ABAR04

Basic model **Single-axis robots**

Rod type

Ordering method

ABAR04 – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – **EP-01** – [ ] – [ ] – [ ] – [ ]

Model	Lead	Shape	Motor specification	Stroke	Cable length Note 1	Cable entry location	Robot positioner	Driver: Power capacity	Regenerative unit Note 2	I/O	Battery Note 3
	12: 12 mm 6: 6 mm	S: Straight R: Right bending L: Left bending	S: Standard/With no brake BK: Standard/With brake BL: Battery-less absolute/With no brake BKBL: Battery-less absolute/With brake	50 to 500 (50mm pitch)	R3: 3 m R5: 5 m R10: 10 m	R: From rear of motor F: From front of motor	EP-01	A10: 200W or less	No entry: None R: With EP-RU	EP: EtherNet/IP™ PT: PROFINET ES: EtherCAT NS: NPN CC: CC-Link	B: With battery N: None

Note 1. The robot cable is flexible and resists bending.
Note 2. When the actuator is used vertically and the stroke is 250 mm or more, the regenerative unit is needed.
Note 3. When the motor specification is the standard (S, BK), whether to use the battery needs to be selected.

Specifications

AC servo motor output		50 W	
Repeatability Note 1		+/-0.01 mm	
Deceleration mechanism		Shifting position ball screw ϕ 10 (C7 class)	
Stroke		50 mm to 500 mm (50mm pitch)	
Maximum speed Note 2		720 mm/sec	360 mm/sec
Ball screw lead		12 mm	6 mm
Maximum payload	**Horizontal**	15 kg	25 kg
	Vertical	3 kg	5 kg
Max. pressing force		83 N	167 N
Rotating backlash		+/-0 °	
Maximum dimensions of cross section of main unit		W 44 mm × H 46 mm	
Overall length	**Straight**	ST + 326.5 mm	
	Bending	ST + 245 mm	
Position detector		Absolute encoder Battery-less absolute encoder	
Resolution		23 bits	
Using ambient temperature and humidity		0 to 40 °C, 35 to 80 %RH (non-condensing)	

Note 1. Positioning repeatability in one direction.
Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.
If the effective stroke exceeds 300 mm, the ball screw may resonate. (Critical speed)
At this time, make the adjustment to decrease the speed while referring to the maximum speed shown in the table.
Note. See P.135 for acceleration/deceleration.

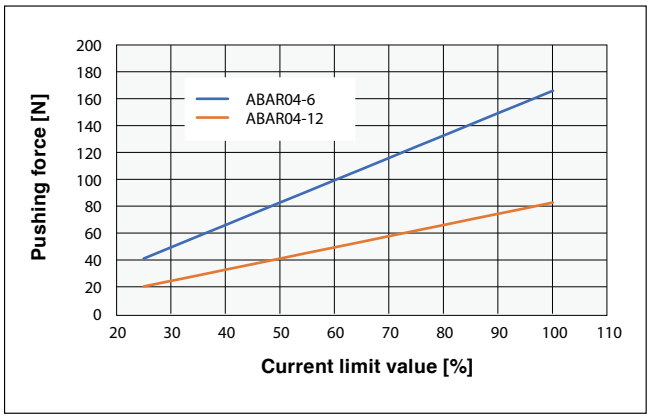
Controller

Controller	Operation method
EP-01	I/O point trace/Remote command

Pushing force (reference value)

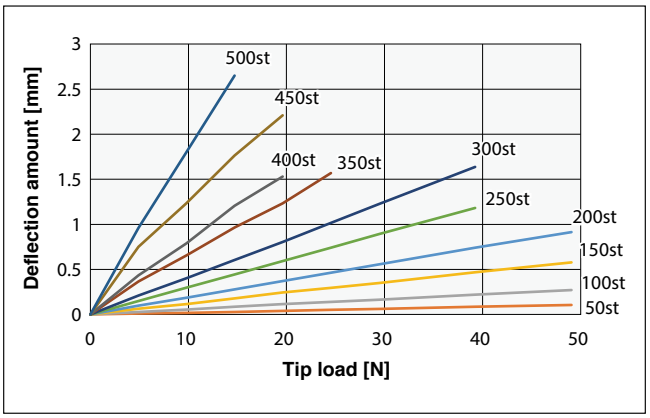
For the pushing force during pushing operation, see the graph below.

Note. The operable time (pushing judgement time) depends on the current limit value.
Use the pushing force under the conditions that no overload error occurs.



Rod deflection amount (reference value)

For the deflection amount per stroke, see the graph below.

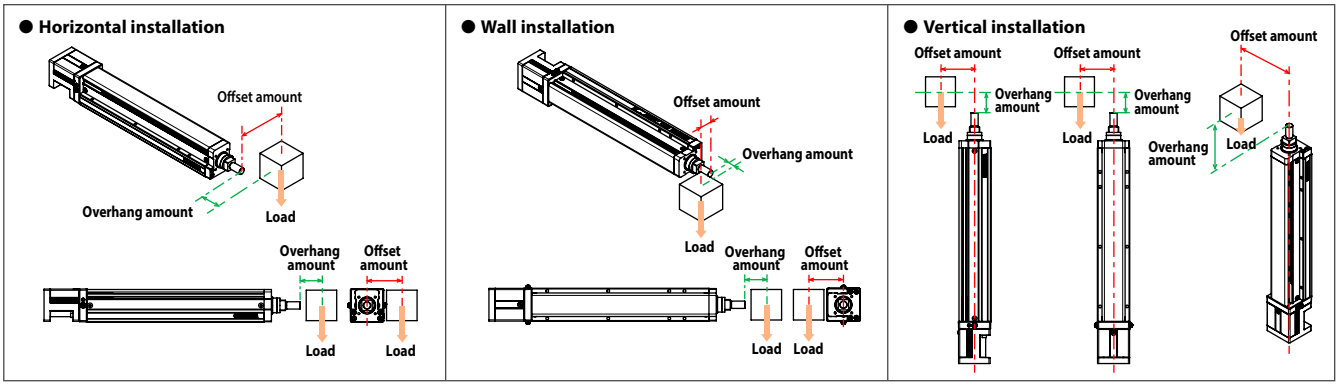


Access the website below.

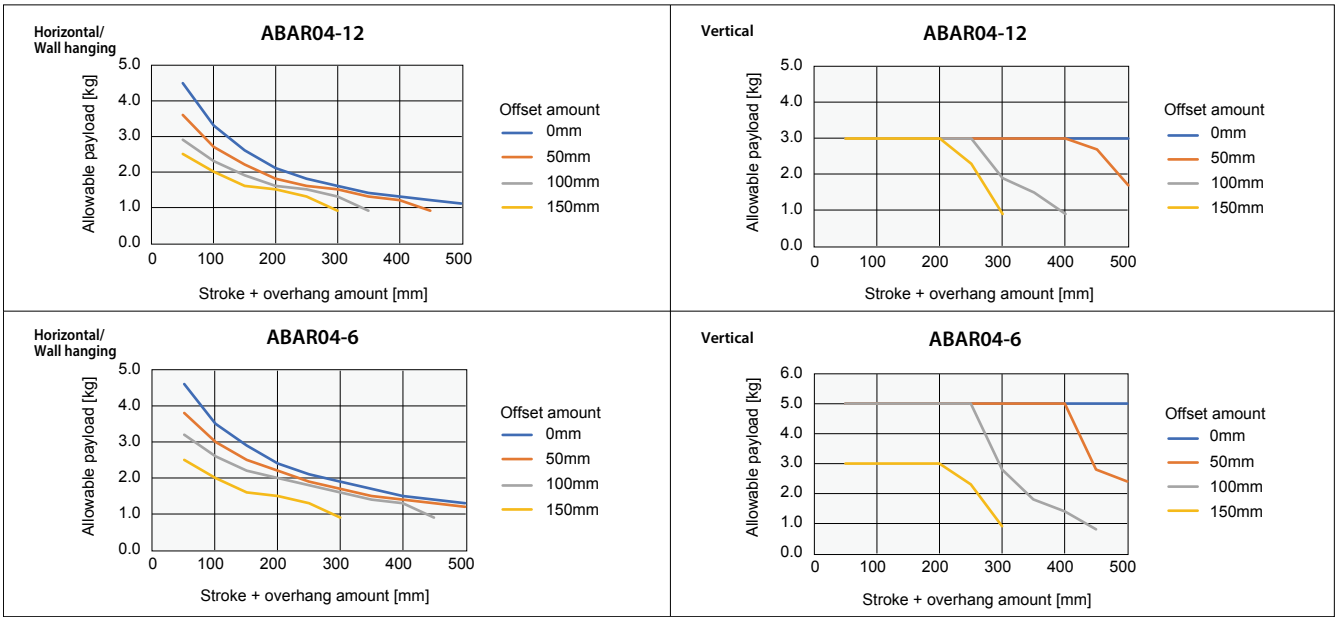
▶ **The cycle time simulation can be performed easily from our member site. For details, see P.12.**

Allowable payload

For the allowable payload per offset amount, see the graph below.

