YAMAHA
YAMAHA MOTOR CO., LTD.

YAMAHA SCARA ROBOT YK-X series

LONG Z

User's Manual

ENGLISH E

E28-Ver. 2.03

Before using the robot (Be sure to read the following)

Our sincere thanks for your purchase of YAMAHA YK-X Long Z series SCARA robot.

The YK-X Long Z series robot has a longer Z-axis stroke than the standard YK-X series and the Z-axis has greater rigidity so the Y-axis arm tip also has more weight than the standard YK-X series.
The following parameter settings must therefore be changed from the standard YK-X series. The payload is also smaller than the standard YK-X series. See “2 Robot Parameters” in 1 Chapter for more details.

① Tip weight (Kg)	Robot parameter No. 1
② Z-axis acceleration coefficient (%)	Axis parameter No. 1
③ + soft limit	Axis parameter No. 2 (No. 3)
④ Max. motor rotation (rpm)	Axis parameter No. 35 (No. 37)
⑤ stroke end origin torque (%)	Axis parameter No. 47

Numbers in parentheses are parameter numbers used for the RCX40 robot controller.

⚠CAUTION

Setting the above parameters incorrectly may cause an early end to drive section service life or breakage, and lead to residual vibration during positioning.

MEMO

Introduction

This instruction manual is intended for the following models of YAMAHA YK-X Long Z series robots.

Model	Maximum Z-axis stroke
YK250X, YK350X, YK400X	300mm
YK500X, YK600X	600mm
YK700X, YK800X, YK1000X	800mm

This instruction manual describes the safety measures, handling, adjustment and maintenance of YK-X Long Z series robots for correct, safe and effective use. Be sure to read this manual carefully before installing the robot. Even after you have read this manual, keep it in a safe and convenient place for future reference.

This instruction manual should be used with the robot and considered an integral part of it. When the robot is moved, transferred or sold, send this manual to the new user along with the robot. Be sure to explain to the new user the need to read through this manual.

For the operating or maintenance procedures not described in this manual, please refer to the separate "YK-X Series User's Manual". Also refer to the "YK-X Series User's Manual" for precautions and warranty. If there are any obscure points in handling the robot, be sure to contact YAMAHA sales office or dealer.

For details on specific operation and programming of the robot, refer to the separate "YAMAHA Robot Controller User's Manual".

NOTES

- The contents of this manual are subject to change without prior notice.
- Information furnished by YAMAHA in this manual is believed to be reliable. However, if you find any part unclear or inaccurate in this manual, please contact YAMAHA sales office or dealer.

YAMAHA MOTOR CO., LTD.
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CHAPTER 1

Functions

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MEMO

1 Robot Manipulator

Fig.1-1 and Fig.1-2 on the subsequent pages show part names and functions of each robot model.

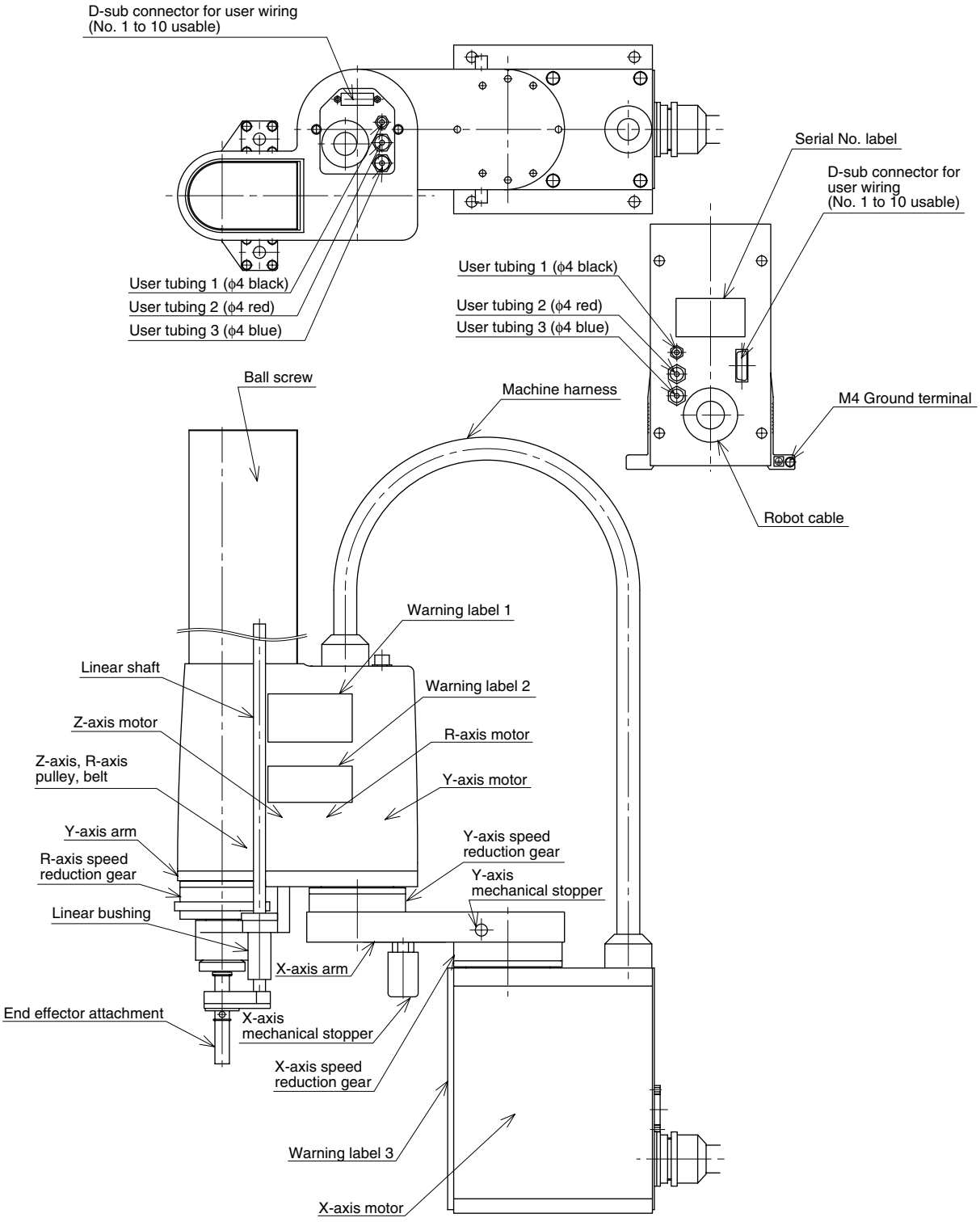


Fig. 1-1 YK250X to YK400X Long Z model

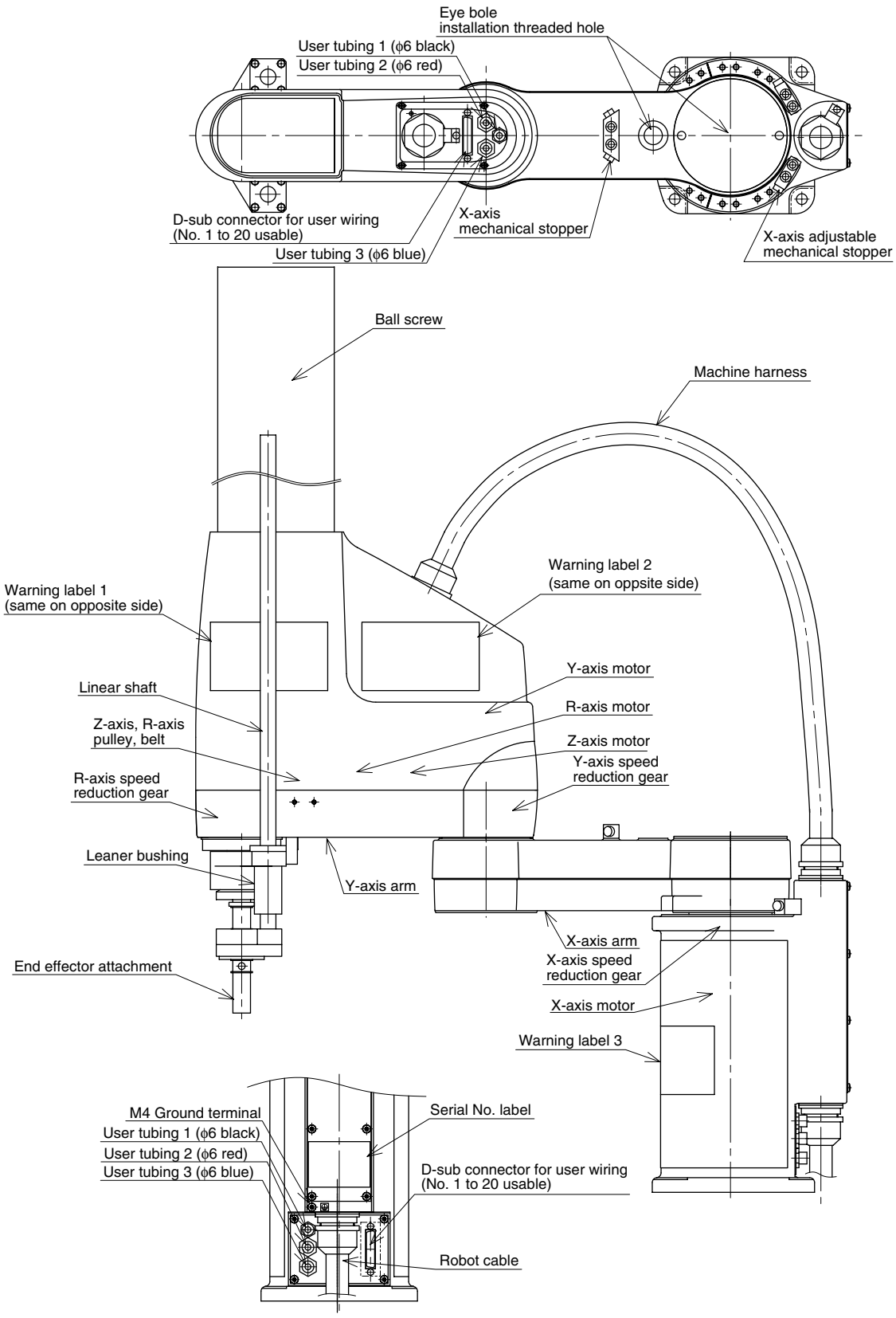


Fig. 1-2 YK500X to YK1000X Long Z model

2 Robot Parameters

2-1 Parameters when shipped

Some parameters on the Long Z series robot have been changed from the standard specifications prior to shipping.
Information on parameter changes and cautions when using the robot with these changed robot parameters are listed below.

To purchasers of this robot

At this time our sincere thanks for your purchase of our robot. This robot is custom-manufactured so some parameter settings are different from the standard robot. Be sure to check the following points before attempting to use the robot.

Operating precautions

Make a backup of the parameters. (When using YAMAHA communication software VIP, POPCOM or optional memory card (S-DRCX) or FDD unit (QRCX). For further information, see the instruction manual that comes with the unit.

⚠CAUTION

Resetting the parameters deletes previous parameter entries. If necessary download the backup parameters again.

Parameter changes

Parameters have been changed as follows. Blank portions indicate standard specifications are used.

(1) YK250X to YK400X (300mm Z-axis stroke models)

① Robot No.

Set to the following robot No. of the standard robots with the same arm length.

Robot No.	Robot model
2100	YK250X
2101	YK350X
2102	YK400X

② Axis setting changes

Parameter No.	Name	Changes			
		X-axis	Y-axis	Z-axis	R-axis
PRM2 (PRM3)	+ soft limit			409600	
PRM35 (PRM37)	Max. motor rotation			3000	
PRM47	Stroke end origin torque			75	

Numbers in parentheses are parameter numbers used for the RCX40 robot controller.

(2) YK500X, YK600X (600mm Z-axis stroke models)

① Robot No.

Set to the following robot No. of the standard robots of Z300 stroke with the same arm length.

Robot No.	Robot model
2110	YK500X Z300
2111	YK600X Z300

② Axis setting changes

Parameter No.	Name	Changes			
		X-axis	Y-axis	Z-axis	R-axis
PRM2 (PRM3)	+ soft limit			491520	
PRM35 (PRM37)	Max. motor rotation			3000	
PRM47	stroke end origin torque			55	

Numbers in parentheses are parameter numbers used for the RCX40 robot controller.

(3) YK700X, YK800X, YK1000X (800mm Z-axis stroke models)

① Robot No.

Set to the following robot No. of the standard robots of Z400 stroke with the same arm length.

Robot No.	Robot model
2112	YK700X Z400
2113	YK800X Z400
2114	YK1000X Z400

② Axis setting changes

Parameter No.	Name	Changes			
		X-axis	Y-axis	Z-axis	R-axis
PRM2 (PRM3)	+ soft limit			655360	
PRM35 (PRM37)	Max. motor rotation			3000	
PRM47	stroke end origin torque			65	

Numbers in parentheses are parameter numbers used for the RCX40 robot controller.

NOTE

(1) When the Z-axis stroke is shorter than the maximum stroke, change the Z axis + software limit to a figure matching the shorter stroke.
(2) Change the stroke end origin point torque after performing the following operations. These parameters cannot be changed unless the robot is in emergency stop.

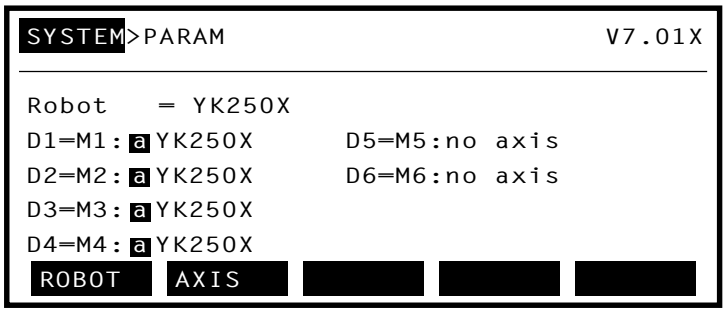
⚠CAUTION

To ensure safety, most RCX40 controller or QRCX controller parameters listed in this manual cannot be changed or referred to by normal operating procedures. So changing these parameters by mistake could have major catastrophic effects on robot operation and place the operator in dangerous situations. Use plenty of caution when you must change these parameters. Change these parameters by either of two methods listed next.

