HORIZONTAL BANDSAW

HFA700CII US

OPERATOR'S MANUAL

AMADA

HFA700C(2) US-E01-200604

PREFACE Read this manual carefully to obtain a thorough knowledge of machine operation and maintenance Be sure to follow the instructions to ensure proper procedures and prevent injuries and accidents Do not operate the machine by guesswork Keep the manual at hand and refer to it whenever you are not sure of how to perform any of the procedures

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Operator's Manual

HFA700CII Horizontal Bandsaw

Printed in Japan

CONTENTS

(Continued on next page.)

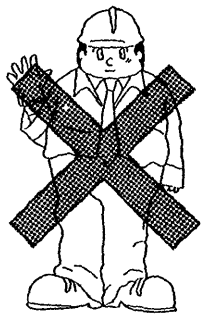
(Continued on next page.)

Safety Rules & Cutting Precautions

SAFETY RULES

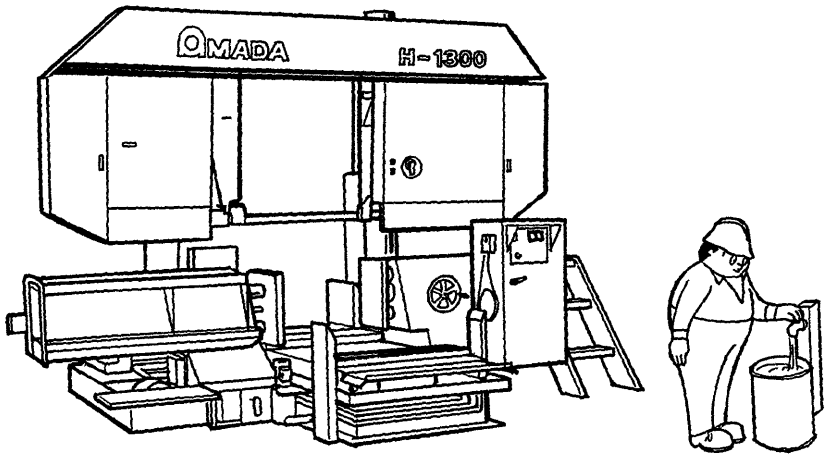
Observe these safety rules to prevent injuries and accidents *(The illustrations may be partly different from the actual machine in detail)*

a) Use roller tables on both front and rear sides of the machine when cutting long work It is dangerous if the work falls off the machine when the roller tables are not used

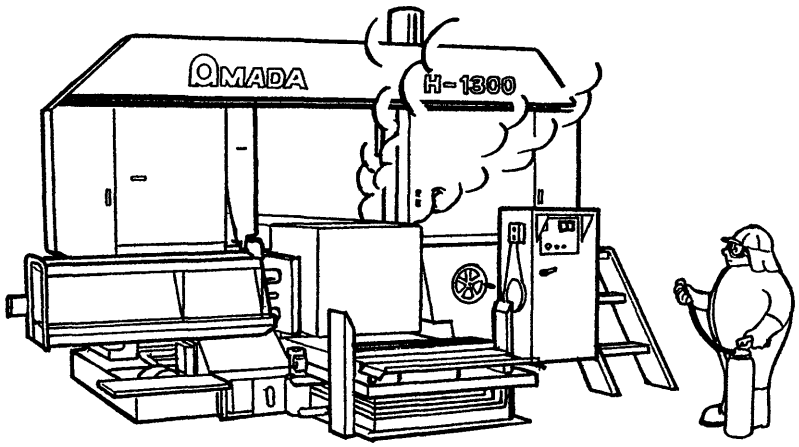


b) Never wear gloves and loose clothing when operating the machine It is dangerous if they are caught in the running machine

c) Use a water-soluble cutting fluid on this machine Oil-based cutting fluids may emit smoke or catch fire, depending on the condition of their use Never use oil-based cutting fluids on this machine

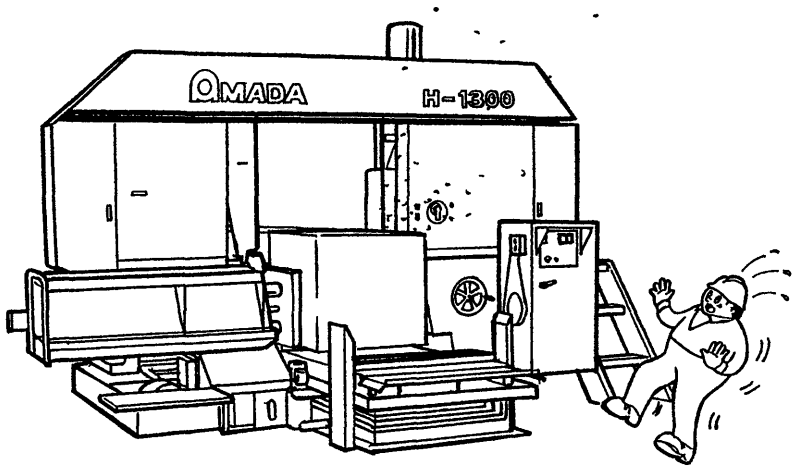


d) Be sure to prohibit any use of fire in the shop, and install a fire extinguisher or other fire control device near the machine when cutting titanium, magnesium, or any other material that produces flammable chips Never leave the machine unattended when cutting flammable materials

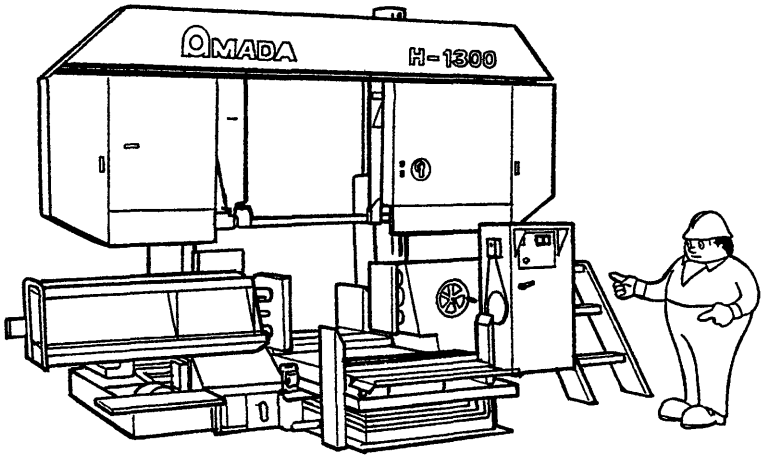


e) Never cut carbon or any other material that produces and disperses explosive dust on this machine Sparks from motors and other machine parts may ignite and explode the air-borne dust

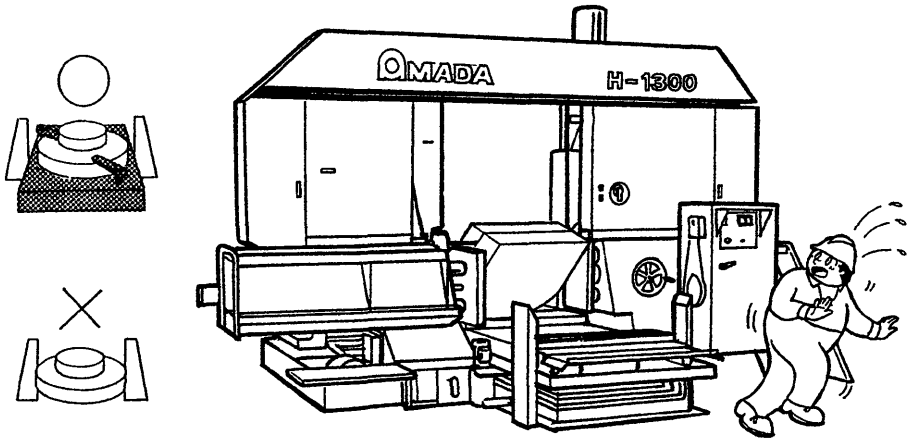
The machine needs special measures for cutting explosive materials (for details, refer to page xvi)



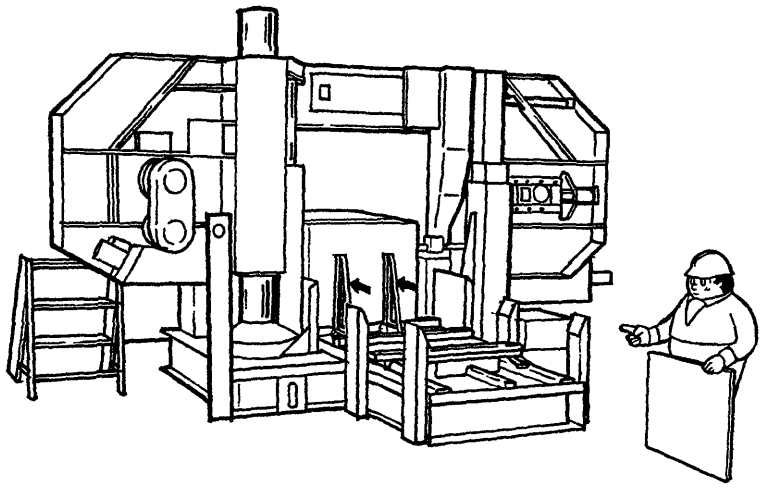
f) Be sure to confirm that the area around the machine is cleared of people and obstacles every time before starting the machine or operation



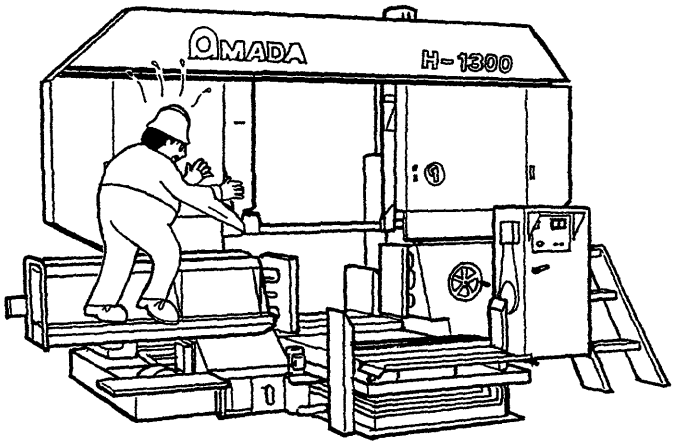
g) Never start the saw blade unless it has been confirmed that the work is firmly clamped If the work cannot be securely clamped with the vise, be sure to clamp it using jigs It is dangerous if the work is clamped loosely and forced out of the vise during cutting



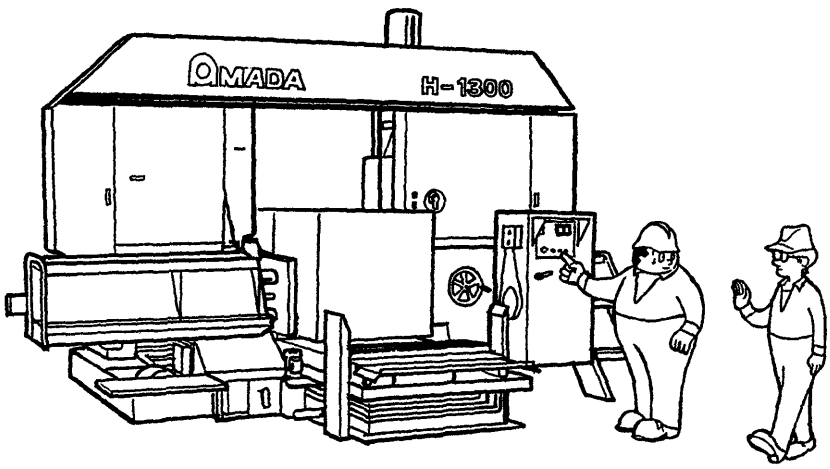
h) Take preventive measures when cutting a thin or short piece from the work to keep it from falling It is dangerous if the cut piece falls



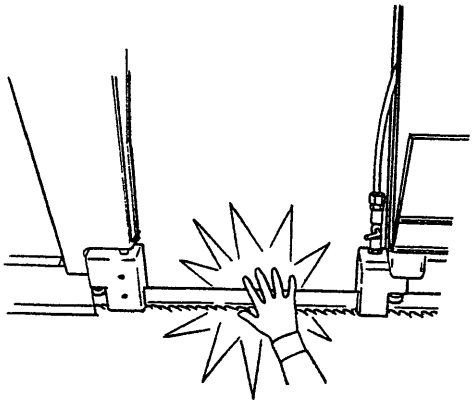
i) Never operate the machine with the wheel covers, the saw blade cover, and other covers removed or opened It is dangerous if your hands or clothing are caught in the running machine



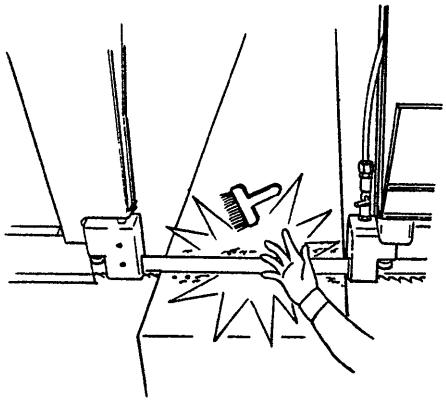
j) Never take your eyes off the machine or lean on the machine during operation Be ready for a situation that demands immediate attention to prevent an accident

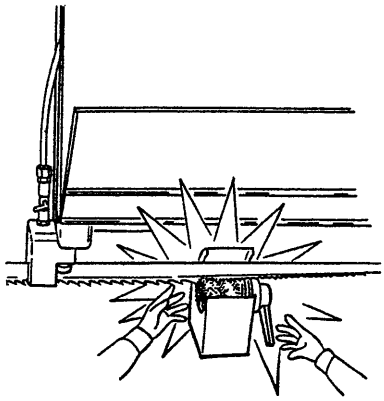


k) Never touch the running saw blade or chip conveyor It is dangerous if your hands or clothing are caught in the running saw blade or chip conveyor

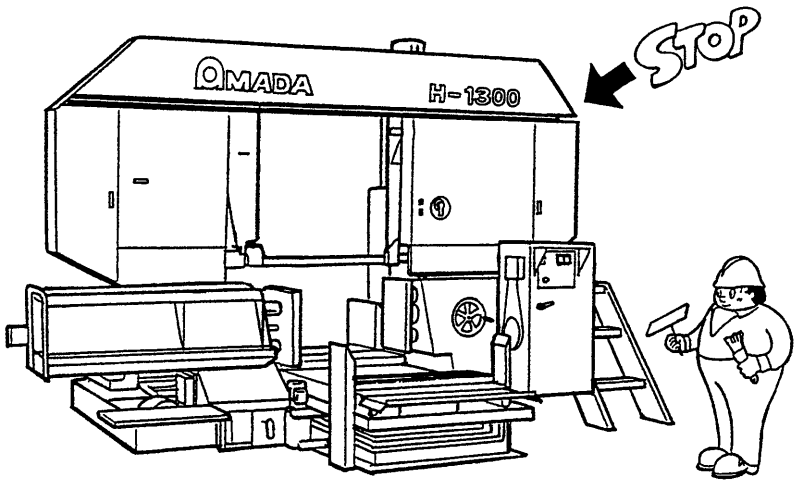


l) Never try to set the wire brushes on the saw blade or remove chips when the saw blade is running It is dangerous if your hands or clothing are caught in the running saw blade

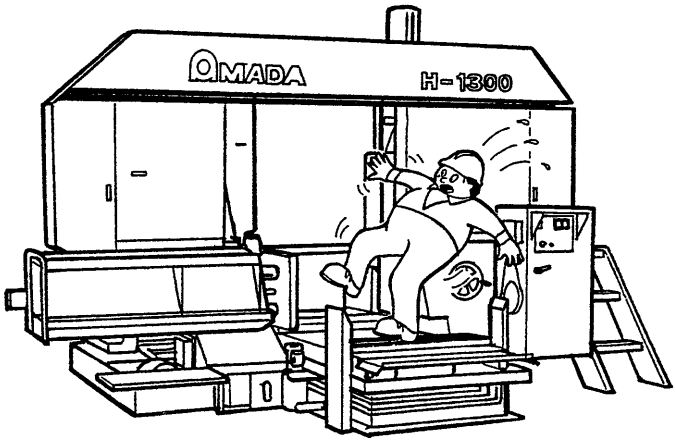




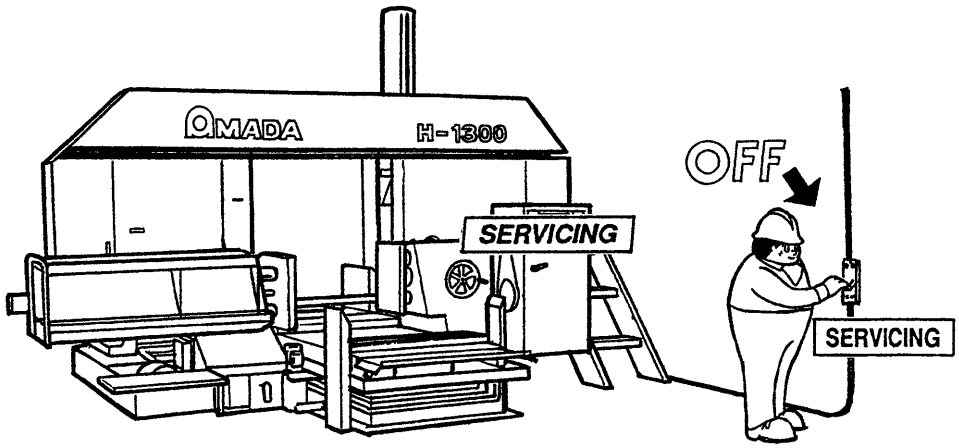
m) Stop the saw blade whenever cleaning the machine It is dangerous if your hands or clothing are caught in the running saw blade



n) Never step or stand on the table rollers of the table and you fall It is dangerous if your foot slips on the



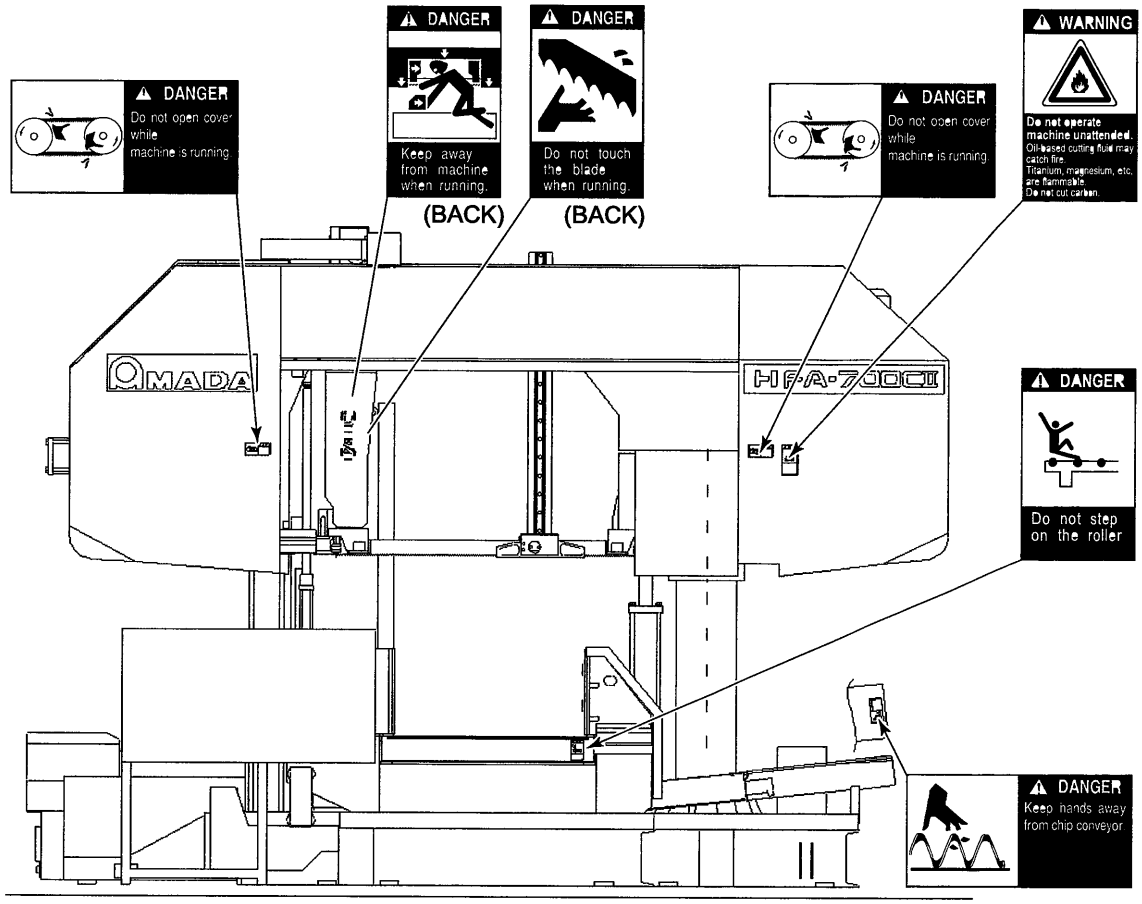
o) Turn off the shop circuit breaker switch before servicing the machine Then post a sign to inform people that the machine is under maintenance

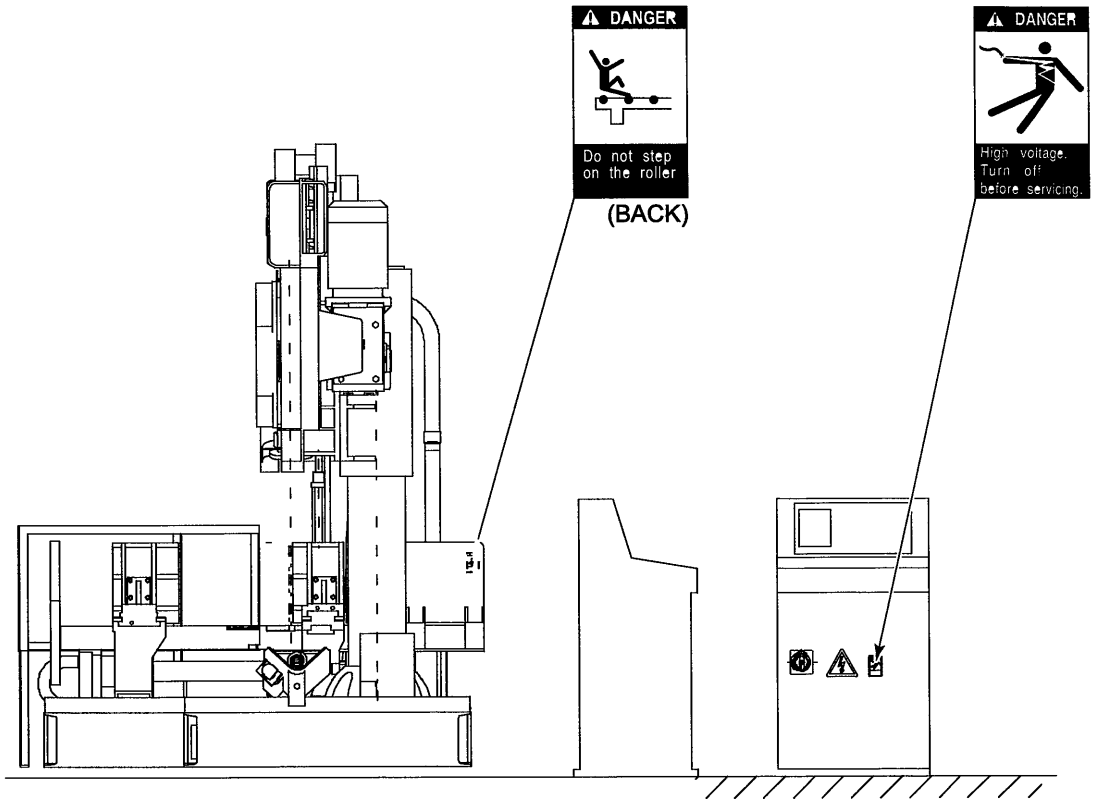


p) Never modify the machine's parts or electric circuits or change them with unauthorized parts or circuits Doing so will cause machine problems and damage and disrupt the safety of the machine and the operator

DANGER and WARNING plates

Keep the DANGER and WARNING plates well noticeable and never remove them





Hazard seriousness level

DANGER — **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury**

WARNING — **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury**

CAUTION — **Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury**

CUTTING PRECAUTIONS

The selection of an appropriate saw blade and cutting method is important in cutting the work safely and efficiently Select an appropriate saw blade and cutting method by fully considering the work to be cut and the requirements of your job (such as cutting accuracy, cutting speed, economy, and safety control)

Selecting saw blade

The tooth form, pitch, and grade of an appropriate saw blade change with the material, shape, size, and fixing method of the work to be cut An appropriate saw blade also varies with the requirements of your job (such as cutting accuracy, cutting speed, and economy) even when the same work is to be cut Consult AMADA about the selection of saw blades for specific jobs

The saw blade supplied as standard equipment on the machine measures 67 mm {2 64 in } in width, 1 6 mm {0 063 in } in thickness, and 8300 mm {327 in } in length

Cutting method

According to its material, the work may be cut wet (or with a cutting fluid), or dry (or without a cutting fluid) The materials to be cut wet or dry are listed in the table below

Wet cutting

Use a water-soluble cutting fluid on this machine

Select an appropriate cutting fluid by referring to Appendixes 1 to 3 The main composition and characteristics of cutting fluids vary from manufacturer to manufacturer Some cutting fluids may adversely affect the human body For the main composition, characteristics, effect on the human body, and other details, consult the manufacturers of specific cutting fluids Do not use cutting fluids of unknown composition

Oil-based cutting fluids may emit smoke or catch fire, depending on the condition of their use Never use oil-based cutting fluids on this machine

Never use oils other than cutting fluids (kerosene, for example) because they have the high possibility of causing a fire

Dry cutting

The machine needs special measures for performing dry cutting Consult AMADA If dry cutting is performed without taking special measures, chips may accumulate in machine parts and may cause the operation or insulation failure of the machine

The machine also needs special measures for cutting carbon and other materials that produce and disperse explosive dust Consult AMADA If such an explosive material is cut on the machine without special measures, sparks from motors and other machine parts may ignite and explode the air-borne dust

Even if the machine is equipped with special measures for cutting explosive materials, carbon and other air-borne dust may still explode Be sure to prohibit any use of fire in the shop and install a fire extinguisher or other fire control device near the machine Never leave the machine unattended during cutting operation

Materials to be cut wet or dry

	JIS	DIN	NF	BS	AISI
Wet Cutting	SUM11–43 SS S20C–S55C SUP3–13 SCr415–445 SCM415–822 SNC415–815 SNCM220–815 SUS201–631 SK1–7 SKS2–5,7– SKD1,11,12 SKT SKH2–59 SF Aluminum Aluminum alloy Copper Copper alloy Magnesium Titanium Nickel base alloy Monel Inconel	9S20–9SMn36 St33–St52-3 CK22–CK55 (C22–C55) 55Cr3–50CrV4 34Cr4–41Cr4 34CrMo4–42CrMo4 X10CrNiS189–X20Cr13 C105W1–C70W2 105WCr6 X210Cr12 X155CrVMo12 1 X100CrVMo5 1 55NiCrMoV6 S18-1-2-5–S2-10-1-8 St37-3–St52-3 Aluminum Aluminum alloy Copper Copper alloy Magnesium Titanium Nickel base alloy Monel Inconel	S250Pb–45MF6 3 1C22–1C55 55C3–50CV4 20MC5–45C4 18CD4–42CD4 30NC11 20NCD2 Z10CNF18 09–Z20C13 $Y_2$140–$Y_1$70 105WC13 Z200C12 Z160 CDV12 Z100 CDV5 55NCDV7 Z80WCV18-04-01– Z110DKCWV09-08-04-02-01 F37–F52 Aluminum Aluminum alloy Copper Copper alloy Magnesium Titanium Nickel base alloy Monel Inconel	220M07–226M44 40A–50F 070M20–070M55 250A53–735A50 530A30–530A40 708M20–708A47 655M13 805A20 303S21–420S29 BW1C–BW1A BD3 BD2 (BA2) BH19 BT1–BM42 Aluminum Aluminum alloy Copper Copper alloy Magnesium Titanium Nickel base alloy Monel Inconel	1110–1144 30–70 1020–1055 1075–6150 5120–5147 4130–4145 8615–4340 303–420 W1-13–W1-7 D3 D2 (A2) H19 T1–M42 Class A–D Aluminum Aluminum alloy Copper Copper alloy Magnesium Titanium Nickel base alloy Monel Inconel
Dry Cutting	FC10–35 FCMB FCMP SKD1 Carbon	GG10–GG35 GTS-35-10 X210Cr12 Carbon	Ft10D–Ft35 Z200C12 Carbon	150–350 B150/4–B690/2 BD3 Carbon	A48-20B–A48-50B 45006–90001 D3 Carbon

Cutting flammable materials

Chips of titanium or magnesium violently burn when they catch fire Once these chips burn, the resultant fire may explosively propagate through surrounding chips When an oil-based cutting fluid is used on the machine, it may also be ignited and spread the fire

When cutting such flammable materials, be sure to clean the machine of accumulated chips at the start and end of every operation During automatic operation, stop the machine as required to remove the chips Take care so that the cutting fluid is discharged in a sufficient amount during the cutting operation

When cutting a flammable material, be sure to prohibit any use of fire in the shop, install a fire extinguisher or other fire control device near the machine Never leave the machine unattended during the cutting operation

When carrying or disposing of chips, take due care so that they do not catch fire Be sure to prohibit any use of fire where the chips are stored

Cutting unknown materials

Before cutting an unknown material, consult the supplier of the material, burn a small amount of chips from the material in a safe place, or follow any other procedure to check to see if the material is flammable or not

Appendix 1 Classification of water-soluble cutting fluids

	Color when diluted	Main composition
Soluble	Milky white or clear	Mineral oil
Semi-synthetic	Clear	Mineral oil
Synthetic	Clear	Polymer

NOTE

● Dilute each product to the specified ratio

Appendix 2 Characteristics of water-soluble cutting fluids

Advantage	Disadvantage
• Have high cooling effect • Not flammable • Economical • Do not require cleaning of cut products (especially when soluble)	• Remove paint • Lose rust protection effect when deteriorated • Foam • Putrefy • Decline in performance, depending on quality of water used for dilution

