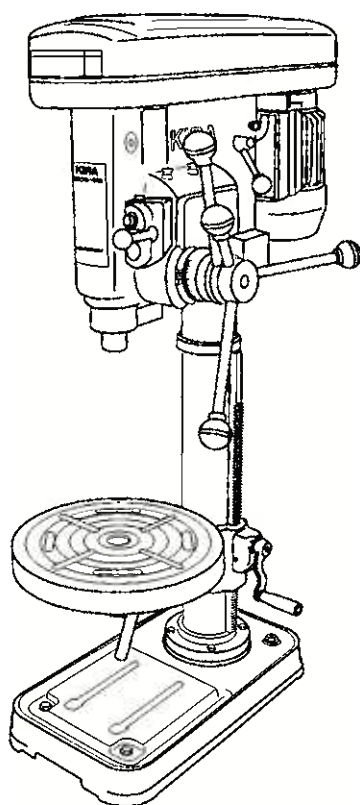


# KIRA

## Bench type Tapping & Drilling Machine KRTG-420 INSTRUCTION MANUAL



### CAUTION



- ◆ *This instruction manual includes important information for using the KRTG-420 properly and safely.  
Be sure to read and understand this document before using the bench type tapping and drilling machine.*

# KIRA CORPORATION



## PREFACE

Thank you for purchasing the Model KRTG-420 KIRA Tapping Machine. This instruction manual uses a number of illustrations to help your understanding. Be sure to read and understand the instruction manual before starting the KRTG-420 operations. Place the manual in a location where it can be accessed whenever necessary.

## SIGNAL WORDS

The signal words as used in this instruction manual and on the KRTG-420 represent the following three levels of hazards:







<b>⚠ DANGER</b>	◆ Indicates an imminently hazardous situation which, if not a voided, will result in death or serious injury.
<b>⚠ WARNING</b>	◆ Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
<b>⚠ CAUTION</b>	◆ Indicates a potentially hazardous situation which, if not avoided, many result in minor or moderate injury, or property damage to the equipment.







### NOTE

*Indicates something that must be considered in handling the equipment.*

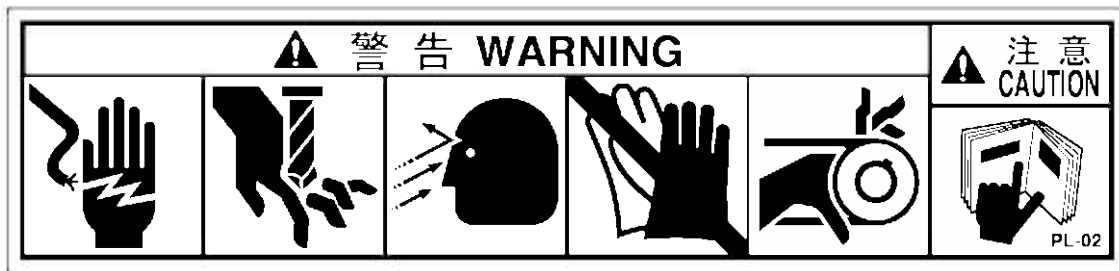
## ICONS

This instruction manual uses the following icons to raise your attention:

Caution ( including Danger and Warning )		Electric shock
		Injured by spindle or tool
		Flied out
		Caught in rotating part
		Fire
		Get caught in belt

Caution		Other general cautions
	Prohibition	
		Do not disassemble
		Do not wear gloves
Compulsion		Refer to instruction manual
		Ground

## DESCRIPTION OF SIGNAL-WORD LABELS



*[Risk of electrical shock]*

*High voltage runs in the electric control cabinet. Getting an electric shock may result in death.*

*Therefore, before opening the door on the electric control cabinet, be sure to shut off the main power.*



*[Warning of electrical shock label]*

*There might be had an electric shock because high voltage runs in the electric control cabinet if the control panel is opened carelessly or is attached with a wet hand.*

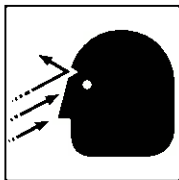
*Don't open or remove the portion which is attached this label.*



*[Risk of injured by spindle]*

*The spindle has a sharp cutter that rotates at a high speed. Touching the spindle during its rotation results in serious injury like severing. Therefore, do not put your hand or foot close to the rotating spindle.*

*Even if the spindle stops, do not touch it with a bare hand.*



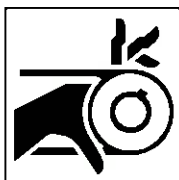
*[Risk of eye injury]*

*"Chips / cutting oil / broken tools" are scattered during processing. There is a chance to injuring eyes or face. The protection glasses must be worn while operating machine.*



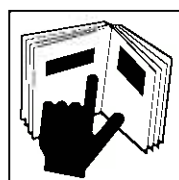
*[Must not wear gloves while operating machine]*

*There is a chance to be injured by the rotating objects of machine pulls or rolls up the glove.*



*[Must not operating machine without covers]*

*There is a chance the rotating belt catches fingers or hands, if operate machine with opening cover etc. If the fingers or the hands are stuck in the belt, stop the machine immediately and turn off the main power. Then rotate the belt by hand in order to release the stuck fingers or hands. Turn off main power when open cover etc.*



*[Be sure to read and understand the contents of this manual before operating]*

*Improper operations may cause unexpected accidents or machine malfunctions. If the Instruction Manual is lost, please contact your dealer for purchasing new one.*

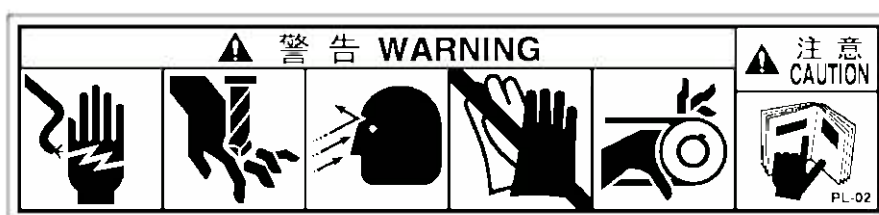
## LOCATIONS FOR STICKING SIGNAL-WORD LABELS

### **⚠ DANGER**

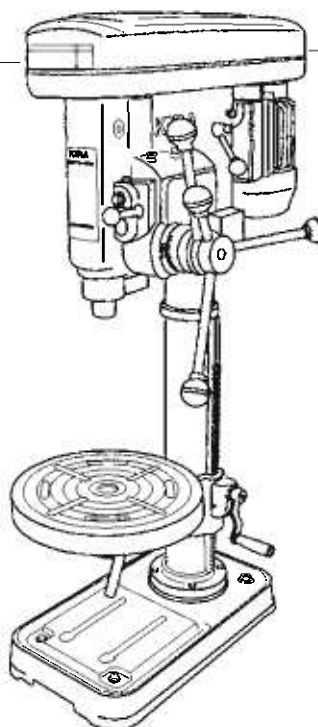
- ◆ Do not use the equipment when any of its signal-word labels is partially or totally broken, peeled off, or has a faded color. This may result in serious damage.

- \* Two different kinds of warning labels are stuck on the equipment.
- \* If the warning label is broken, peeled, or discolored, contact your dealer with its label number.

LABEL No. : PL-02



【Model】 KRTG-420



POWER-SEAL-M

## SAFETY PRECAUTIONS

### ⚠ DANGER



- ◆ The main power must be shut down, before opening the door on the electric control cabinet.
- ◆ Do not operate switches by a wet hands.

### ⚠ WARNING



- ◆ Do not touch the spindle or chips during the operation. Especially, the cutter is very sharp. Do not touch it, even if the spindle is not rotating.



- ◆ Do not approach all fours to belt while rotating, may be caught in the belt.
- ◆ Do not operate machine with opening cover etc.
- ◆ Be careful not to punch hand between pulley and belt while belt changing operation.
- ◆ Turn off main power when open cover etc.



- ◆ Do not wear the gloves during operation absolutely. Your gloves and hands may get stuck in the rotating part of the machine.



- ◆ The KRTG-420 may suddenly start moving after it temporarily stops during the operation. Therefore, do not access the equipment without verifying its present state.

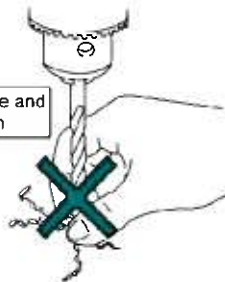


- ◆ If cutting oil attaches to your working wear, clean it off because it may catch fire.
- ◆ Exercise care in handling cutting oil. For example, in order to prevent fire occurring with cutting oil, do not use water-insoluble cutting oil when carrying out operation. If the floor is made of wood, use sufficient care for fire because it is liable to catch fire. And please confirm the location of fire extinguisher before operation start.

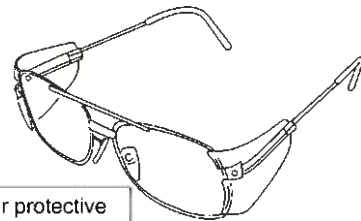


- ◆ To remove chip stuck on a tool, stop the spindle; checking that its rotation has completely stopped; and then brush off the chip while wearing protective glasses, and please do not touch cutting chips barehanded.

Not touching spindle and chip while operation



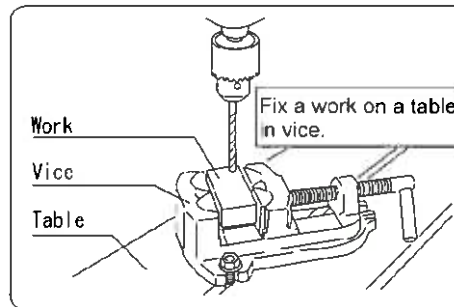
Wear protective glasses and work



## ▲ WARNING



- ◆ Be sure to fix the workpiece to the table using a vise, etc. If machining is carried out without fixing the workpiece, it would be rotated or lifted up to cause very dangerous situation.



- ◆ Please be careful to the handling of a work. Letting it fall on your foot will result in a bone fracture or a similar injury.



- ◆ Be sure to ground the equipment. But, do not connect the grounding to the gas pipe and steel frame which have insufficient grounding.



- ◆ Be sure to connect the wire of power to the power supply in which a leakage breaker is set.
- ◆ Do not install the drilling machine outdoors, in the location where is much moisture, where is splashed by water, or where is exposed to direct sunlight.
- ◆ Do not use the machine in the location where is flammable liquid or gas.



- ◆ Confirm the position of button to stop spindle rotation immediately.
- ◆ Stop the machine and shut off the power before "Maintenance & inspection" or "Changing tool, cutter or fixture". If any hazardous situation may be predicted, also shut off the power.
- ◆ Set up the caution plate in a conspicuous place around the service panel and the control box while working in order to prevent somebody turns on the power suddenly.



