YAMAHA
Revs Your Heart

New product information

In-Position Technologies

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Efficiency of time and space in production

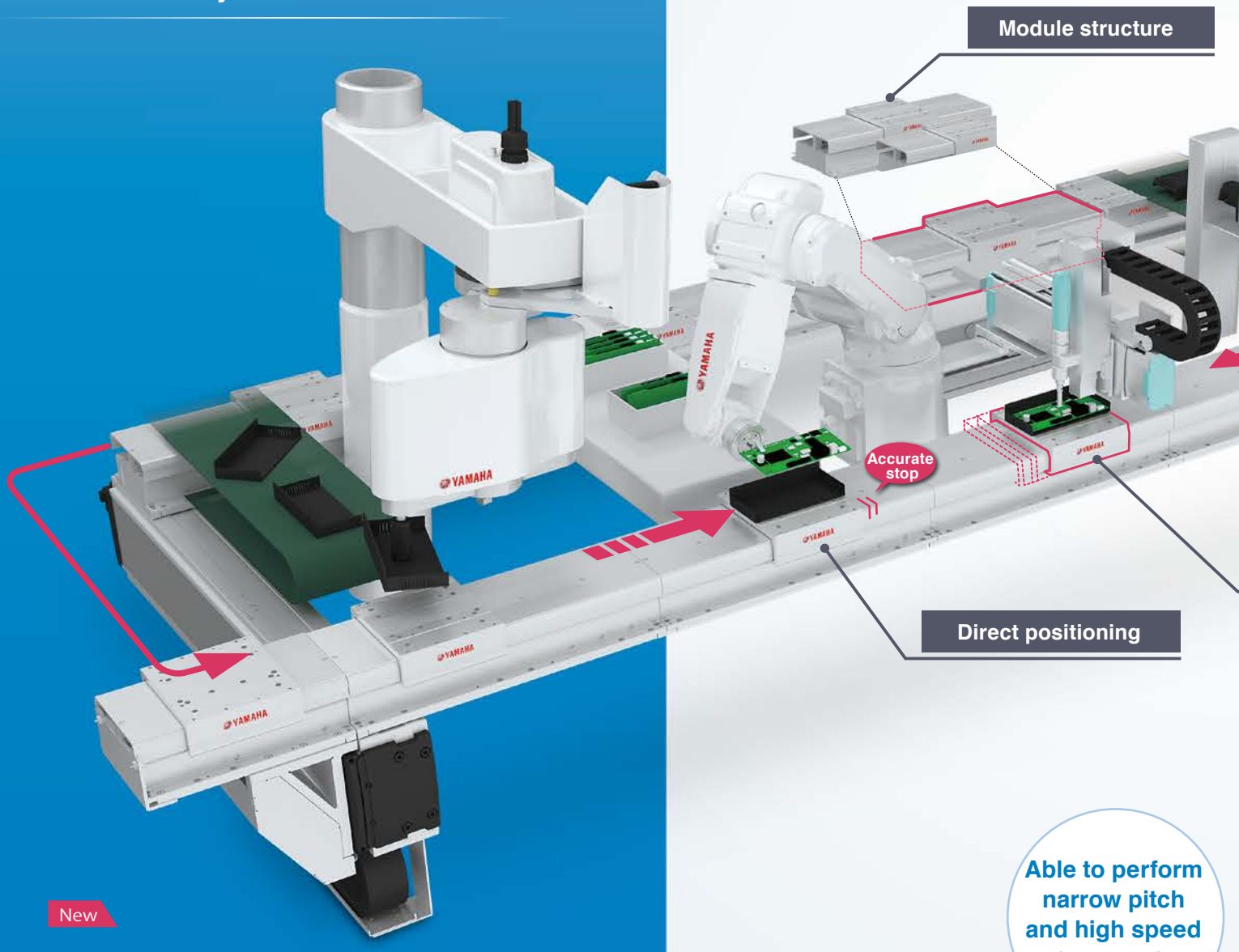
Linear Conveyor Module
LCMR200

Yamaha's answer to Next Generation of Production Line design

- Reduction of Tact Time in transportation
- Flexibility in line design
- Easy maintenance
- Low operation cost
- Improved Productivity
- Reduces line design time
- Space saving design
- Durability

Adding productivity

Convert transfer process into "v



New

LCMR200

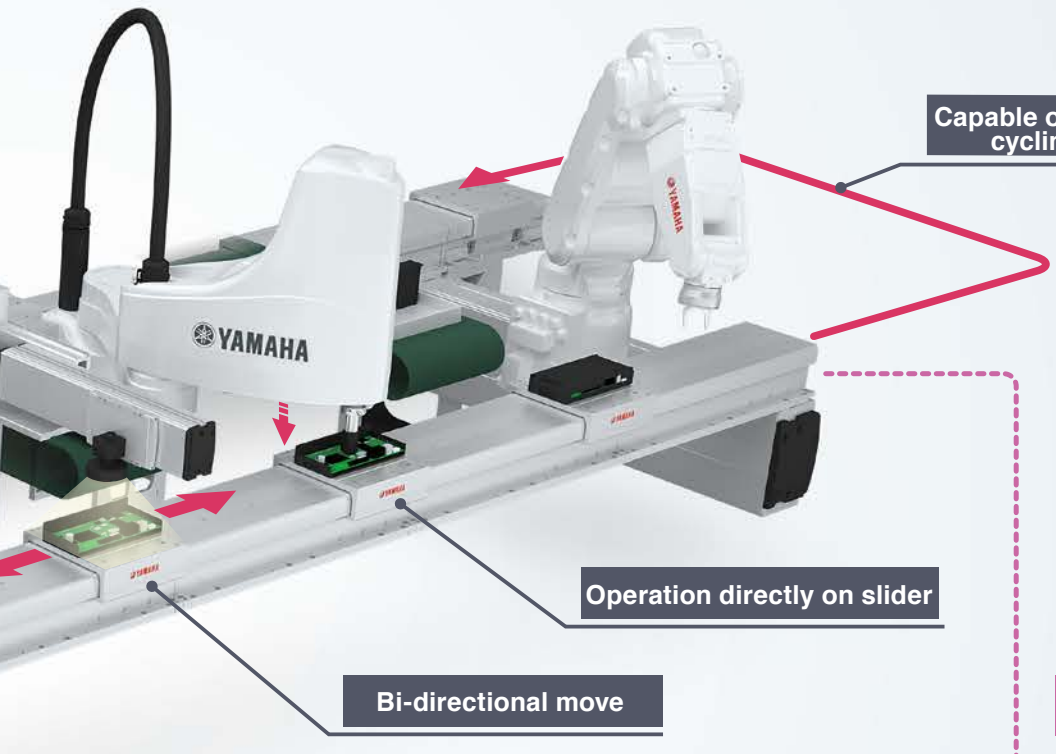
Linear Conveyor Module

Able to perform narrow pitch and high speed transport.

Advanced line

y to transportation process

value-added" assembly process



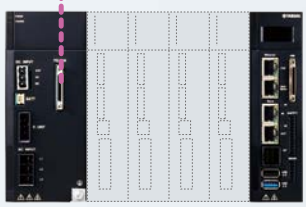
Capable of circulating / cycling motion

Operation directly on slider

Bi-directional move

Smooth acceleration and deceleration

YHX controller



Controllable line length Max. **25.5** m *

Number of simultaneous controllable sliders Max. **64** units *

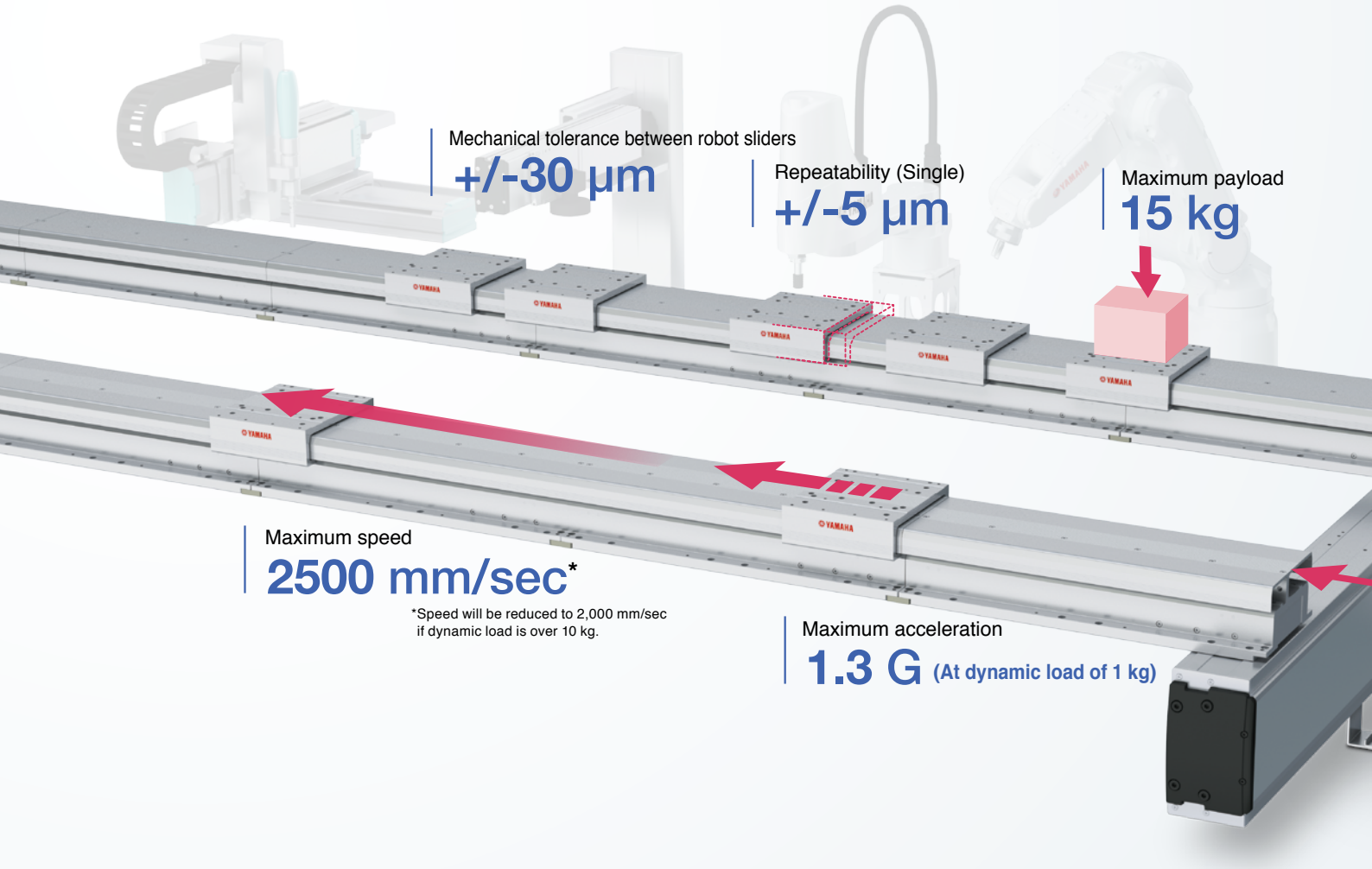
* It may differ depending on the system configuration.

Individual ID recognition.

Complete absolute position system. No origin process needed.

Built-in driver and reduced wiring.

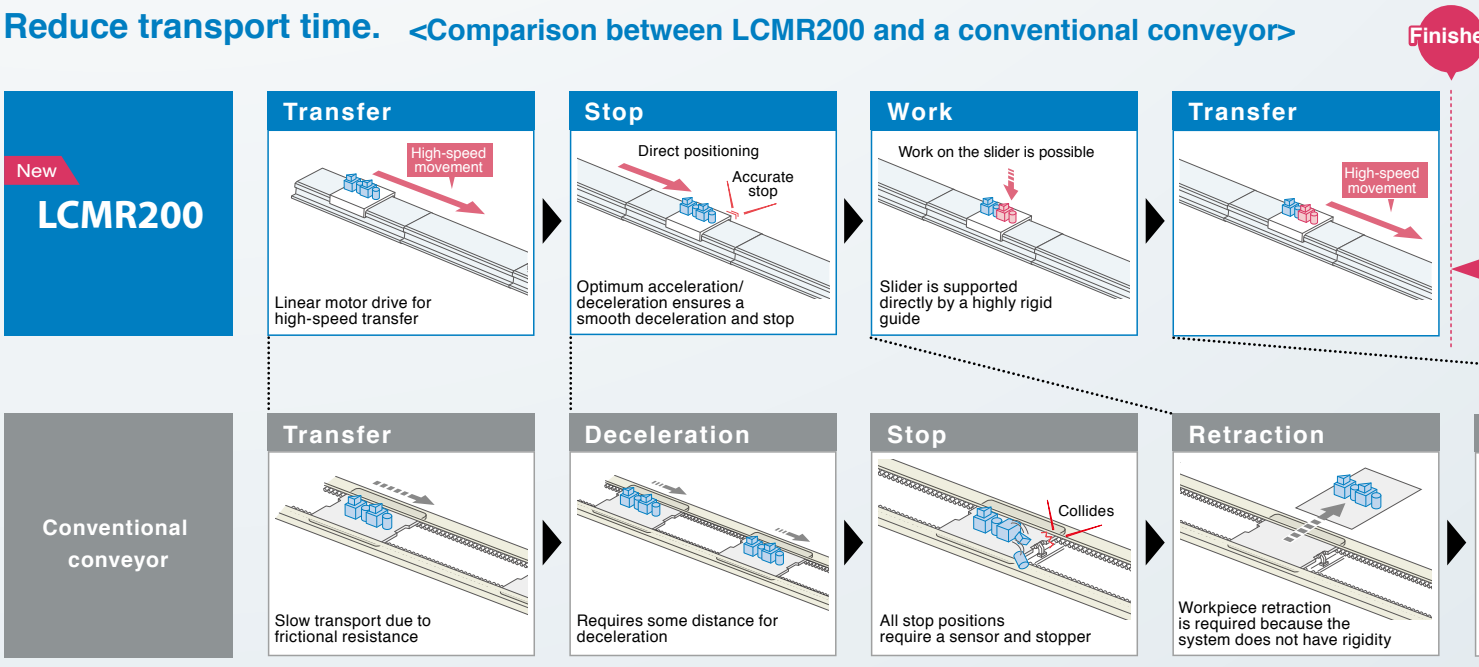
ear conveyor module with high speed transport.

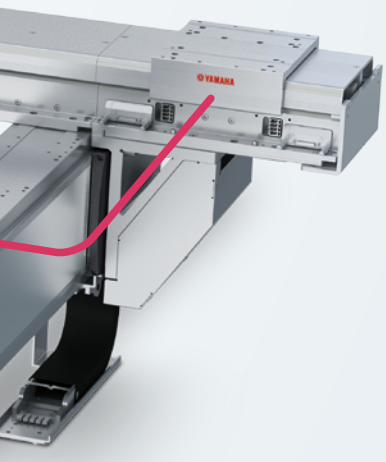


From ordinary “passive flow” to “active position transp

By converting conveyor flow into active production process improves profitability

Reduce transport time. <Comparison between LCMR200 and a conventional conveyor>





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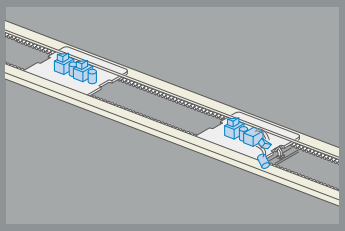
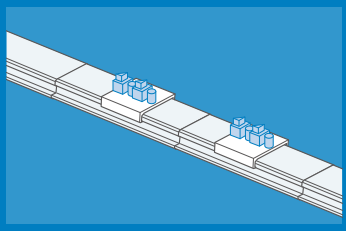
LCMR200 vs Conventional Conveyor System



Conventional type conveyors

- Mechanical stoppers or sensors are required at each stop position.
- Complicated control due to various conveyor components.
- Stopper adjustments are required each time the stop position is changed.
- Fixed productivity rate.
- Various adjustments required



New LCMR200

- Direct driving of the slider.
- Stop positions are controlled with position data in program.
- No mechanical stoppers or external sensors required.
- Maximum speed of 2.5 m/sec for better transfer time.
- Adjustable transfer speed for total line flow coordination.
- Actual task times can be easily monitored.

	Conventional type conveyors	LCMR200
Speed control	△ Same speed required on entire conveyor	◎ **Able to specify the speed and acceleration speed individually.**
Operation control	× One (fixed) direction	◎ **Bi-directional and distance can be set individually for each carriage**
Travel / Stops	× Physical impact at mechanical stop	◎ **Smooth servo-controlled acceleration, deceleration, and incremental move**
Number of system components	× Stopper or sensor required at each stop position	◎ **No mechanical components required for stop position**
Accuracy	△ Additional support is required to increase accuracy	◎ **Mechanical tolerance between sliders (between total sliders) +/- 30 µm**
Rigidity	△ Additional support is required to ensure rigidity	○ **Assembly work can be performed directly on carriage supported by high-rigidity guides**
Line flow changes	× Requires stopper adjustments at each line flow change	◎ **Simple modification of line layout by modular design. Stop position can be changed in program**
Footprint	△ Certain space is required	◎ **Space saving design**

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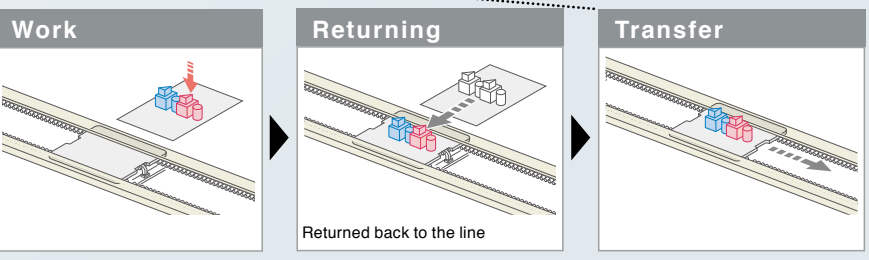
Finished

Transfer time is reduced from **6** to **3** seconds.

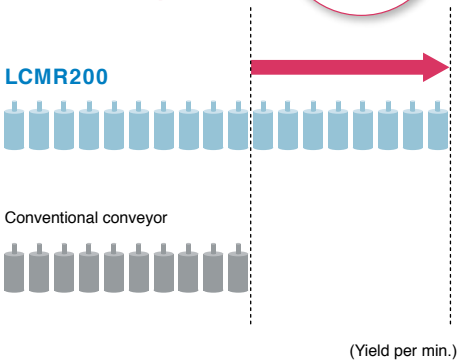
50% reduction in tact time



Note. May vary depending on conditions

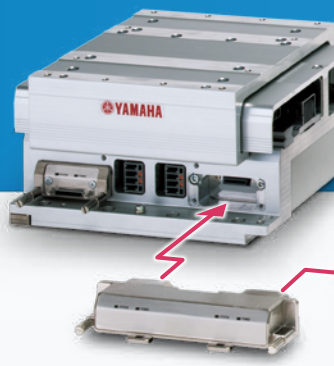
Increased yield

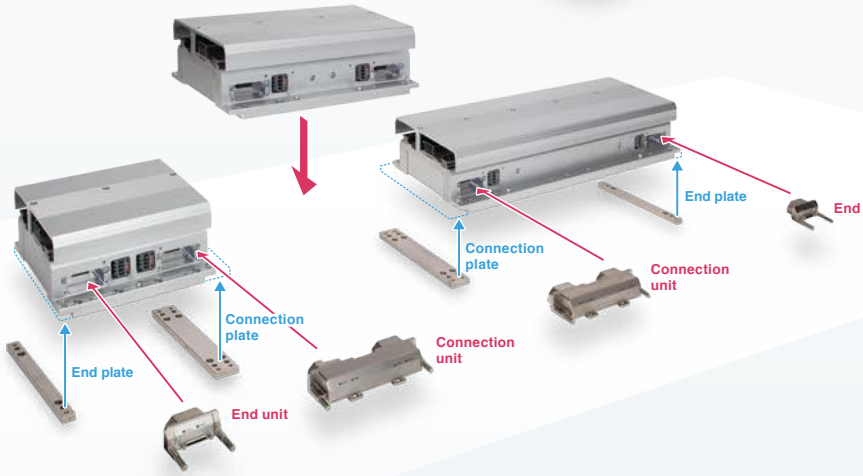
Increased by approx. **80%**



Subject to user's operation setup.

Superior performanc





Easy modular connection with Connecting Plate and Connecting Unit

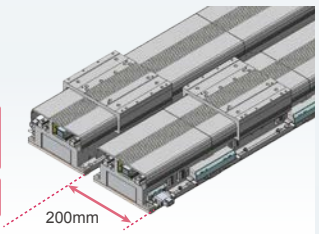
Mechanical connection by Connecting Plate and signal communicating by Connecting Unit. Simple yet, secured connecting method of modular system.

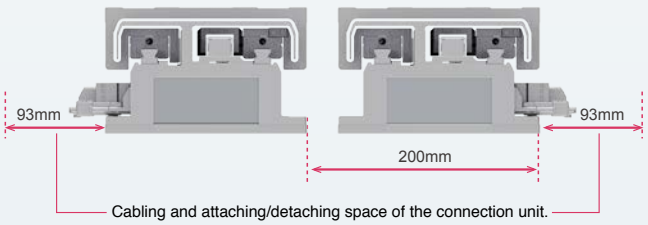
Saves space through proximity installation of forward and returning modules

<Cable extraction direction can be selected Front Rear >

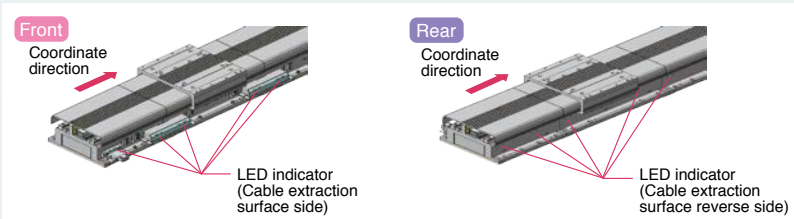
Cycle time reduction during circulation

Space saving





Since the cable extraction direction of a module can be selected, the degree of freedom in electrical wiring is improved when installed on the equipment. In particular, when the cable extraction direction is reversed on the forward and returning modules in the horizontal circulation layout, the module pitch can be made close to the shortest level of 200 mm. This can shorten the cycle time and reduce the installation space during circulation. In addition, the LED indicators that show the module state can be visually checked from both the front and rear sides of the module.

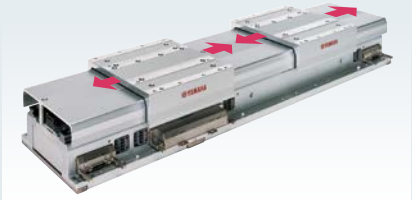


The module state can be checked.

The indicators can be checked from either the front or rear.

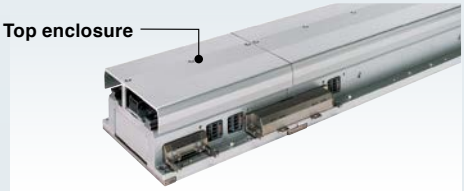
All the sliders can be operated / programmed independently.

Speed and acceleration can be programmed by each move. All carriages can be controller individually.



Top enclosure design for protection.

Top enclosure was designed to protect internal mechanism from any fallen object during line setup process.



Mechanical tolerance between sliders +/-30 μm (Dowel hole standard)

Due to tis machined accuracy, each carriage has own tolerance at one stopping point, however, LCMR200 can limit the slide machine difference to +/-30 μm, and is suitable for high precision process. As RFID, etc. is not necessary, cost reduction is possible.

e that improves the transfer environment.

High acceleration rate

High speed motion between an extremely short distance is possible even in a high density process or pitch feed.

Recognize slider's individual IDs

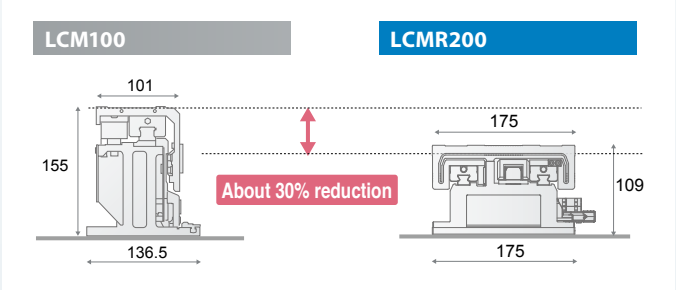
All sliders can be identified when the power is applied.

