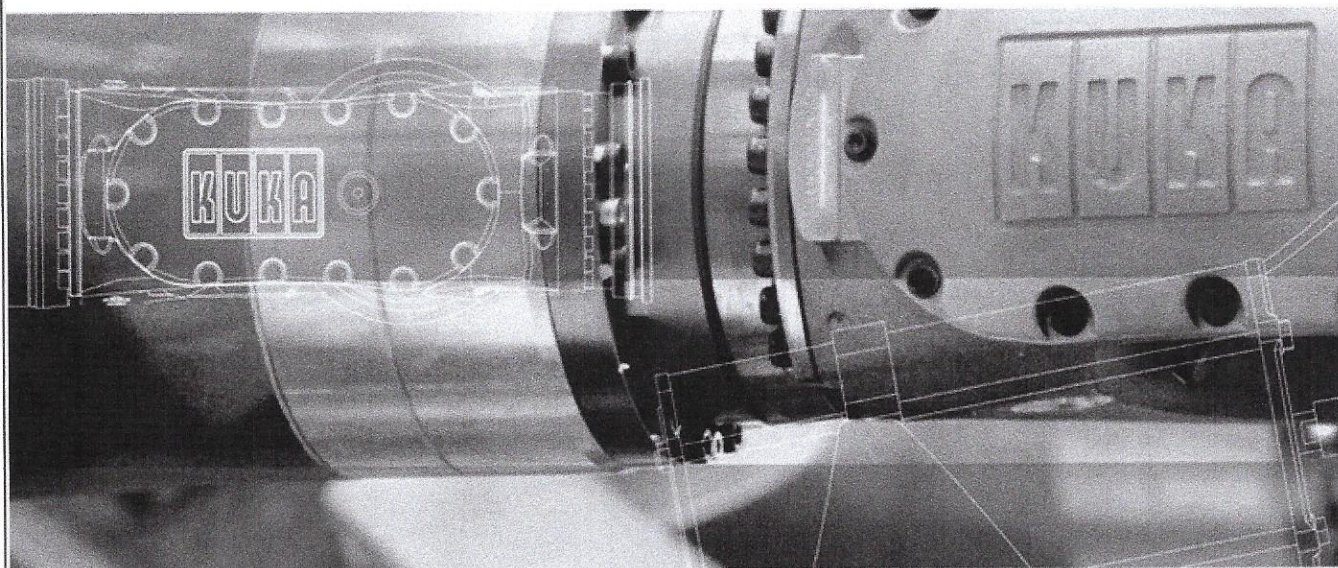


KUKA



KUKA Taiwan Co., Ltd.

Preventive Maintenance

Robot type and s/n : KR 20-3 / 527421

Controller type and s/n : KRC4 / [redacted] - 298809

STARWINN 翁佳有限公司

KUKA Taiwan Ltd. 台灣庫卡股份有限公司

1F, No.298 Yangguang St., Nei Hu Dist., Taipei City, Taiwan 114 台北市內湖區陽光街 298 號 1 樓

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Rev 1.0

Customer data

End customer :

Contact person

Address

Remarks

Contact Tel / Email :

KUKA Engineer

Execution date

Robot and controller data

Robot model :

Robot s/n :

Robot alias :

Controller moc

Controller s/n :

KCP s/n :

Robot applicat

Robot runtime :

Year of manuf.

Mounting position ☒ FloorCeiling ☐Wall ☐Pedestal ☐

Reference : PO/Quotation/Service

▼ CHECKED AND OK

▼ MAY NEED FUTURE ATTENTION

▼ REQUIRES IMMEDIATE ATTENTION

▼ N/A

Gear units / Servo motor		Results / Comments
✓	Axis 1	
✓	Axis 2	
✓	Axis 3	
✓	Axis 4	
✓	Axis 5	
✓	Axis 6	

Gear unit lubrication		Results / Comments
✓	Axis 1	550ml
✓	Axis 2	580ml
✓	Axis 3	380ml
✓	Axis 4	360ml
✓	Axis 5	180ml
✓	Axis 6	150ml

Mastering		Results / Comments
✓	Axis 1	Value Deg ☒ Check value on
✓	Axis 2	Value Deg ☒ Check value on
✓	Axis 3	Value Deg ☒ Check value on
✓	Axis 4	Value Deg ☒ New Mastered
✓	Axis 5	Value Deg ☒ New Mastered
✓	Axis 6	Value Deg ☒ New Mastered