Appendix 3 Cutting fluids suited for specific materials

This table shows the general machinability of materials with different cutting fluids

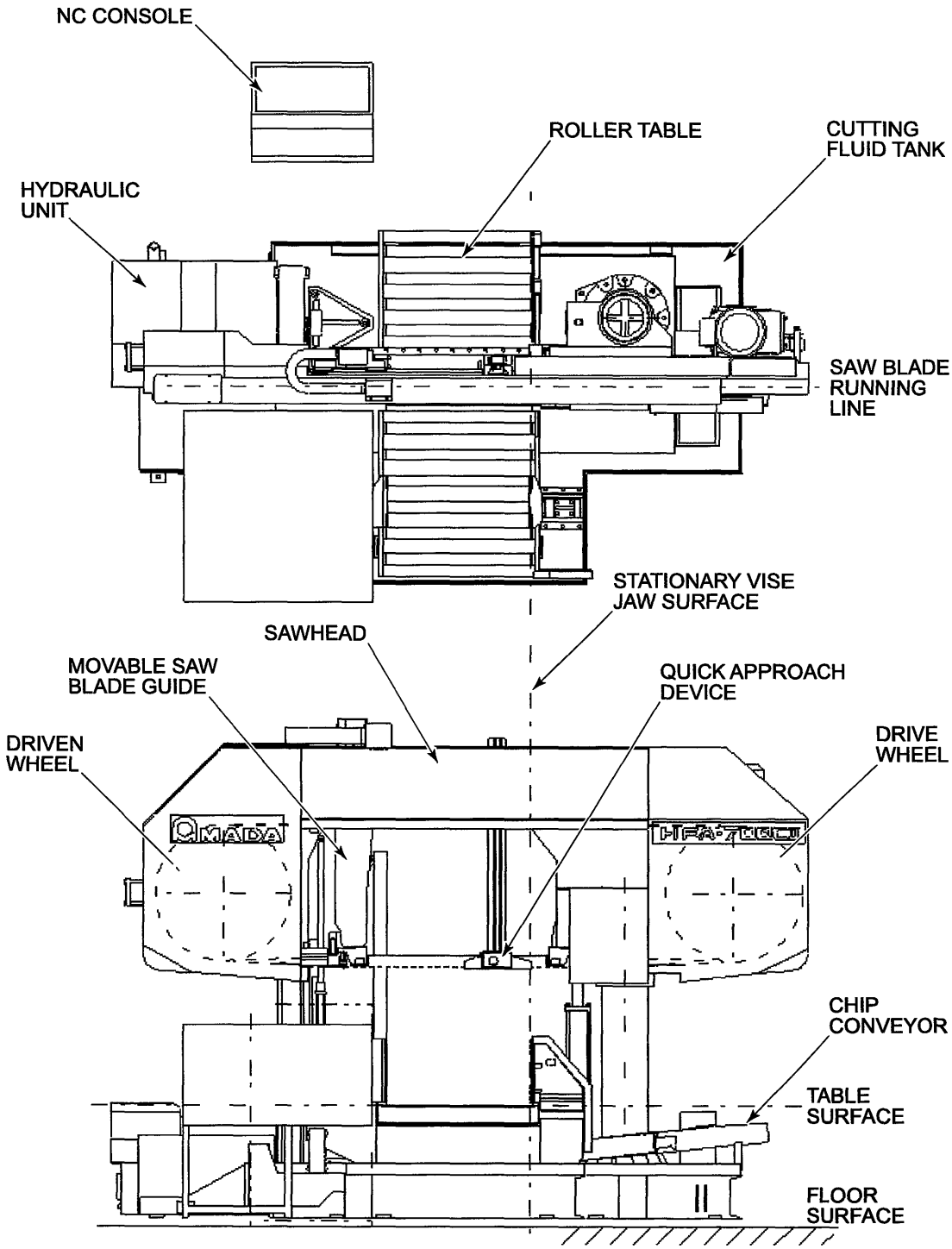
JIS	SUM11–43 FC10–35 S20C–S30C FCMB SS	S40C–S55C SCM415–822 SNCM220–815 SKS2, 4, 5 SF	SCr415–445 SUP3–13 SNC415–815 SK1–7 SKS3 7– SUS201–631 SKD1, 11 12 SKH2–59 SKT	Aluminum Aluminum alloy Magnesium Copper Copper alloy Titanium	Nickel base alloy Monel Inconel
DIN	9S20–9SMn36 GG10–GG35 CK22–CK35 (C22–C35) GTS-35-10 St33–St52-3	CK45–CK55 (C45–C55) 34CrMo4–42CrMo4 St37-3–St52-3	34Cr4–41Cr4 55Cr3–50CrV4 C105W1–C70W2 X10CrNiS189–X20Cr13 105WCr6 X210Cr12 X155CrVMo12 1 X100CrVMo5 1 S18-1-2-5–S2-10-1-8 55NiCrMoV6	Aluminum Aluminum alloy Magnesium Copper Copper alloy Titanium	Nickel base alloy Monel Inconel
NF	S250Pb–45MF6 3 Ft10D–Ft35 1C22–1C25	1C45–1C55 18CD4–42CD4 20NCD2 F37–F52	20MC5–45C4 55C3–50CV4 30NC11 $Y_2$140–$Y_1$70 Z10CNF18 09–Z20C13 105WC13 Z200C12 Z160CDV12 Z100CDV5 Z80WCV18-04-01– Z110DKCWV09-08-04-02-01 55NCDV7	Aluminum Aluminum alloy Magnesium Copper Copper alloy Titanium	Nickel base alloy Monel Inconel
BS	220M07–226M44 150–350 070M20–080A30 40A–50F	060A40–070M55 708M20–708A47 805A20	530A30–530A40 250A53–735A50 655M13 BW1C–BW1A 303S21–420S29 BD3 BD2 (BA2) BT1–BM42 BH19	Aluminum Aluminum alloy Magnesium Copper Copper alloy Titanium	Nickel base alloy Monel Inconel
AISI	1110–1144 A48-20B–A48-50B 1020–1030 30–70	1040–1055 4130–4145 8615–4340 Class A–D	5120–5147 1075–6150 W1-13–W1-7 303–420 D3 D2 (A2) T1–M42 H19	Aluminum Aluminum alloy Magnesium Copper Copper alloy Titanium	Nickel base alloy Monel Inconel
Soluble	▲	●	●	●	▲
Semi-synthetic	▲	●	●	●	▲
Synthetic	●	●	▲	●	▲

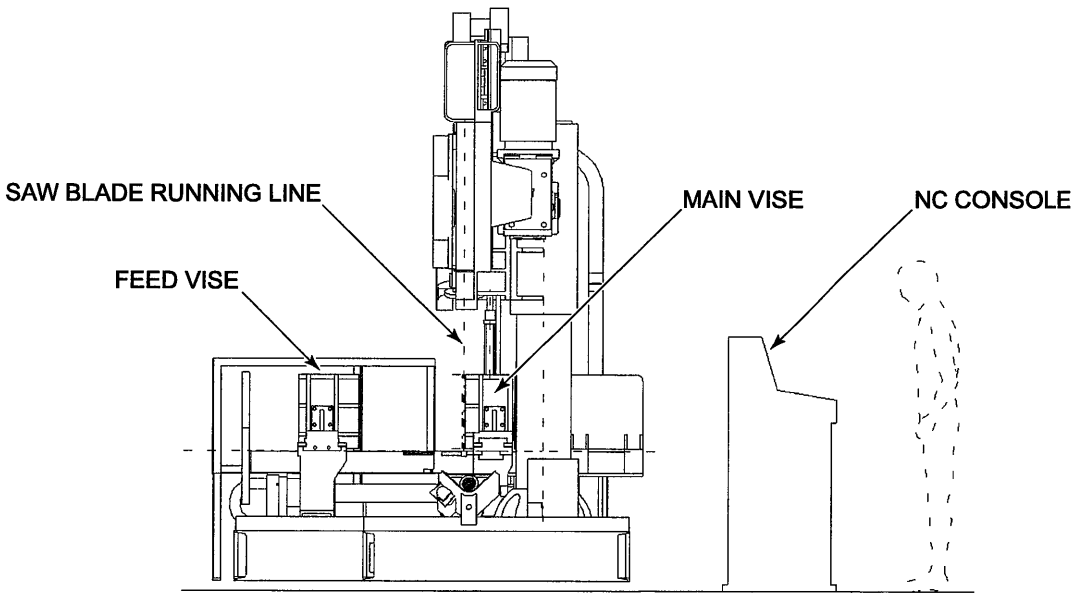
● Best ▲ Good

Part I

Description

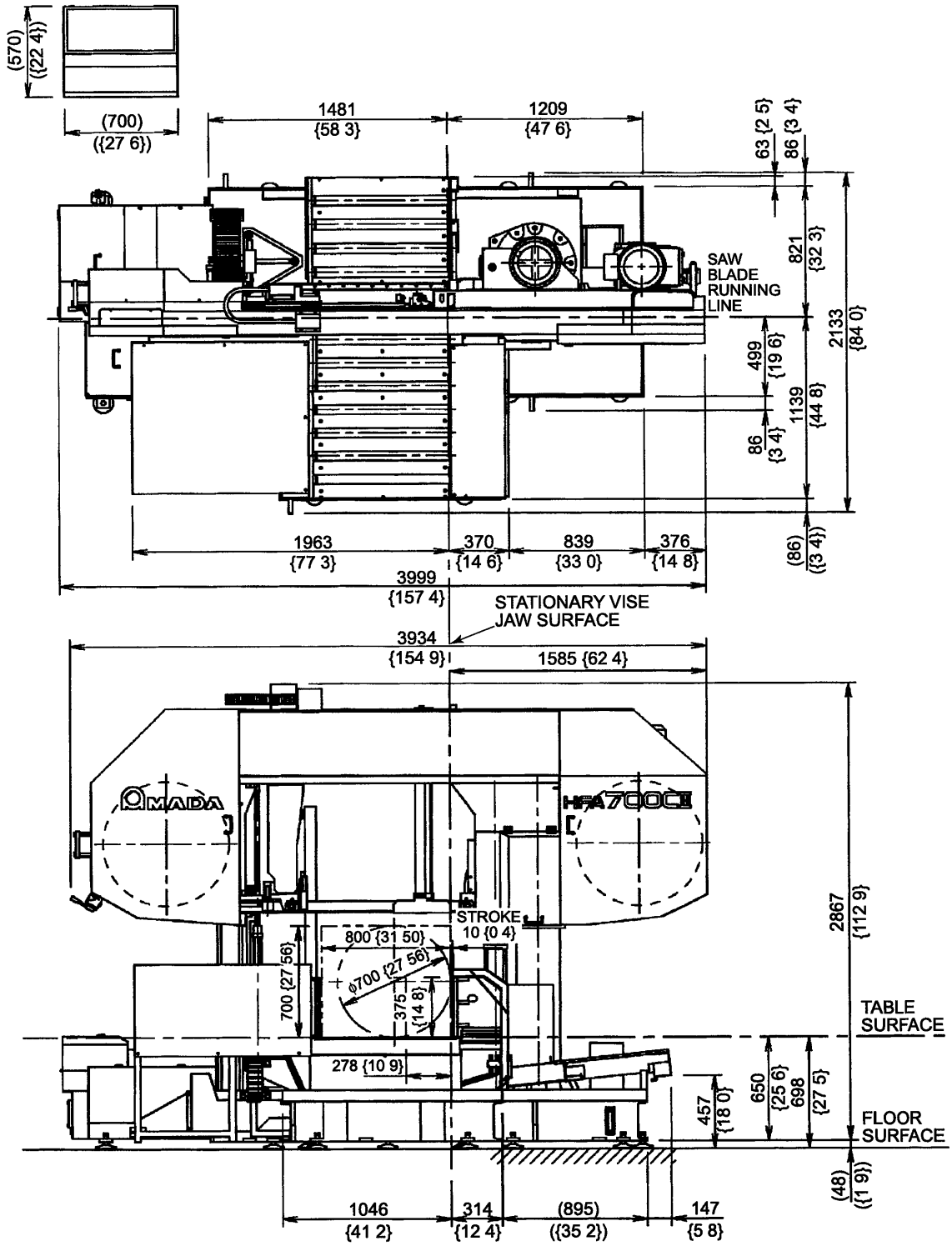
NAMES OF MAIN PARTS

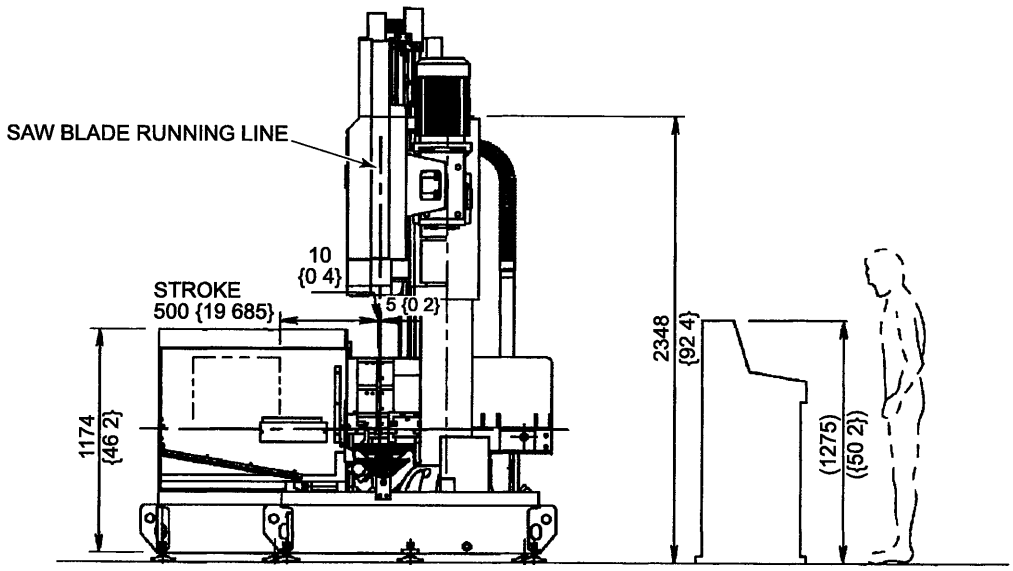



SAW BLADE RUNNING LINE
FEED VISE
MAIN VISE
NC CONSOLE

DIMENSIONS OF MAIN PARTS

Unit mm {in }




SAW BLADE RUNNING LINE
10
{0 4}
STROKE
500 {19 685}
5 {0 2}
1174
{46 2}
2348
{92 4}
(1275)
((50 2))

SPECIFICATIONS

Cutting capacity	Round work (diameter)		ϕ290 to ϕ700 mm {ϕ11 42 to ϕ27 56 in }
	Rectangular work (H × W)		30 × 290 mm to 700 × 800 mm {1 18 × 11 42 in to 27 56 × 31 50 in }
Motors	Saw blade motor		11 kW {14 8 HP}, 4P
	Hydraulic pump motor		3 7 kW {5 0 HP}, 4P
	Cutting fluid pump motor		0 36 kW {0 48 HP}, 2P
	Wire brush motor		0 09 kW {0 12 HP}, 4P
Environment	Power source		3-phase, 200 VAC ± 10%, 50/60 Hz 3-phase, 220 VAC ± 10%, 60 Hz
	Temperature		Operating 0 to 40°C {32 to 104°F} Nonoperating –5 to 50°C {23 to 122°F}
	Humidity		Operating 30 to 90% Nonoperating 10 to 95% (noncondensing)
Control circuit voltage			AC 110 V, DC 24 V
Saw blade	Dimensions (W × T × L)		67 × 1 6 × 8300 mm {2 64 × 0 063 × 327 in }
	Running speed		15 to 120 m/min {49 to 394 fpm} at 50/60 Hz, changed by inverter
	Tension control		Hydraulic powered, with saw blade breakage and slip detection functions
	Guide	Side	Inserts, bearing twist
		Back	Backup tips
Vise	Operation		Hydraulic full-stroke cylinder
Cutting fluid	Tank capacity		100 L {26 4 US gal}
Hydraulic oil	Tank capacity		115 L {30 4 US gal}
Saw blade control	Up	Automatic	Hydraulic automatic rise (automatic stop at upper limit)
		Manual	Inching up by pushbutton operation
	Rise height setting		Automatic setting with quick approach feeler
	Down	Automatic	Rapid approach with quick approach feeler
		Manual	Inching down by pushbutton operation
	Depth-of-cut control		Hydraulic powered, CNC-LIGHT unit
	Slip detection		Automatic stop at overload, jamming, or breakage

Work feed	Type (capacity)	Hydraulic shuttle type, maximum stroke length of 500 mm {19 685 in }, standby position selectable
	Remnant length	35 mm {1 38 in } for clamp clearance of 20 mm {0 79 in }
Chip disposal		Automatic follow-up wire brushes
		Chip conveyor (automatic hydraulic screw type)
Table height		700 mm {27 6 in }
Allowable loading mass on machine		8000 kg {17640 lb}
Machine dimensions (W × D × H)		3999 × 2133 × 2867 mm {157 4 × 84 0 × 112 9 in }
Machine mass		7000 kg {15440 lb}

Automatic backgauge function

Number of input stations	99
Cutoff length	10 0 to 9999 9 mm in 0 1-mm increments, 0 394 to 99 999 inches in 0 001-inch increments
Number of cut pieces	1 to 9999 per station
Kerf compensation	Automatic kerf compensation Also automatically calculated during feed of long work
Input method	Numeric-key input
Cutting data display	LCD screen
Memory backup	Yes (dedicated battery built in)

Standard accessories

Name	Specification or type	Qty
Screwdriver	Phillips type	1
Screwdriver	Slotted type	1
7-piece Allen wrench set	2 5 mm	1
	3 mm	
	4 mm	
	5 mm	
	6 mm	
	8 mm	
	10 mm	
6-piece double-ended wrench set	8 × 10 mm	1
	10 × 12 mm	
	12 × 14 mm	
	14 × 17 mm	
	17 × 19 mm	
	21 × 23 mm	
Grease gun	100 cm^3	1
Socket wrench	15/16"	1
Allen wrench	12 mm	1
Allen wrench	14 mm	1
Single end wrench	38 mm	1
Monkey wrench	300 mm	1
Wire brush	ϕ100 mm	2
Saw blade	67 (W) × 1 6 (T) × 8300 (L) mm	1

Part II

Installation

LOCATION

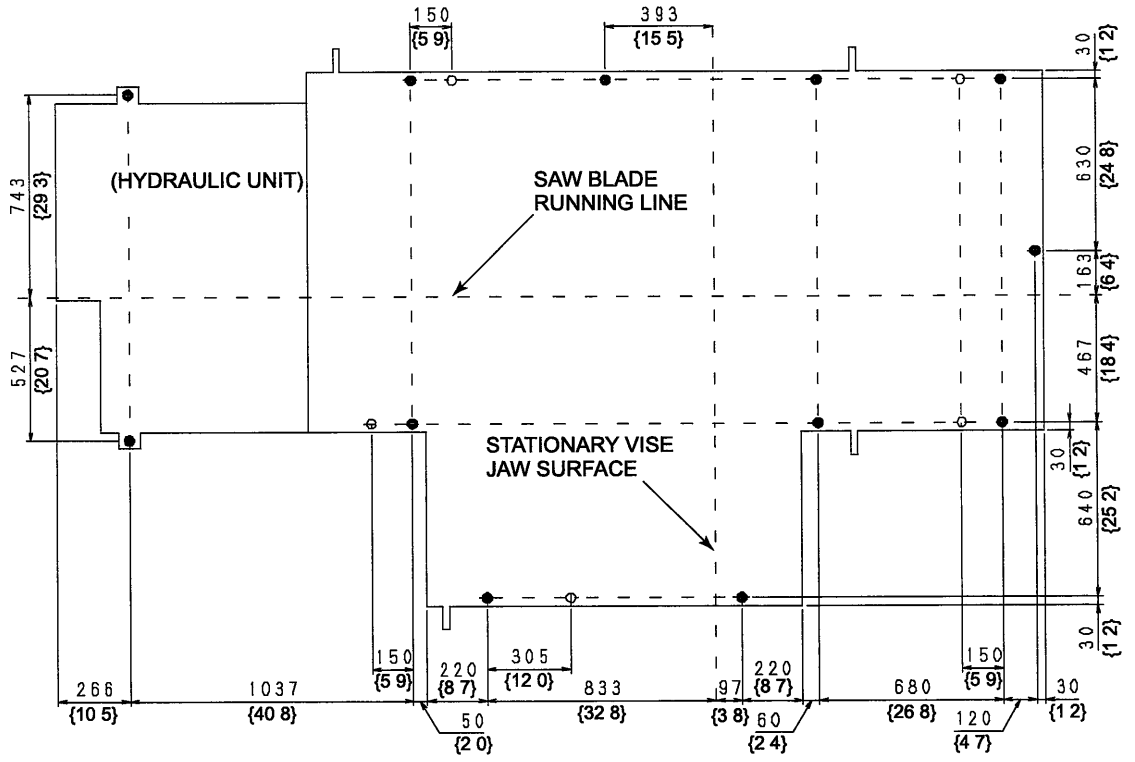
NOTICE

- Select the location where the machine will not be exposed to wind and rain
- If there is any other machine that may produce vibration or dust near the location, take any necessary steps to protect the machine from such vibration or dust

Select a location where ample space can be provided around the machine for ease of material loading and unloading and of machine maintenance and inspection

Install the machine on a concrete floor as flat as possible Place base plates (150 mm {5 9 in } square and 12 mm {0 5 in } thick) where the machine is to be located There is no particular need to install the machine on a raised foundation, but if the machine is likely to vibrate, secure the legs of the machine with anchor bolts (See the foundation drawing below)

Unit mm {in }



- LEVELING BOLT POSITION, M24, 12 PLACES
- ANCHOR BOLT HOLE, ϕ24 {0 94}, 5 PLACES

CARRYING

⚠ WARNING

- **Lifting the machine is likely to damage the machine and is very dangerous Have a qualified contractor perform the lifting work**
- **Be absolutely sure that the crane or forklift used to lift the machine has sufficient power to handle the machine's mass Be absolutely sure that all wire rope slings are of adequate strength**

The mass of the machine is 7000 kg {15440 lb}

When using a crane, install shackles in the four lifting holes in the machine base, apply the wire rope slings to the shackles, and lift the machine while keeping it level When raising or lowering the machine, take care not to shock it

When using a forklift or rollers, move the machine into the location while taking care not to shock the machine

REMOVING RUST-PREVENTIVE GREASE

NOTICE

- If the rust-preventive grease is removed with a scraper or solvent, the machine may be damaged and the paint may be removed

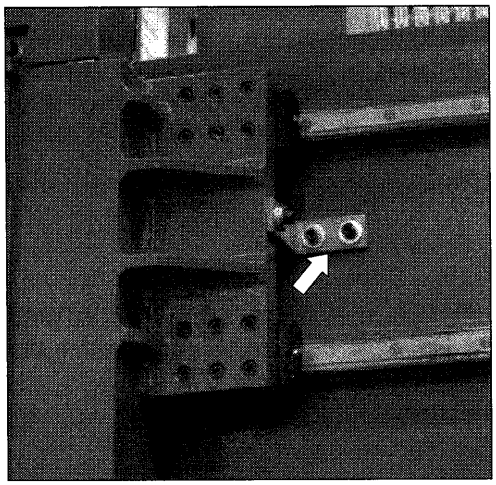
Wipe off the rust-preventive grease with cloth If the rust-preventive grease is difficult to wipe off, dampen the cloth with cleaning oil or kerosene, and use it to remove the rust-preventive grease

Apply machine oil to the machine surfaces that are susceptible to rusting

REMOVING SHIPPING BRACKETS

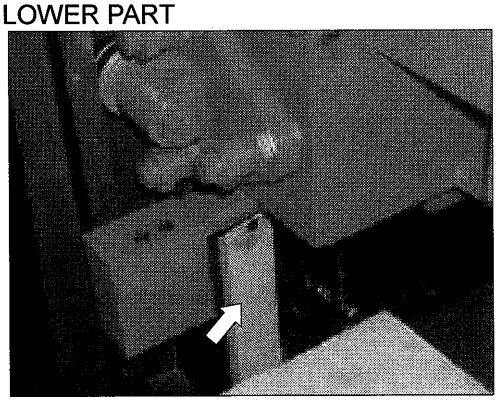
Remove the four shipping brackets securing the machine parts shown below.

MOVABLE SAW BLADE GUIDE

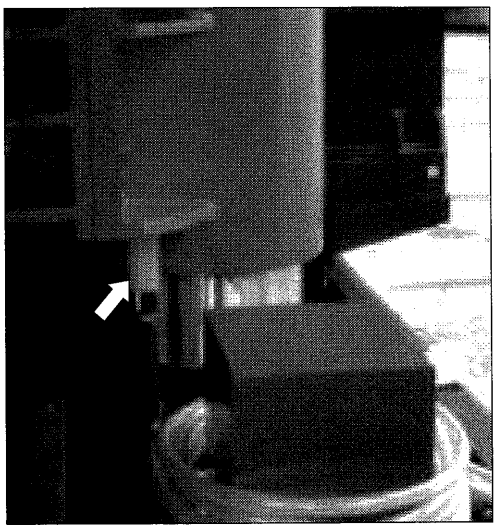


DRIVEN-WHEEL SIDE NARROW GUIDE UPPER PART

DRIVEN-WHEEL SIDE NARROW GUIDE LOWER PART



MAIN COLUMN LOWER PART



NOTE

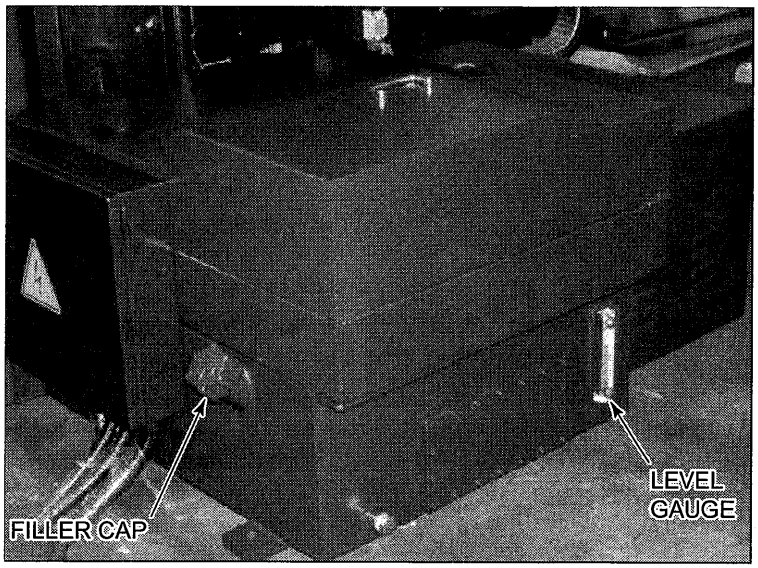
- The shipping brackets will be required when moving the machine to another location. Carefully keep them.

SUPPLYING HYDRAULIC OIL

NOTICE

- If the hydraulic pump is started with an insufficient amount of the hydraulic oil, it may break. Before starting the machine, be sure to supply the hydraulic oil to it.

Supply the hydraulic oil as described below.



1 Remove the filler cap.

2 Fill the hydraulic oil tank with one of the following recommended hydraulic oils:

Recommended oils:
Amada A32
Mobil DTE 24
Shell Tellus Oil 32
(ISO VG32 equivalent)

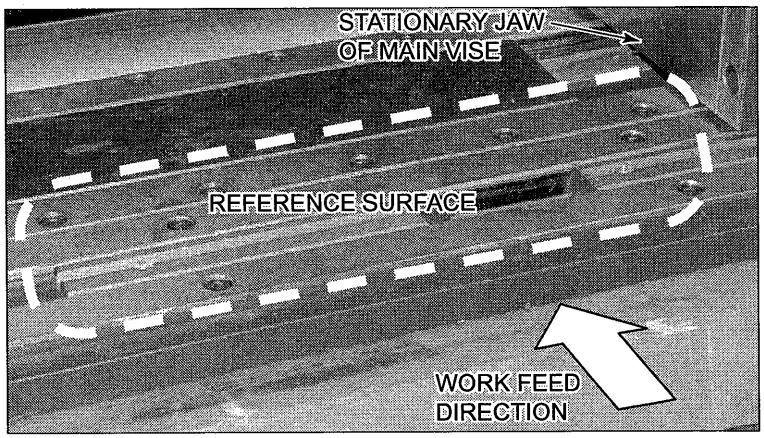
Tank capacity:
115 L {30.4 US gal}

3 Check that the hydraulic oil level is between the high and low marks of the level gauge.

4 Securely tighten the filler cap.

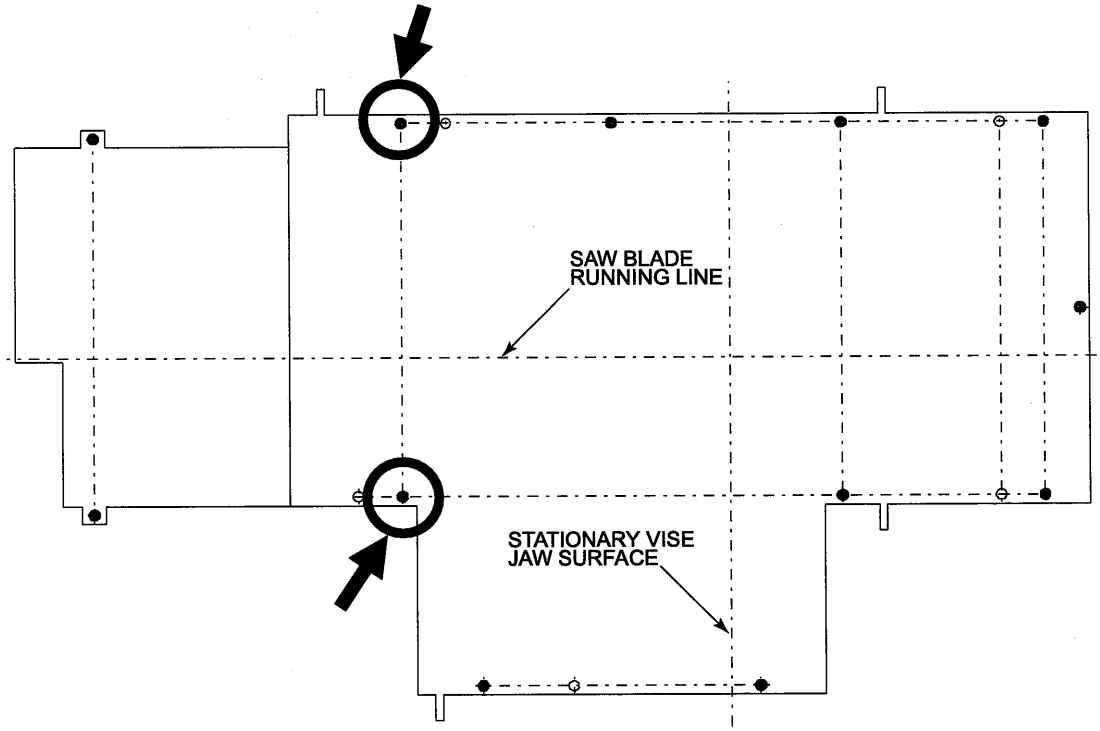
LEVELING

The reference surface for leveling the machine is the top surface of the main vise bed.