[Operation]

Operating from the MPB

1) Press the [F 1] key (Parameter) while in SYSTEM mode.
   The parameter mode screen appears.



Parameter mode

2) While holding down the [UPPER] key, simultaneously press the [F 10] key (Password) and then the [P] key.

3) Press the [⏎] key to finish entries.

The above procedure allows you to change the special parameters just as in normal parameter setting.

Changing the parameter backup file

You can change parameters by directly entering figures in the parameter backup file with an editor and then loading these figures into the controller.
A minimum of safety protective functions (such as disabling entry on certain robot types or setting upper/lower limits on entries) are in effect when operating from the MPB to ensure safety, but there are no such restrictions when changing from the parameter backup file so use caution.

⚠CAUTION

Please acknowledge beforehand that YAMAHA can accept no liability from problems arising due to changes made to parameters that are not specified in this manual.

2-2 Other parameter settings

The Long Z series robot has a longer Z-axis stroke than the standard YK-X series so the Y-axis arm tip has greater weight. Therefore, the following parameter settings must be changed from the standard YK-X series settings. The payload for the Long Z series is also smaller than the standard YK-X series.

(1) YK250X to YK400X

① Axis setting changes

Parameter No.	Name	Setting (Kg)
PRM1	Tip weight	Load mass +1

② Z-axis setting change

Parameter No.	Name	Setting (%)
PRM1	Acceleration coefficient M3	Make settings as shown in the table below according to Z-axis stroke and load mass.

Load mass (Kg)	Acceleration coefficient M3 (%)		
	200mm Z-axis	250mm Z-axis	300mm Z-axis
0	100	100	100
1	80	80	70
2	70	70	60

(2) YK500X, YK600X

① Axis setting changes

Parameter No.	Name	Setting (Kg)
PRM1	Tip weight	Load mass +5

② Z-axis setting change

Parameter No.	Name	Setting (%)
PRM1	Acceleration coefficient M3	Make settings as shown in the table below according to Z-axis stroke and load mass.

Load mass (Kg)	Acceleration coefficient M3 (%)		
	400mm Z-axis	500mm Z-axis	600mm Z-axis
0	70	70	70
1	70	70	70
2	70	70	70
3	70	70	70
4	70	60	50
5	80	70	40

(3)YK700X to YK1000X

① Axis setting changes

Parameter No.	Name	Setting (Kg)
PRM1	Tip weight	Make settings as shown in the table below according to Z-axis storke.

Z-axis storke	Tip weight (kg)
500mm	Load mass +5
600mm	Load mass +5
700mm	Load mass +6
800mm	Load mass +7

② Z-axis setting change

Parameter No.	Name	Setting (%)
PRM1	Acceleration coefficient M3	Make settings as shown in the table below according to Z-axis stroke and load mass.

Load mass (Kg)	Acceleration coefficient M3 (%)			
	500mm Z-axis	600mm Z-axis	700mm Z-axis	800mm Z-axis
0	100	100	80	70
1	90	80	60	60
2	70	60	60	60
3	70	50	50	50
4	60	50	40	40
5	60	60	40	40
6	60	60	40	30
7	70	50	40	30
8	70	70	50	40
9	80	70	50	40
10	80	80	60	50
11	80	70	60	60
12	80	70	70	60
13	100	80	80	80
14	100	100	100	Not usable
15	100	100	Not usable	Not usable

⚠CAUTION

Setting the above parameters incorrectly may cause an early end to drive section service life or breakage, and lead to residual vibration during positioning.

2-3 Cautions when using Long Z series robots

① When the center-of-gravity of the load is offset from the R-axis center, the acceleration on the X-axis, Y-axis and R-axis must be lowered according to the description of "6-1 R-axis tolerable moment of inertia and acceleration coefficient" in Chapter 6 in the standard YAMAHA YK-X series SCARA robot user's manual.

② Residual vibration may sometimes occur in Z-axis operation when the X-axis, Y-axis or R-axis rotates while the Z-axis is lowered or when load center-of-gravity is offset. If such vibration occurs, lower the acceleration coefficients on each axis.

③ Vibration may occur during movement at low speed due to the Z-axis position. Change the speed and acceleration to suppress this vibration.

④ Residual vibration may occur when the arch position is increased by arch motion.

CHAPTER 2

Installation

1 Moving the robot 2-1

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1 Moving the robot

⚠ WARNING

Serious injury may occur if the robot falls and pins someone under it.

- **Do not allow any part of your body to enter the area beneath the robot during work.**
- **Always wear a helmet, safety shoes and gloves during work.**

To check the mass of each robot, refer to “1-1 Basic specifications” in Chapter 4. To move the Long Z series robots safely, follow the description of “2-3 Moving the robot” in the standard YAMAHA YK-X series SCARA robot user’s manual. Since the Z-axis is longer and heavier than the standard models, be careful to keep balance when moving the robot.

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Adjustment

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2 Adjusting the Z-axis machine reference 3-2

3 Removing the robot covers 3-3

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3-2 Removing the Y-axis arm upper cover (YK500X toYK1000X) 3-7

MEMO

1 Origin position sticker attachment position

Refer to the origin sticker locations below only when the mark method is used for absolute reset.

An origin position sticker is attached to the robot arm joint sections when shipped from the factory. The R-axis origin sticker positions for the YK500X to YK1000X are different from standard models as shown in Fig. 3-1. Refer to this drawing when performing absolute reset or when changing the origin position and attaching a new origin position sticker. The attachment position for the X-axis and the Y-axis origin position stickers is the same as for standard models, so refer to Figs. 4-5 to 4-7 in Chapter 4 of the standard YAMAHA YK-X series SCARA robot user's manual.

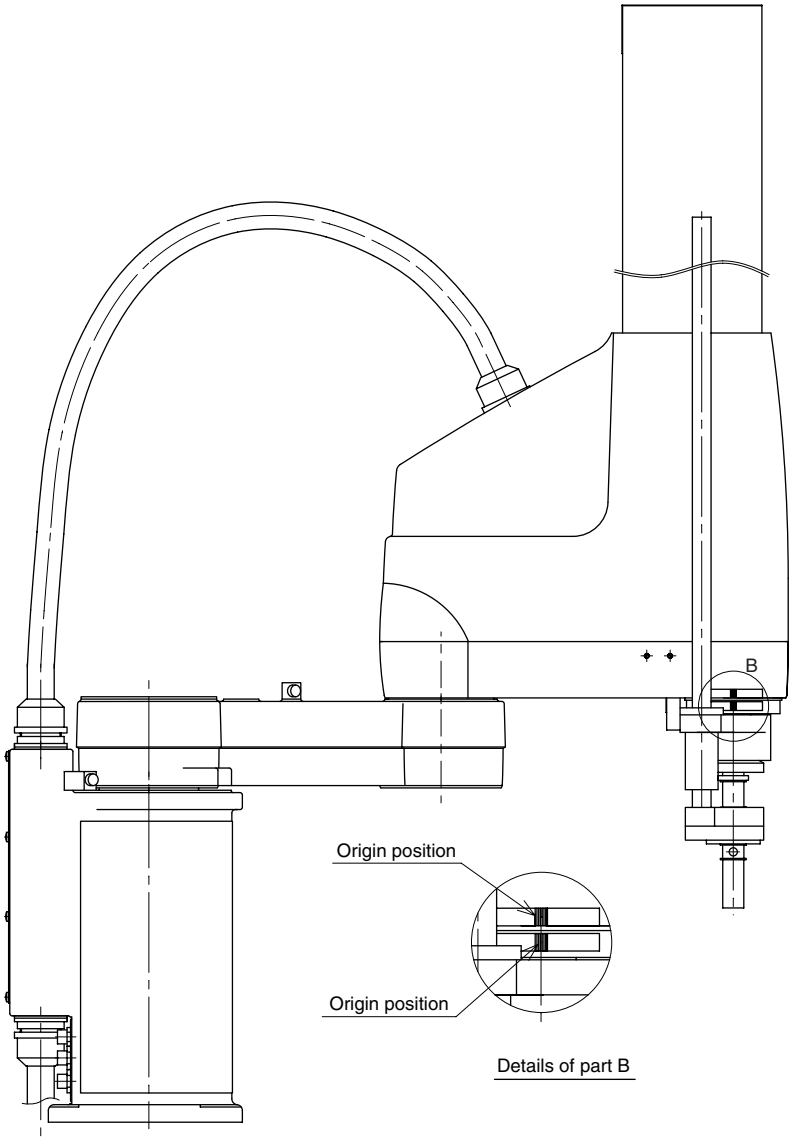


Fig. 3-1

2 Adjusting the Z-axis machine reference

Refer to the caution items and procedures for standard models in “3-3 Adjusting the Z-axis machine reference” of the standard YAMAHA YK-X series SCARA robot user’s manual. Adjustment position L is shown in Fig. 3-2. Dimension L is listed in Table 3-1.
See “4 3 Removing the robot covers” for details on detaching and reinstalling the robot covers.

Table 3-1

Robot model	L
YK250X, YK350X, YK400X	10mm
YK500X, YK600X	15mm
YK700X, YK800X, YK1000X	15mm

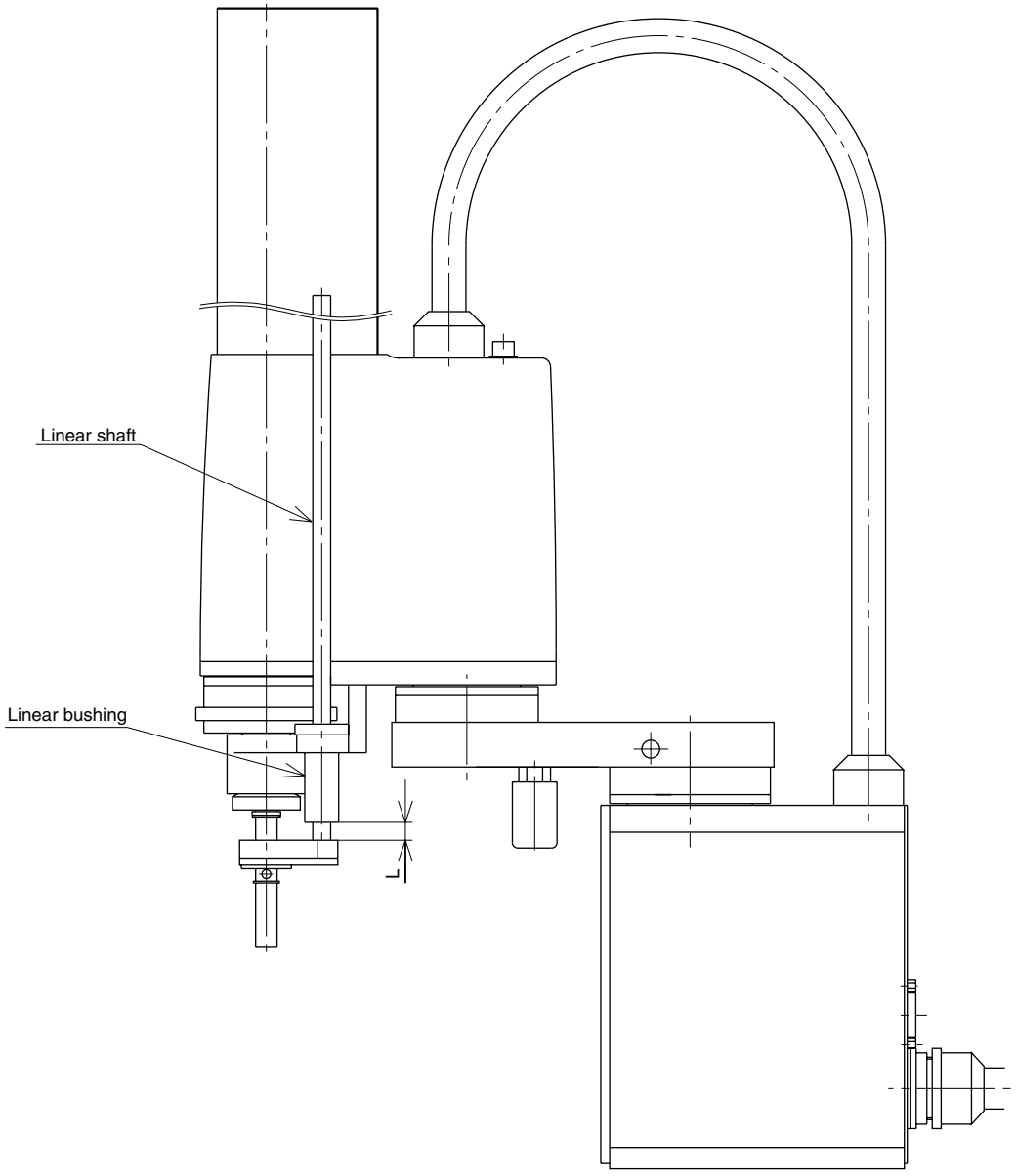


Fig. 3-2

3 Removing the robot covers

Use the following procedure when detaching and reinstalling the robot covers during maintenance of the robot.

1) Prepare the required tools
   • Hex wrench set
   • Phillips-head screwdrivers

2) Turn off the controller.

3) Place a sign showing “Work in progress!” to prevent others from operating the controller switch.

4) Enter the safeguard enclosure.

