



XY-TABLE



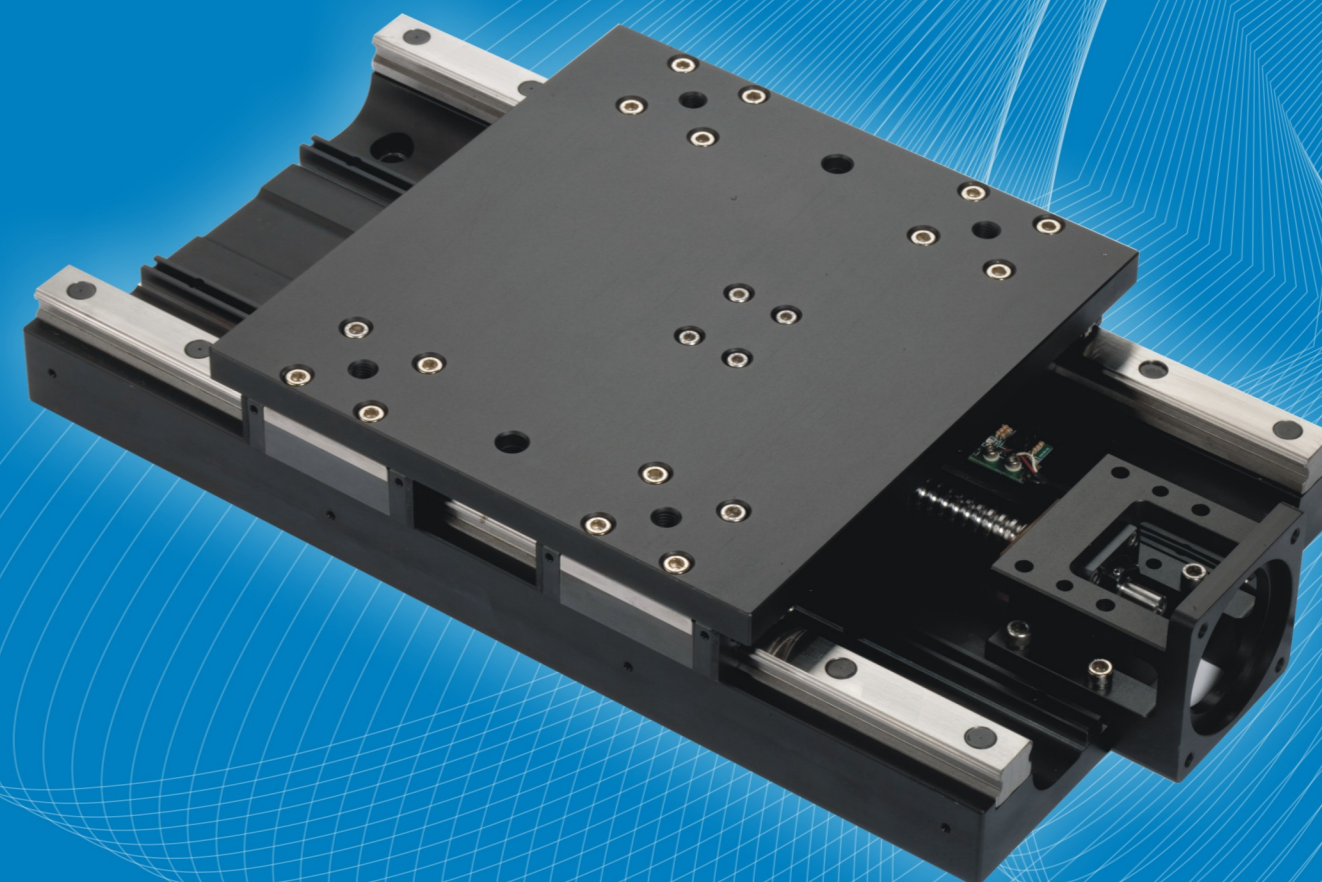
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GXY	25	-	20	20	J	W	P
GXY	25		20	20	J	W	P
Axis numbers	Table width	X axis travel Stroke	Y axis travel Stroke	Dust cover	Anodizing finish	Accuracy level	
GX : Single GXY : Double	15=150mm 25=250mm 40=400mm	Ex: 05=50mm 10=100mm 20=200mm	Ex: 05=50mm 10=100mm 20=200mm	Optional	W : Primary anodizing B : Black anodized	P : Precise R : Regular	