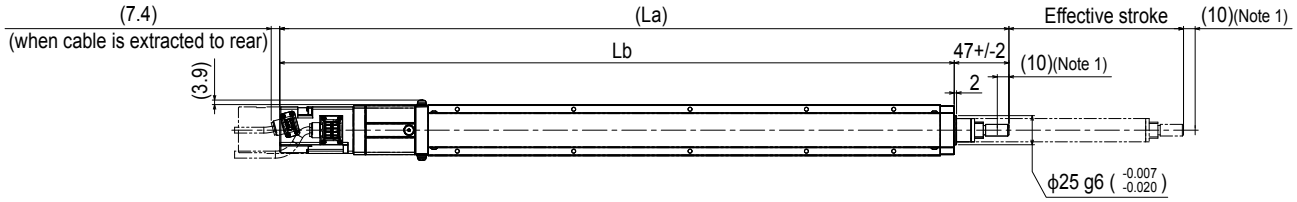


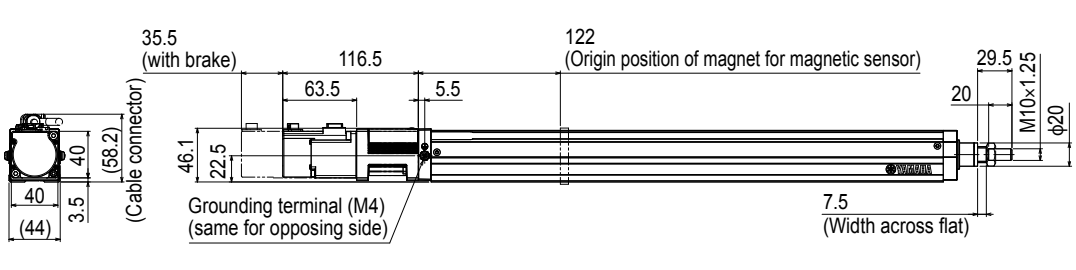
Note 1. When transferring an object with a weight exceeding the following, use an external support guide.
Install the support guide flexibly so that no unnecessary load is applied to the rod.
Note 2. The values are when the service life of the guide is 5000 km.

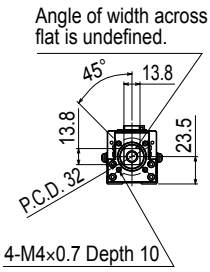


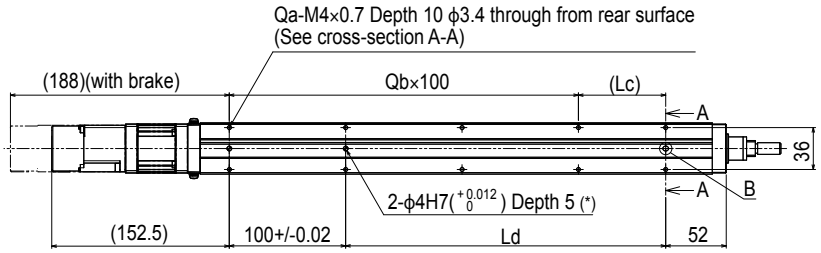
Controller EP-01 ▶ 146

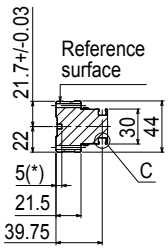
ABAR04 Straight type (S)



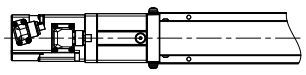




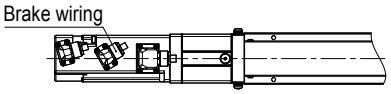




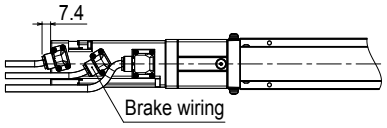
Cross-section A-A



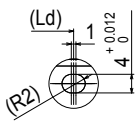
Cable is extracted from the front



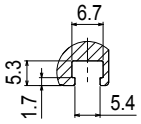
Cable is extracted from the front (with brake)



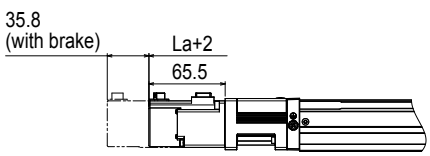
Cable is extracted from the rear (with brake)



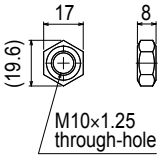
Detailed drawing B



Detailed drawing C



Battery-less absolute axis specification



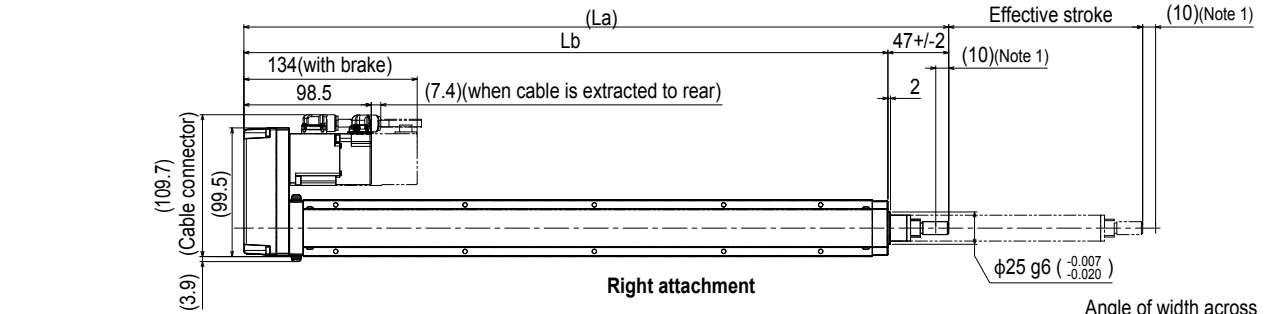
Dimensions of attached hex nut

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. When changing the return-to-origin direction, the parameter needs to be changed. (The standard is that the origin is located on the motor side.)
Note 3. For the installation through hole, the length under head << 30 mm or more>> is recommended for the hex socket head bolts <M3 × 0.5>. In the installation tap hole, the length under head <<thickness of stand +10 mm or less>> is recommended for the hex socket head bolts <M4 × 0.7> used to install the main unit.
Note 4. The weight with the brake is 0.2 kg heavier than the value in the weight column.
Note 5. The minimum bending radius of the robot cable is R30 on the fixed side or R50 on the movable side. The cable extraction direction may vary depending on the specifications.
Note 6. Grease gun nozzle (recommended) (see P.143 for detail)
Part number: KFU-M3861-00

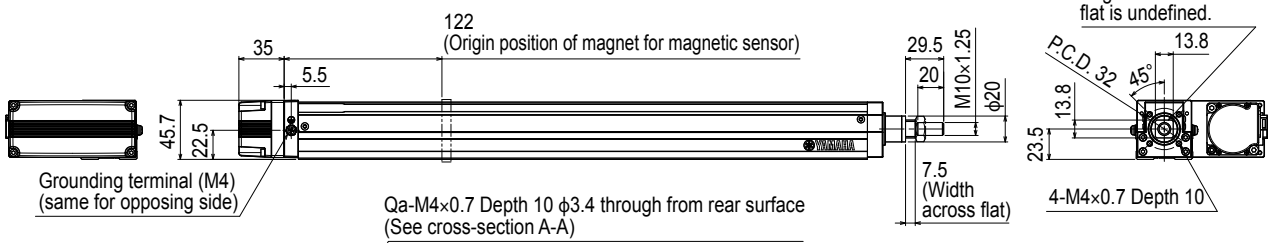
Effective stroke		50	100	150	200	250	300	350	400	450	500
La		376.5	426.5	476.5	526.5	576.5	626.5	676.5	726.5	776.5	826.5
Lb		329.5	379.5	429.5	479.5	529.5	579.5	629.5	679.5	729.5	779.5
Lc		25	75	25	75	25	75	25	75	25	75
Ld		25	75	125	175	225	275	325	375	425	475
Qa		6	6	8	8	10	10	12	12	14	14
Qb		1	1	2	2	3	3	4	4	5	5
Weight (kg) Note 4		1.2	1.3	1.5	1.7	1.9	2	2.2	2.4	2.6	2.8
Maximum speed (mm/sec)	Lead 12	720						648	504	396	324
	Lead 6	360						324	252	198	162
	Speed setting	–						90%	70%	55%	45%