Counter balance system		Results / Comments
✓	Pressure check	Value. - Bar
✓	Mechanical che	Visual inspection / Running noises
✓	Bearing Lubrica	

Toothed belt		Results / Comments
✓	Axis 4 motor	Value. 258 Hz 更換
✓	Axis 5 motor	Value. Hz
✓	Axis 5 wrist	Value. 261 Hz 更換
✓	Axis 6 wrist	Value. Hz

Drive shafts		Results / Comments
✓	Axis 4	
✓	Axis 5	
✓	Axis 6	

▼ CHECKED AND OK

▼ MAY NEED FUTURE ATTENTION

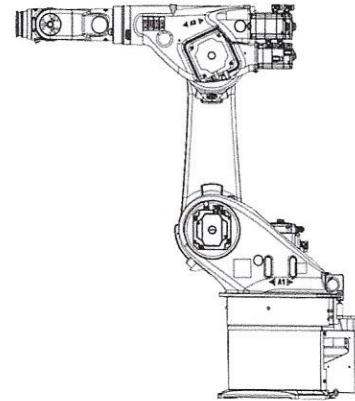
▼ REQUIRES IMMEDIATE ATTENTION

▼ N/A

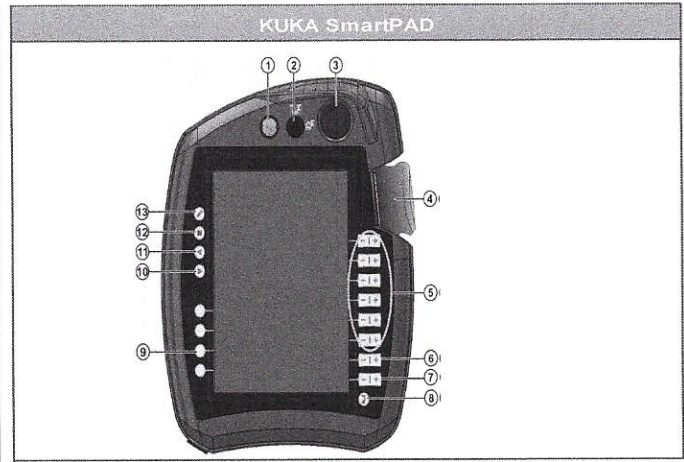
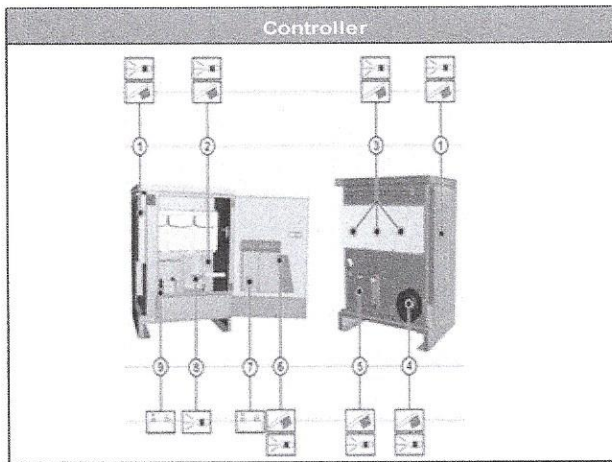
Fastening		Results
✓	Robot base fastening	
Other lubrication		Results
✓	Energy supply	
✓	Rotating column	
✓	PA. Kinematic Bearing	
✓	O-Ring A4 - A5	

Other		Results

General mechanical



總結：手臂控制箱狀況優良，
需小心手臂撞机。



Controller Inspection Checklist

- ▼ CHECKED AND OK
- ▼ MAY NEED FUTURE ATTENTION
- ▼ REQUIRES IMMEDIATE ATTENTION
- ▼ N/A

	Maintenance Point	Results / Comments
✓	• Cabinet Battery	Value > 25 Volt
✓	• Motherboard Battery	
✓	• Data storage device	
✓	• Swing frame / PC fan	
✓	• Inner cooling	
✓	• Outer cooling	
✓	• Air filter	
	► Maintenance Work	Results / Comments
	▼ SIB function	
✓	• SIB [8]	
	• Extended SIB [8]	
	▼ Cabinet fan	
✓	• Outer cooling [4]	
	▼ Side of Control Cabinet	
✓	• Air conditioner	
✓	• Heat exchanger [1]	
✓	• Heat sink [6]	
✓	• KPP, KSP [3]	
✓	• Power supply [5]	
	▼ Other maintenance	
✓	• Fuses	
✓	• Filter insert [2]	
✓	• Contactors	
✓	• Plug-in connections	
✓	• Cable	
	▼ Input / Output	
✓	• Test signal	
	▼ Back up the machine data	
✓	• Archive all data	