- ◆ Install the tooling and the cutter firmly to the normal position by appropriate procedures. Loosely or too much tighten is dangerous. Follow the procedures mentioned in manual.



- ◆ Before turning ON the power, check that the maintenance tools such as chuck handle, wrench, center drift etc. have been removed.

 **CAUTION**


- ◆ Be sure to follow the instructions given in this document, including the operation guidelines.
- ◆ Do not use the KRTG-420 for any purpose other than specified in manuals.
- ◆ Do not use the machine for any purpose of cutting wooden material and similar material
- ◆ This model is vertical type, and install to strong working table etc to prevent overturning.



- ◆ Do not carry out disassembling or modifying by yourself.
- ◆ Use the KRTG-420 at the specified frequency and voltage.



- ◆ Check no damage on covers and other parts before operation.
- ◆ Clean up the machine and wipe up the cutting oil around the machine after operations. Then add the lubrication oil to the designated points.
- ◆ Perform maintenance / inspection regularly.



- ◆ Making operations with wearing appropriate clothes, safety shoes, safety glasses and other protective equipment.



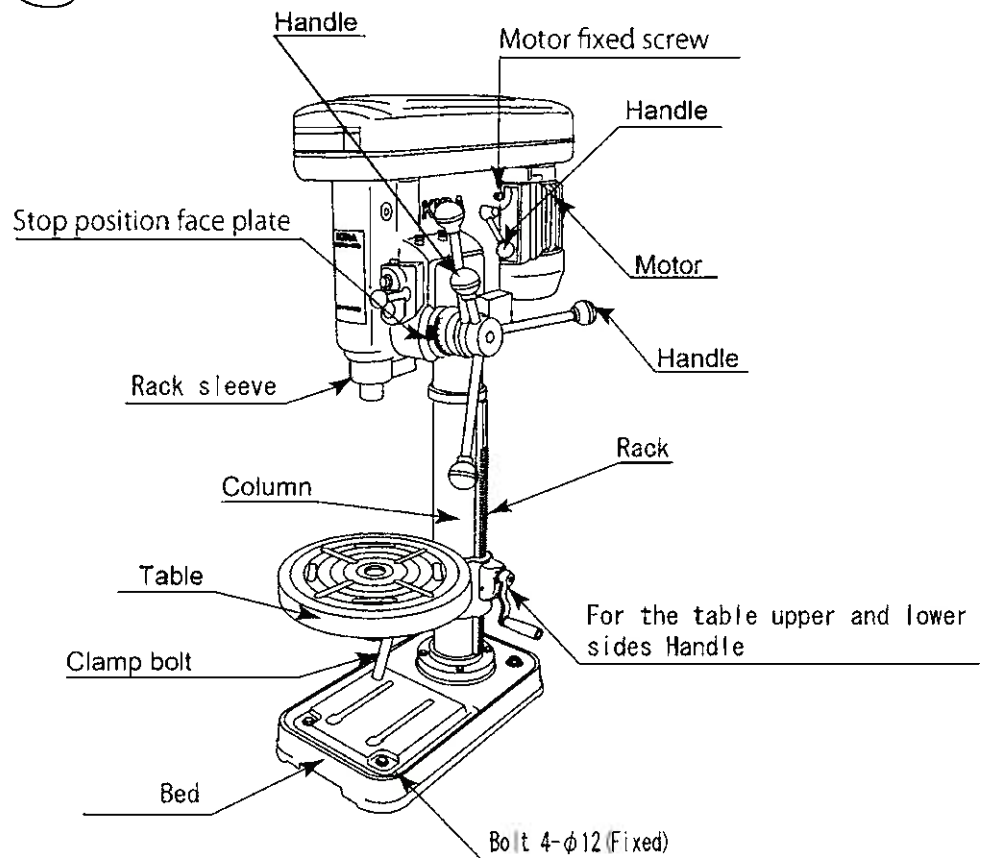
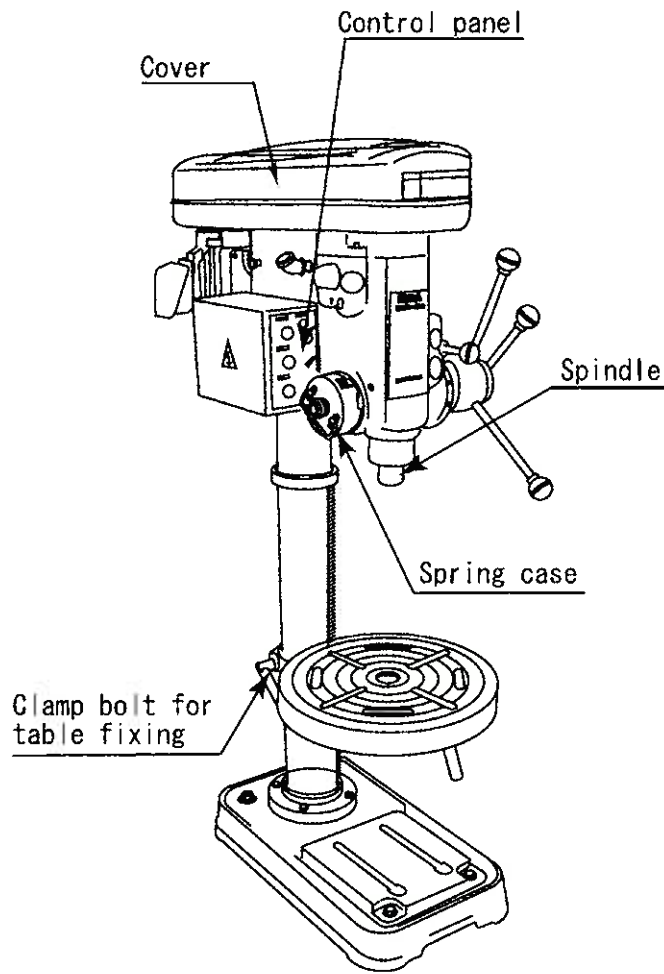
- ◆ Do not operate the machine other than the person in charge of operation.
- ◆ Do not make uncertain operation or procedure.
- ◆ Do not place something not related to operations on the machine or around it.
- ◆ Shut off the power in case of power failure.
- ◆ Shut off the power while the machine is out of use.
- ◆ If the spindle crashes on the workpiece, stop the operation immediately. Then contact your dealer or KIRA Corporation for asking recovery procedures.
- ◆ If you found any abnormal condition on the machine, stop the operation immediately. Then contact your dealer or KIRA Corporation.



# CONTENTS

PREFACE	.....	1
SIGNAL WORDS	.....	1
ICONS	.....	1
DESCRIPTION OF SIGNAL-WORD LABELS	.....	2
LOCATIONS OF SIGNAL-WORD LABELS	.....	3
SAFETY PRECAUTIONS	.....	4
CONTENTS	.....	7
1. NAMES OF VARIOUS PARTS	.....	8
2. SPECIFICATIONS	.....	9
3. USE APPLICATION	.....	9
4. PREPARATIONS FOR OPERATION	.....	9
5. CHECKS BEFORE OPERATION	.....	11
6. OPERATION OF MACHINE	.....	12
7. CONNECTION DIAGRAM	.....	16
8. DIMENSION	.....	17
9. CUTTING DATA	.....	19
10. PARTS LIST	.....	21
11. DISPOSAL AND RESELLING	.....	30
12. WARRANTY	.....	31

# 1. NAMES OF VARIOUS PARTS



## 2. SPECIFICATIONS

Unit : mm

Model		KRTG-420	
Swing		420	
Tapping capacity	S45C	M6~16	
	FC200	M6~20	
Drilling capacity	S45C	4~20	
	FC200	4~25	
Max. distance spindle to table		Round table	485
		Square table	530
Max. distance spindle to base		720	
Spindle stroke	Drilling	120	
	Tapping	115	
Spindle taper		MT3	
Size of table		Round table φ370	Square table □300
Spindle speed(min <sup>-1</sup> )	50Hz	90,140,225,295,375,475,760,1280	
	60Hz	106,170,270,355,450,570,920,1540	
Power supply		Three phase 200V 50/60Hz	
Drive motor		0.75Kw 4P (Totally enclosed type)	
Power code		4 cores cab tire code 2m/1pce(with an earth wire)	
Type of V-Belt		A-40-R	
Machine total height		1321	
Net weight(kg)		170	
Dimension of base		340×600	
Standard Accessories		Center Drift 1pce.	
		φ5 Round bar 2	

## 3. USE APPLICATION

Drilling and Tapping of various materials, S45C(steel),FC200(Cast iron), etc.

## 4. PREPARATIONS FOR OPERATION

### (1) Installation

Install the machine on the smooth top working table which is reserved enough space for making inspection and maintenance.

### (2) Power supply

Power supply voltage is the three phase 200V. Confirm the capacity and the voltage on the specification plate of motor.

### (3) Wiping off rust prevention paint

Wiping off the rust prevention paint of bed, table and column.

**(4) Refilling of lubrication oil**

Refill the lubricating oil to following points. (Please refer to Fig. -1 and Fig.-2)

Lubrication point	Method	Quantity of oil	Brand name	Cycle
Fill opening A (Fig.-2)	Oil bath	0.8little	Shell Tonna Oil S3M68	6 month
Oil cup (Fig.-1)	Manually	3~4drops	Shell Tonna Oil S3M68	once / 1day
Fill opening B (Fig.-2)	Manually	3~4drops	Shell Tonna Oil S3M68	once / 1day
Rack sleeve (Fig.-1)	Manually	3~4drops	Shell Tonna Oil S3M68	once / 1day
Other sliding and rotating part	Manually	2~3drops	Shell Tonna Oil S3M68	sometimes

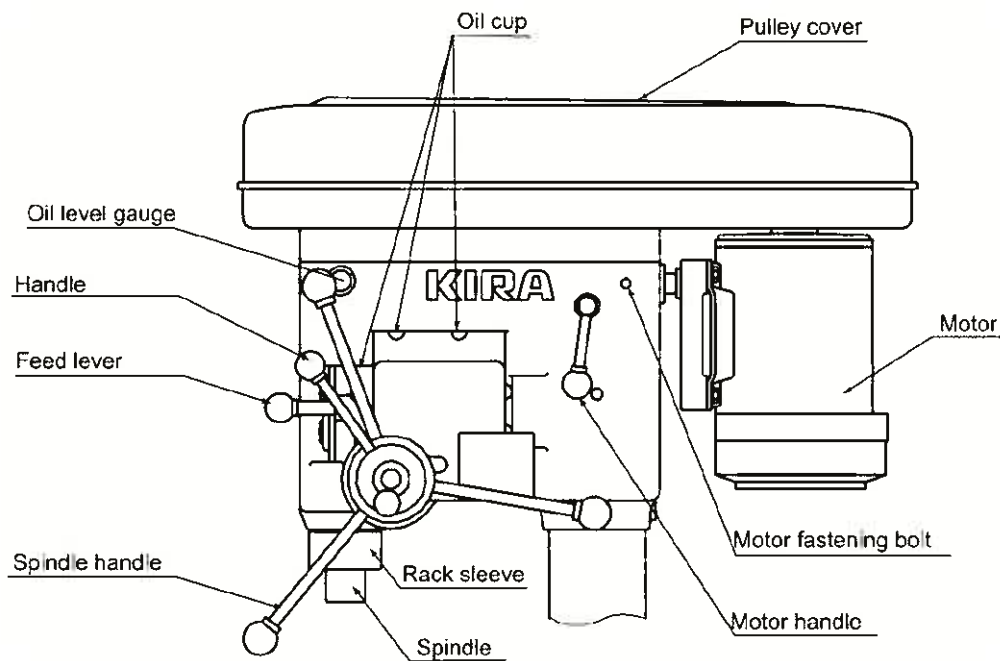


Fig.1 Right side view of the machine

**(5) Applicable oil**

- Use Shell Tonna Oil S3M68 or equivalent for lubrication oil. (Refer to the below table)
- Always use the same brand of oil and never use mixed oil.