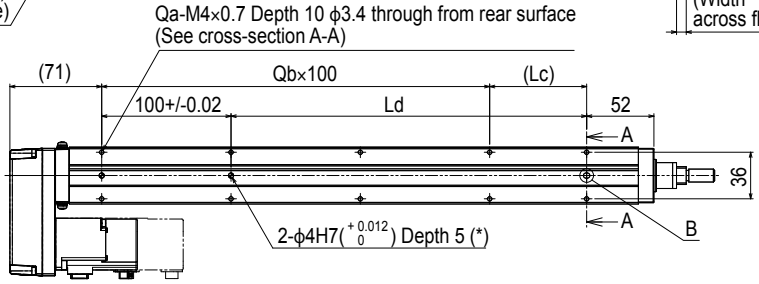
Controller EP-01 ▶ 146

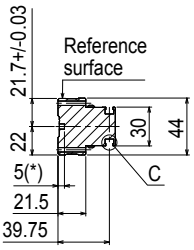
ABAR04 Bending type (R/L)



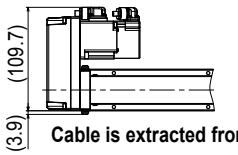
Right attachment



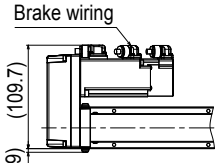




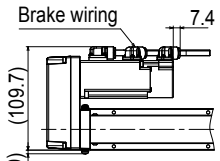
Cross-section A-A



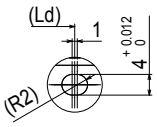
Cable is extracted from the front



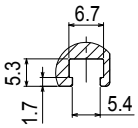
Cable is extracted from the front (with brake)



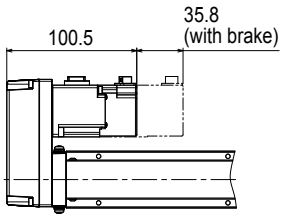
Cable is extracted from the rear (with brake)



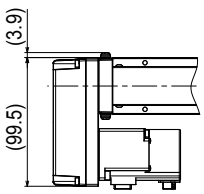
Detailed drawing B



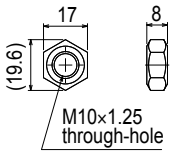
Detailed drawing C



Battery-less absolute axis specification



Left attachment



Dimensions of attached hex nut

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. When changing the return-to-origin direction, the parameter needs to be changed. (The standard is that the origin is located on the motor side.)
Note 3. For the installation through hole, the length under head << 30 mm or more>> is recommended for the hex socket head bolts <M3 × 0.5>. In the installation tap hole, the length under head <<thickness of stand +10 mm or less>> is recommended for the hex socket head bolts <M4 × 0.7> used to install the main unit.
Note 4. The weight with the brake is 0.2 kg heavier than the value in the weight column.
Note 5. The minimum bending radius of the robot cable is R30 on the fixed side or R50 on the movable side. The cable extraction direction may vary depending on the specifications.
Note 6. Grease gun nozzle (recommended) (see P.143 for detail)
Part number: KFU-M3861-00

Effective stroke		50	100	150	200	250	300	350	400	450	500
La		295	345	395	445	495	545	595	645	695	745
Lb		248	298	348	398	448	498	548	598	648	698
Lc		25	75	25	75	25	75	25	75	25	75
Ld		25	75	125	175	225	275	325	375	425	475
Qa		6	6	8	8	10	10	12	12	14	14
Qb		1	1	2	2	3	3	4	4	5	5
Weight (kg) Note 4		1.3	1.4	1.6	1.8	2	2.2	2.3	2.5	2.7	2.9
Maximum speed (mm/sec)	Lead 12	720						648	504	396	324
	Lead 6	360						324	252	198	162
	Speed setting	–						90%	70%	55%	45%

ABAR05

Basic model **Single-axis robots**

Rod type

Ordering method

ABAR05 – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – **EP-01** – [ ] – [ ] – [ ] – [ ]

Model	Lead	Shape	Motor specification	Stroke	Cable length Note 1	Cable entry location	Robot positioner	Driver: Power capacity	Regenerative unit Note 2	I/O	Battery Note 3
	20: 20 mm 10: 10 mm 5: 5 mm	S: Straight R: Right bending L: Left bending	S: Standard/With no brake BK: Standard/With brake BL: Battery-less absolute/With no brake BKBL: Battery-less absolute/With brake	50 to 600 (50mm pitch)	R3: 3 m R5: 5 m R10: 10 m	R: From rear of motor F: From front of motor	EP-01	A10: 200W or less	No entry: None R: With EP-RU	EP: EtherNet/IP™ PT: PROFINET ES: EtherCAT NS: NPN CC: CC-Link	B: With battery N: None

Note 1. The robot cable is flexible and resists bending.
Note 2. When the actuator is used vertically and the stroke is 150 mm or more, the regenerative unit is needed.
When the actuator is used horizontally and the stroke of lead 20 is 300 to 400 mm, the regenerative unit is needed.
Note 3. When the motor specification is the standard (S, BK), whether to use the battery needs to be selected.

Specifications

AC servo motor output		100 W		
Repeatability Note 1		+/-0.01 mm		
Deceleration mechanism		Shifting position ball screw ϕ 12 (C7 class)		
Stroke		50 mm to 600 mm (50mm pitch)		
Maximum speed Note 2		1200 mm/sec	600 mm/sec	300 mm/sec
Ball screw lead		20 mm	10 mm	5 mm
Maximum payload	**Horizontal**	15 kg	25 kg	50 kg
	Vertical	4 kg	8 kg	16 kg
Max. pressing force		100 N	200 N	400 N
Rotating backlash		+/-0 °		
Maximum dimensions of cross section of main unit		W 54 mm × H 54.7 mm		
Overall length	**Straight**	ST + 344 mm		
	Bending	ST + 249 mm		
Position detector		Absolute encoder Battery-less absolute encoder		
Resolution		23 bits		
Using ambient temperature and humidity		0 to 40 °C, 35 to 80 %RH (non-condensing)		

Note 1. Positioning repeatability in one direction.
Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.
If the effective stroke exceeds 350 mm, the ball screw may resonate. (Critical speed)
At this time, make the adjustment to decrease the speed while referring to the maximum speed shown in the table.
Note. See P.136 for acceleration/deceleration.

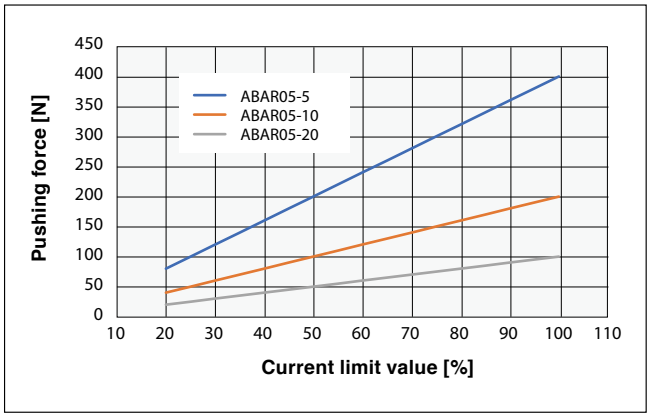
Controller

Controller	Operation method
EP-01	I/O point trace/Remote command

Pushing force (reference value)

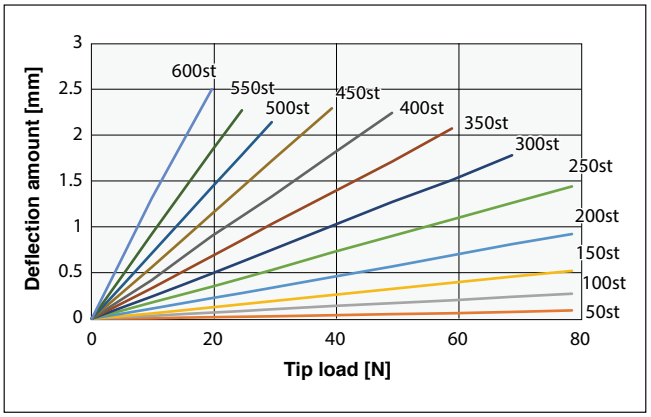
For the pushing force during pushing operation, see the graph below.