Programs Function Checklist - Key function testing

- ▼ CHECKED AND OK
- ▼ MAY NEED FUTURE ATTENTION
- ▼ REQUIRES IMMEDIATE ATTENTION
- ▼ N/A

	KUKA SmartPAD	Results
	► Front	
✓	• Disconnecting request [1]	
✓	• Key mode switch [2]	
✓	• Emergency Stop [3]	
✓	• Space Mouse [4]	
✓	• Jog keys [5]	
✓	• Key setting the program OV [6]	
✓	• Key setting the jog OV [7]	
✓	• Main menu [8]	
✓	• Status keys [9]	
✓	• Start key [10]	
✓	• Start backwards key [11]	
✓	• STOP key [12]	
✓	• Touch screen responding	
	▼ Rear	
✓	• Enabling switch button	
✓	• Program start button	
✓	• Enabling BAR (Right hand)	
✓	• Enabling BAR (Left hand)	
✓	• USB Connecting port	
	► Function check	
	▼ Jog mode and program execution	
✓	• Jogging by Manually JOG Keys	
✓	• Jogging by space mouse	
✓	• Program mode ,GO , Single step	
✓	• Program velocity in %	
✓	• Jog velocity in %	

1. The minimum clearances that must be maintained for the robot controller indicated in the **Figure 1.5**. During inspection, found the robot controller did not follow the specified minimum clearances. If the minimum clearances are not maintained, this can result in damage to the robot controller. The specified minimum clearances must always be observed.