5) Remove the particular covers while referring to Figs. 3-3 to 3-5. The screws used to attach each cover are shown in Tables 3-2 to 3-4. (When using maximum Z stroke specs.)

6) See Sections 3-1 and 3-2 for instructions on removing the Y-axis arm upper cover.

Table 3-2 YK250X, YK350X, YK400X (See Fig 3-3.)

Cover name	Screw No.	Screw size	Q'ty
Base rear cover	①	M4×6	4
Base front cover	②	M4×6	4
Y-axis arm upper cover	③	M3×6 M3 washer	2
	④	M3×10	2
	⑤	M3×16	2
Cover 1	⑥	M4×6	4
Cover 2	⑦	M4×6	6

Table 3-3 YK500X, YK600X (See Fig 3-4.)

Cover name	Screw No.	Screw size	Q'ty
Base rear cover 1	①	M4×6	8
Base rear cover 2	②	M4×6	4
Base front cover	③	M4×6	8
Y-axis arm top cover	④	M4×6	2
Y-axis arm upper cover	⑤	M3×6 M3 Washer	4
	⑥	M3×50	4
Y-axis arm under cover	⑦	M4×6	4
Cover 1	⑧	M4×6	3
Cover 2	⑨	M4×6	2
Cover 3	⑩	M4×6	6

Table 3-4 YK700X to YK1000X (See Fig 3-5.)

Cover name	Screw No.	Screw size	Q'ty
Base rear cover 1	①	M4×6	8
Base rear cover 2	②	M4×6	4
Base front cover	③	M4×6	4
Y-axis arm top cover	④	M4×8	2
Y-axis arm upper cover	⑤	M4×6 M4 Washer	4
	⑥	M4×50	4
Y-axis arm under cover	⑦	M4×6	4
Cover 1	⑧	M4×6	5
Cover 2	⑨	M4×6	8
Cover 3	⑩	M4×6	8

3-1 Removing the Y-axis arm upper cover (YK250X toYK400X)

While referring to Fig. 3-3, remove the Y-axis upper cover as follows.

1) Turn off the controller.

2) Place a sign showing “Work in progress!” to prevent others from operating the controller switch.

3) Remove the base front cover and the base rear cover.

4) Remove the machine harness FG wire round terminals. (2 pcs)

5) Detach the user air tubes 1 to 3 from the air coupler.
The color of the air tube matches the air coupler color.

6) Remove the YM, ZM, YP, ZP, RP, ZBK, FG and IO connectors. Remove the D-sub connector from the cover.

7) Loosen the cap connector on the base and remove it from the base.

8) Draw out the machine harness from the hole in the base.
Take special care at this time not to damage the connectors, wiring and tubing.

9) Remove the screws securing the Y-axis arm upper cover.

10) Remove the Y-axis arm upper cover and perform the necessary maintenance.

11) Use the reverse of the above procedure when reinstalling the cover.
Be sure not to forget to reinstall the FG wire, reconnect the air tubes and clamp the harness. The cap connector that clamps the harness should be tight properly so that the harness will not slide around even if twisted.

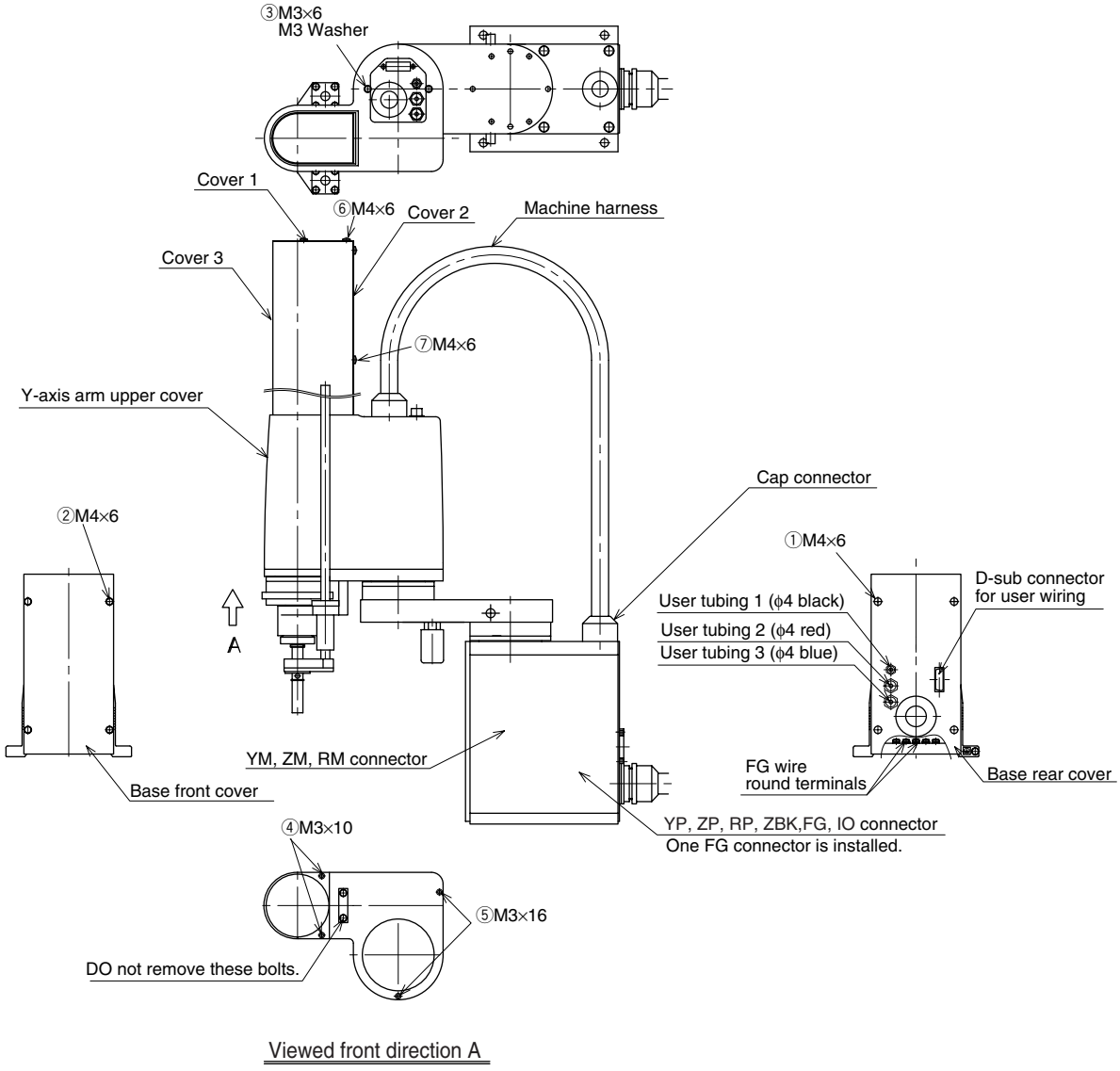

③M3×6
M3 Washer
Cover 1
⑥M4×6
Cover 2
Machine harness
Cover 3
⑦M4×6
Y-axis arm upper cover
Cap connector
②M4×6
①M4×6
D-sub connector
for user wiring
User tubing 1 (ϕ4 black)
User tubing 2 (ϕ4 red)
User tubing 3 (ϕ4 blue)
A
YM, ZM, RM connector
FG wire
round terminals
Base rear cover
Base front cover
④M3×10
YP, ZP, RP, ZBK,FG, IO connector
One FG connector is installed.
⑤M3×16
DO not remove these bolts.
Viewed front direction A

Fig. 3-3

3-2 Removing the Y-axis arm upper cover (YK500X toYK1000X)

While referring to Figs. 3-4 and 3-5, remove the Y-axis upper cover as follows.

1) Turn off the controller.

2) Place a sign showing “Work in progress!” to prevent others from operating the controller switch.

3) Remove the base front cover and base rear cover 1.

4) Remove the machine harness FG wire round terminals. (2 pcs)

5) Detach the user air tubes 1 to 3 from the air coupler.
The color of the air tube matches the air coupler color.

6) Remove the YM, ZM, YP, ZP, RP, ZBK, FG and IO connectors. Remove the D-sub connector from the cover.

7) Loosen the cap connector on the base and remove it from the base.

8) Draw out the machine harness from the hole in the base.
Take special care at this time not to damage the connectors, wiring and tubing.

9) Remove the screws securing the Y-axis arm upper cover.

10) Remove the Y-axis arm upper cover and perform the necessary maintenance.

11) Use the reverse of the above procedure when reinstalling the cover.
Be sure not to forget to reinstall the FG wire, reconnect the air tubes and clamp the harness. The cap connector that clamps the harness should be tight properly so that the harness will not slide around even if twisted.

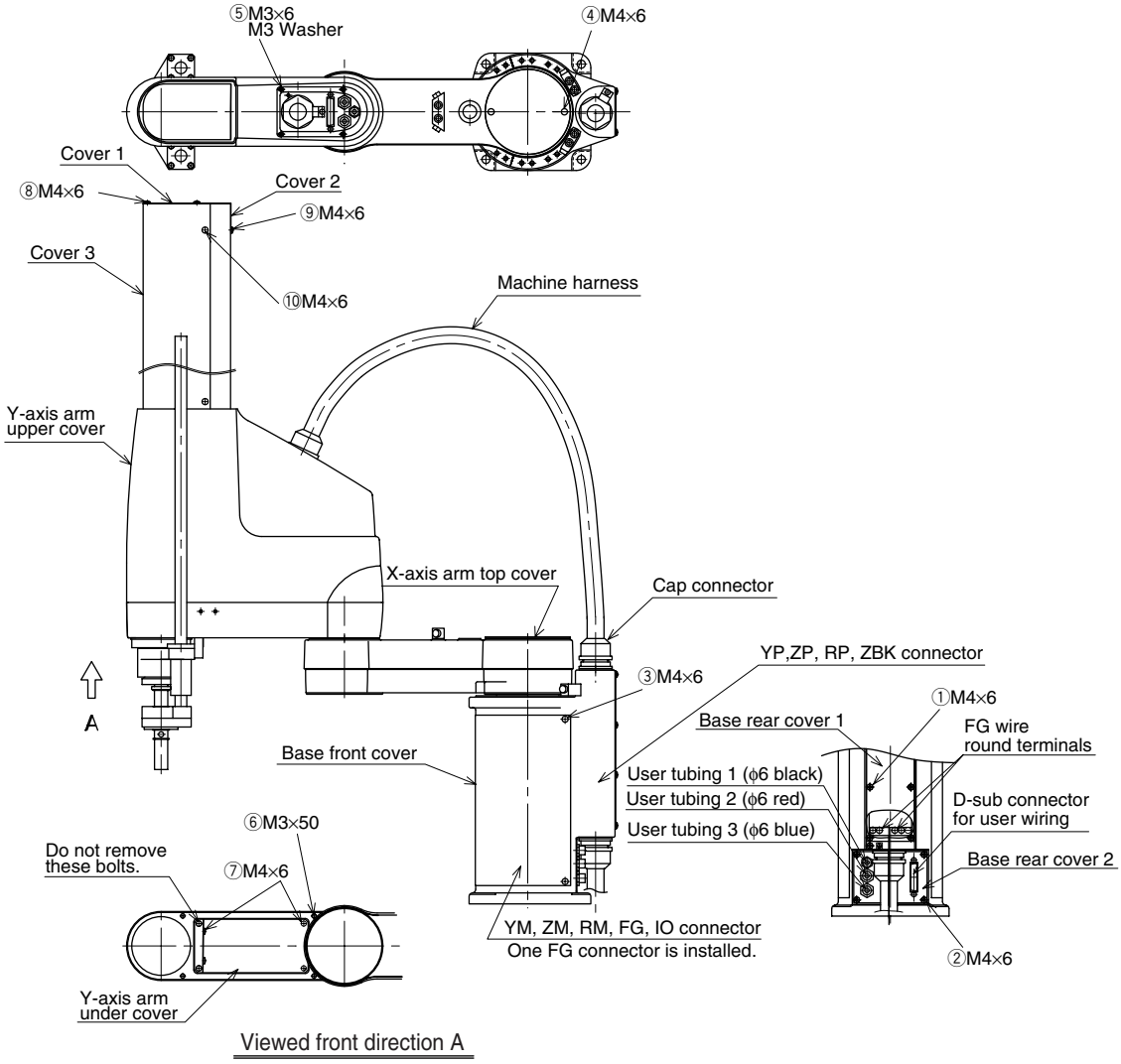

⑤M3×6
M3 Washer
④M4×6
Cover 1
Cover 2
⑧M4×6
⑨M4×6
Cover 3
⑩M4×6
Machine harness
Y-axis arm
upper cover
X-axis arm top cover
Cap connector
YP,ZP, RP, ZBK connector
③M4×6
A
①M4×6
Base rear cover 1
FG wire
round terminals
Base front cover
User tubing 1 (ϕ6 black)
User tubing 2 (ϕ6 red)
User tubing 3 (ϕ6 blue)
D-sub connector
for user wiring
⑥M3×50
Do not remove
these bolts.
⑦M4×6
Base rear cover 2
YM, ZM, RM, FG, IO connector
One FG connector is installed.
②M4×6
Y-axis arm
under cover
Viewed front direction A