Note. The operable time (pushing judgement time) depends on the current limit value.
Use the pushing force under the conditions that no overload error occurs.



Rod deflection amount (reference value)

For the deflection amount per stroke, see the graph below.



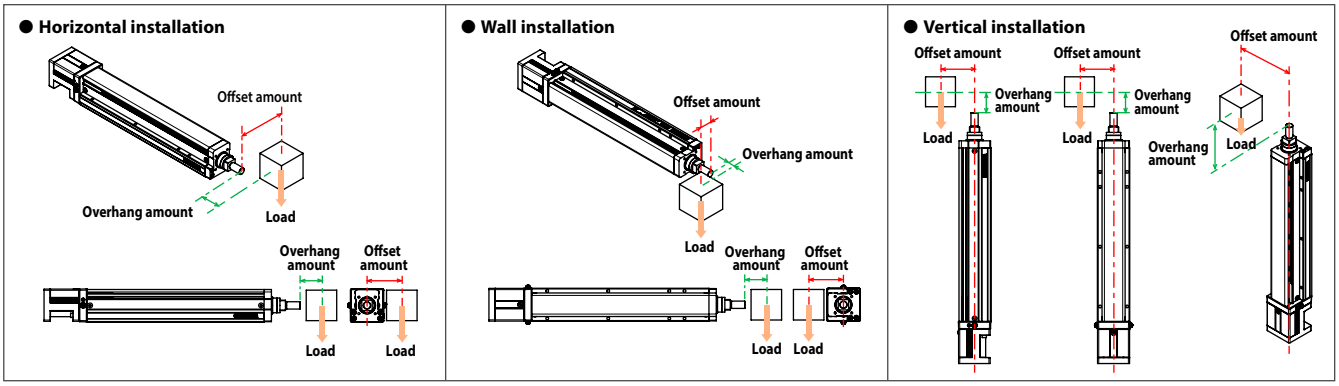
Access the website below.

YAMAHA

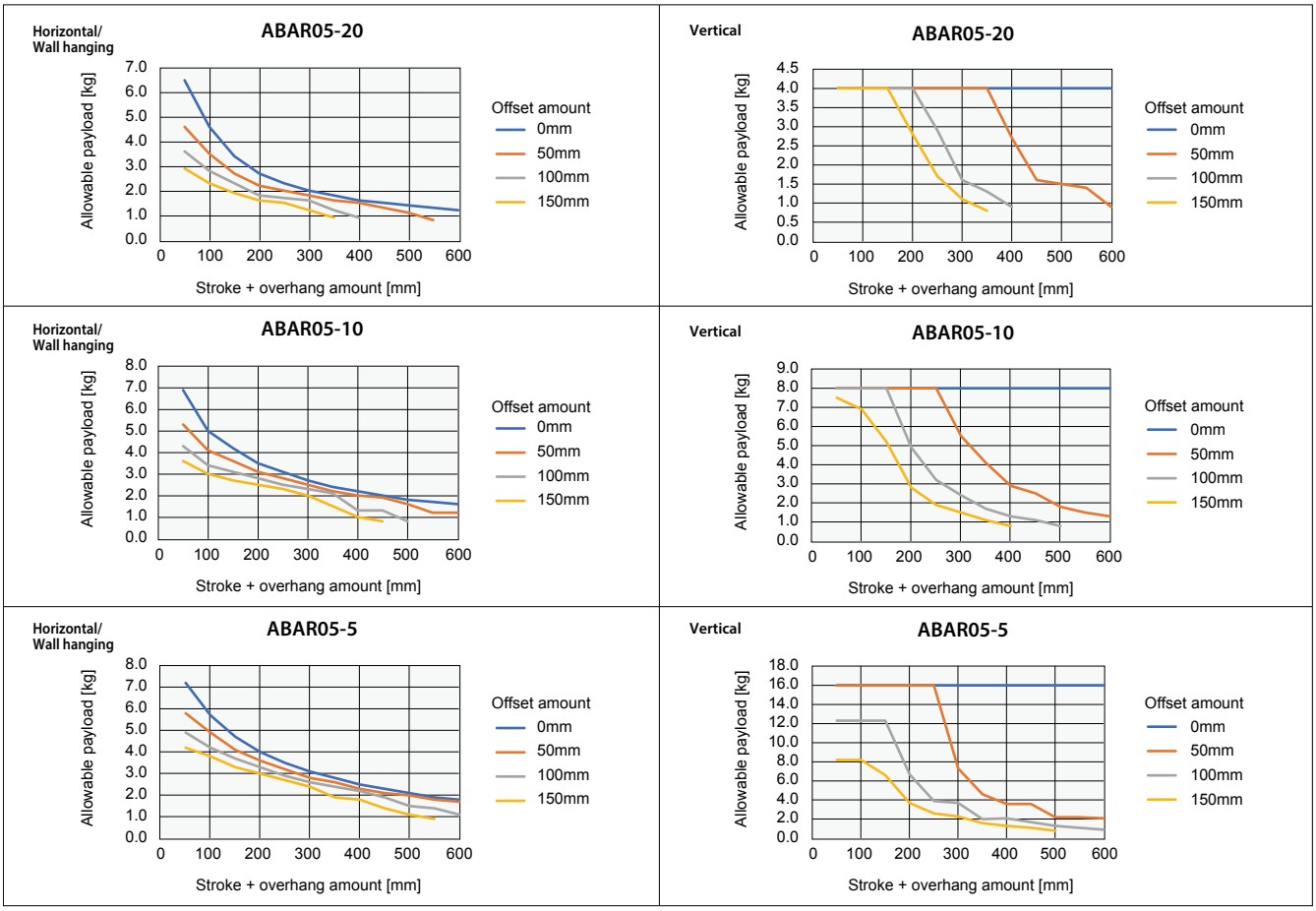
▶ **The cycle time simulation can be performed easily from our member site. For details, see P.12.**

Allowable payload

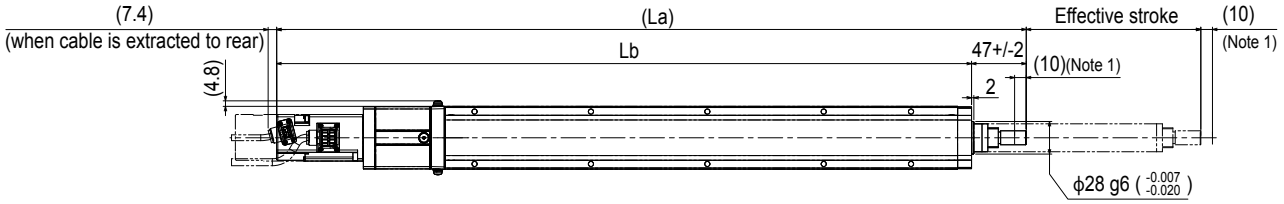
For the allowable payload per offset amount, see the graph below.