No origin process needed

Newly developed high-precision full-range absolute server eliminates the need for return-to-origin. The operation can be started and stopped easily, so there is no time loss even when starting or restarting.

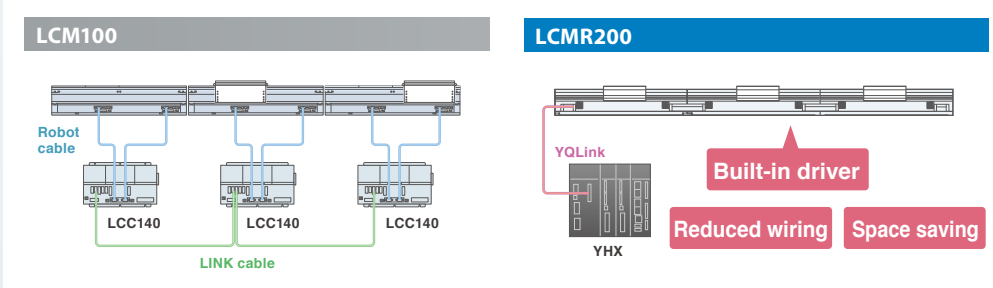
Low profile structure

By adopting a newly developed linear motor, the module height is approx. 30 % down compared to LCM100. The space under the frame can be effectively utilized.



Built-in driver saves electrical wiring

Motor driver is incorporated inside module and entire LCMR200 is controlled by YHX controller through YQLink cable. It also contributes to space saving inside the control panel.



Concentrated control by the YHX controller

Including the operation environment, all sliders and single-axis robots on the transfer process can be controlled.

Simple control with the standard profile

According to the commands from the host PLC, it adopts a simple control method that operates the sliders and single-axis robots as positioners <See Page 12 for detail>.

Versatile and value added transport between work process.

Improve cycle time and reduce line floor space.

Increase productivity and cost performance.

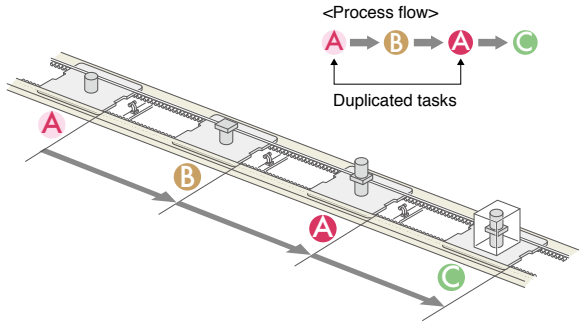
Process sharing

Direct drive | Slider backward travel

- Carriage is bi-directional and one work station can perform more than one task. Saving total line cost and floor space.
- High speed bi-directional move and simultaneous independent operation of multiple carriages.

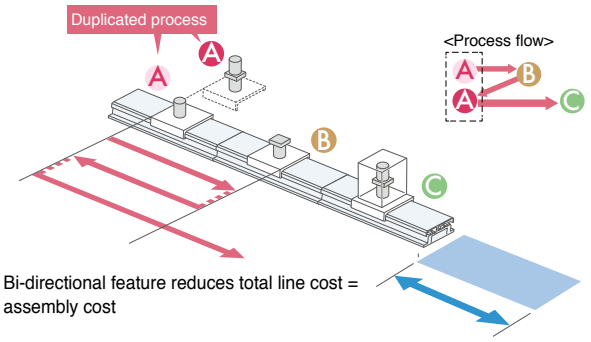
Conventional method

Requires two duplicated work stations in one line



LCMR200

Eliminating duplicated work station



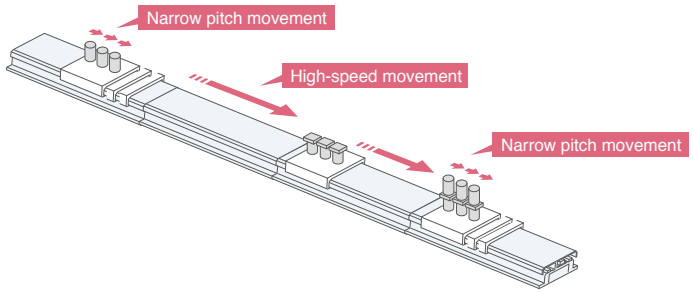
Bi-directional feature reduces total line cost = assembly cost

Variable speed control between work stations.

Direct drive | Narrow pitch operation

- Servo controlled direct drive eliminates mechanical stoppers and position sensors.
- Simple position setting by entering point data in a program.
- Flexibility in setup for production lot change
- Saving flow time by narrow pitch incremental move and high speed move.

LCMR200



Easily serviceability = Easy troubleshooting

- Covered structure of module keeps internal mechanism free from foreign objects
- The environment-resistant magnetic sensor is resilient to contamination.
- Easy positioning with no precision setting.
- Non-contact motor and linear scale design eliminates mechanical wearing
- Low particle generation (only mechanical contact is guide rail)
- Standardized components reduce spare parts SKU.
- Parts can be replaced easily.
- Operation can be restored just by replacing the slider or linear module, and the manufacturing line down time can be kept to a minimum.

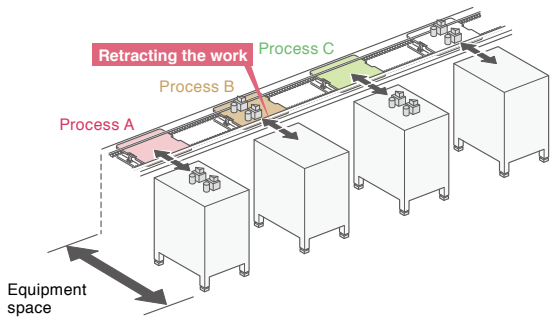
Assembly can be done while parts are on conveyor

Highly rigid guide

- The highly rigid guide enables assembly and processing on the transport line.
- No need to reposition parts to/from conveyor. Floor line space is reduced substantially.

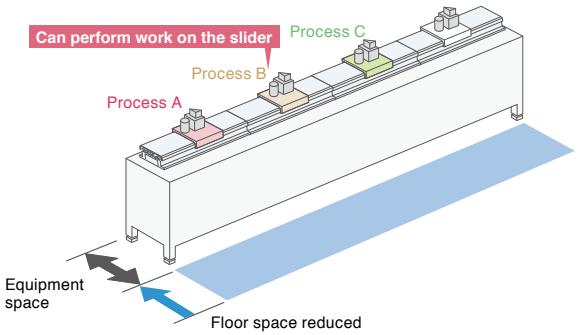
Conventional method

Parts need to be moved to work bench



LCMR200

Assembly work is done while parts are on conveyor

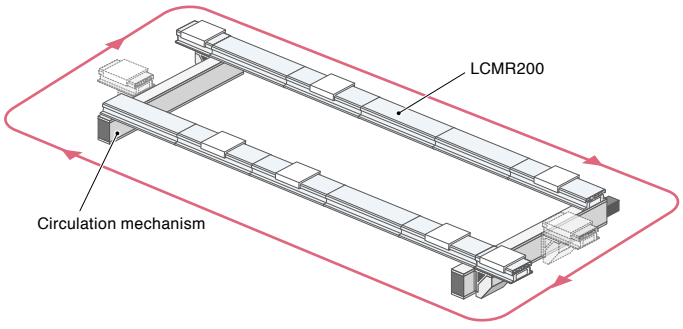


Sleek and simple configuration. Simplified line design process with flexibility and efficiency by modular concept.

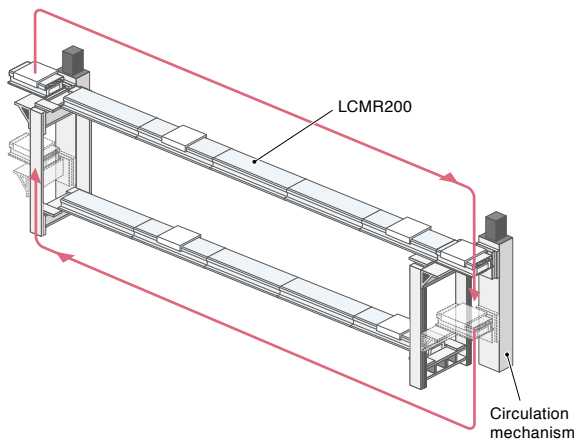
All carriages and peripheral linear robots can be controlled by PLC through one YHX controller.

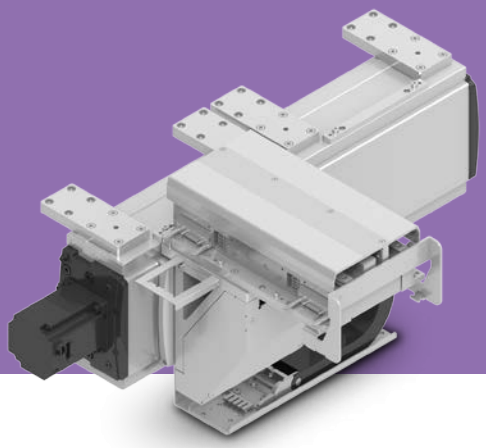
- Layout example with a combination of the module and circulation unit.

Horizontal circulation example



Vertical circulation example





Circulation unit

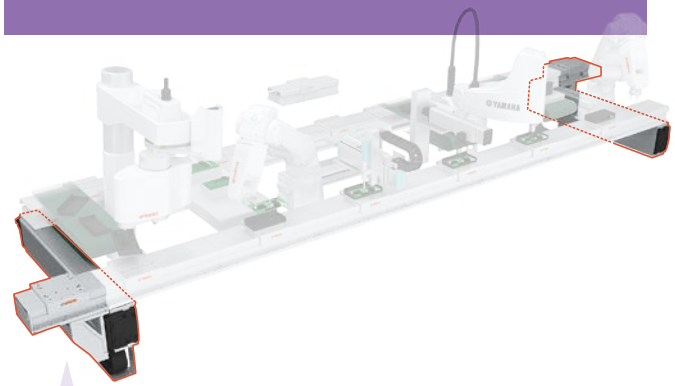
Circulation units are available as standard.
Because the circulation units are manufacturer's standard products, the stable operation of the production line is achieved without worrying about module "deviation". Furthermore, you can also save time and effort in design.

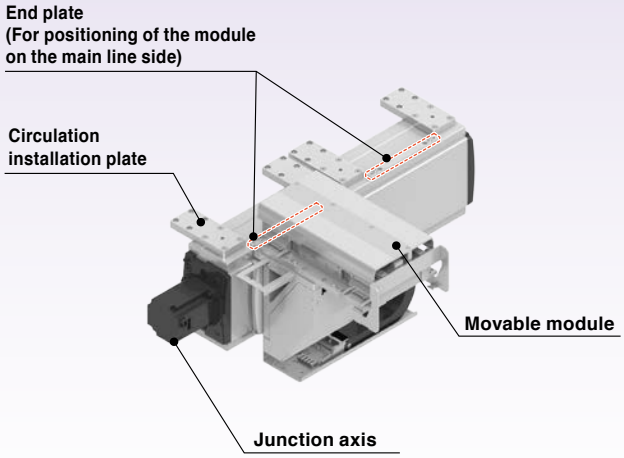
YAMAHA genuine circulation units achieve the stable operation of the production line.

YAMAHA genuine circulation unit

Horizontal circulation unit

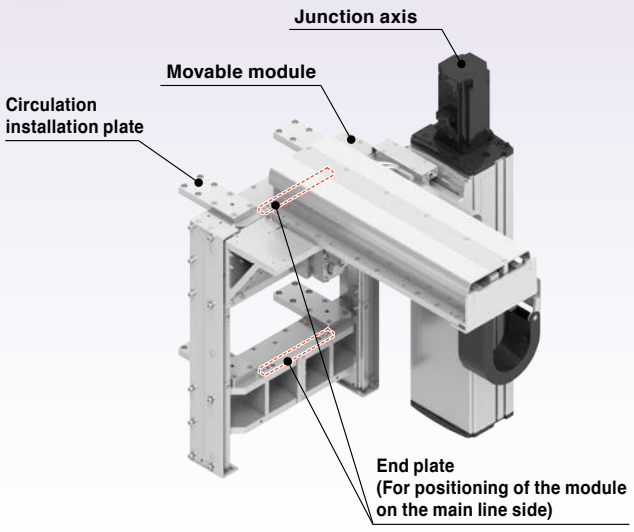
JGX16-H





Vertical circulation unit

JGX16-V



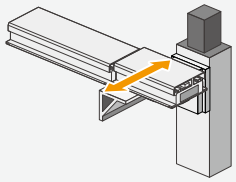
Circulation unit features

POINT ❶ Measures against “deviation” necessary to maintain the accuracy are taken thoroughly.

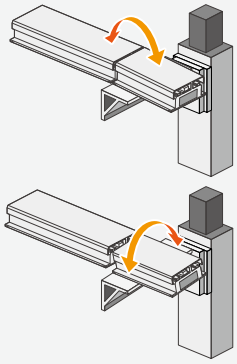
Maintaining the accuracy is very important for transfer sections, but is not easy since “deviation” may occur.
Use of YAMAHA genuine circulation units makes it possible to eliminate such “deviation” and maintain the accuracy.

Concerns about "deviation" due to temperature or motor heat, etc.

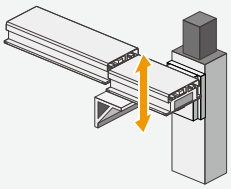
Horizontal deviation



Torsion deviation

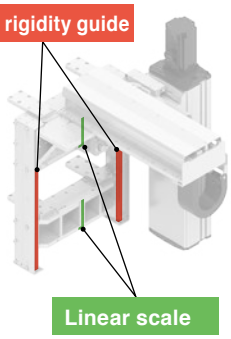


Vertical deviation



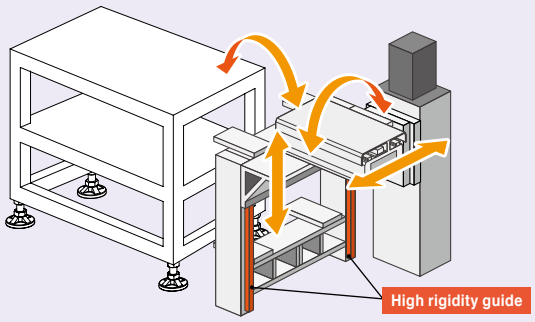
YAMAHA genuine circulation unit

High rigidity guide



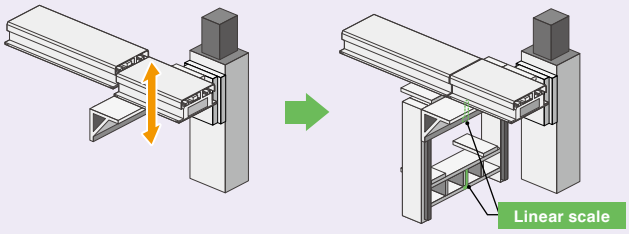
Linear scale

Restricted by two high rigidity guides. Torsion deviation and horizontal deviation are eliminated.



- Circulation module moves along the guide.
- Torsion deviation or horizontal deviation of the transfer section is restricted by two guides.

Corrected by the linear scale. Vertical deviation is eliminated.

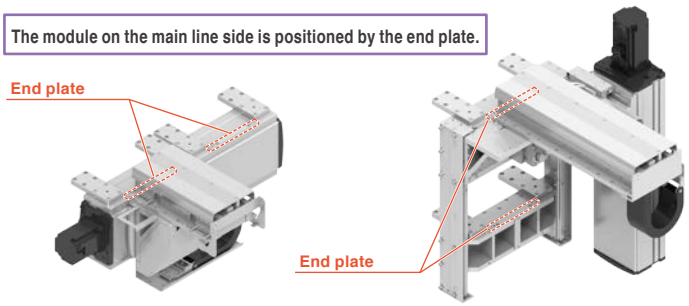


- Positioning is performed by the full closed loop system using the linear scale arranged near the transfer section to correct effects due to thermal elongation of the ball screw, etc.

POINT ❷ Easy adjustment

The end plate that positions the module on the main line side is shipped with the accuracy adjusted, so the adjustment is completed by simply enabling the accuracy correction function.
After installation, the work you have to do is only teaching.

The module on the main line side is positioned by the end plate.



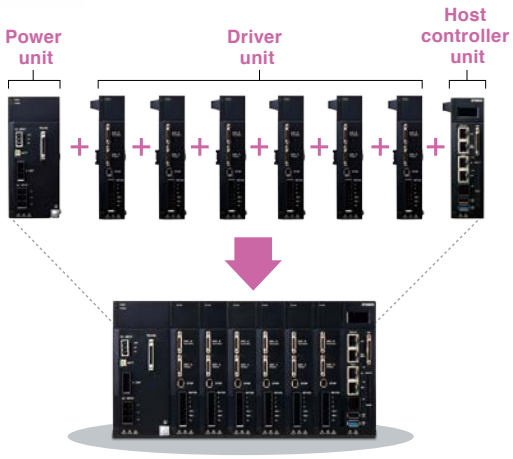
YHX controller

Linear conveyor module "LCMR200" can be controlled via YHX controller from the host PLC.

Reduces production line configuration time

Stacking modular structure

No wiring between modules needed.

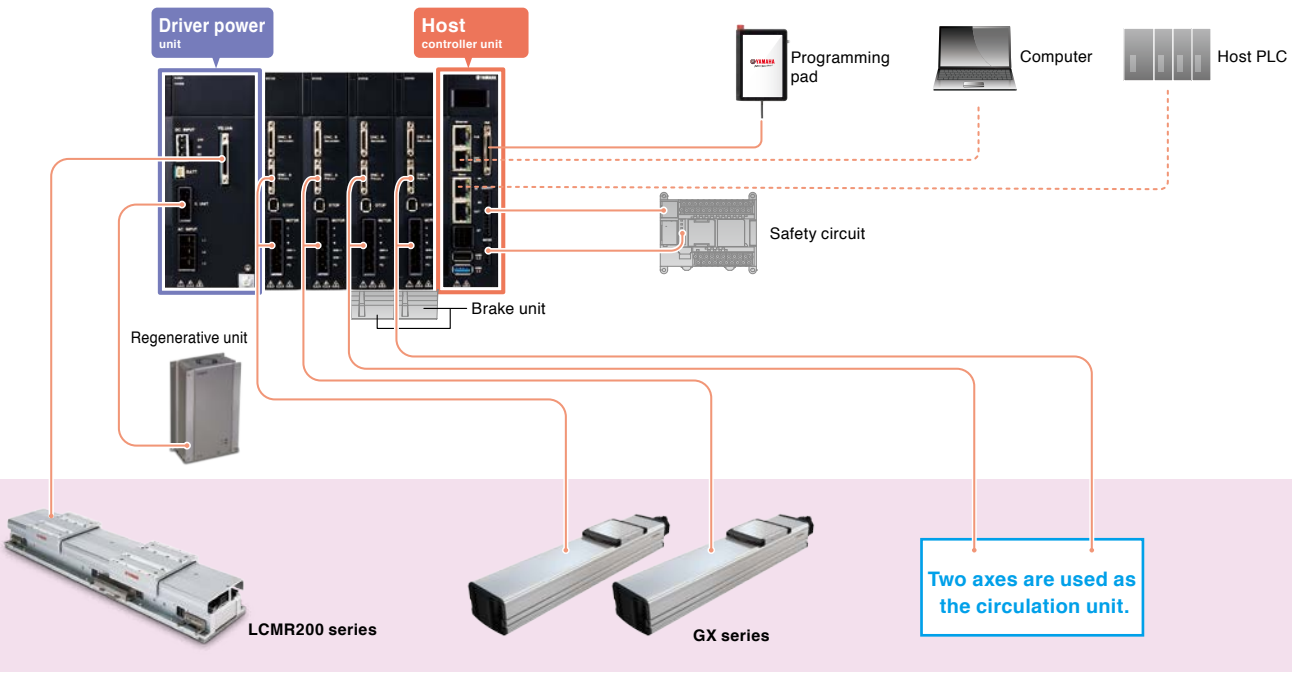


Incorporation a control power supply, motor drive power supply, high speed network communication, safety circuit into a stacking modular structure.
Eliminates wiring between units, reducing conventional wiring cost and wiring man-hour to 30% to 50%.
The stacking structure including host, power and driver is the very first in the industry.

Typical photo image of stacking structure

Driver unit
up to 16 units
Stackable

Configuration example

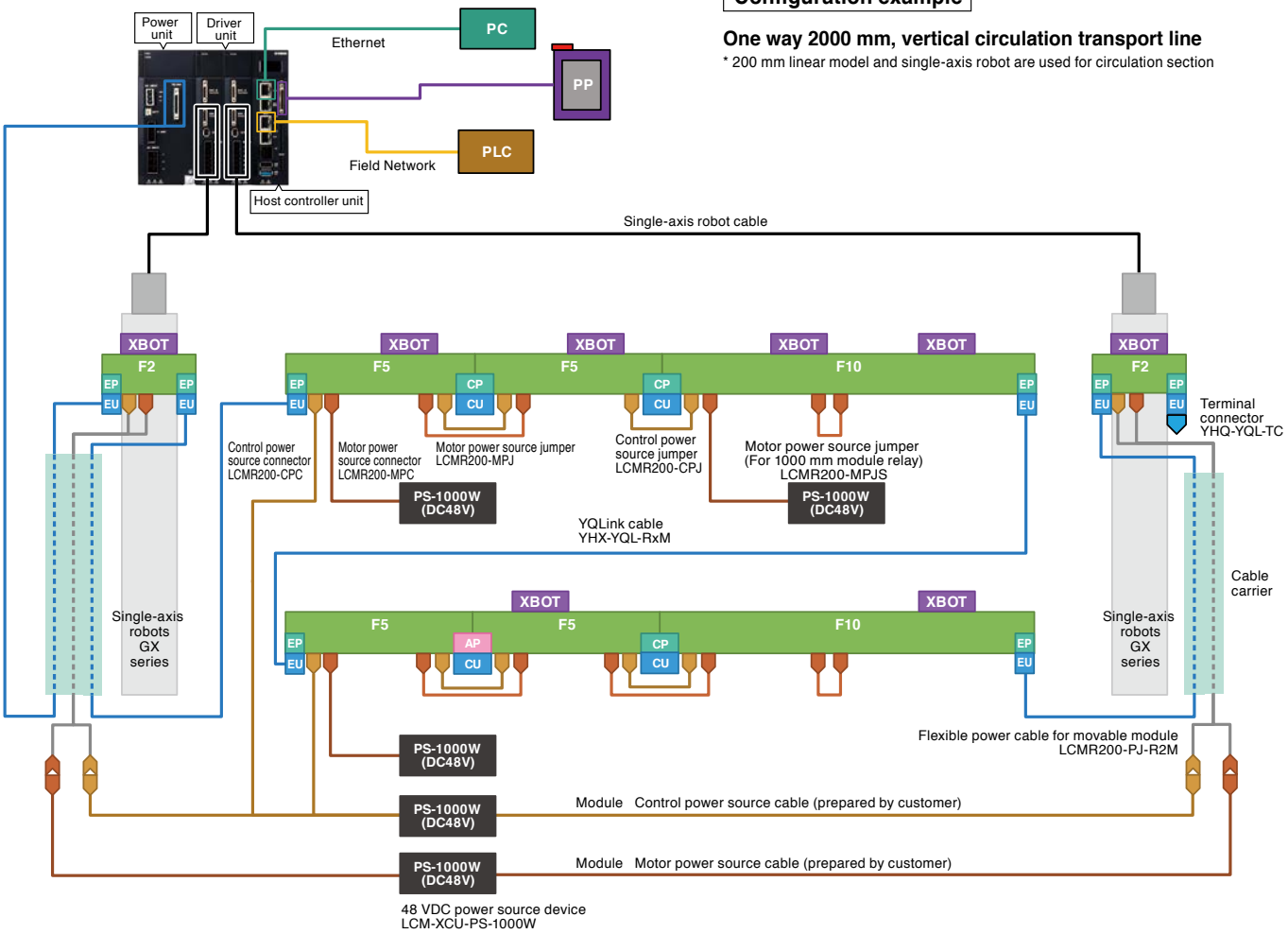


System configuration diagram

Configuration example

One way 2000 mm, vertical circulation transport line

* 200 mm linear model and single-axis robot are used for circulation section



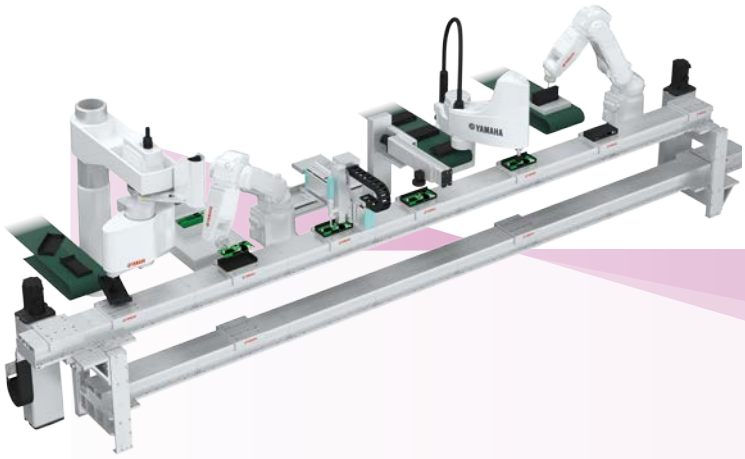
Icon	Name	Description
	Linear module	Size of modules selected here is for reference only. The cable extraction direction can be selected in units of cluster (multiple linear modules are connected to configure one line). A linear module used in the circulation part is also common.
XBOT	**Robot slider**	A slider that operates on the linear module.
EP	**End plate**	Position a linear module on both ends of a cluster.
CP	**Connection plate**	The adjacent modules are positioned and connected.
AP	**Adjuster plate**	This adjuster plate is used to adjust the return line length to match the reference line.
EU	**End unit**	Connect with the YQLink cable or YQLink terminal end unit on both ends of a cluster.
CU	**Connection unit**	Between module communication of adjacent modules is connected.
	Control power supply connector	A connector to supply control power source from 48 VDC power source to the linear module.
	Control power source jumper	A jumper cable to supply control power source to adjacent modules.
	Motor power source connector	A connector to supply motor power source from 48 VDC power source to the linear module.
	Motor power source jumper	A jumper cable to supply motor power source to adjacent modules.
	Motor power source jumper (for 1000 mm module relay)	A jumper cable to relay motor power source in 1000 mm module. When 3 to 4 robot sliders stop in 1000 mm module, remove this motor power source jumper, and connect the power source device for additional motor with the motor power source connector.
	YQLink cable	A communication cable between each linear module cluster and the controller. As shown in the above figure, connect from left to right with one line. Connect the YQLink end connector to the terminal of the end cluster.
PS-1000W (DC48V)	**48 VDC power supply**	General-purpose 48 VDC power source device that can be applied to both control and motor operations. With one power source device, 10 m module control power source can be supplied. Also, one power source device can supply motor power source of two robot sliders. Prepare power source devices for each control power source and motor power source.
	Flexible power cable for movable module	Flexible cable to supply power source to the module that performs reciprocal operation mainly in the circulation part.

