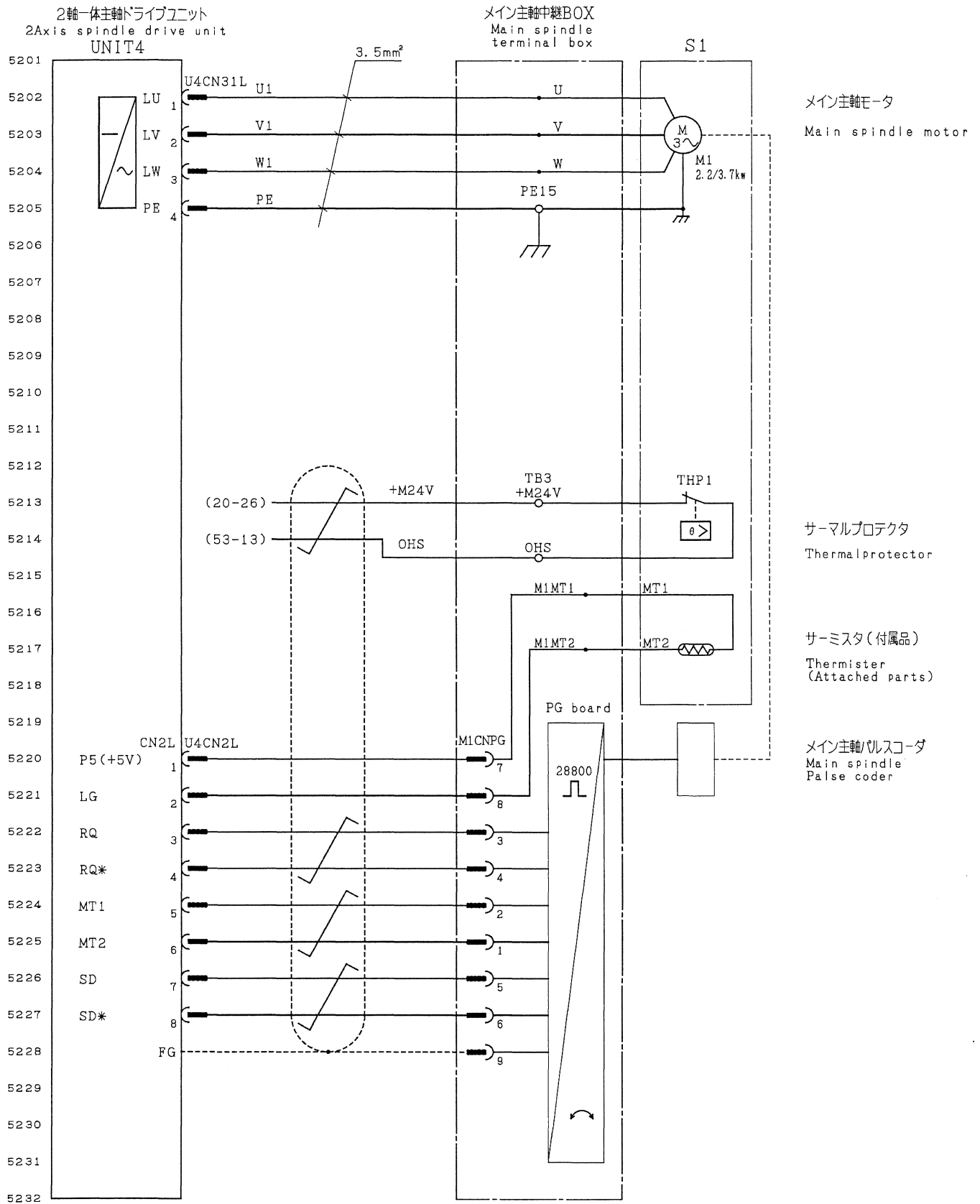
リモートI/O CF11コネクタ第2局選択
Select the I/O card No.2
in CF11 connector



表示ユニット
LCD UNIT
UNIT2



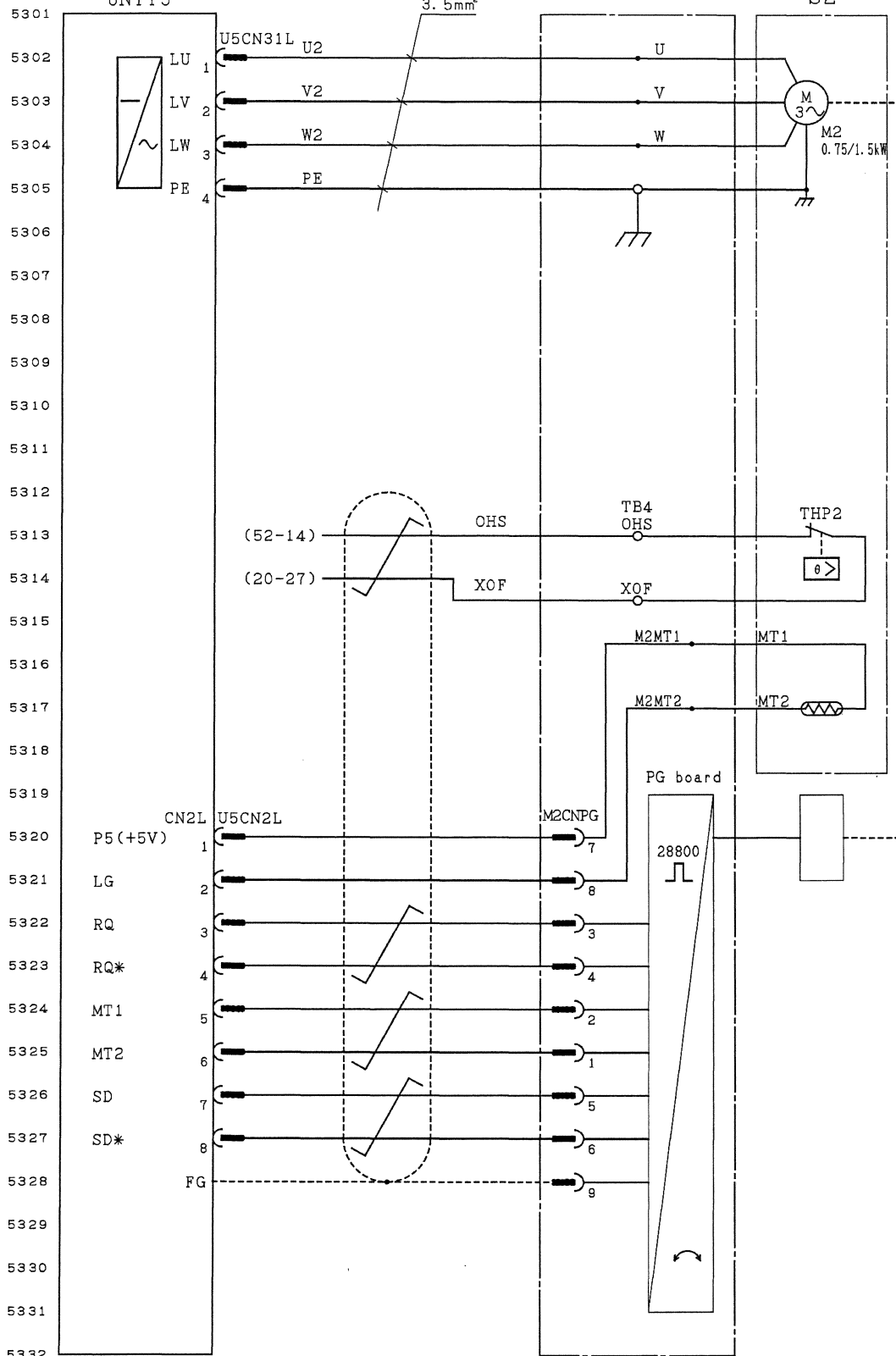
RS232C コネクタ(25P)
RS232C connector(25P)



1軸サーボドライブユニット
1Axis servo drive unit
UNIT5

背面主軸中継BOX
Back spindle
terminal box

S2



背面主軸モータ
(L71620 U40B)
Back spindle motor
(L71620 U40B)

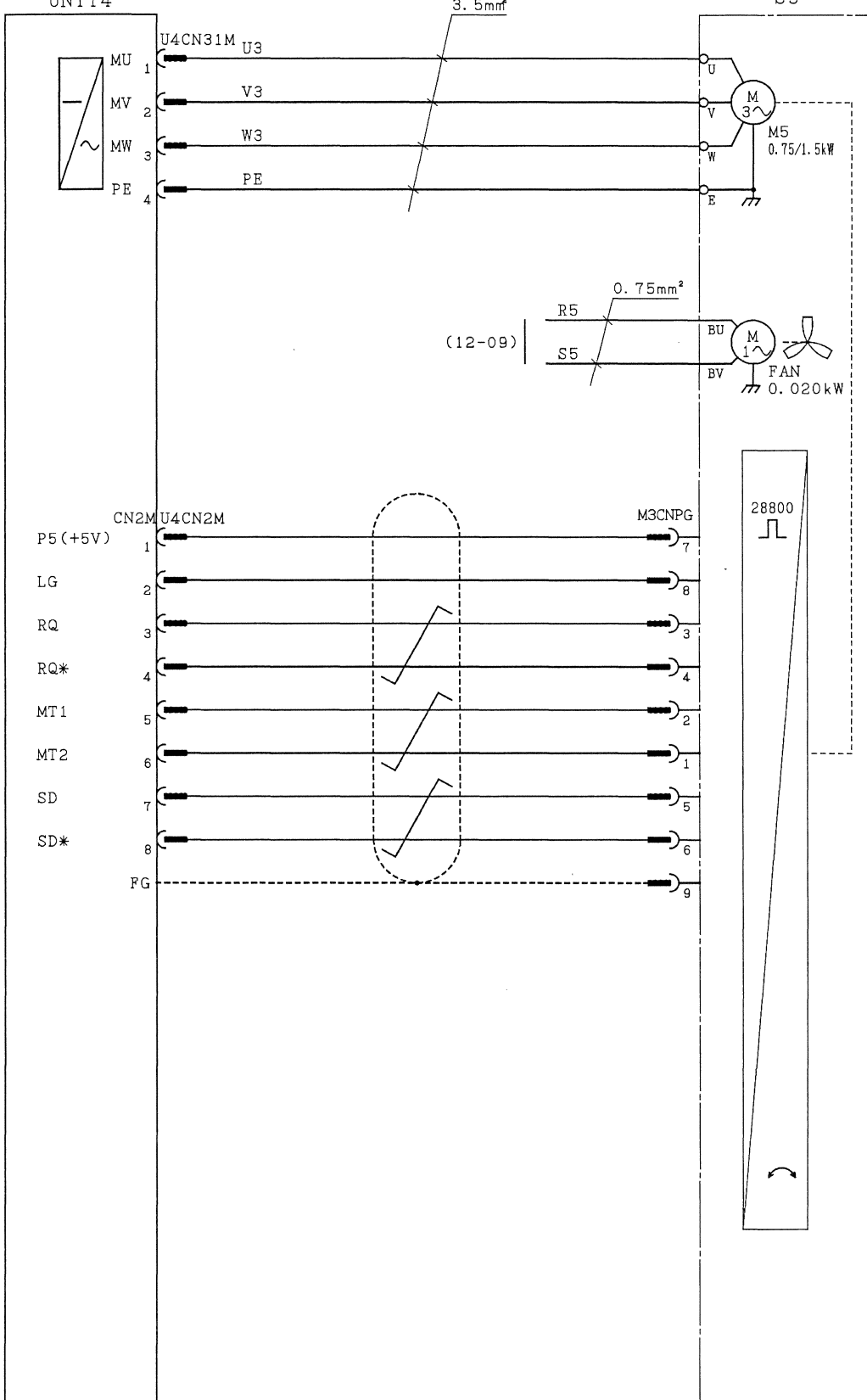
サーマルプロテクタ
Thermal protector

サーミスタ (付属品)
Thermister
(Attached parts)

背面主軸パルスコーダ
Back spindle
Pulse coder

2軸主軸ドライブユニット
2Axis spindle drive unit
UNIT4

5401
5402
5403
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5409
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G/B主軸モータ
(L71620 U40Z)
Guide bushing motor
(L71620 U40Z)

3軸一体サーボドライブユニット
3Axis servo drive unit

UNIT6

5501

5502

5503

5504

5505

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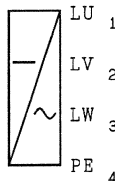
5528

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U6CN31L

1.25mm²

CNX1

MX1



MX1
0.75kW

X1軸モータ
X1 Axis motor

U6CN2L

P5(+5V)

LG

BAT

MR

MRR

MD

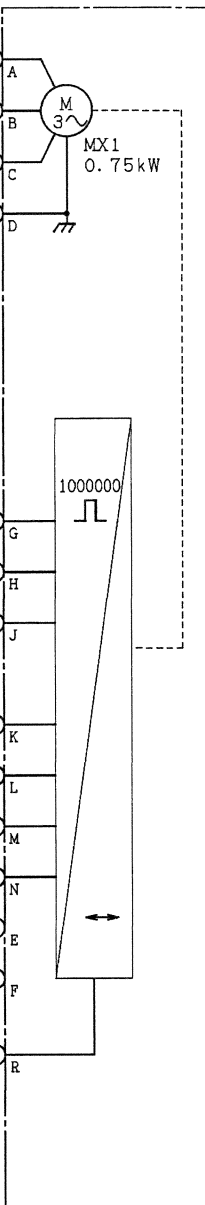
MDR

(77-19) ... V/V型
(81-19) ... I型

(05-22)

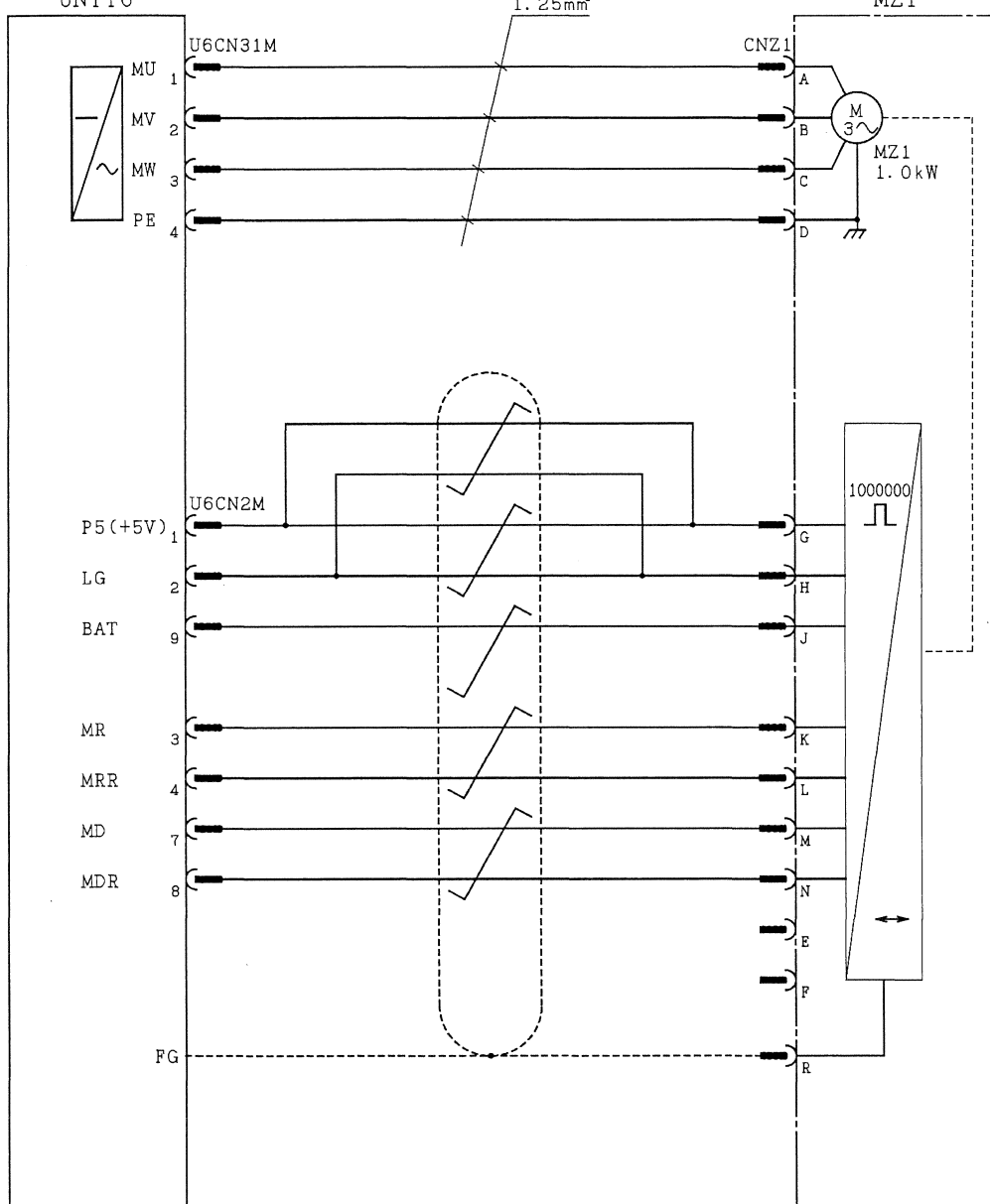
FG

1000000



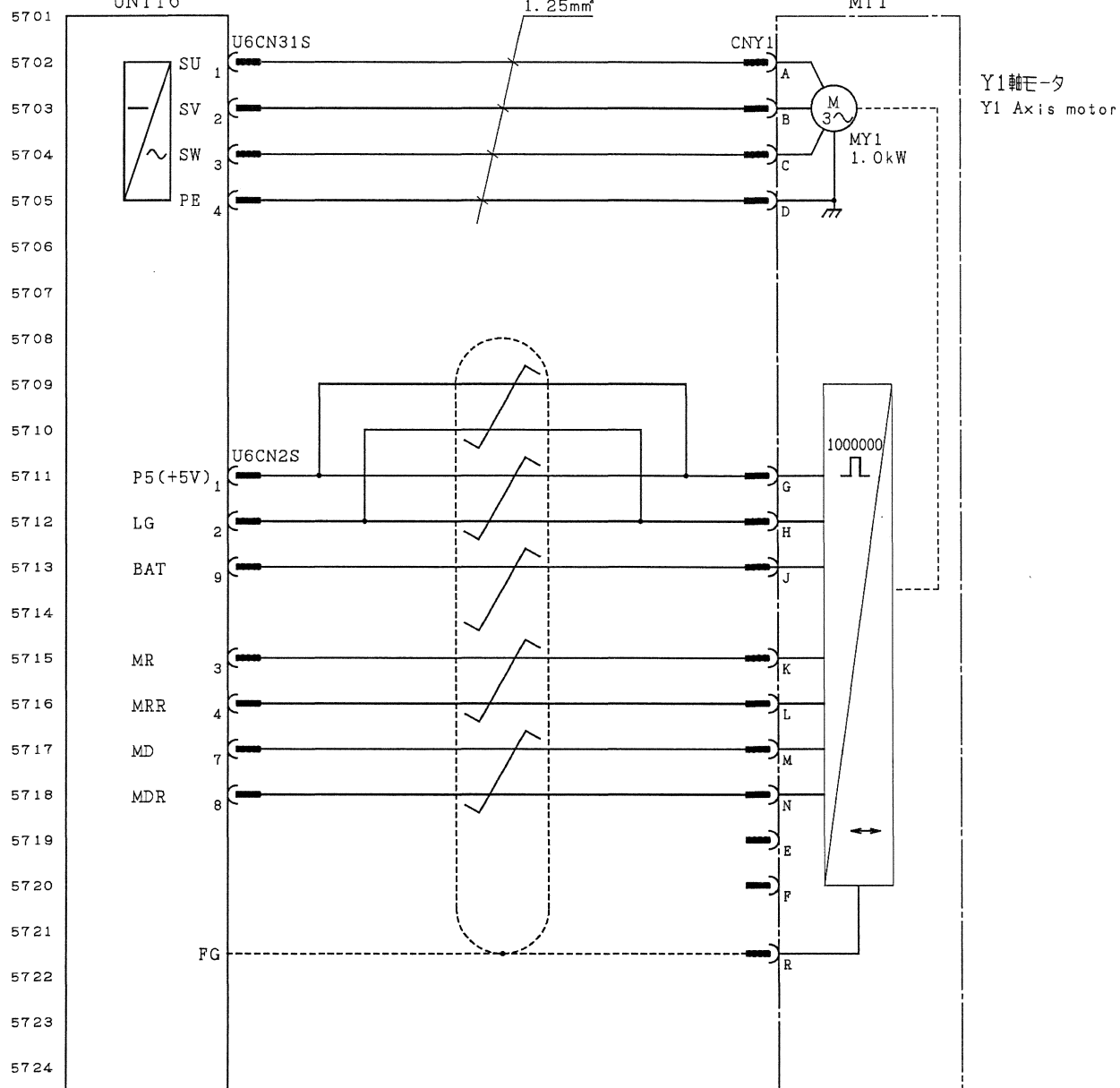
3軸一体サーボドライブユニット
3Axis servo drive unit
UNIT6