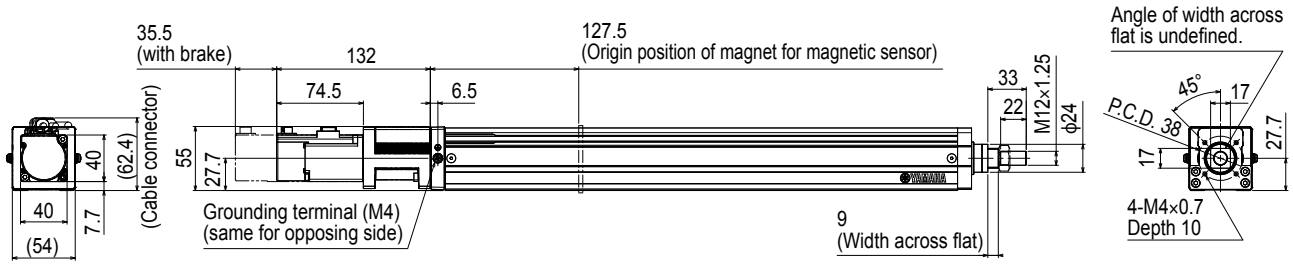


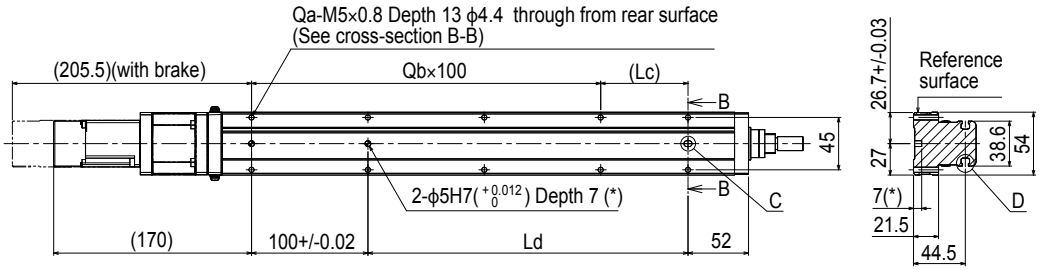
Note 1. When transferring an object with a weight exceeding the following, use an external support guide.
Install the support guide flexibly so that no unnecessary load is applied to the rod.
Note 2. The values are when the service life of the guide is 5000 km.



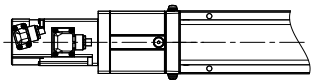
ABAR05 Straight type (S)



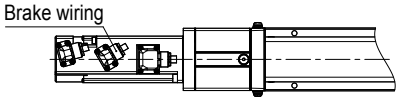




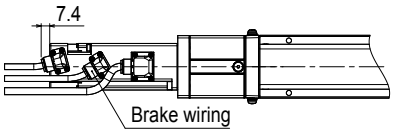
Cross-section B-B



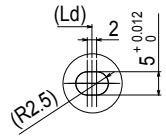
Cable is extracted from the front



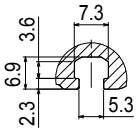
Cable is extracted from the front (with brake)



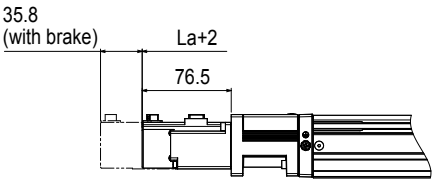
Cable is extracted from the rear (with brake)



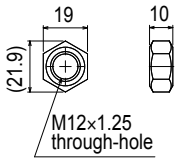
Detailed drawing C



Detailed drawing D



Battery-less absolute axis specification

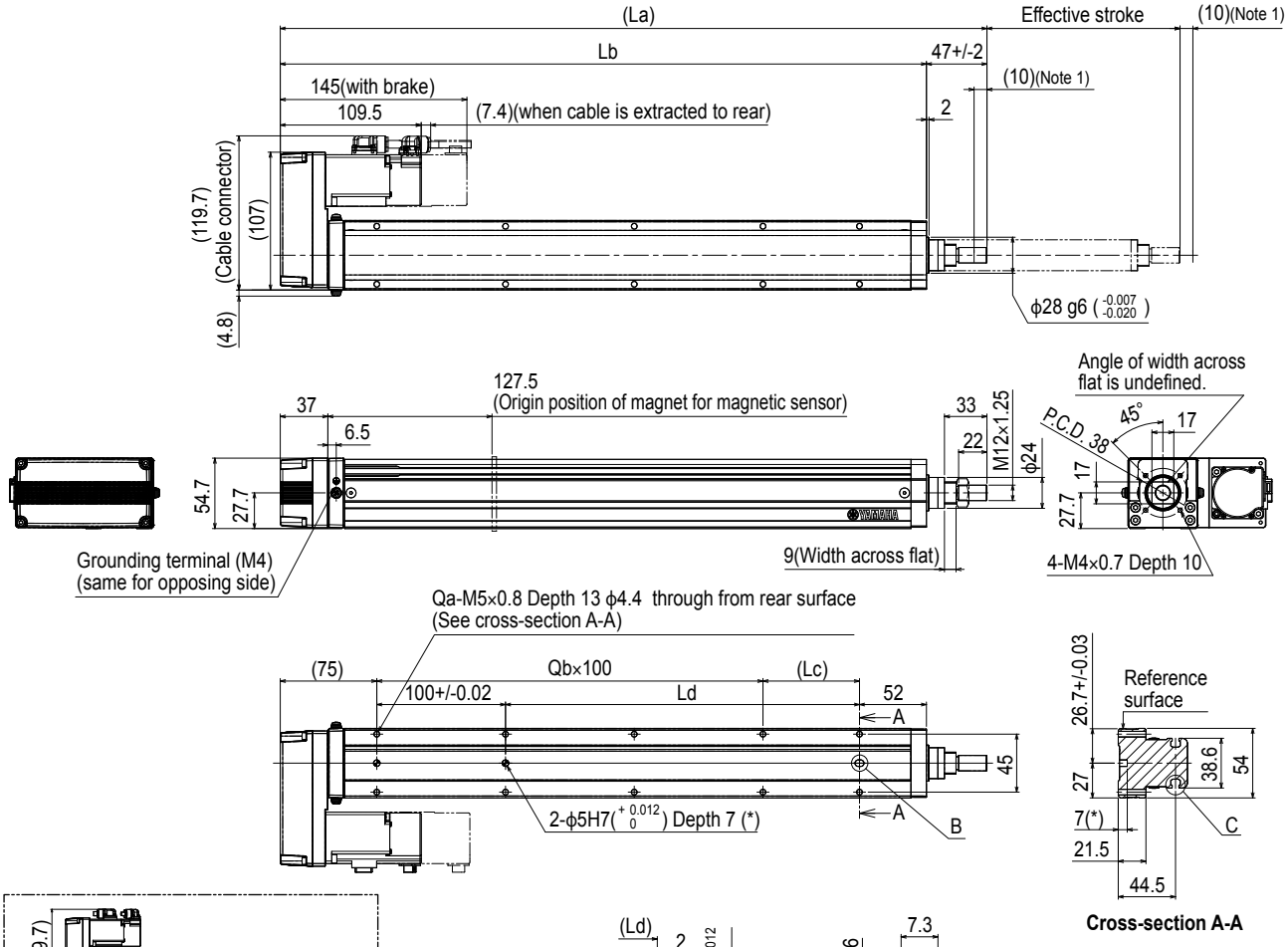


Dimensions of attached hex nut

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. When changing the return-to-origin direction, the parameter needs to be changed. (The standard is that the origin is located on the motor side.)
Note 3. For the installation through hole, the length under head << 30 mm or more>> is recommended for the hex socket head bolts <M3 × 0.5>. In the installation tap hole, the length under head <<thickness of stand +10 mm or less>> is recommended for the hex socket head bolts <M4 × 0.7> used to install the main unit.
Note 4. The weight with the brake is 0.2 kg heavier than the value in the weight column.
Note 5. The minimum bending radius of the robot cable is R30 on the fixed side or R50 on the movable side. The cable extraction direction may vary depending on the specifications.
Note 6. Grease gun nozzle (recommended) (see P.143 for detail)
Part number: KFU-M3861-00

Effective stroke		50	100	150	200	250	300	350	400	450	500	550	600
La		394	444	494	544	594	644	694	744	794	844	894	944
Lb		347	397	447	497	547	597	647	697	747	797	847	897
Lc		25	75	25	75	25	75	25	75	25	75	25	75
Ld		25	75	125	175	225	275	325	375	425	475	525	575
Qa		6	6	8	8	10	10	12	12	14	14	16	16
Qb		1	1	2	2	3	3	4	4	5	5	6	6
Weight (kg) Note 4		2.1	2.3	2.4	2.6	2.8	3	3.1	3.2	3.3	3.4	3.6	3.8
Maximum speed (mm/sec)	Lead 20	1200							960	780	600	480	420
	Lead 10	600							480	390	300	240	210
	Lead 5	300							240	195	150	120	105
	Speed setting	–							80%	65%	50%	40%	35%