Lubrication oil manufacture	Brand name
SHELL	Shell Tonna Oil S3M68
TOTAL	Prosera HXE68
CASTROL	MAGNA BD68

## 5. CHECK BEFORE OPERATION

### (1) Confirmation of a power supply

Please check once again, the power supply of voltage is the three phase 200V.

### (2) Connection of a power supply

As 2-m 4 core cab tire cord has come out from the control box [Fig-2], please connect to a power supply breaker.

A green code is an earth wire(E). Please connect to ground.

When power supply is switched on, the power lamp [Fig-3] will turn on.

When Drill/Tap select switch [Fig3] set to the Drill side and a Spindle starting push-button switch [Fig-3] is pushed, spindle will rotate.

If spindle rotates counterclockwise direction to see from spindle end side, connection of power supply is right.

If it rotates opposite direction, replace the connection two of three power wires, and confirm the spindle rotates right direction.

Please check whether the earth wire is connected to the specified position (earth mark) in control box.

### CAUTION

- ◆ *When you connect a power cord, please be sure to carry out, after turning (OFF) a power supply breaker.*
  - *The power source wire is attached in 4 core cab tire cord 2 m in length.*
  - *Please connect with the power supply breaker certainly.*
  - *Please be sure to connect an earth wire (green) to a ground.*
- ◆ *Please be sure to connect power supply wiring to the power supply in which the earth leakage breaker.*

## 6. OPERATION OF MACHINE

### (1) Conversion operation of Spindle speed

The spindle speed can be changed by changing belt position as indicated on the name plate at front of machine and spindle speed change lever [Fig-2]. Loosen the motor fastening bolts (One right and left each) shown in [Fig-1], and move motor handle [Fig-1] to motor side to loosen the belt, then belt position can change easily. After changing the belt position, please move the handle to opposite side to tighten the belt, and tighten the two of motor fastening bolts.

The spindle speed change lever can change two steps of spindle speed. Solid line position of spindle speed change lever [Fig-2] is low speed side, and dotted line is high speed side. Do not operate this spindle speed change lever by any means during machine operation. It will break down, if it is not operated after stopping motor.

### (2) Conversion operation of spindle feeding speed

This model is available automatic spindle feeding. The spindle federate can be changed by feed lever [Fig-1] as show on the name plate at the front of machine. It will have automatic feed of 0.19mm/rev when the lever is pushed in, 0.13mm/rev when pulled out and 0.09mm/rev when in intermediate position.

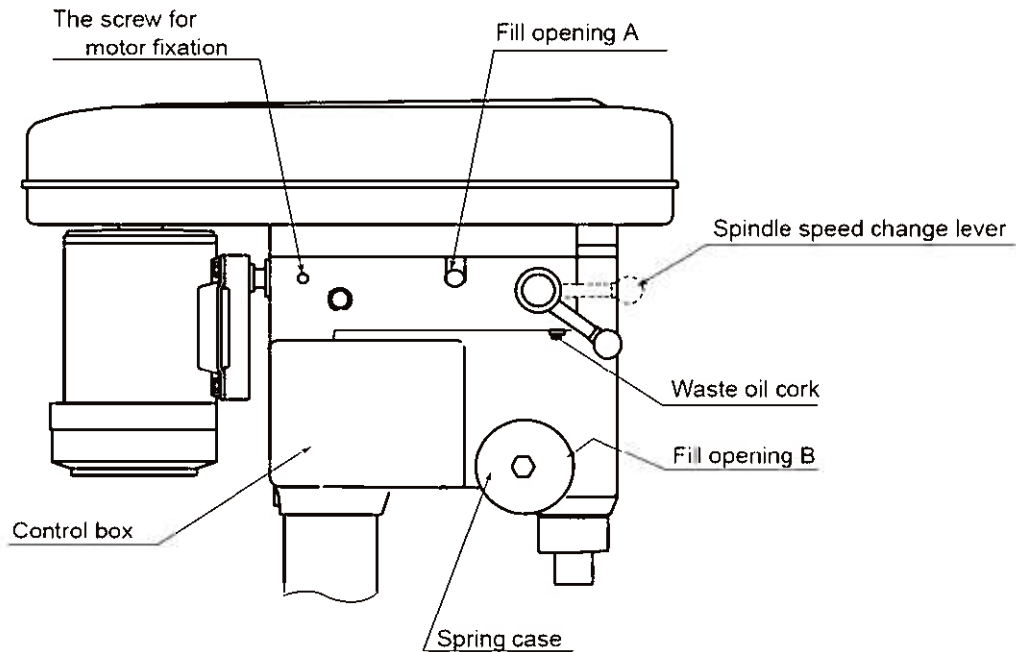


Fig-2 Left-hand side view

### (3) Change of automatic and manual feeding of a spindle and Automatic feed operation

In case of manual feed, please push in Auto/Manual pin (Fig.4).

If the pin is pushed in, manual feed is available. In case of automatic feed, please pull out Auto/Manual pin. The spindle up-and-down handle [Fig.4] moves lower that drill touches to workpeice. If power is applied to the handle for a while, the spindle up-and-down handle will move slightly, and automatic feed will start. If the spindle up-and-down handle is raised upwards, Automatic feed will stops and the spindle will return upwards. For works such as small diameter drilling, drilling on light metals and in reaming, sometimes it is difficult to start automatic feed. Please grab the spindle up-and-down handle and a reamer handle in that case. If it does so, only the spindle up-and-down handle will move for a while, and automatic feed will start.

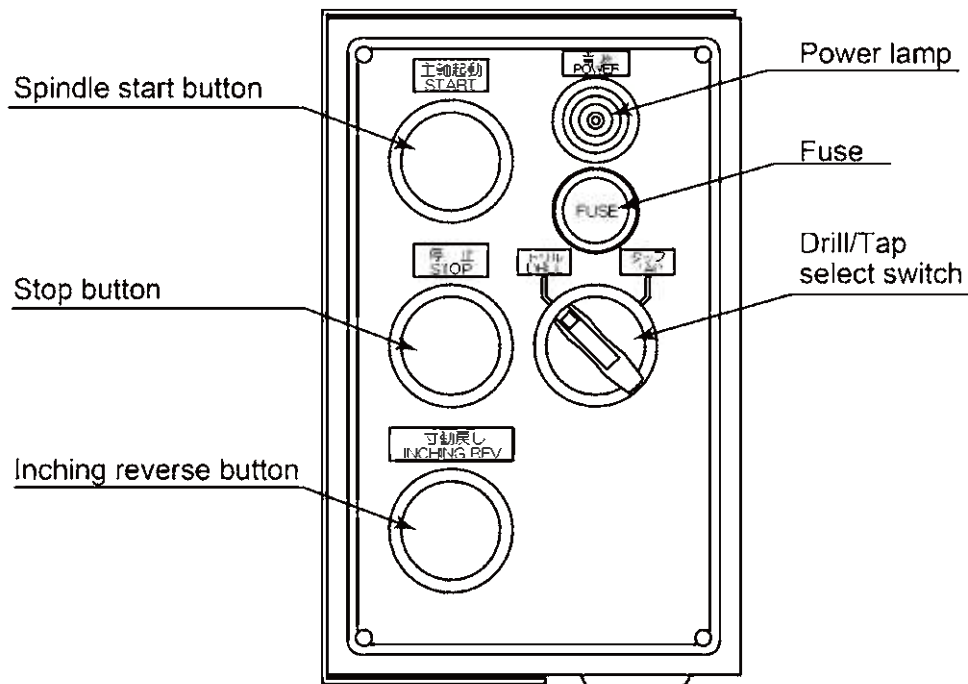


Fig.-3 Switch panel

#### (4) Adjustment of scale ring

The cutting depth can adjust by the scale ring as shown [Fig-4]. One division of the scale ring is 1mm feed. If scale ring fastening bolt is loosened, the scale ring can rotate easily. Please tighten the ring fastening bolt after adjustment of cutting depth.

#### (5) Spindle feed depth adjustment of manual feed

In case of manual feed, please set the scale ring to required feed amount at the feed line [Fig-4], and tighten the scale ring fastening bolt. When spindle moves "0" of scale ring to the feed line by spindle up-and-down handle, spindle movement stops.

#### (6) Spindle feed depth adjustment of automatic feed

In case of automatic feed, please set the scale ring to required amount at Auto-feeding/tap depth line. For example, when you make 30mm depth drilling hole, move spindle until drill edge touches to workpiece, and rotate the scale ring to 30mm position becomes to Auto-feeding/tap depth line and tighten the scale ring fastening bolt. And if automatic feed is applied, "0" of a scale ring will stop only scale ring near feed line. Although spindle continues auto feed, after a while, automatic feed over and spindle returns upwards.

If it is not a required value for drilling depth, please adjust the ring position according to the value of difference.