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Z1軸モータ
Z1 Axis motor

3軸一体サーボドライブユニット
3Axis servo drive unit
UNIT6



5725

5726

5727

5728

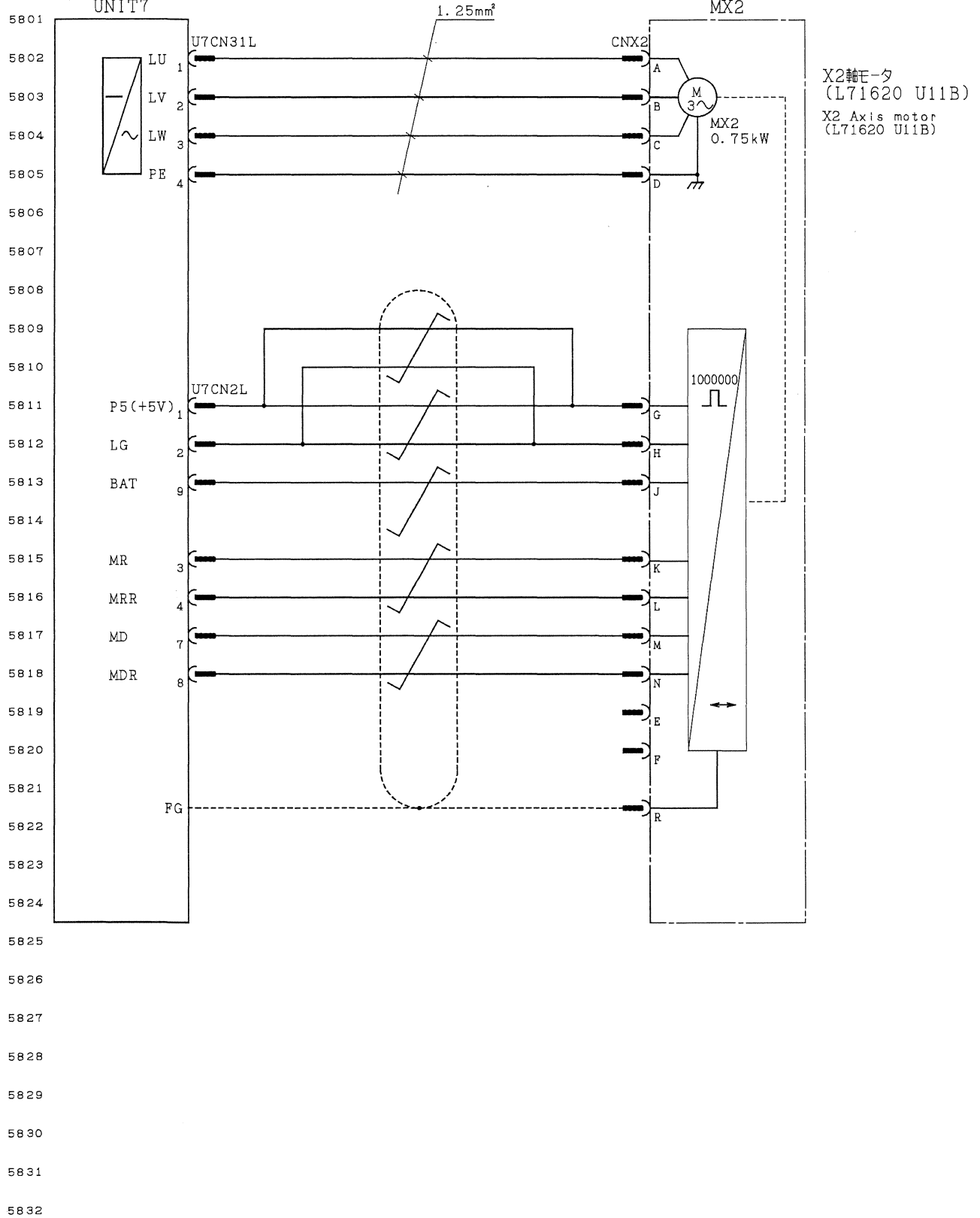
5729

5730

5731

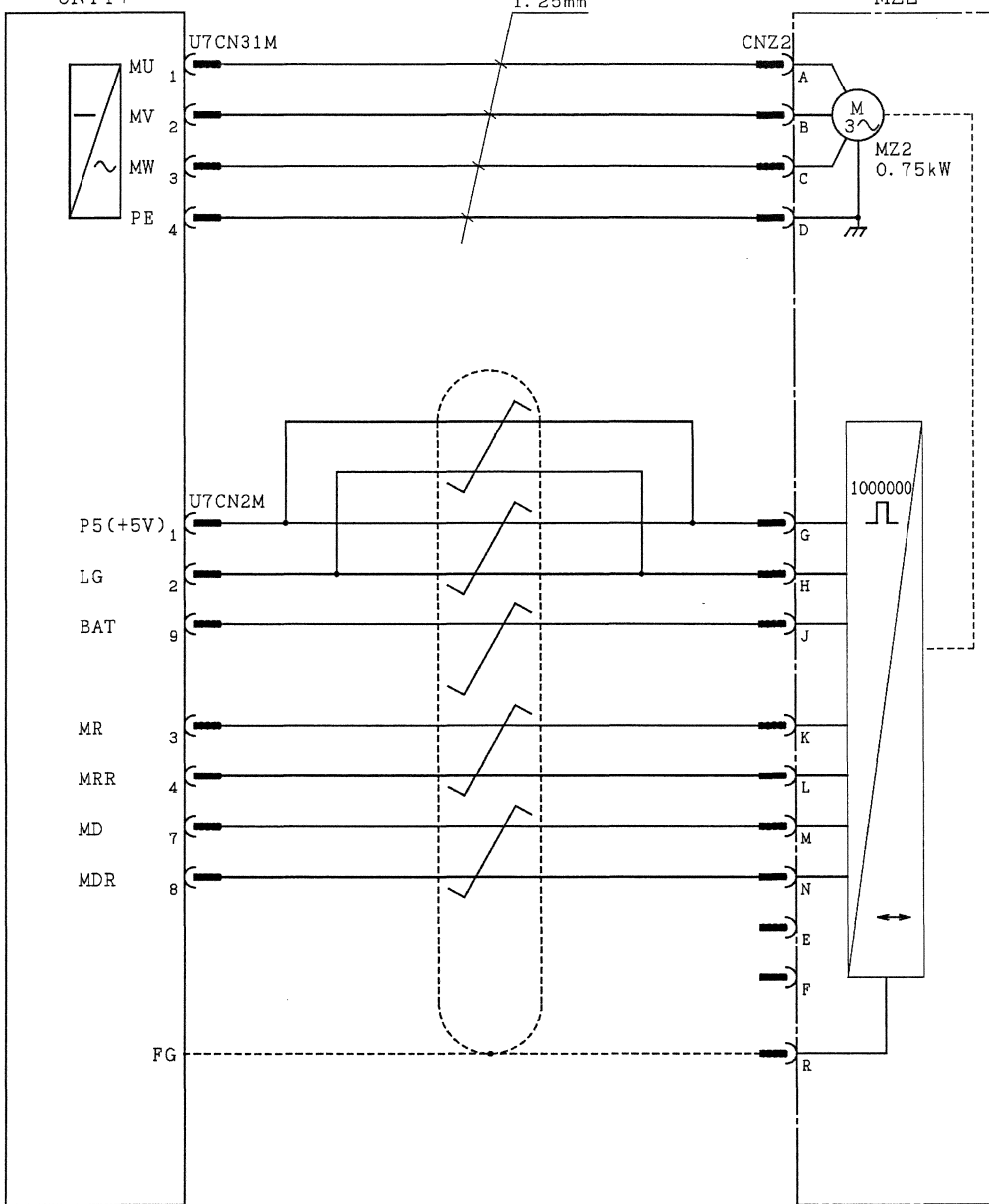
5732

2軸一体サーボドライブユニット
2Axis servo drive unit
UNIT7



2軸一体サーボドライブユニット
2Axis servo drive unit
UNIT7

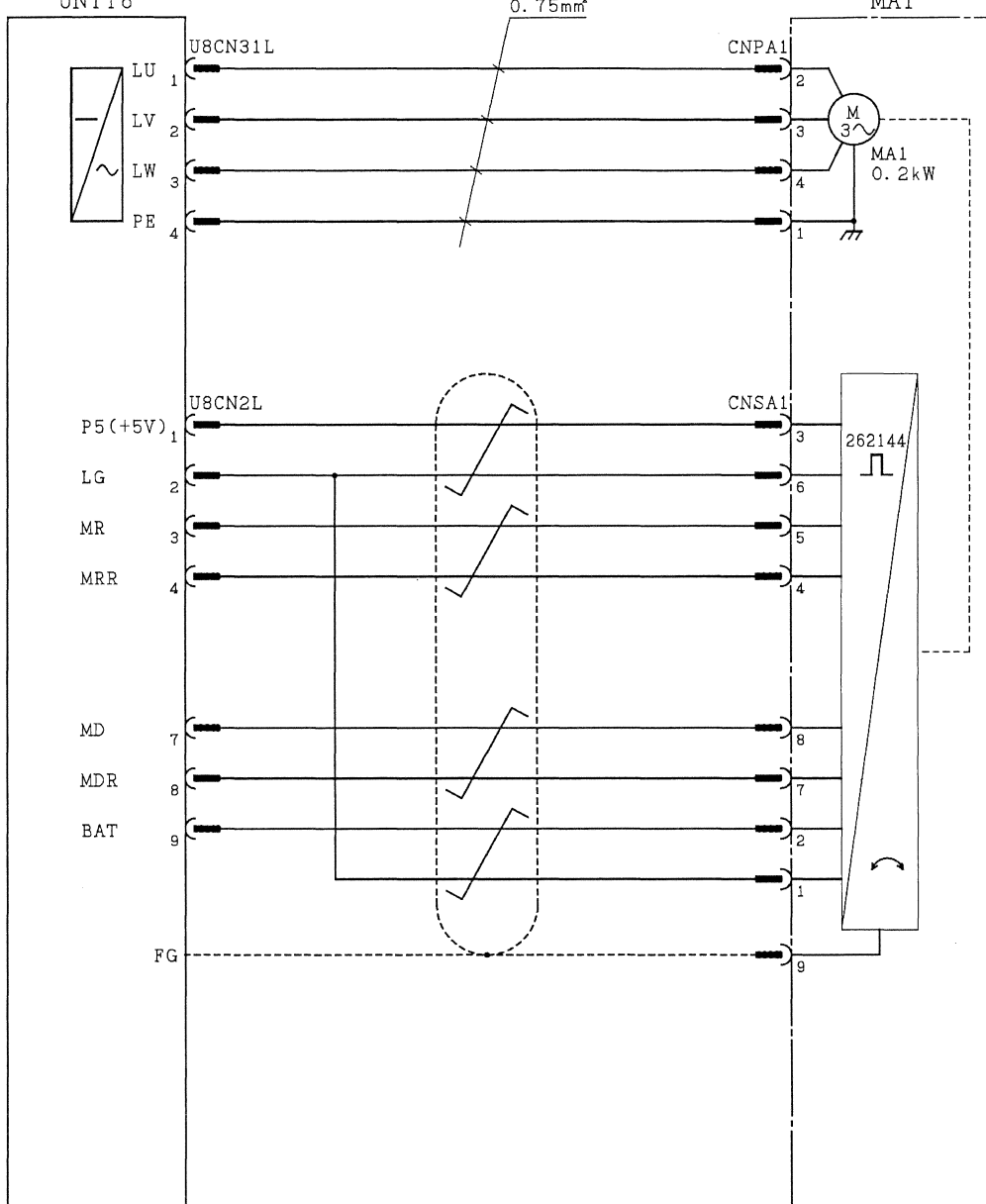
5901
5902
5903
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5905
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5932



Z2軸モータ
(L71620 U11B)
Z2 Axis motor
(L71620 U11B)

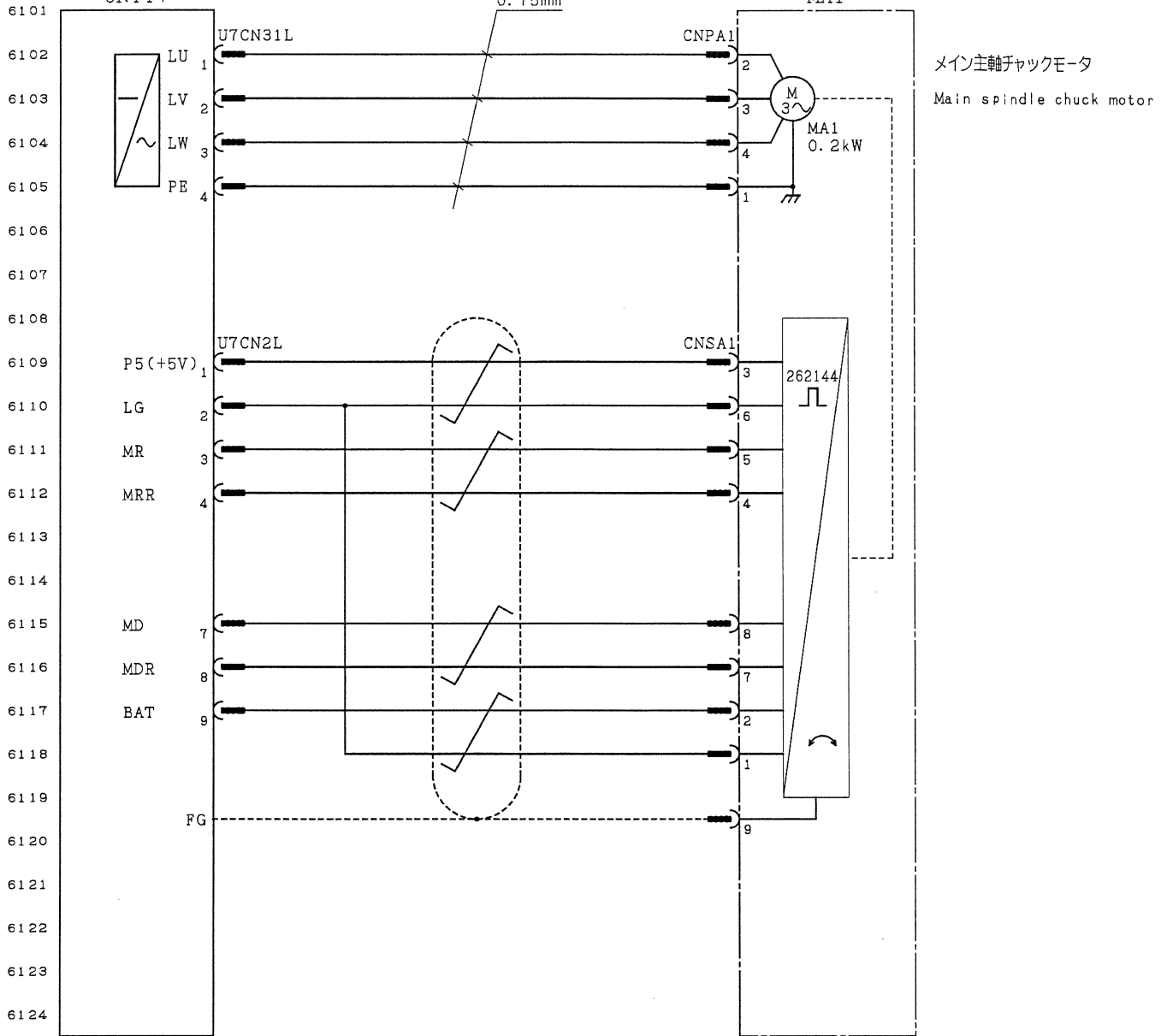
3軸一体サーボドライブユニット
3Axis servo drive unit
UNIT8

6001
6002
6003
6004
6005
6006
6007
6008
6009
6010
6011
6012
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6032



メイン主軸チャックモータ
Main spindle chuck motor

2～3軸一体サーボドライブユニット
2～3Axis servo drive unit
UNIT7

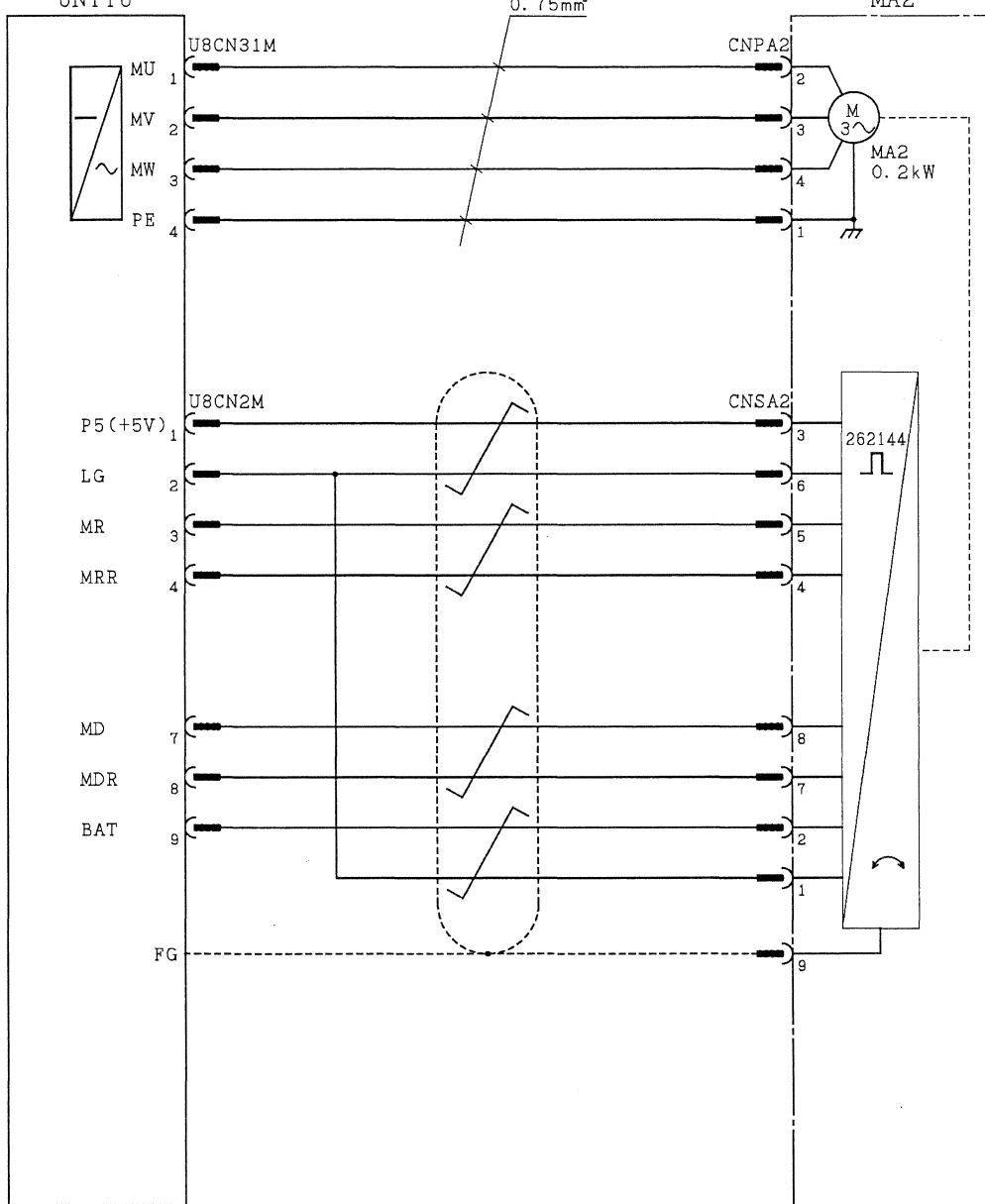


U32B	U31J	サーボドライブユニット Servo drive unit (UNIT7)
○	X	2軸 2Axis
○	○	3軸 3Axis

○・・・付き
With
X・・・無し
Without

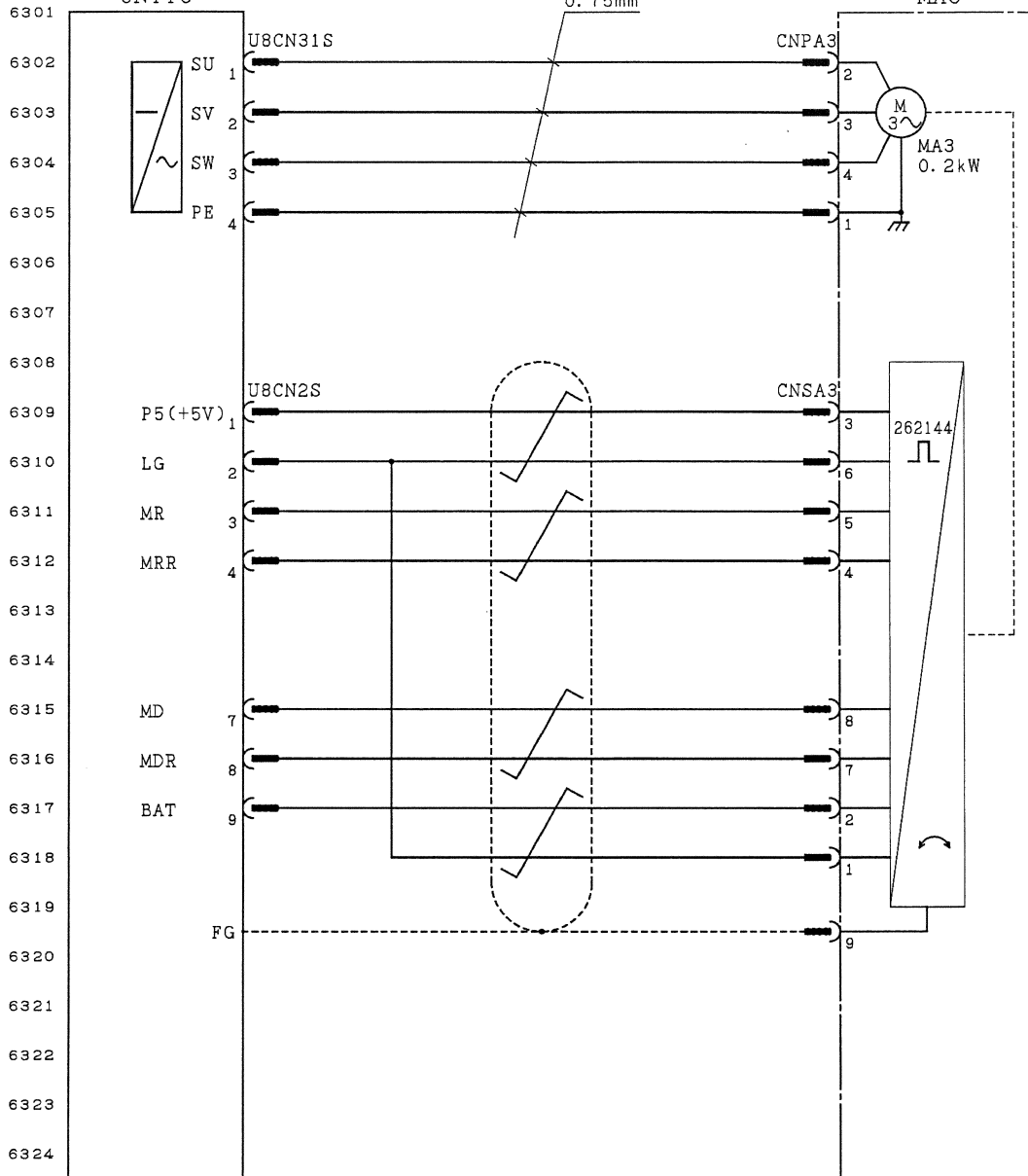
3軸一体サーボドライブユニット
3Axis servo drive unit
UNIT8

6201
6202
6203
6204
6205
6206
6207
6208
6209
6210
6211
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6214
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6231
6232



背面主軸チャックモータ
(L71620 U40B)
Back spindle chuck motor
(L71620 U40B)