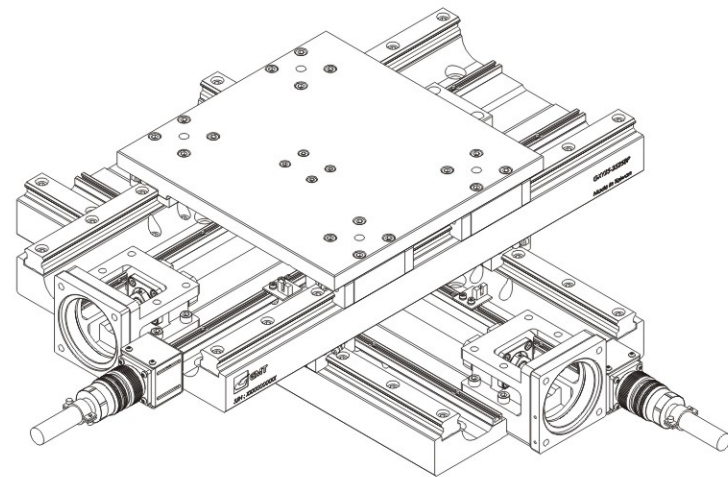
◆ Single axis specification Unit : mm

Spec	Single axis		Single axis with dust cover		Travel stroke	
	Model no.	Table size	Model no.	Table size	X axis	
GX15	GX15-05 <input type="checkbox"/>	150*160	GX15-05J <input type="checkbox"/>	150*188	± 25	
	GX15-10 <input type="checkbox"/>		GX15-10J <input type="checkbox"/>		± 50	
	GX15-15 <input type="checkbox"/>		GX15-15J <input type="checkbox"/>		± 75	
	GX15-20 <input type="checkbox"/>		GX15-20J <input type="checkbox"/>		± 100	
	GX15-25 <input type="checkbox"/>		GX15-25J <input type="checkbox"/>		± 125	
	GX15-30 <input type="checkbox"/>		GX15-30J <input type="checkbox"/>		± 150	
GX25	GX25-20 <input type="checkbox"/>	250*260	GX25-20J <input type="checkbox"/>	250*300	± 100	
	GX25-25 <input type="checkbox"/>		GX25-25J <input type="checkbox"/>		± 125	
	GX25-30 <input type="checkbox"/>		GX25-30J <input type="checkbox"/>		± 150	
	GX25-40 <input type="checkbox"/>		GX25-40J <input type="checkbox"/>		± 200	
	GX25-50 <input type="checkbox"/>		GX25-50J <input type="checkbox"/>		± 250	
GX40	GX40-40 <input type="checkbox"/>	400*420	GX40-40J <input type="checkbox"/>	400*470	± 200	
	GX40-50 <input type="checkbox"/>		GX40-50J <input type="checkbox"/>		± 250	

◆ Dual axis specification Unit : mm

Spec	Dual axes		Dual axes with dust cover		Travel stroke	
	Model no.	Table size	Model no.	Table size	X axis	Y axis
GXY15	GXY15-0505 <input type="checkbox"/>	150*160	GXY15-0505J <input type="checkbox"/>	150*188	±25	±25
	GXY15-0510 <input type="checkbox"/>		GXY15-0510J <input type="checkbox"/>		±25	±50
	GXY15-0515 <input type="checkbox"/>		GXY15-0515J <input type="checkbox"/>		±25	±75
	GXY15-1010 <input type="checkbox"/>		GXY15-1010J <input type="checkbox"/>		±50	±50
	GXY15-1015 <input type="checkbox"/>		GXY15-1015J <input type="checkbox"/>		±50	±75
	GXY15-1515 <input type="checkbox"/>		GXY15-1515J <input type="checkbox"/>		±75	±75
GXY25	GXY25-2020 <input type="checkbox"/>	250*260	GXY25-2020J <input type="checkbox"/>	250*300	±100	±100
	GXY25-2025 <input type="checkbox"/>		GXY25-2025J <input type="checkbox"/>		±100	±125
	GXY25-2030 <input type="checkbox"/>		GXY25-2030J <input type="checkbox"/>		±100	±150
	GXY25-2525 <input type="checkbox"/>		GXY25-2525J <input type="checkbox"/>		±125	±125
	GXY25-2530 <input type="checkbox"/>		GXY25-2530J <input type="checkbox"/>		±125	±150
	GXY25-3030 <input type="checkbox"/>		GXY25-3030J <input type="checkbox"/>		±150	±150
GXY40	GXY40-4040 <input type="checkbox"/>	400*420	GXY40-4040J <input type="checkbox"/>	400*470	±200	±200
	GXY40-4050 <input type="checkbox"/>		GXY40-4050J <input type="checkbox"/>		±200	±250
	GXY40-5050 <input type="checkbox"/>		GXY40-5050J <input type="checkbox"/>		±250	±250