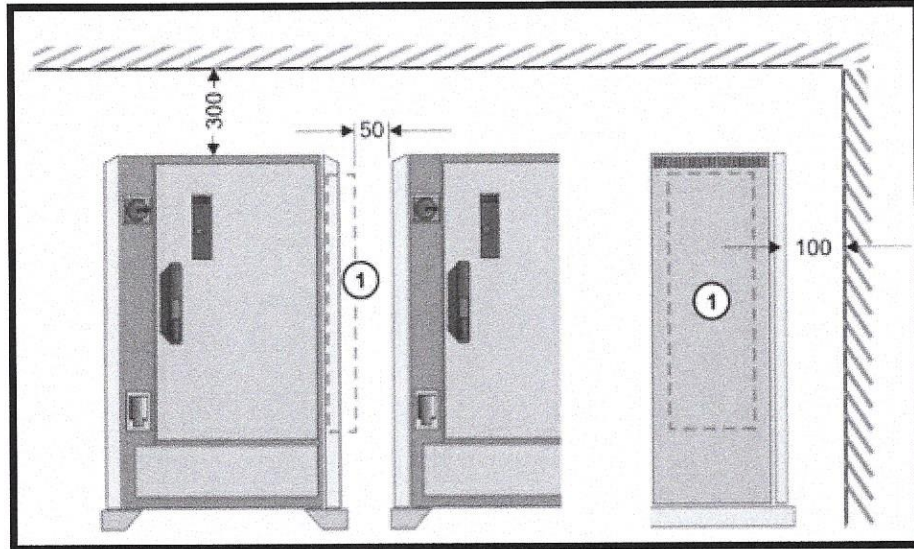
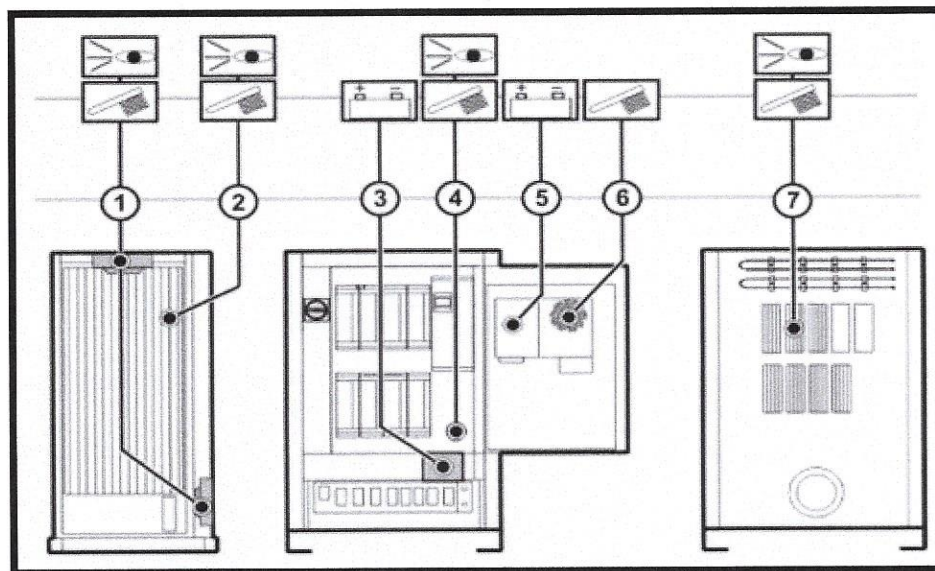
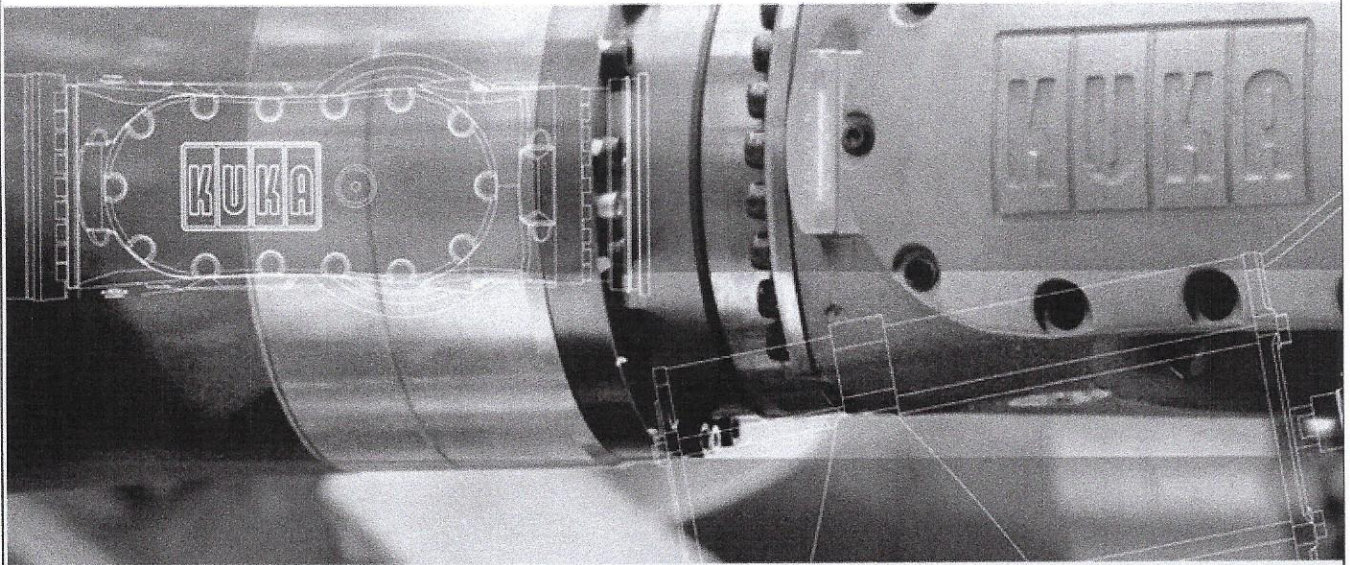


Figure: 1.5: Minimum clearances (dimension in mm)

2. Maintenance work must be performed at the specified maintenance intervals after commissioning by the customer. With this maintenance, customer can protect the parts easy damage due to over heating. Below will be the list of table as a guide



KUKA



KUKA Taiwan Co., Ltd.

Preventive Maintenance

Robot type and s/n : KR10R1100Sixx-C / 509926
Controller type and s/n : KRC4 / 347909
compact

STARWINN 翁佳有限公司

KUKA Taiwan Ltd. 台灣庫卡股份有限公司

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Rev 1.0

Customer data	
End customer : 翁佳	KUKA Engineer
Contact person 翁先生	
Address	
Remarks	
Contact Tel / Email : 0972340921	
Execution date	

Robot and controller data

Robot model : KR10R1100SIX-C	Robot s/n : 509926	Robot alias :
Controller moc KRC4	Controller s/n : 347909	KCP s/n : 076246
Robot applicat CNC加工/取放	Robot runtime : 6010 hrs	Year of manuf.
Mounting position ☐ Floor ☒ Ceiling ☐ Wall ☐ Pedestal	Reference : PO/Quotation/Service	