ABAR05 Bending type (R/L)



Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. When changing the return-to-origin direction, the parameter needs to be changed. (The standard is that the origin is located on the motor side.)
Note 3. For the installation through hole, the length under head << 30 mm or more>> is recommended for the hex socket head bolts <M3 × 0.5>. In the installation tap hole, the length under head <<thickness of stand +10 mm or less>> is recommended for the hex socket head bolts <M4 × 0.7> used to install the main unit.
Note 4. The weight with the brake is 0.2 kg heavier than the value in the weight column.
Note 5. The minimum bending radius of the robot cable is R30 on the fixed side or R50 on the movable side. The cable extraction direction may vary depending on the specifications.
Note 6. Grease gun nozzle (recommended) (see P.143 for detail)
Part number: KFU-M3861-00

Effective stroke		50	100	150	200	250	300	350	400	450	500	550	600
La		299	349	399	449	499	549	599	649	699	749	799	849
Lb		252	302	352	402	452	502	552	602	652	702	752	802
Lc		25	75	25	75	25	75	25	75	25	75	25	75
Ld		25	75	125	175	225	275	325	375	425	475	525	575
Qa		6	6	8	8	10	10	12	12	14	14	16	16
Qb		1	1	2	2	3	3	4	4	5	5	6	6
Weight (kg) Note 4		2.2	2.3	2.5	2.7	2.9	3.1	3.2	3.3	3.4	3.5	3.7	3.8
Maximum speed (mm/sec)	Lead 20	1200							960	780	600	480	420
	Lead 10	600							480	390	300	240	210
	Lead 5	300							240	195	150	120	105
	Speed setting	–							80%	65%	50%	40%	35%

ABAR08

Basic model **Single-axis robots**

Rod type

Ordering method

ABAR08 - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - **EP-01** - [ ] - [ ] - [ ] - [ ]

Model	Lead	Shape	Motor specification	Stroke	Cable length Note 1	Cable entry location	Robot positioner	Driver: Power capacity	Regenerative unit Note 2	I/O	Battery Note 3
	20: 20 mm 10: 10 mm 5: 5 mm	S: Straight R: Right bending L: Left bending	S: Standard/With no brake BK: Standard/With brake BL: Battery-less absolute/With no brake BKBL: Battery-less absolute/With brake	50 to 800 (50mm pitch)	R3: 3 m R5: 5 m R10: 10 m	R: From rear of motor F: From front of motor	EP-01	A10: 200W or less	No entry: None R: With EP-RU	EP: EtherNet/IP™ PT: PROFINET ES: EtherCAT NS: NPN CC: CC-Link	B: With battery N: None

Note 1. The robot cable is flexible and resists bending.
Note 2. When the actuator is used vertically, the regenerative unit is needed.
When the actuator is used horizontally and the stroke of lead 10 or 20 is 150 to 500 mm, the regenerative unit is needed.
Note 3. When the motor specification is the standard (S, BK), whether to use the battery needs to be selected.

Specifications

AC servo motor output		200 W		
Repeatability Note 1		+/-0.01 mm		
Deceleration mechanism		Shifting position ball screw ϕ 16 (C7 class)		
Stroke		50 mm to 800 mm (50mm pitch)		
Maximum speed Note 2		1200 mm/sec	600 mm/sec	300 mm/sec
Ball screw lead		20 mm	10 mm	5 mm
Maximum payload	Horizontal	30 kg	60 kg	80 kg
	Vertical	8 kg	20 kg	30 kg
Max. pressing force		201 N	402 N	804 N
Rotating backlash		+/-0 °		
Maximum dimensions of cross section of main unit		W 82 mm × H 73.5 mm		
Overall length	Straight	ST + 401 mm		
	Bending	ST + 312.5 mm		
Position detector		Absolute encoder Battery-less absolute encoder		
Resolution		23 bits		
Using ambient temperature and humidity		0 to 40 °C, 35 to 80 %RH (non-condensing)		

Note 1. Positioning repeatability in one direction.
Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.
If the effective stroke exceeds 400 mm, the ball screw may resonate. (Critical speed)
At this time, make the adjustment to decrease the speed while referring to the maximum speed shown in the table.
Note. See P.138 for acceleration/deceleration.

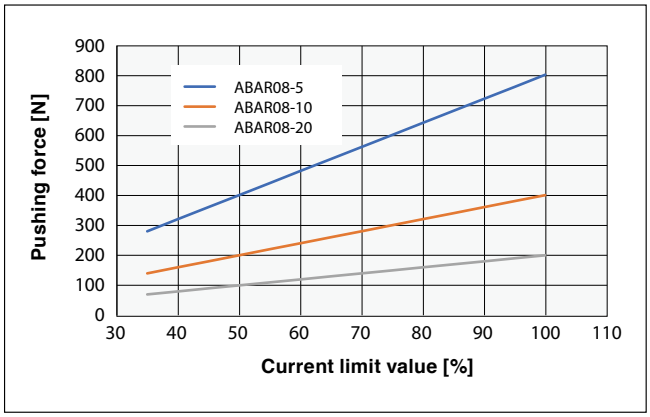
Controller

Controller	Operation method
EP-01	I/O point trace/Remote command

Pushing force (reference value)

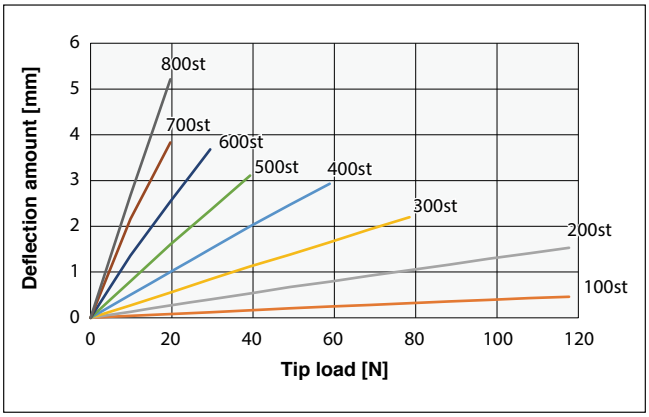
For the pushing force during pushing operation, see the graph below.

Note. The operable time (pushing judgement time) depends on the current limit value.
Use the pushing force under the conditions that no overload error occurs.



Rod deflection amount (reference value)

For the deflection amount per stroke, see the graph below.

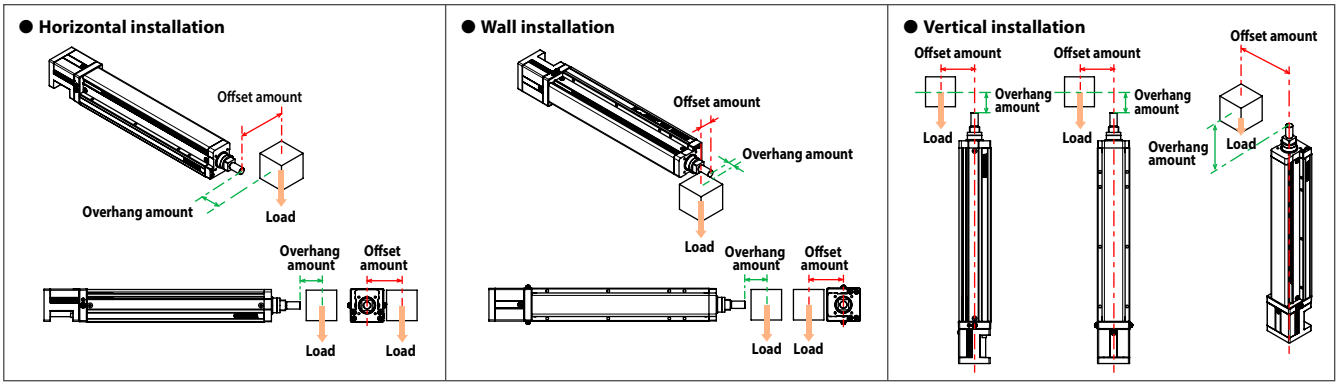


Access the website below.