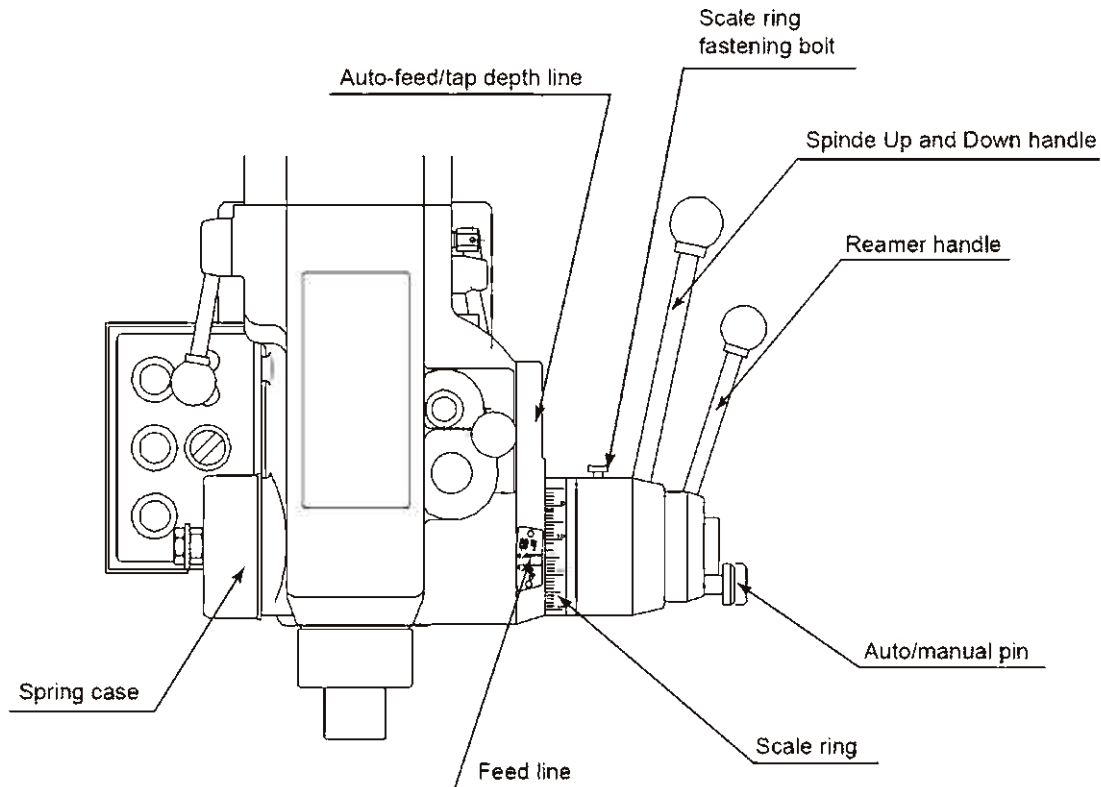


Fig.-4 Spindle device

### (7) Tapping

To protect starting automatic feed, push in Auto/manual pin absolutely as automatic feeding is not available in tapping operation. Please move spindle UP and down handle until tap edge touches to workpiece, and rotate the scale ring to required depth at Auto-feed/tap depth line and tighten the scale ring fastening bolt.

For tapping, please select tap position of drill/tap select switch.

When you start tapping operation, please move down spindle by the Up and Down handle. If tap is engaged to the drill hole, the thread will be cut automatically under the lead of the tap. When "0" of the scale ring move near to Auto-feed/tap depth line, spindle rotation changes to reverse direction.

### (8) Adjustment on spindle balance spring

Although a spindle up-and-down handle is turned and a spindle is moved up and down, There is spiral spring in order to push up spindle up always to the top.

If this spiral spring is pulled to the left where the spring case of figure-4 is rotated to a counterclockwise rotation, stopper pin separates from it and it can turn spring case.

There is a coil spring on the spindle to always keep the handle at up position when not in operation. The strength of this coil can be controlled by adjusting the spring case.

The spring will be stronger when turned counterclockwise direction and weaker when turned clockwise direction. Please thrust spring case back to right side at appropriate power, and inset stopper pin to lack groove. Generally please set the spring weakly for tapping, and set strongly for drilling. In addition, be careful not to part with a spring case enough on the torque of a spring in adjustment operation.



**(9) Adjustment of safety device on tap**

There is a taper clutch inside the spindle pulley, and spindle torque can be adjusted by pushing force of coil spring. If you open belt cover and tighten spring holder nut [Fig-5] by 5mm rod of accessory. Torque increases. If you loosen the spring holder nut, torque decreases. Please tighten both of spring holder nut and lock lock nut firmly after torque adjustment. If the lock nut loosens, it may fly away.

**⚠ WARNING**

- ◆ Please fasten both the spring holder nut and the lock nut firmly.  
There is a risk of being injured by a lock nut is loosening and flying the nut.

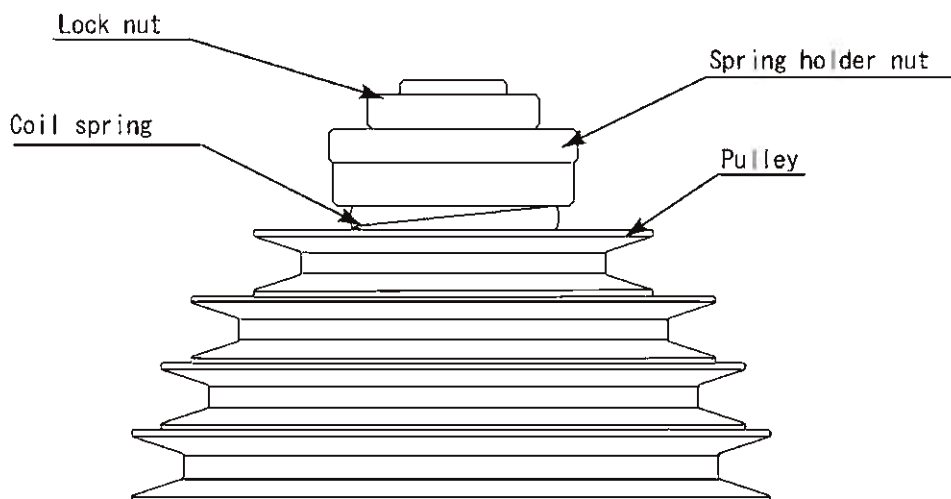


Fig.5 Tap safety device

**(10) Inching reverse**

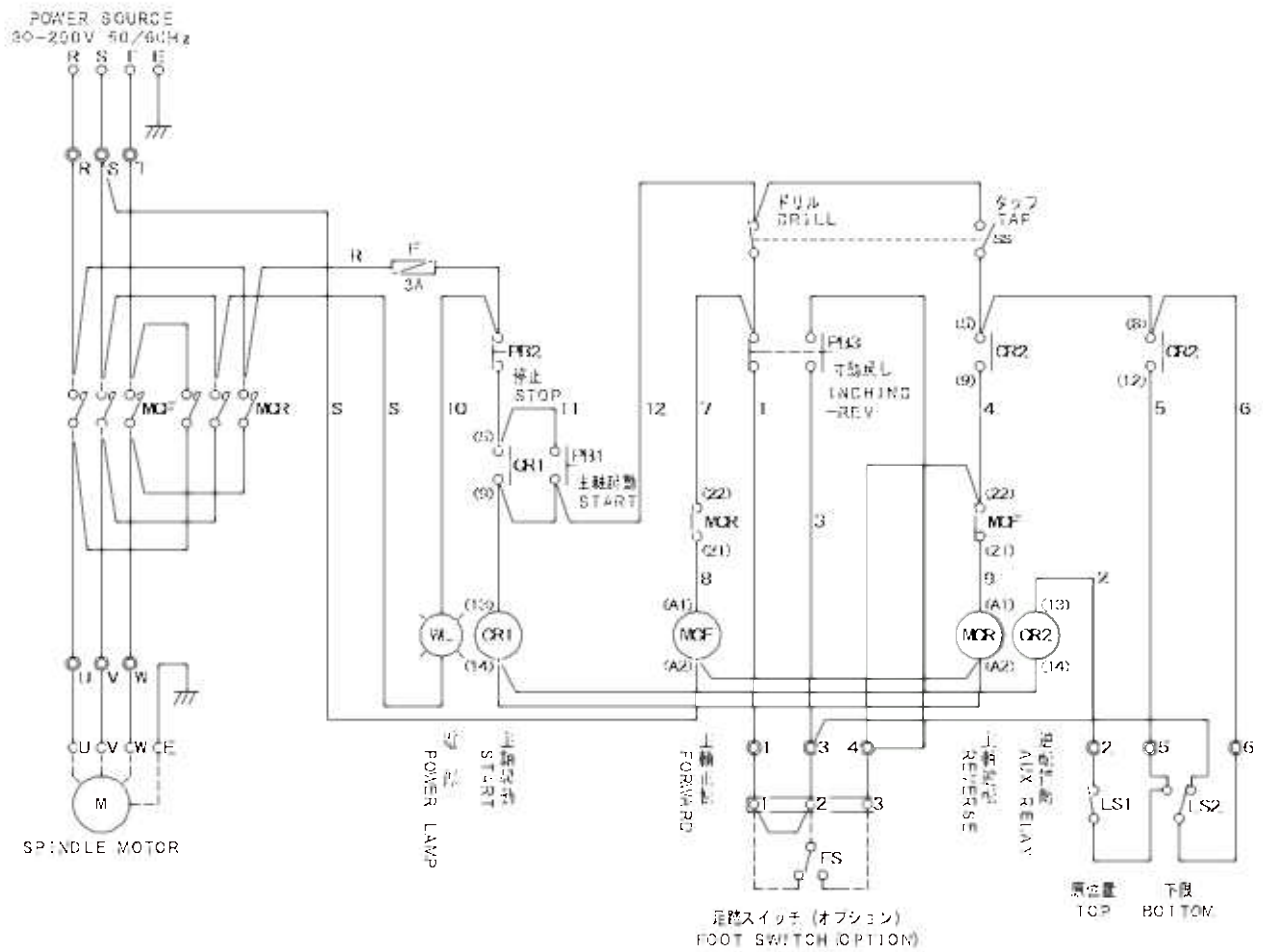
When reverse rotation is required during tapping operation, please push the inching reverse button [Fig-3]. Spindle rotates reverse direction while pushing the inching reverse button. If the button is released, spindle rotates forward direction.

(If Drill/Tap select switch is selected to the drill side, inching reverse function does not work.)

**⚠ CAUTION**

- ◆ Do not run the machine with a pulley cover opened.
- ◆ Do not use the machine while the operator wears gloves.
- ◆ Be sure to fix the workpiece.
- ◆ Always turn power off before touching any electrical wiring.
- ◆ Do not use inferior lubricants other than those specified to be applicable.
- ◆ After the job of everyday, clear the machine thoroughly, apply oil as required, and arrange the surroundings of the machine.