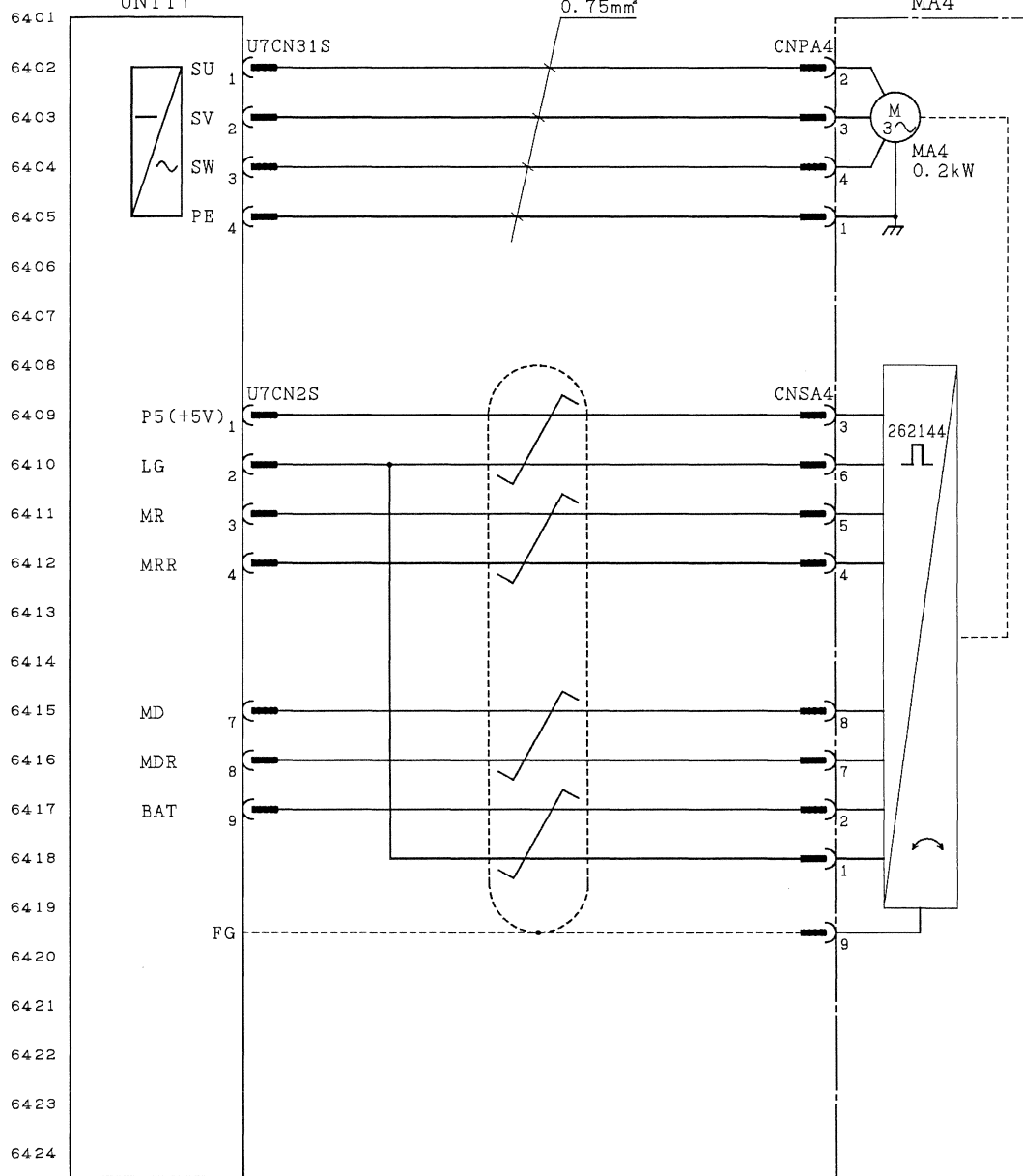
3軸一体サーボドライブユニット
3Axis servo drive unit
UNIT8



ノックアウトモータ
(L71620 U40B)
Knock out motor
(L71620 U40B)

6301
6302
6303
6304
6305
6306
6307
6308
6309
6310
6311
6312
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6314
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6325
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6327
6328
6329
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6331
6332

3軸一体サーボドライブユニット
3Axis servo drive unit
UNIT7



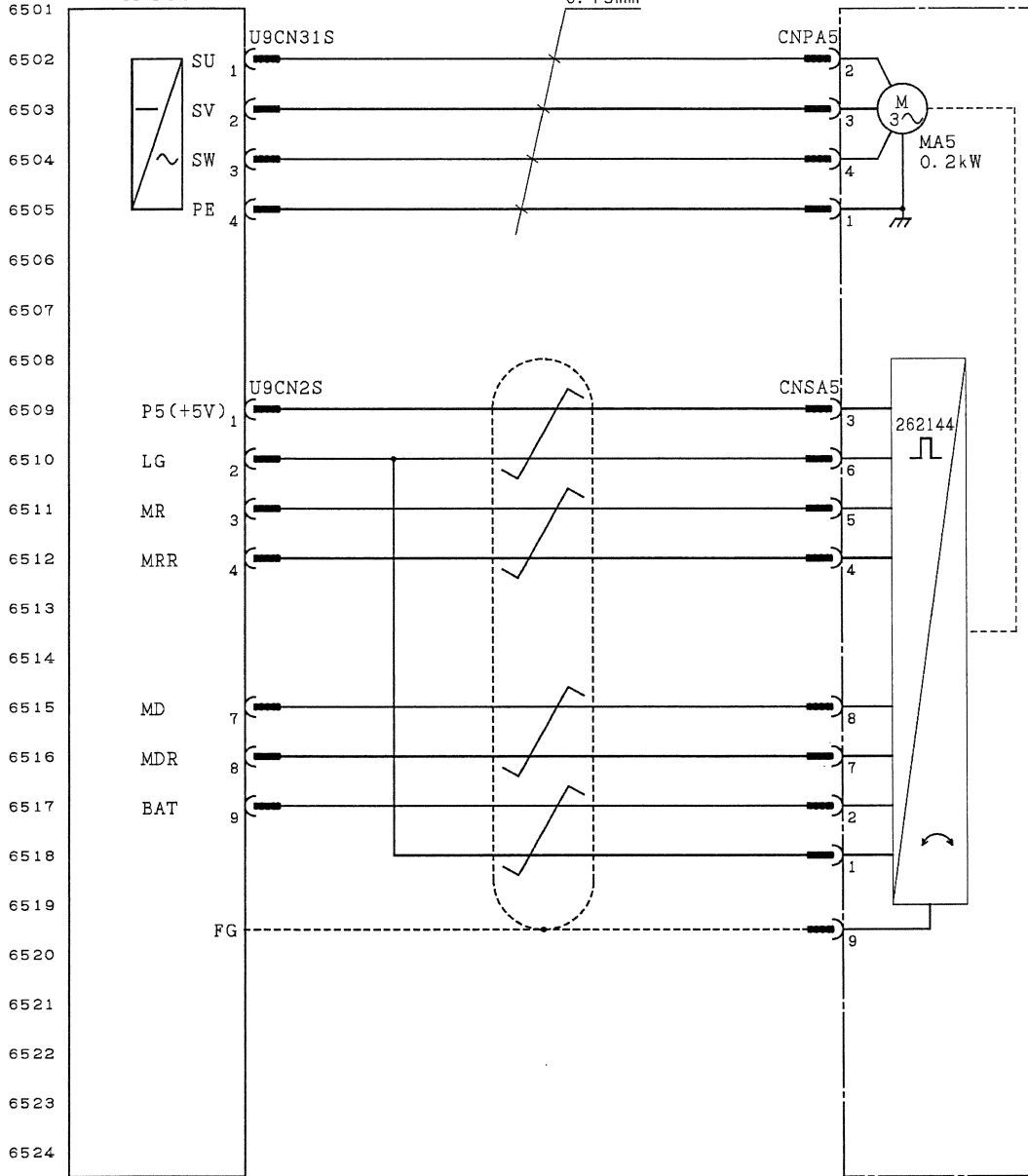
ワークセパレータモータ
(L71620 U31J)
Work separator motor
(L71620 U31J)

2軸一体サーボドライブユニット
2Axis servo drive unit

UNIT9

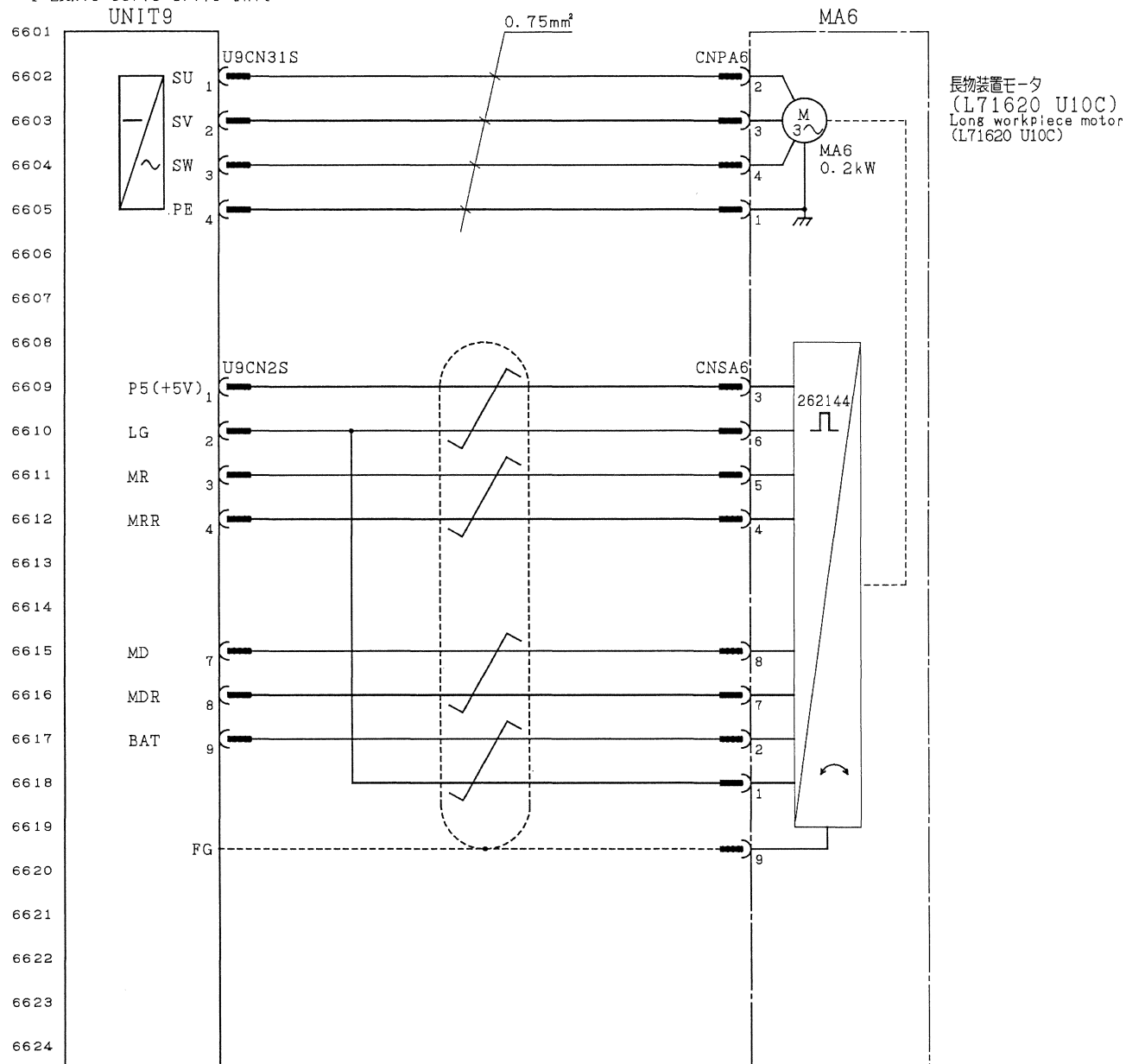
0.75mm²

MA5



長物チャックモータ
(L71620 U50Z)
Long workpiece chuck motor
(L71620 U50Z)

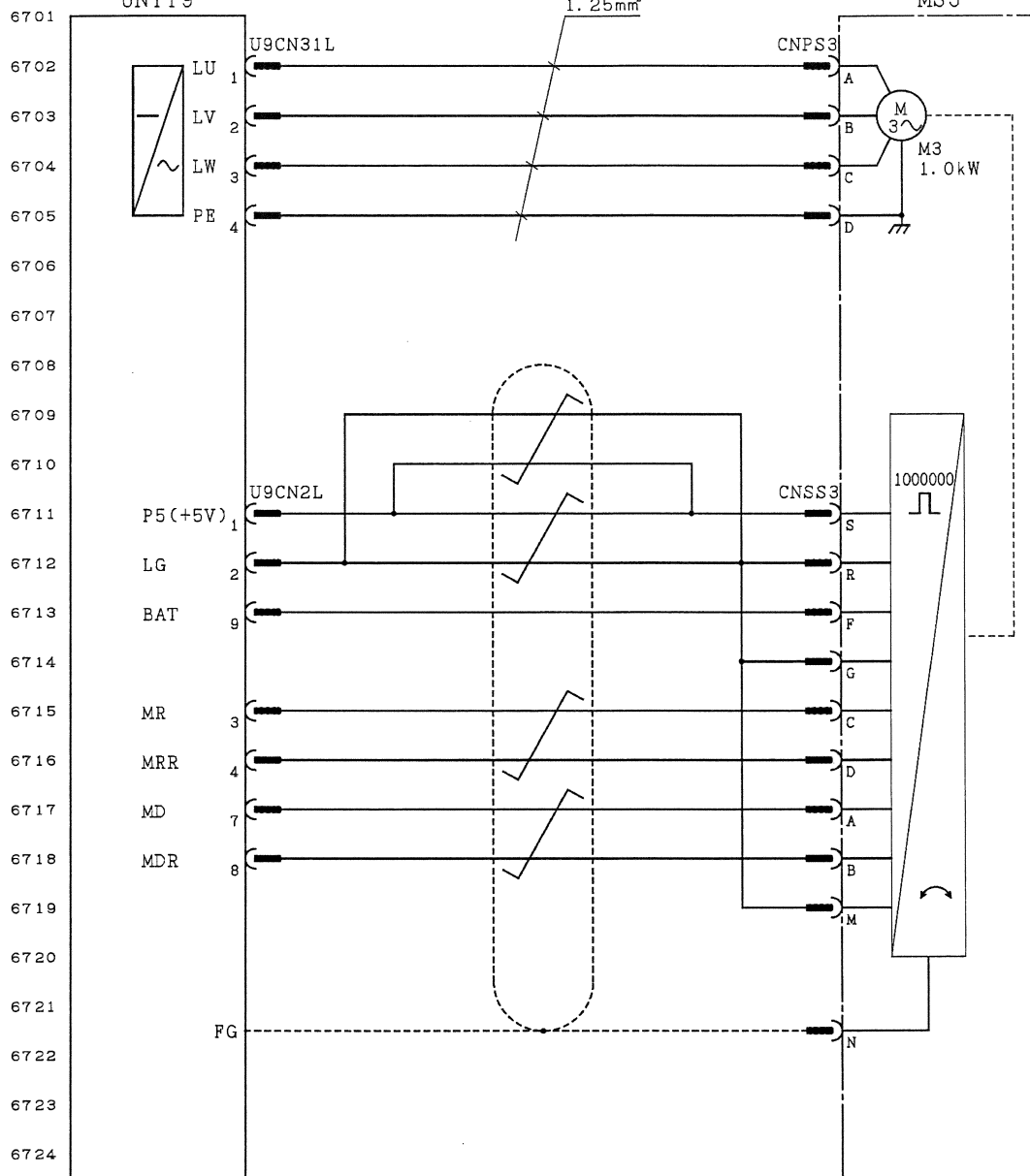
1～2軸一体サーボドライブユニット
1~2Axis servo drive unit
UNIT9



6625			
6626	U10C	U50Z	サーボドライブユニット Servo drive unit (UNIT9)
6627	○	X	1軸 1Axis
6628	○	○	2軸 2Axis
6629	○・・・付き With X・・・無し Without		

1～3軸一体サーボドライブユニット
1～3Axis servo drive unit

UNIT9

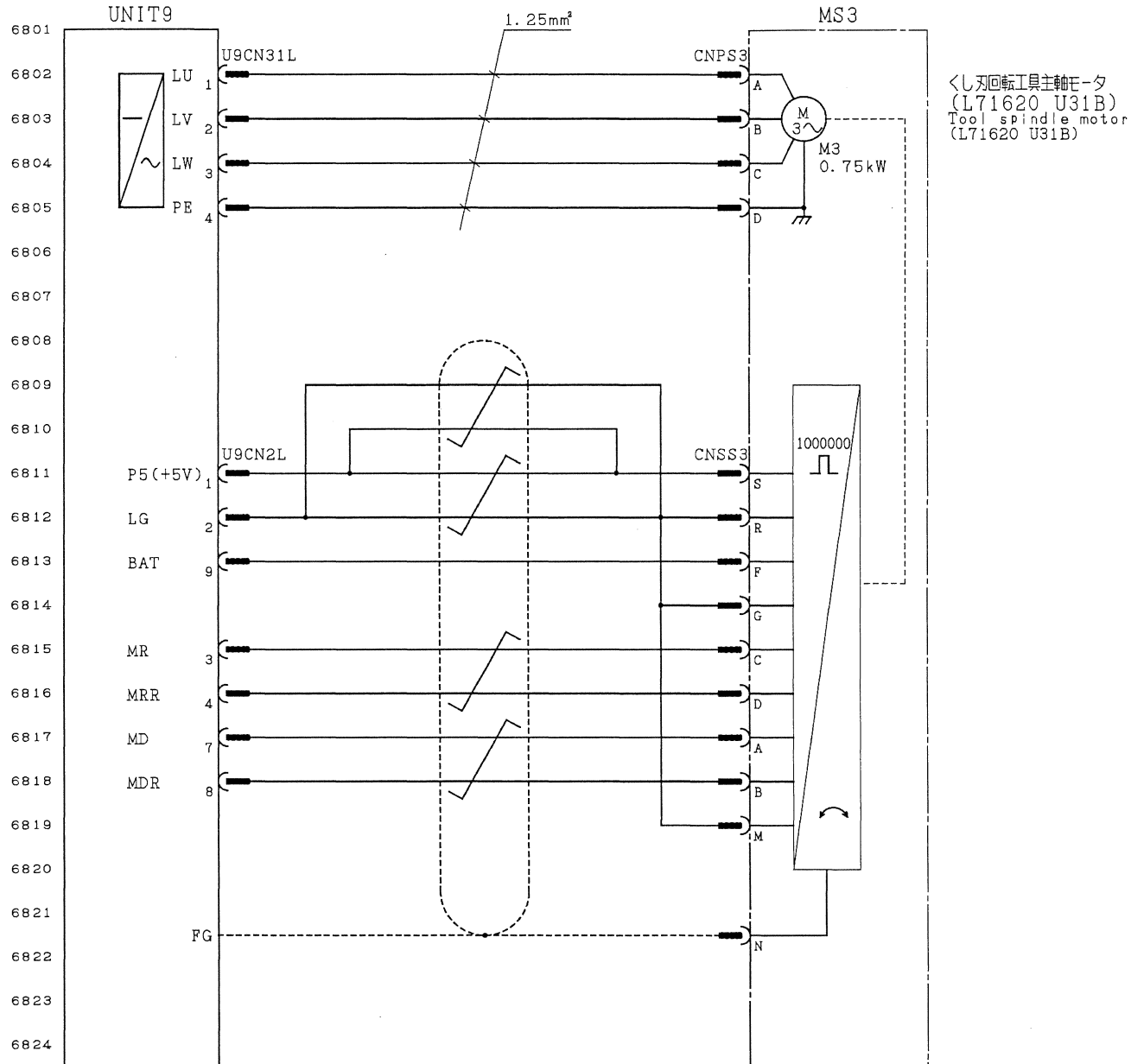


くし刃回転工具主軸モータ
(L71620 U30B)
Tool spindle motor
(L71620 U30B)

U30B	U121B	U151B	サーボドライブユニット Servo drive unit (UNIT9)
○	X	X	1軸 1Axis
○	○	X	2軸 2Axis
○	X	○	3軸 3Axis
○	○	○	3軸 3Axis

○・・・付き
With
X・・・無し
Without

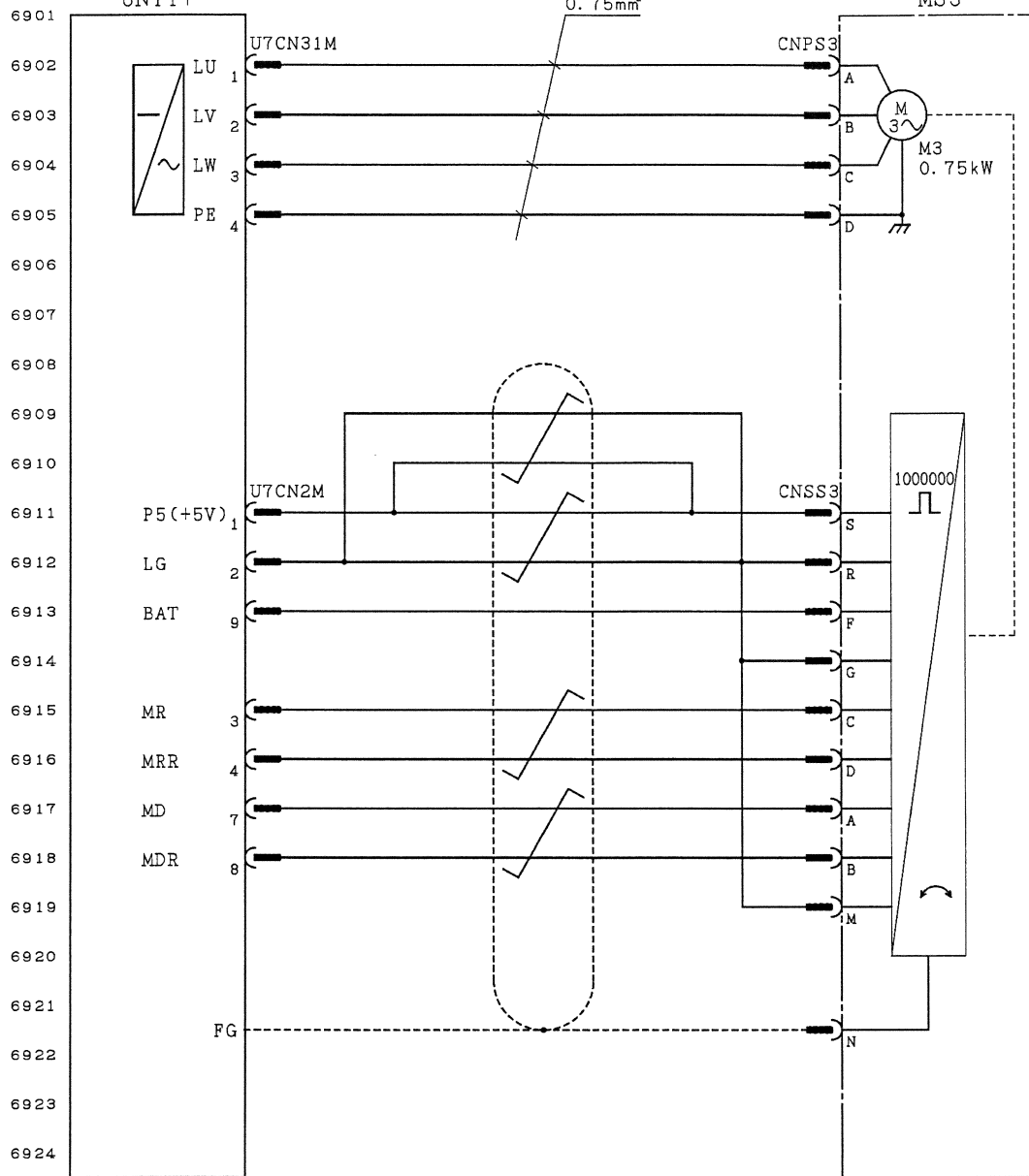
1〜3軸一体サーボドライブユニット
1~3Axis servo drive unit
UNIT9



U31B	U121B	U151B	サーボドライブユニット Servo drive unit (UNIT9)
○	X	X	1軸 1Axis
○	○	X	2軸 2Axis
○	X	○	3軸 3Axis
○	○	○	3軸 3Axis