Fig. 3-4

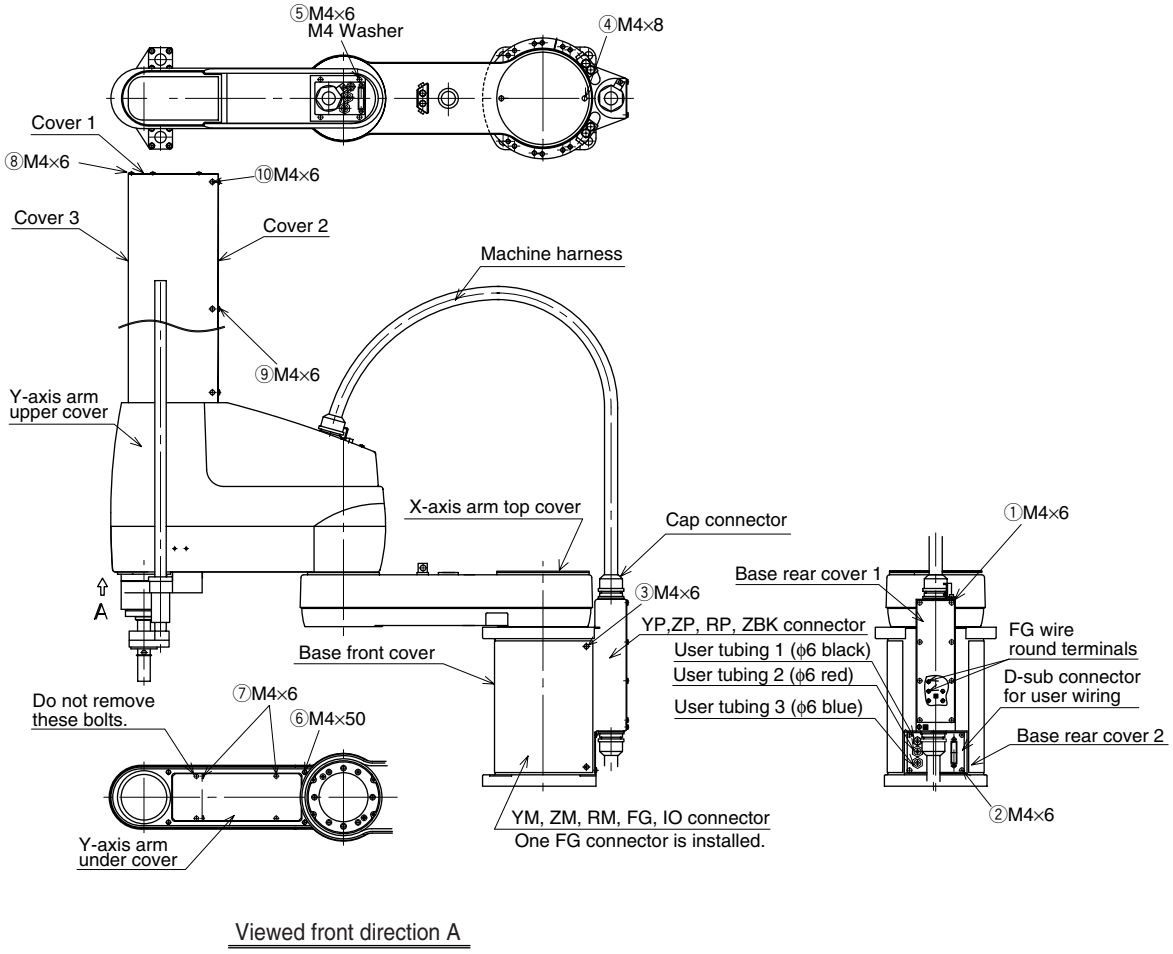

⑤M4×6
M4 Washer
④M4×8
Cover 1
⑧M4×6
⑩M4×6
Cover 3
Cover 2
Machine harness
⑨M4×6
Y-axis arm
upper cover
X-axis arm top cover
Cap connector
①M4×6
Base rear cover 1
③M4×6
YP,ZP, RP, ZBK connector
FG wire
round terminals
User tubing 1 (ϕ6 black)
User tubing 2 (ϕ6 red)
D-sub connector
for user wiring
User tubing 3 (ϕ6 blue)
Base rear cover 2
Base front cover
A
Do not remove
these bolts.
⑦M4×6
⑥M4×50
YM, ZM, RM, FG, IO connector
One FG connector is installed.
②M4×6
Y-axis arm
under cover
Viewed front direction A

Fig. 3-5

MEMO

CHAPTER 4

Periodic Inspecition

1 Greasing the Z-axis Balls Screws 4-1

MEMO

1 Greasing the Z-axis Balls Screws

Long Z-axis series robots have a longer Z-axis stroke than the standard robots. This means a long section on the Z-axis is subjected to movement at maximum speed, making for rough operating conditions. The Z-axis ball screws therefore have to be greased every 2 months.
Always use LRL3 grease (NSK) when greasing long Z-axis ball screws of the YK500 to YK1000X long Z-axis series robots.
See "4. 6 Month Inspections" in the YK-X series robot user's manual when greasing other sections.

⚠ WARNING

Grease the Z-axis ball screws every 2 months using the specified grease. Failure to apply grease might drastically shorten the ball screw service life.

MEMO

CHAPTER 5

Specifications

1 Robot Manipulator 5-1
1-1 Basic specifications 5-1
1-2 External view and dimensions 5-4

MEMO

1 Robot Manipulator

1-1 Basic specifications

Robot model			YK250X	YK350X	YK400X
Axis specification	X-axis	Arm length	125mm	225mm	225mm
		Rotation angle	±115°	±115°	±115°
	Y-axis	Arm length	125mm	125mm	175mm
		Rotation angle	±99°	±140°	±134°
	Z-axis	Stroke	300mm	300mm	300mm
	R-axis	Rotation angle	±180°	±180°	±180°
Motor		X-axis	200W	200W	200W
		Y-axis	100W	100W	100W
		Z-axis	100W	100W	100W
		R-axis	100W	100W	100W
Maximum speed		XY resultant	4.0m/s	5.0m/s	5.7m/s
		Z-axis	0.6m/s	0.6m/s	0.6m/s
		R-axis	1020°/s	1020°/s	1020°/s
Repeatability *1		XY-axis	±0.01mm	±0.01mm	±0.01mm
		Z-axis	±0.01mm	±0.01mm	±0.01mm
		R-axis	±0.005°	±0.005°	±0.005°
Payload *3			2kg	2kg	2kg
R-axis tolerable moment of inertia *2			0.05kgm² (0.5kgfcms²)		
User wiring			10	10	10
User tubing			φ4×3	φ4×3	φ4×3
Travel limit			1. Soft limit 2. Mechanical limit (XYZ axes)		
Robot cable			3.5m (option: 5m, 10m)		
Weight			16kg	16kg	16kg

*1 At constant ambient temperature (XY)

*2 There are limits to acceleration coefficient settings.

*3 There are limits to manipulator tip mass and Z-axis acceleration settings.

Robot model			YK500X	YK600X
Axis specification	X-axis	Arm length	250mm	350mm
		Rotation angle	±120°	±120°
	Y-axis	Arm length	250mm	250mm
		Rotation angle	±139°	±145°
	Z-axis	Stroke	600mm	600mm
	R-axis	Rotation angle	±180°	±180°
Motor		X-axis	400W	400W
		Y-axis	200W	200W
		Z-axis	200W	200W
		R-axis	100W	100W
Maximum speed		XY resultant	4.9m/s	5.6m/s
		Z-axis	1.0m/s	1.0m/s
		R-axis	876°/s	876°/s
Repeatability *1		XY-axis	±0.02mm	±0.02mm
		Z-axis	±0.01mm	±0.01mm
		R-axis	±0.005°	±0.005°
Payload *3			5kg	5kg
R-axis tolerable moment of inertia *2			0.12kgm^2 (1.2kgfcms^2)	
User wiring			20	20
User tubing			φ6×3	φ6×3
Travel limit			1. Soft limit 2. Mechanical limit (XYZ axes)	
Robot cable			3.5m (option: 5m, 10m)	
Weight			33kg	33kg

*1 At constant ambient temperature (XY)

*2 There are limits to acceleration coefficient settings.

*3 There are limits to manipulator tip mass and Z-axis acceleration settings.

Robot model			YK700X	YK800X	YK1000X
Axis specification	X-axis	Arm length	350mm	450mm	550mm
		Rotation angle	±120°	±120°	±120°
	Y-axis	Arm length	350mm	350mm	450mm
		Rotation angle	±145°	±145°	±145°
	Z-axis	Stroke	800mm	800mm	800mm
	R-axis	Rotation angle	±180°	±180°	±180°
Motor		X-axis	800W	800W	800W
		Y-axis	400W	400W	400W
		Z-axis	400W	400W	400W
		R-axis	200W	200W	200W
Maximum speed		XY resultant	6.2m/s	6.6m/s	6.9m/s
		Z-axis	1.0m/s	1.0m/s	1.0m/s
		R-axis	600°/s	600°/s	600°/s
Repeatability *1		XY-axis	±0.02mm	±0.02mm	±0.02mm
		Z-axis	±0.01mm	±0.01mm	±0.01mm
		R-axis	±0.005°	±0.005°	±0.005°
Payload *3			Z-axis 500mm Stroke : 15Kg Z-axis 600mm Stroke : 15Kg Z-axis 700mm Stroke : 14Kg Z-axis 800mm Stroke : 13Kg		
R-axis tolerable moment of inertia *2			0.32kgm^2 (3.2kgfcms^2)		
User wiring			20	20	20
User tubing			ϕ6×3	ϕ6×3	ϕ6×3
Travel limit			1. Soft limit 2. Mechanical limit (XYZ axes)		
Robot cable			3.5m (option: 5m, 10m)		
Weight			63kg	64kg	65kg

*1 At constant ambient temperature (XY)

*2 There are limits to acceleration coefficient settings.

*3 There are limits to manipulator tip mass and Z-axis acceleration settings.

1-2 External view and dimensions

A maximum Z-axis stroke model is illustrated below.

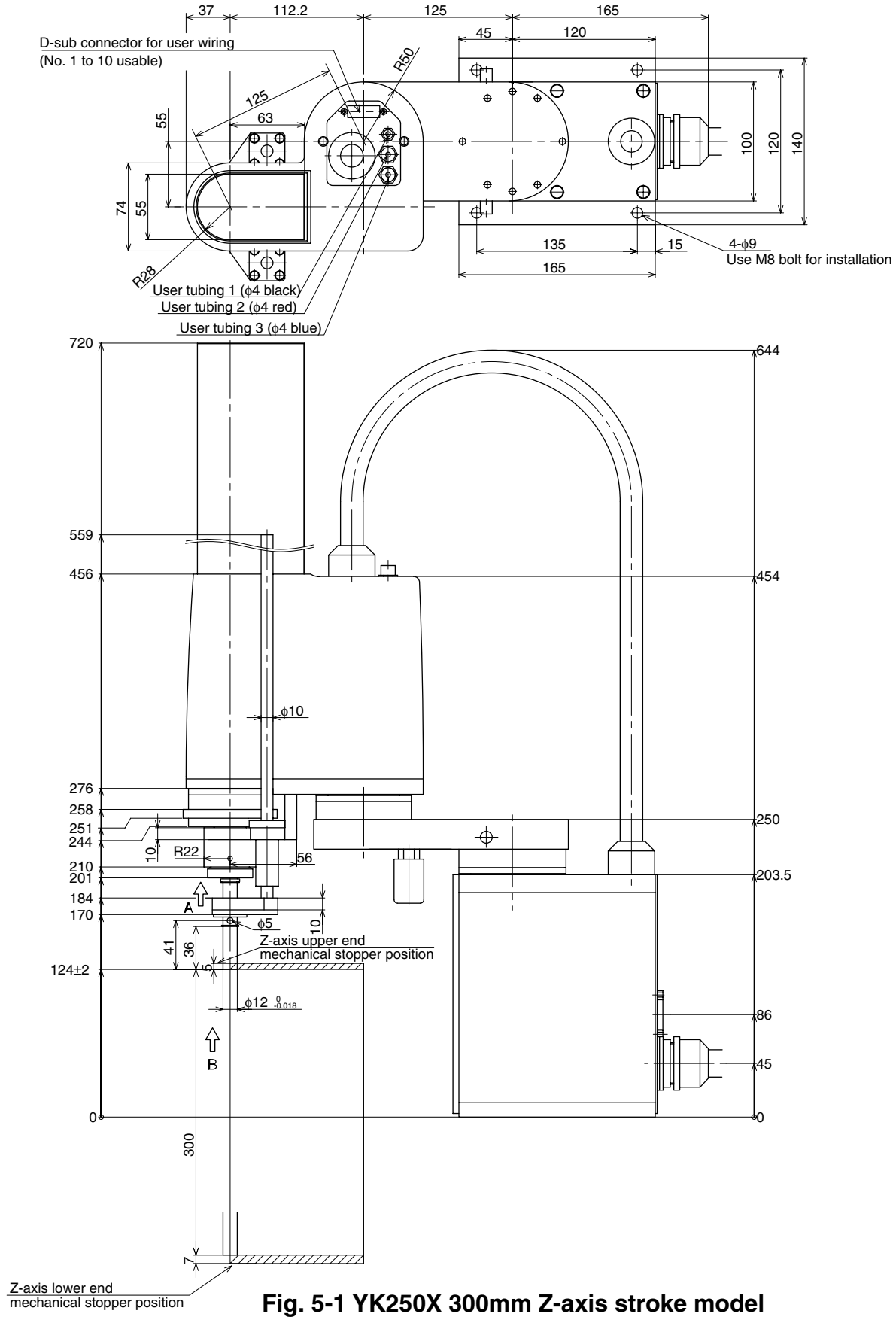
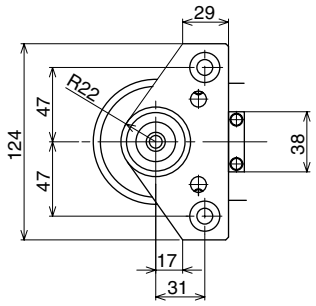
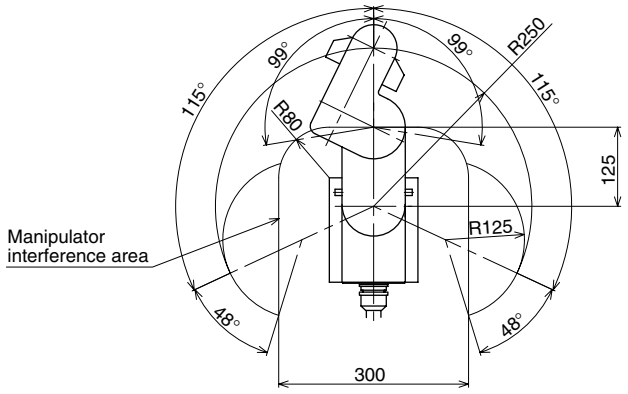