## 7. CONNECTION DIAGRAM

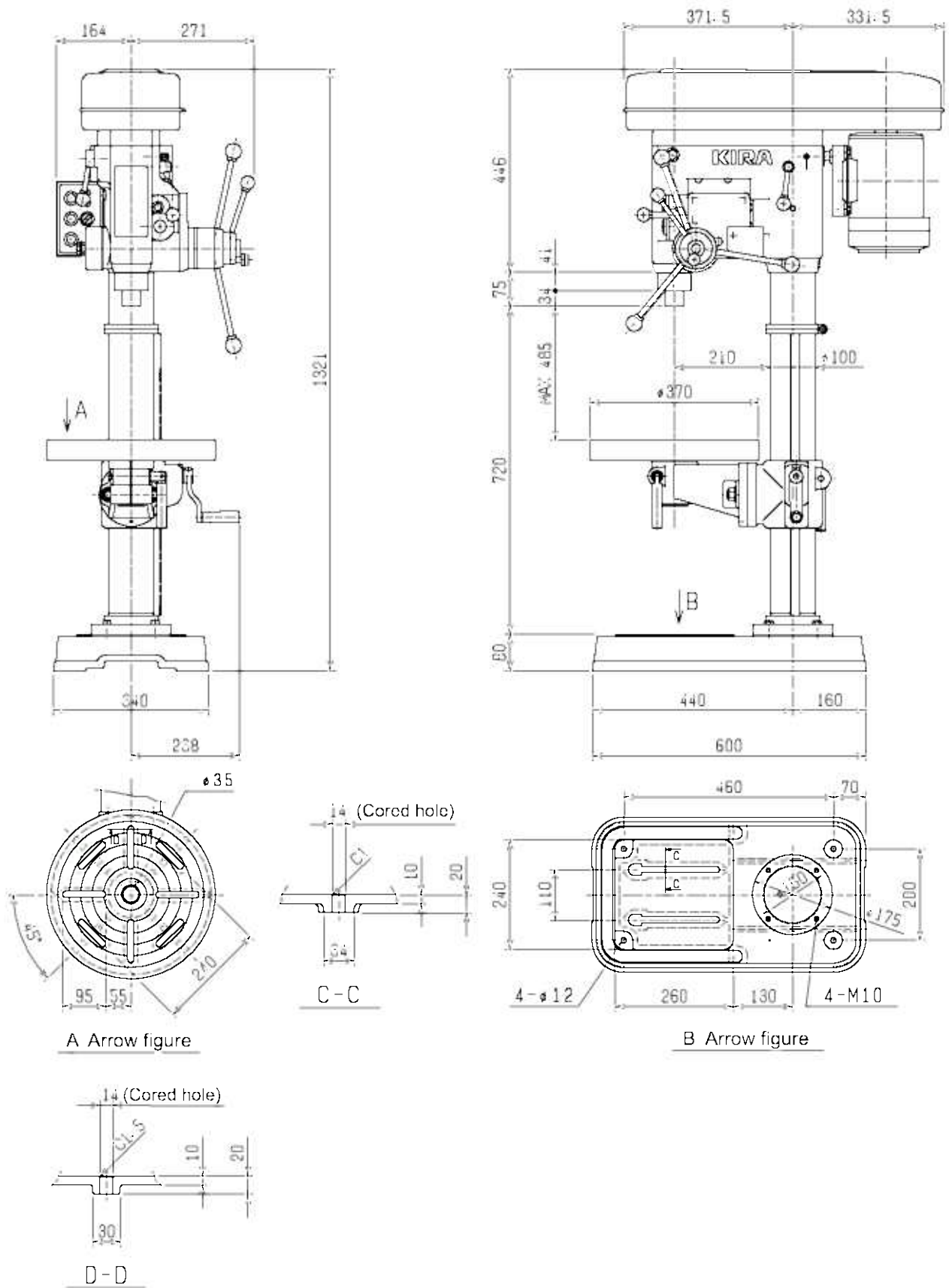


### Parts list

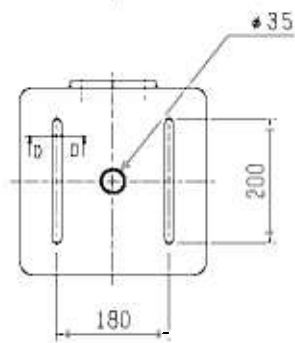
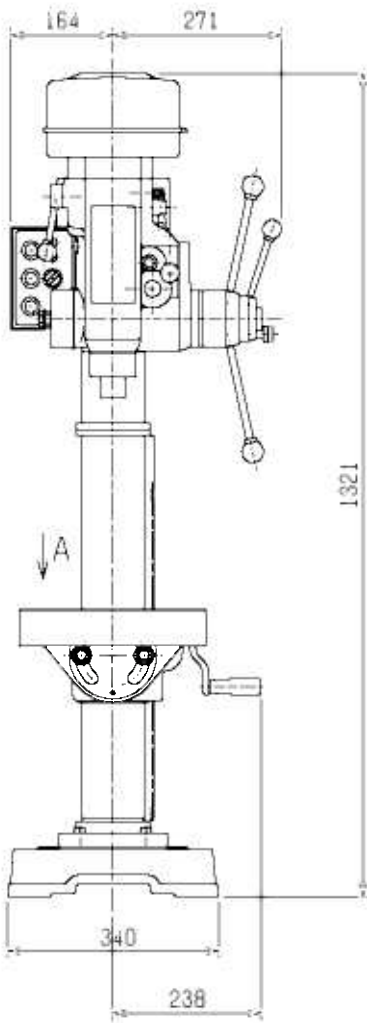
3φ-200V 50/60Hz

Symbol	Parts name	Type	Detail	Maker	Q' ty
MCF, R	Reversing electromagnetic contactor	SK09AR-201W	200V 1b×2	FUJI	1
CR1,2	Auxiliary relay	RU2S-C-A200	200V	IDEC	2
	Socket	SM2S-05D		IDEC	2
	Fitting	SFA502PN20		IDEC	2
WL	Pilot lamp	BN-2-200V-C	Power 200V	SATO	1
SS	Select switch	AR22PR-211B	DRILL/TAP	FUJI	1
PB1	Pushbutton switch	AR22F0R-10B	Spindle ON	FUJI	1
PB2	Pushbutton switch	AR22E0R-11R	Stop	FUJI	1
PB3	Pushbutton switch	AR22E0R-11Y	Inching	FUJI	1
F	Fuse holder	F-4000		SATO	1
	Fuse	FGB0 250V-3A		FUJI TANSI	1
	Receptacle	NCS-253-R		NANABOSHI ELECTRIC	1
	Plug	NCS-253-SP		NANABOSHI ELECTRIC	1
LS1,2	Micro switch	Z-15GQ22-B	Zero, Depth point	OMRON	2
FS(Optional)	Foot switch	SF-1M	NCS-253P	KOKUSAI DENGYO	1

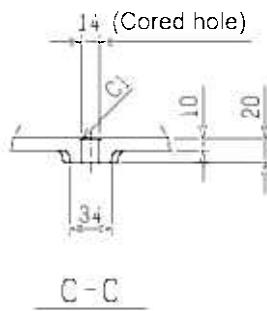
### 8. DIMENSION (Round table)



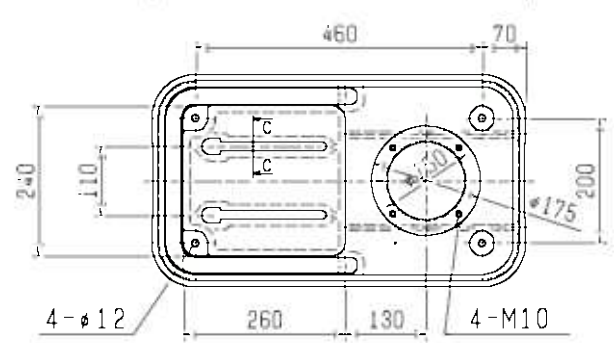
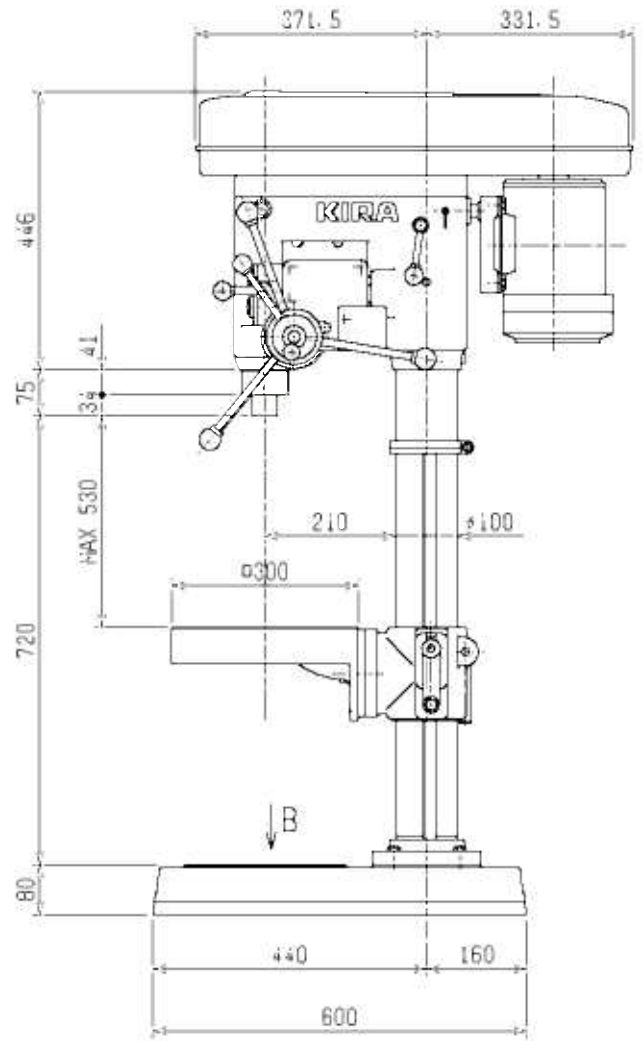
### DIMENSION (Square table)



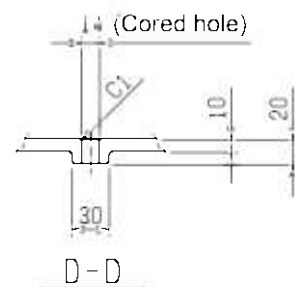
A Arrow figure



C-C



B Arrow figure



D-D

## 9. CUTTING DATA

(1) Screw Prepared hole chart(Reference value)

Unit: mm

Metric (screw) thread		Priming path of screw	Screw Prepared hole diameter	Priming path of screw	Screw Prepared hole diameter
Priming path of screw	Screw Prepared hole diameter	M16	14.1	W 7/16	9.3
M3	2.6	M18	15.6	W 1/2	10.5
M4	3.4	M20	17.6	W 9/16	12.0
M5	4.3	M22	19.6	W 5/8	13.5
M6	5.1	M24	21.0	W 3/4	16.5
M8	6.8	Whitworth screw thread		W 7/8	19.3
M10	8.6	W 1/4	5.0	W1	22.0
M12	10.3	W 5/16	6.5		
M14	12.1	W 3/8	7.9		