○・・・付き
With
X・・・無し
Without

2～3軸一体サーボドライブユニット
2~3Axis servo drive unit
UNIT7

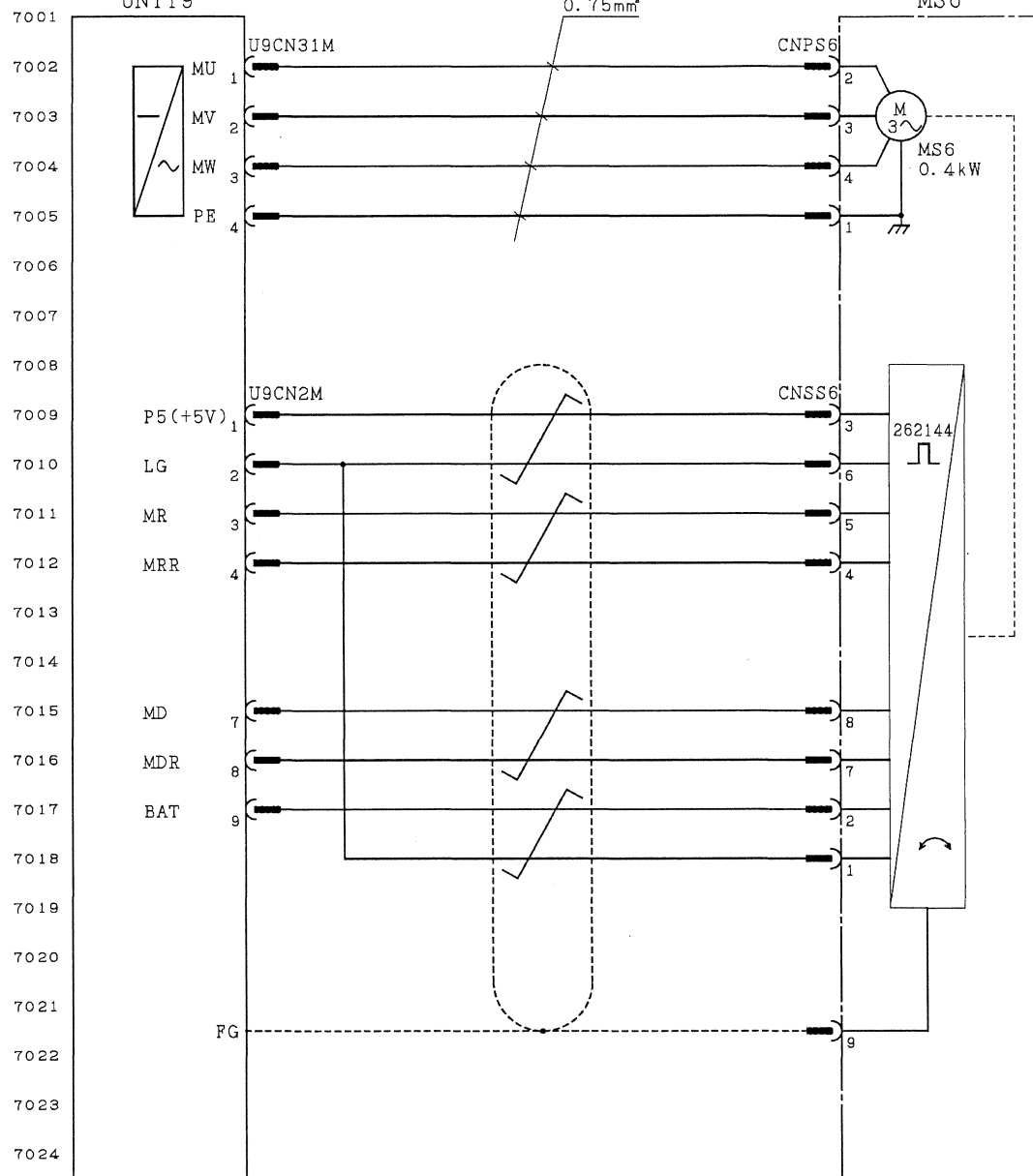


くし刃回転工具主軸モータ
(L71620 U32B)
Tool spindle motor
(L71620 U32B)

U32B	U31J	サーボドライブユニット Servo drive unit (UNIT7)
○	X	2軸 2Axis
○	○	3軸 3Axis

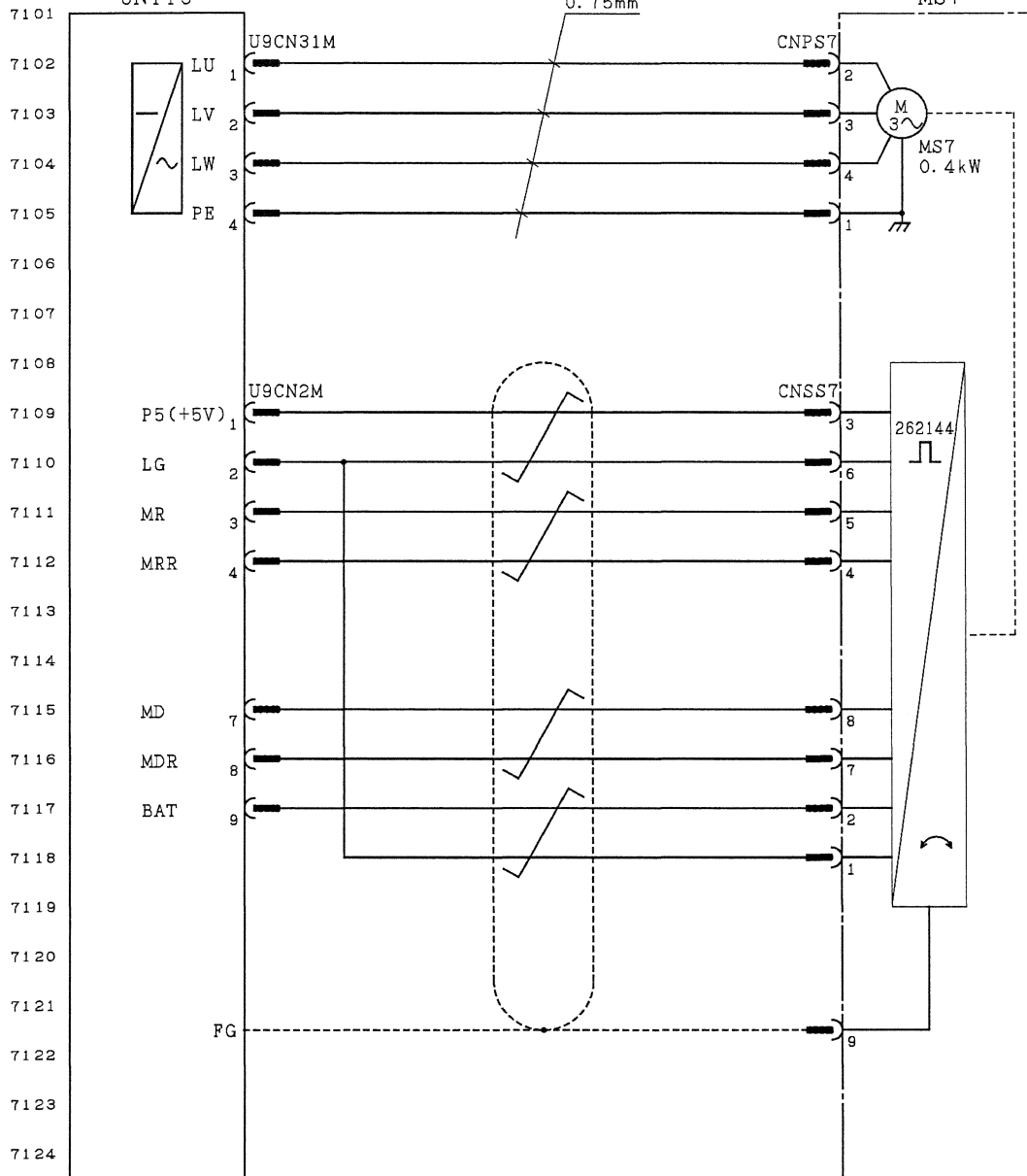
○・・・付き
With
X・・・無し
Without

2軸一体サーボドライブユニット
2Axis servo drive unit
UNIT9



正面回転工具主軸モータ
(L71620 U121B)
Tool spindle motor
(L71620 U121B)

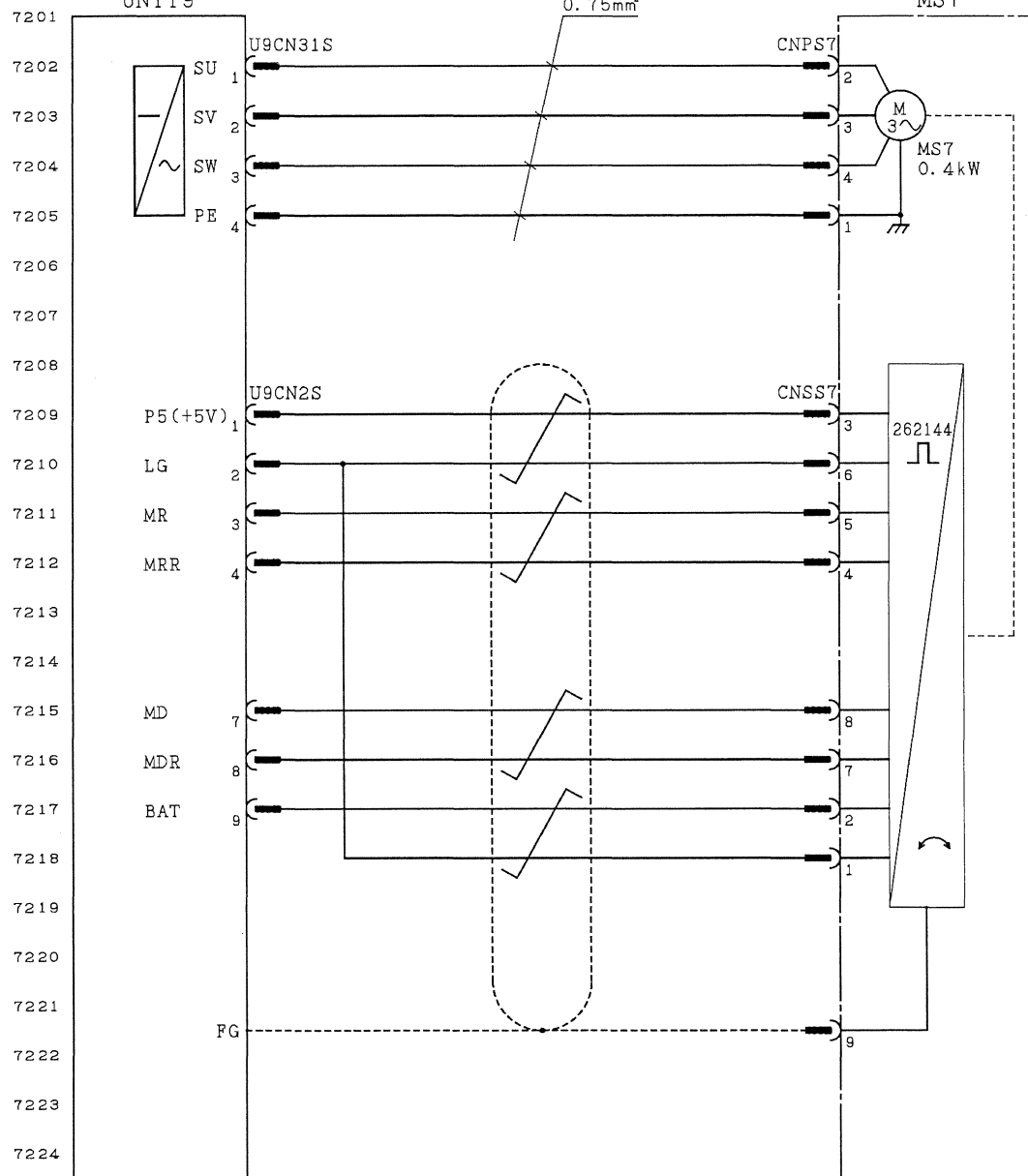
2軸一体サーボドライブユニット
2Axis servo drive unit
UNIT9



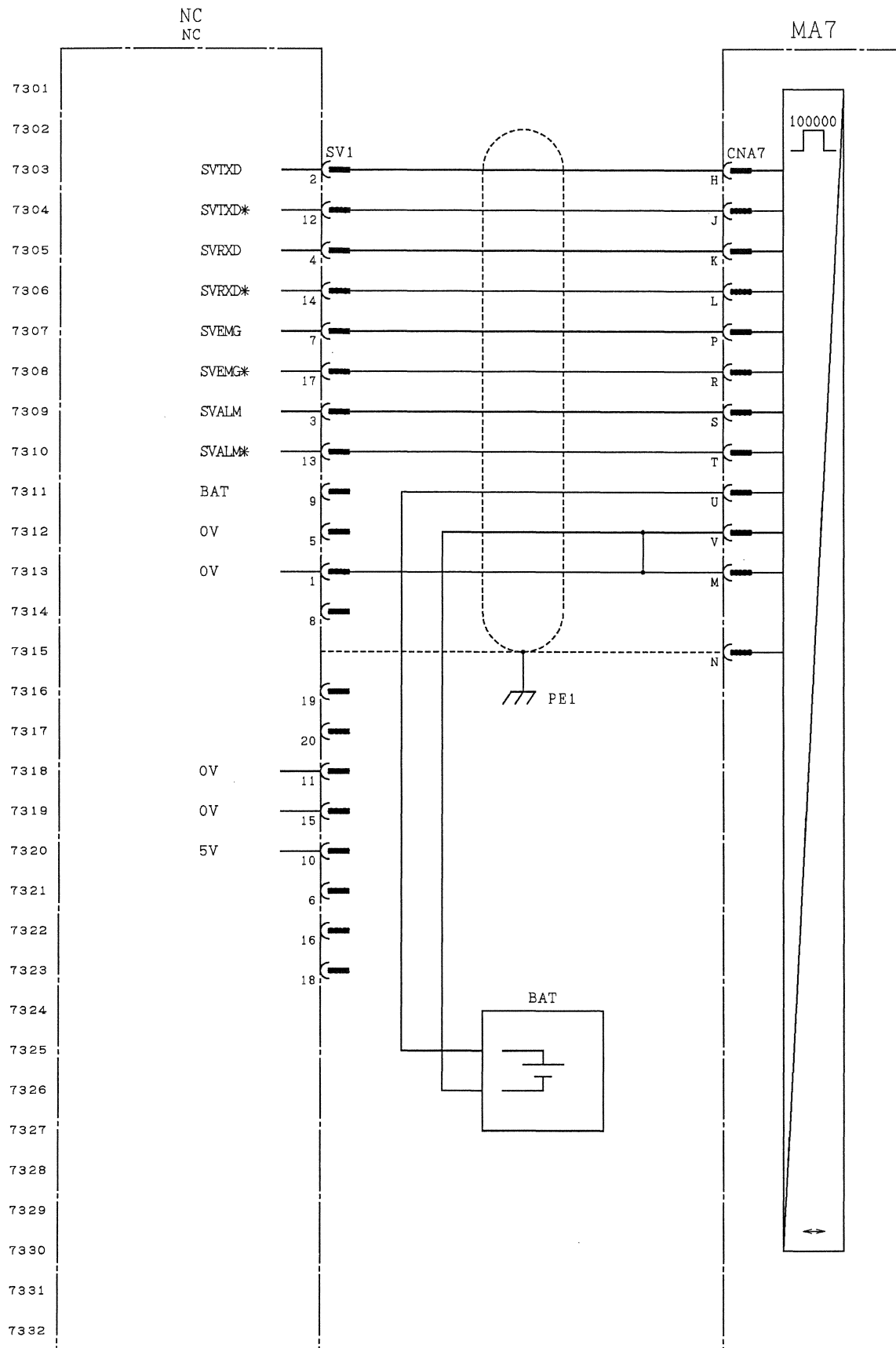
背面回転工具主軸モータ
(L71620 U151B)
Tool spindle motor
(L71620 U151B)

7125
7126
7127
7128
7129
7130
7131
7132

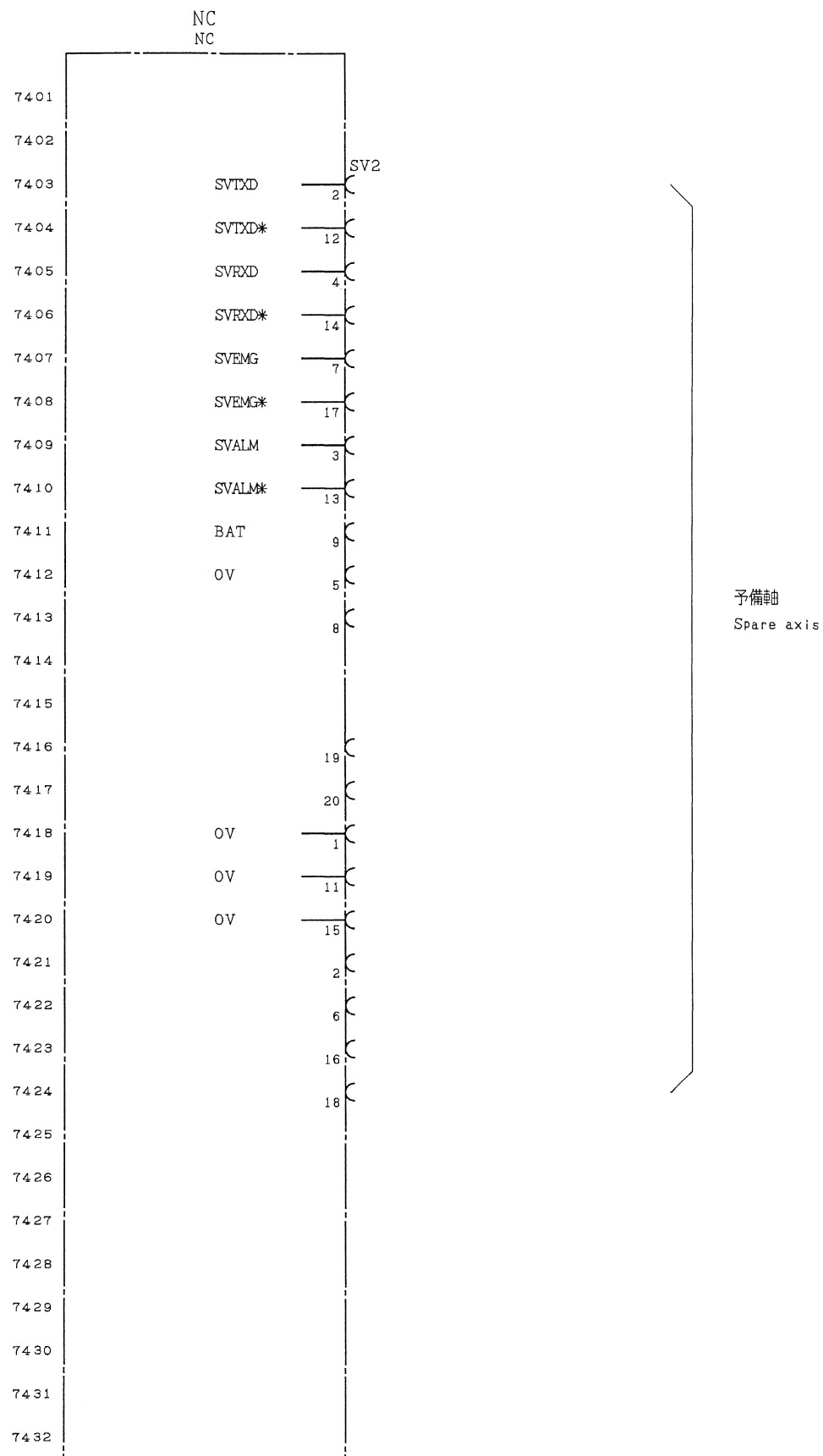
3軸一体サーボドライブユニット
3Axis servo drive unit
UNIT9



背面回転工具主軸モータ
(L71620 U151B)
Tool spindle motor
(L71620 U151B)

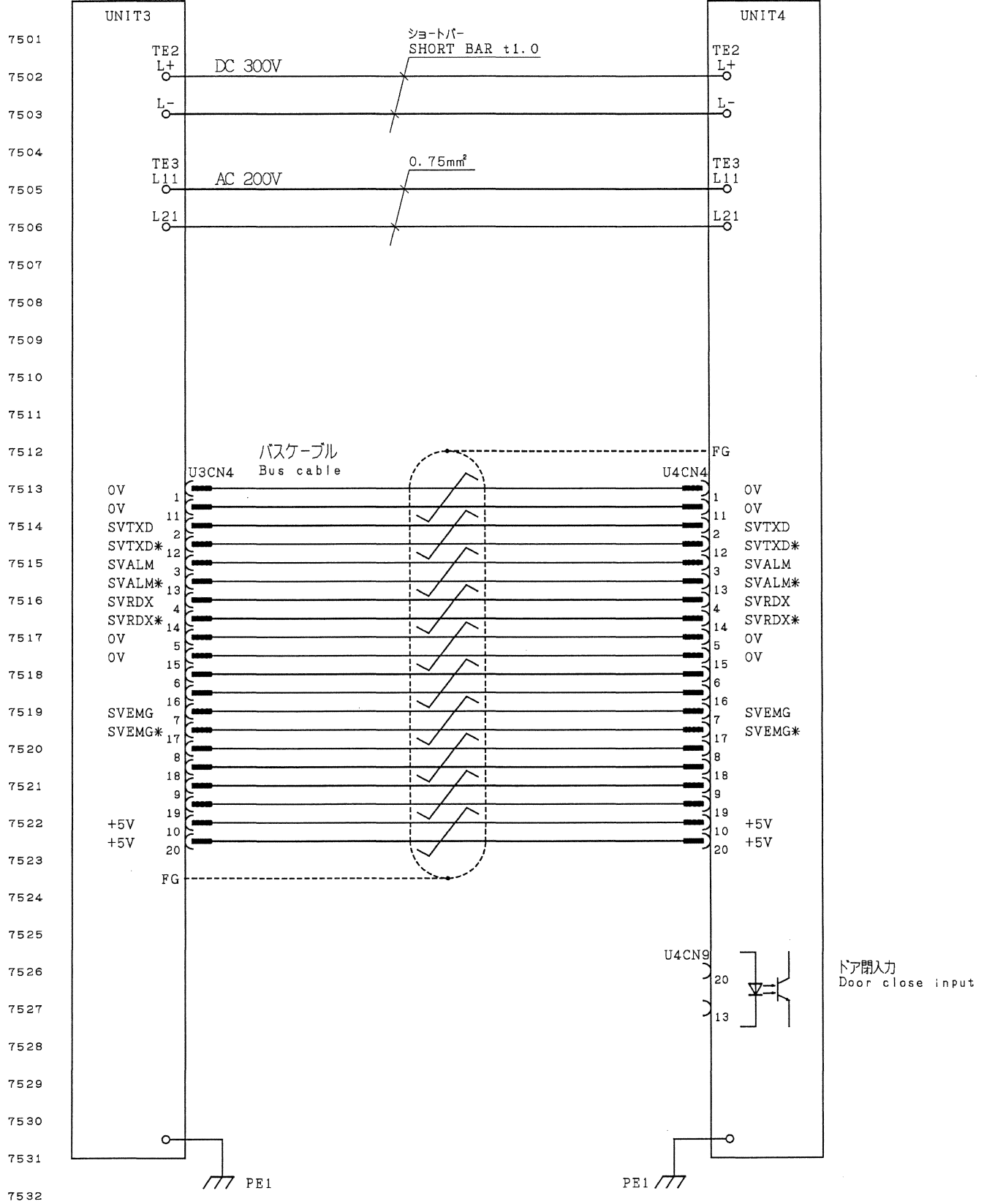


A7軸サーボモータ
(U252J, U302J, U402J)
A7 axis
servo motor
(U252J, U302J, U402J)