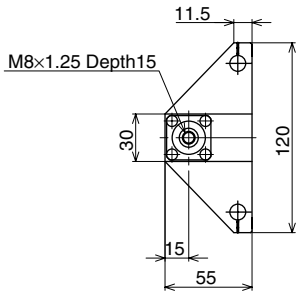
Fig. 5-1 YK250X 300mm Z-axis stroke model



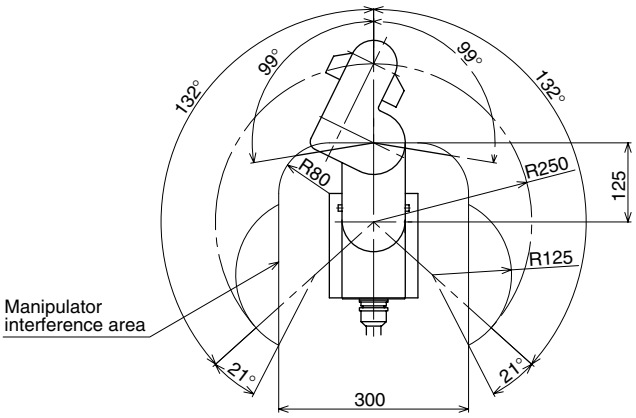
Viewed from direction A



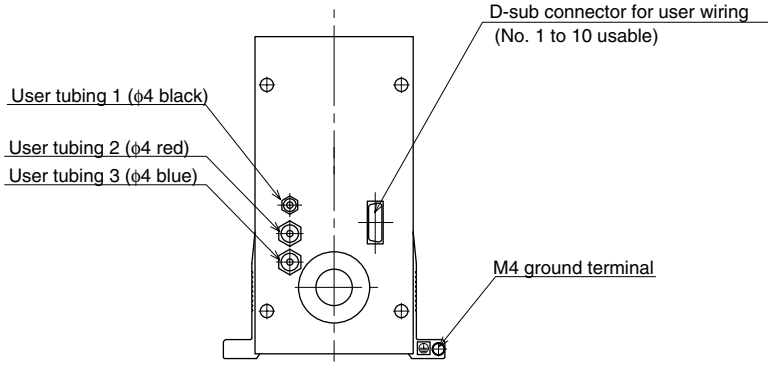
Working envelope



Viewed from direction B



X-axis mechanical stopper position



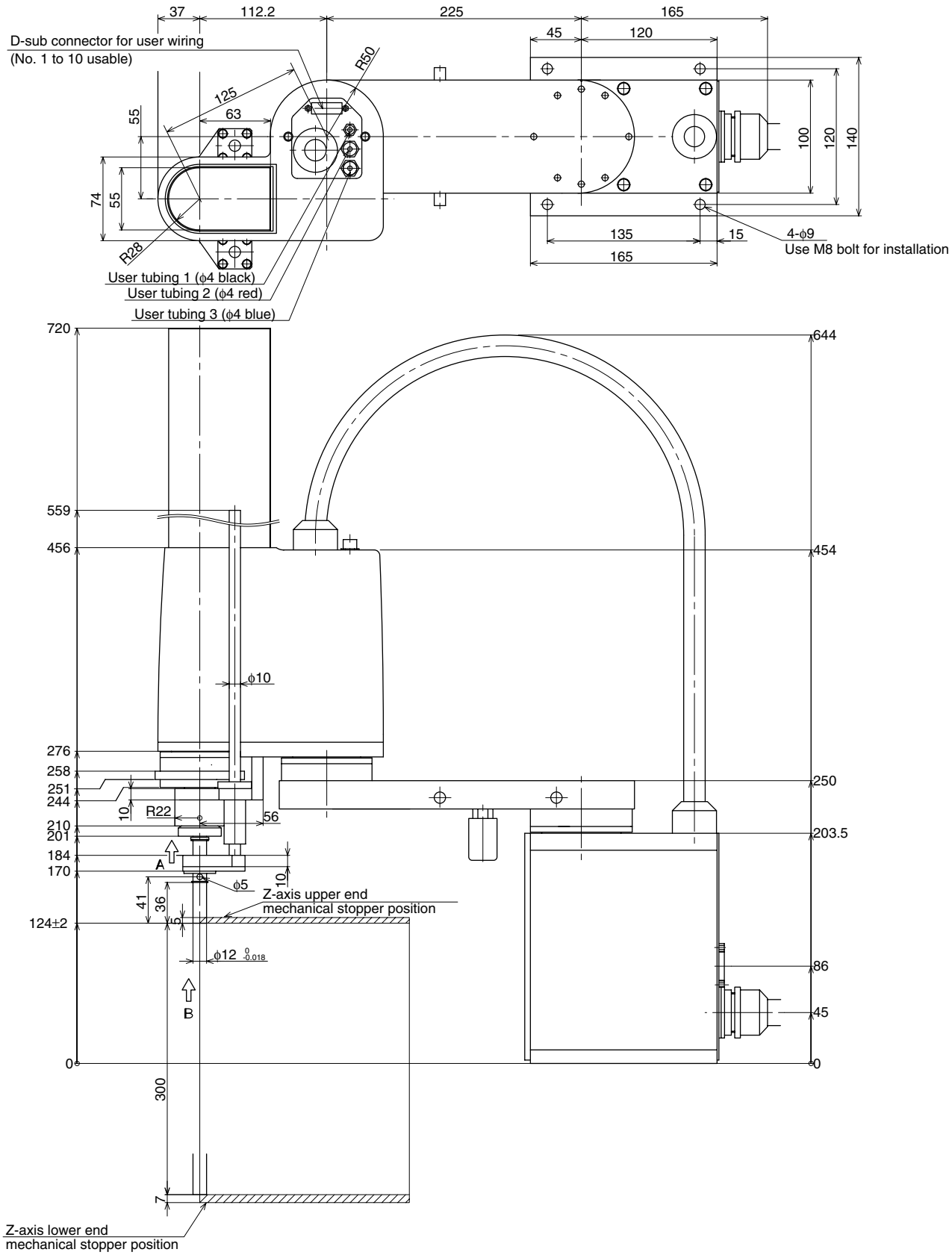
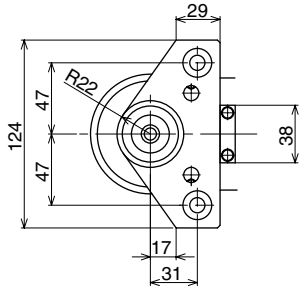
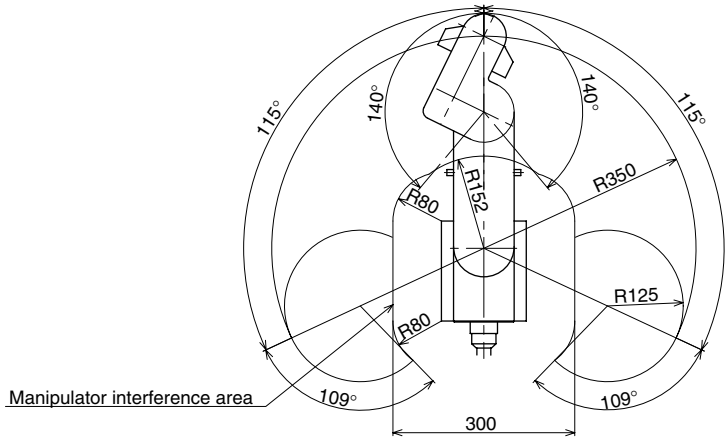


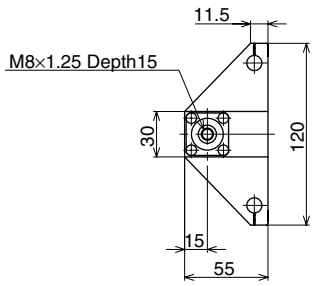
Fig. 5-2 YK350X 300mm Z-axis stroke model



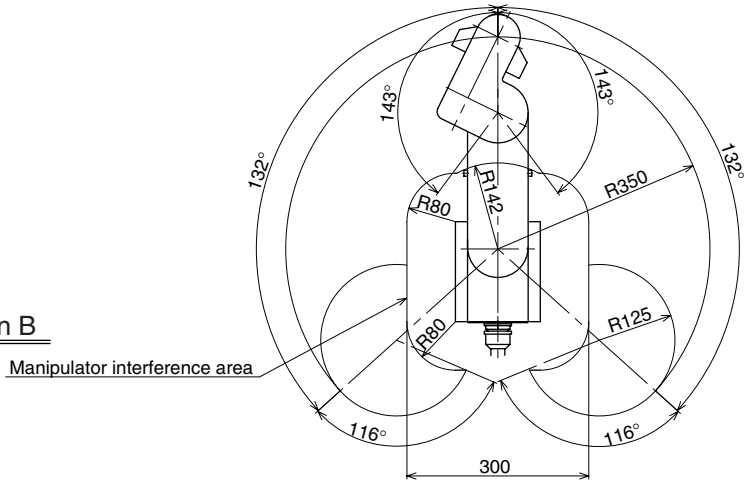
Viewed from direction A



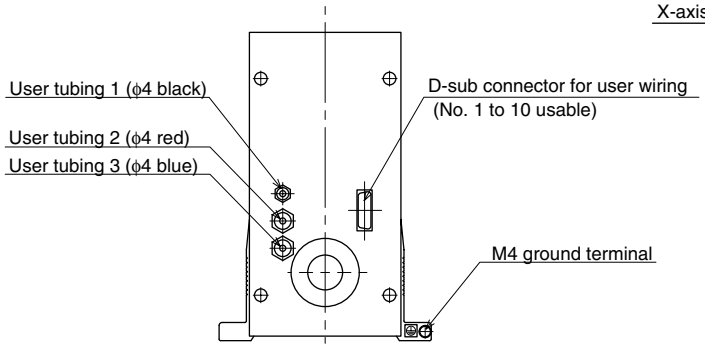
Working envelope



Viewed from direction B



X-axis mechanical stopper position



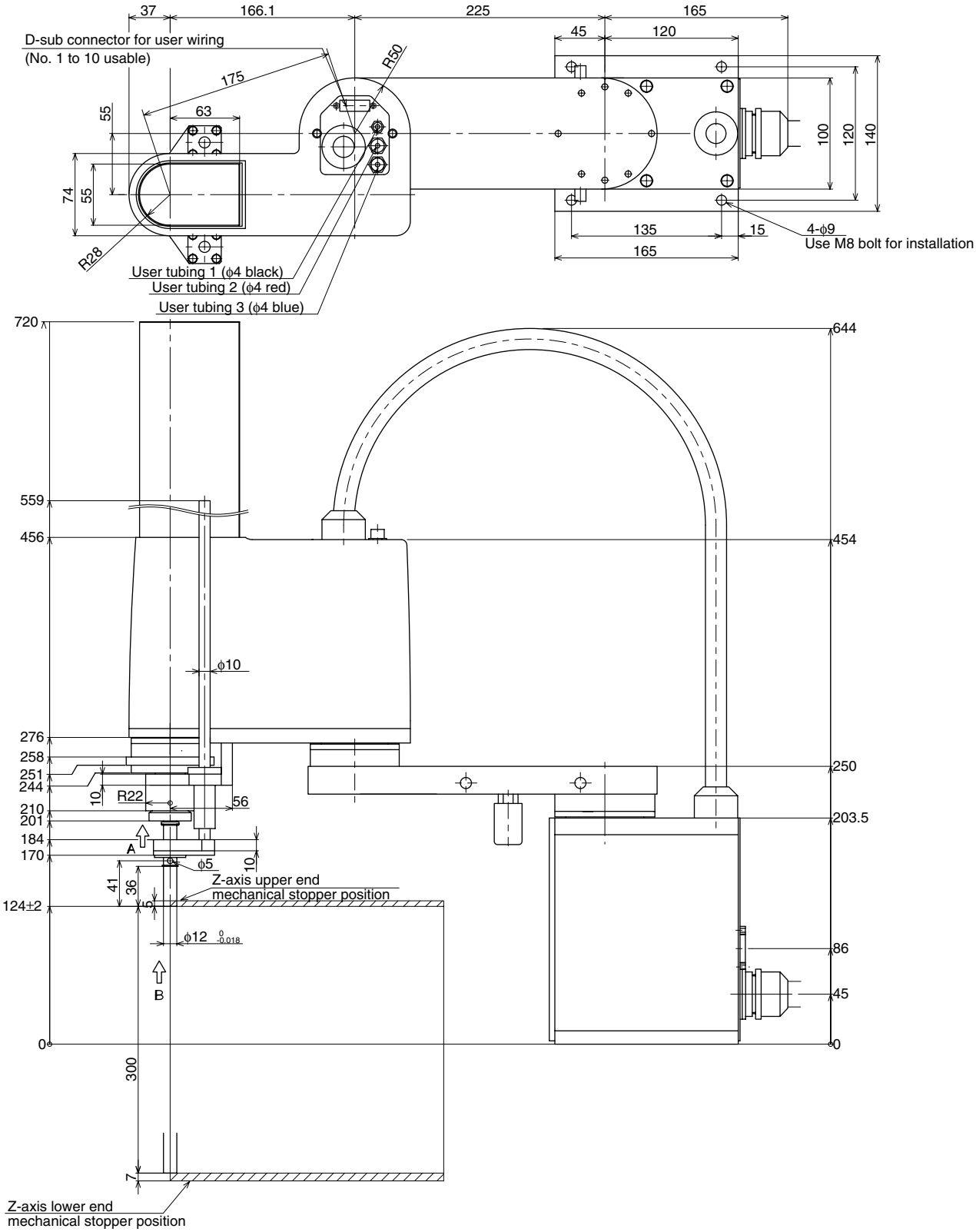
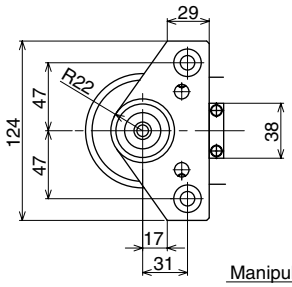
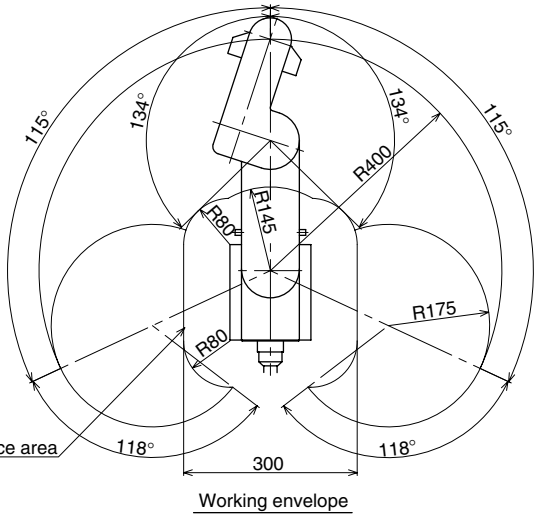