(2) Tapping standard rotation chart(Reference value)

(Manual)

Work material		Aluminum system	Bakelite	Nylon	Brass	Bronze	Mild steel	Half-hard steel	Hard steel	Common cast iron
		25 m/min	25 m/min	20 m/min	15 m/min	12 m/min	10 m/min	8 m/min	5 m/min	12 m/min
Cutting speed										
Tap										
Metric (screw) thread	M4 P0.7	1000	1000	1000	1000	1000	800	640	400	1000
	M5 P0.8	1000	1000	1000	950	830	650	510	320	830
	M6 P1	1000	1000	1000	800	650	530	420	270	650
	M8 P1.25	1000	1000	800	600	480	400	320	200	480
	M10 P1.5	800	800	640	480	380	310	250	160	380
	M12 P1.75	660	660	530	400	320	260	210	130	320
	M14 P2	560	560	450	340	250	230	180	115	250
	M16 P2	500	500	400	300	220	200	160	100	220
	M18 P2.5	420	420	350	250	180	170	140	90	180
	M20 P2.5	360	360	300	220	160	150	130	80	160
M22 P2.5	300	300	250	190	145	140	115	70	145	

### CAUTION

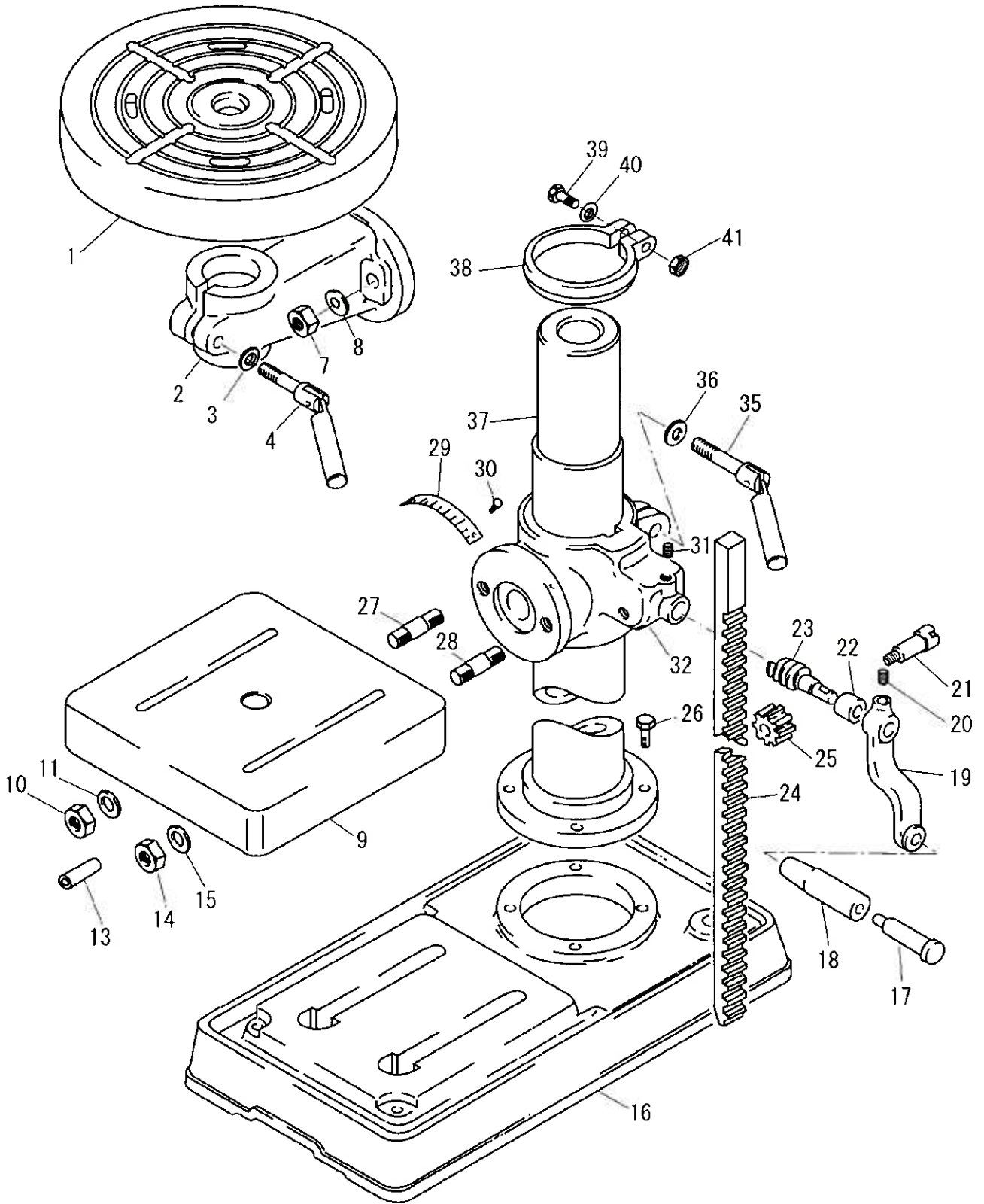
- ◆ The low speed is better until it gets used to be attached to a manual feed.
- ◆ There are some which cannot be cut unless nylon material is also a chasing speed like steel.
- ◆ The above is a reference value.  
Please select a near value from among the number of rotations of this machine.

## (3) Drilling standard rotation chart(Reference value)

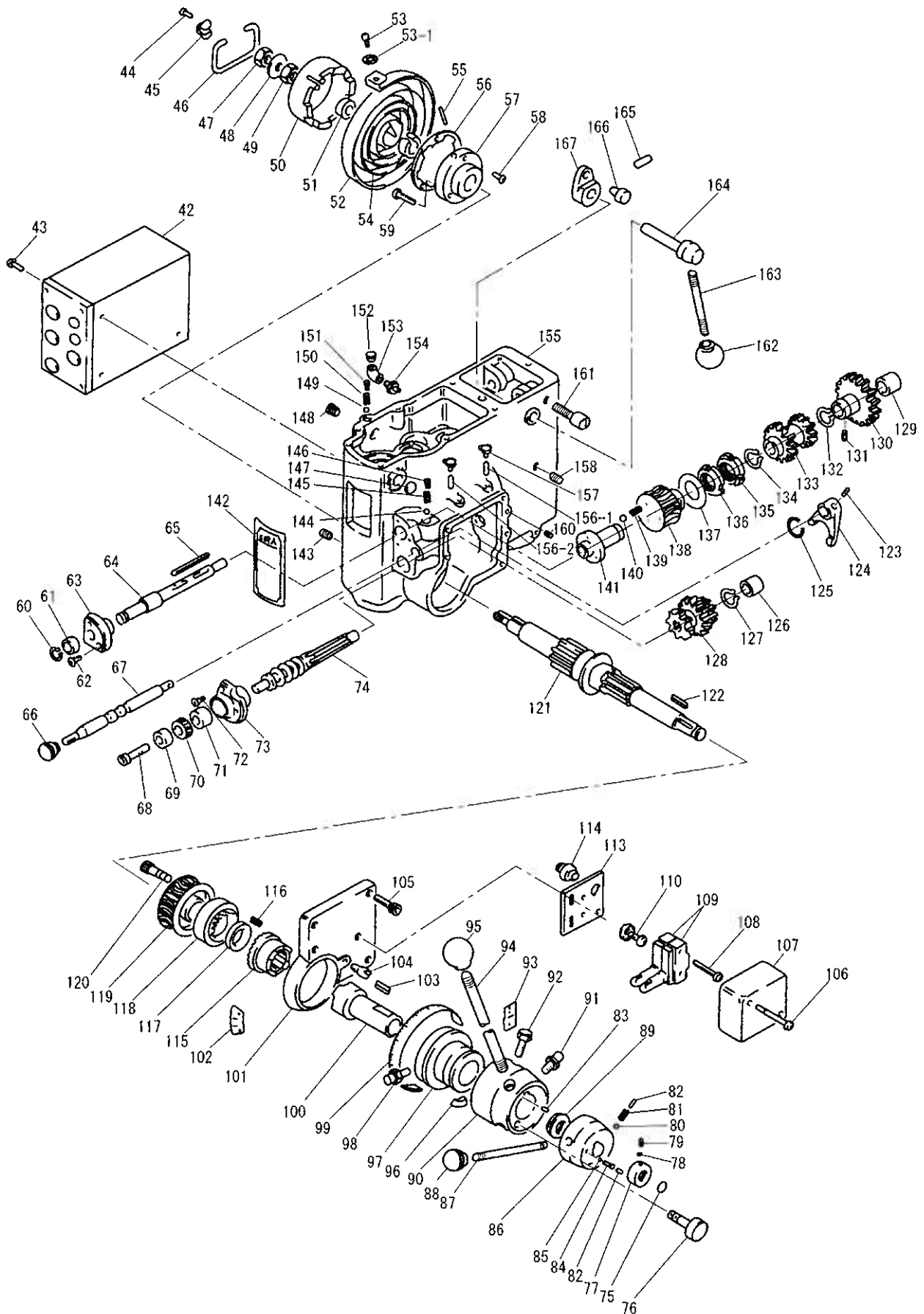
Unit: mm

Work material Diameter of a drill(mm)	Brass gun metal	Aluminum	Cast iron	Hard steel	Mild steel
2	11900	14300	3800	2400	3350
3	8000	9500	2550	1600	2230
4	6000	7200	1900	1200	1680
5	4800	5700	1530	955	1340
6	4000	4800	1270	800	1100
7	3400	4100	1090	680	960
8	3000	3600	960	600	840
9	2650	3200	850	530	740
10	2400	2860	765	480	670
11	2170	2600	700	435	610
12	2000	2400	640	400	560
13	1840	2200	590	370	515
14	1700	2000	545	340	480
16	1500	1800	480	300	420
18	1300	1600	425	265	370
20	1200	1400	380	240	335
22	1100	1300	350	220	305
25	950	1150	305	190	270