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◆ **GMT XY-TABLE** divided into :

- ◎ Precise level(P) : Ball screw shaft is C5 level, linear slide block is precise level (heavy preload).
Application : Measure device, instrument, painting equipment.
- ◎ Regular level(R) : Ball screw shaft is R level, linear slide block is high level H (light preload).
Application : Woodworking machine · Cutting machine · LCR carving machine · Video Comparator.

◆ **Perfect durability**

GMT linear Slide table base is made by high strength aluminum alloy, has been stress eliminated and cryogenic treatment under 196°C (Please refer to P.42), such quality may maintain high precision still after long period using. while it is applied to the slide table required high precision, the base structure is stable enough to against distortion such as expansion while thermal and shrink while cool caused by the environment variation, also can keep a consistence movement of the slide table set. Thus, the base material durability has been highly increased to take the maximum deforming.

◆ **Variety of dimensions assembly**

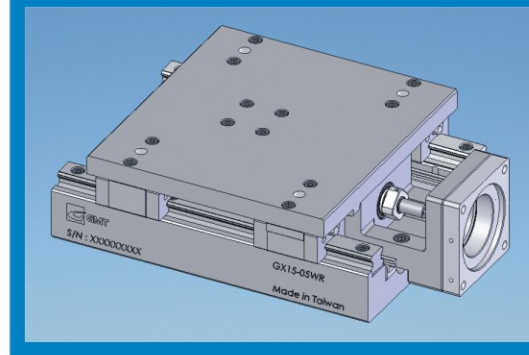
XY-TABLE dimensions, from 150mm ~ 400mm, travel stroke from 50mm ~ 500mm, modularized design creates variety of single axis or dual axes models, fit for linear moulds used in Automatic, Photo-electric, and Semi-conduct fields.

◆ **Motor base**

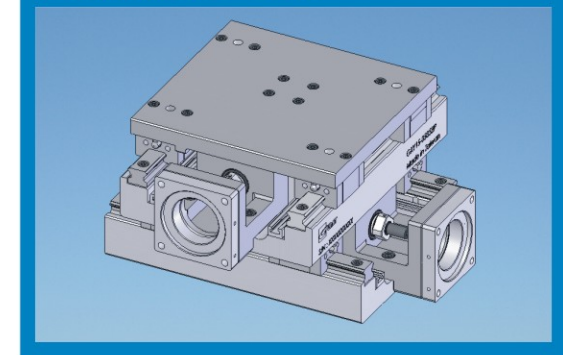
Matched with all servo motors, easy insert installation without axis adjustment.

★ Motors, couplings are excluded from **GMT XY-TABLE** units.

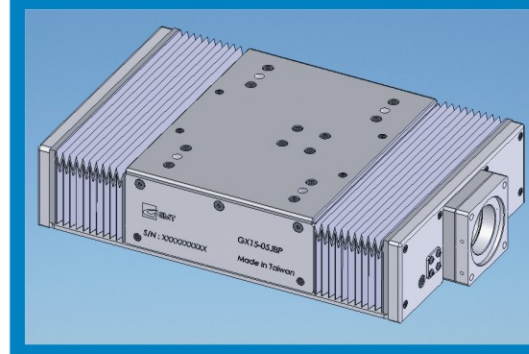
Single axis: GX



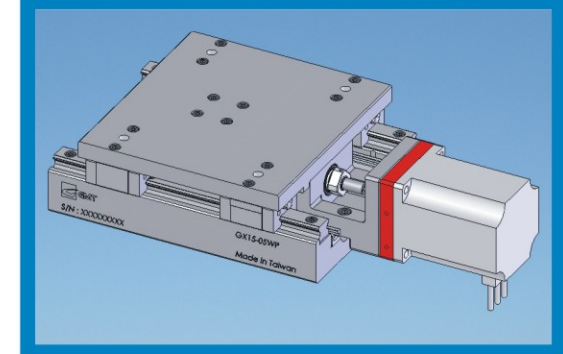
Dual axes: GXY



With dust cover: GX-J



Motor connection examples :