Project file

YHX Standard Profile

What is a standard profile

A project file for LCMR200 that moves a single-axis robot and LCMR200 as a positioner via field network from the host PLC.



Features of YHX standard profile

- Eliminates writing ladder logic codes.
- Adding operation through a pendant.
- Perform simple direct value operation and specific point-to-point move.
- Servo ON of any slider individually.
- Obtain alarm information through the host PLC.

Significant reduction of launching man-hour.

Significant reduction of startup time and process.

Controlled by program creation of the host PLC.

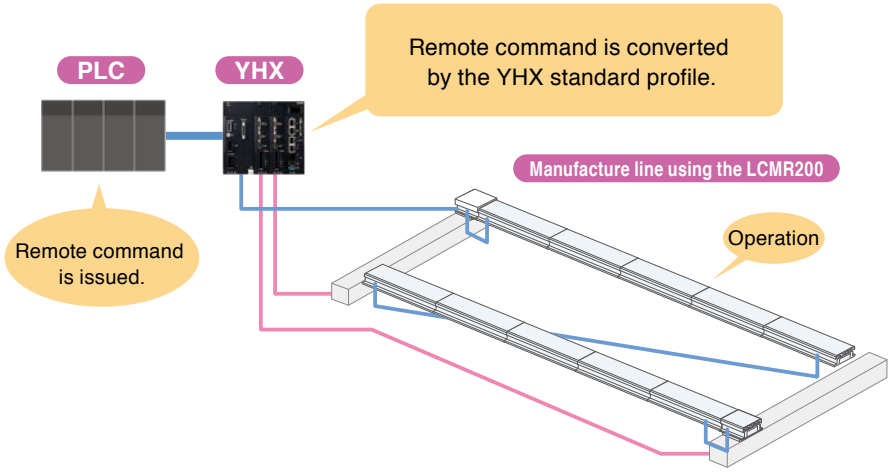
Numbers of improvements in line design and operation.

Implementing a task is simple and easy

Standard profile features

POINT❶ LCMR200 can be operated using your familiar PLC.

Use of YHX standard profile makes it possible to operate the LCMR200 from the host unit such as PLC via the I/O interface of each field work.



POINT❷ Creation of YHX ladder by the customer is not needed.

Dedicated input and output signals are already assigned to the word and bit area of the field network. Operations necessary for the robot motion such as servo ON or JOG movement can be performed without creating programs.

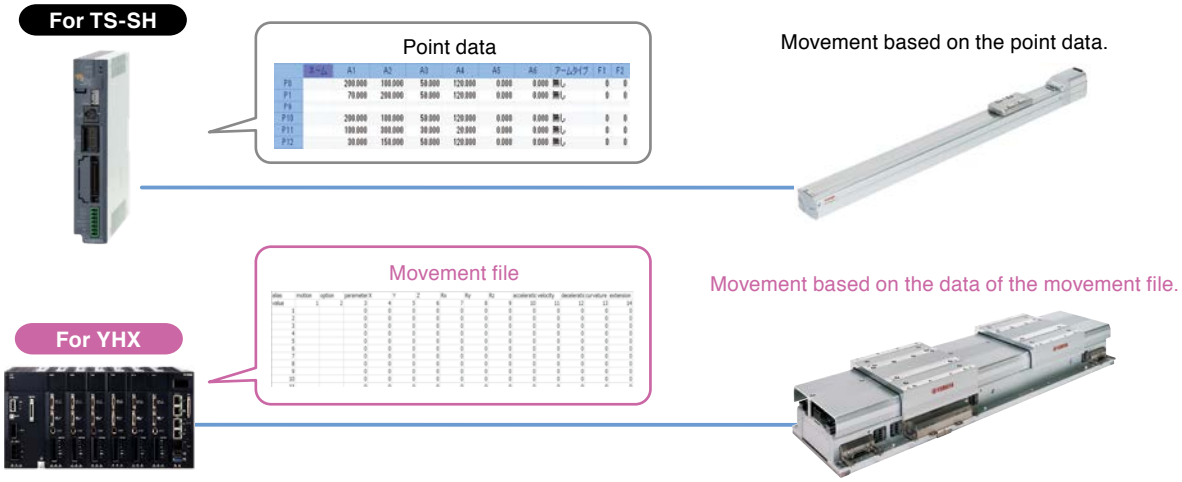
What you can do with the YHX standard profile

- Slider or single-axis servo ON
- Brake of the vertical axis is released.
- Alarm type and occurrence location are checked.
- JOG movement
- Inching

POINT❸ Control using “movement file”

Control is performed using the point data “movement file” necessary to register the target position.

“Movement file” plays a role similar to point data.



POINT④ Simple direct value operation and point designation movement can be performed.

About point designation

- The operation pattern for up to 65,535 points in total can be designated.
- The position, speed, acceleration, deceleration, and tolerance are designated for each point.

Designation image

Point	Position (mm)	Speed	Acceleration	Deceleration	Tolerance (mm)
1	100.000	1	0.5	1	0.01
2	800.000	0.5	1	1	0.05
3	432.562	1	1	1	0.02
4	1234.410	0.5	1	1	0.01
5	2451.400	1	1	1	0.01

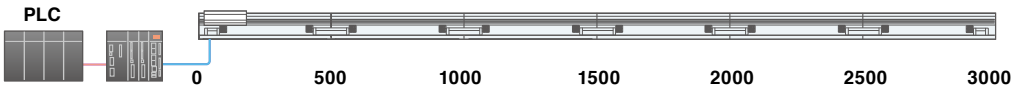
Overview of remote command

Input
1. Command
2. Point designation
3. Direct value position designation

1. Servo ON, return-to-origin, movement, JOG, inching, etc.
2. Point number to be used.
3. When the direct value is designated, the speed and acceleration use the values stated in 2 and only the position is changed.

Output
1. Axis status
2. Point output
3. Current position output

1. Servo status, during movement, or movement completion, etc.
2. Point number during movement
3. Current position is always output.



Direct value operation

Point is assigned to each slider and the coordinates are designated by the direct values.

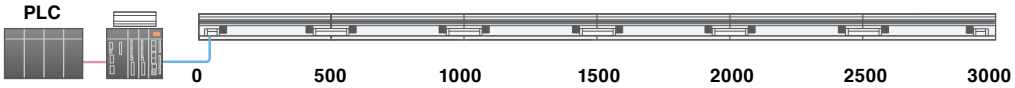
One slider corresponds to one point.

Slider	Point used
#01	P10
#02	P11
#03	P12

Step	Point number		
	P10	P11	P12
1	500.0	-	-
2	1250.0	500.0	-
3	2000.0	1250.0	500.0
4	2750.0	2000.0	1250.0

#03

Coordinate value is input to the point.



Point designation operation

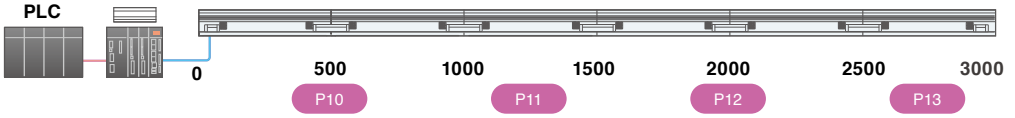
Next movement point number for each slider is designated.

Point	Position	Speed
P10	500.0	1
P11	1250.0	1
P12	2000.0	1
P13	2750.0	1

Step	Slider		
	#01	#02	#03
1	P10	-	-
2	P11	P10	-
3	P12	P11	P10
4	P13	P12	P11

#03

Point number is assigned to the slider.



POINT❺ JOG or inching operation can be performed from the pendant even when no PLC is connected.

Even in a status where no PLC is connected, the axis can be operated using the JOG or inching operation from the programming pad.
When the LCMR200 is used for the circulation layout, the necessary adjustment work can be performed immediately.

POINT❻ Prevention of operation leading to damage to the circulation section is supported.

Slider transfer accidents that occur in the circulation section due to error can be avoided. Software design can be performed more safely.

Process

Preparation such as hardware connection. ▶ **Registration of robots and sliders, and parameter settings.** ▶ **Registration of circulation part configuration.** ▶ **Setting of each stop position.** ▶ **Program creation of the host PLC**

Standard profile specification

Applicable controller		YHX-HCU
Operation method		Point trace point No. specified positioning and direct value coordinate specified positioning.
Comparative robot		LCMR200, LCM-X and GX series (LCMR200 and LCM-X cannot be controlled together).
Interface		YHX Studio, YHX-PP, and field network communication
Operation type		Absolute position moving
Maximum number of points that can be registered.		65535
No. of control axes (Total of sliders and single-axis robots, however, up to 16 axes for single-axis robot)	EtherCAT	64
	EtherNet/IP™	64
	PROFINET	64
	CC-Link	22
Main input and output See the manual for other functions.	All axes target input	Servo ON/OFF switch/Interlock/Alarm reset
	All axes target output	Servo State/Interlock State/Alarm State/Heart beat/Emergency stop State
	Individual axis target input	Servo ON/OFF switch/Return to Origin/Positioning moving inside the control range (including LCM relay operation)/Slider insertion preparation from outside the control range/Slider discharge to outside the control range/Jog movement, inching movement/Movement Stop
	Individual axis target output	Servo State/Return to origin State/Output specified point No. for various execution state display/Current position/Axis alarm State
Main remote command See the manual for other remote commands.		Writing/reading of setting data
		Alarm check
		Writing and reading of integrated running distance and No of transits.

Basic specifications of LCMR200

Basic specifications of LCMR200

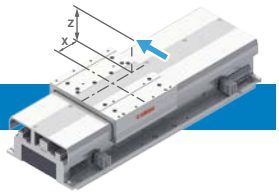
Drive method		Linear motor with moving magnet type core
Position Search		Magnetic absolute position sensor
Maximum payload		15 kg
Maximum speed		2,500 mm/sec *1
Repeatability		±5 µm
Mechanical tolerance between robot sliders		±30 µm (Dowel hole standard)
Total stroke limit		25.5 m *2
Maximum number of robot sliders		64 units *2
Minimum spacing between robot sliders		210 mm *3
Main frame dimensions	Max. external size of frame cross-section	W175 × H109 mm (Including robot slider)
	Linear module length	200 mm / 300 mm / 500 mm / 1000 mm
	Robot slider length	198 mm
Weight	Linear module	Approx 20 kg [Per 1 m of linear module]
	Robot slider	2.4 kg
Power supply	Control power supply	48 VDC Required power [W] = 75 [W/m] x Overall length of module [m] *4
	Motor power supply	48 VDC Yamaha's designated model *5
Operating environment	Operating temperature	0 °C to 40 °C *6
	Storage temperature	-10 °C to 65 °C
	Operating humidity	35 % to 85 %RH [No condensation]
Controller		YHX controller *7

*1. When the conveying weight exceeds 10 kg, it will drop to 2,000 mm/sec according to the weight.
*2. It may differ depending on the system configuration.
*3. When the jig palette to equip to the robot slider is longer, it shall be the jig palette length + 10 mm.
*4. Up to 13.3 m linear module can be supplied with the optional 1000 W power source.
*5. Up to 2 robot sliders can be supplied with the optional 1000 W power source.
*6. Operate LCMR200 in the temperature environment (+/-5 °C) that installation and adjustment were performed.
*7. The YHX controller requires a separate electrical power supply.

Allowable Load of LCMR200

Note. • When center of slider is center of gravity.
• Allowable load in the moving direction of slider is always 28 N regardless of the loading position.

Load: Horizontal Direction

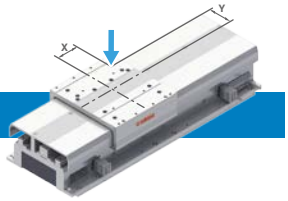


Payload: Common up to 15 kg.

Loading Position X [mm]	Loading Position Z [mm]					
	0	20	40	60	80	100
0	611	514	443	390	348	314
20	517	445	391	349	315	287
40	447	393	350	316	288	264
60	394	352	317	289	265	245
80	353	318	289	266	245	228
100	319	290	266	246	229	214

Unit: [N]

Load: Vertical Direction



Payload: 5 kg

Loading Position X [mm]	Loading Position Y [mm]					
	0	20	40	60	80	100
0	924	687	546	453	387	339
20	760	593	485	411	356	314
40	647	521	436	375	328	293
60	562	465	396	345	305	274
80	498	420	362	319	285	258
100	446	382	335	297	268	243

Payload: 10 kg

Loading Position X [mm]	Loading Position Y [mm]					
	0	20	40	60	80	100
0	874	650	517	429	367	320
20	721	561	459	389	337	297
40	613	493	413	355	311	277
60	533	440	375	327	289	260
80	471	397	343	303	270	244
100	423	362	317	282	254	231

Payload: 15 kg

Loading Position X [mm]	Loading Position Y [mm]					
	0	20	40	60	80	100
0	826	614	488	406	347	303
20	680	529	433	367	318	281
40	578	466	390	335	294	261
60	503	416	354	309	273	245
80	445	375	324	285	255	231
100	399	342	299	266	239	217

Unit: [N]

Configuration parts of LCMR200

LCMR200 Main Body

Linear module

Length	Front* cable extraction	Rear* cable extraction
	Model	
200mm	LCMR200-F2	LCMR200-B2
300mm	LCMR200-F3	LCMR200-B3
500mm	LCMR200-F5	LCMR200-B5
1000mm	LCMR200-F10	LCMR200-B10

* The direction for the order of the driver numbers.
The motor power source connector is attached to the module.

Robot slider

Model	LCM200-XBOT-****
Parts No.	KNA-M2264-**

When ordering the robot slider, specify slider ID number 1001 to 1139 in the last 4 digits "****" section of the model.

ID, model, and parts No. correspondence example		
ID	Model	Parts No.*
1001	LCMR-XBOT-1001	KNA-M2264-01
1002	LCMR-XBOT-1002	KNA-M2264-02
1099	LCMR-XBOT-1099	KNA-M2264-99
1100	LCMR-XBOT-1100	KNA-M2264-A0
1112	LCMR-XBOT-1112	KNA-M2264-B2

ID 1100s are A*.
ID 1110s are B*.

YQLink cable

YQLink movable cable

This cable connects the controller (YHX) and linear conveyor module.
Refer to the system configuration drawing for a connection example.

Cable length	Model	Parts No.
0.3m	YHX-YQL-R0.3M	KFA-M5361-P1
3m	YHX-YQL-R3M	KFA-M5361-31
7m	YHX-YQL-R7M	KFA-M5361-71
10m	YHX-YQL-R10M-N	KFA-M5361-A1

YQLink fixation cable

Cable length	Model	Parts No.
15m	YHX-YQL-M15M	KNA-M5362-F0

YQLink terminating connector

Model	Parts No.
YHX-YQL-TC	KFA-M5361-00

Other power source options

Module electric power supply (48 VDC-1000 W)

This general-purpose 48 VDC power supply unit can be used for both module control and motor drive.

- Rated output 21 A, peak output rating 42 A (within 5 sec.)
- Unit type general-purpose power, efficiency > 80%, power factor > 90%

Model	Parts No.
LCM-XCU-PS-1000W	KFA-M6561-00

Flexible power cable for movable module

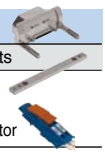
Model	Parts No.
LCMR200-PJ-R2M	KNA-M539H-21

LCMR200 Connection Parts

Module connection kit

Model	Parts No.	Configuration parts
LCMR200-CKIT	KNA-M2043-C0	Connection unit Connection plate Motor power source jumper Control power source jumper

Module terminal kit*



Model	Parts No.	Configuration parts
LCMR200-EKIT	KNA-M2043-E0	End unit ×2 End plate ×2 Control power supply connector

* When a circulation unit made by Yamaha is not used, one terminal kit is necessary for one cluster.
The components for two terminal kits are assembled to or supplied with Yamaha circulation unit.

Adjuster kit*

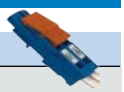
Model	Parts No.	Configuration parts
LCMR200-AKIT	KNA-M2043-A0	Connection unit Adjuster plate Motor power source jumper Control power source jumper

Return line length	Number of adjuster kit
3 m or less	1
More than 3 m and 14 m or less	2
More than 14 m and 25.5 m or less	3

* For the return line, use the specified number of adjuster kit according to the return line length.
For details about the usage location and how to use, see the user's manual.

Maintenance items*

Control power supply connector



Model	Parts No.
LCMR200-CPC	KNA-M4431-00

Control power source jumper

Model	Parts No.
LCMR200-CPJ	KNA-M4421-10

Motor power source connector

Model	Parts No.
LCMR200-MPC	KNA-M4432-00

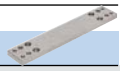
Motor power source jumper

Model	Parts No.
LCMR200-MPJ	KNA-M4422-10
LCMR200-MPJS (for 1000 mm module relay)	KNA-M4422-20

End plate

Model	Parts No.
LCMR200-EP	KNA-M22GM-E0

Connection plate

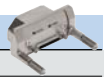


Model	Parts No.
LCMR200-CP	KNA-M22GM-C0

Adjuster plate

Model	Parts No.
LCMR200-AP	KNA-M22GM-A0

End unit



Model	Parts No.
LCMR200-EU	KNA-M2040-E0

Connection unit

Model	Parts No.
LCMR200-CU	KNA-M2040-C0

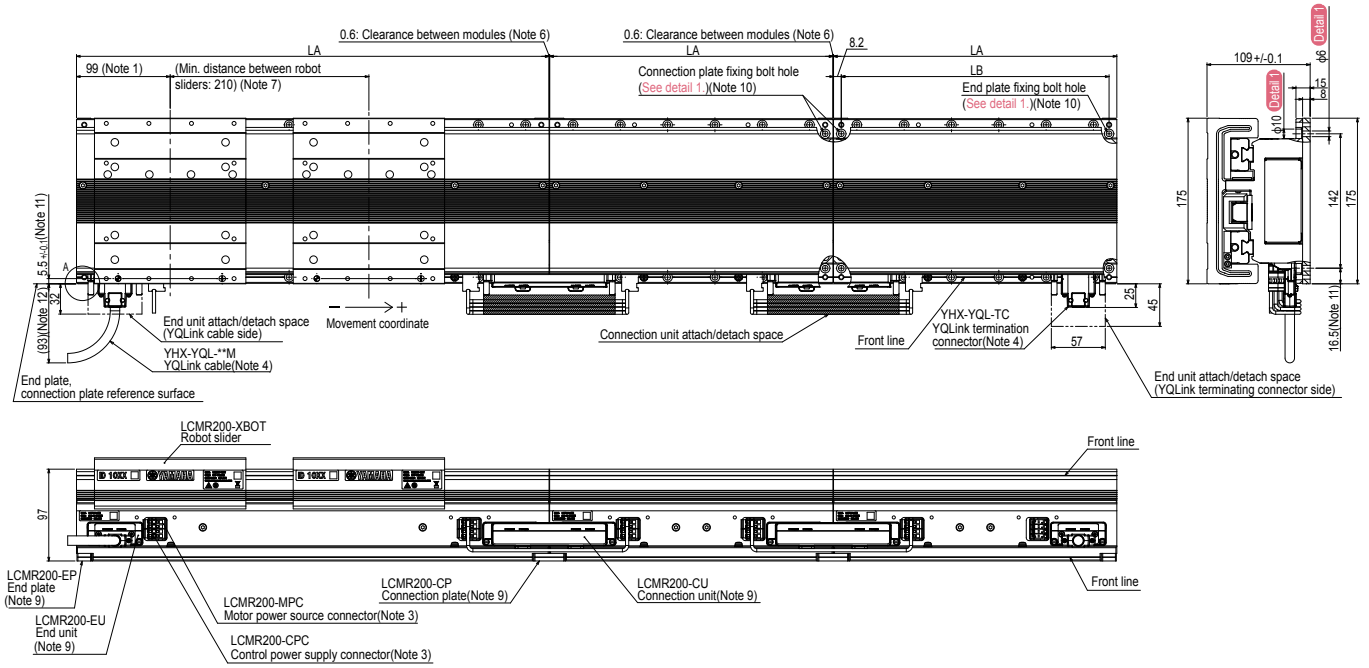
* These are single models of parts included in the module connection kit, adjuster kit, module terminal kit, circulation unit, or module main body.