# 10. PARTS LIST

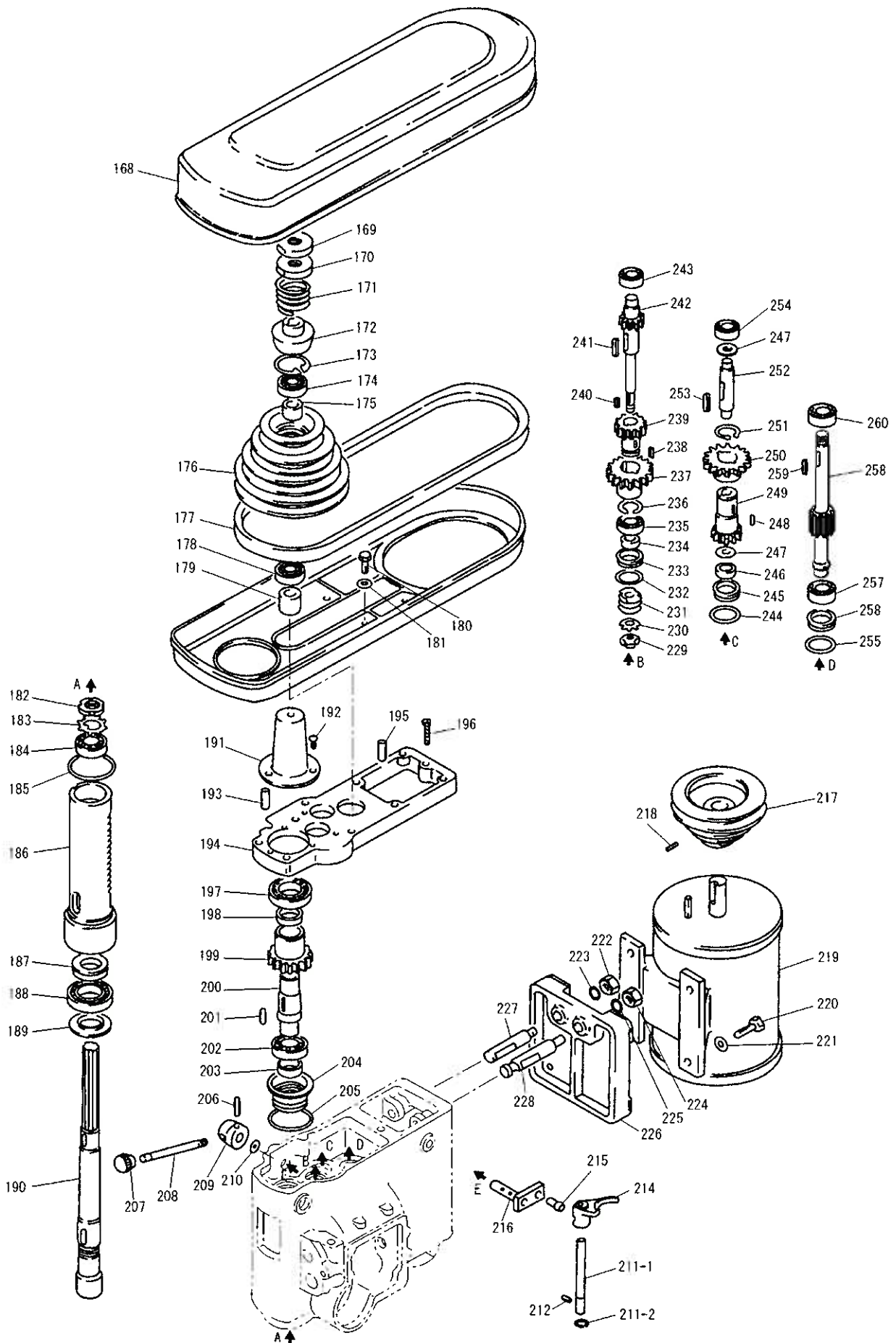








KRTG-420



## 10. PARTS LIST

NO	Spec	Parts number	Part name	Remark	Q'ty
1	R4	KI-7R-D	Table		1
2	R4	KI-4R-D	Holder		1
3	R4	ZG1-M12	Plain Washer	M12	1
4	R4	AS1-KI-5-1B	Clamp bolt		1
7	R4	NT1-M16	Hex. nut	M16	2
8	R4	ZG1-5/8-A	Plain Washer	5/8	2
9	S4	KI-7-D	Table		1
10	S4	NT1-M16	Hex. nut	M16	1
11	S4	ZG1-5/8-A	Plain Washer	5/8	1
13	S4	PN2-06*030	Taper pin	6*30	1
14	S4	NT1-M16	Hex. nut	M16	1
15	S4	ZG1-5/8-A	Plain Washer	5/8	1
16		KI-1-C	Bed		1
17		KI-1059-C	Pin		1
18		KI-1060-D	Knob		1
19		KI-81-D	Handle		1
20		BTA-M08*012-K	Hex. socket head stop screw	M8*12 (Cup point)	1
21		KI-77-B	Shaft		1
22		KI-79-A	Bush		1
23		KI-78-1	Shaft		1
24		KI-85-D	Rack	16*20*620	1
25		KI-76-A	Gear(16T)		1
26		BT1-M10*035	Hex. bolt	M10*35	4
27		KI-8-A	Bolt		1
28		KI-8-A	Bolt		1
29	S4	KI-4-2B	Name plate		1
30	S4	BTD-#2*5	Tack	#2*4.8	2
31		BTA-M06*015-K	Hex. socket head stop screw	M6*15 (Cup point)	1
32		KI-4-G	Bracket		1
35		AS1-KI-5-1B	Clamp bolt		1
36		ZG1-M12	Plain Washer	M12	1
37	C	KI-2-F	Column		1
37	200L	KI-2-4D	Column	200mm (Long)	1
38		KI-89-B	Stop ring		1
39		BT1-M08*055	Hex. bolt	M8*55	1
40		ZG1-M08-U	Plain Washer	M8	1
41		NT1-M08	Hex. nut	M8	1
42		2C-2751-200V	Electric control box	KAWAMOTO	1
43		BT6-M06*010	Cross recessed head machine screw	M6*10	3
44		BT6-M04*006-PL	Cross recessed head machine screw	M4*6	4
45		2C-2264-B	Stopper		2
46		2C-2263-B	Handle		1
47		3B-2245-A	Nut		1
48		ZG1-M14	Plain Washer	M14	1
49		3B-2219-A	Nut		1
50		2C-2250-2B	Spring case		1
51		COL1-015025006B	Collar(1)	2C-2253-2(Previous)	1
52		2C-2250A	Spring case set		1
52		2C-2249-A	Spiral spring		1

NO	Spec	Parts number	Part name	Remark	Q'ty
53		BT6-M04*008-PL	Cross recessed head machine screw	M4*8	1
53-1		ZG1-M04-PL	Plain Washer	Black	1
54		2C-2252-A	Collar		1
55		PN3-06*020	Spring pin	6*20	1
56		2C-2261-B	Plate		1
57		2C-2246-B	Bush		1
58		BT7-M03*006-PL	Countersunk head screw	M3*6	3
59		BT6-M06*020-U	Cross recessed head machine screw	M6*20	3
60		RG1-S016	Stop ring	S16	1
61		COL1-016025005B	Collar(1)	2C-2419 (Previous)	1
62		BT7-M05*012	Countersunk head screw	M5*12	2
63		2C-2417-B	Metal		1
64		2C-2403-E	Shaft	(φ22*203)	1
65		KY1-05*05*080RR	Parallel key	5*5*80RR	1
66		KN-41-A	Knob		1
67		2C-2430-B	Lever		1
68		BT2-M06*015	Hex socket head bolt	M6*15	1
69		2C-2428-A	Collar		1
70		BE6-51102	Thrust ball bearing	51102	1
71		2C-2418-B	Bush		1
72		BT7-M05*012	Countersunk head screw	M5*12	3
73		2C-2425-B	Metal		1
74		2C-2422-C	Shaft	(φ28*193)	1
75		R-42-C-A	Name plate		1
76		2C-2217-7A	Pin		1
77		2C-2237-5B	Nut		1
78		BTF-4.5*2	Set shoe		1
79		BTA-M06*006-K	Hex. socket head stop screw	M6*6 (Cup point)	1
80		BEZ-1/4	Steel ball	38721	1
81		2C-2268-A	Coil spring		1
82		BTA-M08*008-H	Hex. socket head stop screw	M8*8 (flat point)	2
83		BTA-M06*008-K	Hex. socket head stop screw	M6*8 (Cup point)	3
84		3B-2208-B	Coil spring		1
85		BEZ-1/4	Steel ball	38721	1
86		2C-2227-5B	Boss		1
87		KN-40-A	Handle		1
88		KN-41-A	Knob		1
89		BE7-AXK1104	Thrust bearing	AXK1104	1
89		BE8-AS1104	Thrust washer	AS1104	2
90		2C-2216-5B	Boss		1
91		2B-2230-A	Stopper		1
92		BT1-M08*015-K-109	Hex. heighten bolt	M8*15	1
93		4A-2804-A	Name plate		1
93		BTD-#2*5	Tack	#2*4.8	2
94		R-44-A	Handle		3
95		R-45-B	Knob		3
96		KI-53-1A	Clamp piece		1
97		2C-2213-5D	Flange		1
98		2B-2230-A	Stopper		1

## 10 PARTS LIST

NO	Spec	Parts number	Part name	Remark	Q'ty
99		2B-2803-A	Name plate		1
99		BTD-#2*5	Tack	#2*4.8	2
100		2C-2212-6B	Clutch		1
101		2C-2438-5A	Cover		1
102		2C-2802-3A	Name plate		1
102		BTD-#2*5	Tack	#2*4.8	2
103		KY1-05*05*022RR	Parallel key	5*5*22RR	1
104		2C-2231-A	Pin		1
105		BT2-M06*020	Hex socket head bolt	M6*20	4
106		BT6-M04*045	Cross recessed head machine screw	M4*45	2
107		2C-2727-6C	Cover		1
108		BT6-M04*040	Cross recessed head machine screw	M4*40	2
109		EP5-Z-15GQ22-B	Micro switch	Z-15GQ22-B	2
110		BTJ-M05*015-P3-M	Cross recessed head sems screw	M5*15	2
113		2C-2727-5B	Plate		1
114		EL8-NC-1	Code lock	NC-1	1
115		3B-2207-6D	Clutch		1
116		4B-2208-2	Coil spring		3
117		COL1-028042008B	Collar (1)		1
118		2C-2203-5B	Clutch		1
119		2C-2202-D	Gear		1
120		BT2-M06*012	Hex socket head bolt	M6*12	4
121		2C-2201-5I	Pinion shaft	(φ55*360)	1
122		KY1-05*05*020RR	Parallel key	5*5*20RR	1
123		BTA-M06*008-K	Hex. socket head stop screw	M6*8 (Cup point)	1
124		2C-2431-B	Shifter		1
125		R-25B-A	Stop ring		1
126		2C-2418-B	Bush		1
127		RG1-S020	Stop ring	S20	1
128		2C-2424-B	Gear		1
129		2C-2418-B	Bush		1
130		2C-2405-B	Gear(33T)		1
131		BTA-M06*006-K	Hex. socket head stop screw	M6*6 (Cup point)	1
132		2C-2407-A	Ring		1
133		2C-2408-B	Gear		1
134		RG3-WR24	Retaining ring uniform section	WR24	1
135		2C-2415-A	Nut		1
136		2C-2415-A	Nut		1
137		COL1-032052003B	Collar (1)	2C-2414 (previous)	1
138		2C-2411-D	Gear		1
139		2C-2413-A	Coil spring		3
140		BEZ-1/4	Steel ball	1/4	3
141		2C-2410-E	Holder (wheel)		1
142		2C-2801-8A	Name plate		1
142		BTD-#2*5	Tack	#2*4.8	4
143		2C-2115-A	Key	BTG-M10*020	1