Place a spirit level on the reference surface, and turn the leveling bolts in the legs to level the machine.

After leveling the machine, turn the two leveling bolts at the driven-wheel side 2 to 3 turns to raise the driven-wheel side 6 to 9 mm {0.24 to 0.35 in.} for recovery of the cutting fluid.



When the leveling of the machine is completed, check that all base plates are equally loaded and securely seated on the floor.

SUPPLYING ELECTRIC POWER

⚠ WARNING

- **Have a qualified electrician make the necessary electrical connections**
- **Before opening the door of the NC console, be sure to turn off the shop circuit breaker switch**
- **Ground the machine independently of other equipment**

NOTICE

- Supply the machine with 3-phase, AC 200 V, 50/60 Hz or AC 220 V, 60 Hz electric power with voltage variations of 10% or less Prepare a transformer that suits these power supply conditions as required
- The apparent power of the machine is 26 kVA Install a shop circuit breaker that suits this power
- Use power cables of such size and type as to suit the power supply voltage, wiring length, and wiring method
- Supply electric power to the machine from a source different from those for welding or other machines that produce electrical noise Ground the machine with an independent grounding conductor If the power cable conductors and grounding conductor are shared by this machine and a noise-producing machine, this machine may be damaged Additionally, the machine may abruptly stop its operation or may operate improperly These conditions can lead to a serious accident

Connecting power cable

Connect the power cable as described below

1. Turn off the shop circuit breaker switch
2. Turn the machine circuit breaker switch to OFF
3. Open the two locks and the door of the NC console
4. Pull the power cable from the shop circuit breaker through the power inlet at the bottom of the NC console
5. Connect the power cable conductors to the terminal block of the machine circuit breaker
6. Connect the grounding conductor to the E terminal in the NC console
7. Close and lock the door of the NC console

Checking electrical connections

Check that the electrical connections are correctly made as described below (For the operational explanation of the switches and buttons, refer to Part III, Controls)

1 Turn on the shop circuit breaker switch

2 Turn the machine circuit breaker switch to ON

3 Press and illuminate the HYDRAULIC ON button to start the hydraulic pump motor

4 Press the BLADE UP button If the electrical connections are correctly made, the sawhead rises as long as the BLADE UP button is pressed and held The connection of the power cable is completed when the sawhead rises

If the sawhead does not rise when the BLADE UP button is held pressed, the hydraulic pump motor is running in the reverse direction Immediately press the HYDRAULIC OFF button Reconnect the power cable as described below

(1) Turn the machine circuit breaker switch to OFF

(2) Turn off the shop circuit breaker switch

(3) Open the two locks and the door of the NC console

(4) Interchange two of the three power cable conductors connected to the terminal block of the machine circuit breaker

(5) Close and lock the door of the NC console

(6) Repeat steps 1 to 4 above, and check again that the sawhead rises

5 Press the HYDRAULIC OFF button

6 Turn the machine circuit breaker switch to OFF

7 Turn off the shop circuit breaker switch

SUPPLYING CUTTING FLUID

WARNING

- **Use a water-soluble cutting fluid on this machine.**
  Oil-based cutting fluids may emit smoke or catch fire, depending on the condition of their use. Never use oil-based cutting fluids on this machine.

NOTICE

- If the cutting fluid pump is started with an insufficient amount of the cutting fluid, it may break. Before starting the machine, be sure to supply the cutting fluid to it.

Supply the cutting fluid from above the filter into the cutting fluid tank. The proper cutting fluid level is between the high and middle marks of the level gauge.

Tank capacity: 100 L {26.4 US gal}

INSTALLING FIRE CONTROL DEVICES

Install a fire extinguisher or other fire control device in the shop to provide against fires.

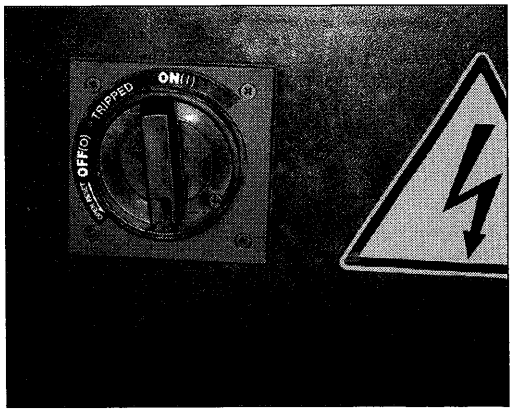
Part III

Controls

MACHINE CIRCUIT BREAKER SWITCH

Power switch of the machine. Located at the front of the NC console.

Turned to ON to turn on the power of the machine and the POWER light on the control panel and to present the initial display on the LCD screen of the control panel. Turned to OFF to turn off the power of the machine and the POWER light on the control panel.



NOTE

- When turning on the power of the machine, first turn on the shop circuit breaker switch, and then turn the machine circuit breaker switch to ON.
- When turning off the power of the machine, first turn the machine circuit breaker switch to OFF, and then turn off the shop circuit breaker switch.

CONTROL PANEL

[1] POWER light

Illuminated to indicate that the power of the machine is turned on when the machine circuit breaker switch on the NC console is turned to ON.

[2] HYDRAULIC ON button

Illuminates the built-in light and starts the hydraulic pump motor.

[3] HYDRAULIC OFF button

Stops the hydraulic pump motor and extinguishes the built-in light of the HYDRAULIC ON button.

[4] AUTO/MANUAL keyswitch

Used to select the automatic or manual mode of operation Turned to "(MANUAL)" to cause the machine to make one cut Turned to "(AUTO)" to cause the machine to automatically operate according to the preset cutting data

NOTE

- When the machine is first started in the MANUAL mode and then switched to the AUTO mode during the downfeeding of the sawhead, the first cut is not counted, but the subsequent cuts are counted as the number of pieces cut during automatic operation This function can be used for the machine to automatically cut the work after it trims the end of the work
- If the keyswitch is turned to MANUAL during its automatic operation, the machine stops immediately When the keyswitch is turned to MANUAL during cutting, the machine stops after completing the current cut

[5] BLADE DRIVE button

Starts the saw blade running, turns on the cutting fluid, and lowers the sawhead

NOTE

- There are several necessary conditions and confirmations to be met before starting the cutting operation Refer to "Manual operation" and "Automatic operation" in Part IV, Operation

[6] EMERGENCY STOP button

Brings the machine to a total stop immediately

The button locks when pressed and must be turned clockwise to unlock it

[7] BLADE UP button

Pressed to stop the saw blade running, and pressed and held to raise the sawhead

[8] BLADE DOWN button

Pressed and held to rapidly lower the sawhead

When the quick approach feeler touches the work, the sawhead automatically changes to the preset downfeed speed

NOTE

- The button is enabled only when the AUTO/MANUAL keyswitch is turned to MANUAL

[9] MAIN VISE OPEN button

With the sawhead positioned above the main vise, pressed and held to open the main vise over the full stroke

With the sawhead positioned below the main vise, pressed to open the main vise slightly When the main vise is already opened, it does not open any more at the depression of the button

NOTE

- The button is enabled only when the AUTO/MANUAL keyswitch is turned to MANUAL

[10] MAIN VISE CLOSE button

Pressed and held to close the main vise and illuminate the MAIN VISE CLOSE light

NOTE

- The button is enabled only when the AUTO/MANUAL keyswitch is turned to MANUAL

[11] MAIN VISE CLOSE light

Illuminated to indicate that the main vise is closed and extinguished to indicate that the main vise is opened

[12] FEED VISE OPEN button

With the sawhead positioned above the feed vise, pressed and held to open the feed vise over the full stroke

With the sawhead positioned below the feed vise, pressed to open the feed vise slightly When the feed vise is already opened, it does not open any more at the depression of the button

NOTE

- The button is enabled only when the AUTO/MANUAL keyswitch is turned to MANUAL

[13] FEED VISE CLOSE button

Pressed and held to close the feed vise and illuminate the FEED VISE CLOSE light

NOTE

- The button is enabled only when the AUTO/MANUAL keyswitch is turned to MANUAL

[14] FEED VISE CLOSE light

Illuminated to indicate that the feed vise is closed and extinguished to indicate that the feed vise is opened

[15] FEED VISE BACKWARD button

Pressed and held to move the feed vise backward The feed vise cannot be moved backward if the main vise and feed vise are both closed The feed vise may not be moved backward when the quick approach feeler is in contact with the work

NOTE

- The button is enabled only when the AUTO/MANUAL keyswitch is turned to MANUAL

[16] FEED VISE FORWARD button

Pressed and held to move the feed vise forward The feed vise cannot be moved forward if the main vise and feed vise are both closed The feed vise cannot also be moved forward if the quick approach feeler is in contact with the work or is raised and locked

NOTE

- The button is enabled only when the AUTO/MANUAL keyswitch is turned to MANUAL

[17] FEED VISE FORWARD LIMIT light

Illuminated to indicate that the feed vise is at the forward limit

[18] FEED VISE POSITIONED light

Illuminated to indicate that the feed vise is completely positioned

[19] FEED VISE SLOW button

Used to select the feed vise speed Pressed to illuminate the built-in light and select a low speed for the forward and backward movements of the feed vise Pressed again to extinguish the built-in light and select a high speed for the forward and backward movements of the feed vise

[20] WORK LIGHT button

Used to turn on and off the work light Pressed to turn on the work light and pressed again to turn off the work light At the specified time after it has come on, the work light automatically goes out

[21] CUTTING FLUID button

Used to start the cutting fluid pump alone for cleaning the machine Pressed to illuminate the built-in light and discharge the cutting fluid even when the saw blade does not run Pressed again to extinguish the built-in light and stop the cutting fluid

[22] BLADE RUNNING SPEED dial

Sets the speed at which the saw blade runs for cutting the work

Turned clockwise (+) to increase the running speed of the saw blade and counterclockwise (–) to decrease the running speed of the saw blade

Setting range 15 to 120 m/min {49 to 394 fpm} at 50/60 Hz (inverter speed change)

[23] HEAD-END POSITIONING button

Starts the head-end positioning of the work Pressed to flash the built-in light and raise the sawhead to the upper limit When the head-end positioning of the work is completed, the built-in light goes out

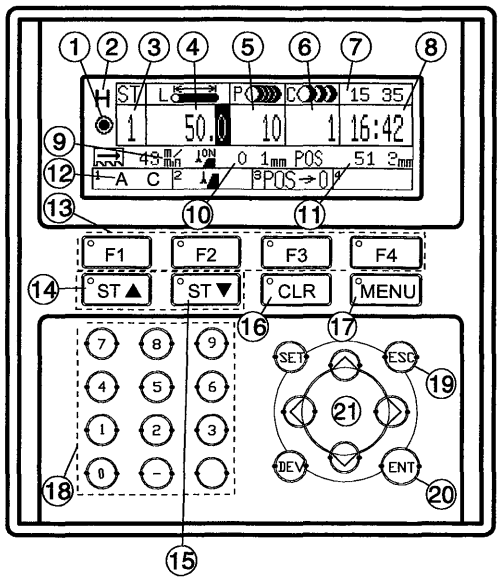
[24] INSERT CLOSE/OPEN button

Used to close and open the saw blade inserts in the movable and stationary saw blade guides Pressed to illuminate the built-in light and close the saw blade inserts Pressed again to extinguish the built-in light and open the saw blade inserts

[25] WORK WIDTH dial

Sets in the NC the width (diameter) of the work to be cut when the saw blade runout detection function is enabled

[26] Cutting data setting controls



① Current station light

Illuminated to indicate that the number of the station currently being run agrees with the number displayed in the ST field

Usually, the machine starts its automatic operation from the station number displayed in the ST field, and both cutting data display and operation go to the next station each time a station is finished The current station light remains illuminated during the automatic operation

The current station light goes out if the ST field is changed to another station number after the start of the automatic operation

NOTE

- If the current station light is extinguished, there is no knowing which station is currently run Change the ST field from one station number to another with the ST ▲ or ▼ key until the current station light is illuminated
- The machine allows the ST field to be changed from one station number to another, and then the cutting data of other than current stations to be confirmed or changed The cutting data of the current station cannot be changed

② Letter H

Appears when heavy material is selected or HEAVY MATERIAL is shown in the material class field of the setup display and disappears when standard material is selected or STANDARD MATERIAL is shown in the material class field of the setup display

③ ST field

Indicates the number for the station The stations 1 to 99 can be used for cutting in the AUTO mode A maximum of 9999 pieces of the same cutoff length can be set at each station The station 0 is used for the semiautomatic positioning function

④ L field

Indicates the cutoff length in the AUTO mode The setup range is 10 0 to 9999 9 mm {0 394 to 99 999 in }

⑤ P field

Indicates the number of pieces to be cut in the AUTO mode The setup range is 1 to 9999 pieces

⑥ C field

Automatically counts and indicates the number of pieces already cut in the AUTO mode The display range is 0 to 9999 pieces

⑦ Current time field

Indicates the current time The display range is 00 00 to 23 59

⑧ Anticipated cutting end time field

Indicates the time at which the cutting operation for the station displayed in the ST field during automatic operation is anticipated to end The anticipated cutting end time is calculated from the measured cutting time of the first piece cut for the station displayed, and is thus not displayed until the first piece is cut When the cutting conditions are changed during the cutting operation, the anticipated cutting end time displayed after the cutting of the first piece may not agree with the actual cutting end time

⑨ Blade speed field

Indicates the running speed of the saw blade in m/min or fpm

⑩ Blade runout field

Indicates whether the runout detection function is set enabled (ON) or disabled (OFF) and the current runout of the saw blade The ON or OFF indication in this field corresponds to the setting made on the runout setup display

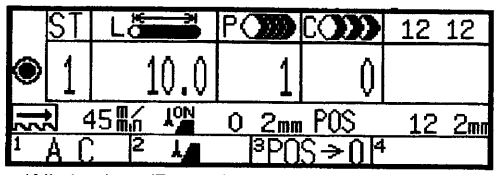
⑪ POS field

Indicates the current position of the feed vise in mm or inches In the MANUAL mode, press the function key F3 (POS→0) to reset the position of the feed vise to zero The sign "–" or "+" is indicated when the feed vise moves forward or backward from the position In the AUTO mode, the distance from the forward limit of the feed vise is always indicated

⑫ Function label fields

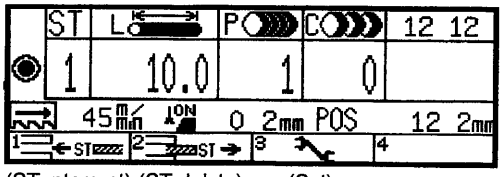
Indicate the function labels corresponding to the function keys F1 to F4, respectively, and cycle through the following three menus each time the MENU key is pressed

Menu 1



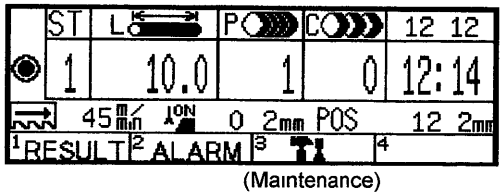
(All clear) (Runout)

Menu 2



(ST interrupt) (ST delete) (Set)

Menu 3



(Maintenance)

⑬ Function keys F1 to F4

Perform the functions displayed in the function label fields and correspond to the numerals 1 to 4 displayed at the upper left corner of each function label field

NOTE

- The function represented by a function key is enabled if the LED at its upper left corner is illuminated and is disabled if the LED at its upper left corner is extinguished

⑭ ST ▲ key

⑮ ST ▼ key

Change the station number displayed in the ST field Move the cursor to the ST field and press the ST ▲ or ▼ key once to increase or decrease the station number by one and to display the cutting data for the selected station in the respective fields The largest possible station number is 99

⑯ CLR key

Clears the data set in the L, P, and C fields When an alarm occurs, press the key to clear the alarm code and alarm condition

NOTE

- The CLR key is enabled if the LED at its upper left corner is illuminated When an alarm occurs, the LED of the CLR key alone is illuminated Unless the CLR key is pressed to clear the alarm condition, the other keys remain disabled

⑰ MENU key

Cycles the functions displayed in the function label fields through the three menus Each time the key is pressed, the functions change from one menu to another

⑱ Numeric keys

Used to enter the cutting data and station numbers

NOTE

- After entering cutting data in each field, be sure to press the ENT key Unless you do so, the new cutting data is not stored for the field, but the old cutting data remains set or stored for the field

⑲ ESC key

Returns a field from the newly entered cutting data to the old cutting data before the ENT key is pressed When the key is pressed after the new cutting data is entered, the new cutting data is deleted, and the old cutting data stored is displayed instead

⑳ ENT key

Sets or stores cutting data after it is entered Press the key to set the entered cutting data and store it in the memory

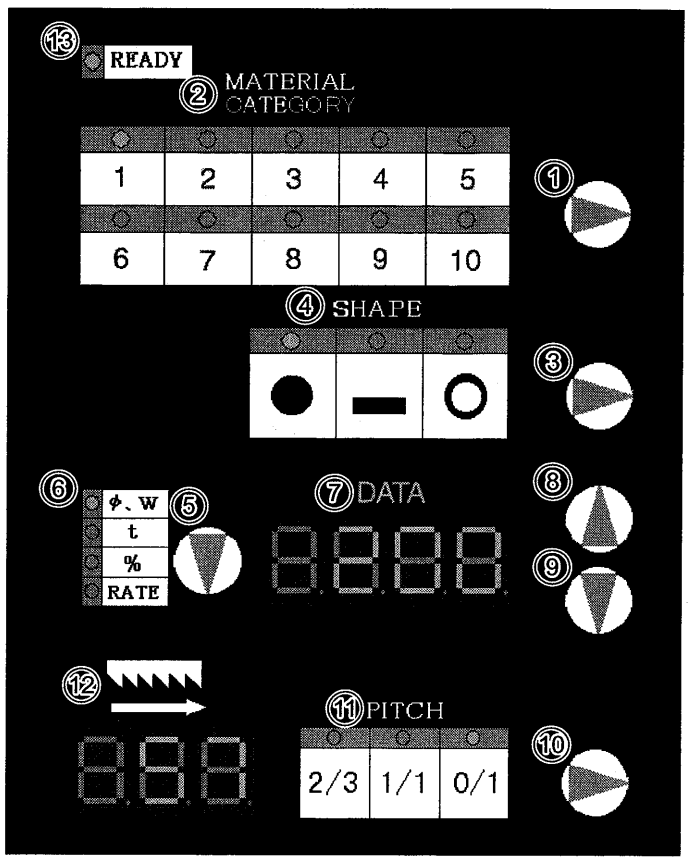
NOTE

- After entering cutting data in each field, be sure to press the ENT key Unless you do so, the new cutting data is not stored for the field, but the old cutting data remains set or stored for the field

㉑ Cursor keys

Move the cursor on the LCD screen

[27] CNC-LIGHT unit



① MATERIAL CATEGORY key

Pressed to set the material category (1 to 10) of the work to be cut. Each time the key is pressed, the MATERIAL CATEGORY LEDs illuminate in the following cyclic order: 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 9 → 10.

② MATERIAL CATEGORY LEDs

Illuminate to indicate the material category of the work set with the MATERIAL CATEGORY key.

③ SHAPE key

Pressed to set the shape (round solid, square/rectangular solid, or round pipe) of the work to be cut. Each time the key is pressed, the SHAPE LEDs illuminate in the following cyclic order: ● → – → ○.

④ SHAPE LEDs

Illuminate to indicate the shape of the work set with the SHAPE key.

⑤ Setting item key

Pressed to select the setting item for the work to be cut Each time the key is pressed, the setting item LEDs illuminate in the following cyclic order ϕ, W→ t → % → RATE Some LEDs may not illuminate, depending on the preset material category and shape of the work

⑥ Setting item LEDs

Illuminate to indicate the setting item selected with the setting item key

⑦ DATA field

Displays the setting value of the item selected with the setting item key The setting range of each item is as shown in the table below

Item	Range	Remarks
ϕ (diameter or outside diameter)	290 to 700 mm {11 42 to 27 56 in }	
W (width)	290 to 800 mm {11 42 to 31 50 in }	
t (wall thickness)	1 mm {0 04 in } minimum	Settable when SHAPE LED "○" is illuminated
% (override rate)	30 to 200%	Settable when one of MATERIAL CATEGORY LEDs "1" to "9" is illuminated
RATE (cutting rate)	1 0 to 99 9 cm^2/min {0 1 to 15 5 in ^{2}/min}	Settable when MATERIAL CATEGORY LED "10" is illuminated

⑧ DATA UP key

Pressed to set a value in the DATA field Each time the key is pressed, the value in the DATA field increases

⑨ DATA DOWN key

Pressed to set a value in the DATA field Each time the key is pressed, the value in the DATA field decreases

⑩ PITCH key

Pressed to set the tooth pitch of the saw blade to be used Each time the key is pressed, the PITCH LEDs illuminate in the following cyclic order 2/3 → 1/1 → 0/1

⑪ PITCH LEDs

Illuminate to indicate the tooth pitch of the saw blade set with the PITCH key

⑫ Recommended blade running speed field

Displays the recommended running speed of the saw blade when the material category, shape and dimensions of the work to be cut and the tooth pitch of the saw blade to be used are set The recommended running speed is not displayed here, however, when the MATERIAL CATEGORY LED "10" is illuminated

⑬ READY LED

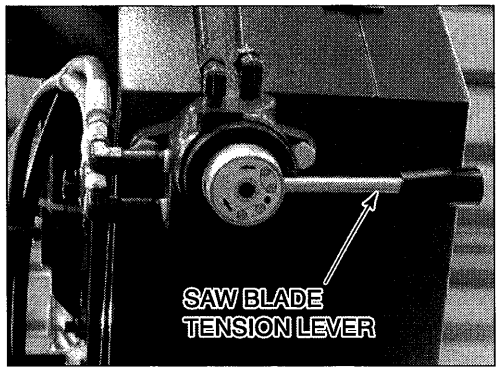
Illuminates to indicate that the setting of the cutting conditions in the CNC-LIGHT unit is completed

OTHER CONTROLS

SAW BLADE TENSION LEVER (AT DRIVEN-WHEEL SIDE)

Used to keep the saw blade tensioned to a constant degree by a hydraulic cylinder.

Turned to the "  " position to tension the saw blade and to the "  " position to slacken the saw blade.



CUTTING FLUID SYSTEM

The cutting fluid is discharged from:

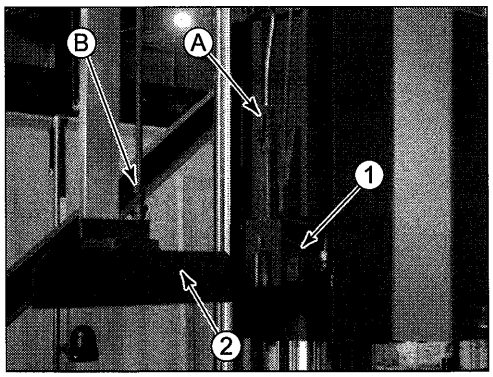
① Stationary saw blade guide insert nozzle: A throttle valve to adjust the nozzle flow rate is located at A.

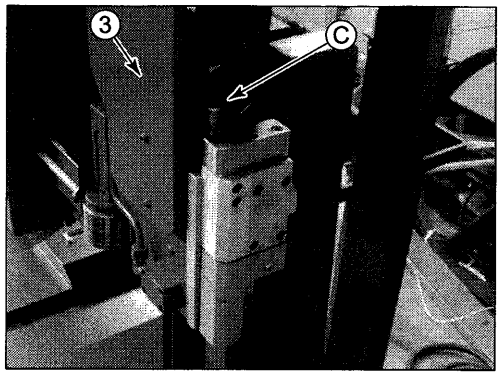
② Quick approach feeler nozzle: A throttle valve to adjust the nozzle flow rate is located at B.

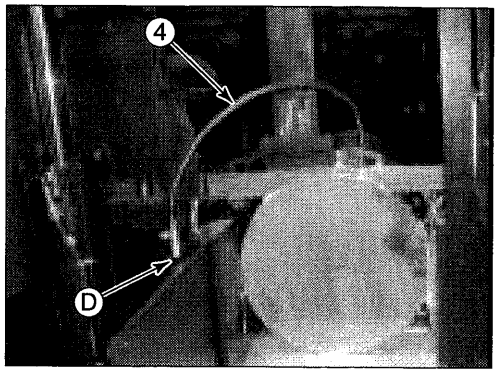
③ Movable saw blade guide insert nozzle: A throttle valve to adjust the nozzle flow rate is located at C.

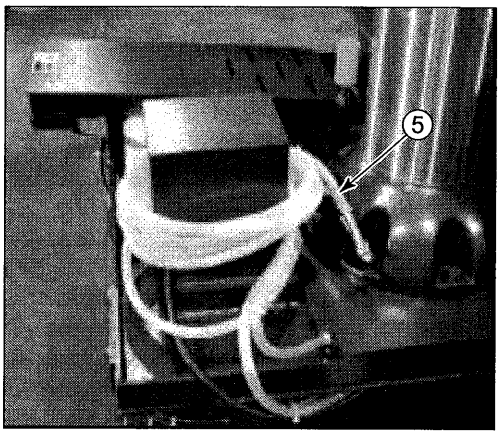
④ Cutting nozzle: A throttle valve to adjust the nozzle flow rate is located at D.

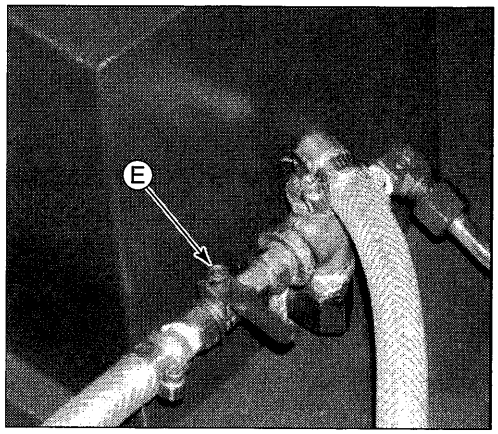
⑤ Cleaning hose nozzle: A throttle valve to adjust the nozzle flow rate is located at E.











Adjusting flow rate of cutting fluid

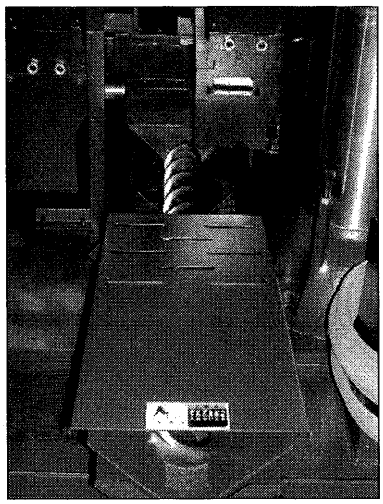
The nozzles ① to ④ are used for cooling and lubricating the saw blade. Discharge the cutting fluid as much as possible unless it is splashed.

The nozzle ⑤ is used for cleaning the machine. Open the throttle valve E, and pull the lever of the nozzle to discharge the cutting fluid.

CHIP CONVEYOR

The chip conveyor is hydraulically driven and operated only when the sawhead is lowering.

When removing the chips after cleaning the machine, move the sawhead down to the lower limit, and press the BLADE DOWN button. The chip conveyor operates as long as the BLADE DOWN button is pressed and held.