▼ CHECKED AND OK	▼ CHECKED AND OK
▼ MAY NEED FUTURE ATTENTION	▼ MAY NEED FUTURE ATTENTION
▼ REQUIRES IMMEDIATE ATTENTION	▼ REQUIRES IMMEDIATE ATTENTION
▼ N/A	▼ N/A

Gear units / Servo motor	Results / Comments	Fastening	Results
✓ Axis 1		✓ Robot base fastening	
✓ Axis 2		Other lubrication	Results
✓ Axis 3		✓ Energy supply	
✓ Axis 4		✓ Rotating column	
✓ Axis 5		✓ PA. Kinematic Bearing	
✓ Axis 6		✓ O-Ring A4 - A5	

Gear unit lubrication	Results / Comments	Other	Results
✓ Axis 1			
✓ Axis 2			
✓ Axis 3			
✓ Axis 4			
✓ Axis 5			
✓ Axis 6			

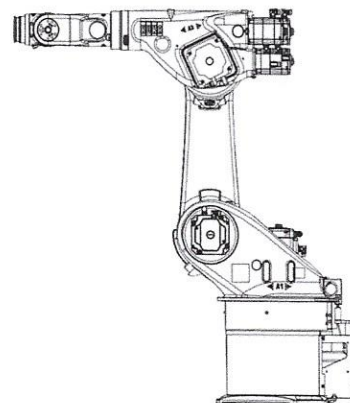
Mastering

Mastering	Results / Comments
0.0001mmV ✓ Axis 1	Value Deg ☒ Check value on
-0.0007mmV ✓ Axis 2	Value Deg ☒ Check value on
-0.003mmV ✓ Axis 3	Value Deg ☒ Check value on
-0.004mmV ✓ Axis 4	Value Deg ☒ New Mastered
✓ Axis 5	Value Deg ☒ New Mastered
✓ Axis 6	Value Deg ☒ New Mastered

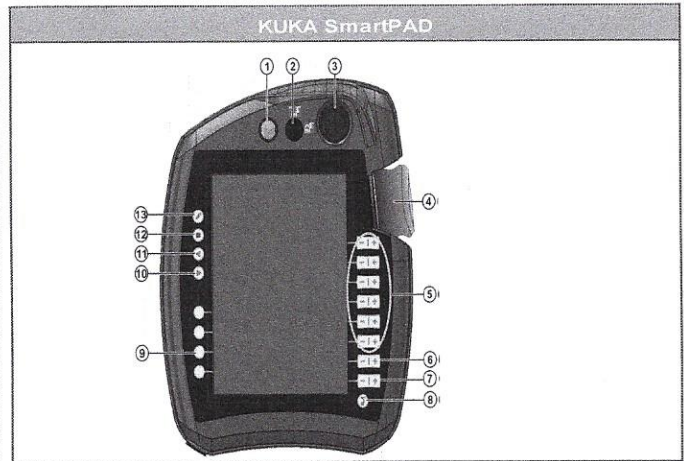
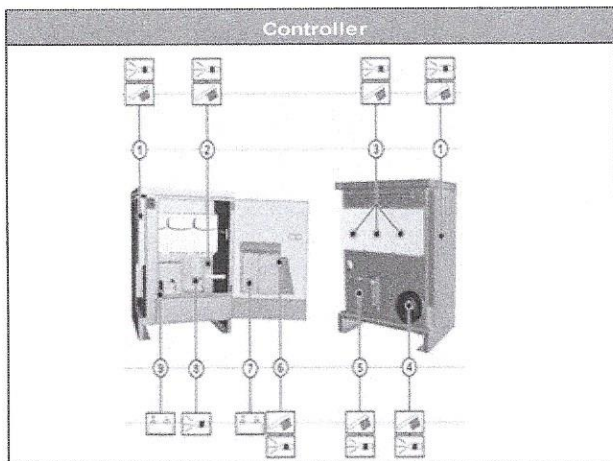
Counter balance system	Results / Comments
✓ Pressure check	Value. - Bar
✓ Mechanical che	Visual inspection / Running noises
✓ Bearing Lubrica	

Toothed belt	Results / Comments
Axis 4 motor	Value. Hz
Axis 5 motor	Value. Hz
✓ Axis 5 wrist	Value. 207 Hz 更換
✓ Axis 6 wrist	Value. 204 Hz 更換