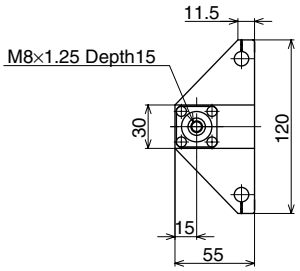
Fig. 5-3 YK400X 300mm Z-axis stroke model



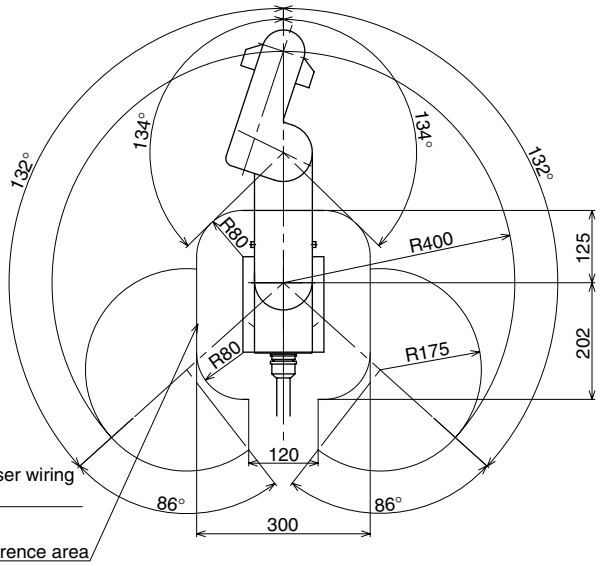
Viewed from direction A



Working envelope

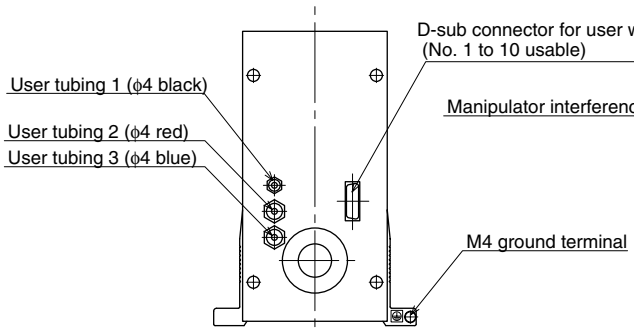


Viewed from direction B



Manipulator interference area

X-axis mechanical stopper position



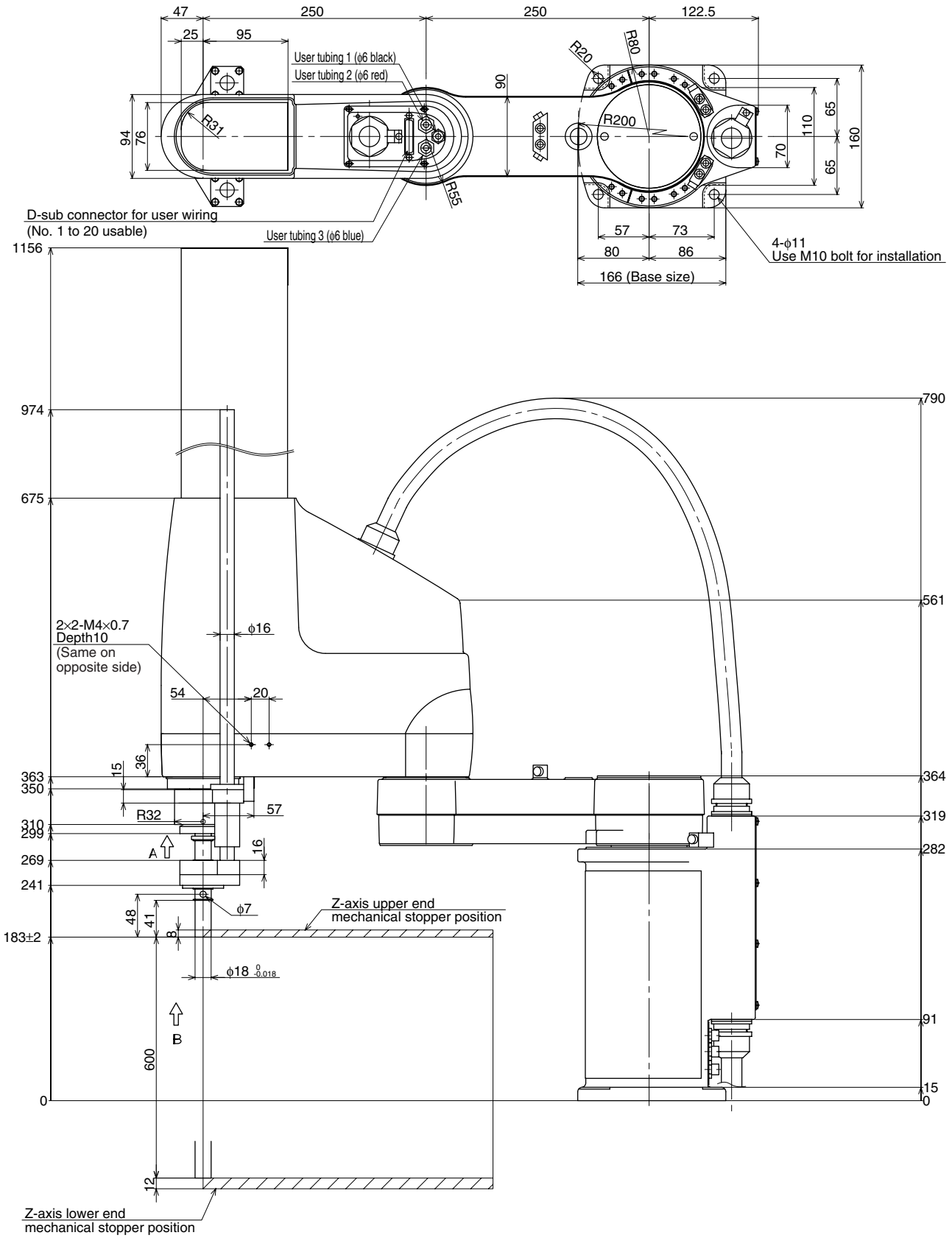
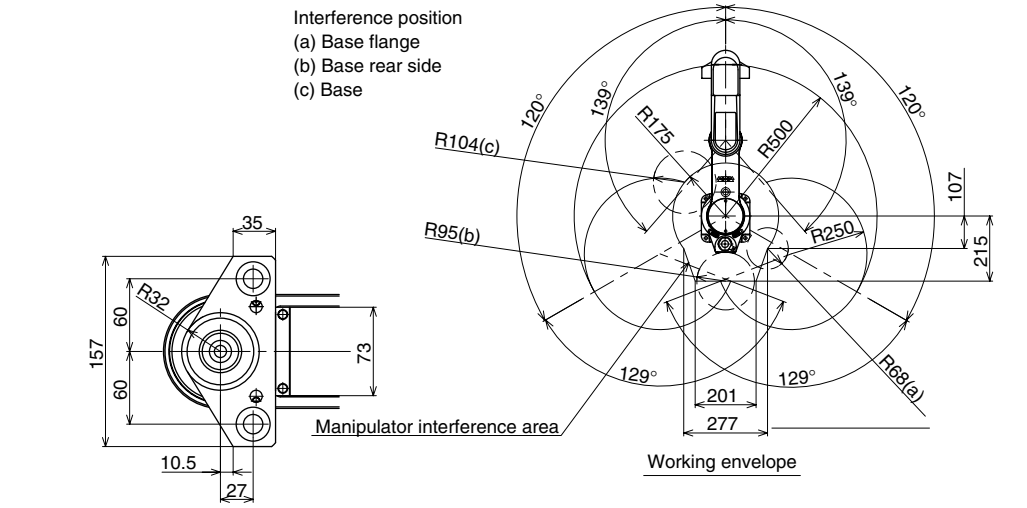
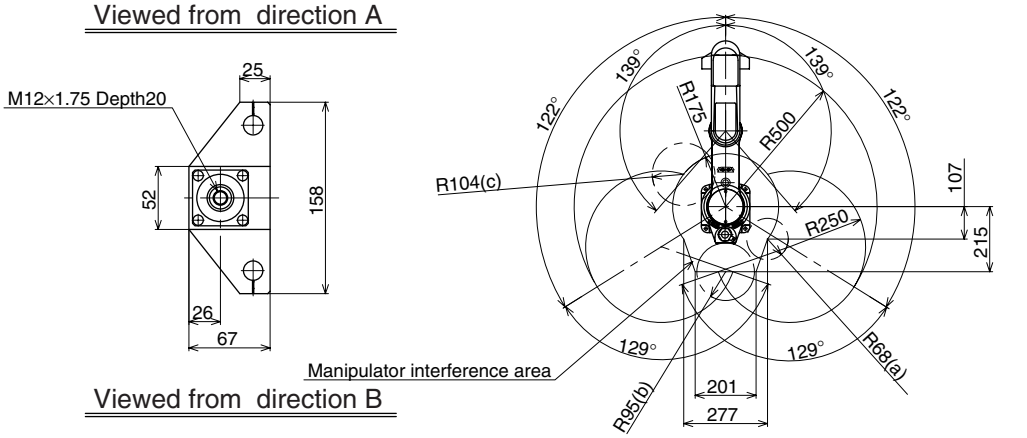


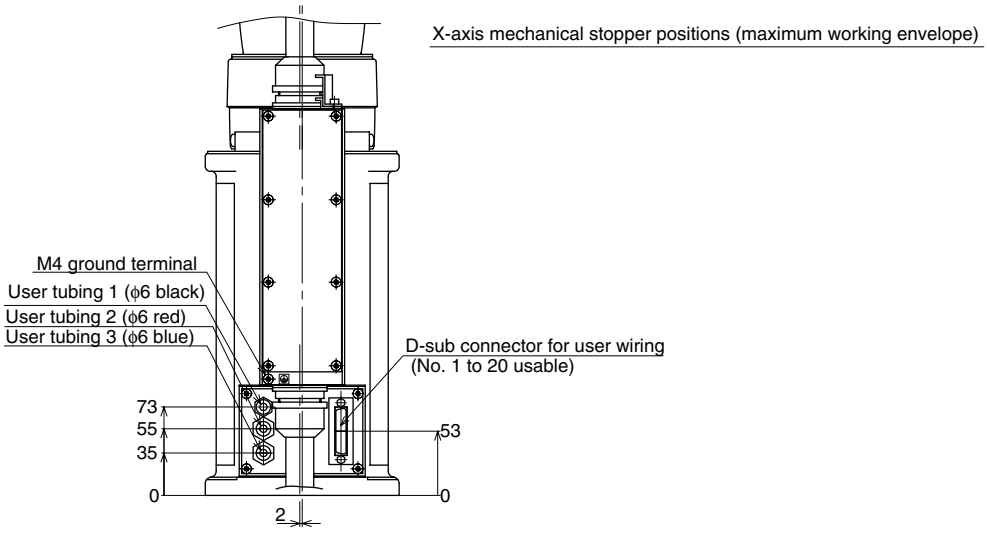
Fig. 5-4 YK500X 600mm Z-axis stroke model