External view of LCMR200

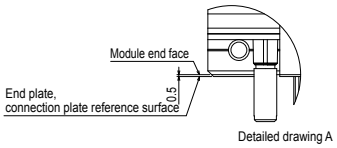
LCMR200 Module connection and installation

Front* cable extraction

LCMR200-F**



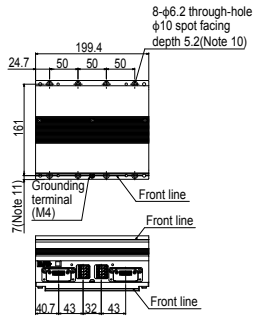
Module type	LA	LB
LCMR200-F2	199.4	183
LCMR200-F3	299.4	283
LCMR200-F5	499.4	483
LCMR200-F10	999.4	983



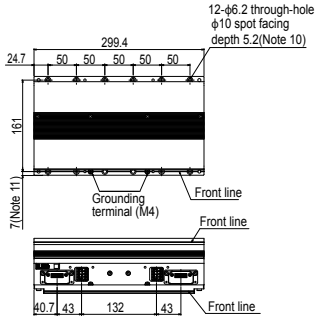
Linear module

Front* cable extraction

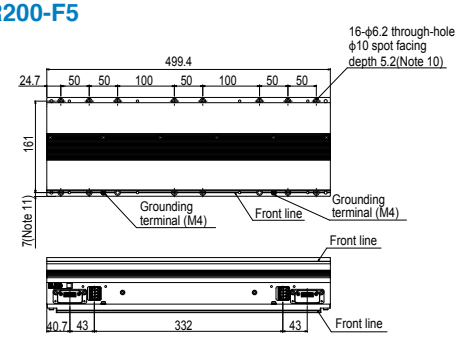
LCMR200-F2



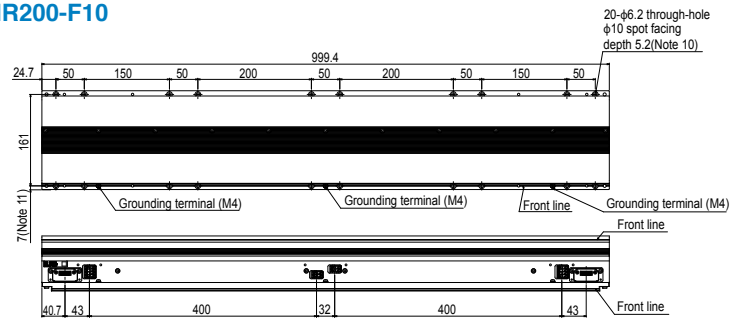
LCMR200-F3



LCMR200-F5



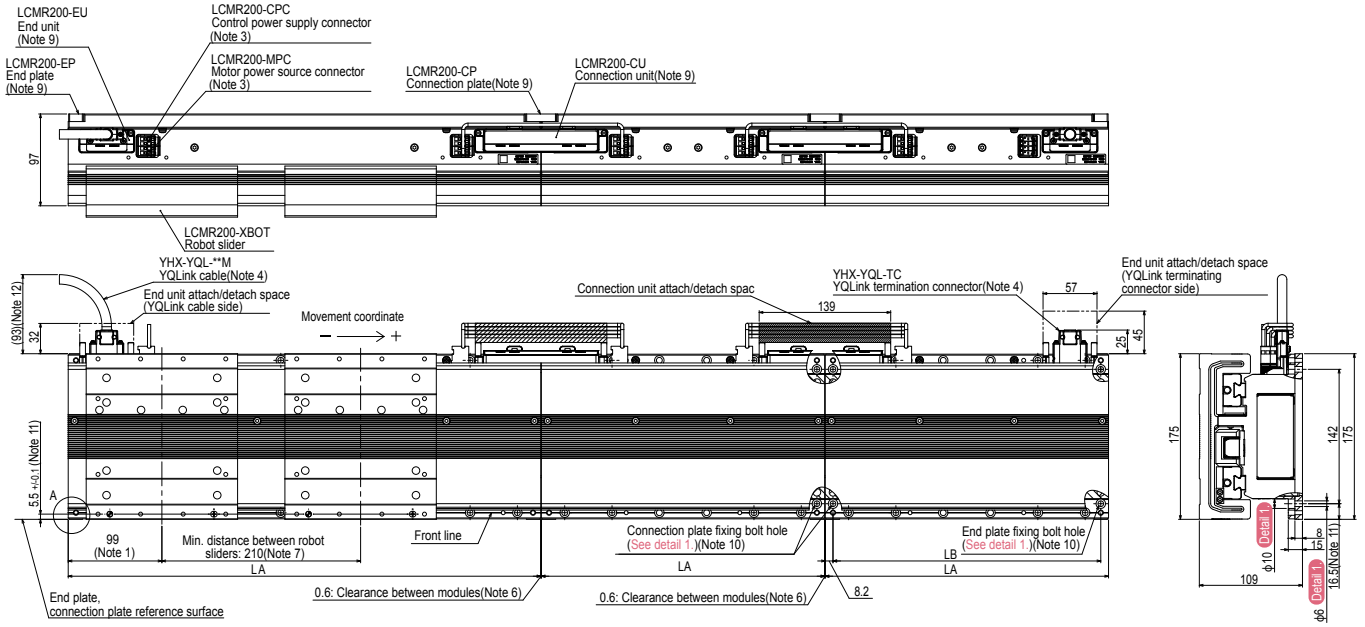
LCMR200-F10



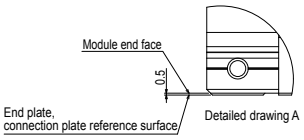
LCMR200 Module connection and installation

Rear* cable extraction

LCMR200-B**



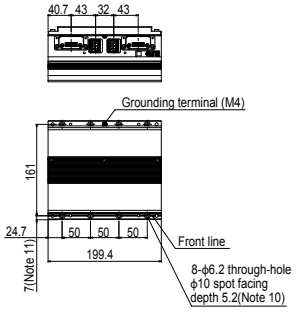
Module type	LA	LB
LCMR200-B2	199.4	183
LCMR200-B3	299.4	283
LCMR200-B5	499.4	483
LCMR200-B10	999.4	983



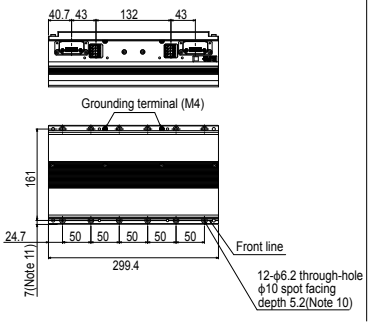
Linear module

Rear* cable extraction

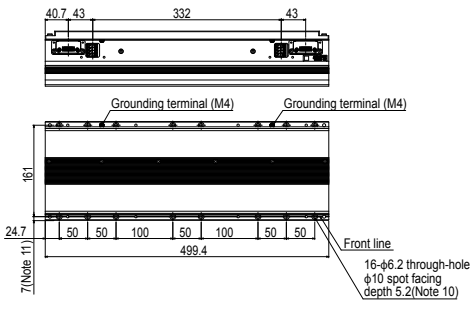
LCMR200-B2



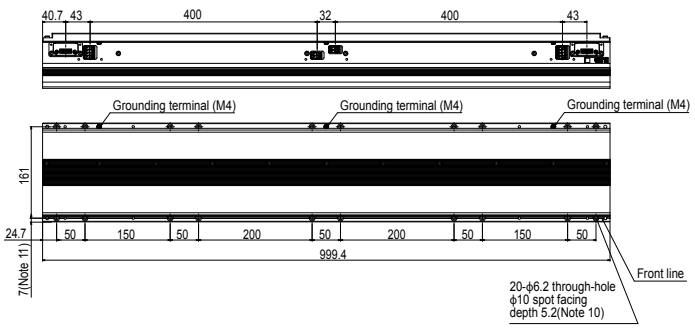
LCMR200-B3



LCMR200-B5



LCMR200-B10

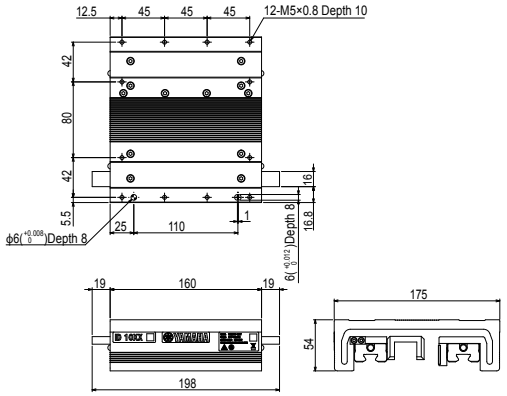


External view of LCMR200

(Note 13)

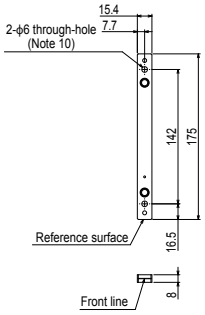
Robot slider

LCMR200-XBOT



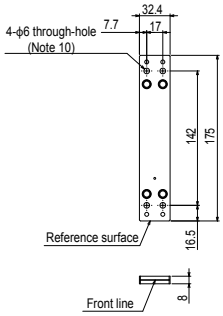
End plate

LCMR200-EP



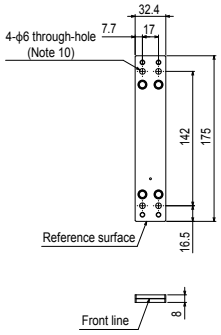
Connection plate

LCMR200-CP



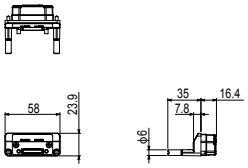
Adjuster plate

LCMR200-AP



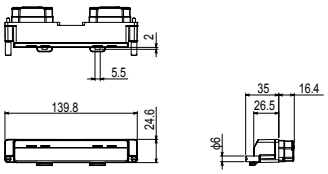
End unit

LCMR200-EU



Connection unit

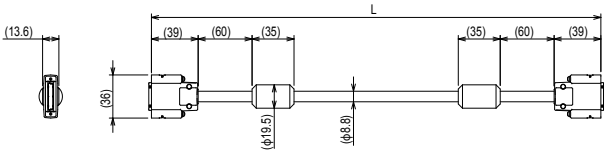
LCMR200-CU



YQLink movable cable

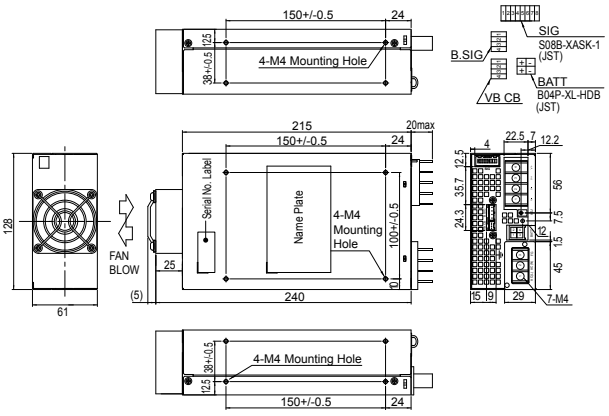
YHX-YQL-R□M (Only 10 m for R10M-N)

Within □	Cable length
0.3	0.3m
3	3m
7	7m
10	10m



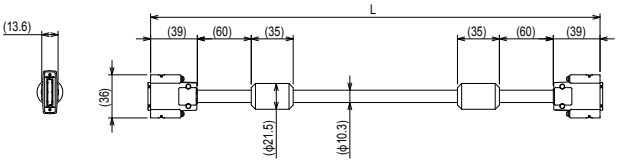
Module electric power supply (48 VDC-1000 W)

LCM-XCU-PS-1000W



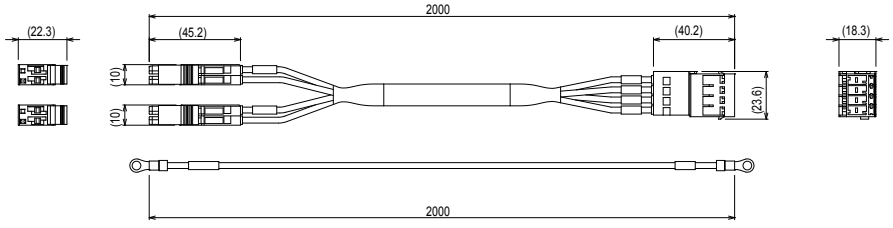
YQLink fixation cable

YHX-YQL-M15M



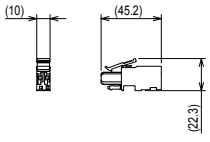
Flexible power cable for movable module

LCMR200-PJ-R2M



Control power supply connector / Motor power source connector

LCMR200-CPC/LCMR200-MPC



Note 1. The area of 99 mm from both ends of the cluster is the range where the robot slider cannot be stopped.
The robot slider stopper is exposed from the end face, causing interference.
(Dimension at the center of the robot slider)
Note 2. Module types can be freely combined within the same cluster after the front and rear of the cable extraction direction have been aligned.
Note 3. The control power source and motor power source can be passed and received by the jumper connector. See the manual for detail of passing and receiving.
Note 4. For the YQLink cable and YQLink terminating connector connection location, see the manual.
Note 5. Sixty-four robot sliders can be installed in a system connected by the YQ Link cables * (depending on the number of robots that are controlled by the same controller).
Note 6. Where modules are connected with the connection plate, the clearance between the adjacent modules is 0.6 mm.
Note 7. The minimum pitch of each slider at the stopping state is 210 mm; however, when they start at the same time, they may collide due to operation conditions, and conditions such as command timing from the upper PLC, programming with YHX, etc. In the case, it is necessary to adjust by securing more distance (pitch) between the sliders, changing the start timing (sequential start), etc.
Note 8. There is no mechanical stopper due to the nature of the product. Please install a mechanical stopper by the customer as needed.
Note 9. The connection plate and connection unit are used to connect the modules, and the end plate and end unit are used at the cluster end.
Note 10. To secure the module, end plate, connection plate, and adjuster plate to the base, use M5 hexagon socket head cap bolts.
Note 11. Distance from the end plate reference surface, connection plate reference surface and adjuster plate reference surface to the spot facing hole for the module clamp bolt.
Note 12. The YQLink movable cable is used. When the YQLink fixation cable is used, the distance is 104 mm.
Note 13. The overall length of the line after the modules have been connected using the adjuster plates can be adjusted. For details, see the manual.

* It may differ depending on the system configuration.
* Orientation corresponds to the order of the driver numbers.

Circulation unit Order model

Horizontal circulation

JGX16 – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

Axis main body	Combination ①	Circulation installation position ②	Lead designation	Single-axis motor specification	Circulation stroke *1	Robot cable length	Robot cable lead-out direction
	H1: Front of motor H2: Rear of motor	L: Left installation R: Right installation	40: 40mm 20: 20mm	Blank: Battery-less S: Standard specification	20 to 80cm	R3 : 3m R5 : 5m R10 : 10m	F: Front of motor R: Rear of motor

LCMR200 – [ ] – [ ] – [ ] **A30** **N** [ ]

LCM main body	Variation	YQLink cable length (IN side) ③	YQLink cable length (OUT side) ③	Driver	Brake unit	Battery *3
	F2: 200 mm (Front cable lead-out) F3: 300 mm (Front cable lead-out) F5: 500 mm (Front cable lead-out) B2: 200 mm (Rear cable lead-out) B3: 300 mm (Rear cable lead-out) B5: 500 mm (Rear cable lead-out)	3: 3m 7: 7m A: 10m	3: 3m 7: 7m A: 10m T: Termination connector *2		N: No	B: Yes N: No

Vertical circulation

JGX16 – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

Axis main body	Combination ④	Circulation installation position ②	Lead designation	Single-axis motor specification	Circulation stroke *1	Robot cable length	Robot cable lead-out direction
	V1: Rear of axis/Above motor V2: Rear of axis/Under motor V3: Rear of axis/Above motor/Folding V4: Front of axis/Above motor V5: Front of axis/Under motor V6: Front of axis/Above motor/Folding	L: Left installation R: Right installation	20: 20mm 10: 10mm	Blank: Battery-less S: Standard specification	30 to 60cm	R3 : 3m R5 : 5m R10 : 10m	F: Front of motor R: Rear of motor

LCMR200 – [ ] – [ ] – [ ] **A30** **V** [ ]

LCM main body	Variation	YQLink cable length (IN side) ③	YQLink cable length (OUT side) ③	Driver	Brake unit	Battery *3
	F2: 200 mm (Front cable lead-out) F3: 300 mm (Front cable lead-out) F5: 500 mm (Front cable lead-out) B2: 200 mm (Rear cable lead-out) B3: 300 mm (Rear cable lead-out) B5: 500 mm (Rear cable lead-out)	3: 3m 7: 7m A: 10m	3: 3m 7: 7m A: 10 T: Termination connector *2		V: Yes	B: Yes N: No

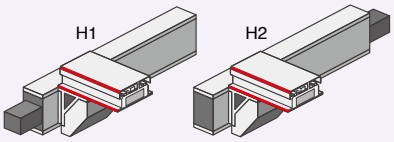
*1 Cautions on circulation stroke
- Specify the same distance as that between the forward and backward movements of the equipment for the circulation stroke.
- The transfer cannot be stopped at a location other than the specified circulation stroke.
- After delivery, the customer cannot adjust the circulation stroke.

*2 The termination connector can be selected only when the circulation installation position is R (right installation).

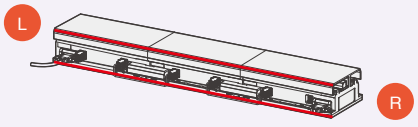
*3 When the battery-less motor is selected, no battery is needed.

■The left and right are reference when the front line of the module is placed on the front. ■The front and rear are the front line reference of the module. — Front line

① Combination

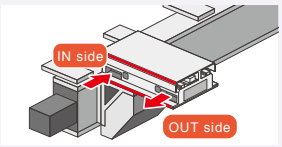


② Circulation installation position



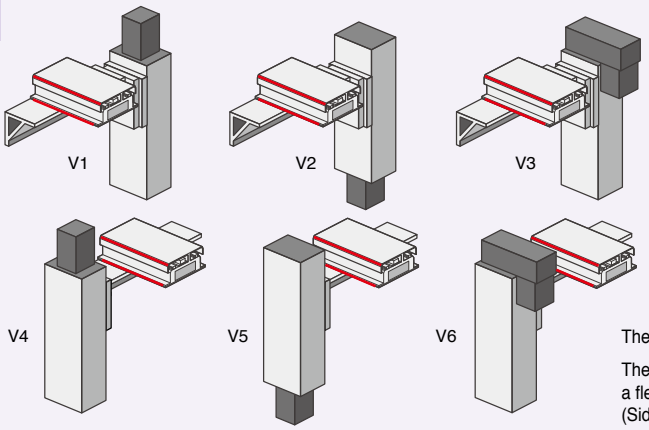
When the front line is placed on the front, the left side of the main line is L while its right side is R.

③ Length of YQLink cable



When the front line is placed on the front, the left side is the IN side while the right side is the OUT side.

④ Combination



The motor folding is performed only on the top side.

The folding direction is only on a side where there is a flexible cable carrier.
(Side where the slider is not ejected.)

* All illustrations shown above use the circulation installation position R (right installation).

MEMO

Circulation unit Basic specifications

JGX16-H Basic specifications

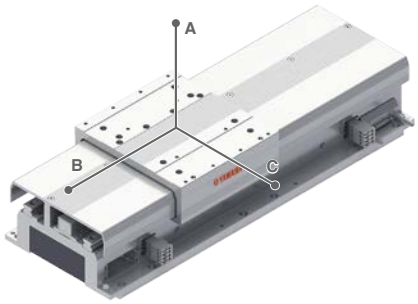
JGX16-H Basic specifications

Axis configuration	Junction axis		LCMR200 (*1)
Motor output	80□ / 750W		-
Repeated positioning accuracy	+/- 0.005		+/- 0.005
Speed reduction mechanism/drive method	Grinding ball screw ϕ20 (C5 grade)		Linear motor with moving magnet type core
Ball screw lead	40mm	20mm	-
Maximum speed (*2)	2400mm/sec	1200mm/sec	2500mm/sec
Circulation pitch/linear module length	200 to 800 mm (50 mm pitch)		200, 300, 500
Position detection	Magnetic type absolute position sensor (*3)		Magnetic type absolute position sensor
Operating temperature	0°C to 40°C (*4)		
Controller	YHX controller		

*1: For details about the specifications, see P.20.
*2: The maximum speed may not be reached depending on the operating range.
*3: The circulation transfer position only
*4: The operation is performed at an environmental temperature (C) at which the installation and adjustment have been performed.

JGX16-H Maximum payload per robot slider

Linear module length		200	300	500	
Number of robot slider simultaneous circulations		1	1	1	1
Ball screw lead	40mm	15	15	15	12
	20mm	15	15	15	15



JGX16-H Allowable overhang amount (*1)

Overhang direction		A direction	B direction	C direction (*2)
Number of robot slider simultaneous circulations		1 or 2	1 or 2	1 or 2
Payload	5kg	760	405	239
	10kg	762	231	158
	15kg	700	173	122

*1 Distance from the center of the top surface of the robot slider to the center of gravity of the load.
*2 Be aware that the robot sliders do not interfere with each other between the main lines.

JGX16-V Basic specifications

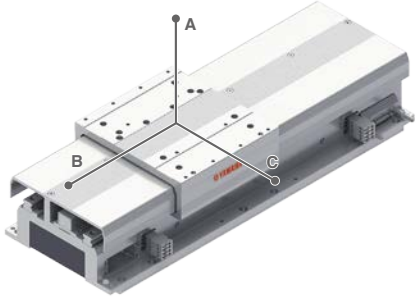
JGX16-V Basic specifications

Axis configuration	Junction axis		LCMR200 (*1)
Motor output	80□ / 750W		-
Repeated positioning accuracy	+/- 0.005		+/- 0.005
Speed reduction mechanism/drive method	Grinding ball screw ϕ20 (C5 grade)		Linear motor with moving magnet type core
Ball screw lead	20mm	10mm	-
Maximum speed (*2)	1200mm/sec	600mm/sec	2500mm/sec
Circulation pitch/linear module length	300 to 600 mm (50 mm pitch)		200, 300, 500
Position detection	Magnetic type absolute position sensor (*3)		Magnetic type absolute position sensor
Operating temperature	0°C to 40°C (*4)		
Controller	YHX controller		

*1: For details about the specifications, see P.20.
*2: The maximum speed may not be reached depending on the operating range.
*3: The circulation transfer position only
*4: The operation is performed at an environmental temperature (C) at which the installation and adjustment have been performed.

JGX16-V Maximum payload per robot slider

Linear module length		200	300	500	
Number of robot slider simultaneous circulations		1	1	1	2
Ball screw lead	20mm	9.5	7.5	3.5	
	10mm	15	15	15	15



JGX16-V Allowable overhang amount (*1)

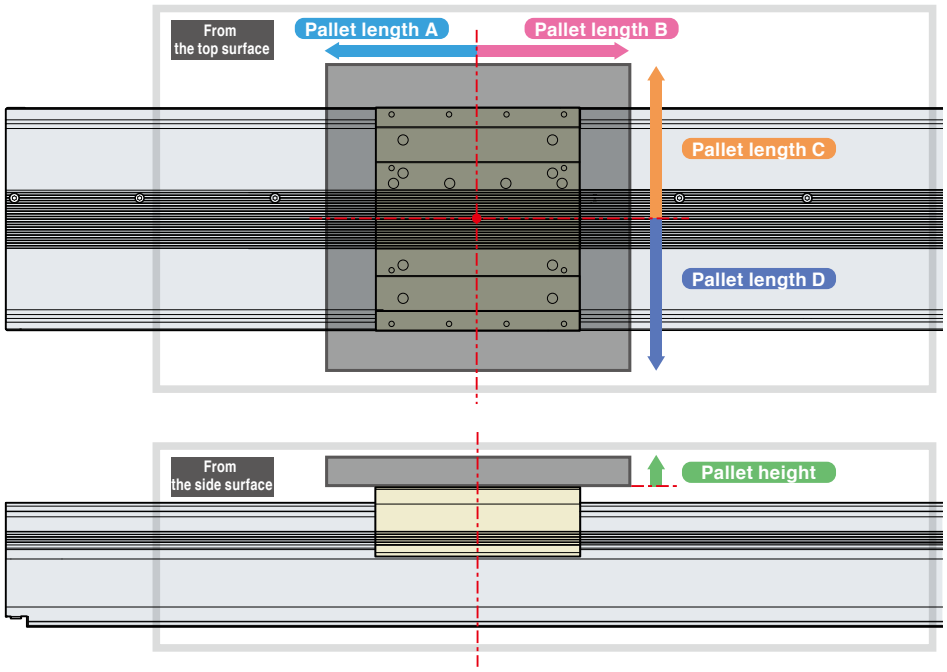
Overhang direction		A direction (*2)	B direction	C direction	
Number of robot slider simultaneous circulations		1 or 2	1 or 2	1	2
Payload	5kg	380	405	150	150
	10kg	380	231	150	100
	15kg	380	173	122	50

*1 Distance from the center of the top surface of the robot slider to the center of gravity of the load.
*2 When this unit is inserted or ejected to or from the lower stage line, the pallet height needs to be “circulation pitch - 220 mm” or less.