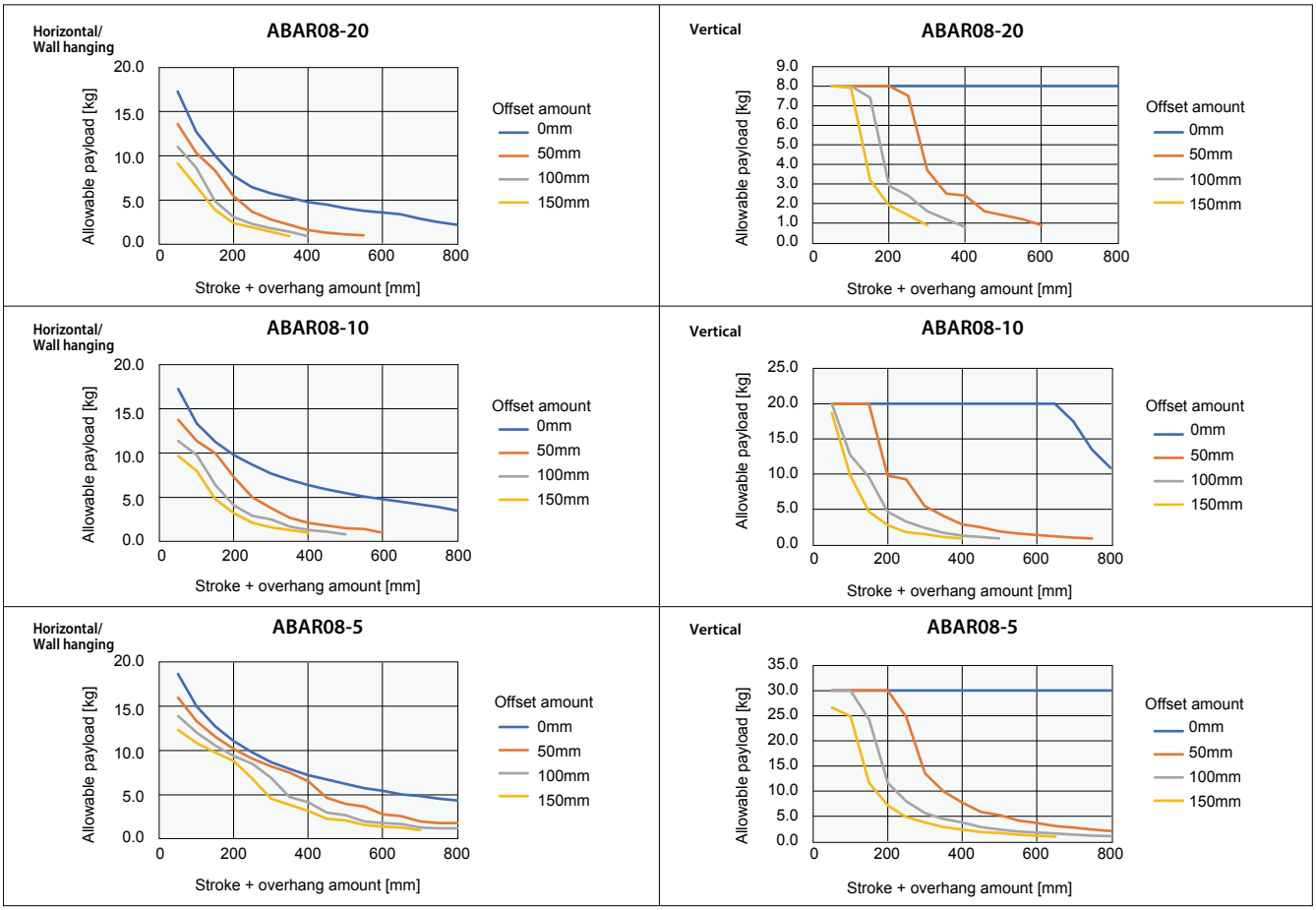
▶ **The cycle time simulation can be performed easily from our member site. For details, see P.12.**

Allowable payload

For the allowable payload per offset amount, see the graph below.



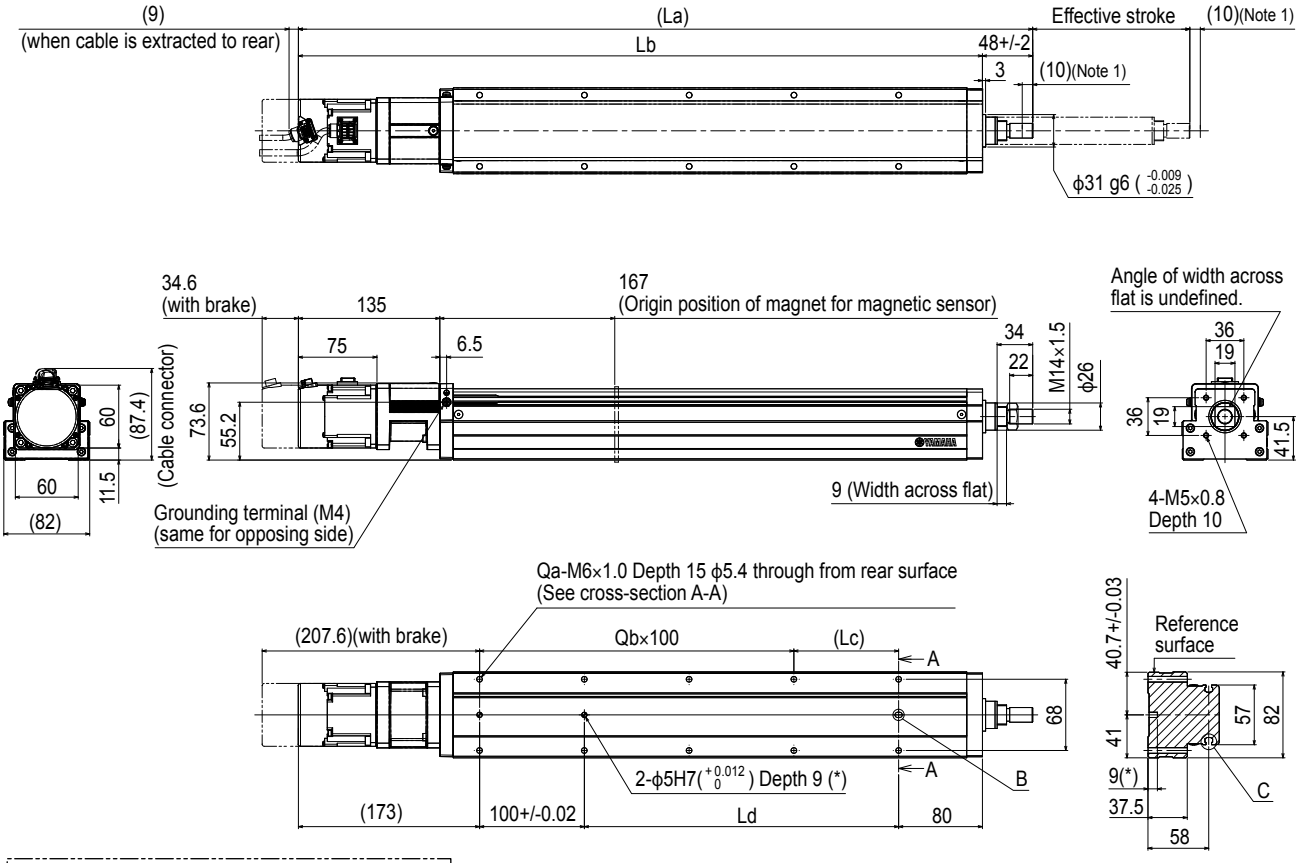
Note 1. When transferring an object with a weight exceeding the following, use an external support guide.
Install the support guide flexibly so that no unnecessary load is applied to the rod.
Note 2. The values are when the service life of the guide is 5000 km.