Drive shafts	Results / Comments
✓ Axis 4	
✓ Axis 5	
✓ Axis 6	



總結：手臂狀況優良，控制箱
需注意清潔



Controller Inspection Checklist

- ▼ CHECKED AND OK
- ▼ MAY NEED FUTURE ATTENTION
- ▼ REQUIRES IMMEDIATE ATTENTION
- ▼ N/A

	Maintenance Point	Results / Comments
✓	• Cabinet Battery	Value > 25 volt
✓	• Motherboard Battery	
✓	• Data storage device	
✓	• Swing frame / PC fan	
✓	• Inner cooling	
✓	• Outer cooling	
✓	• Air filter	
	► Maintenance Work	Results / Comments
	▼ SIB function	
✓	• SIB [8]	
	• Extended SIB [8]	
	▼ Cabinet fan	
✓	• Outer cooling [4]	
	▼ Side of Control Cabinet	
✓	• Air conditioner	
✓	• Heat exchanger [1]	
✓	• Heat sink [6]	
✓	• KPP, KSP [3]	
✓	• Power supply [5]	
	▼ Other maintenance	
✓	• Fuses	
✓	• Filter insert [2]	
✓	• Contactors	
✓	• Plug-in connections	
✓	• Cable	
	▼ Input / Output	
✓	• Test signal	
	▼ Back up the machine data	
✓	• Archive all data	

Programs Function Checklist - Key function testing

- ▼ CHECKED AND OK
- ▼ MAY NEED FUTURE ATTENTION
- ▼ REQUIRES IMMEDIATE ATTENTION
- ▼ N/A

	KUKA SmartPAD	Results
	► Front	
✓	• Disconnecting request [1]	
✓	• Key mode switch [2]	
✓	• Emergency Stop [3]	
✓	• Space Mouse [4]	
✓	• Jog keys [5]	
✓	• Key setting the program OV [6]	
✓	• Key setting the jog OV [7]	
✓	• Main menu [8]	
✓	• Status keys [9]	
✓	• Start key [10]	
✓	• Start backwards key [11]	
✓	• STOP key [12]	
✓	• Touch screen responding	
	▼ Rear	
✓	• Enabling switch button	
✓	• Program start button	
✓	• Enabling BAR (Right hand)	
✓	• Enabling BAR (Left hand)	
✓	• USB Connecting port	
	► Function check	
	▼ Jog mode and program execution	
✓	• Jogging by Manually JOG Keys	
✓	• Jogging by space mouse	
✓	• Program mode ,GO , Single step	
✓	• Program velocity in %	
✓	• Jog velocity in %	

1. The minimum clearances that must be maintained for the robot controller indicated in the **Figure 1.5**. During inspection, found the robot controller did not follow the specified minimum clearances. If the minimum clearances are not maintained, this can result in damage to the robot controller. The specified minimum clearances must always be observed.

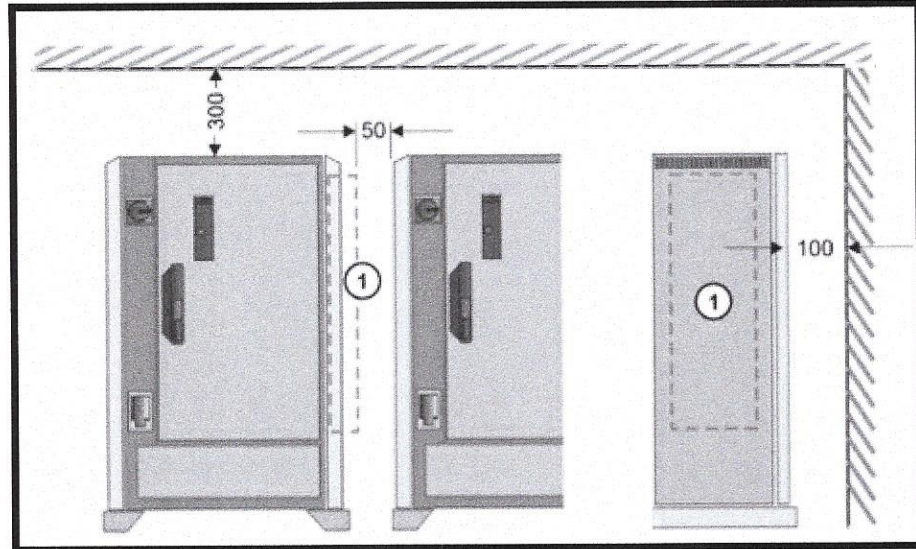


Figure: 1.5: Minimum clearances (dimension in mm)

2. Maintenance work must be performed at the specified maintenance intervals after commissioning by the customer. With this maintenance, customer can protect the parts easy damage due to over heating. Below will be the list of table as a guide