Viewed from direction A



Viewed from direction B



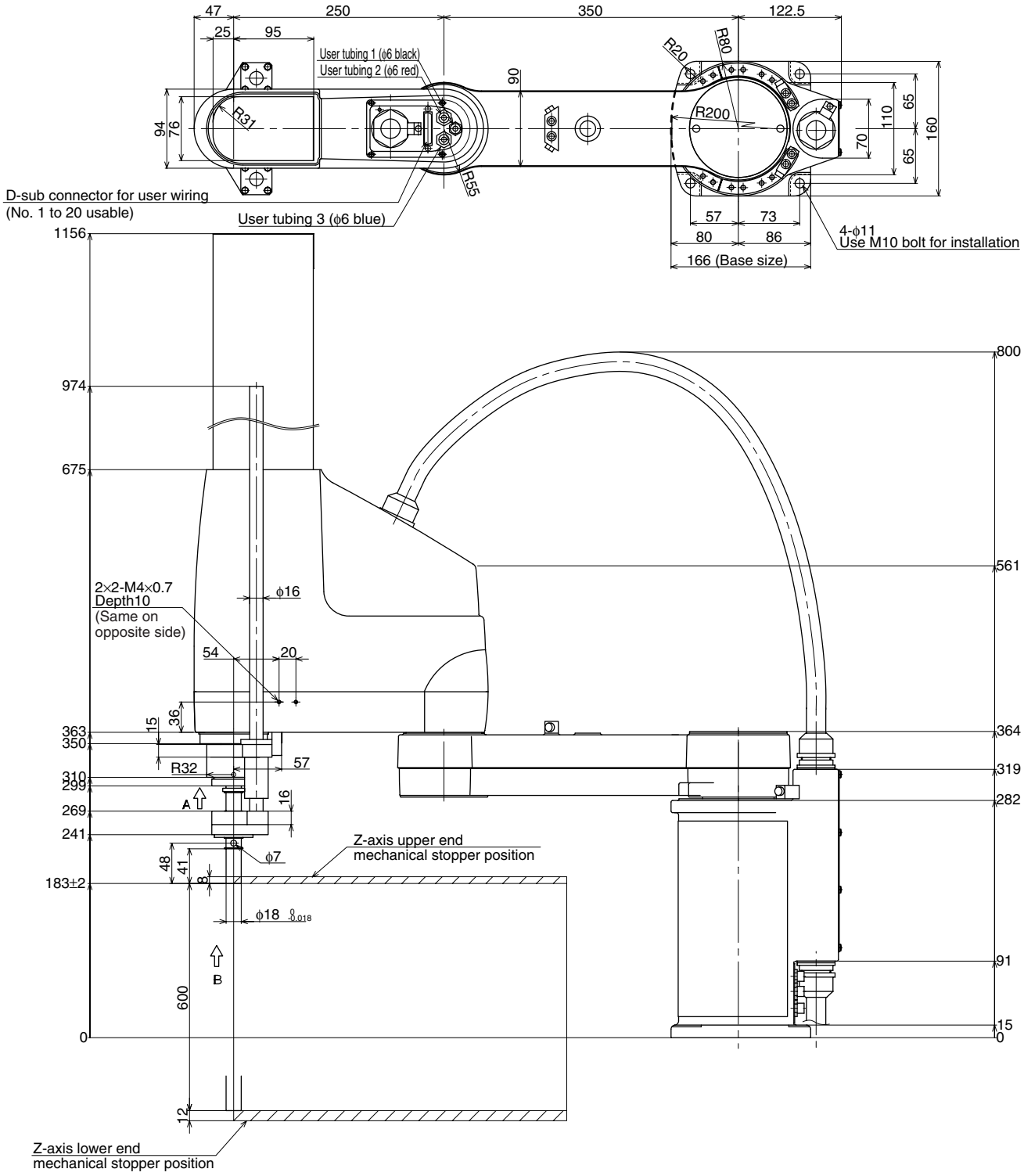
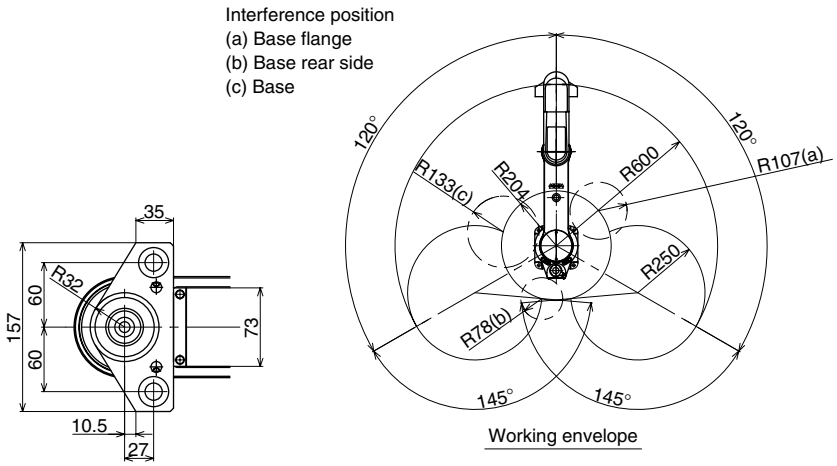
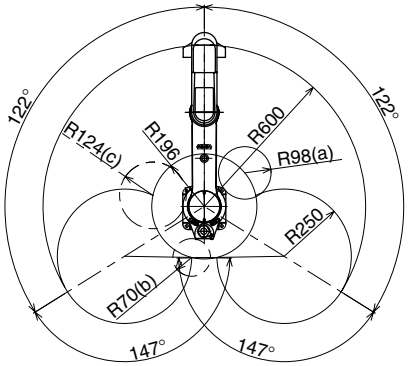


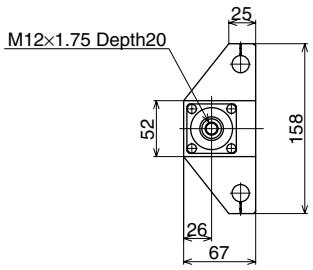
Fig. 5-5 YK600X 600mm Z-axis stroke model



Working envelope

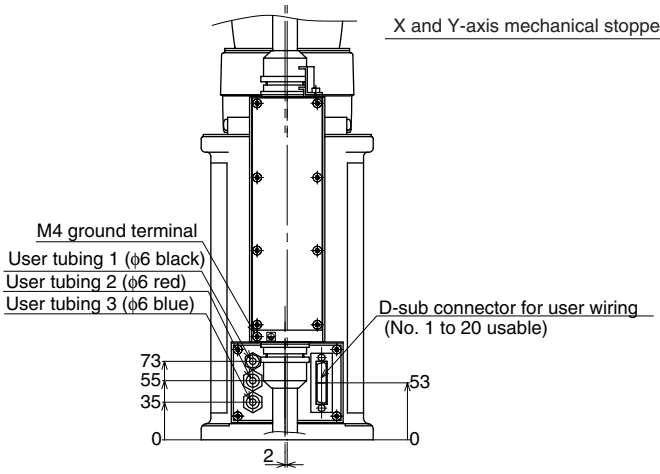
Viewed from direction A





Viewed from direction B

X and Y-axis mechanical stopper positions (maximum working envelope)



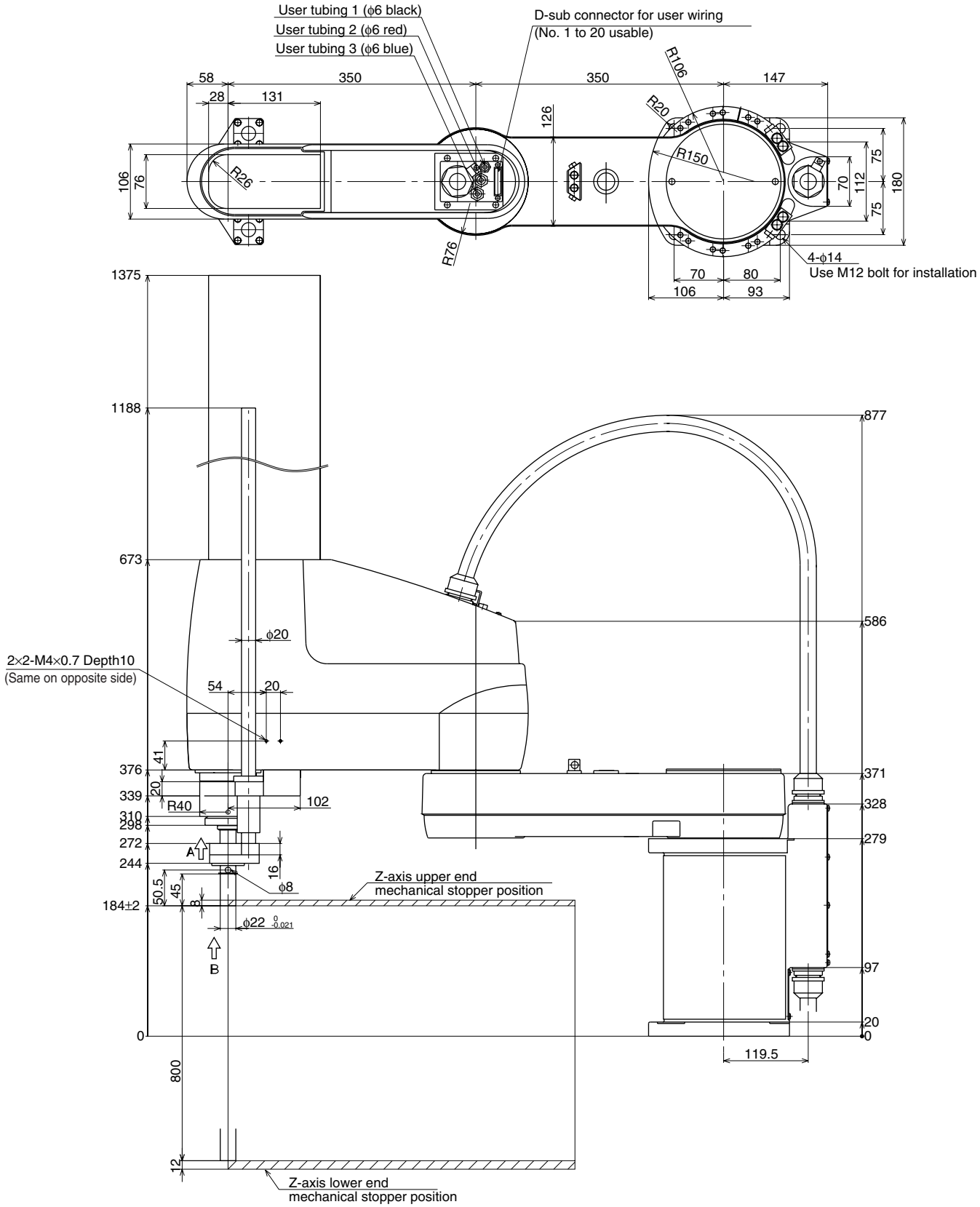
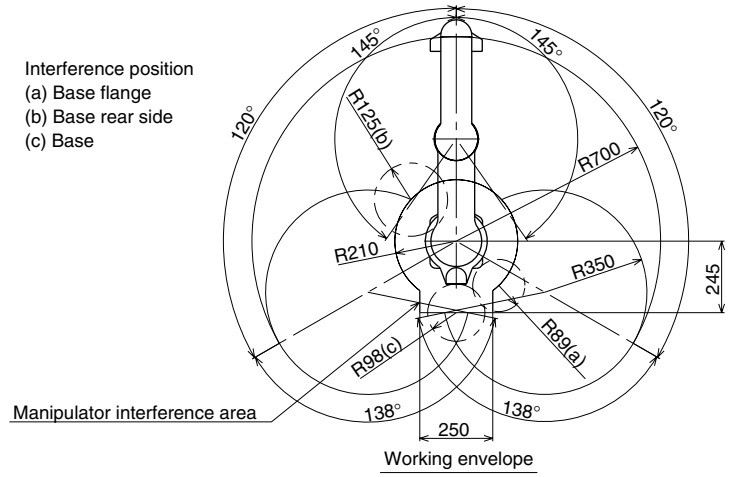
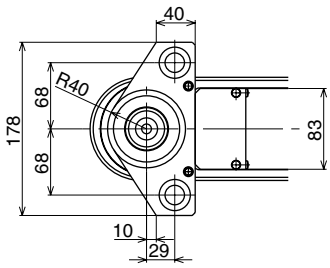
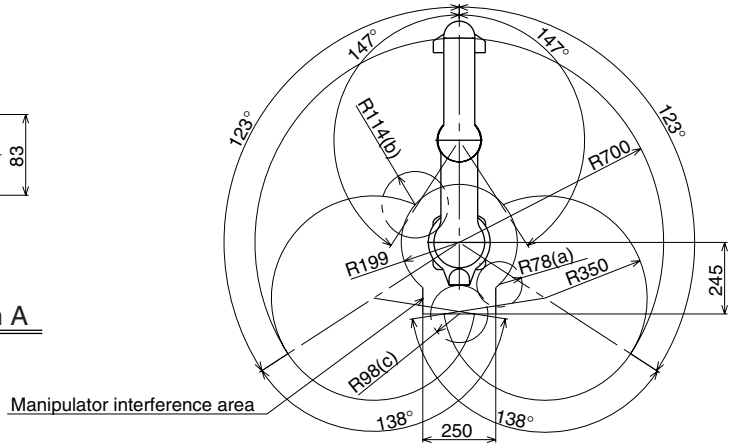


Fig. 5-6 YK700X 800mm Z-axis stroke model

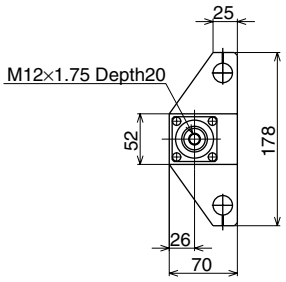




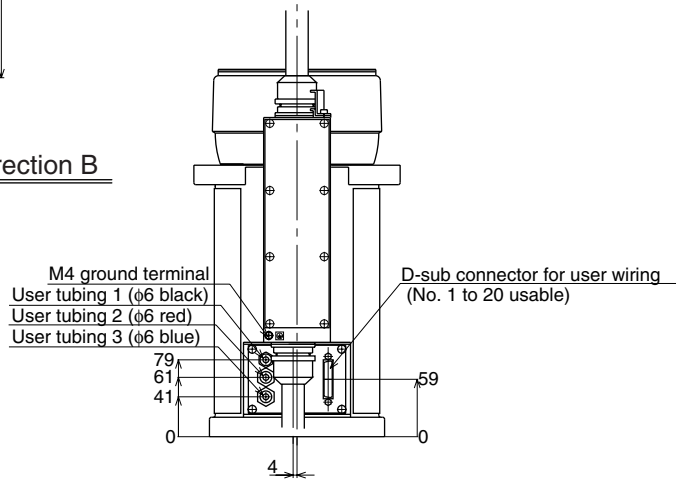
Viewed from direction A



X and Y-axis mechanical stopper positions (maximum working envelope)