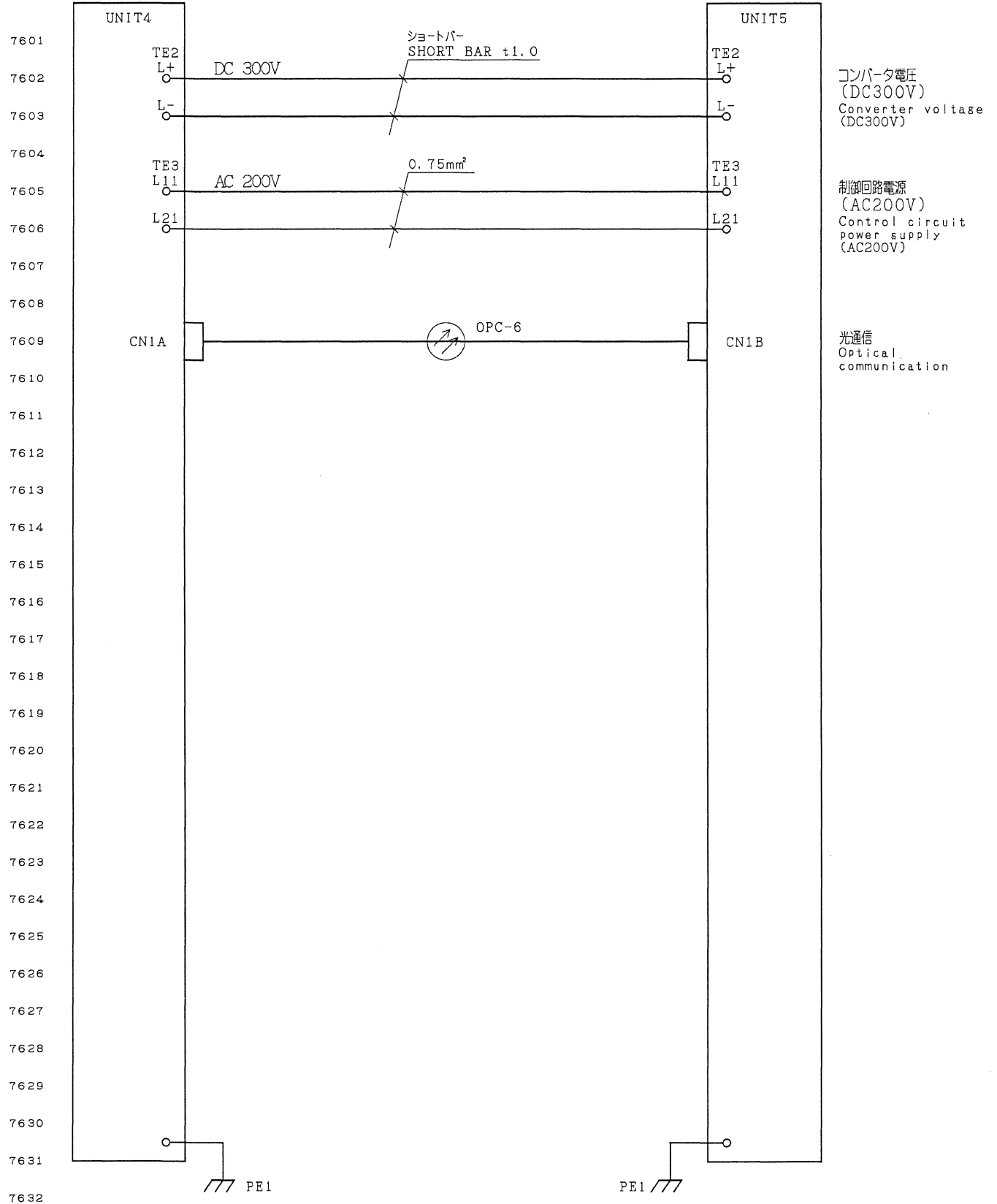
パワーサプライユニット
Power supply unit

2軸一体スピンドルドライブユニット
2Axis spindle drive unit



2軸スピンドルドライブユニット
2Axis spindle drive unit

1軸スピンドルドライブユニット
1Axis spindle drive unit



コンバータ電圧
(DC300V)
Converter voltage
(DC300V)

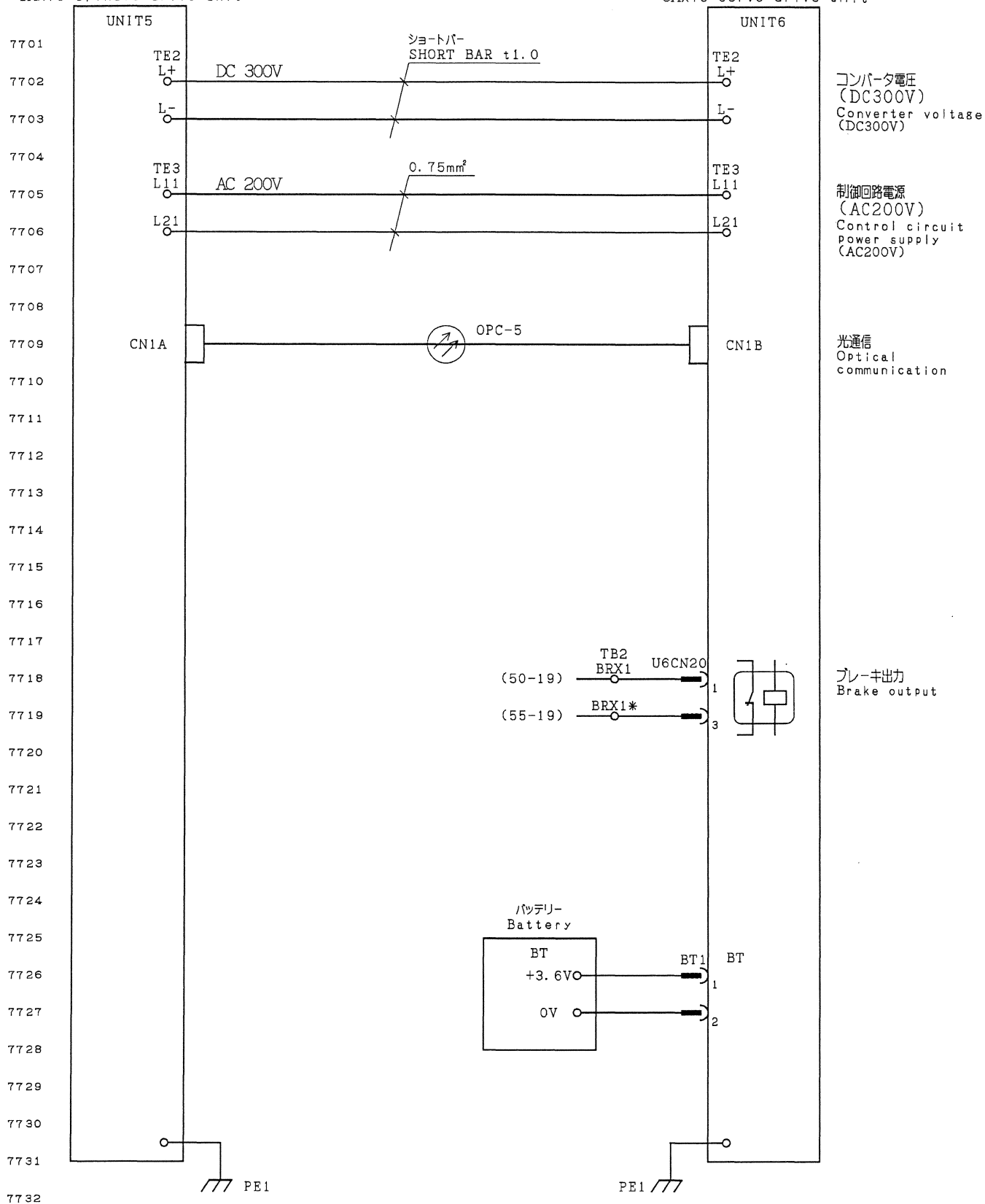
制御回路電源
(AC200V)
Control circuit
power supply
(AC200V)

光通信
Optical
communication

Ⅵ/Ⅶ型用接続図

1軸スピンドルドライブユニット
1Axis spindle drive unit

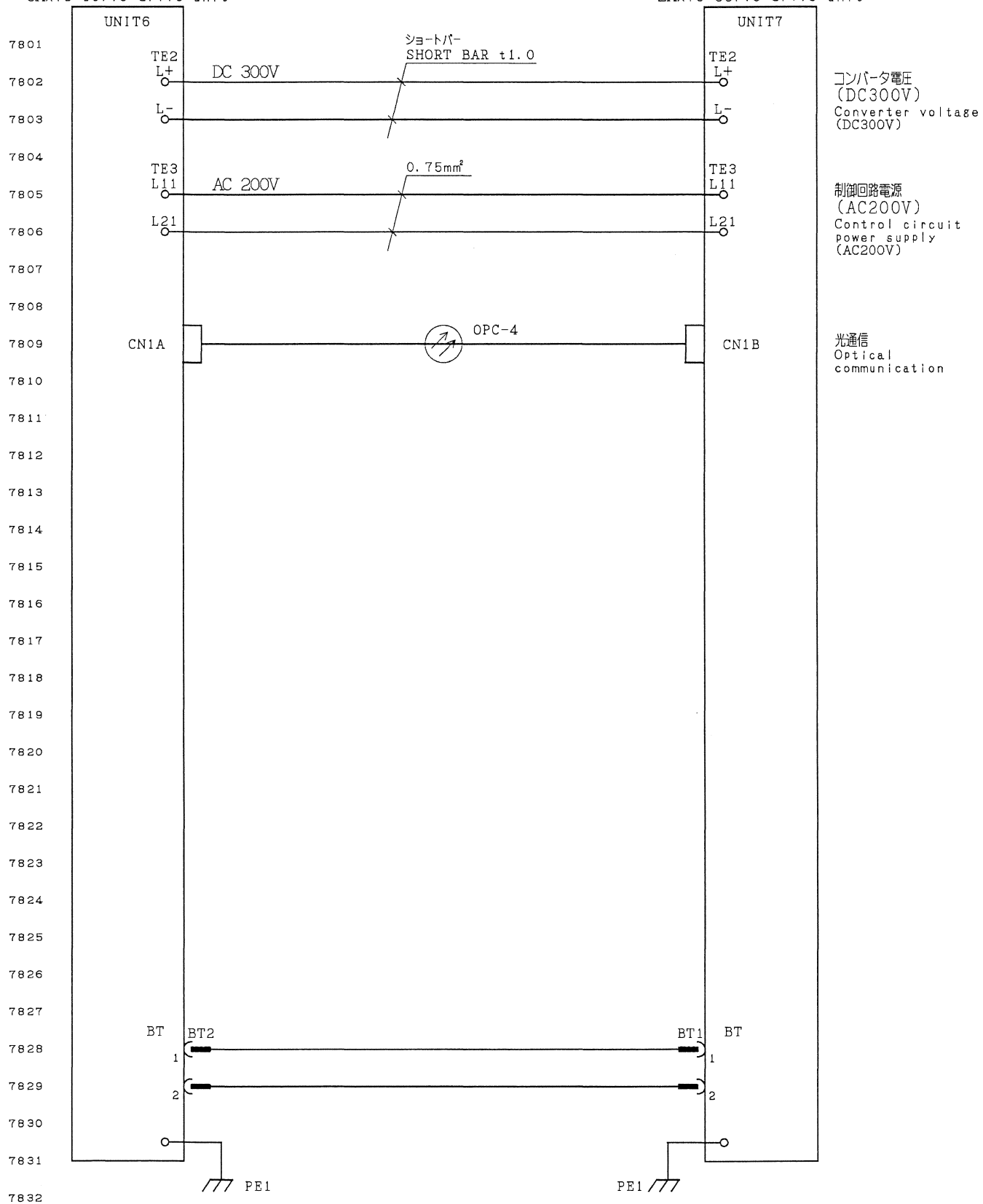
3軸一体サーボドライブユニット
3Axis servo drive unit



Ⅶ/Ⅶ型用接続図

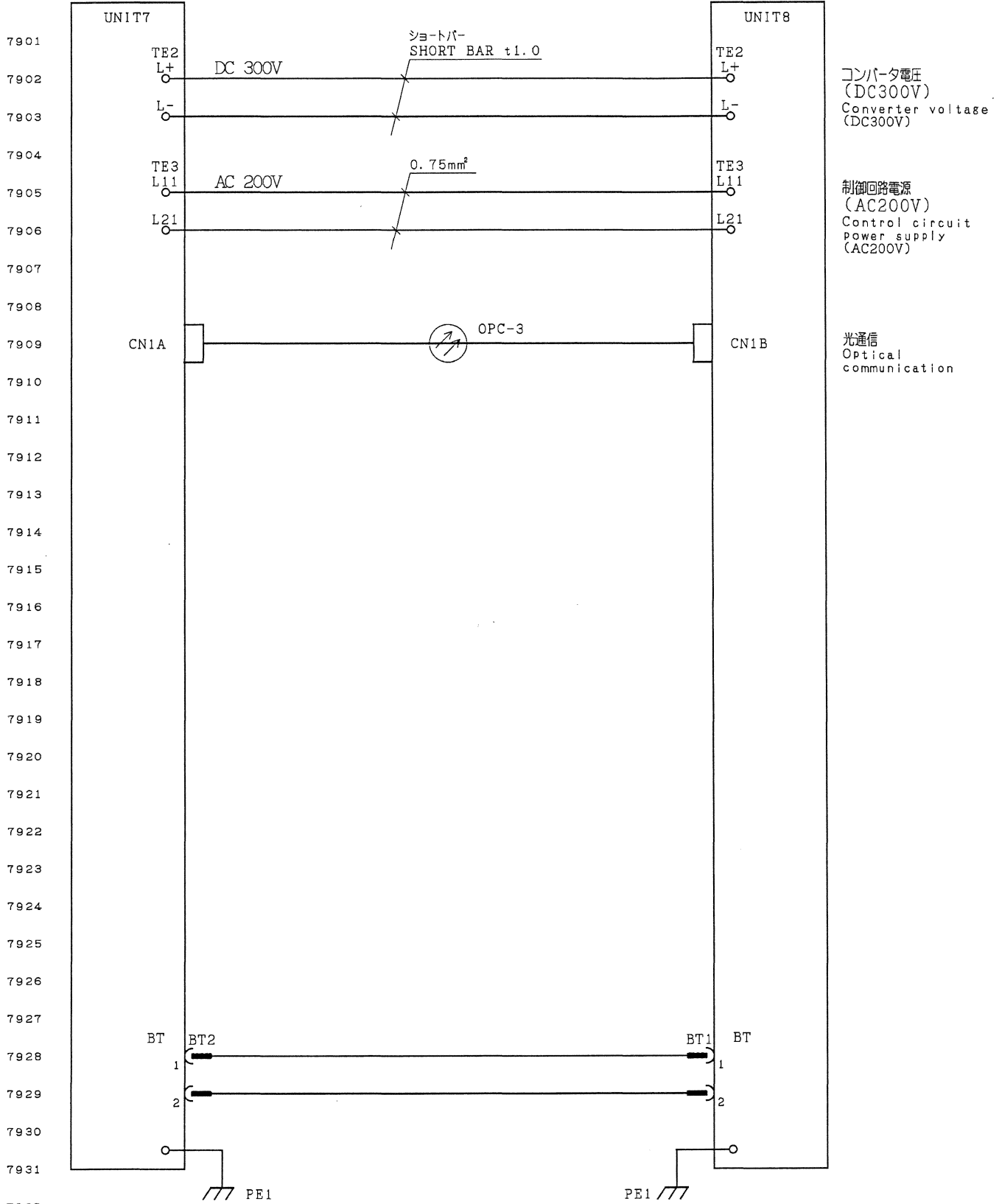
3軸一体サーボドライブユニット
3Axis servo drive unit

2軸一体サーボドライブユニット
2Axis servo drive unit



2軸一体サーボドライブユニット
2Axis servo drive unit

3軸一体サーボドライブユニット
3Axis servo drive unit



コンバータ電圧
(DC300V)
Converter voltage
(DC300V)

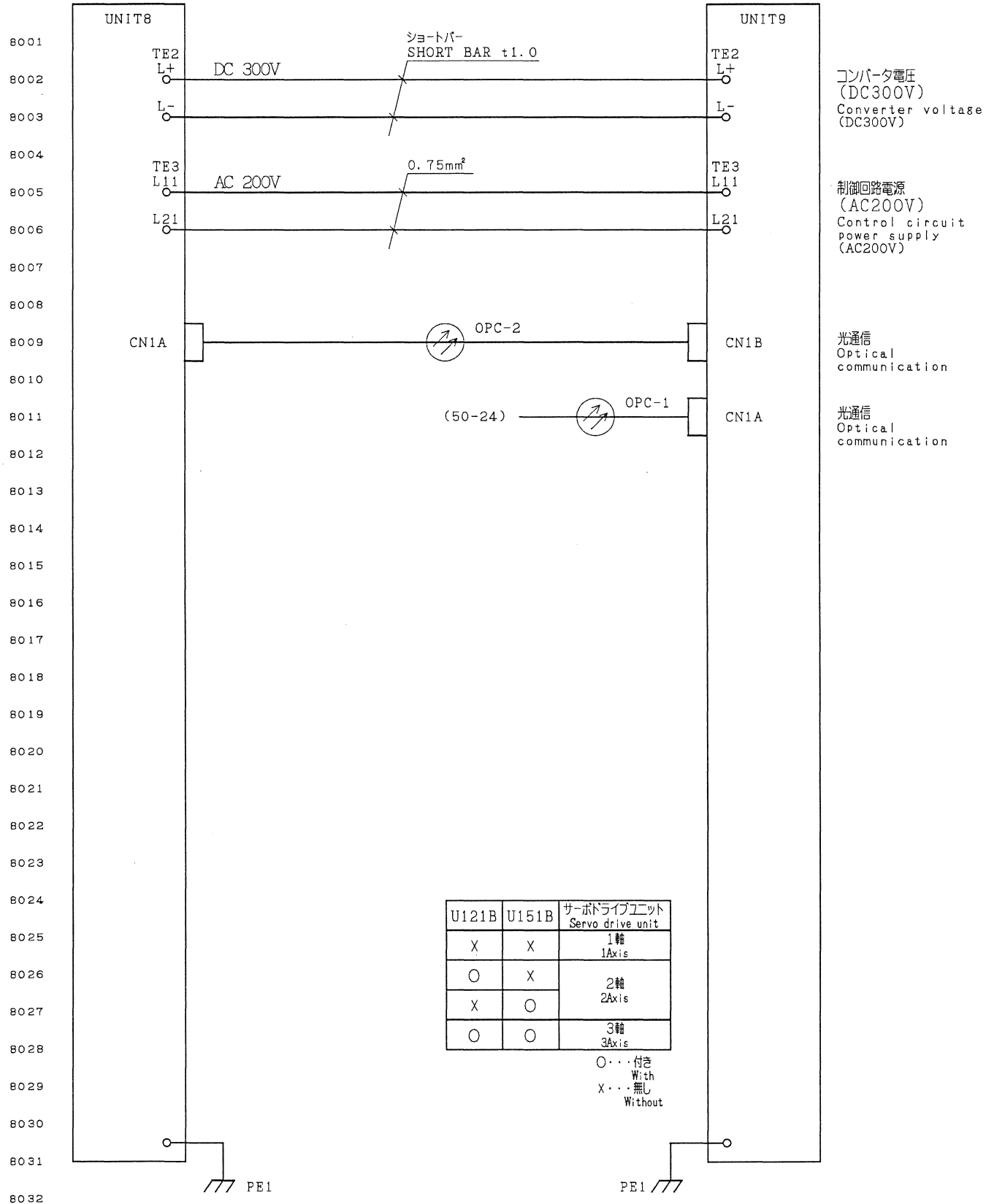
制御回路電源
(AC200V)
Control circuit
power supply
(AC200V)

光通信
Optical
communication

Ⅶ/Ⅶ型用接続図

3軸一体サーボドライブユニット
3Axis servo drive unit

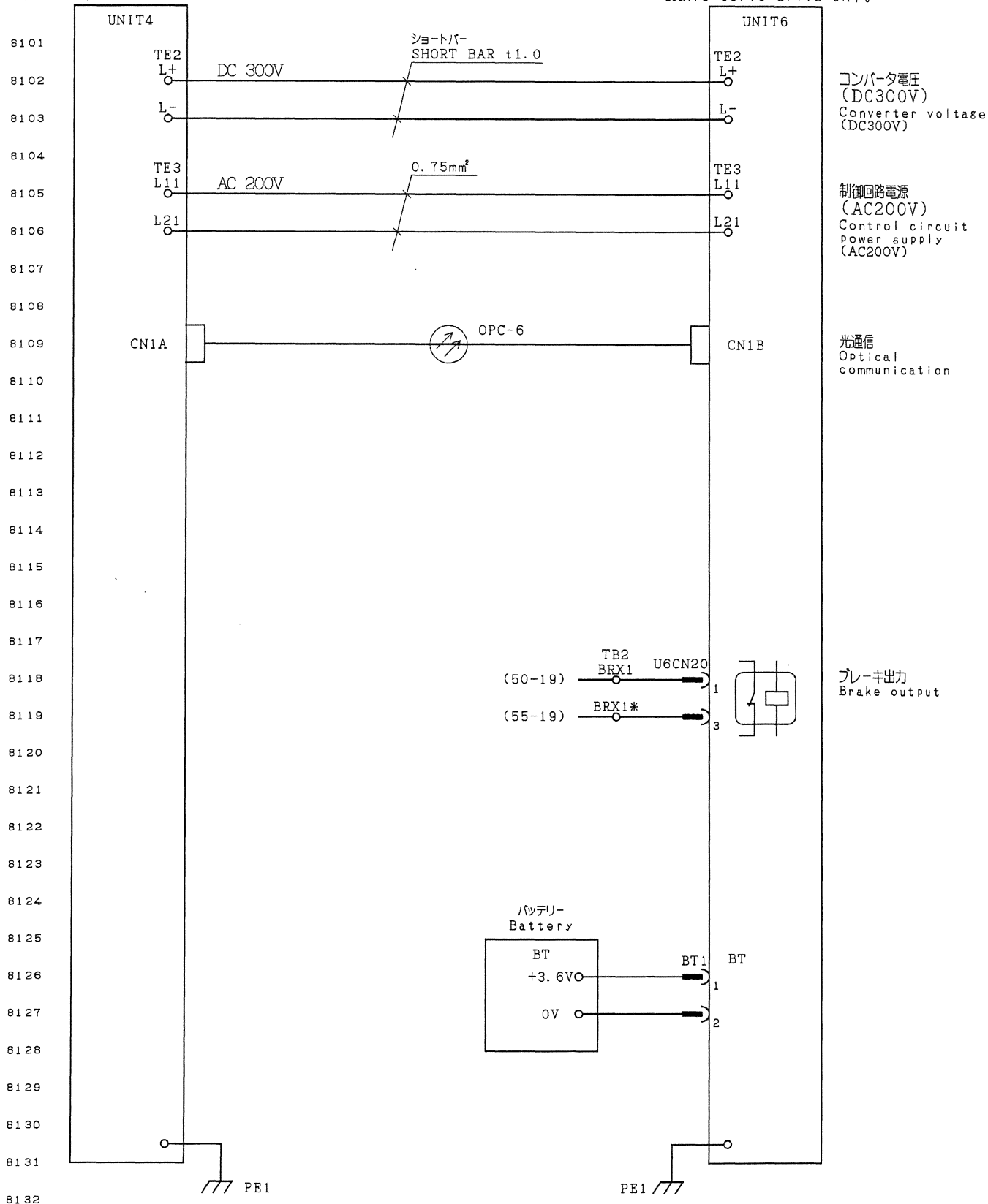
1~3軸一体サーボドライブユニット
1~3Axis servo drive unit