⚠ WARNING

- **Never reach into the chip conveyor when the machine is operating. Before removing foreign matter from the chip conveyor, be sure to turn the machine circuit breaker switch to OFF and turn off the shop circuit breaker switch.**

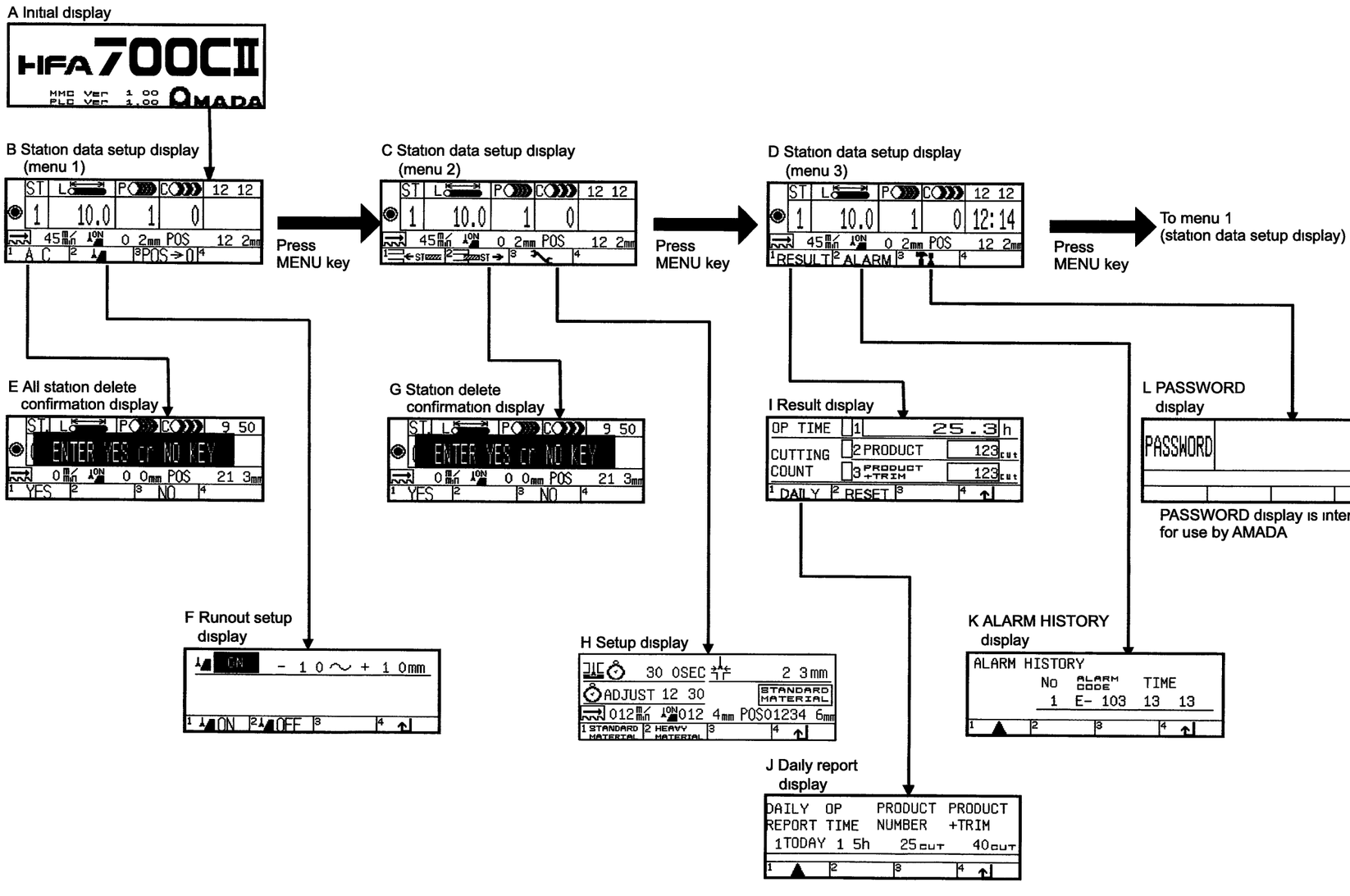
NOTICE

- When a trimming or solid material other than chips enters the chip conveyor, it may eat into the spiral or damage the spiral. Take care so that nothing other than chips should fall into the chip conveyor.

DESCRIPTION OF DISPLAYS

The displays shown on the LCD screen are composed as shown below You can set or change cutting data on the station data setup display You can also check or set the data on the display shown after selecting a menu and pressing a function key The contents of each display and the function of each function key are described on the following pages

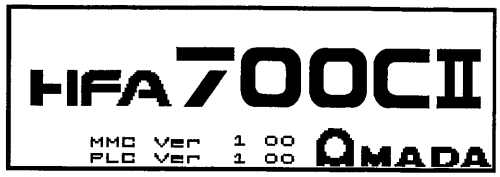
Composition of displays



Contents of displays

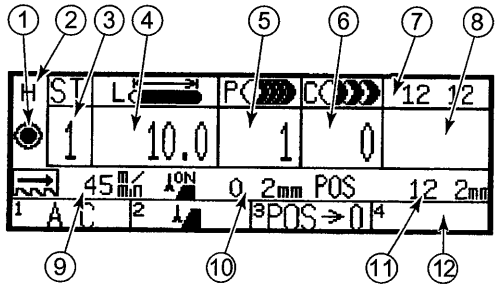
INITIAL DISPLAY

The initial display is shown on the LCD screen for about 7 seconds after the power of the machine is turned on The LCD screen then changes to the station data setup display



STATION DATA SETUP DISPLAY

The contents of the item fields and the functions of the function keys shown on the station data setup display are described below



Displayed contents of item fields

① Current station light

Illuminated to indicate that the number of the station currently being run agrees with the number displayed in the ST field

Usually, the machine starts its automatic operation from the station number displayed in the ST field, and both cutting data display and operation go to the next station each time a station is finished The current station light remains illuminated during the automatic operation

The current station light goes out if the ST field is changed to another station number after the start of the automatic operation

NOTE

- If the current station light is extinguished, there is no knowing which station is currently run Change the ST field from one station number to another with the ST ▲ or ▼ key until the current station light is illuminated
- The machine allows the ST field to be changed from one station number to another, and then the cutting data of other than current stations to be confirmed or changed The cutting data of the current station cannot be changed

② Letter H

Appears when heavy material is selected or HEAVY MATERIAL is shown in the material class field of the setup display and disappears when standard material is selected or STANDARD MATERIAL is shown in the material class field of the setup display

③ ST field

Indicates the number for the station The stations 1 to 99 can be used for cutting in the AUTO mode A maximum of 9999 pieces of the same cutoff length can be set at each station The station 0 is used for the semiautomatic positioning function

④ L field

Indicates the cutoff length in the AUTO mode The setup range is 10 0 to 9999 9 mm {0 394 to 99 999 in }

⑤ P field

Indicates the number of pieces to be cut in the AUTO mode The setup range is 1 to 9999 pieces

⑥ C field

Automatically counts and indicates the number of pieces already cut in the AUTO mode The display range is 0 to 9999 pieces

⑦ Current time field

Indicates the current time The display range is 00 00 to 23 59

⑧ Anticipated cutting end time field

Indicates the time at which the cutting operation for the station displayed in the ST field during automatic operation is anticipated to end The anticipated cutting end time is calculated from the measured cutting time of the first piece cut for the station displayed, and is thus not displayed until the first piece is cut When the cutting conditions are changed during the cutting operation, the anticipated cutting end time displayed after the cutting of the first piece may not agree with the actual cutting end time

⑨ Blade speed field

Indicates the running speed of the saw blade in m/min or fpm

⑩ Blade runout field

Indicates whether the runout detection function is set enabled (ON) or disabled (OFF) and the current runout of the saw blade The ON or OFF indication in this field corresponds to the setting made on the runout setup display

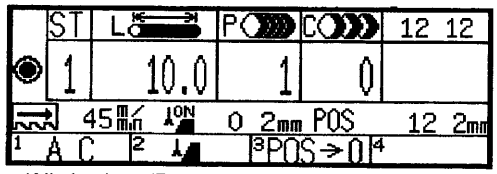
⑪ POS field

Indicates the current position of the feed vise in mm or inches In the MANUAL mode, press the function key F3 (POS→0) to reset the position of the feed vise to zero The sign "– " or "+" is indicated when the feed vise moves forward or backward from the position In the AUTO mode, the distance from the forward limit of the feed vise is always indicated

⑫ Function label fields

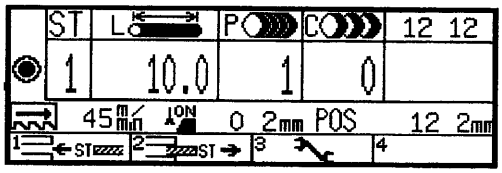
Indicate the function labels corresponding to the function keys F1 to F4, respectively, and cycle through the following three menus each time the MENU key is pressed

Menu 1



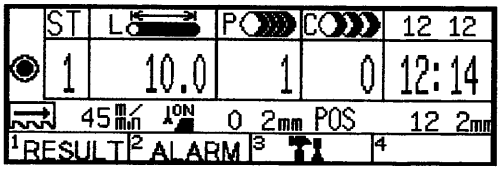
(All clear) (Runout)

Menu 2



(ST interrupt) (ST delete) (Set)

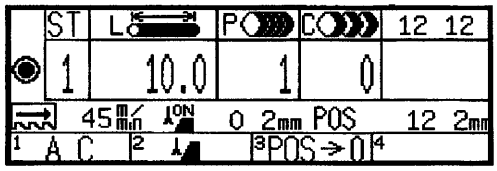
Menu 3



(Maintenance)

Functions of function keys

[Menu 1]

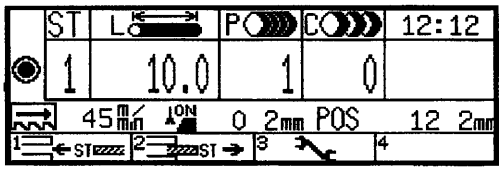


F1 (A•C) key Pressed to open the all station delete confirmation display Press the key to delete the cutting data of all stations registered

F2 (runout) key Pressed to open the runout setup display Press the key to set the runout tolerances of the saw blade

F3 (POS→0) key Pressed to reset the POS field to zero Press the key to reset the current position of the feed vise

[Menu 2]

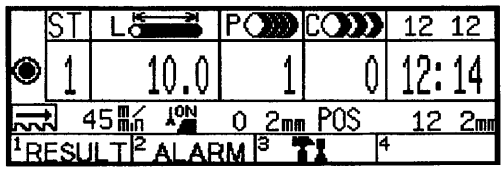


F1 (ST interrupt) key Pressed to set interrupt cutting data by the interrupt station function Press the key to perform interrupt cutting

F2 (ST delete) key Pressed to open the station delete confirmation display Press the key to delete all cutting data of a station

F3 (set) key Pressed to open the setup display

[Menu 3]



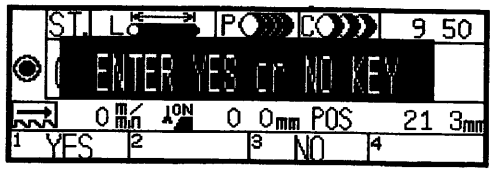
F1 (RESULT) key Pressed to open the result display

F2 (ALARM) key Pressed to open the ALARM HISTORY display

F3 (maintenance) key Pressed to open the PASSWORD display to open the maintenance display The maintenance display has the password set for use by AMADA

ALL STATION DELETE CONFIRMATION DISPLAY

This display appears when you press the F1 (A•C) key on the station data setup display (menu 1) The functions of the function keys on the display are as described below



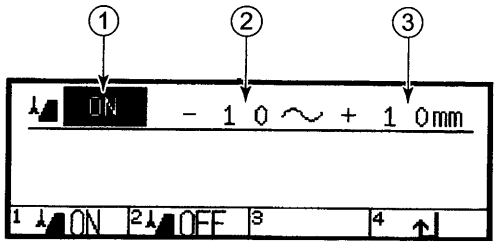
Functions of function keys

F1 (YES) key Pressed to delete all of the cutting data of all stations

F3 (NO) key Pressed to abort the delete processing of cutting data of all stations

RUNOUT SETUP DISPLAY

This display appears when you press the F2 (runout) key on the station data setup display (menu 1) The contents of the item fields and the functions of the function keys on the display are as described below



Displayed contents of item fields

① Runout setup ON/OFF field

Indicates whether the saw blade runout detection function is set ON (enabled) or OFF (disabled) Press the F1 (ON) or F2 (OFF) key to set the function ON (enabled) or OFF (disabled)

② Minus runout tolerance field

Sets the minus runout tolerance of the saw blade Move the cursor to the field, enter the minus runout tolerance in the field with the numeric keys, and press the ENT key The setup range is –99 9 to 0 mm {–9 999 to 0 in }

③ Plus runout tolerance field

Sets the plus runout tolerance of the saw blade Move the cursor to the field, enter the plus runout tolerance in the field with the numeric keys, and press the ENT key The setup range is 0 to +99 9 mm {0 to +9 999 in }

Functions of function keys

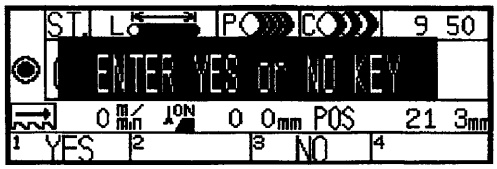
F1 (ON) key Pressed to set the runout setup ON/OFF field to ON and enable the runout tolerances (runout detection function)

F2 (OFF) key Pressed to set the runout setup ON/OFF field to OFF and disable the runout tolerances (runout detection function)

F4 (↵) key Pressed to return to the station data setup display

STATION DELETE CONFIRMATION DISPLAY

This display appears when you press the F2 (ST delete) key on the station data setup display (menu 2) The functions of the function keys on the display are as described below



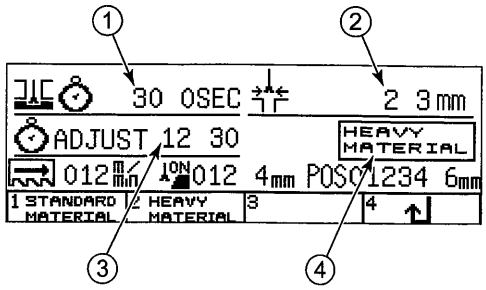
Functions of function keys

F1 (YES) key Pressed to delete all of the cutting data of the station number shown in the ST field

F3 (NO) key Pressed to abort the delete processing of the cutting data of the station number shown in the ST field

SETUP DISPLAY

This display appears when you press the F3 (set) key on the station data setup display (menu 2) The contents of the item fields and the functions of the function keys on the display are as described below



Displayed contents of item fields

① Cutting end dwell time field

Used to completely cut the work as specified The saw blade stops running after the time preset in this field after the stop of the sawhead at the lower limit To suit the actual cutting condition, move the cursor to the field, enter a new value in the field with the numeric keys, and press the ENT key The setup range is 0 to 999 9 sec

② Set width of saw blade field

Sets the set width of the saw blade The set width variation of the saw blade sometimes makes the actual cutoff length different from the preset cutoff length In this case, the set width in the field can be adjusted to compensate for the difference To make the necessary compensation, move the cursor to the field, enter the set width in the field with the numeric keys, and press the ENT key The setup range is 0 to 99 9 mm {0 to 9 999 in }

③ ADJUST field

Corrects the current time shown on the station data setup display Move the cursor to the field, enter the correct current time in the field with the numeric keys, and press the ENT key The setup range is 0 to 23 hours and 0 to 59 minutes

④ Material class field

Indicates the material class of work (standard or heavy material) selected with the function key F1 or F2 When heavy material is selected, the letter H is shown in the upper left of the station data setup display

Functions of function keys

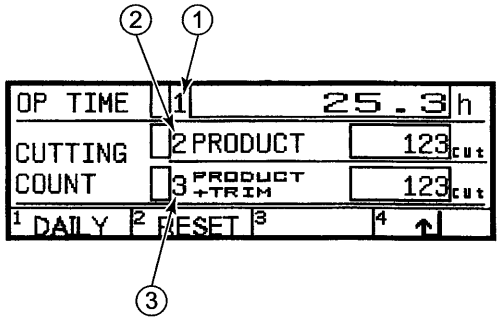
F1 (STANDARD MATERIAL) key Pressed to set the feed vise at the feed speed for standard material

F2 (HEAVY MATERIAL) key Pressed to set the feed vise at the feed speed for heavy material

F4 (↵) key Pressed to return to the station data setup display

RESULT DISPLAY

This display appears when you press the F1 (RESULT) key on the station data setup display (menu 3) The contents of the item fields and the functions of the function keys on the display are as described below



Displayed contents of item fields

① OP TIME field

Indicates the cumulative time the saw blade has run Move the cursor to the field, and press the F2 (RESET) key to reset the field to zero

② CUTTING COUNT PRODUCT field

Indicates the cumulative number of pieces cut in the AUTO mode Move the cursor to the field, and press the F2 (RESET) key to reset the field to zero

③ CUTTING COUNT PRODUCT + TRIM field

Indicates the sum of the number of pieces cut in the AUTO mode and of the number of pieces and trimmings cut in the MANUAL mode Move the cursor to the field, and press the F2 (RESET) key to reset the field to zero

Functions of function keys

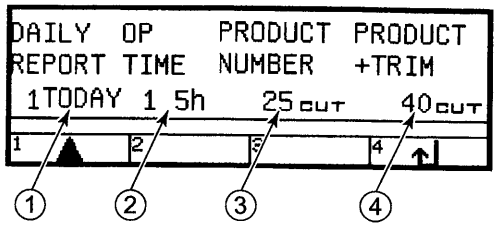
F1 (DAILY) key Pressed to open the daily report display

F2 (RESET) key Pressed to reset the OP TIME, CUTTING COUNT PRODUCT, and CUTTING COUNT PRODUCT + TRIM fields to zero

F4 (↵) key Pressed to return to the station data setup display

DAILY REPORT DISPLAY

This display appears when you press the F1 (DAILY) key on the result display The contents of the item fields and the functions of the function keys on the display are as described below



Displayed contents of item fields

① DAILY REPORT field

Indicates the date of the daily report recorded The daily reports over the past 11 days are left as records Each time the F1 (▲) key is pressed, the field sequentially changes from today to 10 days before Note that the daily reports can be recorded only when the power of the machine is turned on

② OP TIME field

Indicates the operating time of the saw blade for the date shown in the DAILY REPORT field

③ PRODUCT NUMBER field

Indicates the cumulative number of pieces cut in the AUTO mode on the date shown in the DAILY REPORT field

④ PRODUCT + TRIM field

Indicates the sum of the number of pieces cut in the AUTO mode and of the number of pieces and trimmings cut in the MANUAL mode on the date shown in the DAILY REPORT field

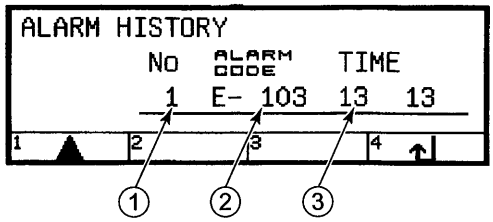
Functions of function keys

F1 (▲) key Pressed to change the date whose daily report is to be indicated

F4 (↵) key Pressed to return to the result display

ALARM HISTORY DISPLAY

This display appears when you press the F2 (ALARM) key on the station data setup display (menu 3) The contents of the item fields and the functions of the function keys on the display are as described below



Displayed contents of item fields

① NO field

Indicates an alarm history number Up to ten alarms are recorded The number 1 corresponds to the latest alarm

② ALARM CODE field

Indicates the code of an alarm

③ TIME field

Indicates the occurrence time of an alarm

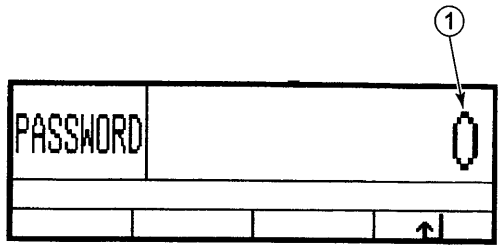
Functions of function keys

F1 (▲) key Pressed to change from one recorded alarm to another Press the key to confirm up to the ten latest alarms

F4 (↵) key Pressed to return to the station data setup display

PASSWORD DISPLAY

This display appears when you press the F3 (maintenance) key on the station data setup display (menu 3) The contents of the item field and the function of the function key on the display are as described below



Displayed contents of item field

① Password entry field

Enters the password to open the maintenance display This field is provided for sole use by AMADA Do not operate on this field by yourself

Function of function key

F4 (↵) key Pressed to return to the station data setup display If you have opened the PASSWORD display, press the key to return to the station data setup display

Part IV

Operation

(Continued on next page.)

INSPECTION BEFORE START OF DAY'S WORK

Before starting the machine every day, check it as described on page VI-2

TURNING ON MACHINE

Start the hydraulic pump motor as described below

1 Turn on the shop circuit breaker switch

2 Turn the machine circuit breaker switch to ON

The POWER light illuminates, the LCD screen shows the initial display for about 7 seconds and then changes to the station data setup display, and the READY LED flashes

3 Press the HYDRAULIC ON button

The button illuminates, the hydraulic pump motor starts, and the machine becomes ready for operation

4 Press and hold the BLADE UP button until the quick approach feeler rises to the upper limit

The flow control valve in the machine is automatically zero-returned The READY LED changes from flashing to steady to indicate that the zero-return is completed

NOTE

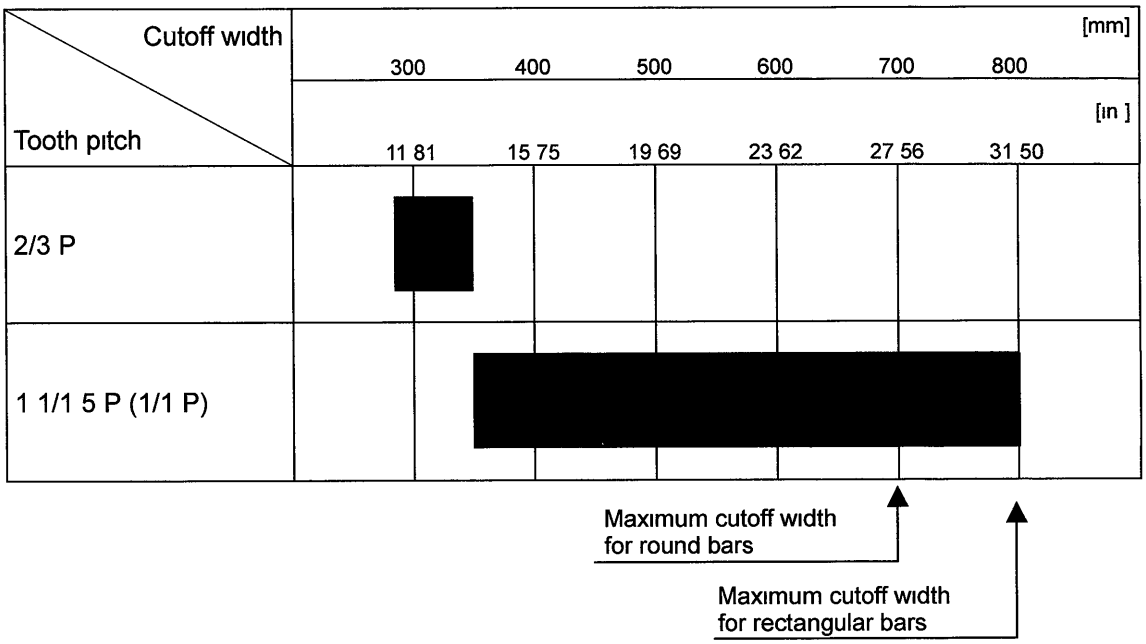
- When the machine is shut down by a power failure, for example, during a cutting operation, turn on the machine, raise the quick approach feeler to the upper limit, and resume the cutting operation
- If the work takes a long time to cut, it can be cut again from the interrupted position without raising the quick approach feeler to the upper limit (with the READY LED flashing) In this case, the sawhead downfeed speed is not controlled by the cutting conditions set in the CNC-LIGHT unit and is the sawhead downfeed speed just before the power of the machine was turned off

SELECTING SAW BLADE

An appropriate saw blade changes with the material, shape, size, and clamping method of the work to be cut When cutting a single solid bar, select the saw blade tooth pitch by referring to the table below

Saw blades with dedicated tooth pitches and shapes are available for cutting structural steel shapes and special materials Contact AMADA

Saw blade tooth pitches for cutting round and rectangular bars (teeth per inch)



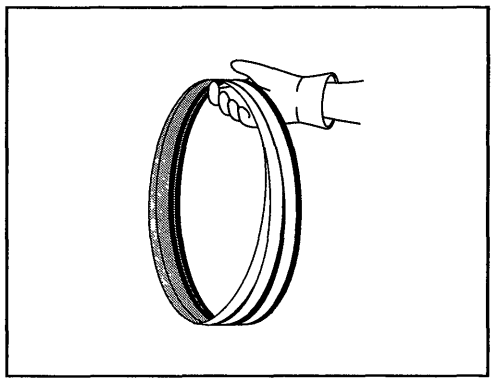
UNFOLDING AND FOLDING SAW BLADE

WARNING ● **Wear leather gloves and protective goggles when unfolding and folding the saw blade**

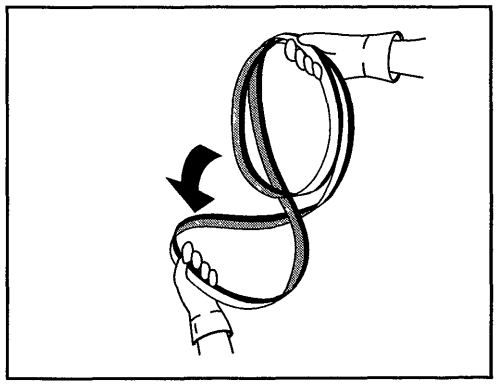
Unfolding saw blade

Unfold the saw blade as described below

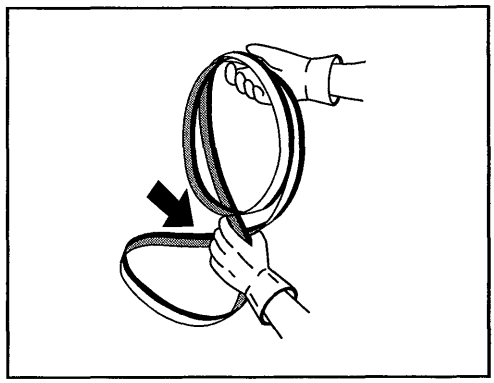
1 Grasp the band securing the saw blade in your right hand The teeth of the saw blade must be facing the palm of your right hand



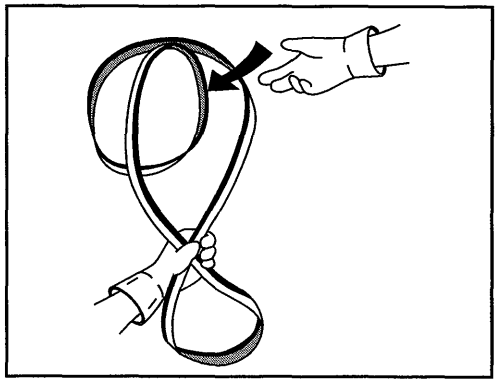
2 Remove the securing band from the saw blade Grasp two of the saw blade loops (crossed portion) with your right hand Grasp the remaining saw blade loop with your left hand



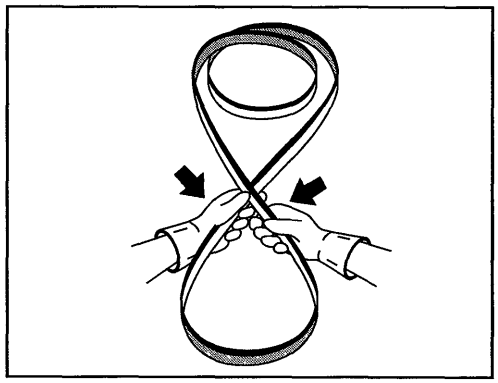
3 Firmly grasp the crossed portion of the saw blade with your left hand as shown in the figure



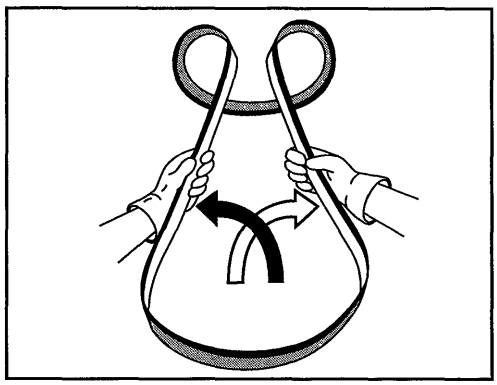
4 Check that you are maintaining a firm grip on the saw blade with your left hand
Release your grip at the top of the saw blade (right hand)



5 Position your left hand so that the palm of your hand is facing your body Use your right hand to carefully free the right-hand loop

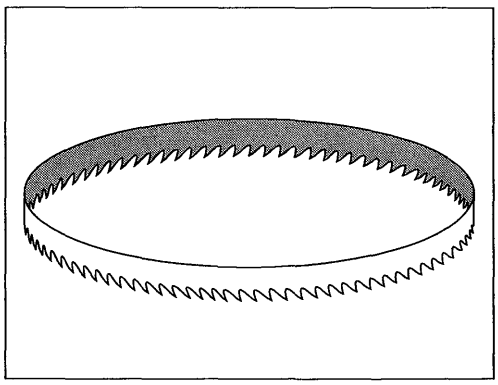


6 Hold one portion of the crossed section of the saw blade in each hand Twist both portions away from each other to completely open the saw blade loop



7 Check that the saw blade teeth are facing down and to the right

If the saw blade teeth are facing down and to the left, immediately contact AMADA for assistance

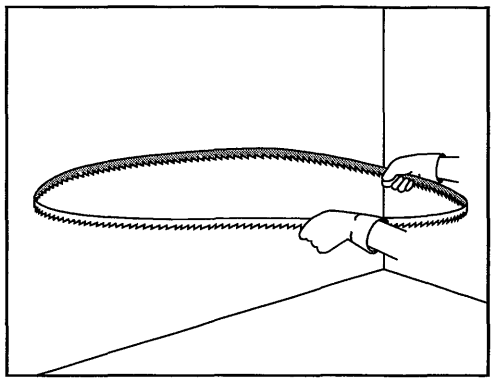


8 Remove the teeth guard from the saw blade

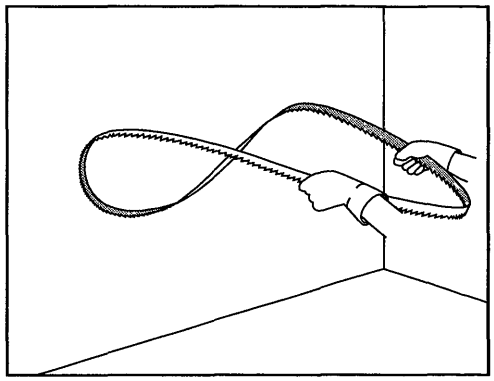
Folding saw blade

Fold the saw blade as described below

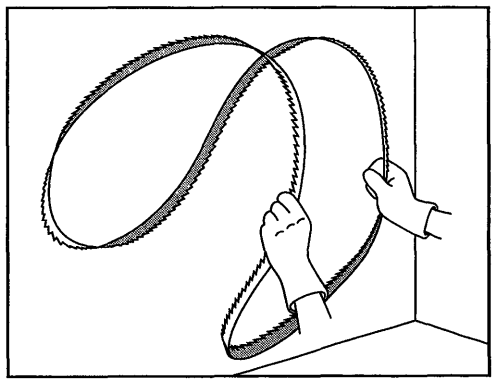
1 Pick up the saw blade and hold it as shown in the figure The palms of your hands must be facing up Approximately 1/3 of the saw blade circumference should be between your hands The saw blade teeth must be facing down



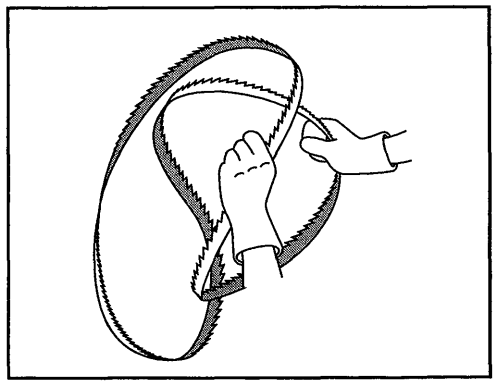
2 Press the opposite side of the saw blade against a wall



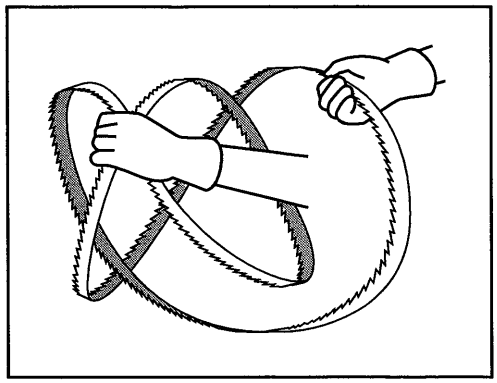
3 Push against the saw blade to force the saw blade center portion up



4 Twist the saw blade toward the inside of your wrists until the saw blade crosses itself



5 Grasp the crossed portion of the saw blade in one hand Use the other hand to bundle the saw blade



6 Secure the bundled saw blade with the band

INSTALLING SAW BLADE

WARNING

- **Never operate the machine with the wheel covers, the saw blade cover, and other covers removed or opened. It is dangerous if your hands or clothing are caught in the running machine.**
- **Always wear leather gloves when handling the saw blade.**
- **Be careful not to let the wire brush cover fall during the saw blade change.**

CAUTION

- **When applying tension to the saw blade in step 14 below, take care not to have your hands pinched between the saw blade and driven wheel.**

Install the saw blade as described below.