Viewed from direction B



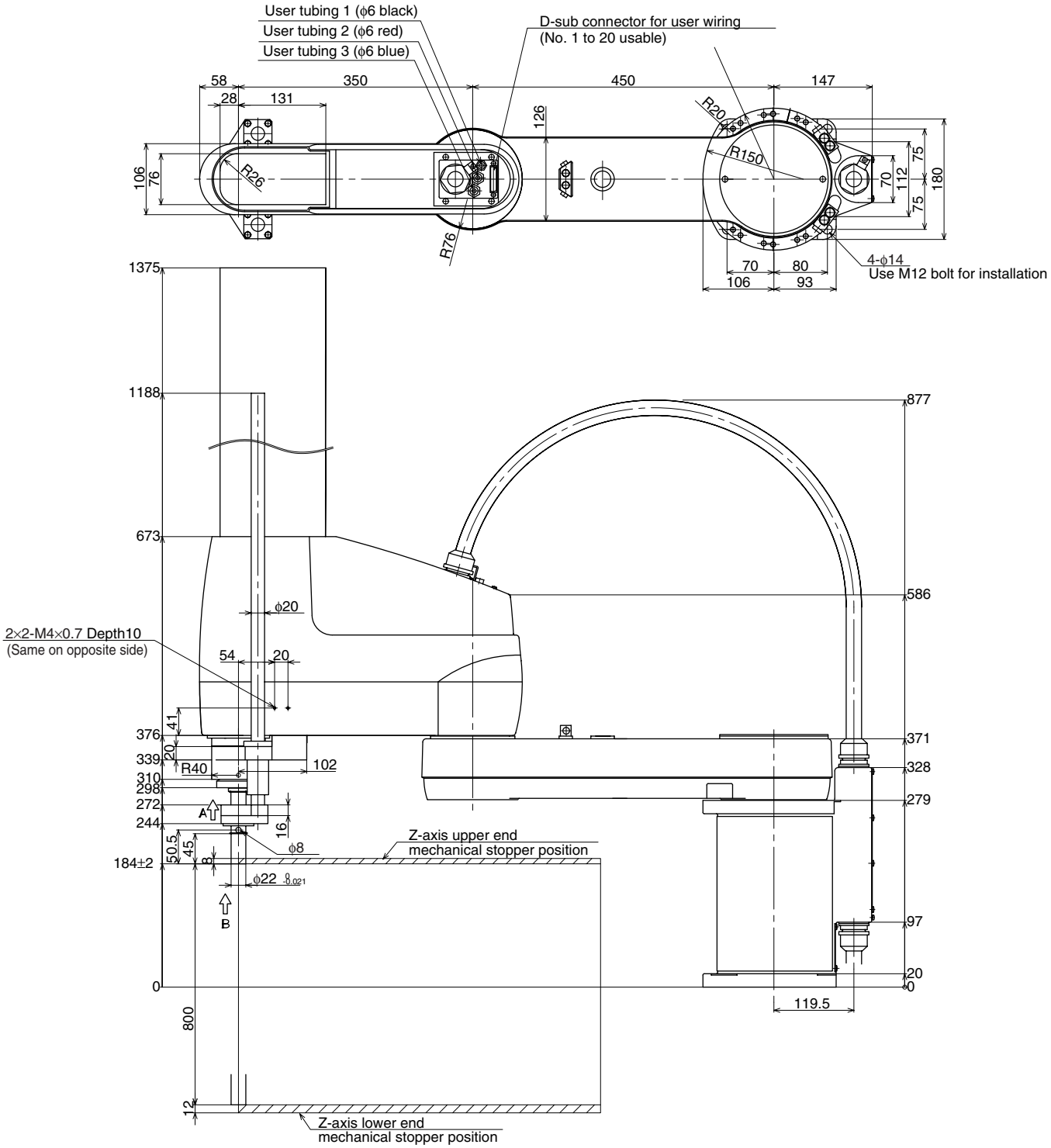
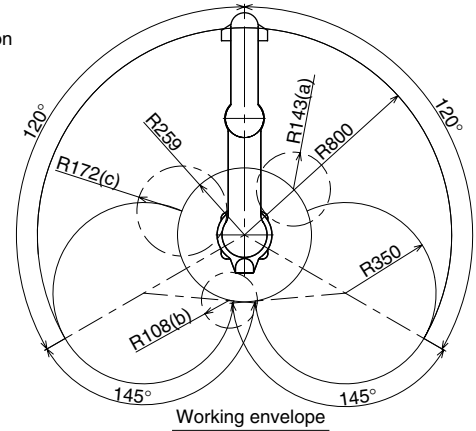
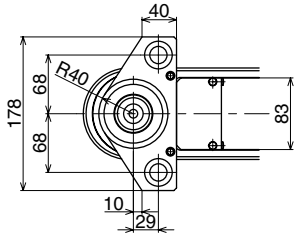


Fig. 5-7 YK800X 800mm Z-axis stroke model

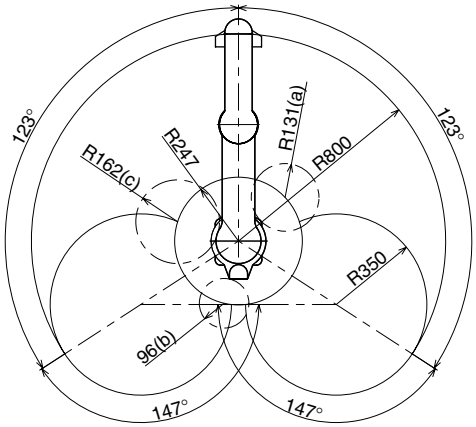
Interference position
(a) Base flange
(b) Base rear side
(c) Base



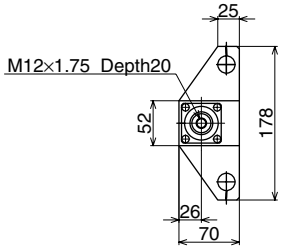
Working envelope



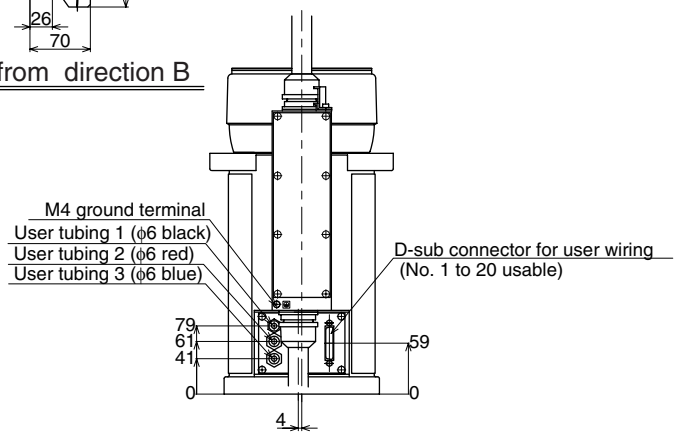
Viewed from direction A



X and Y-axis mechanical stopper positions (maximum working envelope)



Viewed from direction B



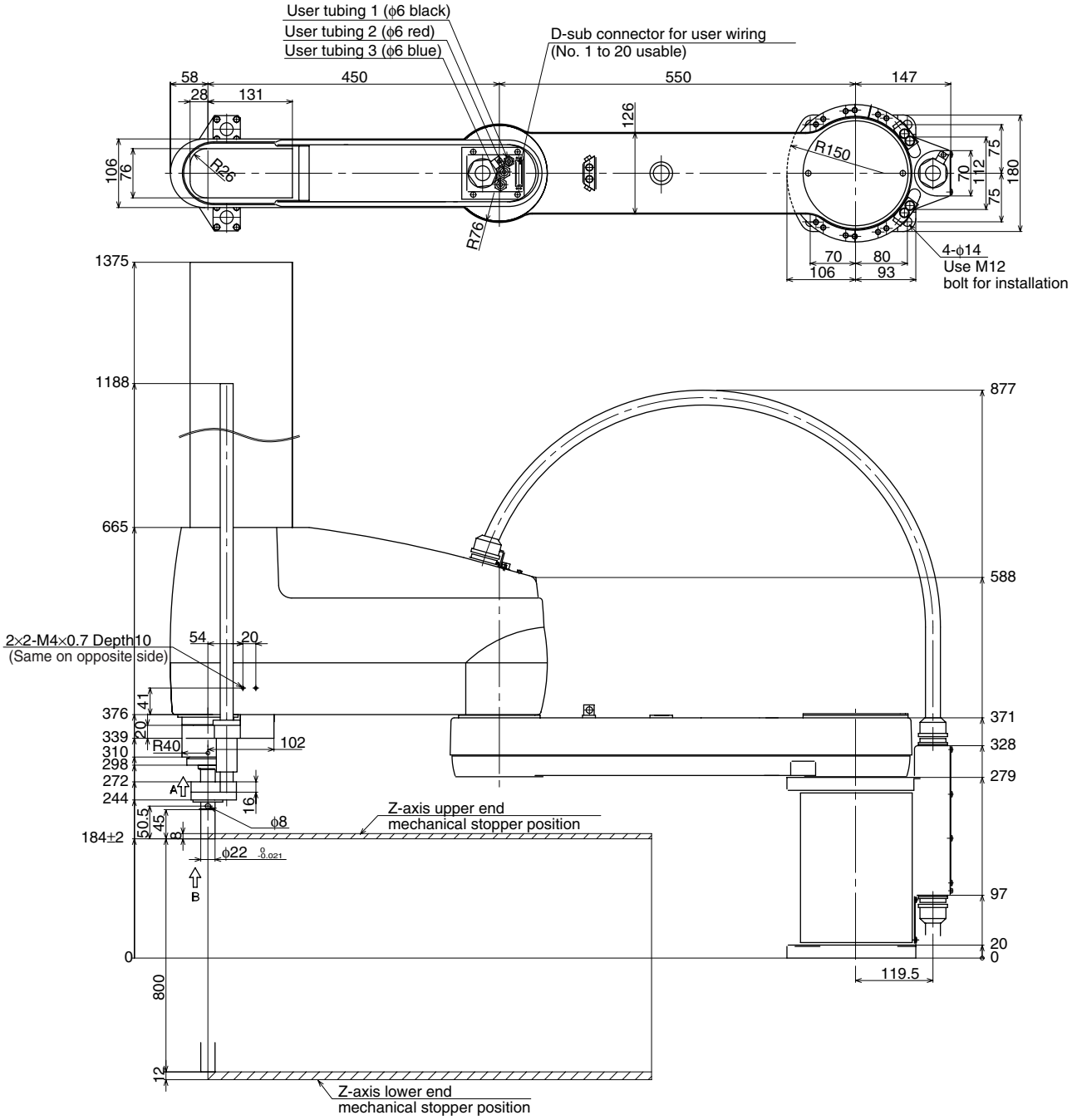
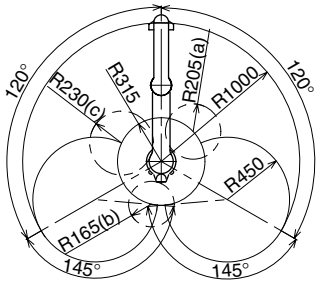
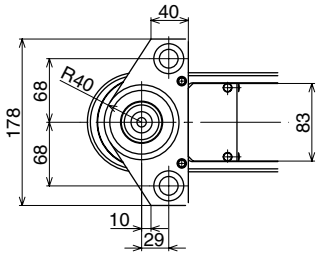


Fig. 5-8 YK1000X 800mm Z-axis stroke model

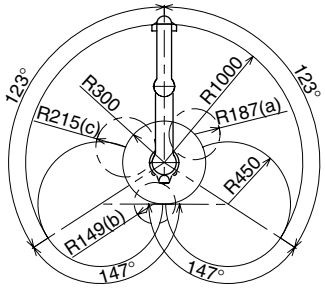
Interference position
(a) Base flange
(b) Base rear side
(c) Base



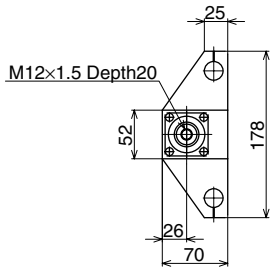
Working envelope



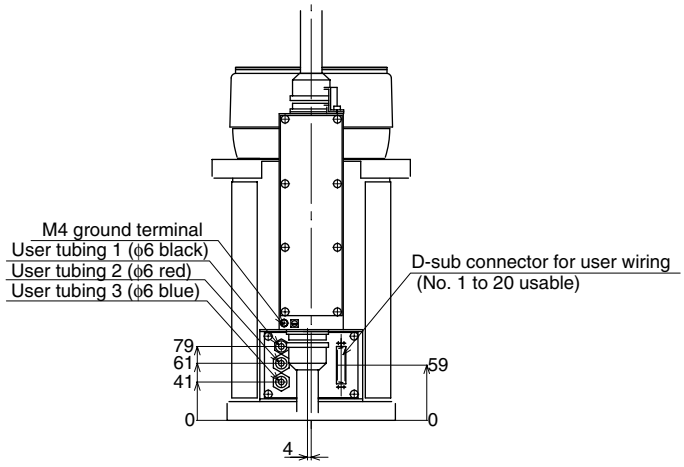
Viewed from direction A



X and Y-axis mechanical stopper positions (maximum working envelope)



Viewed from direction B



User's Manual

YAMAHA SCARA Robot YK-X LongZ Series

May 2007
Ver. 2.03
This manual is based on Ver. 2.03 of Japanese manual.

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IM Operations

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