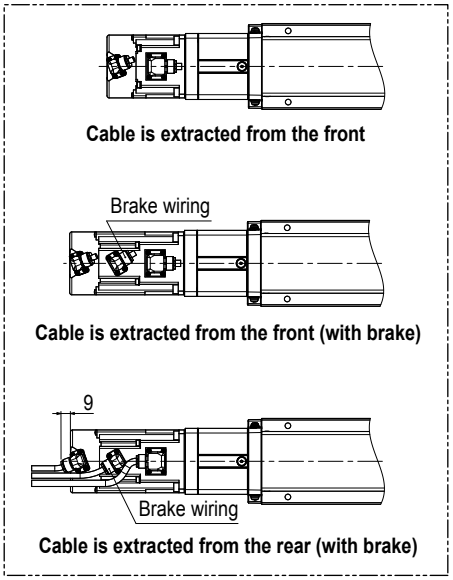


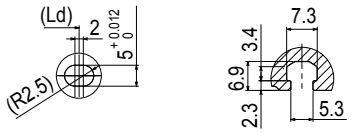
Features
Motorless Slidertype Basic model LBAS
Motorless Slidertype Advanced model LGXS
Motorless Rodtype Basic model LBAR
With motor Slidertype Basic model ABAS
With motor Slidertype Advanced model AGXS
With motor Rodtype Basic model ABAR
Acceleration/Deceleration Inertia Moment
Option
Single-axis Robot positioner EP-01

Controller EP-01 ▶ 146

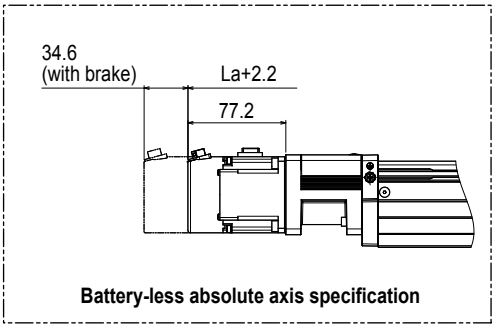
ABAR08 Straight type (S)



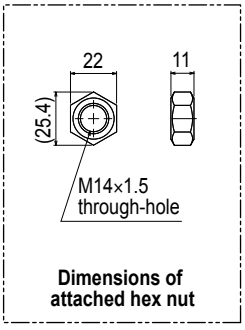




Detailed drawing B **Detailed drawing C**



Battery-less absolute axis specification

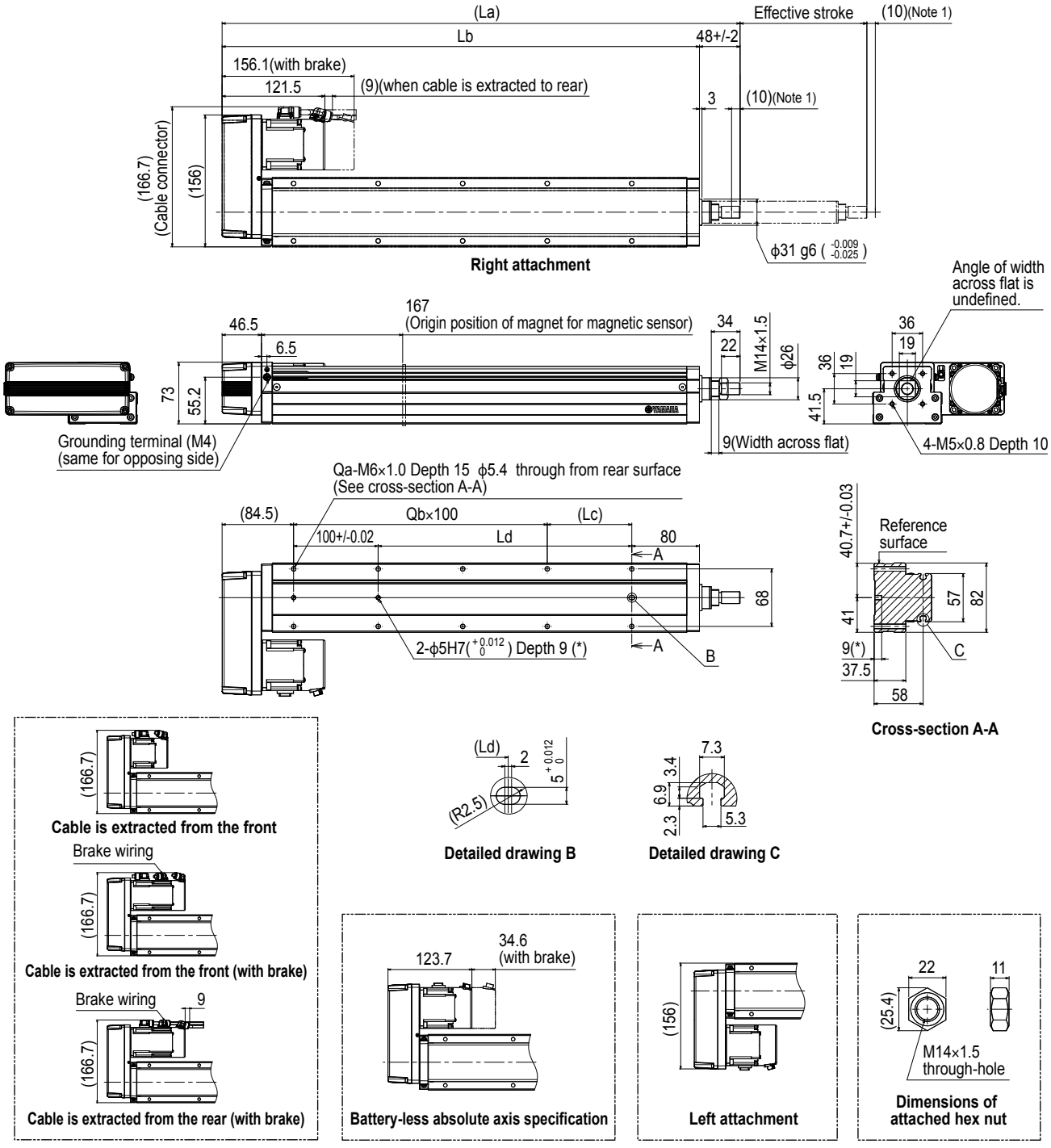


Dimensions of attached hex nut

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. When changing the return-to-origin direction, the parameter needs to be changed. (The standard is that the origin is located on the motor side.)
Note 3. For the installation through hole, the length under head << 45 mm or more>> is recommended for the hex socket head bolts <M5 × 0.8>. In the installation tap hole, the length under head <<thickness of stand +15 mm or less>> is recommended for the hex socket head bolts <M6 × 1.0> used to install the main unit.
Note 4. The weight with the brake is 0.4 kg heavier than the value in the weight column.
Note 5. The minimum bending radius of the robot cable is R30 on the fixed side or R50 on the movable side. The cable extraction direction may vary depending on the specifications.
Note 6. Grease gun nozzle (recommended) (see P.143 for detail)
Part number: KFU-M3861-00

Effective stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
La		451	501	551	601	651	701	751	801	851	901	951	1001	1051	1101	1151	1201
Lb		403	453	503	553	603	653	703	753	803	853	903	953	1003	1053	1103	1153
Lc		50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100
Ld		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Qa		6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20
Qb		1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
Weight (kg) Note 4		4.7	5.1	5.5	5.8	6.1	6.5	6.8	7.1	7.4	7.8	8.2	8.5	8.9	9.2	9.4	9.7
Maximum speed (mm/sec)	Lead 20	1200								900	720	600	480	420	360	300	240
	Lead 10	600								450	360	300	240	210	180	150	120
	Lead 5	300								225	180	150	120	105	90	75	60
	Speed setting	–								75%	60%	50%	40%	35%	30%	25%	20%

ABAR08 Bending type (R/L)



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Note 6. Grease gun nozzle (recommended) (see P.143 for detail)
Part number: KFU-M3861-00

Effective stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
La		362.5	412.5	462.5	512.5	562.5	612.5	662.5	712.5	762.5	812.5	862.5	912.5	962.5	1012.5	1062.5	1112.5
Lb		314.5	364.5	414.5	464.5	514.5	564.5	614.5	664.5	714.5	764.5	814.5	864.5	914.5	964.5	1014.5	1064.5
Lc		50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100
Ld		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Qa		6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20
Qb		1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
Weight (kg) Note 4		5.1	5.5	5.9	6.2	6.5	6.9	7.2	7.5	7.8	8.2	8.6	8.9	9.3	9.6	9.8	10.1
Maximum speed (mm/sec)	Lead 20	1200								900	720	600	480	420	360	300	240
	Lead 10	600								450	360	300	240	210	180	150	120
	Lead 5	300								225	180	150	120	105	90	75	60
	Speed setting	–								75%	60%	50%	40%	35%	30%	25%	20%