1 Turn on the shop circuit breaker switch.

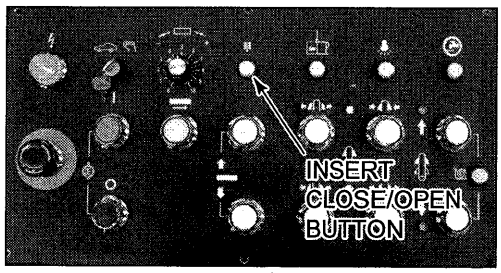
2 Turn the machine circuit breaker switch to ON.
The machine powers up, and the POWER light illuminates.

3 Press the HYDRAULIC ON button.
The button illuminates, and the hydraulic pump motor starts.

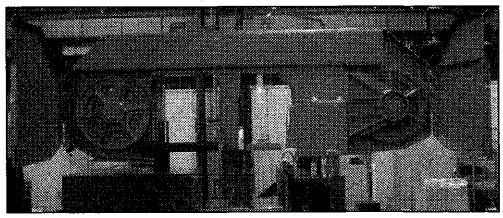
4 Turn the AUTO/MANUAL keyswitch to MANUAL.

5 Press and hold the BLADE UP button to raise the sawhead and position the driven wheel cover above the feed vise cover top.

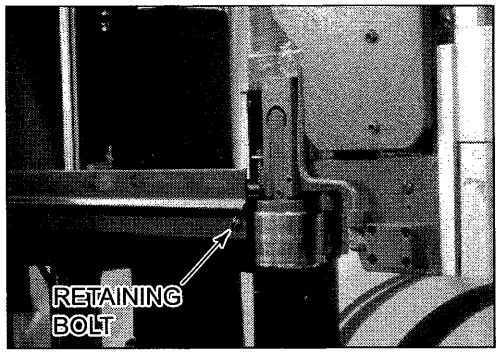
6 Press and extinguish the INSERT CLOSE/OPEN button.
The saw blade inserts in the movable and stationary saw blade guides open.



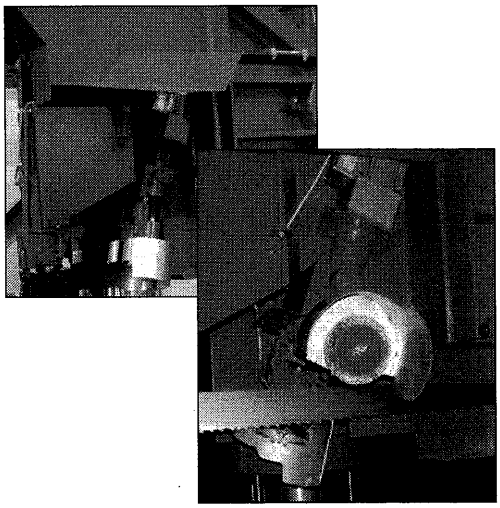
7 Open the drive and driven wheel covers.



8 Loosen the bolt retaining the saw blade cover to open the cover.

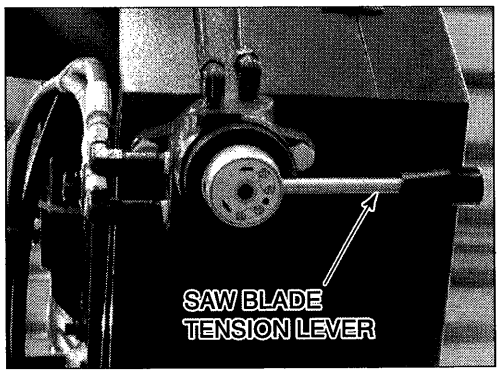


9 Open the cover of the wire brushes, and lift up the wire brushes.



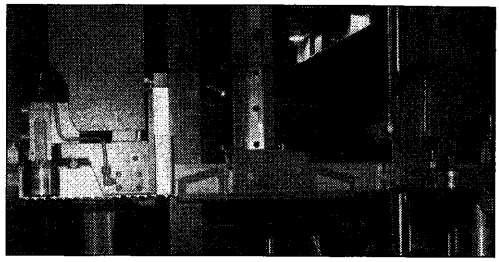
10 Turn the saw blade tension lever to the "  " position.

The driven wheel moves toward the drive side.



11 Install the saw blade on both the drive and driven wheels.

12 Push the saw blade in the gap between the guide rollers and then in the openings of the saw blade inserts.



13 Where the back of the saw blade is pushed against the backup tips, press and illuminate the INSERT CLOSE/OPEN button.

The saw blade inserts close.

14 Check that the saw blade is securely installed on the drive wheel. While holding the saw blade with one hand so that its back is pushed against the flange of the driven wheel, turn the saw blade tension lever to the "  " position by the other hand.

The saw blade is hydraulically tensioned to a proper degree.

15 Properly set the wire brushes on the saw blade, and close their cover.

16 Close the saw blade cover, and fix it with the retaining bolt.

17 Gently close the drive and driven wheel covers.

LOADING AND POSITIONING WORK

WARNING

- **When clamping the work with the vise, do not come close to the work It is dangerous if the work is of such a shape as to spring out of the vise**
- **If the work cannot be securely clamped with the vise, use jigs to clamp it securely It is dangerous if the work is clamped loosely and forced out of the vise during cutting**
- **Take preventive measures when cutting a thin or short piece from the work to keep it from falling It is dangerous if the cut piece falls**

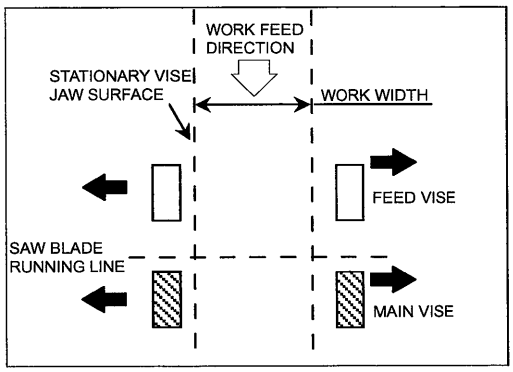
Loading work

Load the work on the machine as described below

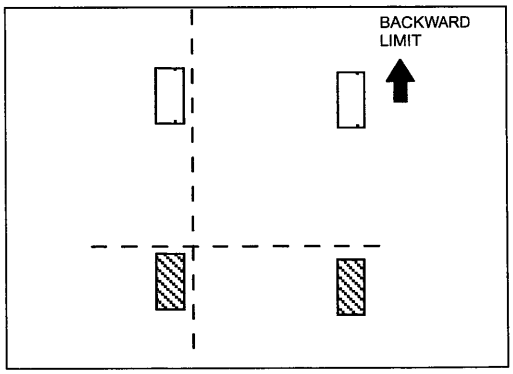
1 Press and hold the BLADE UP button to raise the sawhead to the upper limit

2 Press and hold the MAIN VISE OPEN button to open the main vise wider than the width of the work

3 Press and hold the FEED VISE OPEN button to open the feed vise wider than the width of the work

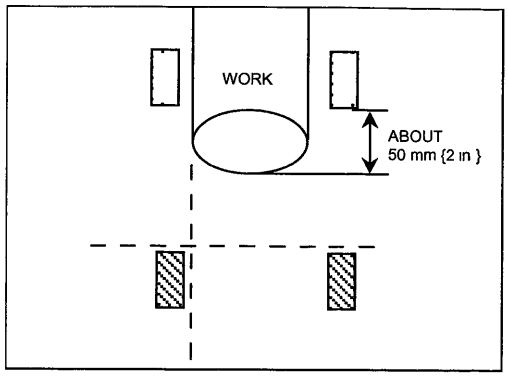


4 Press and hold the FEED VISE BACKWARD button to move the feed vise to the backward limit

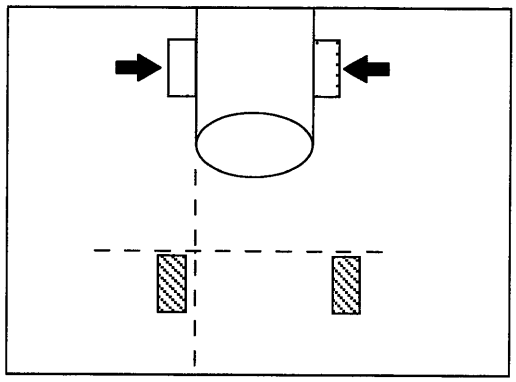


5 Gently place the work on the feed vise bed

Check that the head end of the work projects about 50 mm {2 in } from the front end of the feed vise toward the main vise



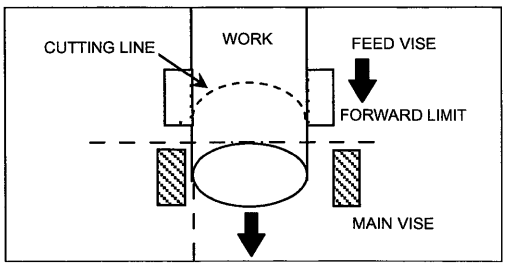
6 Press and hold the FEED VISE CLOSE button to clamp the work with the feed vise



Positioning work

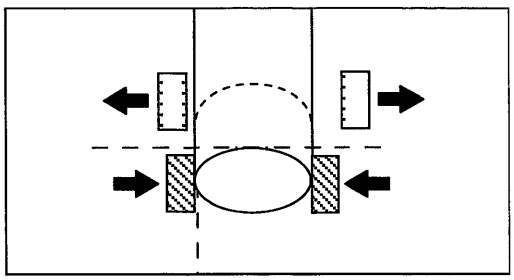
Position the loaded work as described below

1 Press and hold the FEED VISE FORWARD button to move the feed vise to the forward limit and move the work forward

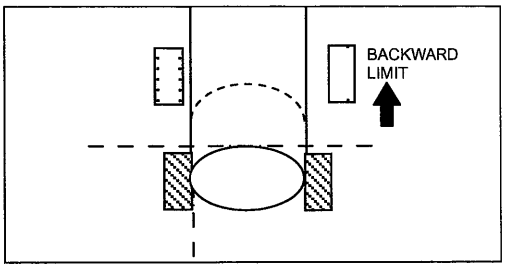


2 Press and hold the MAIN VISE CLOSE button to clamp the work with the main vise

3 Press and hold the FEED VISE OPEN button to open the feed vise

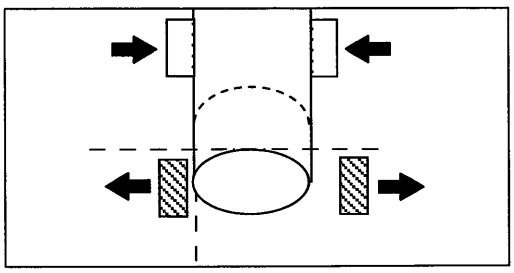


4 Press and hold the FEED VISE BACKWARD button to move the feed vise to the backward limit

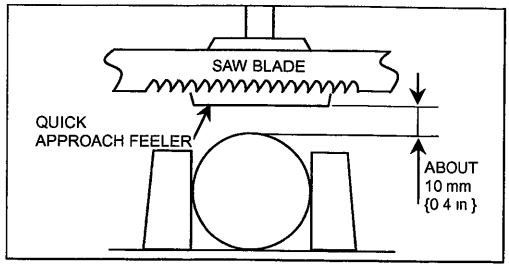


5 Press and hold the FEED VISE CLOSE button to clamp the work with the feed vise

6 Press and hold the MAIN VISE OPEN button to open the main vise



7 Intermittently press the BLADE DOWN button to lower the sawhead slowly until the quick approach feeler comes to about 10 mm {0 4 in } above the top surface of the work

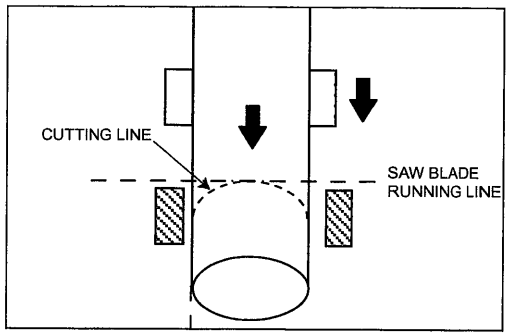


NOTICE

- When lowering the sawhead, take care so that the quick approach feeler does not touch the work If the quick approach feeler is lowered too close to the work, it may touch the work when the work is moved Be sure to ensure a clearance of about 10 mm {0 4 in }

8 Press and hold the FEED VISE FORWARD button until the cutting line of the work comes right below the saw blade

If necessary, press and illuminate the FEED VISE SLOW button to move the feed vise at the low speed

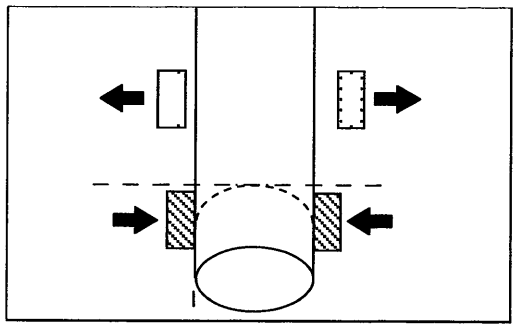


NOTE

- When trimming the head end of the work in automatic operation, align the cutting line with the saw blade running line, and start the machine in the MANUAL mode When the AUTO/MANUAL keyswitch is turned to AUTO after the sawhead has started lowering, the machine can operate automatically without counting the head-end trim
  If you do not trim the head end of the work, align the first cutting line with the saw blade running line, and start the machine in the AUTO mode In this case, the work is not automatically fed for the first cutoff length

9 If the cutoff length is longer than the feed vise stroke of 500 mm {19 685 in } during manual operation, repeat steps 2, 3, 4, 5, 6, and 8 above in that order

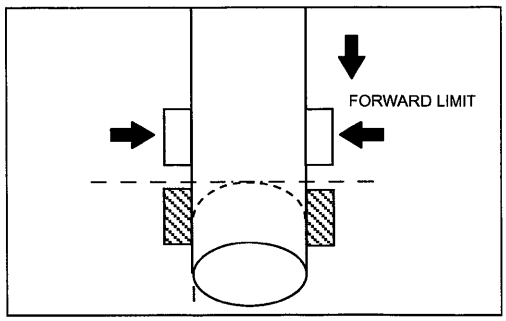
10 When the work positioning operation is completed, press and hold the MAIN VISE CLOSE button to clamp the work with the main vise



11 Press and hold the FEED VISE OPEN button to open the feed vise

12 Press and hold the FEED VISE FORWARD button to move the feed vise to the forward limit

13 Press and hold the FEED VISE CLOSE button to clamp the work with the feed vise



Semiautomatic positioning function

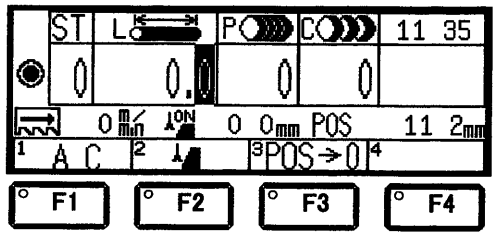
During the manual operation of the machine, its semiautomatic positioning function automatically moves the feed vise backward for the preset cutoff length

SETTING CUTOFF LENGTH

Set the cutoff length as described below

1 Move the cursor to the ST field with the cursor keys

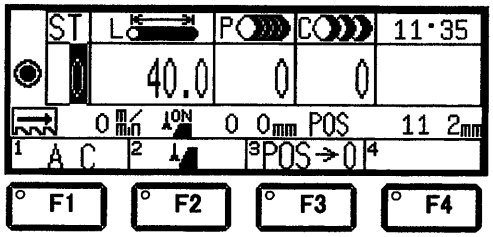
2 Press the numeric key "0" and the ENT key to call the station 0 in the ST field and move the cursor to the L field



The station 0 is exclusively used for the semiautomatic positioning function, and nothing can be entered in the P and C fields

If the station 0 was used before, the cutoff length preset then is shown in the L field

3 Enter the cutoff length in the range of 10 0 to 500 0 mm {0 394 to 19 685 in } with the numeric keys



NOTE

- With the semiautomatic positioning function, allow for the saw blade kerf

4 Press the ENT key to store the cutoff length in memory

SEMIAUTOMATIC POSITIONING

Semiautomatically position the loaded work as described below

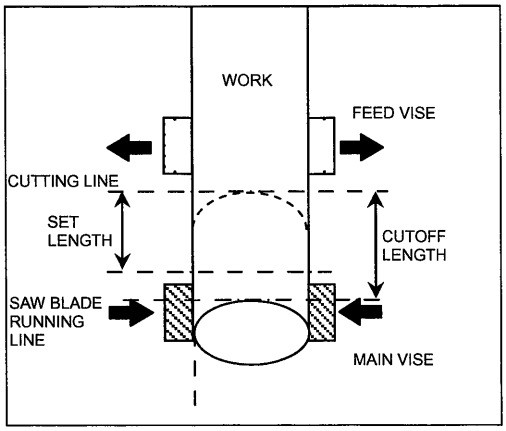
NOTE

- Before semiautomatically positioning the work, be sure to check that the head end of the work is positioned just below the saw blade

1 Press and hold the BLADE UP button to raise the sawhead until the saw blade is a minimum of 10 mm {0 4 in } apart from the work

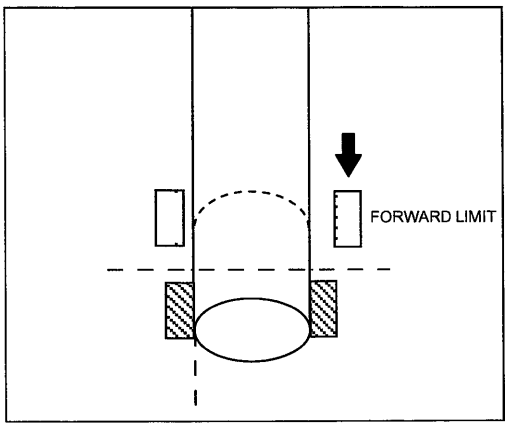
2 Press and hold the MAIN VISE CLOSE button to clamp the work with the main vise

3 Press and hold the FEED VISE OPEN button to open the feed vise

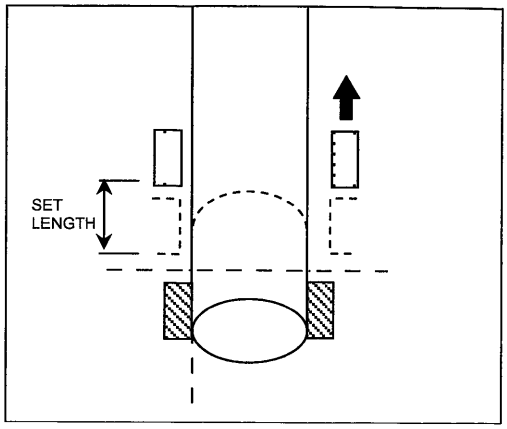


4 Press and hold the FEED VISE FORWARD button to move the feed vise forward until the FEED VISE FORWARD LIMIT light illuminates

5 Turn the AUTO/MANUAL keyswitch to AUTO



6 Press the FEED VISE BACKWARD button (The button need not be held)



The feed vise moves backward over the preset cutoff length and stops The FEED VISE POSITIONED light illuminates to indicate that the feed vise has moved backward and completed the semiautomatic positioning operation

To stop the semiautomatic positioning operation while the feed vise is moving backward, press the BLADE UP button

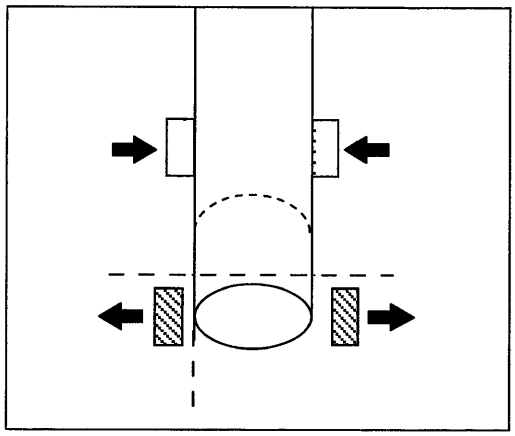
7 Turn the AUTO/MANUAL keyswitch to MANUAL

NOTE

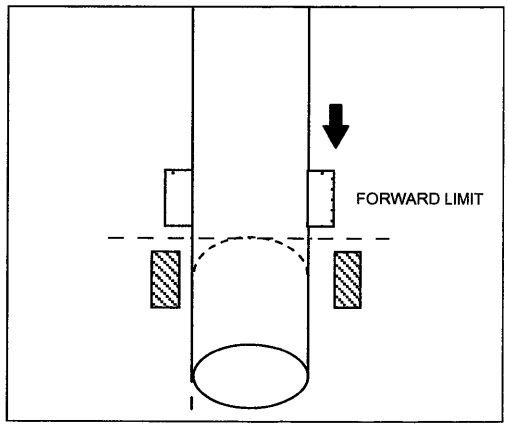
- Before turning the AUTO/MANUAL keyswitch to MANUAL, be sure to check that the positioning of the feed vise is completed and that the FEED VISE POSITIONED light is illuminated If the AUTO/MANUAL keyswitch is turned to MANUAL while the feed vise is moving backward, the feed vise stops in that position

8 Press and hold the FEED VISE CLOSE button to clamp the work with the feed vise

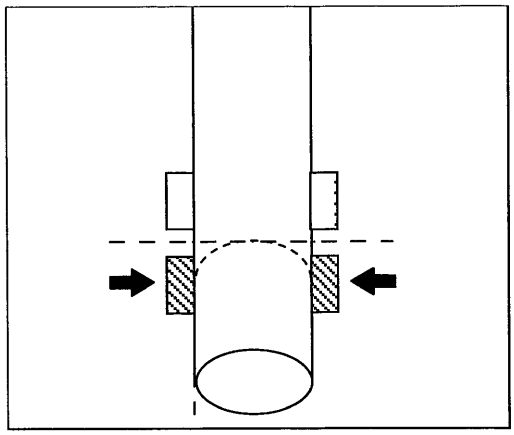
9 Press and hold the MAIN VISE OPEN button to open the main vise



10 Press and hold the FEED VISE FORWARD button to move the work forward until the FEED VISE FORWARD LIMIT light illuminates



11 Press and hold the MAIN VISE CLOSE button to clamp the work with the main vise



ADJUSTING CUTTING FLUID FLOW RATE

As soon as the BLADE DRIVE button is pressed, the saw blade starts running, the cutting fluid pump starts, and each nozzle discharges the cutting fluid Adjust the flow rate of the cutting fluid with the throttle valves in the cutting fluid system to suit the work to be cut (See "Cutting fluid system" in Part III, Controls)

RUNOUT DETECTOR

When using the runout detector during cutting, set the runout tolerances of the saw blade before starting the machine The runout detector automatically stops the machine at the prescribed time after it detects the runout of the saw blade that exceeds the tolerances

Setting runout tolerances

The runout tolerances of the saw blade are stored in memory even after the power of the machine is turned off This means that the previous runout tolerances are retained in memory when the power of the machine is turned on the next time

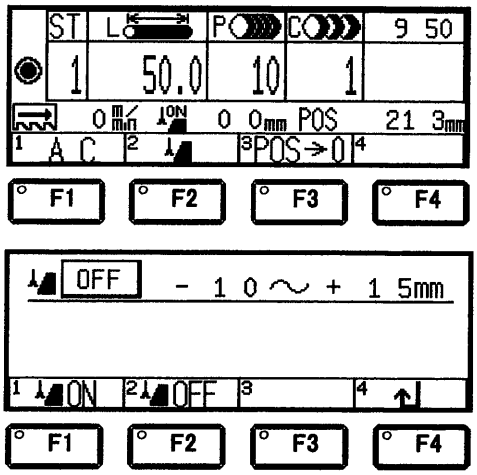
Set the runout tolerances of the saw blade as described below

1 Turn the machine circuit breaker switch to ON

NOTE

- The power of the runout detector is interlocked with that of the machine As soon as the machine circuit breaker switch is turned to ON, the power of the runout detector is automatically turned on

2 Press the F2 (runout) key on the station data setup display to go to the runout setup display

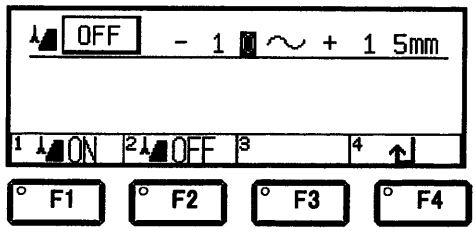


3 Set the minus runout tolerance

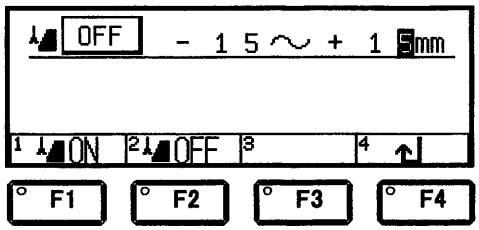
Example Change the minus runout tolerance from 1 0 mm to 1 5 mm

Check that the cursor is positioned on the "–" side

If the cursor is positioned on the "+" side, move the cursor to the "–" side with the cursor keys



4 Enter "1", " " and "5" with the numeric keys, and press the ENT key to move the cursor to the "+" side



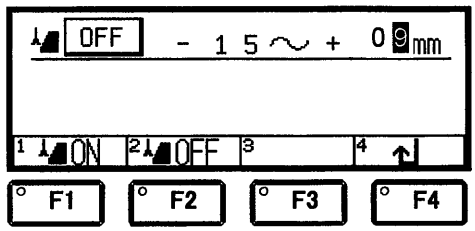
5 Set the plus runout tolerance

Example Change the plus runout tolerance from 1 5 mm to 0 9 mm

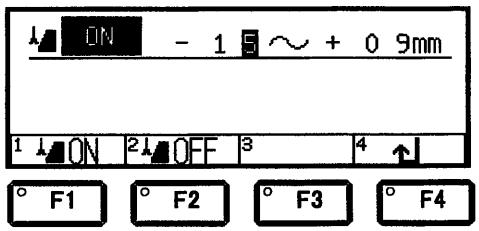
Check that the cursor is positioned on the "+" side

If the cursor is positioned on the "–" side, move the cursor to the "+" side with the cursor keys

6 Enter "0", " " and "9" with the numeric keys, and press the ENT key



7 Press the F1 (ON) key to change the runout setup ON/OFF field to ON

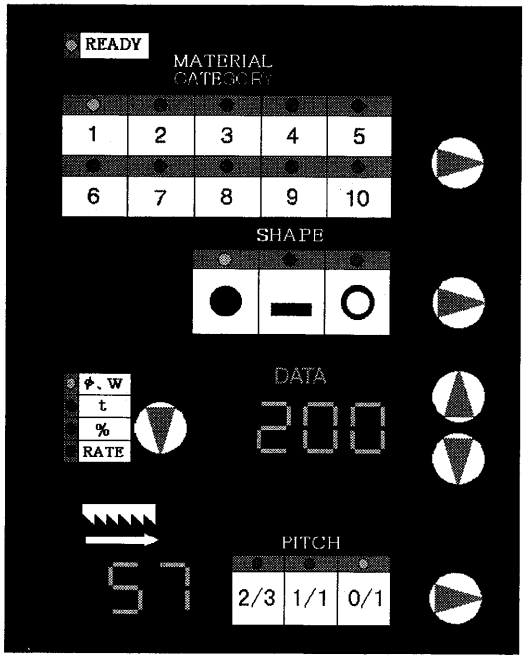


NOTE

- The runout detector cannot work if the runout tolerances are set but the runout setup ON/OFF field is set to OFF

SETTING CUTTING CONDITIONS

Set the cutting conditions in the CNC-LIGHT unit.



NOTE

- The READY LED illuminates to indicate that the setting of the cutting conditions 1 to 5 described below is completed.
- While the saw blade is running, it is possible to change the setting value of the override rate (%) when the material category "1" to "9" is selected and the setting value of the cutting rate (RATE) when the material category "10" is selected. The other setting items cannot be changed.

1. Setting material category of work

There are ten material categories 1 to 10. The smaller the material category number, the easier the work is to cut, and the larger the material category number, the more difficult the work is to cut.

Check the material category of the work to be cut by referring to the material category table on the pages that follow. Press the MATERIAL CATEGORY key to illuminate the corresponding MATERIAL CATEGORY LED.