Transferrable pallet size list (*1)

	Circulation unit	Linear module length	Pallet length [mm]			Pallet width [mm]			Pallet height [mm]
			A	B	A+B	C	D	C+D	
Recommended size when one slider circulates.	JGX16-H	200	99	99	198	Not restricted. (*2)			Not restricted. (*2)
		300	199	199	298				
		500	399	399	498				
	JGX16-V	200	99	99	198	150	150	300	Circulation pitch - 220 mm
		300	199	199	298				
		500	399	399	498				
Maximum size when one slider circulates.	JGX16-H	200	99	99	198	Not restricted. (*2)			Not restricted. (*2)
		300	199	199	398				
		500	399	399	798				
	JGX16-V	200	99	99	198	150	150	300	Circulation pitch - 220 mm
		300	199	199	398				
		500	399	399	798				
Maximum size when two sliders circulate.	JGX16-H	200	Unavailable.			Unavailable.			Unavailable.
		300							
		500	145 (*3)	145 (*3)	244 (*3)	Not restricted. (*2)			Not restricted. (*2)
	JGX16-V	200	Unavailable.			Unavailable.			Unavailable.
		300							
		500	145 (*3)	145 (*3)	244 (*3)	150	150	300	Circulation pitch - 220 mm

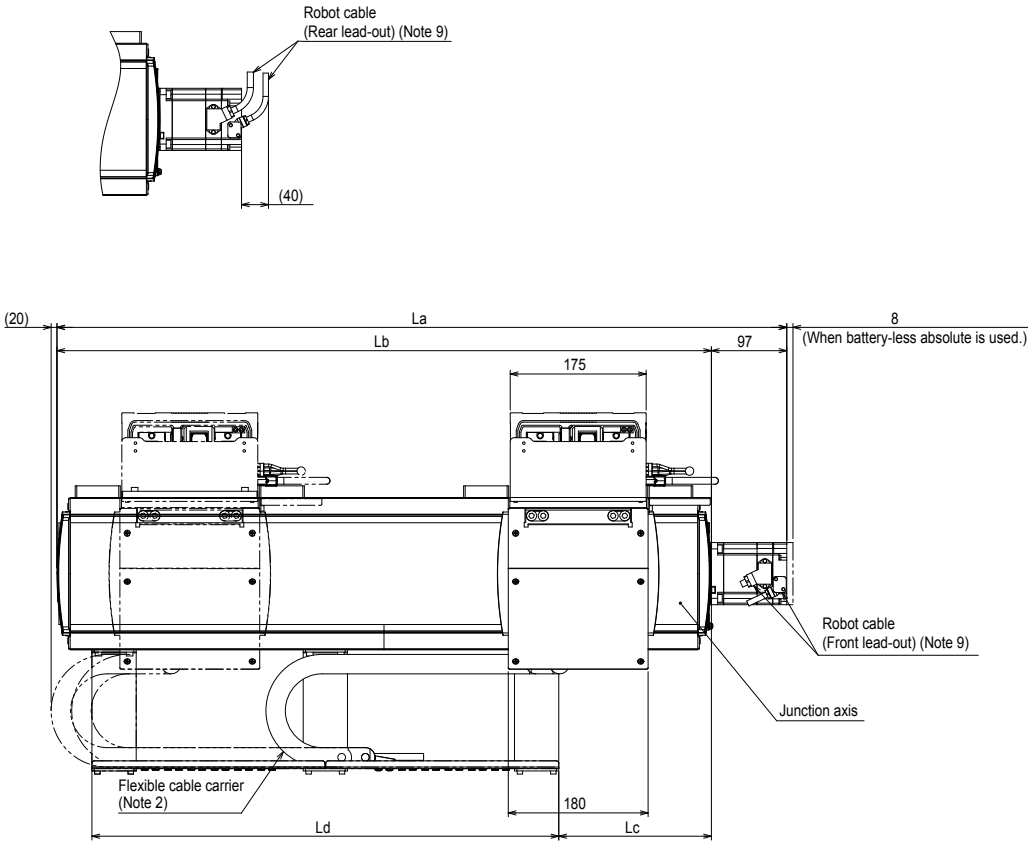
*1: The pallet size indicates the total size of the loads on the robot slider including the customer's workpieces.
In addition, it is assumed that all pallets on the robot sliders have the same shape.
For the horizontal circulation method, be aware that pallets or workpieces on the robot sliders that pass each other on the outbound and inbound routes do not collide with each other.
*2: The allowable overhang amount must not be exceeded. Be aware that the robot sliders do not collide with each other between the main lines.
*3: When either A or B is 122 mm or more, the pallet cannot be arranged at the center of the robot slider.
It is assumed that all pallets on the robot sliders have the same shape.



Circulation unit **External view**

Horizontal circulation

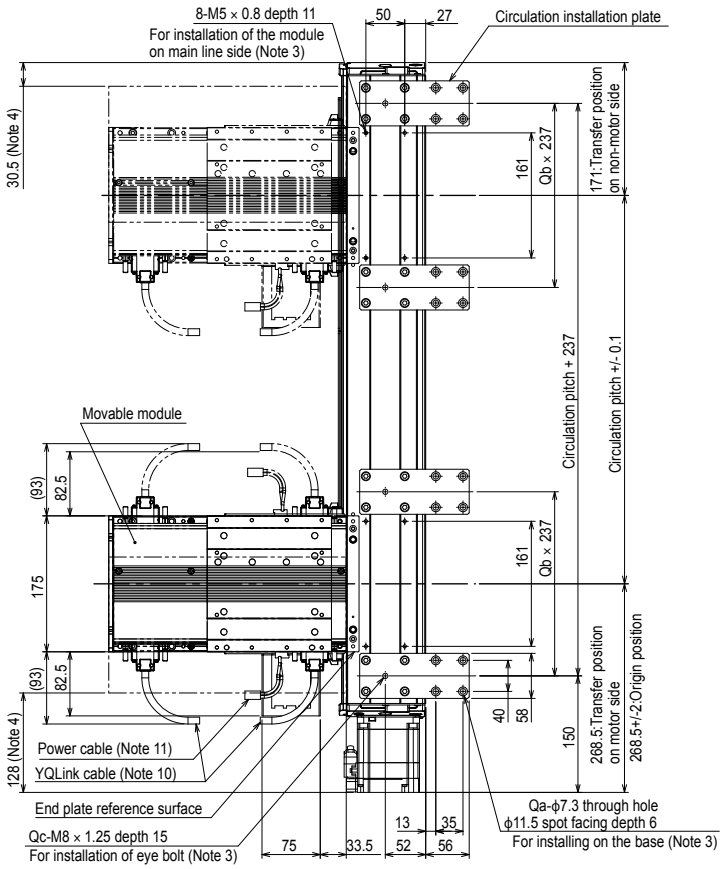
JGX16-H1L/H2L



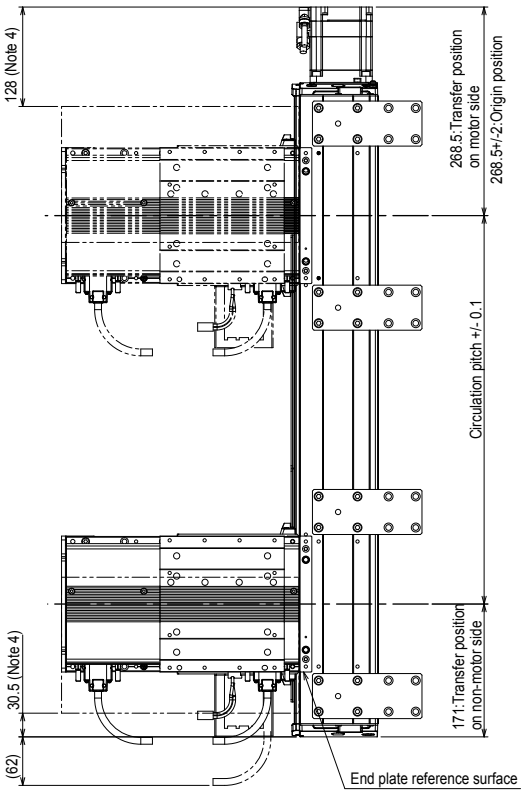
Note 1. For details about the installation and operation procedures, see the user's manual.
Note 2. The user wiring cannot be passed through the flexible cable carrier.
Note 3. Do not use the installation hole at each location for an application other than that specified.
Note 4. Movable module position when the junction axis is stopped by the mechanical stopper.
Note 5. Robot slider unstoppable range from the module end.
An unstoppable range of 99 mm on the main line side may vary depending on the pallet length.
For details, see the YHX User's Manual.
Note 6. Two-slider simultaneous circulation can be performed only when the movable module is 500mm-module.
Note 7. When the pallet length is 200 mm or more, this pitch is "pallet length + 10 mm".
However, when two sliders start at the same time, the minimum pitch is 250 mm or "pallet length + 50 mm".
Note 8. Reference value for installation of the base. Install the circulation unit so that it is not in contact with the base end.
Note 9. The robot cable fixing R is R30. The lead-out direction may vary depending on the specifications.
Note 10. The YQLink cable fixing R is R55. This cable may become the termination connector depending on the specifications.
Note 11. The power cable fixing R is R55.
Note 12. The weight of the main body is a reference value. The weights of the module and robot slider are not included.

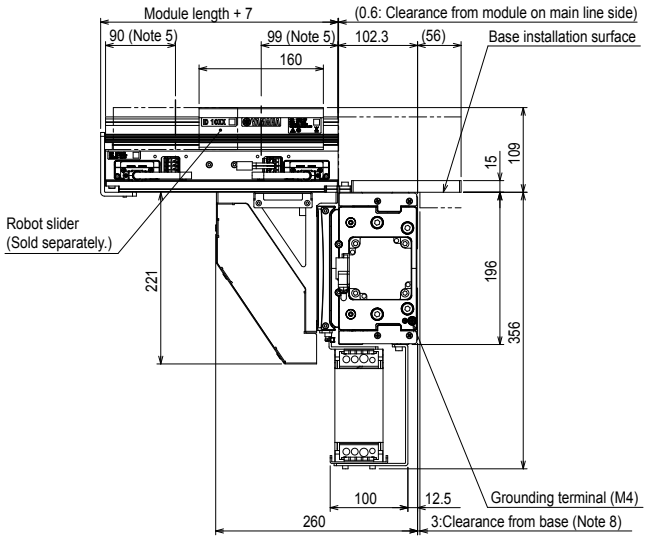
Circulation pitch	200	250	300	350	400	450	500	550	600	650	700	750	800
La	639.5	689.5	739.5	789.5	839.5	889.5	939.5	989.5	1039.5	1089.5	1139.5	1189.5	1239.5
Lb	542.5	592.5	642.5	692.5	742.5	792.5	842.5	892.5	942.5	992.5	1042.5	1092.5	1142.5
Lc	196.5	253.5	307.5	60.5	85.5	171.5	196.5	251.5	306.5	361.5	416.5	471.5	496.5
Ld	300	300	300	601	601	601	601	601	601	601	601	601	601
Qa	8	8	8	8	16	16	16	16	16	16	16	16	16
Qb	0	0	1	1	1	1	1	1	1	1	1	1	1
Qc	2	2	4	4	4	4	4	4	4	4	4	4	4
Weight (Kg)(Note 12)	27.6	28.7	31.7	33.6	34.7	35.8	37	38.1	39.3	40.4	41.6	42.7	43.9

JGX16-H1L

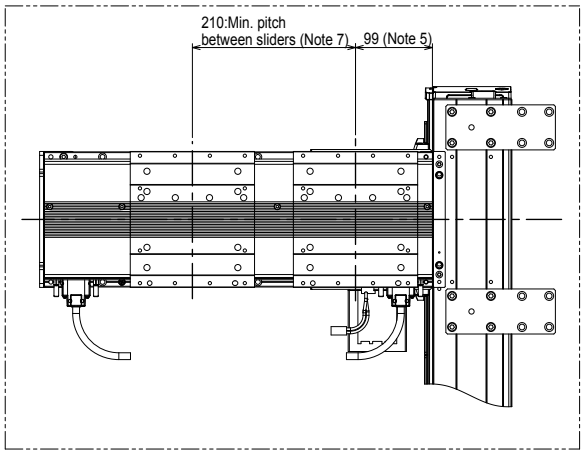


JGX16-H2L





2-slider circulation (Note 6)

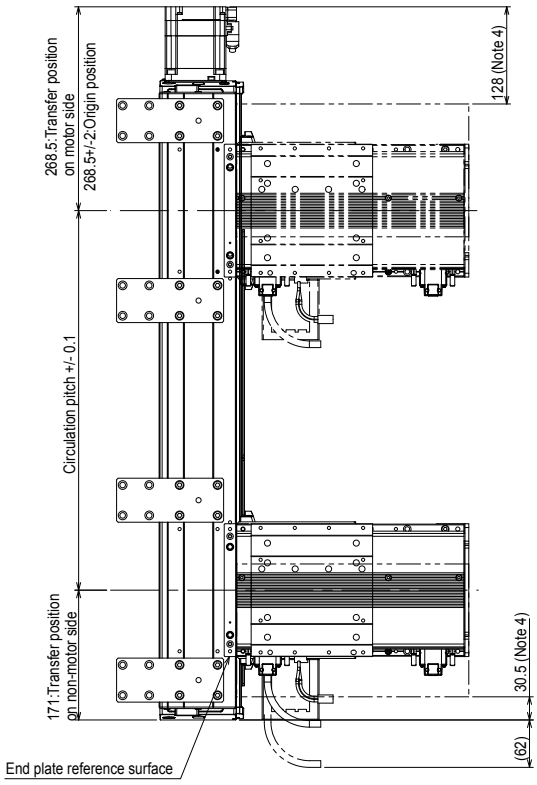


Circulation unit **External view**

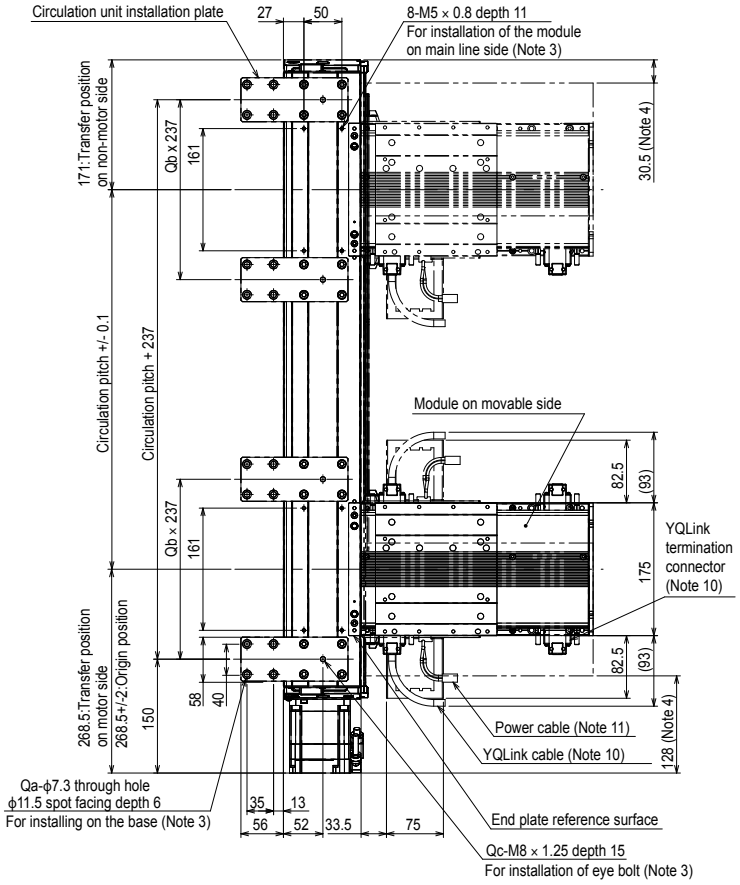
Horizontal circulation

JGX16-H1R/H2R

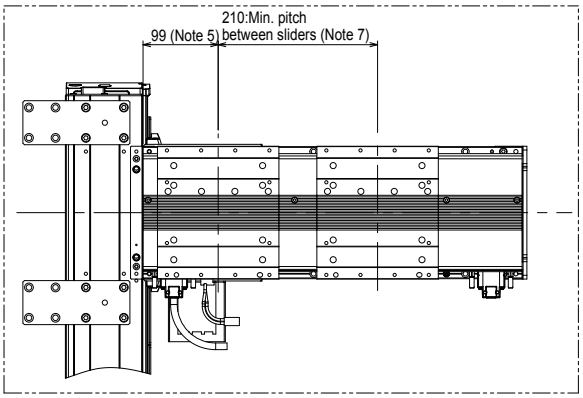
JGX16-H2R

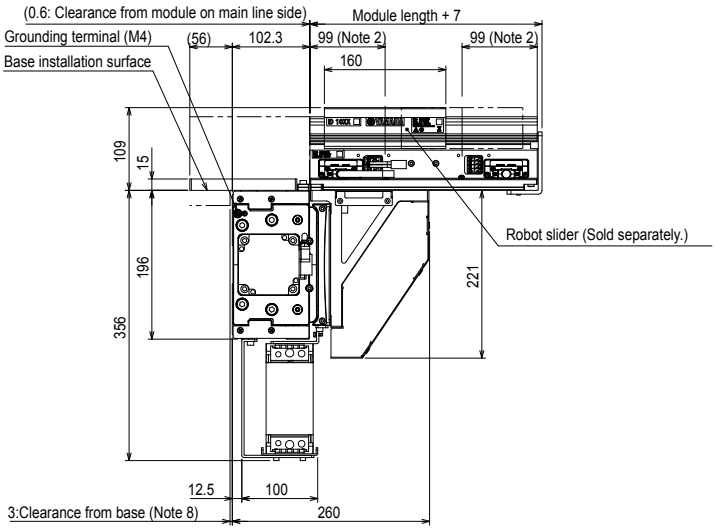


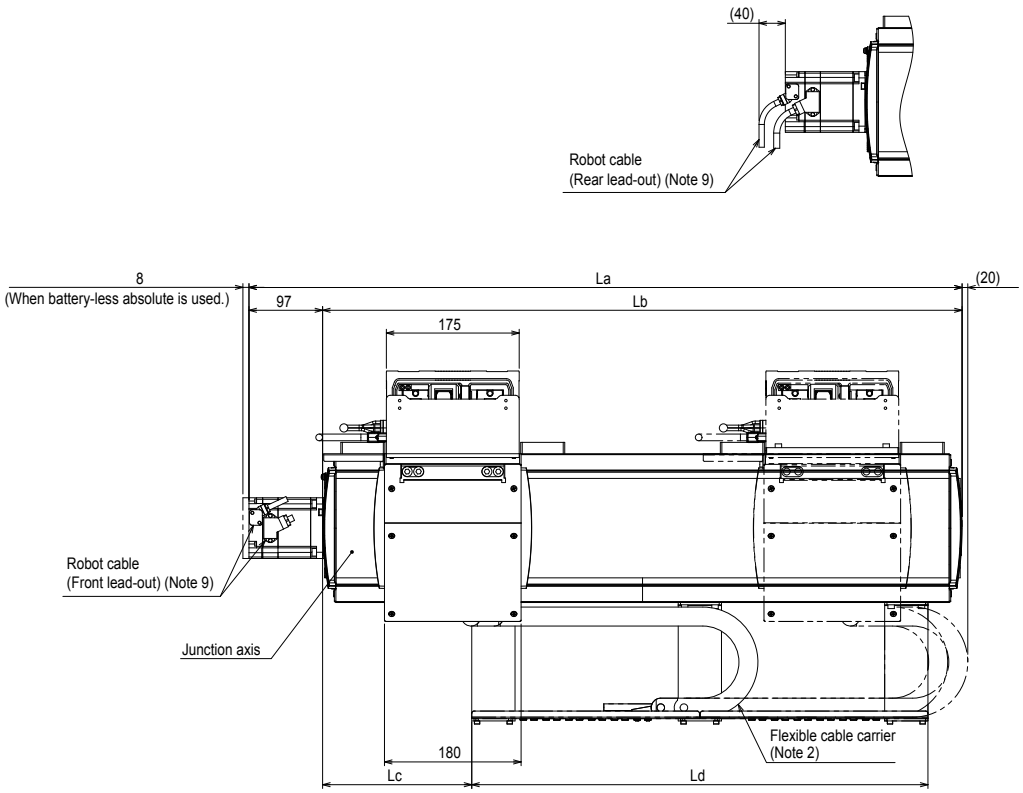
JGX16-H1R



2-slider circulation (Note 6)







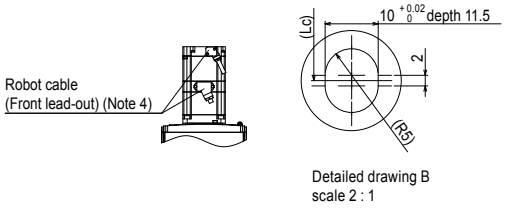
Note 1. For details about the installation and operation procedures, see the user's manual.
Note 2. The user wiring cannot be passed through the flexible cable carrier.
Note 3. Do not use the installation hole at each location for an application other than that specified.
Note 4. Movable module position when the junction axis is stopped by the mechanical stopper.
Note 5. Robot slider unstoppable range from the module end.
An unstoppable range of 99 mm on the main line side may vary depending on the pallet length.
For details, see the YHX User's Manual.
Note 6. Two-slider simultaneous circulation can be performed only when the movable module is 500mm-module.
Note 7. When the pallet length is 200 mm or more, this pitch is "pallet length + 10 mm".
However, when two sliders start at the same time, the minimum pitch is 250 mm or "pallet length + 50 mm".
Note 8. Reference value for installation of the base. Install the circulation unit so that it is not in contact with the base end.
Note 9. The robot cable fixing R is R30. The lead-out direction may vary depending on the specifications.
Note 10. The YQLink cable fixing R is R55. This cable may become the termination connector depending on the specifications.
Note 11. The power cable fixing R is R55.
Note 12. The weight of the main body is a reference value. The weights of the module and robot slider are not included.