VI/VII型用接続図

2軸スピンドルドライブユニット
2Axis spindle drive unit

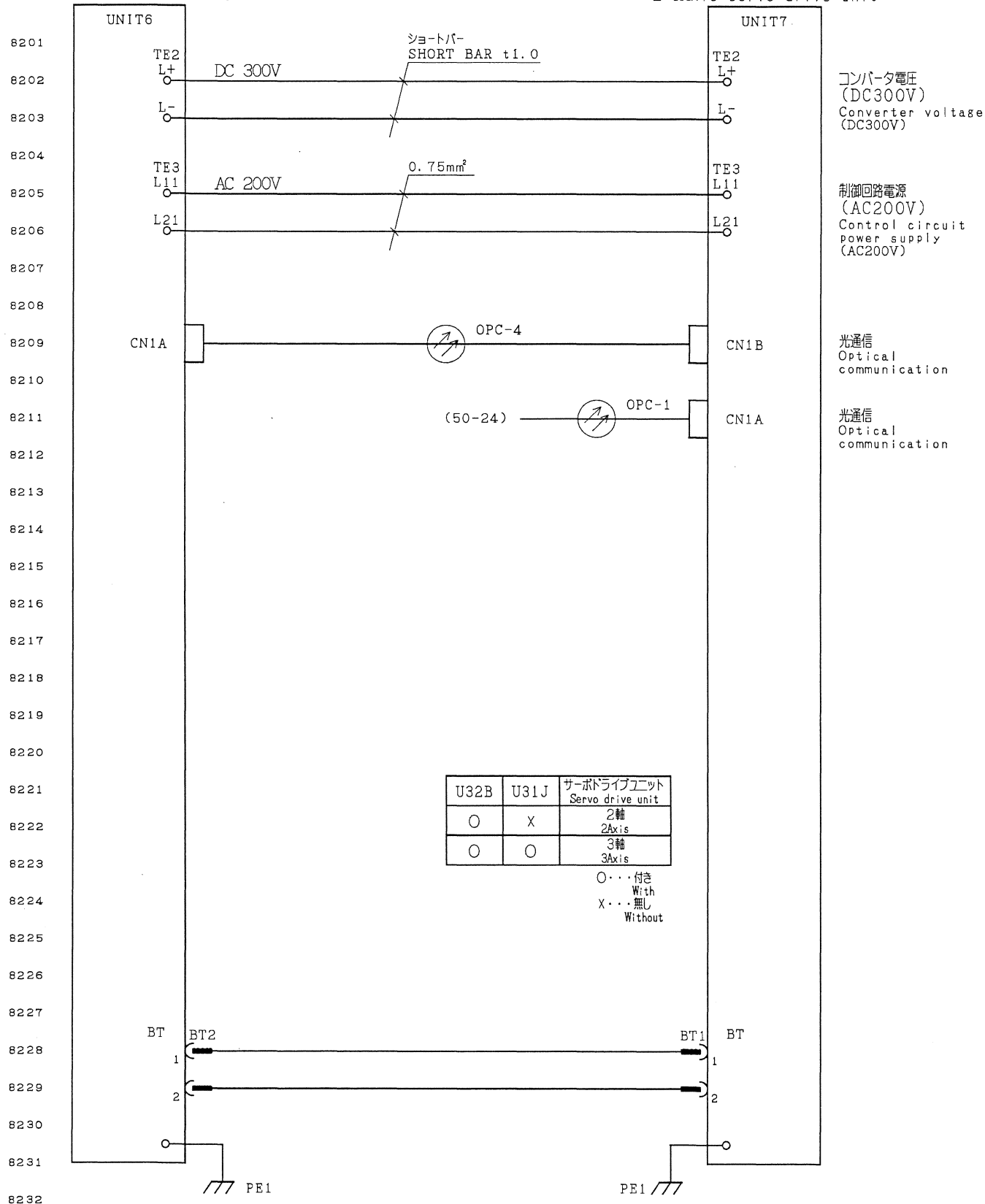
3軸一体サーボドライブユニット
3Axis servo drive unit



I型用接続図

3軸一体サーボドライブユニット
3Axis servo drive unit

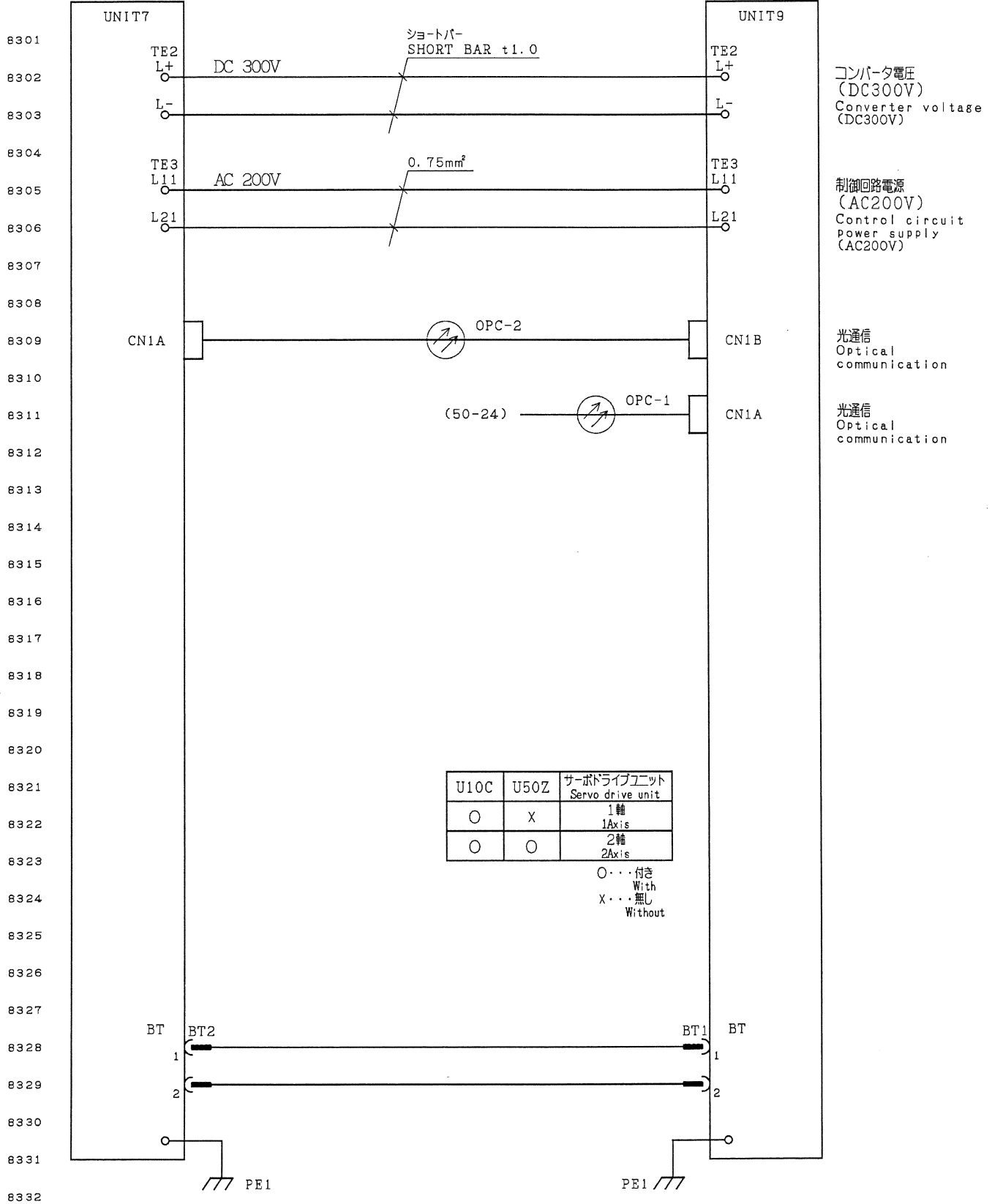
2~3軸一体サーボドライブユニット
2~3Axis servo drive unit



I 型用接続図

2軸一体サーボドライブユニット
2Axis servo drive unit

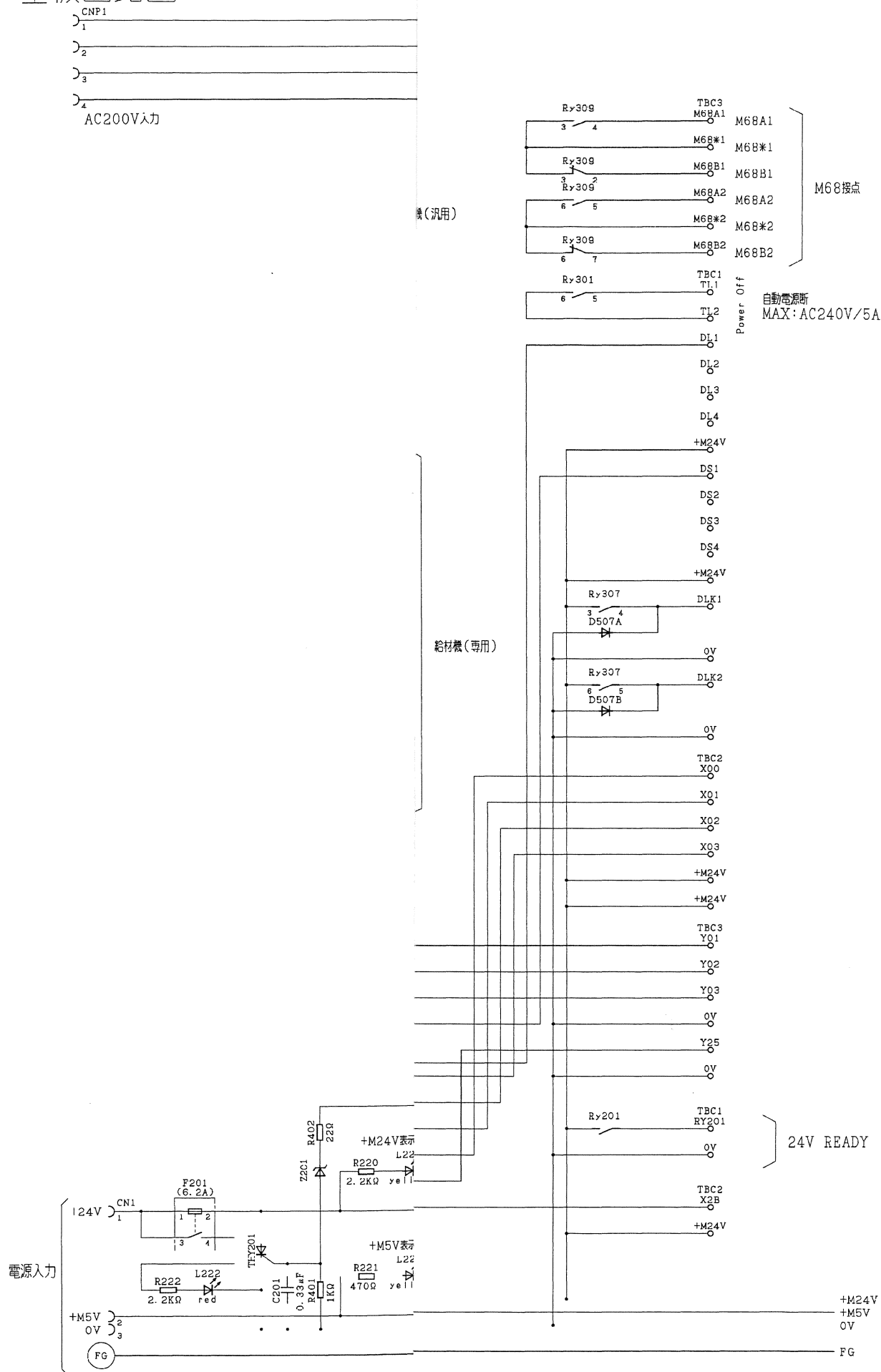
1~3軸一体サーボドライブユニット
1~3Axis servo drive unit

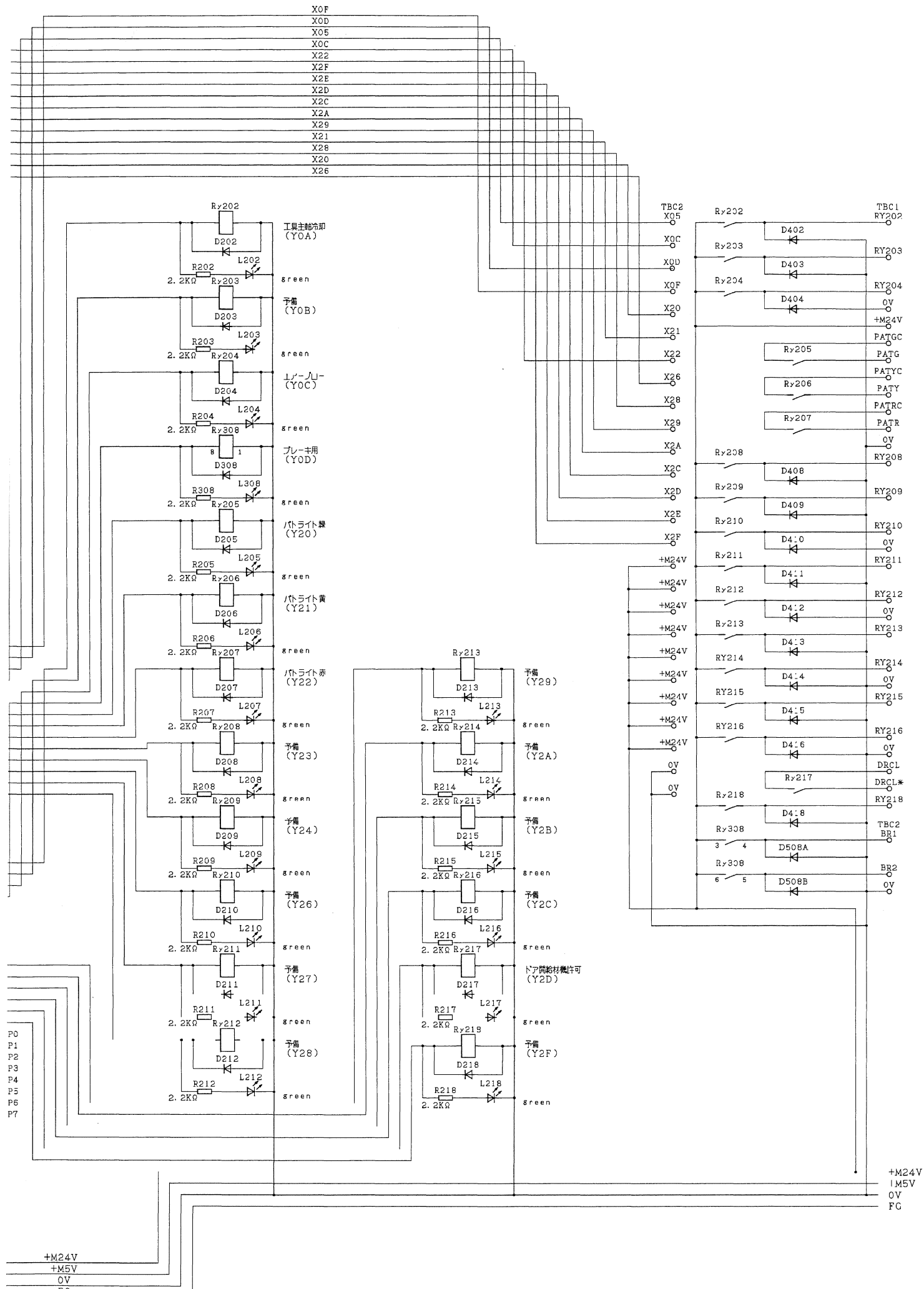


I型用接続図

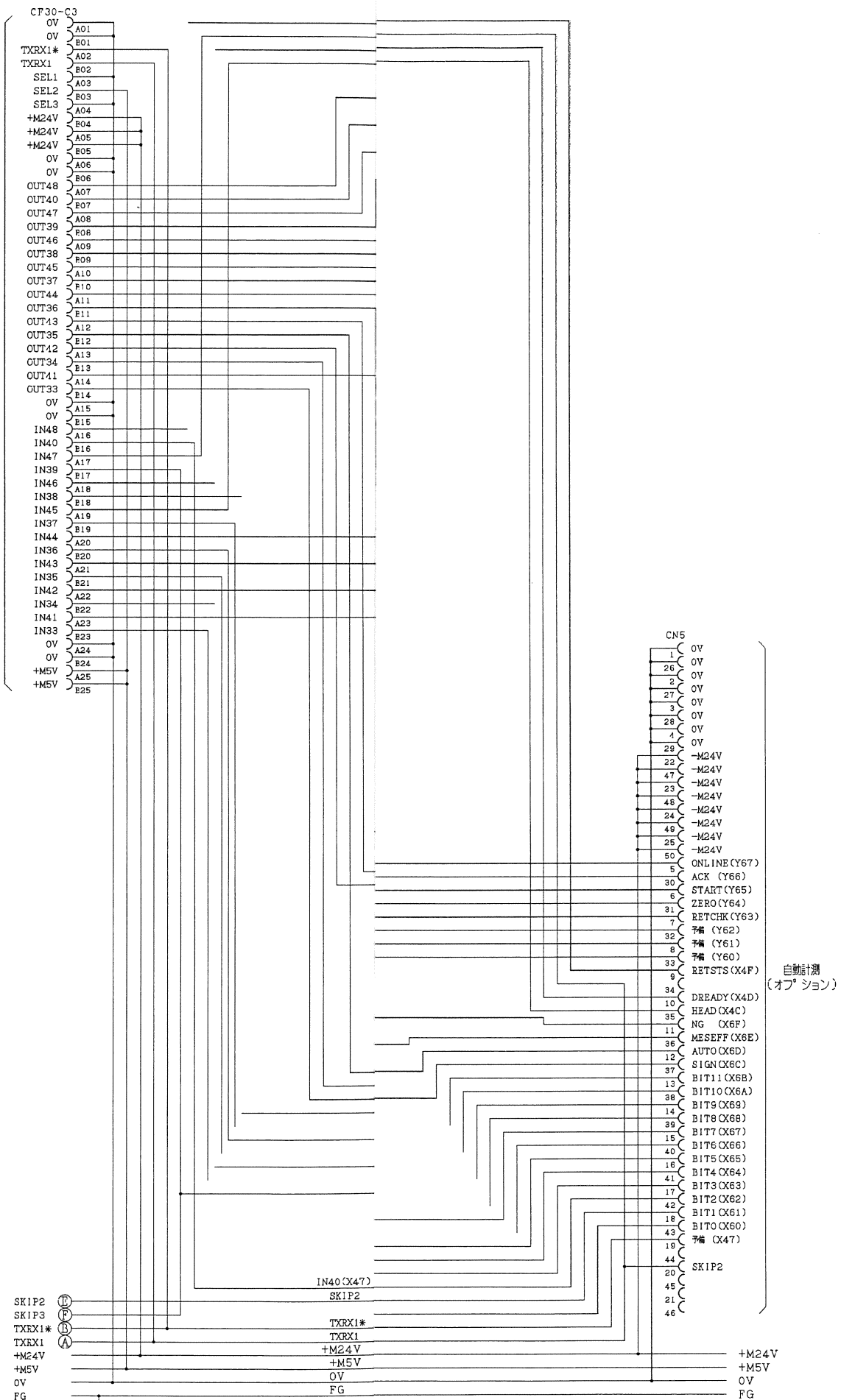
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I F 基板回路図





リモートI/O
HR371



+M24V	+M24V
+M5V	-M5V
CV	0V
FG	FG

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Product code

C	–	L	7	1	6	2	0	I	VII	VIII			
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Document code

3	J	1	–	0	7	0	2
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3	E	1	–	0	7	0	2
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3	C	1	–	0	7	0	2
---	---	---	---	---	---	---	---

8章 ラダーI/Oリスト

8. LADDER I/O LIST

8章 LADDER I/O列表

コード No.	C-L71620 I VII VIII	製番	L71620/0001 ~	日付	2005.2
	3J1-0800				
	3E1-0800				
	3E2-0800				
	3C1-0800				

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コメントリスト (MELDAS M700)

ADDRESS	COMMENT
X000	AC200V 過電流 AC200V OVERLOAD
X001	サーマルアラーム SERMAL ALARM
X002	チップコンベア過負荷アラーム CHIP C/V OVERLOAD
X003	潤滑油ポンプ 1 レベル検出 LUBRICATING OIL LEVEL DETECT
X004	潤滑油ポンプ 2 レベル検出 (オイルエアー) OIL AIR LUBRICANT OIL ALARM
X005	給材機残材排出検知／材料切れ BAR LODER SHORTAGE
X006	給材機棚材検知／材料交換中 BAR LOADER BAR CHANGING
X007	給材機シャッター開位置／前進端位置 BAR LOADER FEED IN BAR ADVANCE
X008	給材機シャッター閉位置／アラーム BAR LOADER ALARM
X009	給材機材料挿入位置／準備完了 BAR LOADER READY
X00A	給材機シャッター振れ止め開位置 BAR LODDER OPEN THE LID POS.
X00B	ドアロック信号 DOOR LOCK SIG
X00C	切削油流量検出 COOLANT OIL FLOWING DETECT
X00D	切削油レベル検出 COOLANT OIL LEVEL DETECT
X00E	ドア閉 DOOR CLOSE
X00F	主軸オーバーヒート MAIN SPINDLE OVER HEAT
X020	バイト折れ検出 TOOL BIT BREAKAGE
X021	ファンアラーム FUN ALARM
X022	G/B 圧力不足アラーム GB PRESSURE ALARM
X023	外部装置アラーム 1 EXTERNAL ALARM 1
X024	外部装置アラーム 2 EXTERNAL ALARM 2
X025	外部 M コード完了 EXTERNAL CODE FINISH
X026	予備 (EC 用) SPAER (FOR EC)
X027	非常停止 EMER GENCY STOP
X028	予備 (EC 用) SPAER (FOR EC)
X029	予備 SPARE
X02A	予備 SPARE
X02B	予備 SPARE
X02C	予備 SPARE
X02D	予備 SPARE
X02E	予備 SPARE
X040	原点位置 (OIL BF) ORIGIN (OIL BF)
X041	全閉全開 (OIL BF) CLISE&OPEN (OIL BF)
X042	振れ止め 1 (OIL BF) VIBRATION STOP 1
X043	振れ止め 2 (OIL BF) VIBRATION STOP 2
X044	振れ止め 3 (OIL BF) VIBRATION STOP 3
X045	給材機ドアスイッチ (OIL BF) DOOR SW. (OIL BF)
X046	材料先端検知 (OIL BF) DETECT OF THE TIP SK.3 (OIL BF)
X047	予備 SPARE
X048	予備 (CS 用) SPARE (FOR CS)
X049	予備 (CS 用) SPARE(FOR CS)
X04A	予備 (CS 用) SPARE (FOR CS)
X04B	予備 (CS 用) SPARE (FOR CS)
X04C	ヘッド上昇端 HEAD UP POSITION
X04D	データ有効 EFFECTIVE DATA
X04E	計測信号入力 MEASURE SIG INPUT
X04F	リトラクション RETRY