NOTE

- When you have illuminated the MATERIAL CATEGORY LED "10" (difficult-to-cut work), you cannot use the database of the cutting conditions stored in the CNC-LIGHT unit. Set the cutting rate (RATE) directly in the DATA field. The saw blade running speed is not displayed in the recommended blade running speed field. Set the running speed of the saw blade to suit the work to be cut.

Material category table (JIS)

Standard material grades are shown *in italics*

Material category 1	***S28C–50C***		
	SNCM220, 240		
	SS400–540		
Material category 2	S10C–25C	***SCM415–822***	SMNC420, 443
	S53–58C	SCR415–435	SBC300–690
	S09CK–20CK		
	SS330		
	SNC236–836	SM400A–570	
	SNCM415, 420	SMN420–443	
Material category 3	SNCM431–815	SUS430F	
	SCR440, 445	SUS440F	
	SACM645		
	SUP3		
	SUS303, 303SE		
	SUS416		
Material category 4	SK1–7	SUS301, 302	SUS430, 431
	SKS2–8	***SUS304***	SUS434
	SKS11, 21–41	SUS403, 405	SUS440C
	SKS44–95	SUS410, 410L	SUS447J1
	SUP6–9, 9A	SUS410J1	SUSXM27
	SUP11A, 12, 13	SUS420F, 420J1	
Material category 5	SKS43	SKH51, 52	
	SKT3, 4		
	SUJ1–5		
	SUP10		
	SKD11, 12		
	SKH2		

Material category 6	SKD4–6		
	SKD61, 62		
	SKD7, 8		
	SKH53, 54		
Material category 7	SKH3, 4, 10	SUSXM7	
	SKH55, 56, 58		
	SUS304L, LN		
	SUS304N1, N2		
	SUS305		
	SUS316		
Material category 8	SKD1	SUS347	
	SKH57, 59	SUS420J2	
	SUS201, 202	***SUS630, 631***	
	SUS316J1	SUSXM15J	
	SUS317, 317L	SUH446	
	SUS317J1		
Material category 9	SUS309S	SUH1, 3, 11	
	SUS310S	SUH31–38	
	SUS316L, 316N		
	SUS316LN		
	SUS321		
	SUS329J1		

Material category table (AISI)

Standard material grades are shown *in italics*

Material category 1	***1028–1050***		
	—		
	45, 50, 58, 65		
	A570Gr 50, A572Gr 50		
	70, 70W		
Material category 2	1010–1025	***4130–4150***	1022, 1518, 5120
	1050–1064	5015, 5115, 5120, 5130, 5132, 5135	—
	—		
	30, 33, 36, 40		
	3135, 3415, 3435, 3310, 9314	SM400A–570	
	4320	1522, 1536, 1541	
Material category 3	4340, 9850, 4337, 4340	430F	
	5140, 5147	440F	
	A355CIA, E71400, G71640		
	1075, 1078		
	303, 303SE		
	416		
Material category 4	W1-7–13, W108–112, W1-11 1/2	301, 302	430, 431
	01, 07, S4–S7, W4	***304, 304H***	434
	S1, F2	403, 410S, 429, 405	440C
	W2, W2-8 1/2, L6, W5	410, CA-15	—
	9260H, 9260, 5155, 5160	—	XM27
	51B60, 9254, 4161	420, 420F	

Material category 5	W2, W2-9 1/2, W2-10, W210	M2, M3-1	
	G6, L6, 6F2		
	51100, 51200, L1, L3, A485, 1		
	6145, 6150		
	D2, A2		
	T1		
Material category 6	H21, H11		
	H13, H12		
	H10, H19		
	M3-2, M4		
Material category 7	T4, M3, T5, T15	XM7, 304CU	
	M35, M36, M7		
	304L, 304LN		
	304N, XM21		
	305, 308		
	316		
Material category 8	D3	347, 348	
	M42	420, 420F	
	201, 202	***630, 631, S17700***	
	—	XM15	
	317, 317L	446	
	—		
Material category 9	309S	HNV3	
	310S	EV8	
	316I, 316N		
	316LN		
	321		
	329		

2. Setting shape of work

The shape of the work that can be cut is round solid (●), square/rectangular solid (–), or round pipe (○)

Press the SHAPE key to illuminate the SHAPE LED for the shape of the work to be cut

3. Setting dimensions of work

Set the dimensions of the work to be cut according to its shape as described below

Round solid work

1 Press the setting item key to illuminate the setting item LED at the left of the "ϕ, W" item

2 Press the DATA UP or DATA DOWN key to set the diameter of the work in the DATA field

Square/rectangular solid work

1 Press the setting item key to illuminate the setting item LED at the left of the "ϕ, W" item

2 Press the DATA UP or DATA DOWN key to set the width of the work in the DATA field

Round pipe work

1 Press the setting item key to illuminate the setting item LED at the left of the "ϕ, W" item

2 Press the DATA UP or DATA DOWN key to set the outside diameter of the work in the DATA field

3 Press the setting item key to illuminate the setting item LED at the left of the "t" item

4 Press the DATA UP or DATA DOWN key to set the wall thickness of the work in the DATA field

4. Setting tooth pitch of saw blade

The tooth pitch of the saw blade that can be used is 2/3, 1/1, or 0/1

Press the PITCH key to illuminate the PITCH LED for the same tooth pitch as that of the saw blade installed

5. Setting running speed of saw blade

NOTICE

- The harder or larger the work of the same material, the lower the saw blade running speed should be
- If the running speed of the saw blade is inappropriate, efficiency and economy both suffer Be sure to cut the work at an appropriate saw blade running speed
- When using a new saw blade, run it in as described in "Running in new saw blade" on the next page

When the material category, shape and dimensions of the work, and the tooth pitch of the saw blade are set, the recommended running speed of the saw blade is displayed in the recommended blade running speed field (It is not displayed when the MATERIAL CATEGORY LED "10" is illuminated)

Turn the BLADE RUNNING SPEED dial to obtain the recommended running speed of the saw blade

6. Setting override rate

The cutting condition database of the CNC-LIGHT unit has average cutting conditions set for each material category This means that the cutting speed (saw blade running speed, sawhead downfeed speed, and cutting rate) varies with specific materials in the same material category

If the cutting speed is too fast or slow, it can be finely adjusted by changing the override rate Press the setting item key to illuminate the setting item LED at the left of the "%" item Press the DATA UP or DATA DOWN key to decrease or increase the override rate in the range of 30 to 200% as applied to the cutting condition database of the CNC-LIGHT unit

If you want to slightly decrease the cutting speed, set the override rate at 70 to 80% to cut the work at a speed by 20 to 30% lower than stored in the cutting condition database of the CNC-LIGHT unit

RUNNING IN NEW SAW BLADE

When a new saw blade is to be used for the first time, be sure to run it in Unless the new saw blade is properly run in, it may become unable to cut any more in the middle of a cutting operation, prematurely run out, and decrease in service life Each time a new saw blade is to be used, run it in as described below, because it is basic to the proper use of the machine

1 Set the override rate in the CNC-LIGHT unit as described below Set the override rate at 30% for mild steel and at 40% for tool steel and stainless steel

(1) Press the setting item key to illuminate the setting item LED at the left of the "%" item

(2) Press the DATA UP or DATA DOWN key to set the override rate (30% or 40%) in the DATA field

2 The running speed of the saw blade varies with the override rate Set the saw blade running speed with the BLADE RUNNING SPEED dial according to the value displayed in the recommended blade running speed field

Adjust its running speed when the saw blade produces vibration noise during cutting

3 Cut to the following target cross-sectional area while bringing the override rate and saw blade running speed close to the standard conditions in stages by reference to the table below

Target cross-sectional area

Mild steel At least 5000 cm^2 {775 in^2} (four cuts of ϕ400 mm {15 75 in } work)

Tool steel and stainless steel At least 3000 cm^2 {465 in^2} (three cuts of ϕ400 mm {15 75 in } work)

Raise the cutting conditions every cut if the work is 400 mm {15 75 in } in diameter

Override rate	Running-in condition (for ϕ 400 mm {15 75 in } work)	
	Mild steel	Tool steel and stainless steel
30%	1	
40%	2	1
60%	3	2
80%	4	3
100%	Standard condition	Standard condition

4 If the saw blade vibrates before it reaches the standard cutting conditions, this means that it is not properly run in In this case, slow down the saw blade running speed and sawhead downfeed speed, and gradually bring them closer to the standard cutting conditions while checking that the saw blade does not vibrate

HANDLING CUTTING DATA

Entering and storing cutting data

When the automatic operation of the machine is to be performed, enter cutting data at respective stations and store them in memory as described below

NOTE

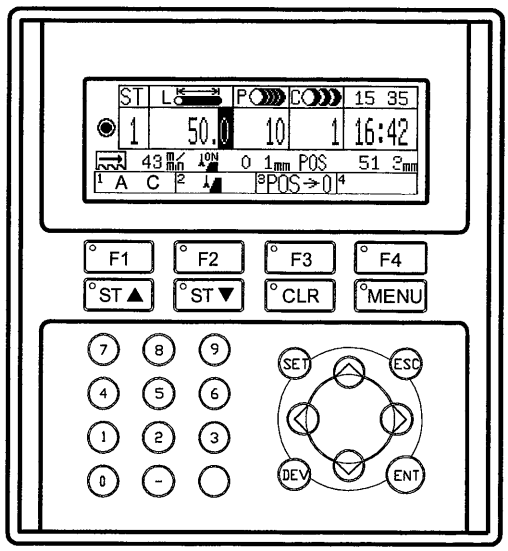
- The cutting data are stored in memory even after the power of the machine is turned off When the power of the machine is turned on the next time, the previous cutting data are all retained in memory

1 Move the cursor to the ST field with the cursor keys

2 Press the F1 (A•C) key to go to the all station delete confirmation display

3 Press the F1 (YES) key to delete the cutting data stored at all stations

4 Enter a station number in the ST field with the numeric keys



5 Press the ENT key to set the station number in the ST field and move the cursor to the L field

6 Enter the cutoff length in the L field with the numeric keys The setup range is 10 0 to 9999 9 mm in 0 1-mm increments {0 394 to 99 999 inches in 0 001-inch increments} The kerf of the saw blade and the stroke of the feed vise need not be considered

NOTE

- If the entered value is outside the setup range, the ENT key is not allowed to set the entered value in the ST field and move the cursor to the P field In such a case or when a wrong value is entered, press the CLR key to delete the entered value, and enter a correct value

7 Press the ENT key to set the cutoff length in the L field and move the cursor to the P field

8 Enter the quantity of pieces to be cut in the P field with the numeric keys The setup range is 1 to 9999

9 Press the ENT key to set the quantity of pieces to be cut in the P field and move the cursor to the ST field

NOTE

- If you enter a wrong value, press the CLR key to delete it, and enter a correct value

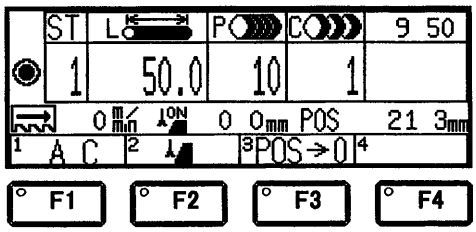
10 Repeat steps 4 to 9 above to enter and store the cutting data for the required number of stations

Example of data entry

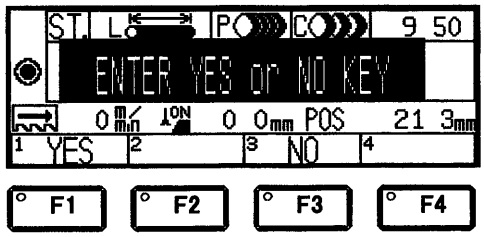
Station 1 L field (cutoff length) 10 mm
P field (quantity of pieces to be cut) 3 pieces

Station 2 L field (cutoff length) 20 mm
P field (quantity of pieces to be cut) 5 pieces

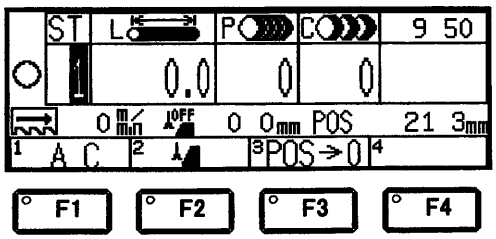
1 Press the F1 (A•C) key to go to the all station delete confirmation display



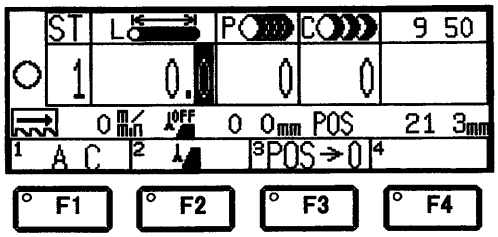
2 Press the F1 (YES) key to delete the cutting data of all stations



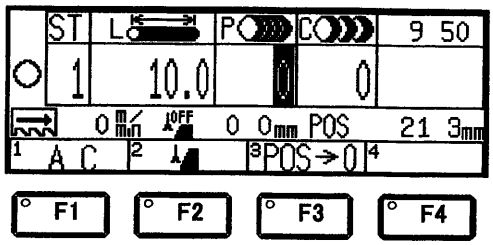
3 Press the numeric key "1" and the ENT key to set "1" in the ST field



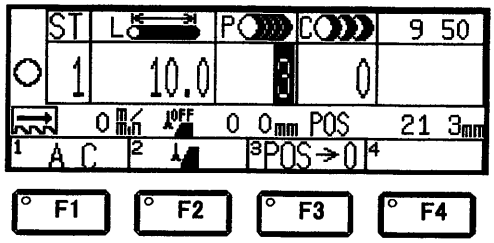
4 Once the station number is set in the ST field, the cursor moves to the L field



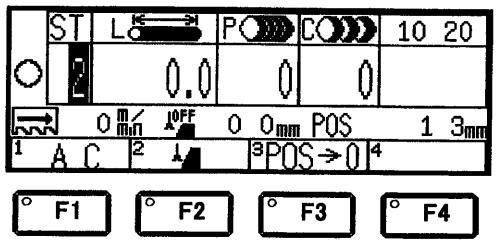
5 Press the numeric keys "1" and "0" and the ENT key to set "10 0" in the L field and move the cursor to the P field



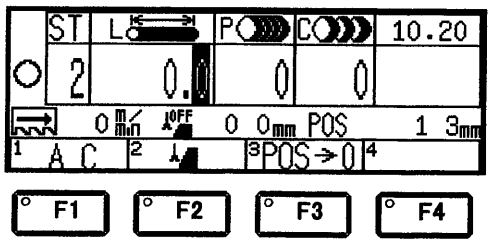
6 Press the numeric key "3" and the ENT key to set "3" in the P field



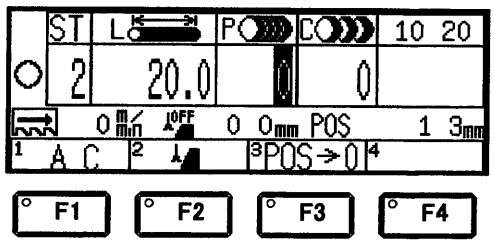
7 Once the quantity of pieces to be cut is set in the P field, the cursor moves to the ST field The station number is increased by 1 to "2"



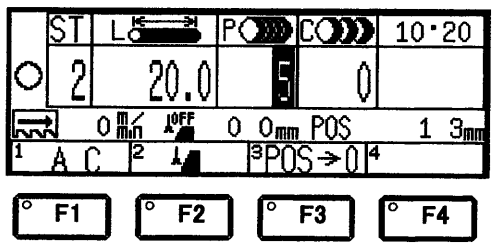
8 Press the ENT key to move the cursor to the L field



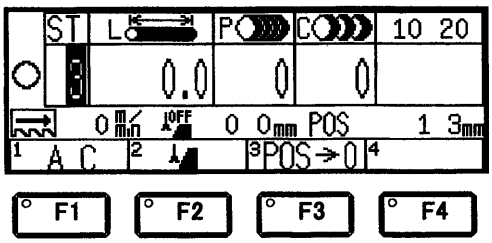
9 Press the numeric keys "2" and "0" and the ENT key to set "20 0" in the L field and move the cursor to the P field



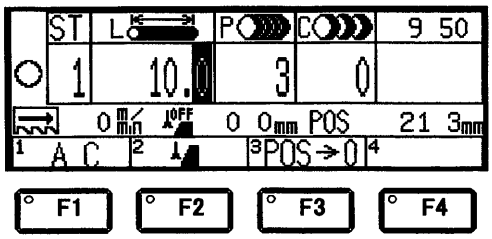
10 Press the numeric key "5" and the ENT key to set "5" in the P field



11 Once the quantity of pieces to be cut is set in the P field, the cursor moves to the ST field The station number is increased by 1 to "3"



12 Press the numeric key "1" and the ENT key to call the station 1 in the ST field and display the cutting data of the station 1



NOTE

- During its automatic operation, the machine starts cutting the work at the station whose number is displayed in the ST field

Checking cutting data (calling station)

When calling the station whose cutting data are to be checked, move the cursor to the ST field and enter the number for the station in the ST field as you did when entering and storing the cutting data for the station

The length and quantity of pieces to be cut as stored at the station number are displayed in the L and P fields, respectively The C field displays the quantity of pieces cut during the last automatic operation

NOTE

- Before starting the automatic operation of the machine, check the cutting data of all stations

Changing cutting data

Change the stored cutting data as described below

NOTE

- The cutting data can be changed during the automatic operation of the machine, except that the cutting data of the station currently being executed cannot be changed

1. Enter with the numeric keys the number for the station whose cutting data you want to change, and press the ENT key
2. To change the cutoff length, move the cursor to the L field with the cursor keys To change the quantity of pieces to be cut, move the cursor to the P field with the cursor keys
3. Enter the appropriate value with the numeric keys, and press the ENT key
4. To reset the quantity of pieces already cut, move the cursor to the C field with the cursor keys In this condition, the quantity of pieces already cut may be reset by either of the following methods
   (a) Press the CLR key and the ENT key
   (b) Press the numeric key "0" and the ENT key
5. This stores the new cutting data

Canceling cutting data

When canceling the cutting data stored at a station, call the station first Set either the L or P field to "0", and press the ENT key

The automatic operation of the machine skips the station

NOTE

- When the L and P fields are both set to "0" for a given station, the automatic operation of the machine is stopped at the station

Conditions for execution of cutting data

The following conditions affect the automatic operation of the machine being executed according to the cutting data stored at the respective stations

- When "0" is set in either of the L and P fields for a given station, the machine skips the station and goes to the next station
- When "0" is set in both of the L and P fields for a given station, the machine ends its automatic operation at the station
- When the P and C fields display the same value for a given station, the machine skips the station and goes to the next station

Example of data execution

ST field	L field	P field	C field	Operating status	Execution condition
1	100 0	10	0	Started and executed	Automatic operation is started
2	200 0	0	0	Skipped	P field is set to "0"
3	0 0	10	0	Skipped	L field is set to "0"
4	400 0	40	40	Skipped	40 pieces are already cut
5	500 0	50	0	Executed	
6	0 0	0	0	Ended	L and P fields are both set to "0"
7	700 0	70	0	Started and executed	Automatic operation is resumed
8	800 0	80	0	Executed	
9	0 0	0	50	Ended	L and P fields are both set to "0"

When the cutting data are stored at the stations 1 to 9 as shown above,

- Displaying the station number 1 and starting the machine cut the work at the station 1, skip the stations 2 to 4, cut the work at the station 5, and end the automatic operation
- Displaying the station number 7 and starting the machine cut the work at the stations 7 and 8 and end the automatic operation

HEAD-END POSITIONING FUNCTION

- If the head-end positioning operation is performed with bent work, the head end of the work may not reach the main vise even when the work is fed for the preset length
- Before performing the head-end positioning operation, be sure to remove the chips from the contact surface at the back of the main vise If the chips are deposited on the contact surface, they may be lodged between the contact surface and work head and may degrade the accuracy of cutoff pieces
- If the head-end positioning function is used together with the optional vise pressure control valves, the head-end positioning operation may not be properly performed

Setting cutoff length

Set the length of pieces to be cut by using the head-end positioning function as described below

1 Move the cursor to the ST field with the cursor keys, and call the station whose cutoff length is to be set

NOTE

- Use a station from the stations 1 to 99, and set the quantity of pieces to be cut at the same time

2 Press the ENT key to set the station number in the ST field and move the cursor to the L field

3 Enter the cutoff length in the range of 10 0 to 9999 9 mm {0 394 to 99 999 in } with the numeric keys, and press the ENT key to set the cutoff length in the L field and move the cursor to the P field

The kerf of the saw blade is automatically added to the cutoff length

4 Enter the quantity of pieces to be cut in the range of 1 to 9999 with the numeric keys, and press the ENT key to set the quantity of pieces to be cut in the P field and move the cursor to the ST field

Head-end positioning operation

CAUTION

- **The feed vise may repeat its forward and backward motions several times until it positions the work for the preset cutoff length**

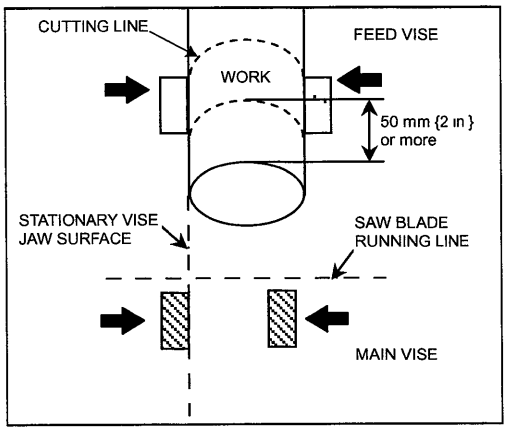
Perform the head-end positioning operation as described below

1 Press and hold the FEED VISE BACKWARD button to move the feed vise backward

2 Press and hold the FEED VISE OPEN button to open the feed vise over the full stroke

3 Place the work on the feed vise bed so that its head end projects 50 mm {2 in } or more from the front end of the feed vise toward the main vise

4 Press and hold the FEED VISE CLOSE button to clamp the work with the feed vise



5 Press and hold the MAIN VISE CLOSE button to close the main vise

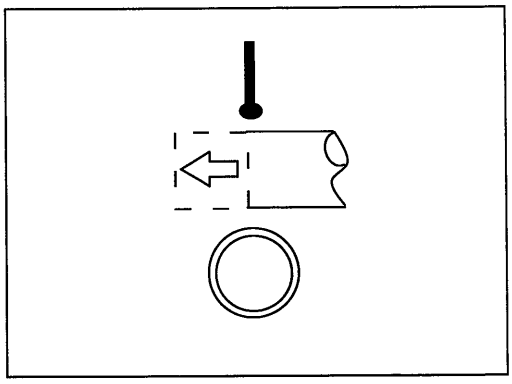
6 Turn the AUTO/MANUAL keyswitch to AUTO

7 Check that

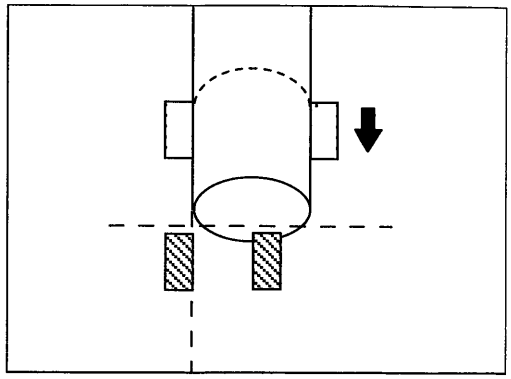
- The work is clamped with the feed vise (the FEED VISE CLOSE light is illuminated)
- The main vise is fully closed (the MAIN VISE CLOSE light is illuminated)
- The feed vise is not at the forward limit (the FEED VISE FORWARD LIMIT light is extinguished)

8 Press the HEAD-END POSITIONING button

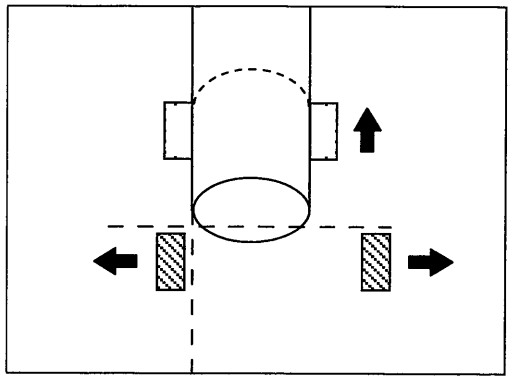
The button flashes, and the sawhead rises to the upper limit The feed vise starts the head-end positioning operation



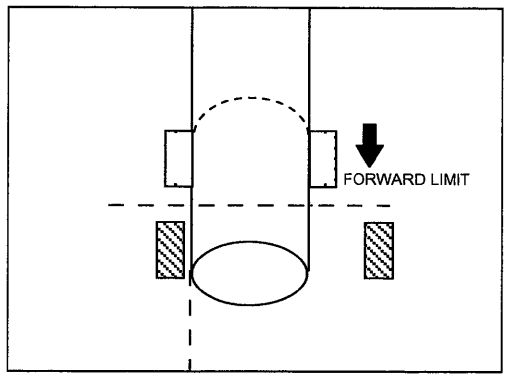
The feed vise moves forward When the work is pushed against the main vise, the feed vise stops the forward motion

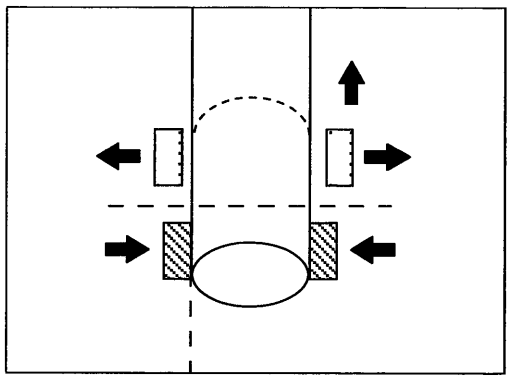


When the feed vise moves slightly backward and stops, the main vise fully opens

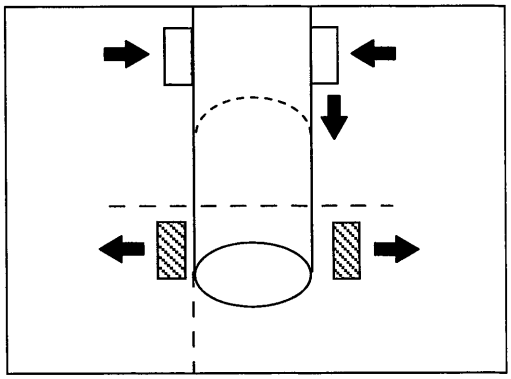


The feed vise performs the positioning operation until the preset cutoff length is achieved

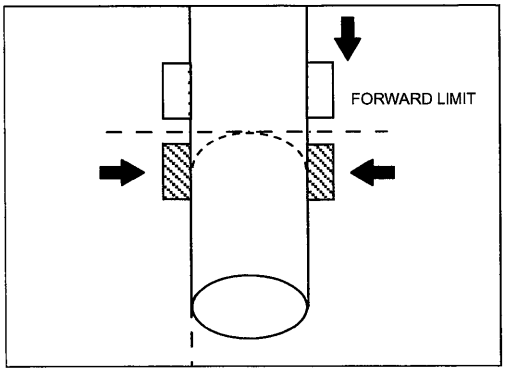




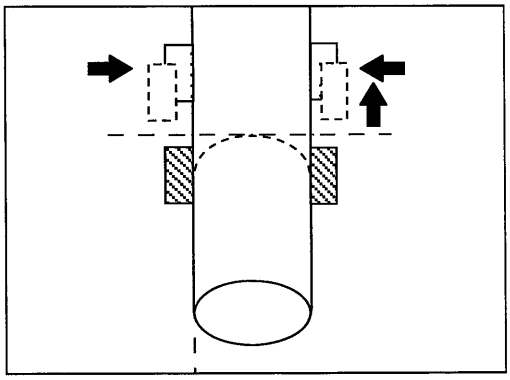
The feed vise moves to the forward limit



9 The main vise clamps the work



10 When the feed vise unclamps the work, moves slightly backward, and clamps the work again, the HEAD-END POSITIONING button extinguishes



Going from head-end positioning operation to automatic operation

CAUTION	● If the BLADE DRIVE button is pressed during the head-end positioning operation, the saw blade starts running

If you want to go directly to the automatic operation of the machine after completing the head-end positioning operation, press the BLADE DRIVE button while the HEAD-END POSITIONING button is flashing

After the head-end positioning operation, the machine starts the automatic operation at the station where the head-end positioning operation has been performed (or at the station for which the Current station light illuminates)

OPERATION

⚠ WARNING

- **Before starting the operation of the machine each time, be sure to check that there are no people and obstacles around the machine**
- **Never take your eyes off the machine or lean on the machine during operation Be ready for a situation that demands immediate attention to prevent an accident**
- **Never touch the running saw blade or chip conveyor It is dangerous if your hands or clothing are caught in the running saw blade or chip conveyor**
- **Never try to set the wire brushes on the saw blade or remove chips when the saw blade is running It is dangerous if your hands or clothing are caught in the running saw blade**
- **Be sure to check that the flow rate of the cutting fluid is adjusted to a proper degree If the cutting fluid is not supplied in sufficient amounts, the life of the saw blade may be markedly shortened If the cutting operation is continued in this condition, a fire may occur**

Manual operation

STARTING CUTTING

Position the work and cut it once during the manual operation as described below

1 Check again that

- The saw blade running speed is properly set
- The wire brushes are properly set on the saw blade
- The flow rate of the cutting fluid is properly adjusted
- The work is securely clamped with the main vise (the MAIN VISE CLOSE light is illuminated)
- The work is securely clamped with the feed vise (the FEED VISE CLOSE light is illuminated)

NOTE

- If the feed vise is not positioned where it may interfere with the movable saw blade guide, the machine can be manually operated when any of the following conditions are met

  a) The work is clamped only with the main vise

  b) The work is clamped only with the feed vise

  c) The work is clamped both with the main vise and the feed vise

2 Turn the AUTO/MANUAL keyswitch to MANUAL

3 Press the BLADE DRIVE button to start cutting the work

The saw blade starts running, and the sawhead rapidly lowers until the quick approach feeler touches the work The sawhead then lowers at the preset downfeed speed