Circulation pitch	200	250	300	350	400	450	500	550	600	650	700	750	800
La	639.5	689.5	739.5	789.5	839.5	889.5	939.5	989.5	1039.5	1089.5	1139.5	1189.5	1239.5
Lb	542.5	592.5	642.5	692.5	742.5	792.5	842.5	892.5	942.5	992.5	1042.5	1092.5	1142.5
Lc	196.5	253.5	307.5	60.5	85.5	171.5	196.5	251.5	306.5	361.5	416.5	471.5	496.5
Ld	300	300	300	601	601	601	601	601	601	601	601	601	601
Qa	8	8	8	8	16	16	16	16	16	16	16	16	16
Qb	0	0	1	1	1	1	1	1	1	1	1	1	1
Qc	2	2	4	4	4	4	4	4	4	4	4	4	4
Weight (Kg)(Note 12)	27.6	28.7	31.7	33.6	34.7	35.8	37	38.1	39.3	40.4	41.6	42.7	43.9

Circulation unit **External view**

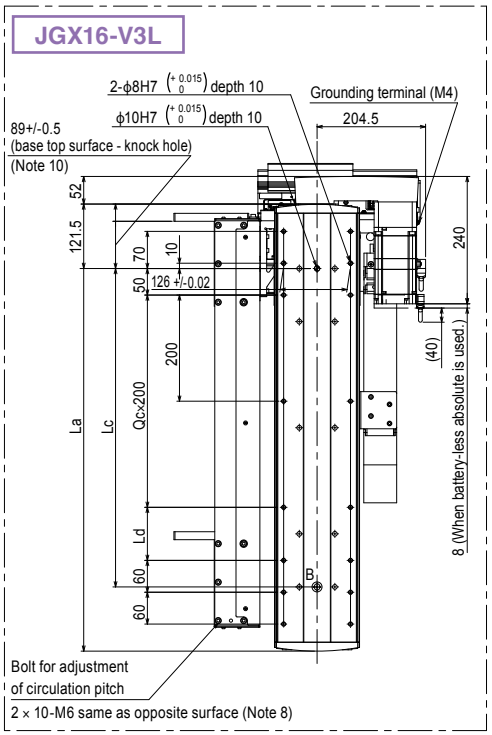
Vertical circulation

JGX16-V1L/V2L/V3L

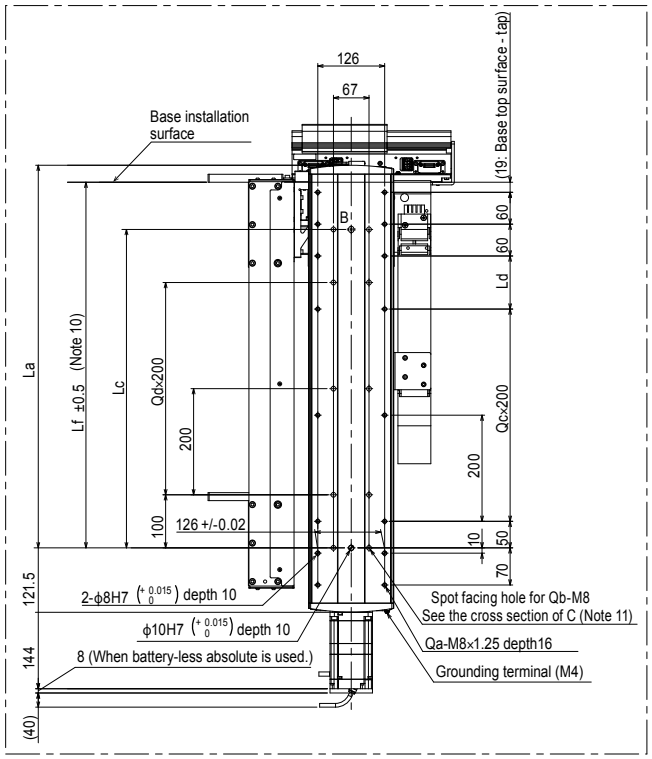


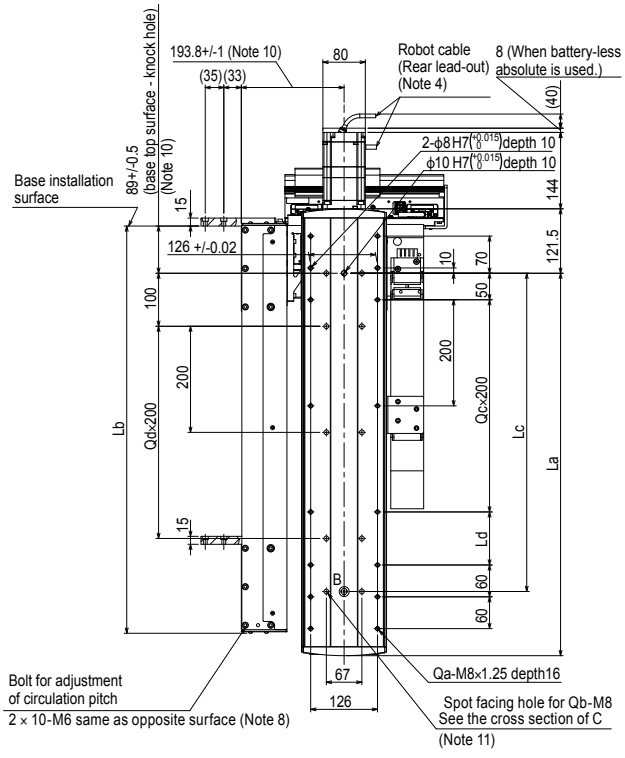
Detailed drawing B
scale 2 : 1

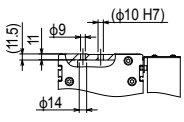
JGX16-V3L



JGX16-V2L

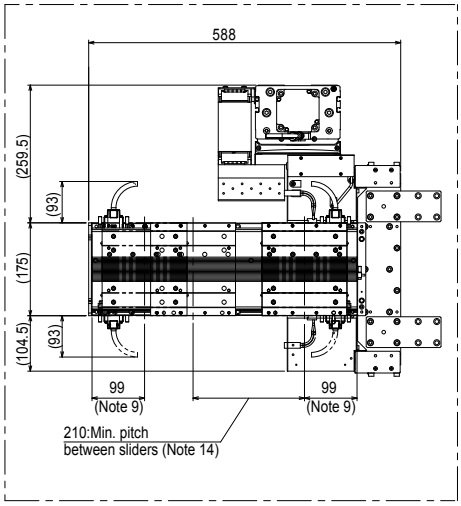




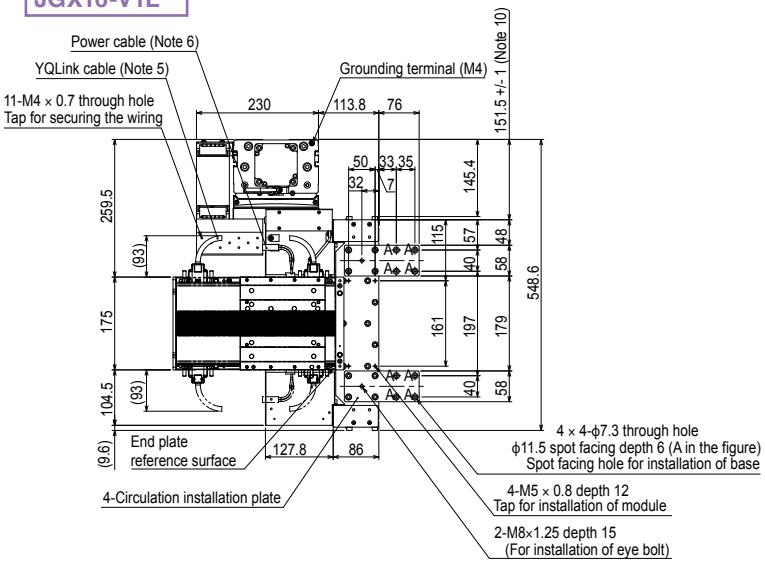


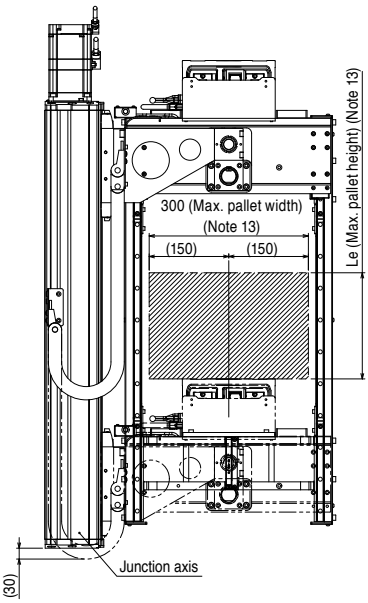
Cross section of C

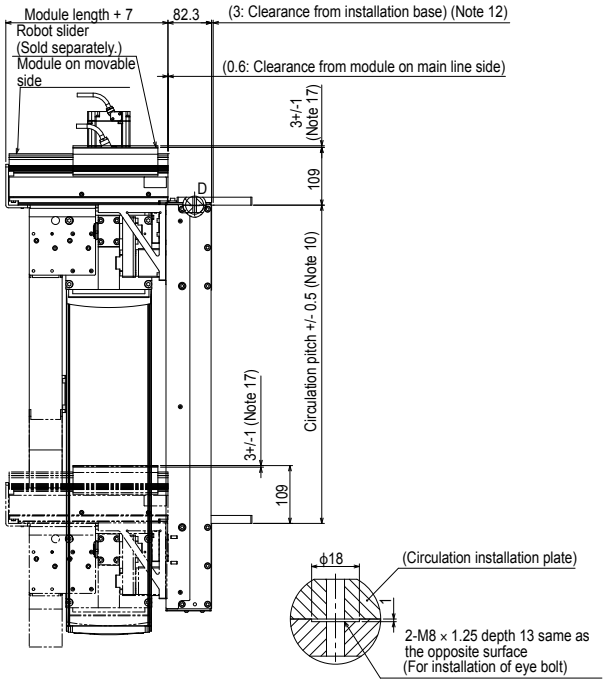
2-slider circulation (Note 15)



JGX16-V1L







Detailed drawing D
Scale 1 : 1

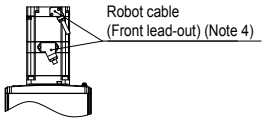
Note 1. For details about the installation and operation procedures, see the user's manual.
Note 2. The user wiring cannot be passed through the flexible cable carrier.
Note 3. Do not use the installation hole at each location for an application other than that specified.
Note 4. The robot cable fixing R is R30. The lead-out direction may vary depending on the specifications.
Note 5. The YQLink cable fixing R is R55. This cable may become the termination connector depending on the specifications.
Note 6. The power cable fixing R is R55.
Note 7. The weight of the main body is a reference value. The weights of the module and robot slider are not included.
Note 8. Hexagon socket head cap bolt for fine adjustment of circulation pitch.
Maintain a work space where you can access the bolt.
Note 9. Robot slider unstoppable range from the module end.
An unstoppable range of 99 mm on the main line side may vary depending on the pallet length.
For details, see the instruction manual for YHX standard profile.
Note 10. Design and install the base so that it is within the described tolerance.
Note 11. When securing the unit using the installation spot facing hole (cross section of C), peel off the dust-proof seal adhered to the inside of the axis, and then install the unit.
Note 12. Reference value for installation of the base. Install the circulation unit so that it is not in contact with the base end.
Note 13. This value may differ from the allowable overhang amount of the robot slider.
For details about the payload and allowable overhand amount, see the LCMR200 specifications.
Even when the circulation operation is performed with workpieces placed, the dimensions are restricted in the same manner.
Note 14. When the pallet length is 200 mm or more, this pitch is "pallet length + 10 mm".
However, when two sliders start at the same time, the minimum pitch is 250 mm or "pallet length + 50 mm".
Note 15. Two-slider simultaneous circulation can be performed only when the movable module is 500mm-module.
Note 16. The origin position is located on the motor side.
Note 17. Slider top surface position when the junction axis is stopped by the mechanical stopper.

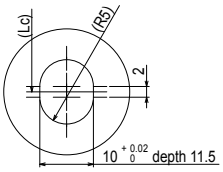
Circulation pitch	300mm	350mm	400mm	450mm	500mm	550mm	600mm
La	421	471	521	571	621	671	721
Lb	467.8	517.8	567.8	617.8	667.8	717.8	767.8
Lc	300	350	400	450	500	550	600
Ld	200	50	100	150	200	50	100
Le	80	130	180	230	280	330	380
Lf	389	439	489	539	589	639	689
Qa	10	12	12	12	12	14	14
Qb	6	8	8	8	8	10	10
Qc	0	1	1	1	1	2	2
Qd	0	1	1	1	1	2	2
Weight (Kg)(Note 7)	47.6	49.0	50.5	52.0	53.5	55.0	56.4

Circulation unit **External view**

Vertical circulation

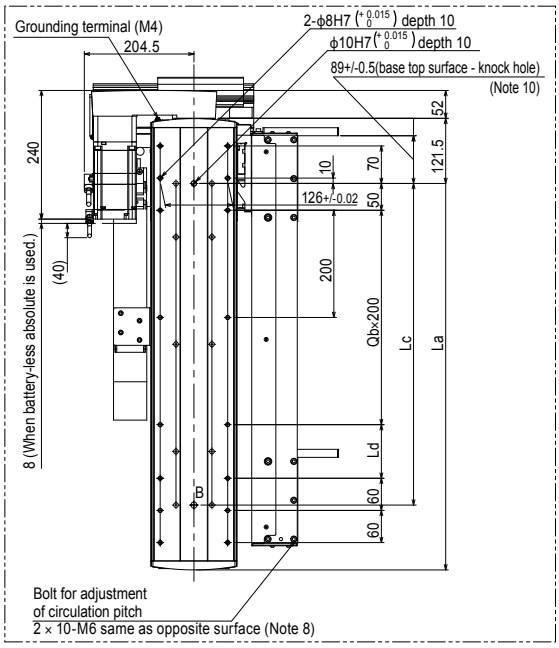
JGX16-V4L/V5L/V6L



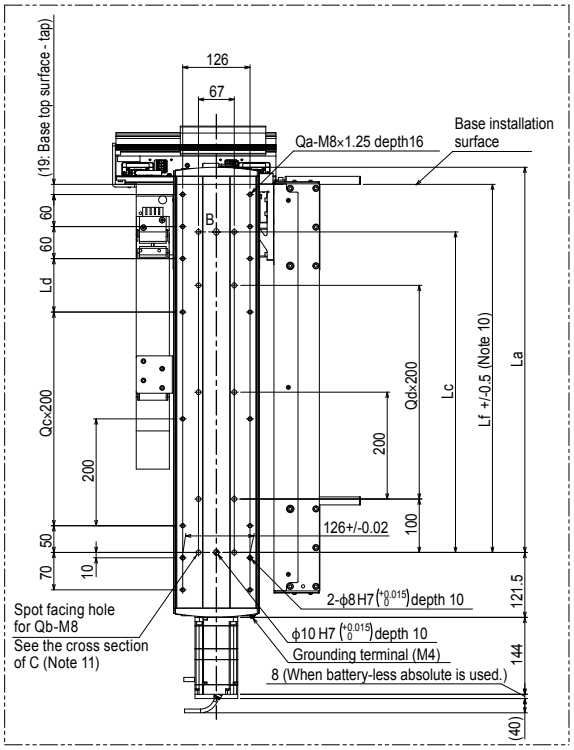


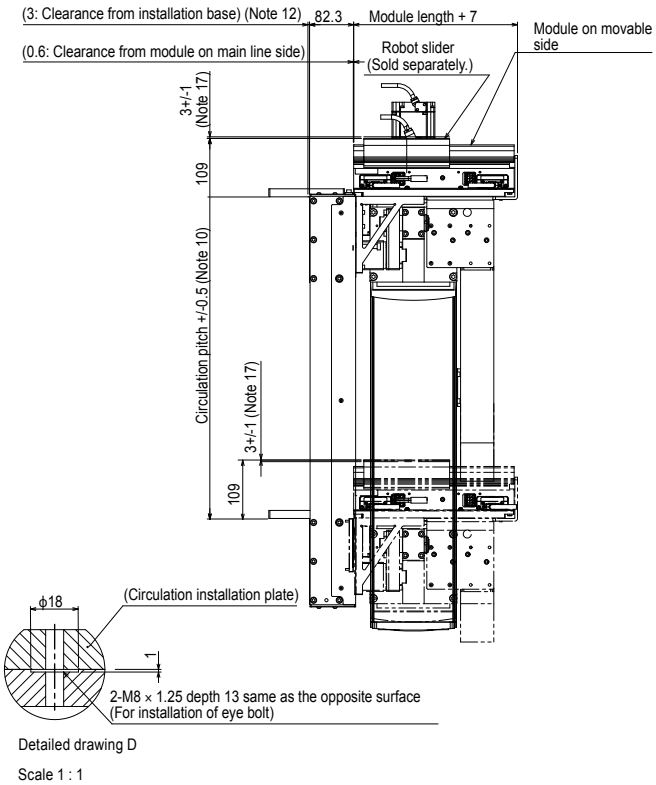
Detailed drawing B
scale 2 : 1

JGX16-V6L



JGX16-V5L

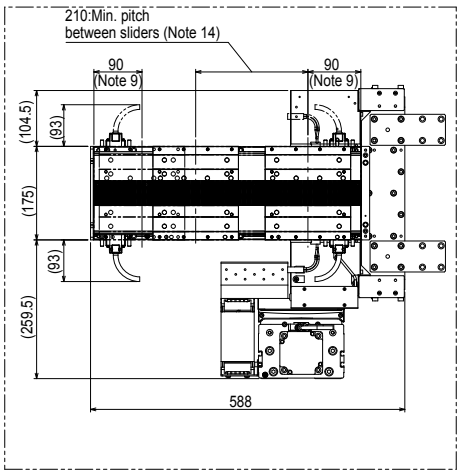




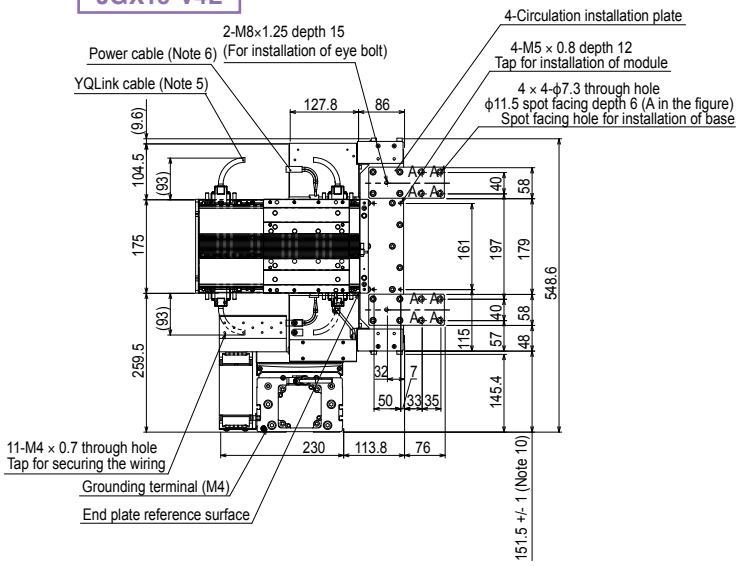
Detailed drawing D

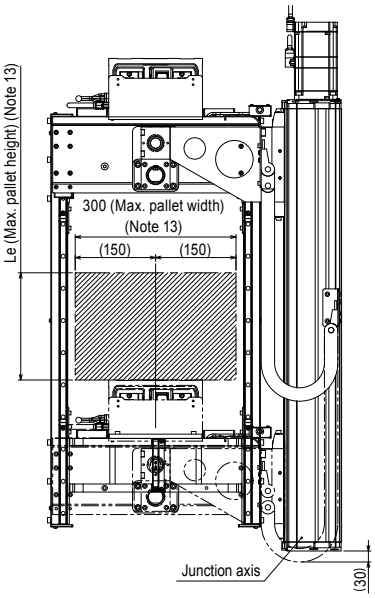
Scale 1 : 1

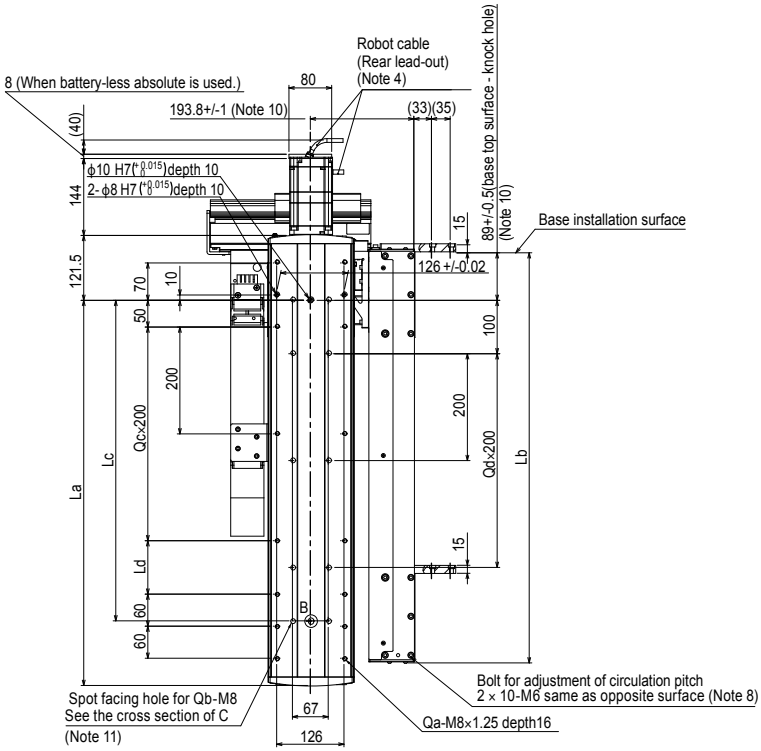
2-slider circulation (Note 15)

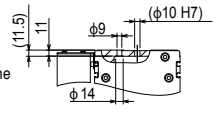


JGX16-V4L









Cross section of C

Note 1. For details about the installation and operation procedures, see the user's manual.
Note 2. The user wiring cannot be passed through the flexible cable carrier.
Note 3. Do not use the installation hole at each location for an application other than that specified.
Note 4. The robot cable fixing R is R30. The lead-out direction may vary depending on the specifications.
Note 5. The YQLink cable fixing R is R55. This cable may become the termination connector depending on the specifications.
Note 6. The power cable fixing R is R55.
Note 7. The weight of the main body is a reference value. The weights of the module and robot slider are not included.
Note 8. Hexagon socket head cap bolt for fine adjustment of circulation pitch.
Maintain a work space where you can access the bolt.
Note 9. Robot slider unstoppable range from the module end.
An unstoppable range of 99 mm on the main line side may vary depending on the pallet length.
For details, see the instruction manual for YHX standard profile.
Note 10. Design and install the base so that it is within the described tolerance.
Note 11. When securing the unit using the installation spot facing hole (cross section of C), peel off the dust-proof seal adhered to the inside of the axis, and then install the unit.
Note 12. Reference value for installation of the base. Install the circulation unit so that it is not in contact with the base end.
Note 13. This value may differ from the allowable overhang amount of the robot slider.
For details about the payload and allowable overhand amount, see the LCMR200 specifications.
Even when the circulation operation is performed with workpieces placed, the dimensions are restricted in the same manner.
Note 14. When the pallet length is 200 mm or more, this pitch is "pallet length + 10 mm".
However, when two sliders start at the same time, the minimum pitch is 250 mm or "pallet length + 50 mm".
Note 15. Two-slider simultaneous circulation can be performed only when the movable module is 500mm-module.
Note 16. The origin position is located on the motor side.
Note 17. Slider top surface position when the junction axis is stopped by the mechanical stopper.