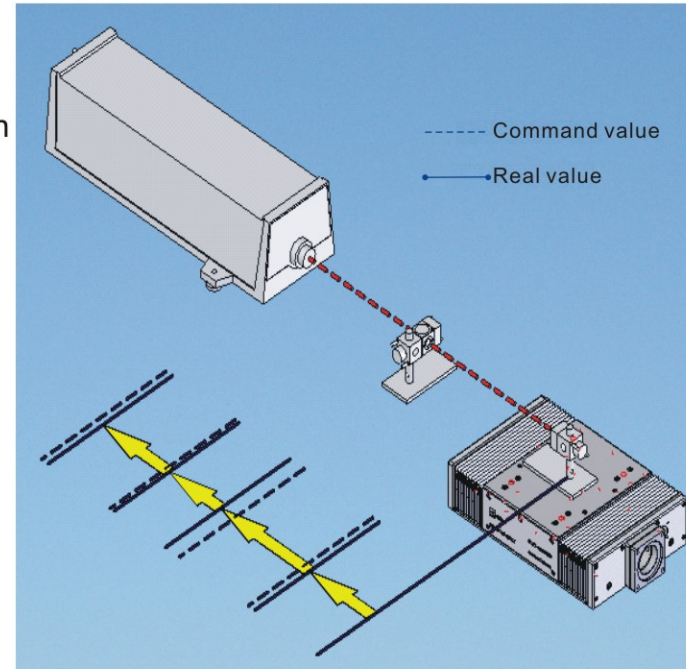
- (1) Choose precise level(P) or regular level(R) by working environment and accuracy requirement.
- (2) Select Single axis or Dual axes.
- (3) Required table dimensions.
- (4) Stroke options.
- (5) Function options : with dust cover(J) · No dust cover.
- (6) Surface finish : Anodizing - Primary color or Black color.
- (7) Coupling added or not(optional accessory)
- (8) Please advise motor brand, model no. while ordering.
(to match with motor connection)

◆ **Lubricant use**

- General environment :
Linear rail : Lithium soap lubricant NO. 2 or lubricant in viscosity 30~150cst.
Ball screw shaft : Lithium soap lubricant or lubricant in viscosity 30~40cst.
- Clean room :
Lubrication level depends on individual request from clean rooms.

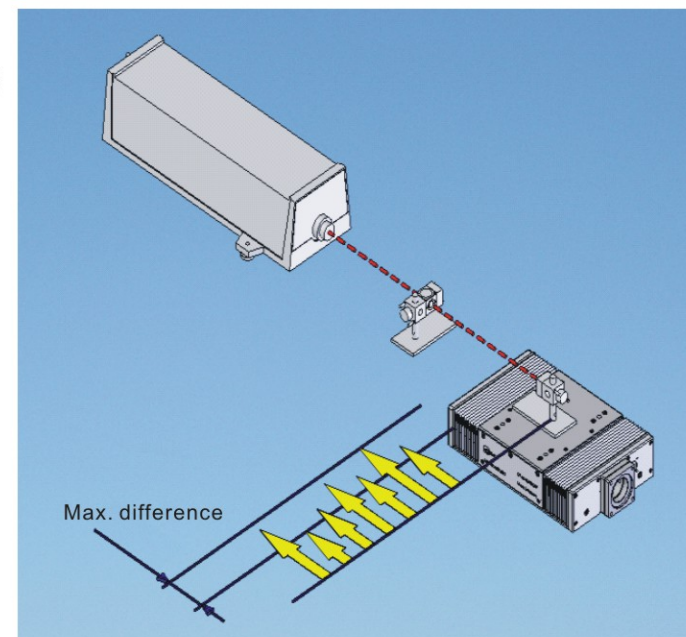
Accumulated read error(Positioning Accuracy) (Refer to JIS B 6191-1999)

From datum, move in direction, same interval positioning gradually in the range table could move and note down each real position value (measured from datum to the stop point), and command value(the expected value position in theory after commanding). The maximum difference is called Accumulated reading error. (Positioning Accuracy)
This could be revised by controller.