ENDING CUTTING

When the sawhead reaches the lower limit after cutting the work once, the sawhead and saw blade automatically stop lowering and running, respectively

INTERRUPTING OR STOPPING CUTTING

Press the BLADE UP button or one of the EMERGENCY STOP buttons to interrupt or stop cutting

- Press the BLADE UP button to stop the saw blade running, and press and hold it to raise the sawhead Press the BLADE DRIVE button to resume the interrupted cutting operation
- Press one of the EMERGENCY STOP buttons to immediately stop the entire machine

The machine stops as soon as it falls into an alarm condition When the saw blade runout alarm code "E-007" is displayed, the saw blade stops running, the sawhead rises to the upper limit, and the machine immediately stops (See "Alarm code list" in Part V, Troubleshooting)

Automatic operation

Execute the cutting data stored at each station to continuously cut the work

BEFORE STARTING AUTOMATIC OPERATION

Before pressing the BLADE DRIVE button, check again that

- The saw blade running speed is properly set
- The wire brushes are properly set on the saw blade
- The flow rate of the cutting fluid is properly adjusted
- The first station to be executed is called (The machine starts continuously cutting the work at the station number displayed in the ST field and skips the previous stations)
- The cutting data of each station are properly set
- The conditions for the start of the automatic operation are satisfied
- The work is securely clamped with the main vise (the MAIN VISE CLOSE light is illuminated)
- The work is securely clamped with the feed vise (the FEED VISE CLOSE light is illuminated)
- The feed vise is at the forward limit (the FEED VISE FORWARD LIMIT light is illuminated)

STARTING CUTTING WITHOUT TRIMMING HEAD END

Start cutting the work without trimming its head end as described below

1 Place the work cutting line just below the saw blade as described in "Positioning work" on page IV-14

2 Turn the AUTO/MANUAL keyswitch to AUTO

3 Press the BLADE DRIVE button to start continuously cutting the work

As soon as the saw blade starts running, the Current station light illuminates The machine continues to operate automatically according to the preset cutting data

NOTE

● Unless the automatic operation start conditions were satisfied when the BLADE DRIVE button was pressed, the saw blade does not start running, and the MAIN VISE CLOSE light or FEED VISE FORWARD LIMIT light flashes
When either light flashes, turn the AUTO/MANUAL keyswitch to MANUAL, and press the MAIN VISE CLOSE button or FEED VISE FORWARD button to change the light from flashing to steady

STARTING CUTTING AFTER TRIMMING HEAD END

Start cutting the work after trimming its head end as described below

1 Place the work head-end trimming line just below the saw blade as described in "Positioning work" on page IV-14

2 Turn the AUTO/MANUAL keyswitch to MANUAL

3 Press the BLADE DRIVE button to start the saw blade running

4 When the sawhead starts lowering, turn the AUTO/MANUAL keyswitch to AUTO to start continuously cutting the work

As soon as the head-end trim is completed, the Current station light illuminates The machine continues to operate automatically according to the preset cutting data (This head-end trim is not counted)

NOTE

- Unless the automatic operation start conditions were satisfied when the AUTO/MANUAL keyswitch was turned to AUTO, the machine stops immediately

ENDING AUTOMATIC OPERATION

When the execution of all cutting data is completed, the machine positions the sawhead at the lower limit and stops the saw blade and the hydraulic pump motor

INTERRUPTING AUTOMATIC OPERATION

To interrupt the automatic operation of the machine, press the BLADE UP button The machine immediately stops When the BLADE UP button is pressed during cutting, the saw blade stops running As long as the BLADE UP button is pressed and held, the sawhead rises (The interrupted cut is not counted as complete)

To resume the interrupted automatic operation, press the BLADE DRIVE button The saw blade starts to resume the automatic operation

NOTE

- If the AUTO/MANUAL keyswitch is turned to MANUAL during the interruption of the automatic operation, the interrupted automatic operation cannot be resumed

STOPPING AUTOMATIC OPERATION AFTER DETECTION OF EXCESSIVE RUNOUT

When the plus or minus runout tolerance is exceeded for more than the prescribed time during cutting, an alarm condition occurs, and the alarm code "E-007" is displayed above the function label fields

The saw blade stops running, the sawhead rises to the upper limit, and the machine immediately stops The electric power of the machine and the hydraulic pump motor remain on, and the LCD screen continues to display the runout of the saw blade when the alarm condition occurred

Restoring operation after automatic stop

Clear the alarm condition as described below

1 Press the CLR key

The alarm code "E-007" and its message disappear, and the LCD screen displays the runout tolerances of the saw blade again

2 Press the CLR key again

The runout of the saw blade when the alarm condition occurred is reset to allow the machine to be operated again

3 Investigate and remove the cause of the runout (e g , saw blade life, improper cutting conditions, clamp failure, or internal stress in the work)

STOPPING AUTOMATIC OPERATION

When the machine falls into such a condition that it cannot continue cutting during its automatic operation, press one of the EMERGENCY STOP buttons The entire machine, including the saw blade and hydraulic unit, comes to an immediate stop

The machine stops as soon as the AUTO/MANUAL keyswitch is turned to MANUAL during its automatic operation If the machine is cutting the work, it stops after completing and counting the current cut

When the alarm code "E-007" is displayed at the occurrence of a runout alarm, the machine comes to an immediate stop (See "Alarm code list" in Part V, Troubleshooting)

The machine also stops as soon as it falls into an alarm condition or its power is turned off

When the machine has stopped in emergency, its automatic operation cannot be resumed by pressing the BLADE DRIVE button Investigate and remove the cause of the emergency stop, and restart the automatic operation of the machine from the beginning

NOTE

- When restarting the automatic operation of the machine after its emergency stop, pay attention to the quantity displayed in the C field The work is not cut for the pieces already counted

Interrupt station function

The interrupt station function actuates during the automatic operation of the machine and comes in handy when there occurs a rush job using the work currently being cut This function can be used to insert and store new cutting data as an interrupt station The interrupt station is preferentially executed, so that there is no need to stop the machine

Press the F1 (ST interrupt) key to enable the interrupt station function The interrupt station function may be activated in one of the following three ways

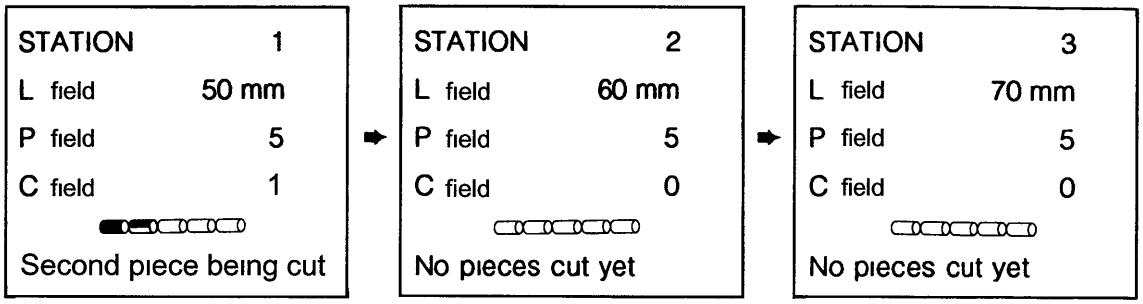
- The interrupt station is inserted in the middle of the station currently being executed (see the next page)
- The interrupt station is inserted between the stations to be executed later (see page IV-49)
- The interrupt station is inserted as the first station of automatic operation while the head end of the work is being trimmed during the automatic operation (see page IV-51)

NOTE

- To disable the interrupt station function after pressing the F1 (ST interrupt) key (or pressing the F1 (ST interrupt) key by mistake), press the F2 (ST delete) key to delete the inserted station and display the cutting data of the original station
- The cutting data of the interrupt station, once stored, can be changed in the same way as those of ordinary stations
- When the interrupt station is inserted, the subsequent stations are incremented by one each in number Note that the cutting data stored at the station 99 will be deleted
- The interrupt station function can be used not only during the automatic operation, but also before the start of the automatic operation, during the pause of the automatic operation or in the MANUAL mode
  The following pages describe the procedures for inserting an interrupt station while an ordinary station is being executed The same procedures can be used for inserting an interrupt station in other cases

INSERTING INTERRUPT STATION IN CURRENT STATION

Example

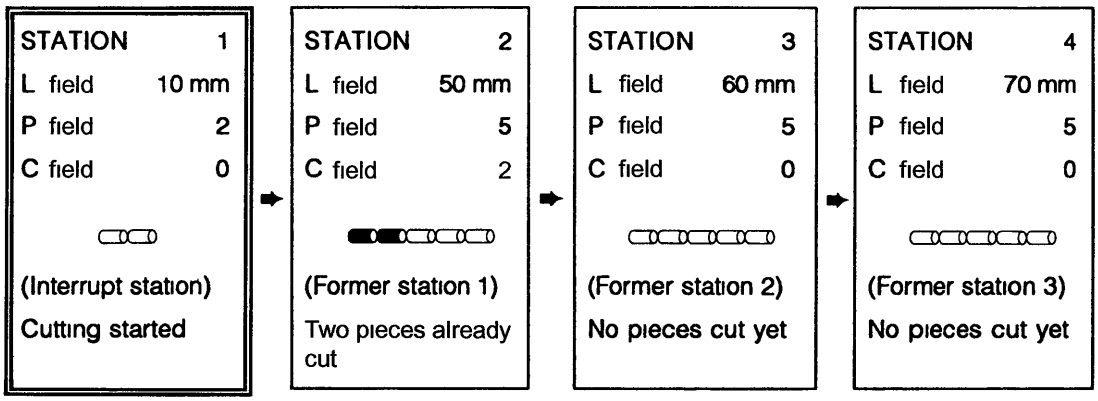


Insert the following cutting data as interrupt station after the second piece is cut at the station 1 under the above conditions

Cutoff length (L field) 10 mm
Quantity to be cut (P field) 2 pieces

When the interrupt station is set as described on the next page, the numbers of the stations become as shown below after the second piece is cut at the station 1

The interrupt station is stored as the new station 1, and the former station 1 and subsequent stations are incremented by one each in number



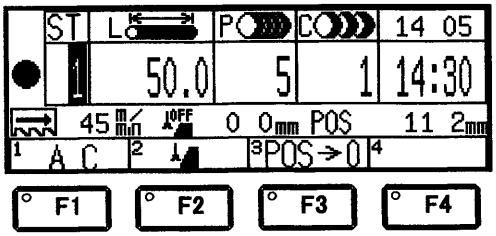
After executing the interrupt station, the machine continues to cut the third piece at the interrupted station 2 (former station 1)

NOTE

- Depending on the timing of pressing the ENT key to set the interrupt station as the last step of the entry procedure, the interrupt station may be executed after another piece is cut at the current station

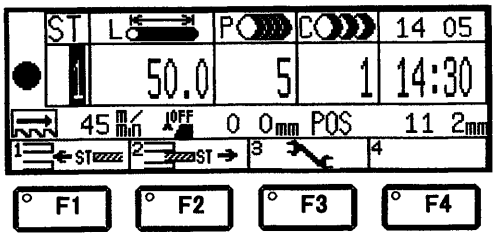
Entry procedure (Inserting interrupt station (10 mm x 2 pieces) in station 1 currently being executed)

1 Enter the number for the currently running station in the ST field with the numeric keys (In this example, enter "1", and press the ENT key)



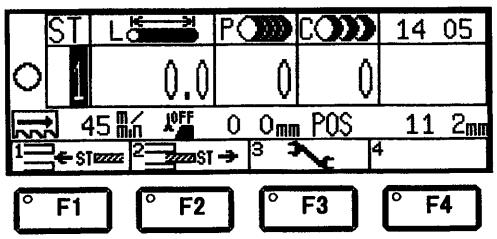
The Current station light illuminates, and the cutting data of the station 1 are displayed

2 Press the MENU key several times to display the F1 (ST interrupt) key

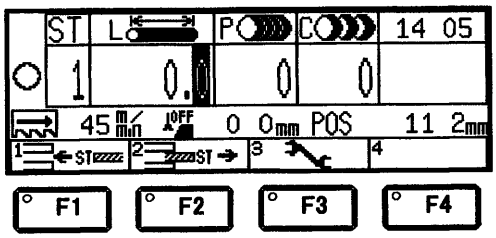


3 Press the F1 (ST interrupt) key

The L, P, and C fields are all reset to "0", and the Current station light extinguishes

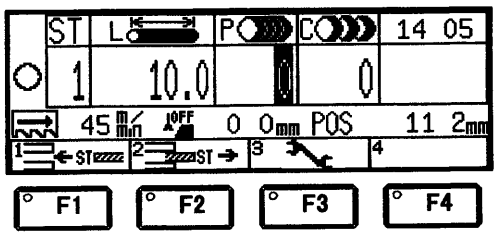


4 Press the ENT key to move the cursor to the L field



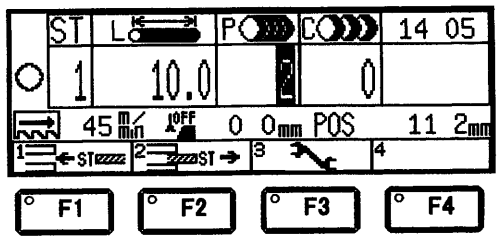
5 Enter the cutoff length with the numeric keys (In this example, enter "1" and "0", and press the ENT key)

The cursor moves to the P field



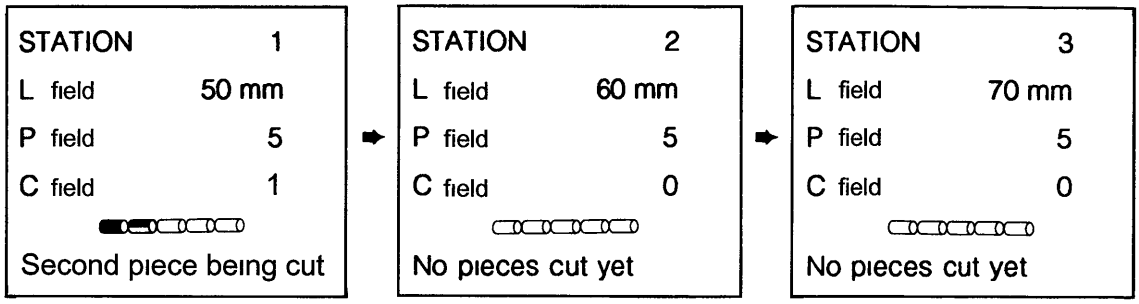
6 Enter the quantity of pieces to be cut with the numeric keys (In this example, enter "2", and press the ENT key)

This completes the setting of the interrupt station



INSERTING INTERRUPT STATION BETWEEN STATIONS TO BE EXECUTED

Example

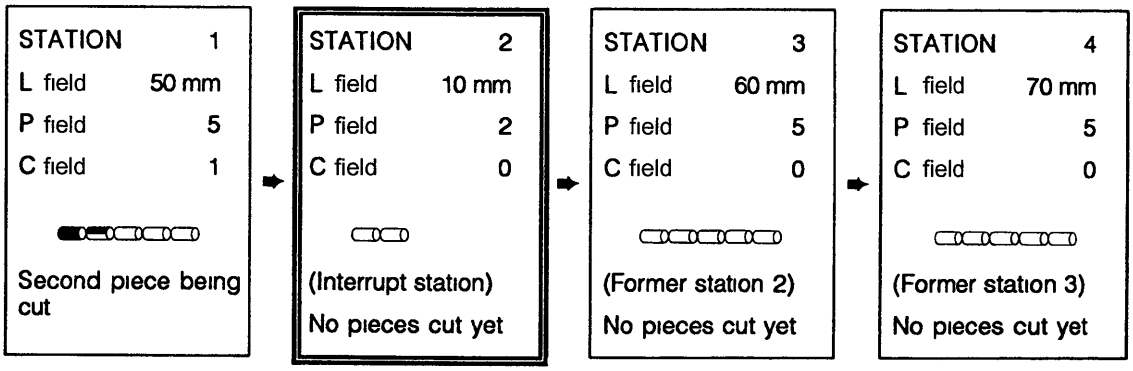


Insert the following cutting data as interrupt station between the stations 1 and 2 under the above conditions

Cutoff length (L field) 10 mm
Quantity to be cut (P field) 2 pieces

When the interrupt station is set as described on the next page, the numbers of the stations become as shown below After the execution of the station 1, the interrupt station begins to be executed

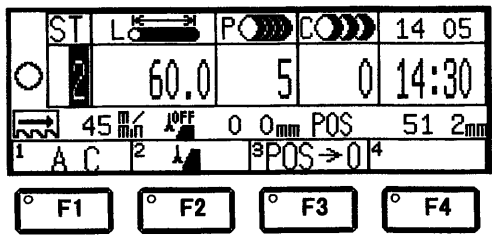
The interrupt station is stored as the new station 2, and the former station 2 and subsequent stations are incremented by one each in number



After executing the interrupt station, the machine continues to execute the new station 3 (former station 2)

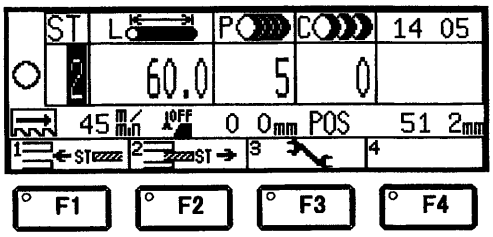
Entry procedure (Inserting interrupt station (10 mm x 2 pieces) between stations 1 and 2)

1 Enter with the numeric keys the number for the station before which to insert the interrupt station (In this example, enter "2", and press the ENT key)



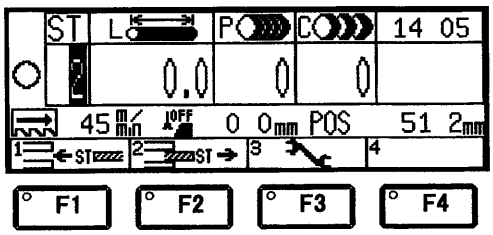
The cutting data of the station 2 are displayed

2 Press the MENU key several times to display the F1 (ST interrupt) key

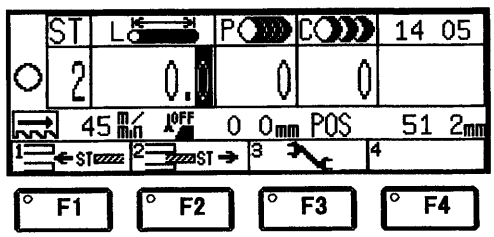


3 Press the F1 (ST interrupt) key

The L, P, and C fields are all reset to "0"

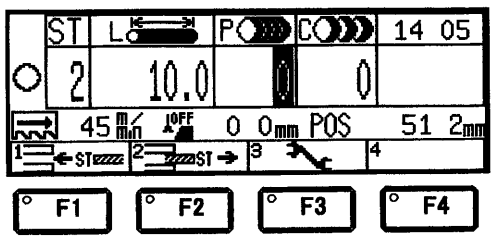


4 Press the ENT key to move the cursor to the L field



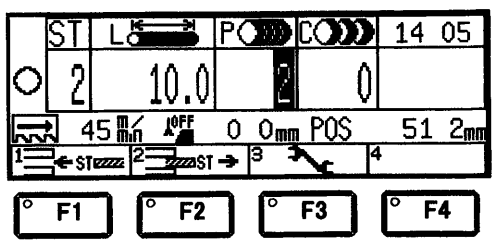
5 Enter the cutoff length with the numeric keys (In this example, enter "1" and "0", and press the ENT key)

The cursor moves to the P field



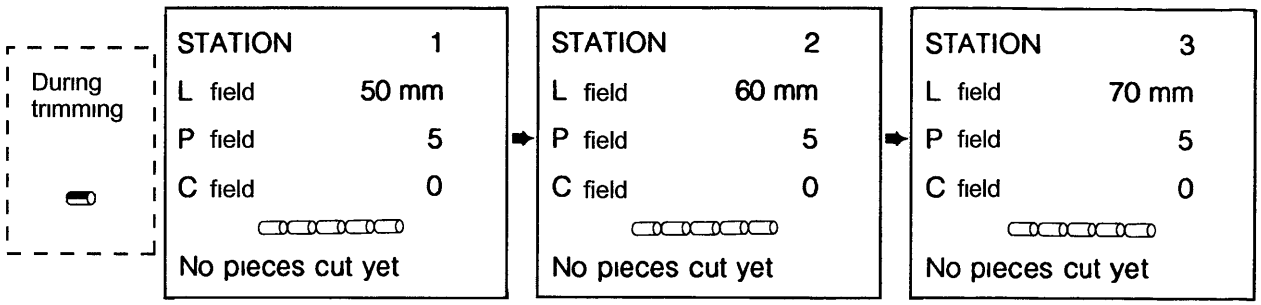
6 Enter the quantity of pieces to be cut with the numeric keys (In this example, enter "2", and press the ENT key)

This completes the setting of the interrupt station



INSERTING INTERRUPT STATION AS FIRST STATION OF AUTOMATIC OPERATION DURING HEAD-END TRIMMING

Example

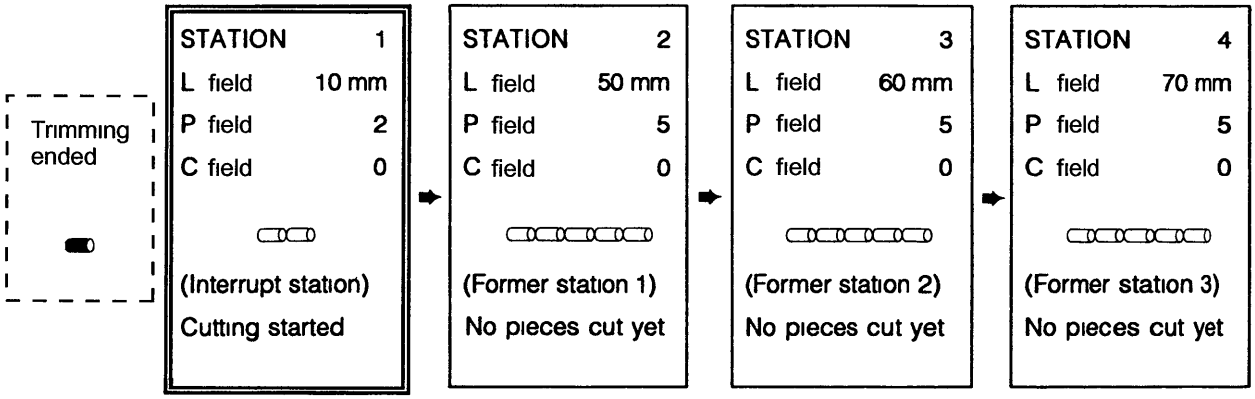


Insert the following cutting data as interrupt station before the station 1 under the above conditions

Cutoff length (L field) 10 mm
Quantity to be cut (P field) 2 pieces

When the interrupt station is set as described on the next page, the numbers of the stations become as shown below After trimming the head end of the work, the interrupt station begins to be executed

The interrupt station is stored as the new station 1, and the former station 1 and subsequent stations are incremented by one each in number



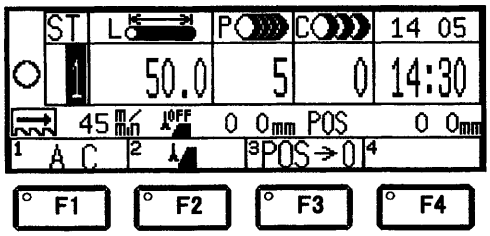
After executing the interrupt station, the machine continues to execute the new station 2 (former station 1)

NOTE

- When you insert an interrupt station while the head end of the work is being trimmed, do not change the station number displayed in the ST field until the head-end trim is completed If you do so, you may change the sequence of the stations during automatic operation

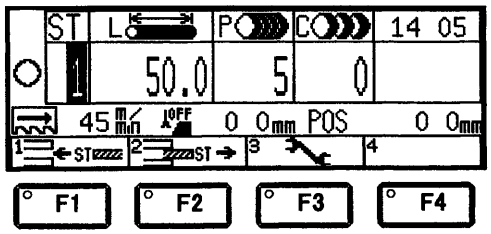
Entry procedure (Inserting interrupt station (10 mm × 2 pieces) before station 1 while head end of work is being trimmed)

1 Enter with the numeric keys the number for the station to be executed after trimming (or the first station of automatic operation) (In this example, enter "1", and press the ENT key)



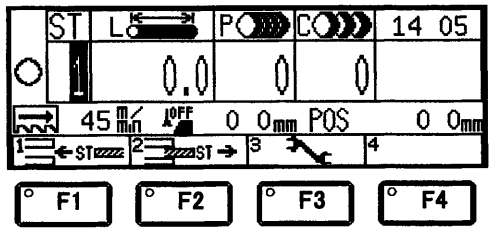
The cutting data of the station 1 are displayed

2 Press the MENU key several times to display the F1 (ST interrupt) key

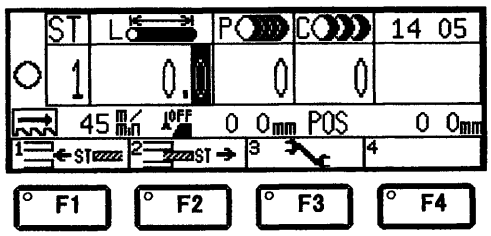


3 Press the F1 (ST interrupt) key

The L, P, and C fields are all reset to "0"

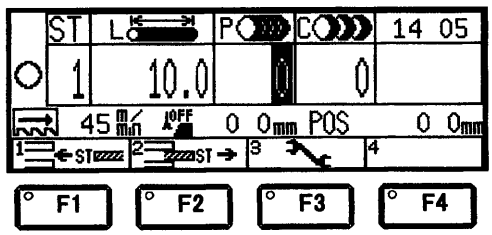


4 Press the ENT key to move the cursor to the L field



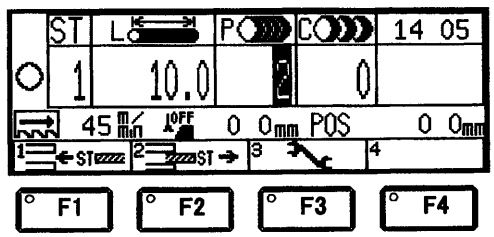
5 Enter the cutoff length with the numeric keys (In this example, enter "1" and "0", and press the ENT key)

The cursor moves to the P field



6 Enter the quantity of pieces to be cut with the numeric keys (In this example, enter "2", and press the ENT key)

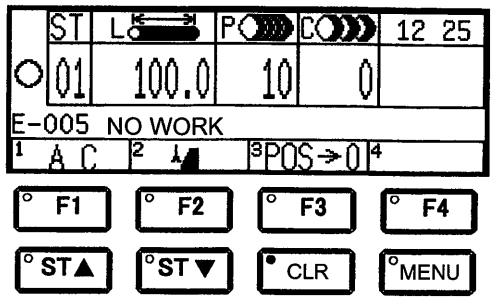
This completes the setting of the interrupt station



Self-diagnostic function

The machine is equipped with the self-diagnostic function of detecting an alarm and informing the operator of the alarm

If an alarm occurs when the machine is powered up or operating, its code and message are displayed above the function label fields Referring to "Alarm code list" in Part V, investigate and remove the cause of the alarm and press the CLR key to clear the alarm condition



NOTE

- While an alarm code is displayed, all of the keys but the CLR key are disabled These keys cannot be enabled unless the alarm condition is cleared

ENDING OPERATION

WARNING

- **Be sure to stop the saw blade before cleaning the machine It is very dangerous if any part of your body is caught in the running saw blade**
- **When carrying or disposing of flammable chips (like those of titanium or magnesium), take due care so that the chips do not catch fire Prohibit any use of fire in the chip storage place**

NOTICE

- If chips are left accumulated in the machine, they may accelerate the deterioration of the cutting fluid or cause the machine to malfunction
- To prevent freezing in a cold region, drain the cutting fluid from the hoses after cleaning the machine

End the operation of the machine as described below

1 Open the throttle valve of the cleaning hose nozzle

2 Hold the cleaning hose nozzle, and press and illuminate the CUTTING FLUID button

3 Apply the cutting fluid to the chip-deposited areas to clean them

NOTICE

- Take care so that the cutting fluid does not splash over the control panel

4 After cleaning the machine, press and extinguish the CUTTING FLUID button

5 Remove the chips from the chip box

6 Press and hold the BLADE DOWN button to move the sawhead down to the lower limit

7 Press the HYDRAULIC OFF button to stop the hydraulic pump motor

8 Turn the machine circuit breaker switch to OFF

9 Turn off the shop circuit breaker switch

Part V

Troubleshooting

OPERATING TROUBLES

The saw blade is consumable It is certain to reach the end of its life after cutting so many workpieces If its life is extremely short, the following causes may be considered according to symptoms Remove the cause of the trouble, and continue correct cutting Similarly remedy other symptoms

Checkpoints for improving cutting accuracy

- The saw blade is properly center aligned
- The saw blade is clamped with its inserts
- The saw blade inserts are not worn
- The backup tips are not worn
- The saw blade is properly tensioned
- The saw blade tooth pitch is suitable for the shape and material of the work to be cut
- The saw blade tooth form is suitable for the shape and material of the work to be cut
- The cutting rate is not too high
- The saw blade running speed is not too high
- The cutting fluid is not insufficient or thin
- The saw blade is properly run in

	Symptom	Cause	Remedy
1	Saw blade runs out or vibrates	Saw blade is new and is not run in	Run it in
2	Saw blade runs out or vibrates	Saw blade running speed is too high	Reset it
3	Saw blade runs out	Saw blade running speed is too low	Reset it
4	Saw blade vibrates or breaks	Cutting rate is too high	Check saw blade running speed and sawhead downfeed speed
5	Saw blade runs out or breaks	Cutting rate is too low	Increase override rate
6	Saw blade vibrates	Work surface is too rough	Turn outside of work on another machine
7	Saw blade teeth are prematurely chipped or worn	Chips appear blue or violet	Reduce cutting rate and saw blade running speed