コメントリスト (MELDAS M700)

ADDRESS	COMMENT
X060	測定データ 0 DATA 0
X061	測定データ 1 DATA 1
X062	測定データ 2 DATA 2
X063	測定データ 3 DATA 3
X064	測定データ 4 DATA 4
X065	測定データ 5 DATA 5
X066	測定データ 6 DATA 6
X067	測定データ 7 DATA 7
X068	測定データ 8 DATA 8
X069	測定データ 9 DATA 9
X06A	測定データ 10 DATA 10
X06B	測定データ 11 DATA 11
X06C	極性+- MARK +-
X06D	アンプ自動モード AMP. NOMAL STATE
X06E	アンプ正常 AMP. ON LINE
X06F	測定データ NG NG DATA
X080	外部装置アラーム 3 EXTERNAL ALARM 3
X081	外部装置アラーム 4 EXTERNAL ALARM 4
X082	外部 B コード完了 EXTERNAL B CODE FINISH
X083	予備 SPARE
X084	予備 SPARE
X085	予備 SPARE
X086	予備 SPARE
X087	予備 SPARE
X088	予備 SPARE
X089	予備 SPARE
X08A	予備 SPARE
X08B	予備 SPARE
X08C	予備 SPARE
X08D	予備 SPARE
X08E	予備 SPARE
X08F	予備 SPARE
X200	手動操作 MANUAL OPERATION MODE
X201	MDI MDI MODE
X202	自動運転 AUTOMATIC OPERATION MODE
X203	プログラムチェック PROGRAM CHECK MODE
X204	運転準備 PREPARATION FOR OPERATION MODE
X205	OP1 OPTION 1
X206	OP2 OPTION 2
X207	自動電源断 AUTOMATIC POWER OFF
X208	オプションルストップ OPTIONAL STOP
X209	ブロックスキップ BLOCK SKIP
X20A	背面主軸チャック BACK SPINDLE CHUCK
X20B	メイン主軸チャック SPINDLE CHUCK
X20C	リセット RESET
X20D	給材機電源 ON BF POWER ON
X20E	開始 START
X20F	休止 PAUSE

コメントリスト (MELDAS M700)

ADDRESS	COMMENT	
X220	切削油	COOLANT OIL
X221	主軸起動	SPINDLE START
X222	全主軸停止	SPINDLE STOP
X223	手動ハンドル X1	MANUAL HANDLE X1
X224	手動ハンドル X10	MANUAL HANDLE X10
X225	手動ハンドル X100	MANUAL HANDLE X100
X226	オーバーライド 1	OVERRIDE 1
X227	オーバーライド 2	OVERRIDE 2
X228	オーバーライド 4	OVERRIDE 4
X229	オーバーライド 8	OVERRIDE 8
X22A	オーバーライド 16	OVERRIDE 16
X22B	プログラム保護スイッチ	PROGRAM PROTECT KEY
X22C	予備	SPARE
X22D	切削油流量検出温度検知	COOLANT TEMP
X22E	予備	SPARE
X22F	予備	SPARE
X6F8	センサ入力 0	SENSOR INPUT 0
X6F9	センサ入力 1	SENSOR INPUT 1
X6FA	センサ入力 2	SENSOR INPUT 2
X6FB	センサ入力 3	SENSOR INPUT 3
X6FC	センサ入力 4	SENSOR INPUT 4
X6FD	センサ入力 5	SENSOR INPUT 5
X6FE	センサ入力 6	SENSOR INPUT 6
X6FF	センサ入力 7	SENSOR INPUT 7

コメントリスト (MELDAS M700)

ADDRESS	COMMENT
Y000	自動電源断 AUTO POWER OFF
Y001	ワークコンベア起動 WORK CONVEYOR
Y002	切削油ポンプ起動 COOLANT OIL PUMP
Y003	潤滑油ポンプ/給材機電源 LUBRICAT.PUMP/BAR LOADER POWER
Y004	取出しモータ正転/材料交換開始 PICK UP MTR ON/BAR LOAD.RUN.ST
Y005	取出しモータ逆転/トルク切替え PICK UP MTR ON/B-LOAD.TORQ.CHG
Y006	着脱モータ正転/機械側アラーム MOTOR ON / BAR LOADER EMG.STOP
Y007	着脱モータ逆転/カウント MOTOR ON / COUNT RESET
Y008	ブレーキ解除/送り停止 BRAKE RELEASE/BAR LOAD.FD.SP
Y009	ドアロック ON DOOR LOCK ON
Y00A	工具主軸モータ冷却/トップカバーファン TOOL SPINDLE COOL AIR BLOW/TOP COVER FUN
Y00B	長物装置前進 WORK SEPARATER ADV.
Y00C	エアブロー AIR BLOW
Y00D	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y00E	外部 M65 信号 EXTERNAL M65
Y00F	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y020	シグナルタワー緑 SIGNAL TOWER GREEN
Y021	シグナルタワー黄 SIGNAL TOWER YELLOW
Y022	シグナルタワー赤 SIGNAL TOWER RED
Y023	回転工具オイルエアー1 TOOL SPINDLE OIL AIR1
Y024	回転工具オイルエアー2 TOOL SPINDLE OIL AIR2
Y025	主軸台及び RGB モータ冷却ファン RGB MOTOR COOLING
Y026	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y027	主軸振れ止め VIBRATION STOP CLOSE
Y028	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y029	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y02A	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y02B	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y02C	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y02D	ドア閉給材機始動許可 DOOR CLOSE B.LODER START PERMIT
Y02E	外部 M68 信号 EXTERNAL M68
Y040	カム軸正転 CAM AXIS FORWARD
Y041	カム軸逆転 CAM AXIS REVERS
Y042	潤滑油ポンプカム CAM PUMP 1 STARTING
Y043	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y044	中圧切削油ポンプオン OIL BLOW PUMP ON
Y045	中圧切削油用バルブ 1 MEDIUM PRESSURE CUTTING OIL VALVE1
Y046	中圧切削油用バルブ 2 MEDIUM PRESSURE CUTTING OIL VALVE2
Y047	中圧切削油用バルブ 3 MEDIUM PRESSURE CUTTING OIL VALVE3
Y048	中圧切削油用バルブ 4 MEDIUM PRESSURE CUTTING OIL VALVE4
Y049	計測ヘッド開 MEASURE HEAD OPEN
Y04A	給材機先端検出 DETECT OF THE TIP
Y04B	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y04C	予備 (システム予約) SPARE (SYSTEM RESERVE)
Y04D	予備 (CS 用) SPARE (CS)
Y04E	予備 (CS 用) SPARE (CS)
Y04F	予備 (CS 用) SPARE (CS)

コメントリスト (MELDAS M700)

ADDRESS	COMMENT
Y060	予備 SPARE
Y061	予備 SPARE
Y062	予備 SPARE
Y063	リトラクション要求 RETRY
Y064	ゼロイング ZEROING
Y065	計測開始 MEASURE START
Y066	データ要求 DATA DEMANDS
Y067	アンプ自動モード AUTO MEASURE MODE
Y068	予備 SPARE
Y069	予備 SPARE
Y06A	予備 SPARE
Y06B	予備 SPARE
Y06C	予備 SPARE
Y06D	予備 SPARE
Y06E	予備 SPARE
Y06F	予備 SPARE
Y080	外部コード出力 2-0 EXTERNAL CODE 2-0
Y081	外部コード出力 2-1 EXTERNAL CODE 2-1
Y082	外部コード出力 2-2 EXTERNAL CODE 2-2
Y083	外部コード出力 2-3 EXTERNAL CODE 2-3
Y084	外部コード出力 2-4 EXTERNAL CODE 2-4
Y085	外部コード出力 2-5 EXTERNAL CODE 2-5
Y086	外部コード出力 2-6 EXTERNAL CODE 2-6
Y087	外部コード出力 2-7 EXTERNAL CODE 2-7
Y088	外部出力 EXTERNAL CODE
Y089	外部出力 EXTERNAL CODE
Y08A	予備 (EC 用) SPARE (FOR EC)
Y08B	予備 (EC 用) SPARE (FOR EC)
Y08C	予備 SPARE
Y08D	予備 SPARE
Y08E	予備 SPARE
Y08F	予備 SPARE
Y200	アラーム表示 ALARM
Y201	警告表示 ERROR
Y202	重畳/同期表示 EXTERNAL/ WORK SEPARATER ADVANCE
Y203	軸移動中表示 AXIS MOVING
Y204	バックグラウンドロック BACK GROUND LOCK
Y205	手動操作表示 MANUAL OPERATION MODE
Y206	MDI 表示 MDI MODE
Y207	自動運転表示 AUTOMATIC OPERATION MODE
Y208	プログラムチェック表示 PROGRAM CHECK MODE
Y209	運転準備表示 PREPARATION FOR OPERATION MODE
Y20A	OP 1 表示 OPTION 1
Y20B	OP 2 表示 OPTION 2
Y20C	自動電源断表示 AUTO POWER OFF
Y20D	オプションナルストップ表示 OPTIONAL STOP
Y20E	ブロックスキップ表示 BLOCK SKIP
Y20F	背面主軸チャック表示 BACK SPINDLE CHUK

コメントリスト (MELDAS M700)

ADDRESS	COMMENT	
Y220	メイン主軸チャック表示	MAIN SPIDLE CHUCK
Y221	給材機電源 ON 表示	BF POWER
Y222	開始表示	START
Y223	休止表示	PAUSE
Y224	切削油表示	COOLANT OIL
Y225	手動ハンドル×1 表示	X1 INDICATOR
Y226	手動ハンドル×10 表示	X10 INDICATOR
Y227	手動ハンドル×100 表示	X100 INDICATOR
Y228	主軸起動表示	SP. START
Y229	中圧切削油ポンプ (予備)	OIL BLOW PUMP ON (SPARE)
Y22A	オイルブローバルブ (予備)	OIL BLOW VALVE ON (SPARE)
Y22B	外部M61 信号	EXTERNAL M61
Y22C	外部M62 信号	EXTERNAL M62
Y22D	外部M63 信号	EXTERNAL M63
Y22E	外部M64 信号	EXTERNAL M64
Y22F	切削油流量検出有効表示	COOL.OIL FLOW.DETECT [ON] IND.

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Appendix Relocating the NC Machine

Selecting the Installation Site	App-3
Preparation.....	App-6
Transportation	App-10
A. Hoist sling.....	App-10
B. Fork lift	App-12
Installing the NC Machine	App-13
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Disposal	App-19

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This appendix provides instructions for relocating the NC machine after it has been installed by the manufacturer. It tells you how to safely prepare the NC machine for relocation, transport the machine, select a suitable new site, and install the machine at the new site.
Be sure to read this appendix before relocating the NC machine.



CAUTION

If you do not do the following, you will damage the machine.

Selecting the Installation Site

To ensure the high cutting precision of the NC machine, take into consideration the location of power outlets, foundation strength, environmental temperature and humidity, traffic, ventilation, sunlight, proximity of other electrical machines and equipment generating high-frequency noise, and all other considerations which may affect the machine's operation.

The site you select should meet the following requirements.

On the site foundation:

- The weight bearing capacity of the soil must be 1 ton/m^2 [205 lb/ft^2], and the foundation thickness must be 100 mm [3.94"] or more.
- The foundation area must extend 300 mm [11.81"] or more from the periphery of the NC machine.
- The NC machine must be installed on a sturdy, level surface which is not affected by vibrations of other machines.
If you are going to provide a trench for isolating vibrations, dig it along the edge of the machine's foundation area.
- Never place the NC machine on concrete blocks on the floor. Concrete blocks cannot serve as the foundations of the NC machine.
- Select an installation site that provides enough clearance around the NC machine to allow movement of a cart for removing chips and so that workers can perform maintenance tasks such as removing the panels without bumping into other machines. (The floor space required for the NC machine itself is $1085 \times 2110 \text{ mm}$ [$42.72" \times 83.07"$] and the floor space with margin for maintenance (without the bar loader) is $2020 \times 3210 \text{ mm}$ [$79.53" \times 126.38"$].)

On the site environment:

- The NC machine must not be installed in a place where there may be sharp temperature changes, such as near air conditioners.
- The NC machine must not be exposed to dust and direct sunlight or must not be placed near a ventilation opening or heat source or in a place of high humidity. A heavy curtain can protect the NC machine if it must be installed in such a location.
Also, a screen may be used as a barrier against a ventilation opening or heat source.
- The work site should be well ventilated to prevent heat build-up.

NC machine installation standards:



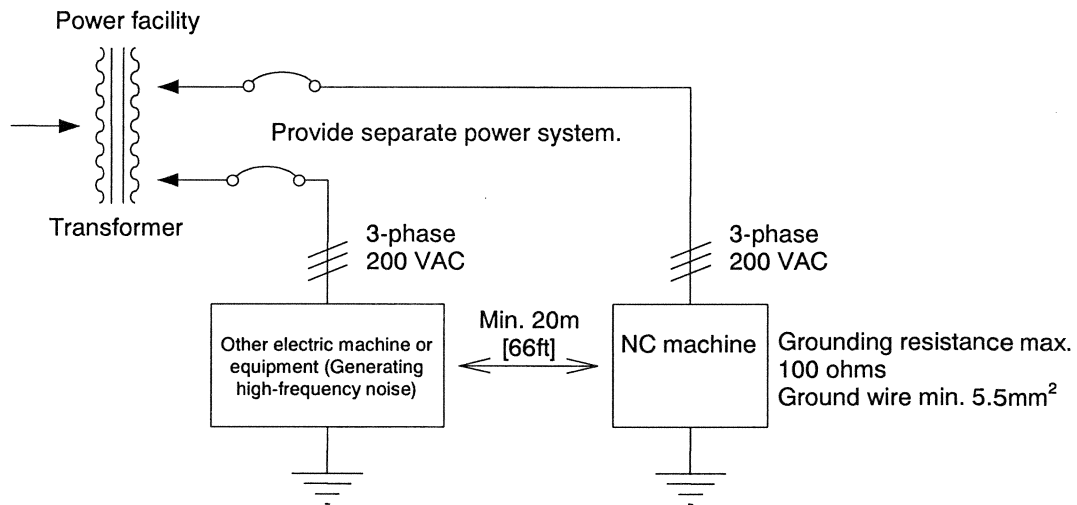
WARNING

If you do not follow the precautions, high-frequency noise may cause abnormal machine movements, resulting in severe injuries or deaths.

- **Power line**
Use a dedicated power line (200VAC $\pm 10\%$) of the NC machine separately from the power lines of other machines and equipment that generate high-frequency noise.
- **Installation site**
Install the NC machine at least 20m [66ft] away from other machines and equipment that generate high-frequency noise.
- **Grounding of the NC machine**
Use 5.5 mm² or more thick grounding wire and ground the NC machine separately from the ground of other machines and equipment. The ground resistance of the NC machine should be 100 ohms or less. (Class 3 grounding)
If the NC machine is installed near machines and equipment that generate high-frequency noise, provide a separate ground terminal within 5m [16ft] of the NC machine. The ground resistance of the NC machine should be 100 ohms or less.
Examples of equipment that generate high-frequency noise:
 - Arc welding machine
 - Resistance welding
 - High frequency dryer
 - Electric spark machine
 - Miscellaneous
- If a circuit breaker with an electric leakage detection function is used as the power circuit breaker on the factory side, the sensitivity current must be 100 mA. If the sensitivity current is less than 100 mA, the circuit breaker may be turned off abnormally.

Example of NC machine installation:

The figure below shows the conditions of NC machine installation and proper proximity to other machines or equipment.



WARNING

Operations for relocating the NC machine, such as crane or forklift operation and slinging work, must be performed by qualified personnel authorized by public organizations. Leaving such operations to unqualified persons may result in serious accidents such as letting the machine fall down.

Preparation

Use the following steps to prepare the machine for transportation.

1. Make backup copies of data including programs and offset values stored in the machine using the external storage devices.
(The NC machine will retain the data even if you disconnect it from the power outlet. However, to assure the safety of data, it is best to make backup copies before transporting the machine.)
2. Disconnect the external storage device.
3. Remove tools from the machine.
4. Move each axis of the machine to their respective positions shown below.
Z1 axis: Return position
X1 axis: Return position
Y1 axis: Y1 = 0 (machine coordinate)
X2 axis: X2 = 340 (machine coordinate) (for types VII and VIII)
Z2 axis: Return position (for types VII and VIII)
5. Turn off the main circuit breaker of the machine and the breaker of the factory power outlet (primary side).



DANGER

Make sure that the breaker of the factory power outlet and main circuit breaker of the NC machine are turned OFF. Failure to do so may expose you to hazardous voltage that can cause severe injury or death.

6. Disconnect the coolant pump hose.
7. Disconnect the coolant pump connector cable.
8. Disconnect the connector cable for the coolant level sensor.
If the coolant flow rate detector (option) is installed, disconnect the cables of the flow rate sensor and the thermistor. If the machine has a chip conveyor (option), also unplug the connector cable of the chip conveyor.

9. Disconnect the hose from the pneumatic device.
10. Pull out the coolant tank and remove the chips and coolant.

Note) Dispose of the waste oil according to all national laws and regulations.

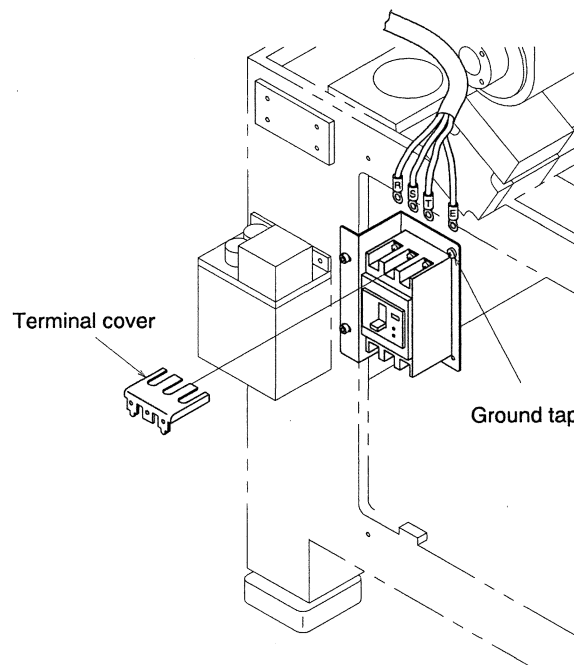
11. Disconnect the power cable and grounding wire.

**DANGER**

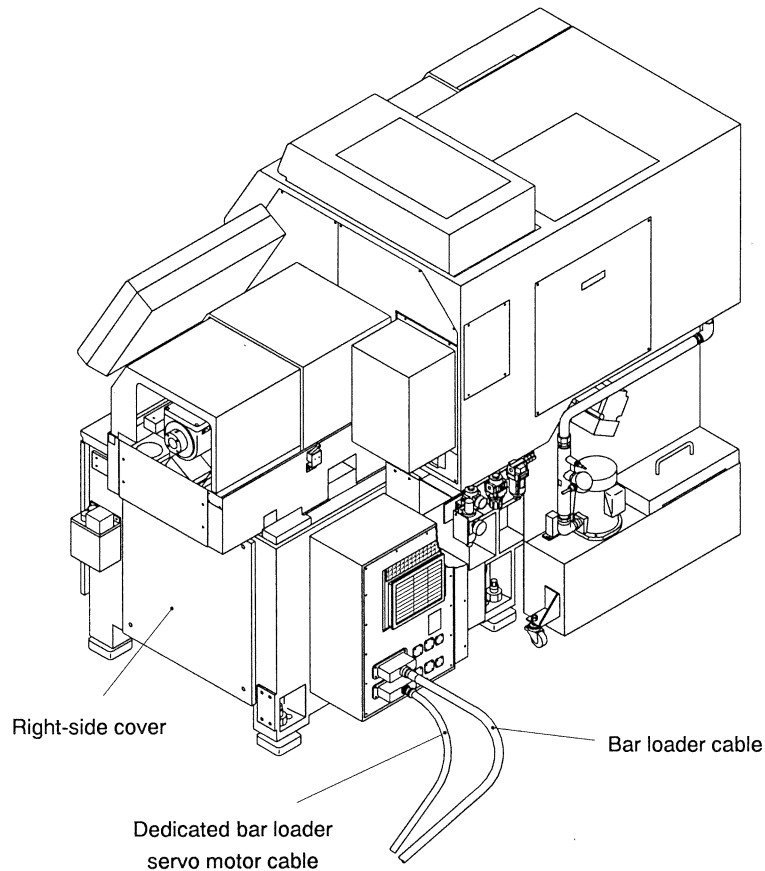
Make sure that the breaker of the factory power outlet and main circuit breaker of the NC machine are turned OFF.

Failure to do so may expose you to hazardous voltage that can cause severe injury or death.

- 11-1. Remove the right side cover of the control unit.
- 11-2. Remove the circuit breaker terminal cover by pulling it toward you.
- 11-3. Disconnect the power cable and grounding wire.
- 11-4. Remount the circuit breaker terminal cover.
- 11-5. Restore the right side cover of the control unit.



12. If a bar loader has been installed with the machine, turn the bar loader connector on the back of the machine to remove the cable.
If the bar loader is dedicated one, in addition, open the cover on the right side of the control unit to remove the cable.



13. Remove chips and clean the machine.
14. Secure the moving parts of the machine to prevent movement and damage during transportation.
 - 14-1. Securing covers and doors
Affix weakly gummed paper tape to prevent covers and doors from moving during transportation.