NO	Spec	Parts number	Part name	Remark	Q'ty
144		BEZ-1/4	Steel ball	1/4	1
145		2A-2243-A	Coil spring		1
146		BTG-M08*008	Slotted set screw	M8*8	1
147		OG1-VA-01	Oil pot window	VA-01	1
148		BTE-PT03	Hex socket head plug	PT3/8	1
149		BEZ-1/4	Steel ball	1/4	1
150		2C-2345-A	Coil spring		1
151		BTG-M08*008	Slotted set screw	M8*8	1
152		BTE-PT03	Hex socket head plug	PT3/8	1
153		WC3-PT03-45	Elbow		1
154		WC1-PT03	Nipple	PT3/8	1
155		2C-2001-W	Head		1
156-1		PH6-08mm	Nylon pipe	30mm	1
156-2		PH6-08mm	Nylon pipe	40mm	1
157		LCC-#211-1/4	Oil cup	1/4	3
158		BTA-M12*015-K	Hex. socket head stop screw	M12*15 (Cup point)	4
160		BTA-M06*012-K	Hex. socket head stop screw	M06*12 (Cup point)	2
161		BT1-M10*030	Hex. bolt	M10*30	2
162		KN-41-A	Knob		1
163		2C-2341-A	Handle		1
164		2C-2368-2B	Shaft		1
165		BTA-M10*012-K	Hex. socket head stop screw	M10*12 (Cup point)	1
166		3B-2376-A	Pin		1
167		2C-2374-C	Shifter		1
168		2C-2601-A	Cover (Assembly))		1
169		2C-2386-A	Nut	(φ55*315)	1
170		2C-2386-A	Nut	(φ55*315)	1
171		3C-2311-A	Coil spring		1
172		2C-2381-A	Clutch		1
173		RG1-R047	Stop ring	R47	1
174		BE1-6204UU	Ball bearing	62042NK(6204LLB)	1
175		2C-2385-A	Collar		1
176		2C-2382-A	Pulley		1
177		BL1-A-40-R	V Belt	A-40	1
178		BE1-6204UU	Ball bearing	62042NK(6204LLB)	1
179		COL1-020030015B	Collar (1)	2C-2353 (Previous)	1
180		BT1-M08*015	Hex. bolt	M8*15	4
181		ZG1-M08-U	Plain Washer	M8	4
182	2C3	NT3-AN05	Bearing nut	AN05	1
183	2C3	ZG5-AW05	Bearing washer	AW05	1
184	2C3	BE1-6005ZZ	Ball bearing	6005ZZ	1
185	2C3	2C-2114-A	Packing		1
186	2C3	2C-2101-5G	Rack sleeve		1
187	2C3	BE6-51107	Thrust ball bearing	51107	1
188	2C3	BE1-6007ZZ	Ball bearing	6007ZZ	1
189	2C3	2C-2103-5B	Collar		1
190	2C3	2C-2102-5J	Spindle		1
191		2C-2313-A	Cap		1
192		BT6-M06*010	Cross recessed head machine screw	M6*10	3



## 10. PARTS LIST

NO	Spec	Parts number	Part name	Remark	Q'ty
193		PN1-06*020	Parallel pin	6h7*20	1
194		2C-2301-F	Head cover		1
195		PN1-06*020	Parallel pin	6h7*20	1
196		BT2-M06*035	Hex socket head bolt	M6*35	7
197		BE1-6206Z	Ball bearing	6206Z	1
198		COL1-030040007B	Collar (1)	2C-2312 (Previous)	1
199		2C-2310-A	Gear (32T)		1
200		2C-2305-5B	Sleeve	(φ42*1830)	1
201		KY1-07*07*028RR	Parallel key	7*7*28RR	1
202		BE1-6006	Ball bearing	6006	1
203		SE2-SB30397	Oil seal	SB30397	1
204		2C-2306-A	case		1
205		OR1-G055	O ring	G55	1
206		PN3-05*036	Spring pin	5*36	1
207		KN-41-A	Knob		1
208		2C-2341-A	Handle		1
209		2C-2340-B	Boss		1
210		OR1-P015	O ring	P15	1
211-1		2C-2334-1A	Guide		1
211-2		RG1-S012	Stop ring	S12	1
212		BTA-M06*010-K	Hex. socket head stop screw	M6*10K	1
214		2C-2337-9A	Shifter		1
215		2C-2338-A	Pin		1
216		2C-2339-1B	Shifter		1
217		2C-2359-3A	Motor pulley		1
218		BTA-M06*012-K	Hex. socket head stop screw	M6*12 (Cup point)	1
219	75F	MO1-0.75KW*4*200F	Motor	IKS-FBK8	1
220		BT1-M08*025	Hex. bolt	M8*25	4
221		ZG1-M08-U	Plain Washer	M8	4
222		NT1-M12	Hex. nut	M12	1
223		ZG2-M12	Spring washer	M12	1
224		NT1-M12	Hex. nut	M12	1
225		ZG2-M12	Spring washer	M12	1
226		4C-2364-2B	Base (Motor)		1
227		2C-2366-3B	Guide		1
228		4B-2365-3B	Guide		1
229		NT3-AN01	Bearing nut	AN01	1
230		ZG5-AW01	Bearing washer	AW01	1
231		2C-2401-5C	Worm	(φ34*1100)	1
232		OR1-G035	O-ring	G35	1
233		2C-2316-A	Holder		1
234		SE2-SB17287	Oil seal	SB17287	1
235		BE1-6203	Ball bearing	6203	1
236		RG3-WR30	Retaining ring uniform section	WR30	1
237		2C-2322-A	Gear (30T)		1
238		KY1-05*05*022RR	Parallel key	5*5*22RR	2
239		2C-2320-A	Gear(23T)		1
240		KY1-04*04*016RR	Parallel key	4*4*16RR	1

NO	Spec	Parts number	Part name	Remark	Q'ty
241		KY1-05*05*037RR	Parallel key	5*5*37RR	1
242		2C-2315-8B	Shaft(A)		1
243		BE1-6203Z	Ball bearing	6203Z	1
244		OR1-G030	O ring	G30	1
245		2C-2328-B	Collar		1
246		BE1-6202	Ball bearing	6202	1
247		BE8-AS1102	Thrust washer	AS1102	2
248		KY1-05*05*018RR	Parallel key	5*5*18RR	2
249		2C-2330-9C	Gear(18T)		1
250		2C-2330-8D	Gear(32T)		1
251		RG1-S028	Stop ring	S28	1
252		2C-2327-8B	Shaft(B)	( $\phi$ 22*102)	1
253		KY1-05*05*037RR-	Parallel key	5*5*37(-0.06-0.08)	1
254		BE1-6202Z	Ball bearing	6202Z	1
255		OR1-P036	O ring	P36	1
256		2C-2348-B	Collar		1
257		BE1-6004	Ball bearing	6004	1
258		2C-2347-8C	Shaft(C)		1
259		KY1-05*05*037RR	Parallel key	5*5*37RR	1
260		BE1-6004LB	Ball bearing	6004LB	1
261		2C-2807-A	Name plate		1
262		2C-2901-B	Center (Drift)		1
267		3C-2901-A	Handle	Black	2

## 11. DISPOSAL AND RESELLING

### 11.1. Disposal

- Please handle the following items as industrial wastes in accordance with regulation of your country.

(1) Cutting oil and lubrication oil

(2) Chip

(3) Tools

(4) Main unit

- For disposing of them, contact us.

### 11.2 Reselling

 **CAUTION**

- ◆ *To resell the KRTG-420 to any other party, strictly observe the following instructions:  
Be sure to hand the Instruction Manual to that new user.  
See the chapter indicating the locations of signal-word labels and make sure that all the labels are in place.  
If the Instruction Manual or any of the signal-word labels is missing, be sure to contact us to obtain it.  
Before reselling the KRTG-420, contact us without fail.*
  
- ◆ *You, as purchaser of this machine, agree to follow the procedures for the export or transfer of the machine, under the Foreign Exchange and Foreign Trade Law, when you export or transfer the machine abroad.  
This machine was produced to meet the law and specifications in your country (or area).  
You, as purchaser of the machine, are not allowed to re-sell, re-export, or re-transfer the machine to any party in the country (or area) which has different law and specifications from those in your country.*



## 12. WARRANTY

### 12.1. Free Repairs

- 1) If a malfunction or a failure occurs during the normal use strictly based on the operation guidelines (given in the Instruction Manual), the Instruction Manual, the signal-word labels, and other instructions, then it is repaired free of charge within the warranty period.
- 2) Our warranty only covers the delivered main unit and does not apply to any loss and/or damage, direct or indirect, resulting from such malfunction or failure.
- 3) The warranty remains valid for one year after the delivery with your acceptance.

### 12.2 Charged repairs

- The repairs after the warranty period and those in the following cases within the warranty period are charged to you:
- 1) A malfunction, failure, or damage has resulted from the misuse of the KRTG-420 or from the modification or repair made without obtaining our consent.
  - 2) A malfunction, failure, or damage has resulted from fire, acts of God, lightning, abnormal voltage, or any other unpredictable situation.
  - 3) A malfunction, failure, or damage has resulted from your improper handling such as falling during the transportation or transfer by you.
  - 4) A malfunction, failure, or damage has occurred because you have failed to follow the operation guidelines.
  - 5) Consumable items have been used up, worn out, or otherwise have deteriorated after the normal use.

### 12.3. Locations for contact

Sales Department of Main Office :

TOMIYOSI SHINDEN, KIRA-CHO NISHIO-CITY, AICHI PREF.,  
444-0592, JAPAN

TEL 81-563-32-0100      FAX 81-563-32-3241

E-Mail : [info@kiracorp.co.jp](mailto:info@kiracorp.co.jp)

# KIRA CORPORATION

---

Revision history  
2nd edition : August 24, 2016



**KIRA**