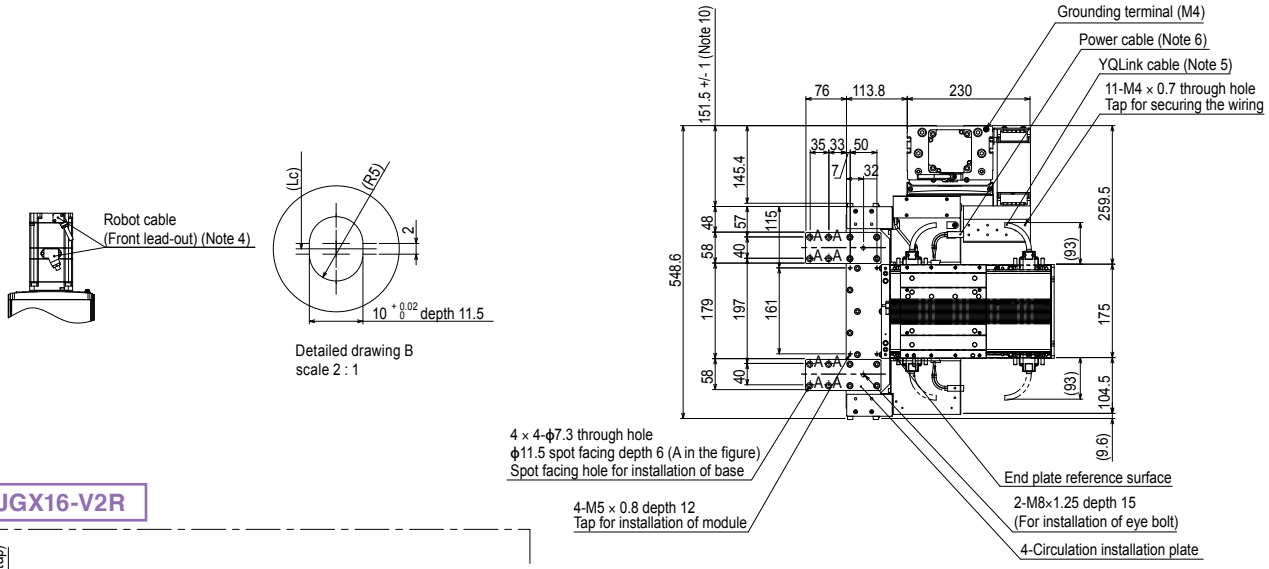
Circulation pitch	300mm	350mm	400mm	450mm	500mm	550mm	600mm
La	421	471	521	571	621	671	721
Lb	467.8	517.8	567.8	617.8	667.8	717.8	767.8
Lc	300	350	400	450	500	550	600
Ld	200	50	100	150	200	50	100
Le	80	130	180	230	280	330	380
Lf	389	439	489	539	589	639	689
Qa	10	12	12	12	12	14	14
Qb	6	8	8	8	8	10	10
Qc	0	1	1	1	1	2	2
Qd	0	1	1	1	1	2	2
Weight (Kg)(Note 7)	47.6	49.0	50.5	52.0	53.5	55.0	56.4

Circulation unit **External view**

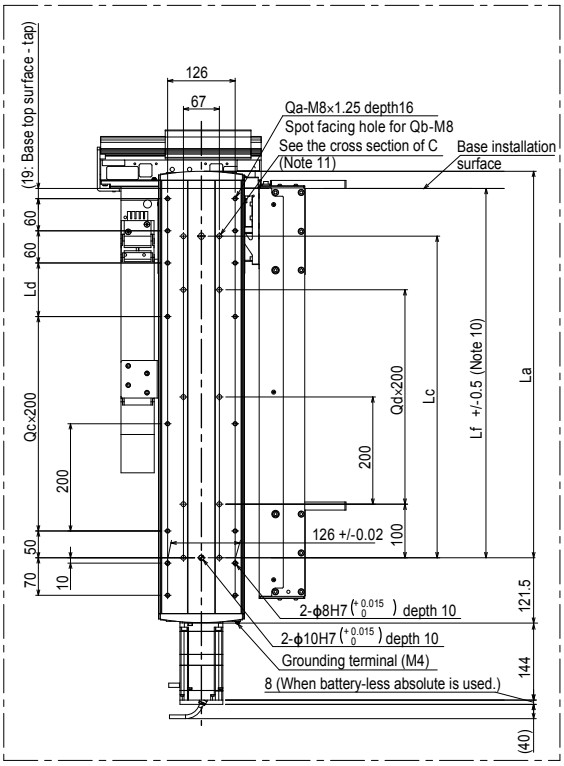
Vertical circulation

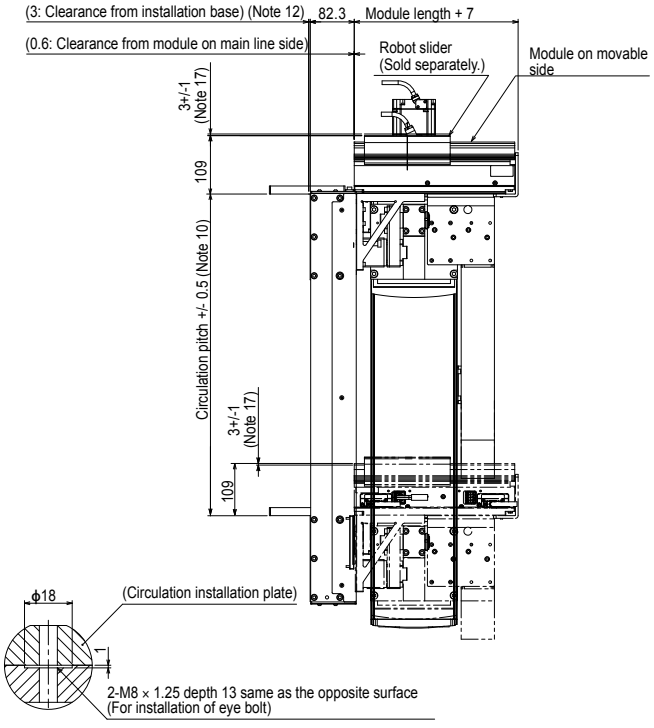
JGX16-V1R/V2R/V3R

JGX16-V1R



JGX16-V2R





Detailed drawing D

Scale 1 : 1

Note 1. For details about the installation and operation procedures, see the user's manual.
Note 2. The user wiring cannot be passed through the flexible cable carrier.
direction may vary depending on the specifications.
Note 5. The YQLink cable fixing R is R55. This cable may become the termination connector depending on the specifications.
Note 6. The power cable fixing R is R55.
Note 7. The weight of the main body is a reference value. The weights of the module and robot slider are not included.
Note 8. Hexagon socket head cap bolt for fine adjustment of circulation pitch.
Maintain a work space where you can access the bolt.
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For details, see the instruction manual for YHX standard profile.
Note 10. Design and install the base so that it is within the described tolerance.
Note 11. When securing the unit using the installation spot facing hole (cross section of C), peel off the dust-proof seal adhered to the inside of the axis, and then install the unit.
Note 12. Reference value for installation of the base. Install the circulation unit so that it is not in contact with the base end.
Note 13. This value may differ from the allowable overhang amount of the robot slider.
For details about the payload and allowable overhand amount, see the LCMR200 specifications.
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Note 15. Two-slider simultaneous circulation can be performed only when the movable module is 500mm-module.
Note 16. The origin position is located on the motor side.
Note 17. Slider top surface position when the junction axis is stopped by the mechanical stopper.

Circulation pitch	300mm	350mm	400mm	450mm	500mm	550mm	600mm
La	421	471	521	571	621	671	721
Lb	467.8	517.8	567.8	617.8	667.8	717.8	767.8
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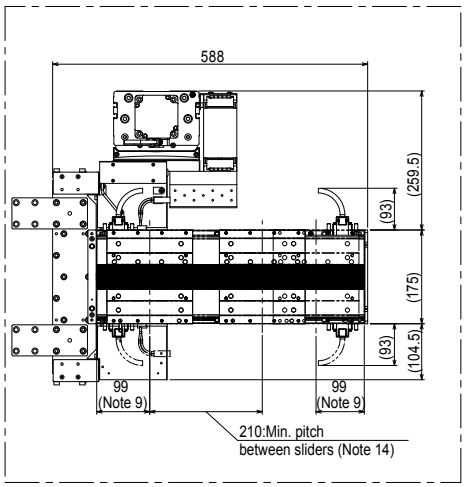
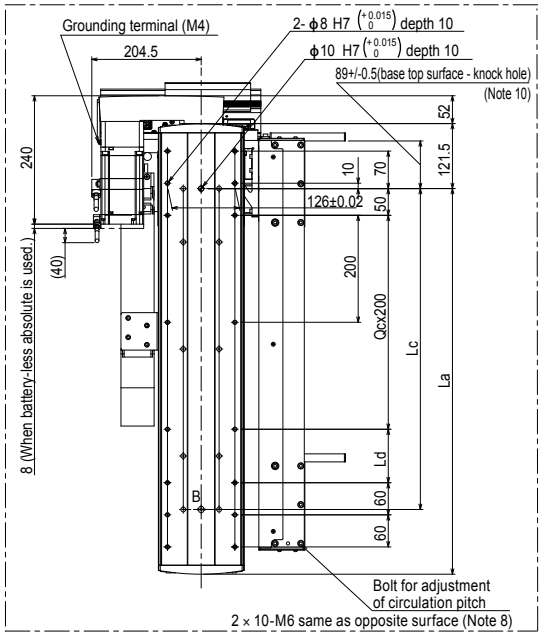
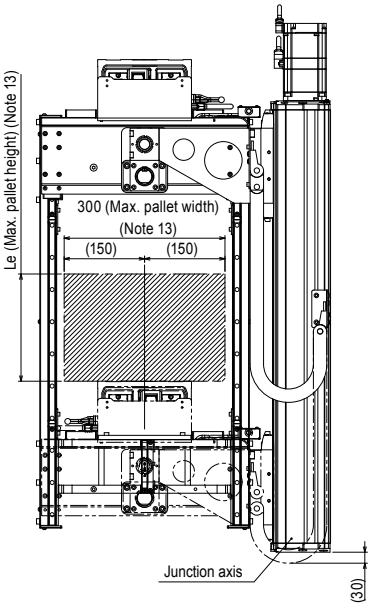
Ld	200	50	100	150	200	50	100
Le	80	130	180	230	280	330	380
Lf	389	439	489	539	589	639	689
Qa	10	12	12	12	12	14	14
Qb	6	8	8	8	8	10	10
Qc	0	1	1	1	1	2	2
Qd	0	1	1	1	1	2	2
Weight (Kg)(Note 7)	47.6	49.0	50.5	52.0	53.5	55.0	56.4

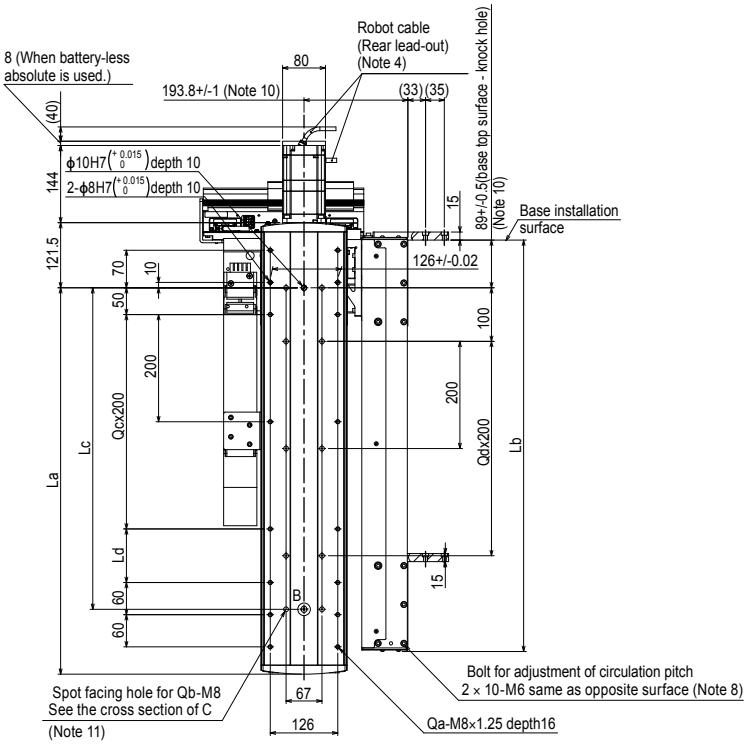
2-slider circulation (Note 15)

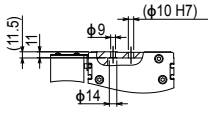


JGX16-V3R









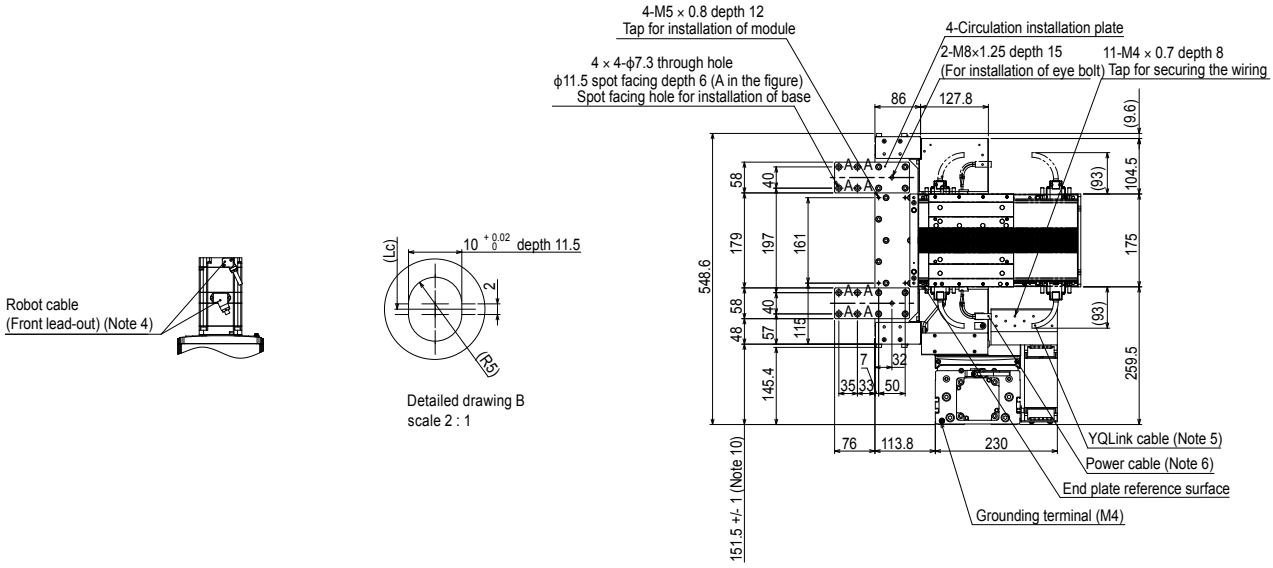
Cross section of C

Circulation unit **External view**

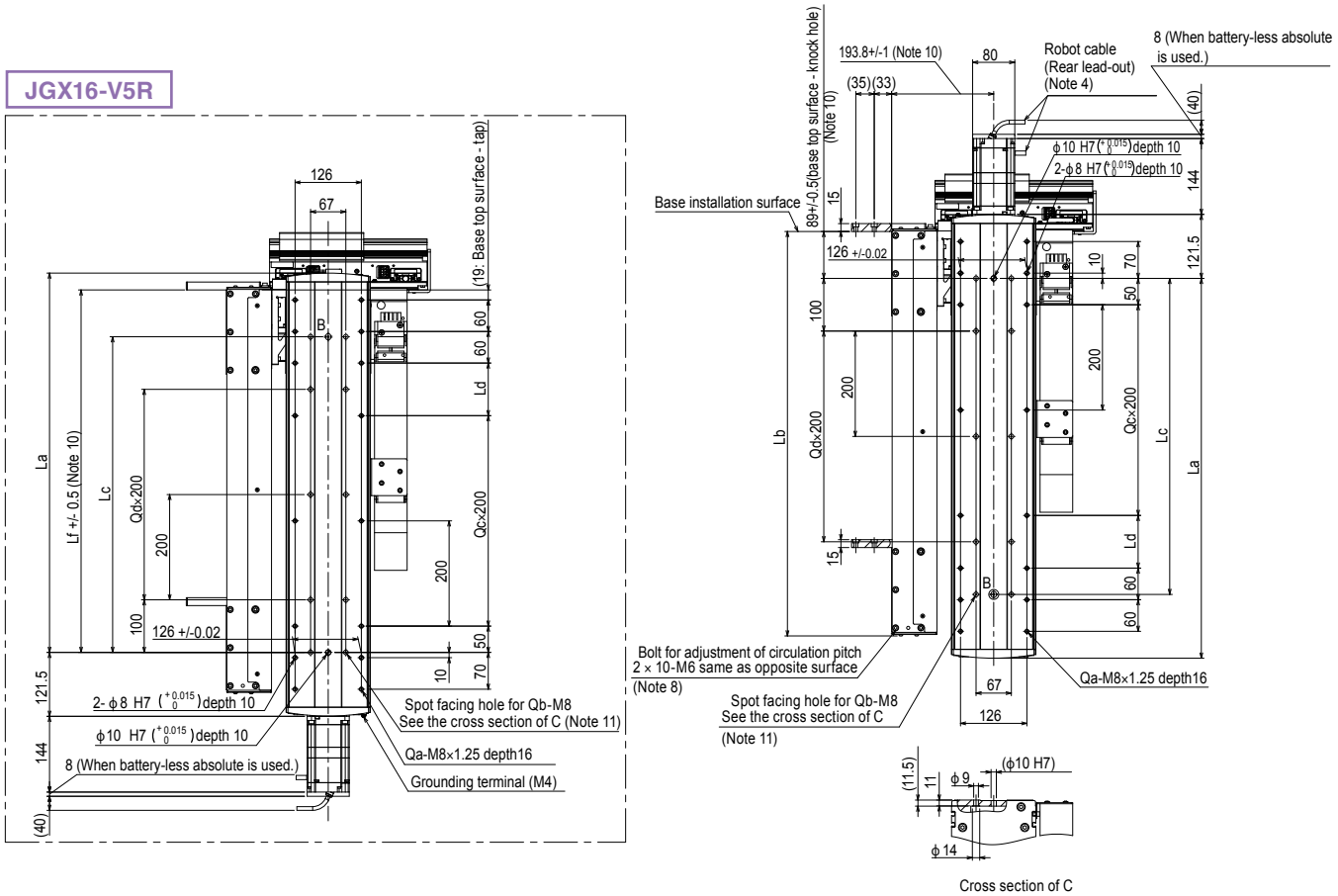
Vertical circulation

JGX16-V4R/V5R/V6R

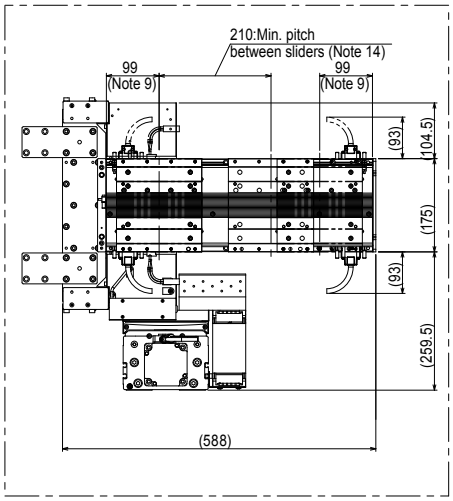
JGX16-V4R



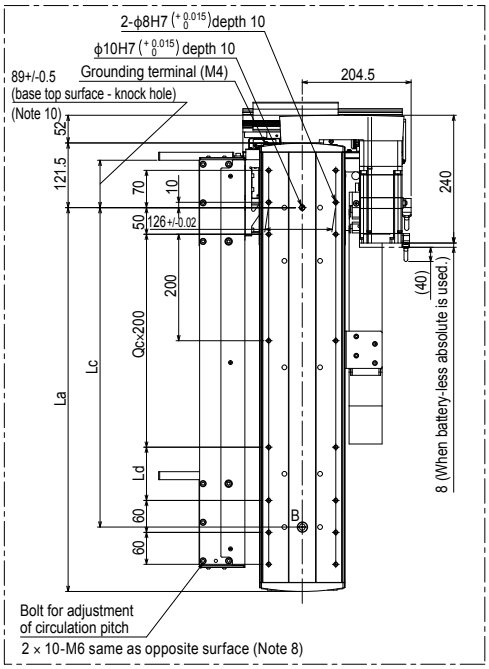
JGX16-V5R

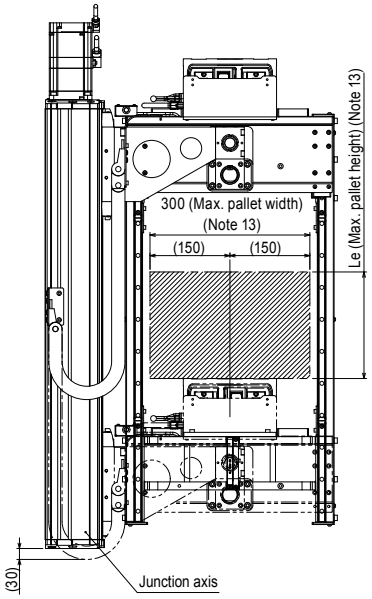


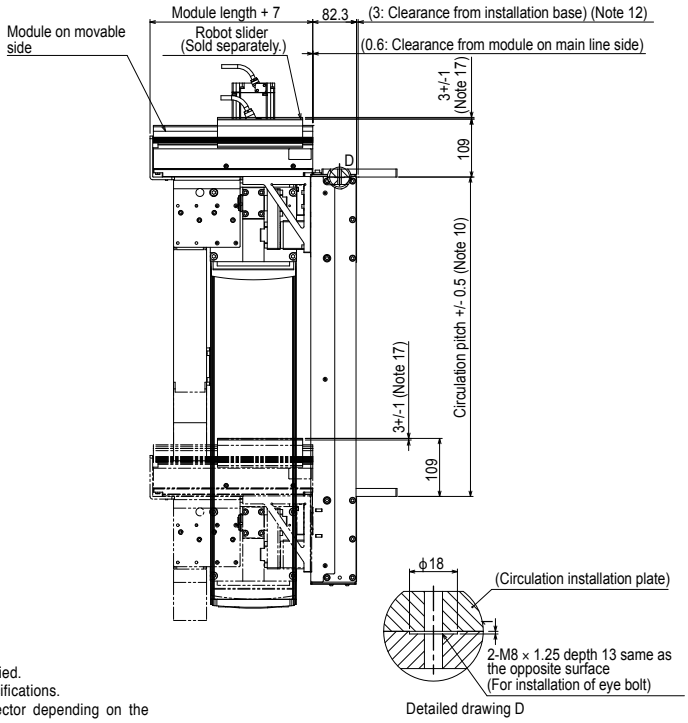
2-slider circulation (Note 15)



JGX16-V6R







Detailed drawing D

Scale 1 : 1

Note 1. For details about the installation and operation procedures, see the user's manual.
Note 2. The user wiring cannot be passed through the flexible cable carrier.
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Note 4. The robot cable fixing R is R30. The lead-out direction may vary depending on the specifications.
Note 5. The YQLink cable fixing R is R55. This cable may become the termination connector depending on the specifications.
Note 6. The power cable fixing R is R55.
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Note 8. Hexagon socket head cap bolt for fine adjustment of circulation pitch.
Maintain a work space where you can access the bolt.
Note 9. Robot slider unstoppable range from the module end.
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Note 10. Design and install the base so that it is within the described tolerance.
Note 11. When securing the unit using the installation spot facing hole (cross section of C), peel off the dust-proof seal adhered to the inside of the axis, and then install the unit.
Note 12. Reference value for installation of the base. Install the circulation unit so that it is not in contact with the base end.
Note 13. This value may differ from the allowable overhang amount of the robot slider.
For details about the payload and allowable overhand amount, see the LCMR200 specifications.
Even when the circulation operation is performed with workpieces placed, the dimensions are restricted in the same manner.
Note 14. When the pallet length is 200 mm or more, this pitch is "pallet length + 10 mm".
However, when two sliders start at the same time, the minimum pitch is 250 mm or "pallet length + 50 mm".
Note 15. Two-slider simultaneous circulation can be performed only when the movable module is 500mm-module.
Note 16. The origin position is located on the motor side.
Note 17. Slider top surface position when the junction axis is stopped by the mechanical stopper.

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Ld	200	50	100	150	200	50	100
Le	80	130	180	230	280	330	380
Lf	389	439	489	539	589	639	689
Qa	10	12	12	12	12	14	14
Qb	6	8	8	8	8	10	10
Qc	0	1	1	1	1	2	2
Qd	0	1	1	1	1	2	2
weight (Kg)(Note 7)	47.6	49.0	50.5	52.0	53.5	55.0	56.4

Controller

Order model: YHX-HD – [ ] – [ ]

Controller	Language	Network
	J (Japanese)	N : None
	E (English)	CC : CC-Link*1
		PT : PROFINET*2
		EP : EtherNet/IP*3
		ES : EtherCAT*4

*1. CC-Link is a registered trade mark of Mitsubishi Electric Corporation.
*2. PROFINET is a registered trade mark of PROFIBUS Nutzerorganisation e.V. (PNO).
*3. EtherNet/IP is a registered trade mark of ODVA, Inc.
*4. EtherCAT is a patented technology and a registered trademark licensed by Beckhoff Automation GmbH (Germany).

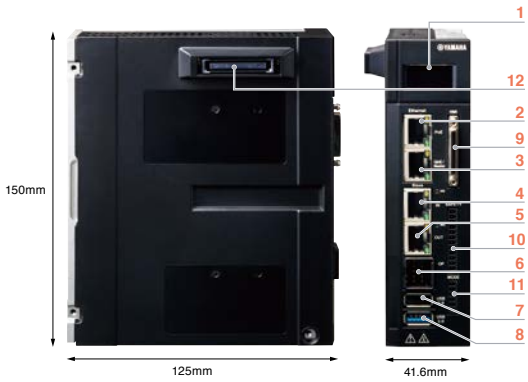
The YHX-HD is a set model of the host controller unit, driver power unit, and related components shown below. Each unit should be assembled by the customer.

YHX-HD Configuration parts

▶Control unit

Host

Host controller unit



1	LCD	Indicates the status of the controller.
2	PoE	PoE compatible giga bit Ethernet connector.
3	GbE	PoE non-compatible giga bit Ethernet connector.
4	IN	LAN connector for connecting with master devices of field network communications connector (EtherNet/IP, EtherCAT, PROFINET)
5	OUT	LAN connector for connecting with other slave devices of field network communications connector (EtherNet/IP, EtherCAT, PROFINET)
6	OP	Connector for field network communications adaptors (CC-Link)
7	USB 2.0	Connector compatible with USB 2.0
8	USB 3.0	Connector compatible with USB 3.0
9	HMI	Connector for connecting with a programming pad, display and other devices
10	SAFETY	Connect with external PLC, safety devices and the like.
11	MODE	CPU OK output Programming pad AUTO/MANUAL select switch contact output
12	Connector for connection between units (control signal/Power)	

This unit can control multiple robots by combining with the linear conveyor. Although the unit is compact, it is multifunctional and has an enhanced interface.