	Symptom	Cause	Remedy
8	Saw blade teeth are prematurely chipped or saw blade runs out	Work surface is too hard or work is not annealed	Remove hard surface on another machine or anneal work
9	Saw blade runs out	Saw blade tooth pitch or tooth form is not appropriate	Select another saw blade
10	Saw blade runs out or breaks	Saw blade tooth pitch is too fine for width of work	Select another saw blade
11	Saw blade runs out	Saw blade tooth pitch is too coarse for width of work	Select another saw blade
12	Saw blade runs out	Saw blade teeth are not offset equally to left and right or are unevenly worn	Change saw blade for new one
13	Saw blade runs out	Saw blade is not properly center aligned	Adjust perpendicularity of saw blade
14	Saw blade vibrates or runs out	Work is not securely clamped	Check and reclamp it
15	Saw blade teeth are prematurely chipped	Chips are embedded in vise jaw slide surface	Clean to remove them
16	Saw blade teeth are clogged and prematurely chipped	Chips are not properly removed or cutting fluid is insufficient	Adjust cutting fluid flow rate or add cutting fluid
17	Saw blade vibrates or runs out	Saw blade inserts are dirty	Clean and check them
18	Saw blade vibrates	Saw blade is in contact with wheel flange	Adjust saw blade to proper clearance
19	Saw blade runs out	Saw blade teeth are unevenly worn	Change saw blade for new one
20	Saw blade runs out	Saw blade teeth are not offset equally to left and right	Change saw blade for new one
21	Saw blade teeth are prematurely chipped	Vise jaws are unevenly worn	Change them
22	Saw blade runs out	Saw blade tension is low	Retention saw blade, or check hydraulic pressure and cylinder
23	Saw blade breaks	Saw blade tension is too high	Check hydraulic pressure
24	Saw blade breaks or runs out	Saw blade is improperly set in running position	Adjust saw blade so that it runs in proper position
25	Saw blade vibrates or runs out	Sawhead knocks during downward movement	Bleed air from lift cylinders

	Symptom	Cause	Remedy
26	Saw blade teeth are clogged and prematurely chipped or saw blade runs out	Wire brush or brushes are worn	Change them
27	Saw blade runs out	Saw blade inserts are unevenly worn	Change them
28	Saw blade runs out or vibrates	Guide roller or rollers are worn	Change them
29	Saw blade teeth are prematurely chipped or saw blade prematurely breaks	Backup tip or tips are worn or cracked	Change them
30	Saw blade prematurely breaks	Wheel or wheels are worn	Change them
31	Saw blade teeth are prematurely chipped or saw blade runs out	Speed reducer oil is degraded or insufficient	Change or add it
32	Saw blade teeth are prematurely worn, or saw blade teeth are clogged and saw blade runs out	Cutting fluid is insufficient	Clean tank, and add specified amount of cutting fluid
33	Saw blade vibrates and decreases in cutting rate Saw blade teeth are chipped and saw blade is reduced in life	Cutting fluid is degraded or its dilution factor is too large	Change or add it
34	Saw blade prematurely breaks	Cutting fluid pump filter is clogged	Clean tank and filter
35	Saw blade vibrates	There is vibration-producing machine nearby	Treat this machine not to produce vibration or relocate it
36	Saw blade runs out or saw blade teeth are prematurely chipped	Power supply voltage is low so that saw blade running speed decreases with increasing load	Check it and connect machine to dedicated power source
37	Saw blade vibrates or runs out	Input voltage varies too greatly	Check it and connect machine to dedicated power source

	Symptom	Cause	Remedy
Manual operation	Alarm code is displayed on LCD screen	Machine malfunctions	Clear alarm by referring to alarm code list on pages that follow
	Hydraulic pump motor does not start when HYDRAULIC ON button is pressed	One of EMERGENCY STOP buttons is pressed and locked	Turn pressed button clockwise to unlock it
	Feed vise does not move forward	Quick approach feeler is in contact with work	Press and hold BLADE UP button to raise sawhead until quick approach feeler moves away from work
		Both main and feed vises are closed	Open either vise
	Main and feed vises do not open wide	Sawhead is too low	Press and hold BLADE UP button to raise sawhead to upper limit
	Machine cannot be operated in any other way than raising sawhead	AUTO/MANUAL keyswitch is turned to AUTO	Turn keyswitch to MANUAL
Automatic operation	Saw blade does not start when BLADE DRIVE button is pressed	Invalid value or values are set on LCD screen Check that L field indicates value from 10 0 to 9999 9 mm {0 394 to 99 999 in }, P field indicates value from 1 to 9999, and C field indicates value smaller than P field does	Correct value or values If C field indicates same value as P field, reset it to zero
		Main vise is not closed	Close main vise
		Feed vise is not at forward limit	Move feed vise to forward limit

ALARM CODE LIST

To clear an alarm, press the CLR key of the cutting data setting controls
If the alarm cannot be cleared, contact AMADA

Alarm code	Cause	Remedy	Remarks
E-002	BLADE DRIVE button was pressed with either or both of wheel covers opened	Close both wheel covers, and clear alarm	Saw blade stops running
	Either wheel cover was opened while saw blade was running		
	If wheel covers are both closed, cover open limit switches are faulty	Contact AMADA	
E-003	Sawhead upper and lower limit switches simultaneously turned on	Clear alarm	Hydraulic pump motor stops
	Sawhead upper and lower limit switches are faulty	Contact AMADA	
E-004	During automatic operation, work did not come within ±0 2 mm {±0 008 in } of target position after three positioning attempts	Contact AMADA	Saw blade stops running
E-005	During automatic operation, work became too short to be clamped with feed vise	Clear alarm, and change work	Hydraulic pump motor stops
	Either main or feed vise pressure switch is faulty	Contact AMADA	
E-006	Saw blade inverter is faulty	Contact AMADA	Hydraulic pump motor stops
E-007	Runout of saw blade was detected	Clear alarm, reset runout, and change saw blade or reduce cutting rate	Sawhead rises to upper limit and stops
	Runout detector is faulty	Contact AMADA	

Alarm code	Cause		Remedy	Remarks
E-008	PLC backup battery ran down		Clear alarm Contact AMADA for changing run-down battery	This alarm occurs only when hydraulic pump motor is running (Machine can be operated without changing run-down battery, but machine parameters and cutting data may be erased from memory when power is turned off)
E-010	Backup battery for cutting data setting controls ran down		Clear alarm Contact AMADA for changing run-down battery	This alarm occurs only when hydraulic pump motor is running (Machine can be operated without changing run-down battery, but current time may be improperly displayed on LCD screen once power is turned off)
E-011	During head-end positioning, work projection from feed vise is less than 20 mm {0 8 in }		Clear alarm, and properly set work	Hydraulic pump motor stops
	During head-end positioning, amount by which feed vise can move backward is small			
E-014	Sawhead obstacle detection switch turned on		Move up sawhead to turn off detection switch, and clear alarm	Machine stops
E-016	Pressure switch of main vise does not operate	Pressure switch of main vise is faulty	Contact AMADA	Hydraulic pump motor stops
E-017	Pressure switch of feed vise does not operate	Pressure switch of feed vise is faulty	Contact AMADA	Hydraulic pump motor stops

Alarm code	Cause		Remedy	Remarks
E-018	Feed vise forward limit switch is turned on after positioning feed vise	Feed vise forward limit switch is faulty	Contact AMADA	Hydraulic pump motor stops
E-101	Saw blade inverter breaker (QM1) tripped		Reset inverter breaker, and clear alarm	Hydraulic pump motor stops
E-102	Hydraulic pump motor breaker (QM2) tripped		Reset motor breaker, and clear alarm	Hydraulic pump motor stops
E-103	Cutting fluid pump motor breaker (QM3) tripped		Reset motor breaker, clear alarm, and check cutting fluid pump filter	Hydraulic pump motor stops
E-104	Wire brush motor breaker (QM4) tripped		Reset motor breaker, clear alarm, and inspect wire brushes	Hydraulic pump motor stops
E-106	Sawhead lower limit is detected although predetermined time is elapsed after output of upward movement signal	Lower limit switch is faulty	Clear alarm	Hydraulic pump motor stops
		Up-down solenoid valve is faulty	Clear alarm	
E-107	During automatic operation, sawhead upper limit is detected although predetermined time is elapsed after output of downward movement signal	Upper limit switch is faulty	Clear alarm	Hydraulic pump motor stops
		Up-down solenoid valve is faulty	Clear alarm, and check solenoid valve	
		Hydraulic oil temperature is low	Restart after warm-up operation	

Alarm code	Cause		Remedy	Remarks
E-108	Feed vise is moving back although predetermined time is elapsed after output of backward movement signal	Proportional solenoid valve is faulty	Clear alarm	Hydraulic pump motor stops
E-109	Feed vise is moving forward although predetermined time is elapsed after output of forward movement signal	Proportional solenoid valve is faulty	Clear alarm	Hydraulic pump motor stops
E-110	MAIN VISE CLOSE light does not come on within predetermined time after output of main vise close signal	Main vise solenoid valve is faulty	Clear alarm, and manually check vise open and close operation	Hydraulic pump motor stops
		Main vise pressure switch is faulty	Clear alarm	
E-111	FEED VISE CLOSE light does not come on within predetermined time after output of feed vise close signal	Feed vise solenoid valve is faulty	Clear alarm, and manually check vise open and close operation	Hydraulic pump motor stops
		Feed vise pressure switch is faulty	Clear alarm	
E-113	Motion detector actuated during operation	Saw blade slipped	Check saw blade tension, clear alarm, and reduce cutting rate to decrease load	Hydraulic pump motor stops
		Saw blade broke	Clear alarm, and change saw blade	
		Motion detector is faulty	Contact AMADA	

Alarm code	Cause	Remedy	Remarks
E-114	During automatic operation, backward movement amount of feed vise was different from its return amount	Clear alarm, and remove obstacle near feed vise forward limit	Hydraulic pump motor stops
E-118	Sawhead up solenoid valve remains on for preset time, but uppermost limit switch does not turn on	Contact AMADA	Hydraulic pump motor stops
E-119	Sawhead up solenoid valve remains on for preset time, but upper limit switch does not turn on	Contact AMADA	Hydraulic pump motor stops
E-120	Wire brush or brushes are worn	Change wire brushes, and clear alarm	This alarm can be cleared without changing wire brushes, but recurs 15 min later

Part VI

Maintenance

⚠ WARNING

- **Turn off the shop circuit breaker switch before servicing the machine. Then post a sign to inform people that the machine is under maintenance.**

PERIODIC MAINTENANCE

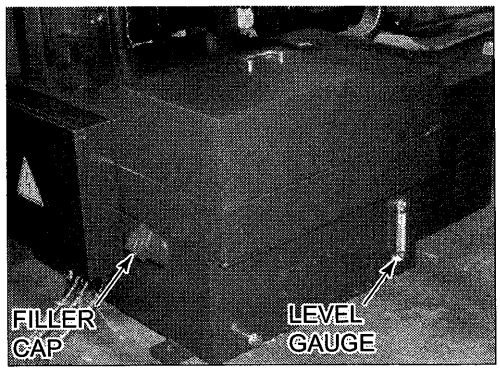
Every day

CHECKING BEFORE START OF DAY'S WORK

Before starting the machine every day, check the following items.

Hydraulic oil level

Observe the level gauge of the hydraulic oil tank to check that the hydraulic oil level is between the high and low marks of the level gauge. If the hydraulic oil level is low, add the same hydraulic oil into the hydraulic oil tank.



Recommended oils:
Amada A32
Mobil DTE 24
Shell Tellus Oil 32
(ISO VG32 equivalent)

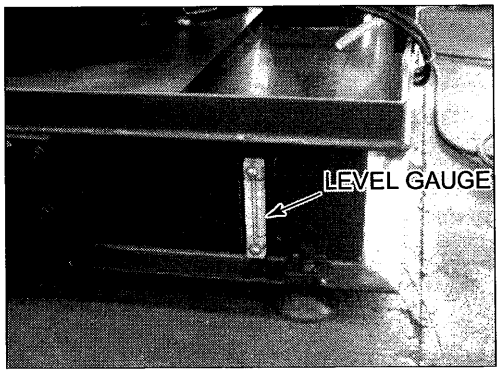
Tank capacity: 115 L {30.4 US gal}

Cutting fluid level

WARNING

- **If the tank is low on the cutting fluid, the cutting fluid may not be supplied in sufficient amounts, markedly shortening the life of the saw blade. If the cutting operation is continued in this condition, a fire may occur.**

Observe the level gauge of the cutting fluid tank to check that the cutting fluid level is above the middle mark of the level gauge. If not, add the same cutting fluid into the cutting fluid tank. If the cutting fluid is deteriorated, change it all.



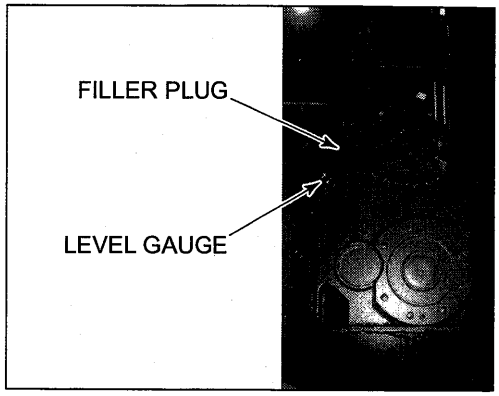
Tank capacity:
100 L {26.4 US gal}

Oil level in speed reducer

Observe the level gauge of the speed reducer to check that the oil is filled to the middle of the level gauge. If the oil level is lower, add the same oil into the speed reducer.

Recommended oil:
Mobil Glygoyle 30
(ISO VG220 equivalent)

Required amount of oil:
20 L {5.3 US gal}



Saw blade

Check that the saw blade is properly installed on the drive and driven wheels. If not, properly install it on the drive and driven wheels.

Wire brushes

Check that the wire brushes are properly set on the saw blade. If the wire brushes are worn, change them for new ones.

CLEANING

WARNING

- **Be sure to stop the saw blade before cleaning the machine. It is very dangerous if any part of your body is caught in the running saw blade.**
- **When carrying or disposing of flammable chips (like those of titanium or magnesium), take due care so that the chips do not catch fire. Prohibit any use of fire in the chip storage place.**

NOTICE

- If chips are left accumulated in the machine, they may accelerate the deterioration of the cutting fluid or cause the machine to malfunction.
- To prevent freezing in a cold region, drain the cutting fluid from the hoses after cleaning the machine.

At the end of the day's work, clean the machine.

Using the accessory cleaning broom, chip rake bar, and chip shovel, remove the chips collected in the following parts:

- Inside of wheel covers
- Wire brushes
- Saw blade inserts
- Top surface of table
- Top surface of cutting fluid pan
- Backup tips

LUBRICATION

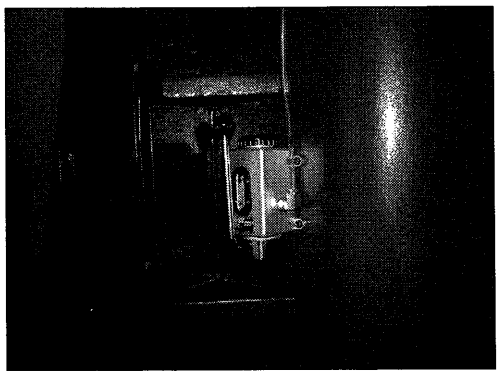
After cleaning the machine, apply machine oil to the following parts:

- Sliding surfaces of vise jaws
- Top surface of table

Also apply a specified oil to the sliding parts of the main column by manually operating their pump (see right).

Specified oils:
Amada Way 150
Mobil Vactra Oil No.4
Shell Tonna Oil S220

Tank capacity:
0.5 L {16.9 fl.oz.}



NOTICE

- When there is no oil film on the sliding parts of the main column, the cutting speed may become unstable.

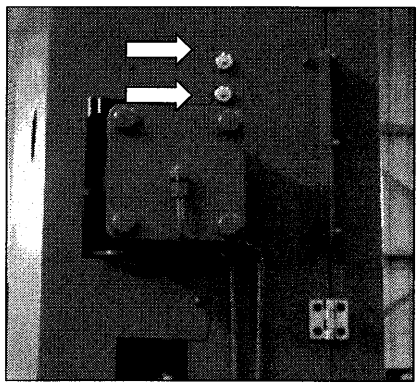
Every month

LUBRICATION

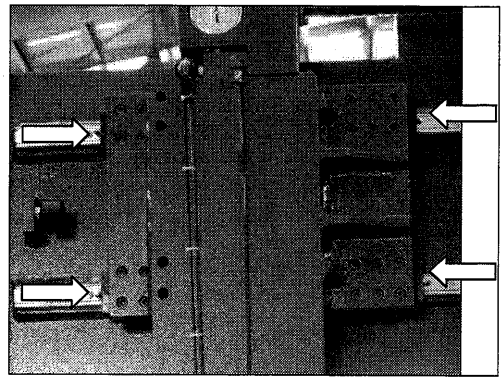
Apply grease to the nipples in the following parts with a grease gun.

Recommended greases: Amada Grease No.2
Mobil Mobilux EP2
Shell Alvania EP Grease 2

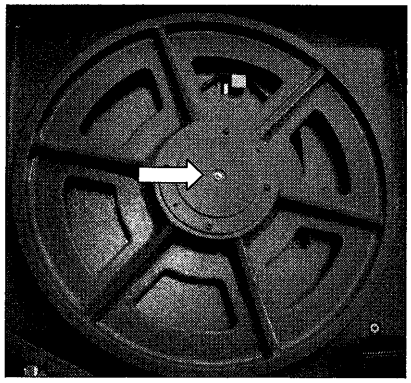
Saw blade tension slide (2 points)



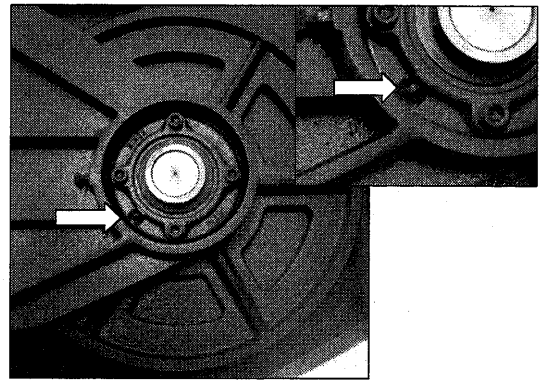
LM guides of movable saw blade guide (4 points)



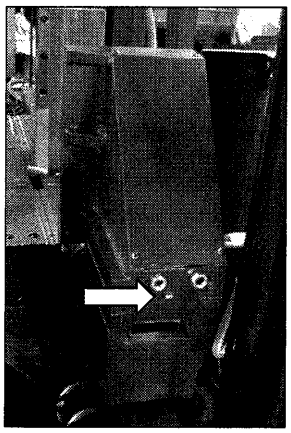
Driven wheel (1 point)



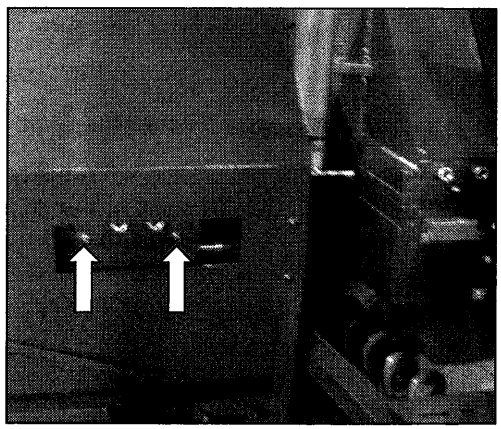
Drive wheel (1 point)



Main vise (1 point)



Feed vise (2 points)



CLEANING CUTTING FLUID TANK

Clean the cutting fluid tank as described below.

NOTE

- If chips are left accumulated in the cutting fluid tank for a long period of time, they accelerate the deterioration of the cutting fluid.

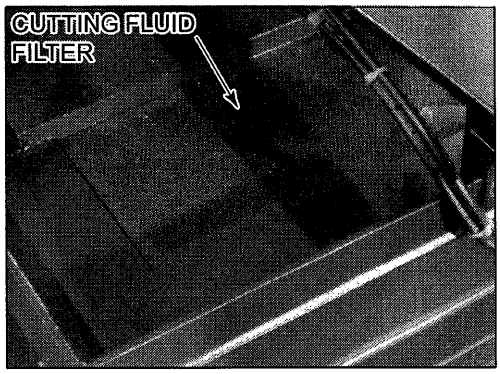
1 Turn off the shop circuit breaker switch.

2 Remove the drain plug of the cutting fluid tank to drain the cutting fluid.

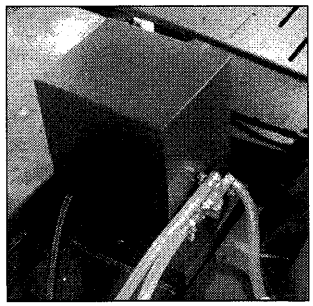
3 After the cutting fluid is completely drained, replace the drain plug.

4 Remove the cutting fluid filter from the cutting fluid pan.

5 Scoop out the chips accumulated in the cutting fluid tank.

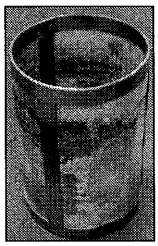


6 Remove the cover from the cutting fluid pump and then the pump.



7 Clean the filter below the cutting fluid pump.

8 Replace the cutting fluid pump and then its cover.



9 Replace the cutting fluid filter.

10 Return the removed cutting fluid from above the filter into the tank.

11 Check that the cutting fluid level is between the high and middle marks of the level gauge. If the cutting fluid level is below the middle mark, add the same cutting fluid. If the cutting fluid is deteriorated, change it all.

Every six months

CHANGING CUTTING FLUID

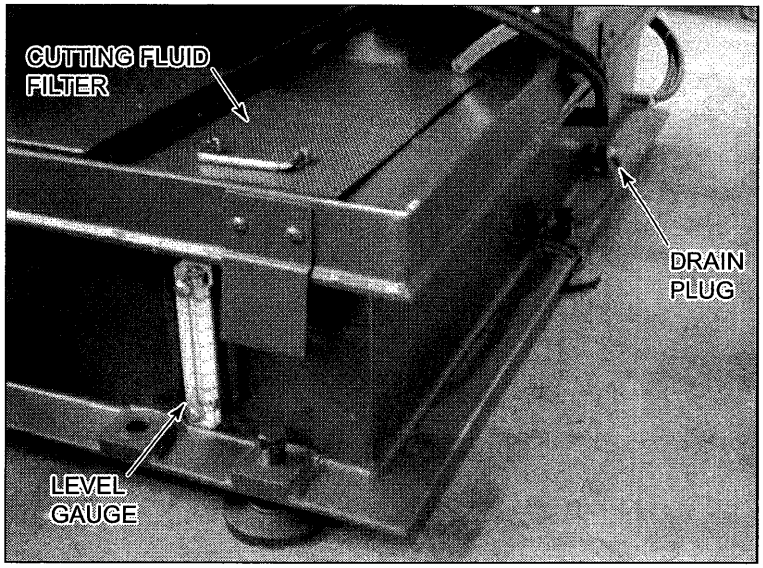
WARNING	● **Use a water-soluble cutting fluid on this machine.** **Oil-based cutting fluids may emit smoke or catch fire, depending on the condition of their use. Never use oil-based cutting fluids on this machine.**

The cutting fluid will be discolored by the contaminants and rust of the workpieces and will be degraded and putrefied when used for a long period of time. At least every six months, change the entire cutting fluid as described below.

Tank capacity: 100 L {26.4 US gal}

NOTE

● Dispose of the used cutting fluid as specified by the manufacturer and by the applicable government regulations in your country.



1 Turn off the shop circuit breaker switch.

2 Remove the drain plug of the cutting fluid tank to drain the cutting fluid.

3 After the cutting fluid is completely drained, replace the drain plug.

4 Add a fresh cutting fluid from above the filter into the tank. The proper cutting fluid level is between the high and middle marks of the level gauge.

Every year

CHANGING HYDRAULIC OIL

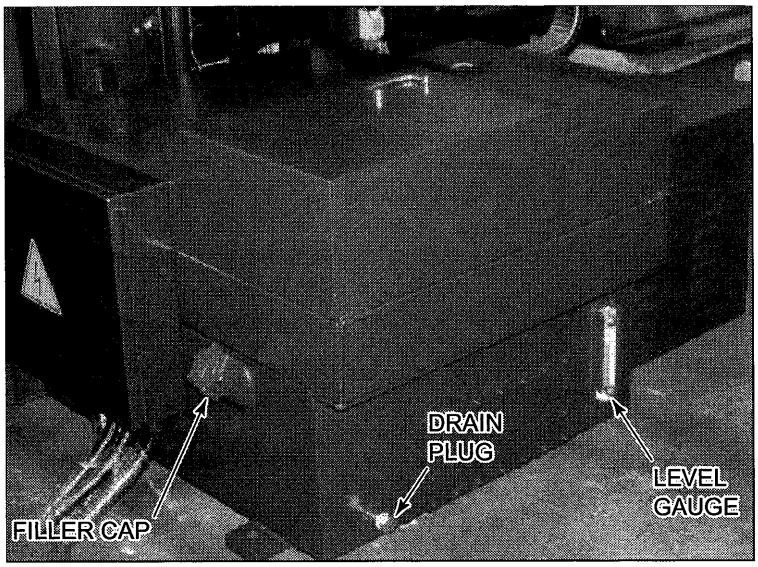
Change the hydraulic oil as described below. If the hydraulic oil is added midway, be sure to change the entire oil one year after the last change.

Recommended oils: Amada A32
Mobil DTE 24
Shell Tellus Oil 32
(ISO VG32 equivalent)

Tank capacity: 115 L {30.4 US gal}

NOTE

- Dispose of the used hydraulic oil as specified by the manufacturer and by the applicable government regulations in your country.



1 Turn off the shop circuit breaker switch.

2 Remove the filler cap.

3 Suck up the hydraulic oil with a pump. Or remove the drain plug to drain the hydraulic oil.

4 After the drain plug is removed and the hydraulic oil is completely drained, wrap a sealing tape around the drain plug, and securely tighten the drain plug.

5 Add a fresh hydraulic oil into the hydraulic oil tank.

6 Check that the hydraulic oil level is between the high and low marks of the level gauge.

7 Securely tighten the filler cap.

Every four years (20000 hours)

CHANGING SPEED REDUCER OIL

Change the speed reducer oil as described below every four years or 20000 hours of machine operation, whichever comes first. If the speed reducer oil is added midway, be sure to change the entire oil four years or 20000 hours after the last change.

Recommended oil: Mobil Glygoyle 30
(ISO VG220 equivalent)

Required amount of oil: 20 L {5.3 US gal}

NOTE

- Dispose of the used speed reducer oil as specified by the manufacturer and by the applicable government regulations in your country.

1 Move the sawhead down to the lower limit.

2 Press the HYDRAULIC OFF button.

3 Turn the machine circuit breaker switch to OFF.

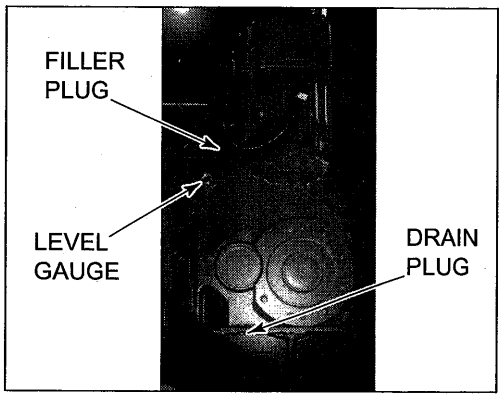
4 Turn off the shop circuit breaker switch.

5 Remove the filler plug of the speed reducer.

6 Remove the drain plug of the speed reducer to drain the speed reducer oil.

7 After the speed reducer oil is completely drained, replace the drain plug.

8 Add fresh oil to the middle of the level gauge.



NOTICE

- If the saw blade is run with a low speed reducer oil level, the speed reducer may be damaged. Be sure to check that the speed reducer is filled with the oil to the middle of the level gauge.

9 Replace the filler plug.

CHANGING WIRE BRUSHES

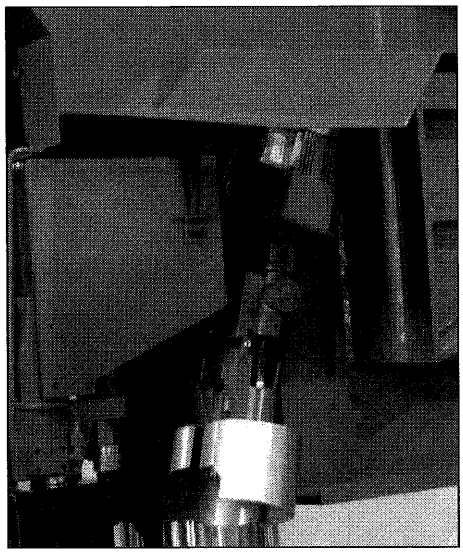
WARNING

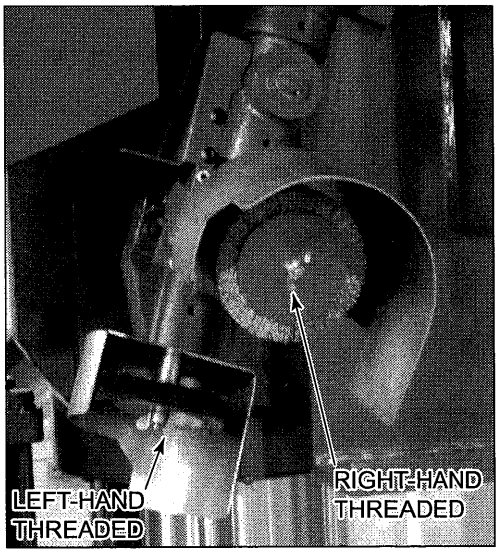
- **Never try to set the wire brushes on the saw blade or remove chips when the saw blade is running. It is dangerous if your hands or clothing are caught in the running saw blade.**

The two wire brushes are consumable. If the wire brushes are worn, lift them up, remove their fixing nuts, and change them. Install the new wire brushes, fix them with the nuts, and set them so that their bristles properly touch the gullet of the saw blade.

NOTE

- The two wire brush fixing nuts are different in the thread direction. One is left-hand threaded, and the other is right-hand threaded.





AMADA COMPANY, LTD.
200, Ishida, Isehara, Kanagawa, JAPAN

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