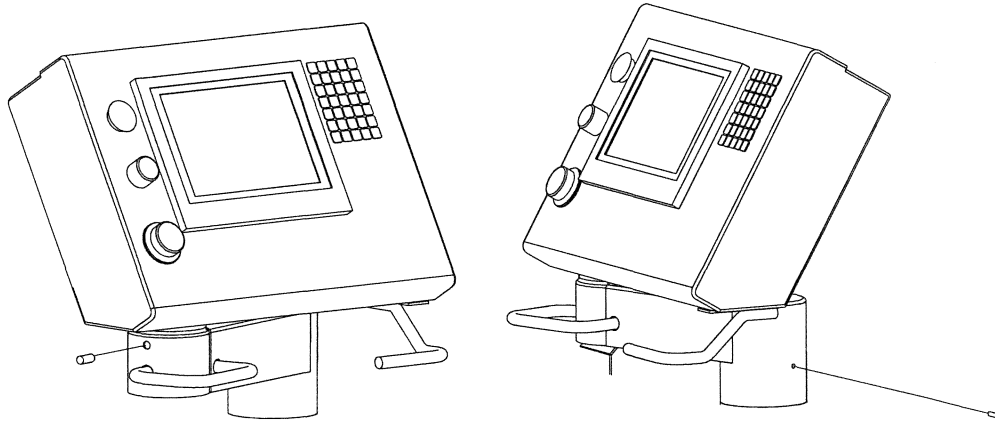


CAUTION

Do not use tapes with strong adhesives. Such tapes may peel off the paint on the machine when you pull them off at the delivery site. Also, do not leave tape stuck on the machine for a long period. If you do, the paint on the machine may peel off when you try to remove the tape.

14-2. Protecting and securing the operation panel

- Swivel the operation panel and arm to fit them in parallel with the main body of the machine.
- Secure the operation panel and arm using bolts ($M6 \times 20$).
- Secure the arm and column using bolts ($M6 \times 20$).
- Cover the LCD with styrofoam or other protective material.



15. Loose the four level adjustment bolts and remove them from the machine bed after ensuring safety.

Transportation

Use a hoist sling or fork-lift truck to remove the machine from the current site and transport it to a new site or delivery vehicle.

A. Hoist sling

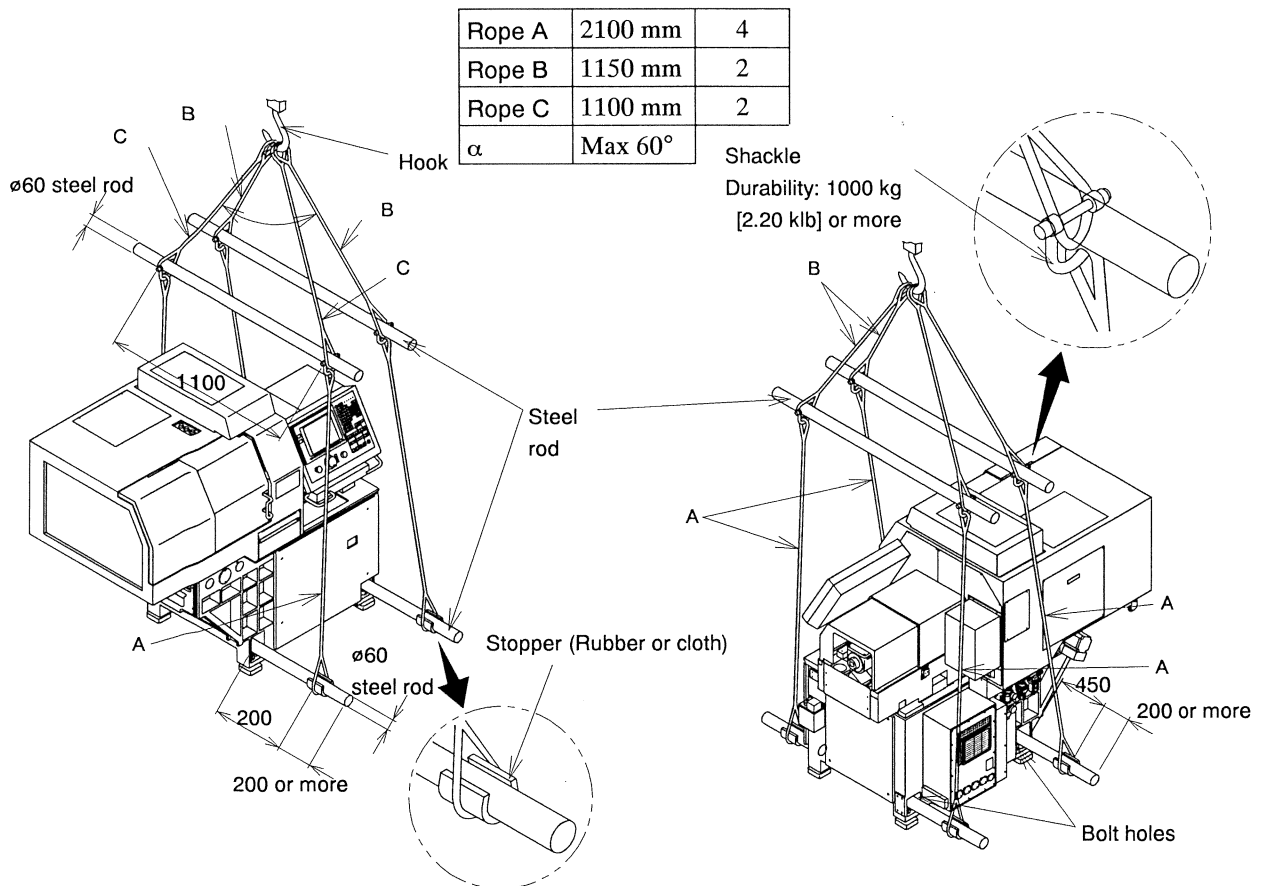


WARNING

If you do not follow the precautions and instructions in this section, the machine could fall and cause severe injury or death.

Precautions:

- The max. weight of the machine (depending on the options mounted) is approximately 2,100 kg [4.63 klb]. Nylon or wire ropes may be used for slinging the machine. They must be a minimum of 10 mm [0.39"] in diameter.
- Use a hook as shown below.
- Do not use rusted, worn, or torn wire ropes.



Slinging procedure

1. Insert $\varnothing 60$ mm [2.36"] steel rods across the bolt holes on both sides of the machine in the figure.
2. Secure the slinging ropes to these steel rods as shown in the figure.
3. Hoist the rope gradually. Stop hoisting when the wire rope becomes taught.
4. Check whether the sling is safe and secure.
5. Hoist the rope until the machine is lifted off the floor.
6. Check the sling again.
7. If the sling is safe and secure, hoist the rope to the required height.
8. Transport the machine to a delivery vehicle or new site.
9. To place the machine on a vehicle or the ground, lower the machine gradually and stop just before the machine touches the surface.
10. Check the position of contact and adjust the position if necessary.
11. If the position is correct, lower the machine to the surface.

B. Fork lift

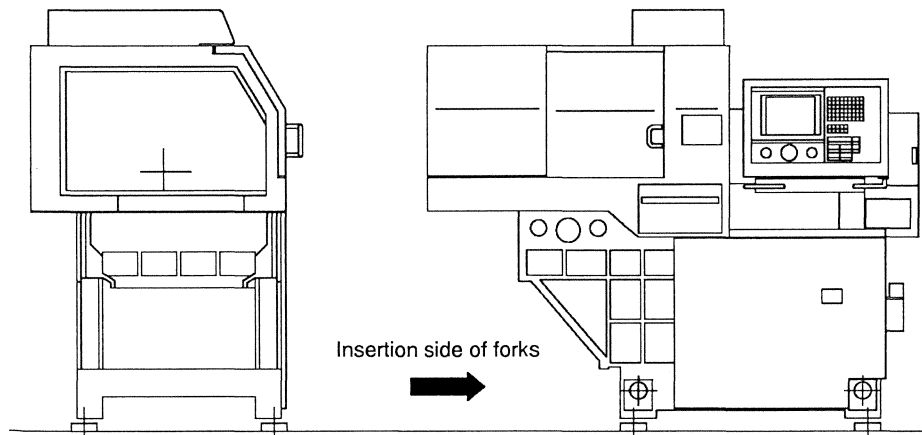


WARNING

If you do not follow the precautions and instructions in this section, the machine could fall and cause severe injury or death.

Precautions:

- The max. weight of the machine (depending on the options mounted) is approximately 2,100 kg [4636 lb]. Be sure to use a fork-lift truck that can handle this load.
- Be sure to have a supervisor attend the transport work together with a driver of the fork-lift truck so that projecting portions of the machine are not damaged.
- Be sure to perform a trial lift before transporting the machine. Try lifting the machine in a position in which its front, back, left, and right sides are balanced in a stable manner.



Lifting procedure

1. Insert the fork under the steel rods from the left of the machine.
2. Lift the machine and maintain the most stable position.
3. Transport the machine to the new site or delivery vehicle.
4. To place the machine on a vehicle or the ground, lower the machine gradually and stop just before the machine touches the surface.
5. Check the position of contact and adjust the position if necessary.
6. If the position is correct, lower the machine to the surface.

Installing the NC Machine

1. Transport the machine to the installation site by hoist sling or fork-lift.
2. While the machine is still in a raised position (by hoist sling or fork-lift), mount the level adjustment bolts and hexagonal nuts (four locations).
3. Place four seats on the floor at the new site.
4. Gradually lower the machine and adjust the seat positions so that the level adjustment bolts are positioned directly above the depressions in the seats.
5. Adjust the level of the machine.
 - 5-1. When all four seats are positioned properly, lower the machine on the seats and adjust the level adjustment bolts so that the machine is approximately level.

Note

As a guideline, place the coolant tank into position. If the coolant tank can be placed properly, the machine is approximately level.

- 5-2. After making sure that the machine is level enough, remove the sling or withdraw the fork-lift.
- 5-3. Open the right-side door of the headstock and remove the rail (rear) cover. Place a spirit level on the finishing surface of the machine bed.

Note

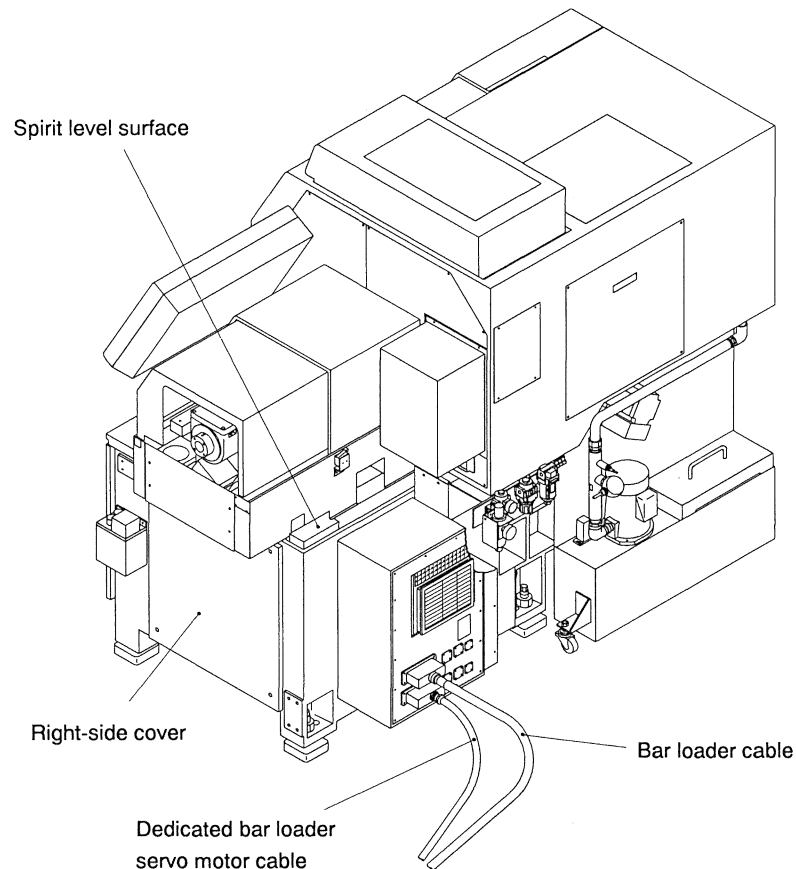
The spirit level sensitivity should be approximately 0.02 mm per meter [0.0007 in./yd.] for each scale setting.

- 5-4. Adjust the four level adjustment bolts so that the level is within 0.04 mm [0.0014 in./yd.] per meter on the surface of the machine. It should be level across the length and depth of the machine.
- 5-5. Tighten the level adjustment bolts to the same torque. The bolts should be tightened in a crosswise order, or you can tighten three bolts first, then the fourth bolt to the desired level.
- 5-6. Check the level to be sure it is correct.
- 5-7. Check the tightening torque of the four bolts so that they are identical.

Note

Do not fix the NC machine to the floor with mortar. If the machine vibrates because of the bar material sway, fix the NC machine to the seats with anchor bolts in the holes next to the level adjustment bolt hole.

6. Remove the gummed paper tape and gummed tape from the sliding doors and operation panel.
7. Remove the plastic string and protective material from the LCD.
8. To connect the bar loader, connect the bar loader connector to the control unit.
If the bar loader is dedicated one, in addition, open the cover on the right side of the control unit and connect the cable.



9. Connect the coolant pump hose, coolant pump connector cable, and coolant level sensor cable.
If the machine has a coolant flow rate detector (option), also connect the flow rate sensor and thermistor connector cables. If the machine has a chip conveyor (option), also connect the chip conveyor connector cable.
10. Also, connect the pneumatic device hose.
11. Clean the machine by completing the following steps.
The machine may collect dirt and dust during transportation. Before starting up the relocated machine, therefore, be sure to check the machine conditions not to use the machine left dirty.

**CAUTION**

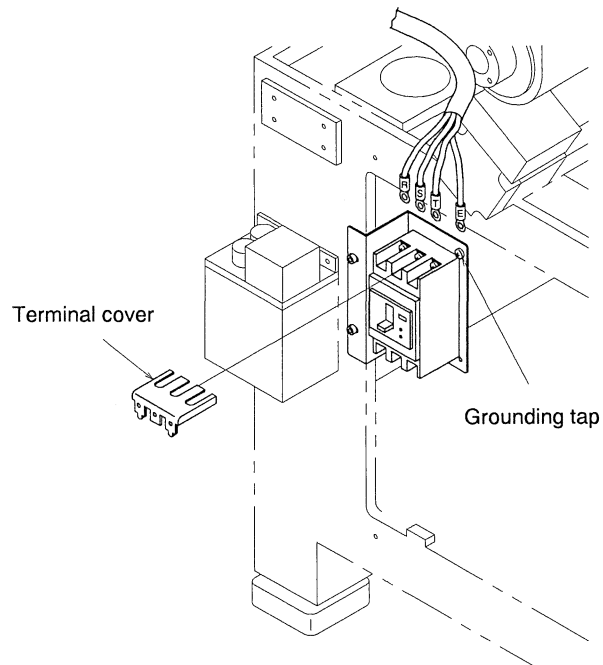
Do not use compressed air to remove dust because foreign matter at the mouths of gaps between fittings will be pushed further inside the gap and may damage the fitting surface.

- 11-1. Clean the machine with a dry cloth or a cloth soaked in high quality petroleum (neutral) to remove the dust and foreign matter.
 - 11-2. After cleaning, lightly apply a lubricating oil equivalent to Exxon Mobil Vactra Oil No. 2 to the finish surface.
12. Open the front panel of the control unit and connect the power cables and grounding wire.

**DANGER**

Make sure that the breaker of the factory power outlet and main circuit breaker of the NC machine are turned OFF. Failure to do so may expose you to hazardous voltage that can cause severe injury or death.

- 12-1. Providing the power breaker.
Provide a dedicated power outlet (isolated from other machines) with a breaker switch for the NC machine and near it so that a machine operator can turn it on/off easily. The breaker capacity should be 30A.
- 12-2. Providing the power cable and grounding wire.
Provide a power cable between the power breaker and the main circuit breaker of the NC machine (primary side). Also, connect a grounding wire to the grounding terminal of the machine.



The power cable and grounding wire should conform to the following specifications:

Electric wire thickness (IV wire or VCT)		
Overall capacity	R.S.T	Grounding
6KVA	5.5 mm ²	5.5 mm ²

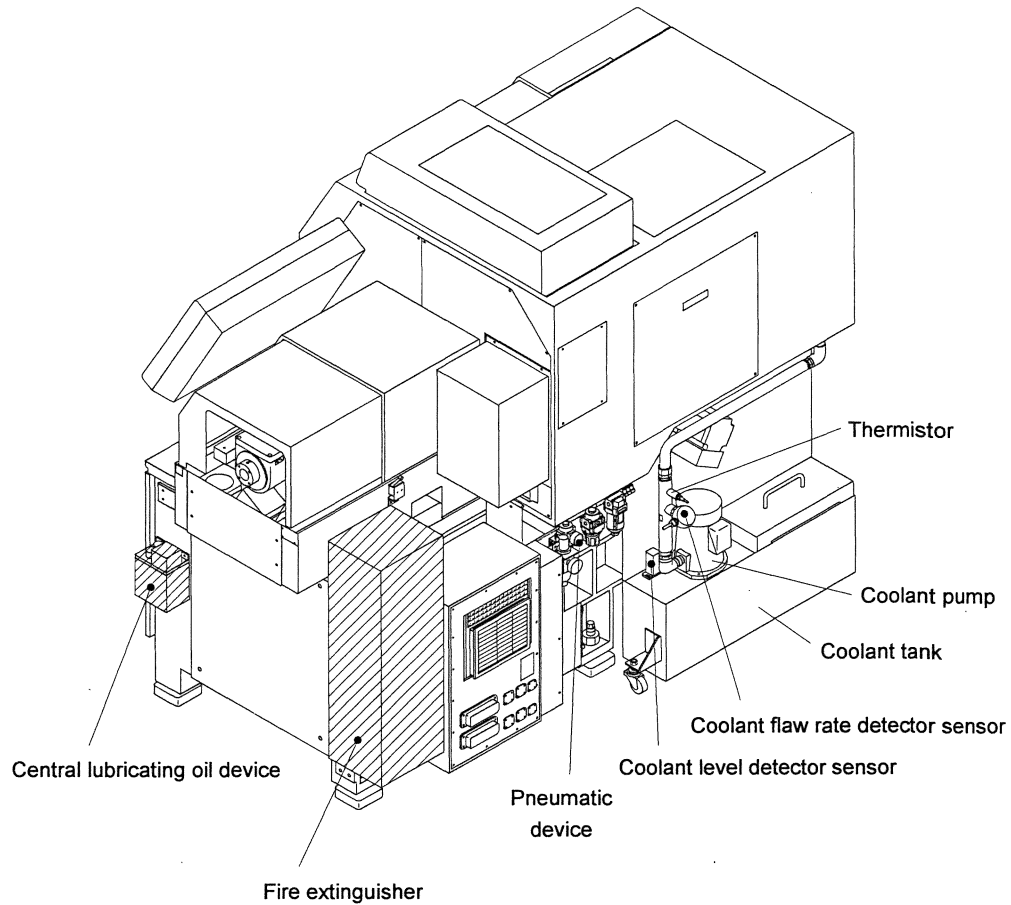
Note

Be sure to use the O-ring type jack. Do not use Y-type terminals which may be easily disconnected.

13. Apply a lubricating oil as shown in the table of step 11 to the following parts.

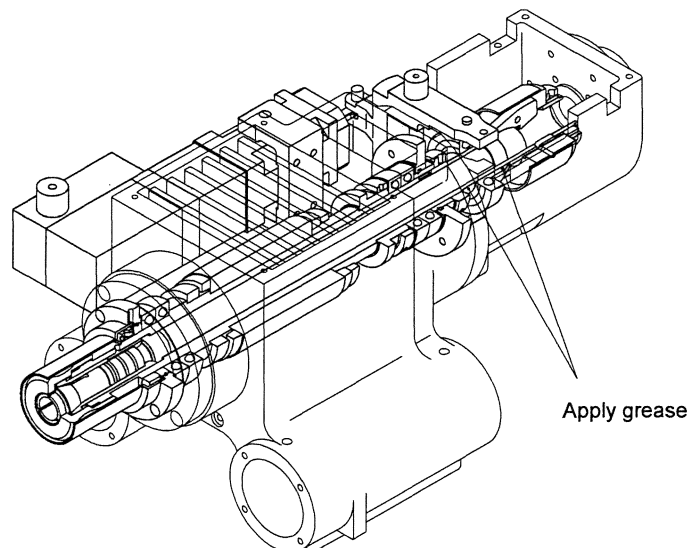
13-1. Central lubricating oil device

Fill the tank with lubricating oil. The tank can hold 0.8 liters.



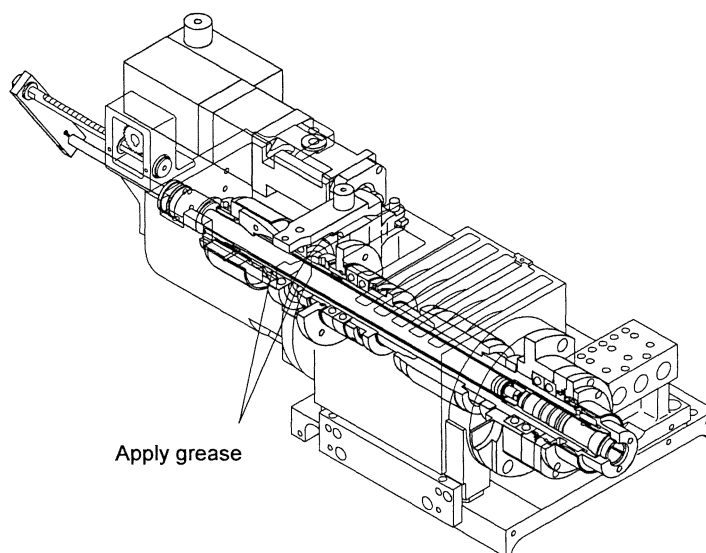
13-2. Main spindle bobbin sliding portion

Loosen two screws and remove the back side safety cover of the main headstock and apply grease or lubricating oil to the spindle bobbin sliding portion and the portion on which the chuck claw rides. The lubricating oil should have 60cst or more viscosity (under 40 degrees Celsius).



13-3. Back spindle bobbin sliding portion (for Types VII and VIII)




Take off two screws and remove the back spindle headstock cover and apply grease or lubricating oil to the spindle bobbin sliding portion and the portion on which the chuck claw rides. The lubricating oil should have 60cst or more viscosity (under 40 degrees Celsius).



14. Fill the coolant tank on the left side of the NC machine with coolant. Oil-based coolant is recommended to prevent wear of material and guide bushing sliding portions. The tank can hold approximately 150 liters.

Checking the Operation of the NC Machine

Use the procedure below to ensure that the NC machine functions properly before starting operations at the new work site.

1. Turn on the breaker of the factory power outlet.
2. Confirm the power supply voltage.
Measure the voltage of each 3-phase power cable and make sure the fluctuation is within $200V \pm 10\%$.
3. Turn on the main circuit breaker of the NC machine.
4. Reset the Emergency Stop button on the operation panel if it is pressed. If it has not been pressed, skip this step.
5. Press the Power ON switch  on the operation panel.
6. Make sure the Preparation key  lamp lights.
7. Press the Coolant key  on the operation panel to turn on and off the coolant motor.
Make sure the coolant pump rotates in the direction of the arrow on top of the pump. The coolant pump will rotate in the reverse direction if the power supply has been incorrectly connected.
8. Perform the regular test operation procedures and checkups.

Note

The following alarm may occur after the machine has been transferred:

"EX401 Detection of the machine moving"

This alarm occurs when the machine transfer detection function mounted on the machine detects the machine moving. If the alarm occurs, contact your sales representative.

Disposal

Note the following when disposing of the machine.

- Be sure to remove all lubricant and coolant.
- Dispose of the machine and waste oil according to all national laws and regulations.

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