Japanese	Model	YHX-HCU
	Parts No.	KEK-M4200-0A
English	Model	YHX-HCU-E
	Parts No.	KEK-M4200-1A

Safety connector

Host YQLink

Used for building up an external safety circuit while connecting with the safety dedicated port of a host controller.

Model	YHX-CN-SAFE
Parts No.	KEK-M4432-00

Mode connector

Host

Used for building up an external safety circuit while using the mode switch output port of a host controller unit.

Model	YHX-CN-MODE
Parts No.	KEK-M4432-10

HMI short circuit connector

Host

Used when a programming pad is not connected with a host controller. Note that if not connected, robots do not operate because the controller enters the state of emergency stop.

Model	YHX-CN-HMIS
Parts No.	KEK-M4429-00

▶Power unit

D. Power

Driver power unit

1	POWER	Blue: 24 VDC control power supply is available.
2	CHARGE	Orange: 200 VAC main power supply is available and Charge*
3	DC INPUT	Control power supply connector (24 VDC)
4	BATT	ABS battery connector
5	R.UNIT	Connector for connecting regenerative unit
6	AC INPUT	Main power supply connector (Single phase / 3-phase 200 to 230 VAC)
7	YQLink	YQLink communications connector Connects with IO units and linear conveyor modules.
8	⏚	Grounding terminal
9	Connector for connection between units (control signal/Power)	
10	Connector for connection between units (high voltage power source for driving motors)	

* Even when the main power is turned off, the lamp is lit while any charge remains in the internal capacitor. Do not touch the main circuit and motor terminal while the lamp is lit. Doing so may cause electrical shock.

This unit supplies power to each unit. Be sure to use it together with the host controller unit or a YQLink expansion unit. Use the dedicated cables to connect with linear conveyor modules.

Model	YHX-DPU
Parts No.	KEK-M5880-0A

Control power supply connector

D. Power

Used when supplying the control power supply.

Model	YHX-CN-CP
Parts No.	KEK-M4512-00

Main power supply connector

D. Power

Used when supplying the main power supply.

Model	YHX-CN-DP
Parts No.	KEK-M5382-00

Regenerative unit short circuit connector

D. Power

Used when not connecting a regenerative unit.
An error is generated if the short circuit connector of a regenerative unit is not connected.

Model	YHX-CN-RUS
Parts No.	KEK-M4431-00

Selection options

Field network

EtherCAT slave

Model	YHX-NWS-ECAT
Parts No.	KEK-M440A-A0

EtherNet/IP adapter (slave)

Model	YHX-NWS-ENIP
Parts No.	KEK-M440A-E0

PROFINET slave

Model	YHX-NWS-PFNET
Parts No.	KEK-M440A-N0

CC-Link slave (with adapter and connector)

Model	YHX-NWS-CCL
Parts No.	KEK-M440A-C0

Connector for CC-Link

CC-Link connector

Model	YHX-CN-CCL
Parts No.	KEK-M4872-C0

CC-Link branch-out connector

Model	YHX-CN-CCSP
Parts No.	KEK-M4873-00

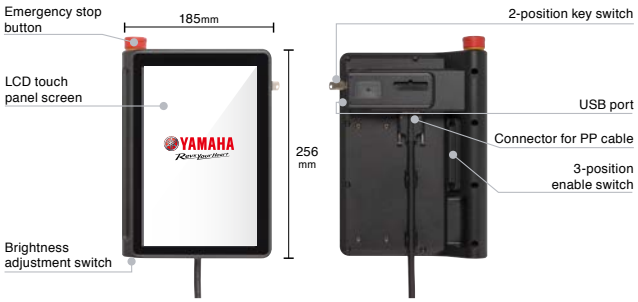
<Cautionary notes on field networks>
The YHX controllers are not equipped with a field network board.
Entering the activation code, which is issued for each host controller, into the host controller unit enables field network functions.
The activation code certificate comes with a host controller unit.

* If purchasing a field network only later on, inform us of the serial number of the host controller unit because it is necessary to issue the activation code.
* When the CC-Link option is selected, the CC-Link adapter × 1, CC-Link connector × 2, and CC-Link branch connector × 1 are supplied with the product. When the CC-Link terminating connector is needed, order it separately.

The parts with the marks below are their respective constituent parts. Host … Host controller unit D. Power … Driver power unit Regenerative unit … Regenerative unit YQLink …YQLink expansion Drivers … Driver unit

Programming pad (cable set)

Order model: YHX-PP6L (KEK-M5110-0B)



Use the touch panel screen for various operation.
Equipped with safety functions (emergency stop button and enable switch) and a USB connector.

Programming pad

Model	YHX-PP
Parts No.	KEK-M5110-0A

Programming pad cable

Host

Used when connecting a programming pad.

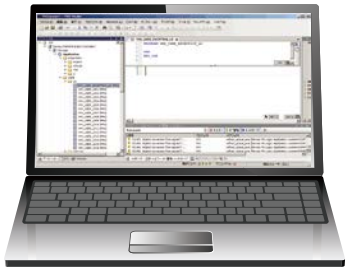
6 m	Model	YHX-PP-6M
	Parts No.	KEK-M5362-61

Software YHX Studio for Standard Profile

Order model: YHX-SW-STUDIO-SP (KEK-M4990-10)

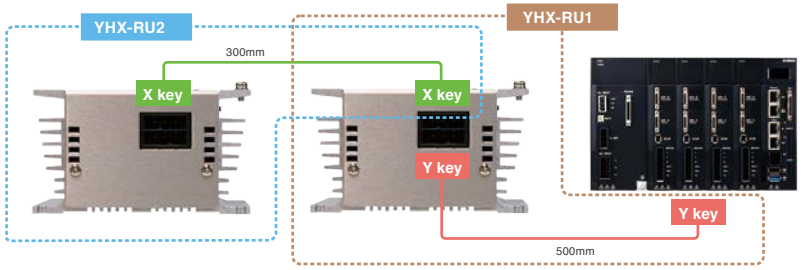
PC operating environment	OS	Windows 7 SP1/8/8.1/10 (64-bit version only for all)
	CPU	Equivalent to Intel Core (TM) i5-6200U 2.30 GHz or better.
	Memory	8 GB or larger
	Hard disc drive capacity	2 GB or more of empty space for destination of installing the YHX Studio.
	Communications port	Ethernet
	Display	1920 × 1080 or higher resolution is recommended.
	Other	Ethernet cable (Category 5 or better) USB port: One port (for USB key)
Applicable controllers		YHX Host controller unit
Applicable robots		Robots connectable to YHX

The YHX Studio is a software program for programming and adjusting a YHX controller.



Download from website

Regenerative unit set



Absorbs regenerative energy generated during decelerating a robot with a large motor.
Connecting two increases the capacity to absorb regenerative energy to two times.

Absorbable electric power	100 W (Equivalent to RGU 3) * 200 W when 2 are connected
Momentary maximum power	1600W
Number of connected units	Maximum 2 units
Other	Forced cooling and exhaust by fan Overheat detection for protection

Regenerative unit

Regenerative unit

Order model: YHX-RU1 (KEK-M4107-0A)

Regenerative unit

Model	YHX-RU
Parts No.	KEK-M5850-0A

Regenerative unit connection cable

D. Power Regenerative unit

Used when connecting a regenerative unit.

0.5 m	Model	YHX-RU-50C
	Parts No.	KEK-M5363-00

Regenerative unit

Regenerative unit (For expansion)

Order model: YHX-RU2 (KEK-M4107-0B)

Regenerative unit

Model	YHX-RU
Parts No.	KEK-M5850-0A

Regenerative unit expansion cable

Regenerative unit

Used when adding a regenerative unit.

0.3 m	Model	YHX-RU-EX30C
	Parts No.	KEK-M5364-00

YQLink expansion unit set

Order model: YHX-YQL-SET (KEK-M4406-0B)

1	STATUS	Blue: 24 VDC power supply available Red: Error
2	YQLink	Connect with YQLink communications connector (input) driver power unit.
3	SAFETY	Connect with external PLC, safety devices and the like.
4	Connector for connection between units (control signal/Power)	

This unit cancels the physical restrictions of the universal controller for its expansion. YQLink

YQLink expansion unit

Model	YHX-YQL
Parts No.	KEK-M4406-0A

Safety connector

Host YQLink

Used for building up an external safety circuit while connecting with the safety dedicated port of a host controller.

Model	YHX-CN-SAFE
Parts No.	KEK-M4432-00

Other options

Battery holder box

Order model: YHX-BATT-HLD

D Power

Used to store the ABS batteries.
Up to eight batteries can be stored.

Model	YHX-BATT-HLD
Parts No.	KEK-M53G7-00

Battery holder connection cable

Order model: YHX-BATT-15C

D Power

Used when the battery holder box is connected.

Model	YHX-BATT-15C
Parts No.	KEK-M53G4-00

CC-Link terminating connector

Order model: YHX-CN-CCTM

Model	YHX-CN-CCTM
Parts No.	KEK-M4874-00

STOP connector

Order model: YHX-CN-STOIN

Drivers

Used to shut off the drive power of each driver unit.

Model	YHX-CN-STOIN
Parts No.	KEK-M5869-10

Connector for brake power

Order model: YHX-CN-BU

Drivers

Used when the brake power is supplied externally.
The driver is not needed when the brake power unit is used.

1 m	Model	YHX-CN-BU
	Parts No.	KEK-M4427-00

The parts with the marks below are their respective constituent parts. Host … Host controller unit D. Power … Driver power unit Regenerative unit … Regenerative unit YQLink …YQLink expansion Drivers … Driver unit

Driver for single-axis robot

Order model:

Driver	Presence of driver brake unit *1	Battery
A30	V	B
	N	N

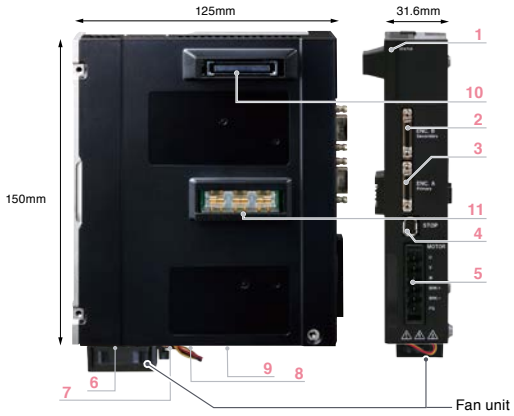
*1: When the external brake power is input, the brake unit cannot be used.

The customer assembles the necessary number of driver units between the host controller unit and driver power unit to use them.

Driver units

Drivers

Driver unit 30A



1	STATUS	Blue lamp lit: Servo ON Blue lamp flashing: Servo OFF and ready for operation Blue/Red flashing in an alternate fashion: Servo OFF and not yet ready for operation Red flashing: Error
2	ENC.B	Not used
3	ENC.A	· Connector for connecting robot cable (encoder cable)
4	STOP	Use this to build up a circuit to shut off the power to a motor. When not used, connect with the "STOP short circuit connector"
5	MOTOR	Connector for connecting robot cable (power line) · Output U/V/W current output, Brake output
6	Connector for connecting a fan	Fan unit connector
7	BATT connector	ABS battery connector
8	Power supply output for brake	Brake unit connector
9	Power supply input for holding braking effort	External power supply connector for brake unit or brake
10	Connector for connection between units (control signal/Power)	
11	Connector for connection between units (high voltage power source for driving motors)	

This unit drives robots. Use cables to connect with robots. The unit is connected to the left of the control unit.

30A Specifications		
	Model	YHX-A30
	Parts No.	KEK-M5800-1A

Stop short circuit connector

Drivers

Used when it is not necessary to shut off the power supply to each driver unit separately.

Model	YHX-CN-STOEN
Parts No.	KEK-M5869-00

Fan unit

Drivers

Cools down a driver unit. Attached at the bottom of a driver unit to send wind to heat sinks. A driver unit made to the 30 A specification is shipped out with a fan unit.

Model	YHX-AMP-FU
Parts No.	KEK-M6195-00

Selection options

ABS battery

D. Power Drivers

Model	YHX-AMP-BATT
Parts No.	KEK-M53G0-00

Brake unit

Drivers

A unit for releasing braking effort of the robot* with a brake. Enables robot brake control without an external electrical wiring. Installed at the bottom of a driver unit.

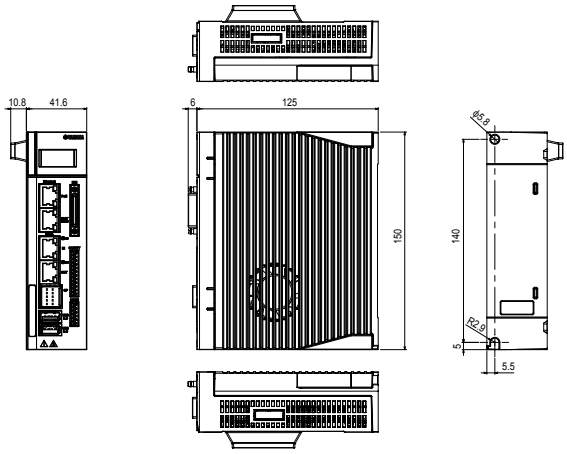
Model	YHX-AMP-BU
Parts No.	KEK-M5317-00

* Unable to release the braking effort of a robot with a brake if a brake unit is not available or if a 24 VDC power supply is not connected.

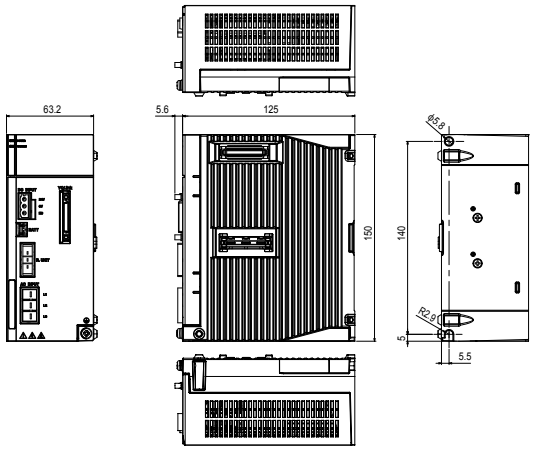
The parts with the marks below are their respective constituent parts. Host … Host controller unit D. Power … Driver power unit Regenerative unit … Regenerative unit YQLink …YQLink expansion Drivers … Driver unit

External view of each unit

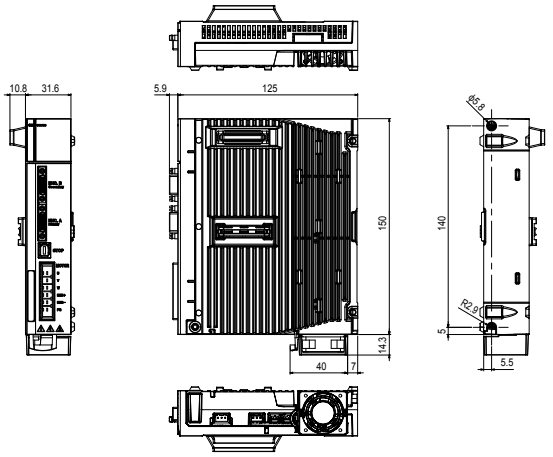
Host controller unit
YHX-HCU KEK-M4200-0A



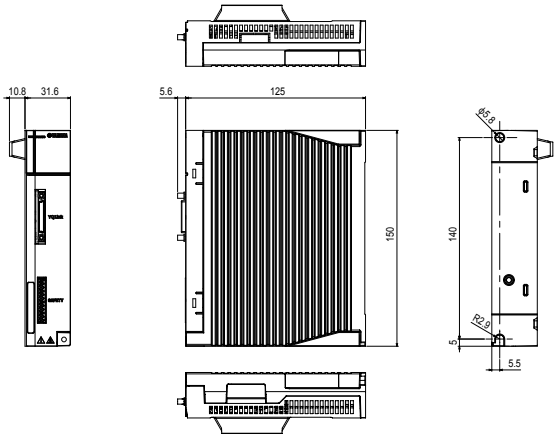
Driver power unit
YHX-DPU KEK-M5880-0A



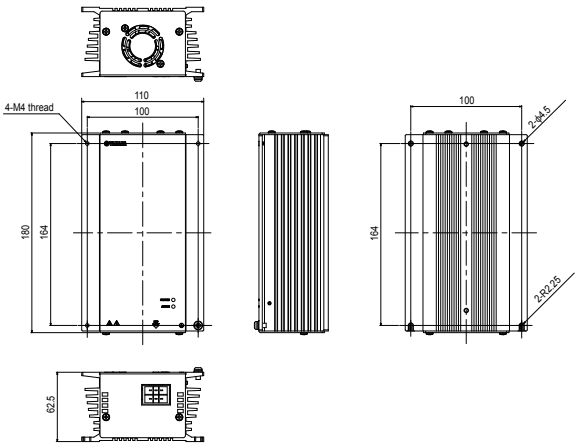
Driver unit 30A
YHX-A30 KEK-M5800-1A



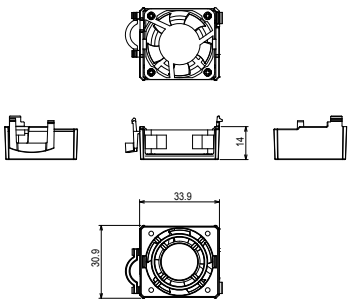
YQLink expansion unit
YHX-YQL KEK-M4406-0A



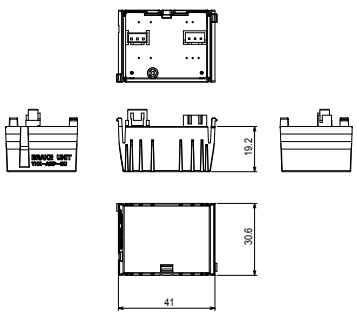
Regenerative unit
YHX-RU KEK-M5850-0A



Fan unit
YHX-AMP-FU KEK-M6195-00



Brake unit
YHX-AMP-BU KEK-M5317-00



Basic specifications

Host

Host controller unit

Japanese	Model	YHX-HCU
	Parts No.	KEK-M4200-0A
English	Model	YHX-HCU- E
	Parts No.	KEK-M4200-1A

Item		Host controller unit
Power supply	Control power supply	Voltage: 21.6 to 26.4 VDC (24 V +/-10%)
		Current: 3.5 A (Including PoE)
Connector	External I/F	Giga bit Ethernet · Compatible with PoE yet 1 port (23 W) · Not compatible with PoE yet 1 port Field network (Slave) Select one from the following 4 kinds. · EtherCAT · CC-Link* · EtherNet/IP * A separate adaptor is necessary. · PROFINET USB · USB 2.0 1 Port (Bus power 0.5 A) · USB 3.0 1 port (Bus power 1.0 A)
	HMI	Connector for connecting programming pad
	SAFETY	Emergency stop contact output Enable switch contact output Emergency stop input
	MODE	CPU OK output Programming pad AUTO/MANUAL select key switch output
Indicator	LCD	128 x 64 dots, Yellow
Dimensions		41.6×150×125 (mm)
Weight		750g
Protection structure / Protection rating		IP20 / class 1

D. power

Driver power unit

Model	YHX-DPU
Parts No.	KEK-M5880-0A

Item		Driver power unit
Power supply	Control power supply	Voltage: 21.6 to 26.4 VDC (24 V +/-10%)
		Current: 0.5A
	Main power supply	Input: Single phase / 3-phase 180 to 253 VAC / (200 to 230 VAC +/-10%), 50/60 Hz
		Power supply capacity: Single phase 3.5 kVA 3-phase 6 kVA
Connection motor capacity		Single phase within 1.6 kW, 3-phase within 3.0kW / Driver unit within 16 units (16 axes)
Connector	Regenerative	Regenerative unit connector
	External I/F	YQLink
	ABS Battery	ABS Battery connector
Dimensions		63.2×150×125 (mm)
Weight		1050g
Protection structure / Protection rating		IP20 / class 1

Regenerative unit

Regenerative unit

Model	YHX-RU
Parts No.	KEK-M5850-0A

Item		Regenerative unit
Power supply	Input	254 to 357 VDC (Controller DCBUS connected)
Connector		Regenerative connector (For connecting regenerative unit/ For adding regenerative unit)
Dimensions		62.5×180×110 (mm)
Weight		1450g
Protection structure / Protection rating		IP20 / class 1

YQLink

YQLink expansion unit

Model	YHX-YQL
Parts No.	KEK-M4406-0A

Item		YQLink expansion unit
Power supply	Control power supply	Voltage: 21.6 to 26.4 VDC (24 V +/-10%)
		Current: 0.3A
Connector	External I/F	YQLink
	SAFETY	Emergency stop input
Dimensions		31.6×150×125 (mm)
Weight		380g
Protection structure / Protection rating		IP20 / class 1

Driver

Driver unit

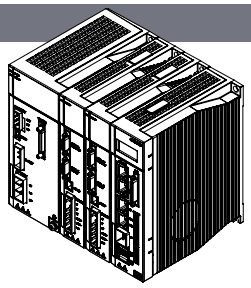
Servo motor specifications (30A)

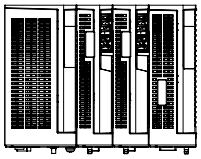
Model	YHX-A30
Parts No.	KEK-M5800-1A

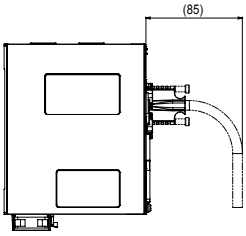
Item		Driver unit 30 A
Power supply	Control power supply	Voltage: 21.6 to 26.4 VDC (24 V +/-10%)
		Current: 0.8A (Including brake unit power supply)
Connector	ENC.A	Encoder input
	ENC.B	Encoder input (Dedicated use)
	STOP	Gate off input, 2 points Gate status output, 1 point
	MOTOR	Motor drive power supply output Brake power supply output
	ABS Battery	ABS Battery connector
	Fan unit connector	Accessory fan unit connection
	Brake unit connector	Brake unit is connectable.
Dimensions		31.6×150×125 (mm)
Weight		570 g
Protection structure / Protection rating		IP20 / class 1

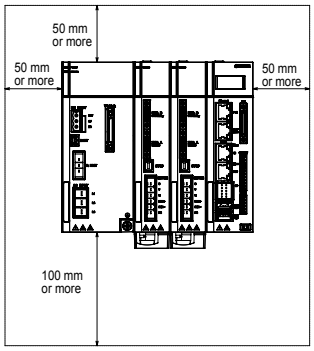
External view of YHX unit combination

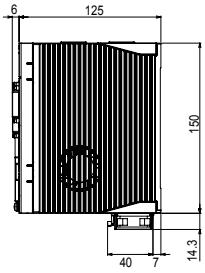
Combination of host controller (HCU), driver unit (A30), and driver power unit (DPU)

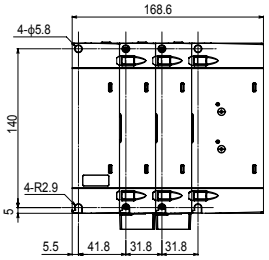


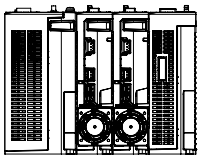




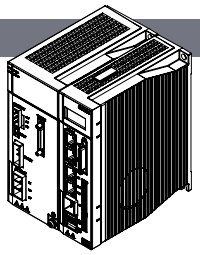


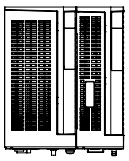


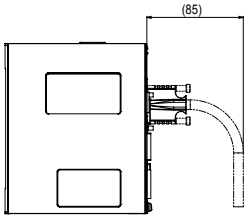


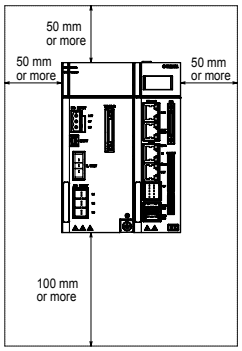


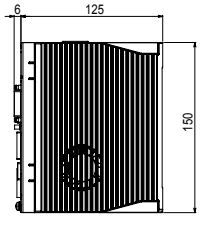
Combination of host controller (HCU) and driver power unit (DPU)

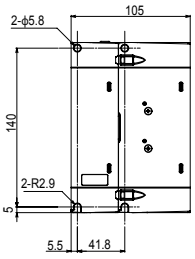


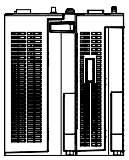












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