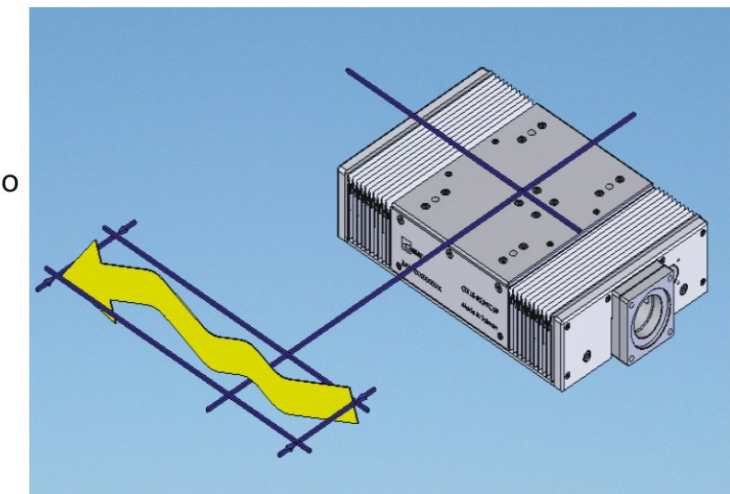
Repeated Accuracy (refer to JIS B 6191-1999)

Any point begins in same direction (As datum) Take 7 times measurement to get max. difference. This operates in center and two ends, and have the Plus/Minus value after measured maximum difference divided by 2, called Repeated positioning accuracy.



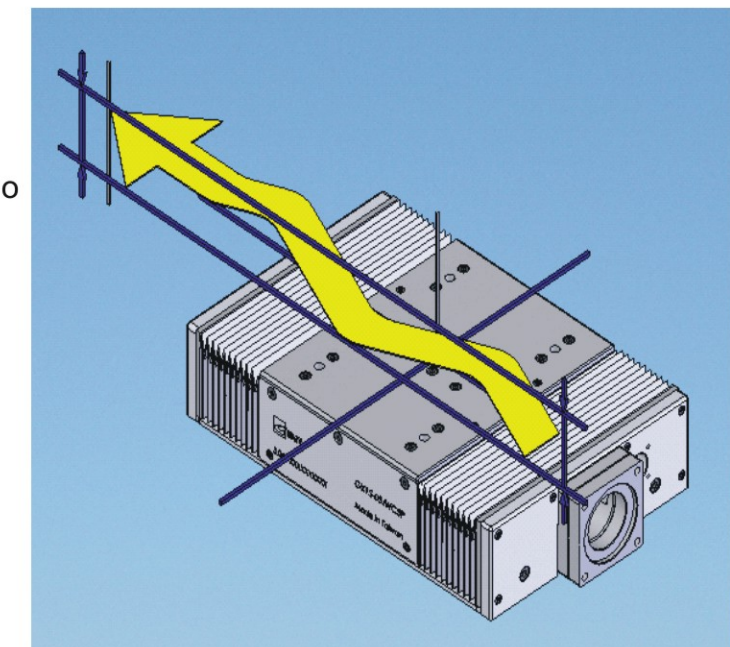
Straightness (XY axis direction) (refer to JIS B 6191-1999)

Positioning on the table(with Glass Ruler...etc) as the datum, and measuring by electric gauge in the range table could move. Connect two spots from starting point of test to destination, and the maximum difference between two points is called Straight value. It includes vertical part and parallel part. Each of maximum value is Straight value of table.



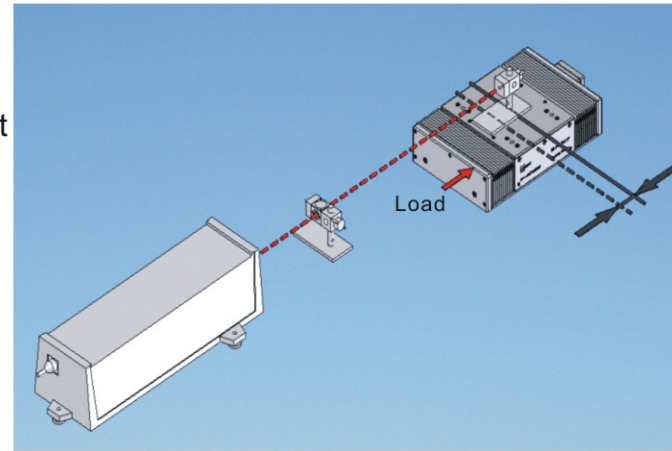
Straightness(Z axis direction) (refer to JIS B 6191-1999)

Positioning on the table(with Glass Ruler...etc) as the datum, and measuring by electric gauge in the range table could move. Connect two spots from starting point of test to destination, and the maximum difference between two points is called Straight value. It includes vertical part and parallel part. Each of maximum value is Straight value of table.



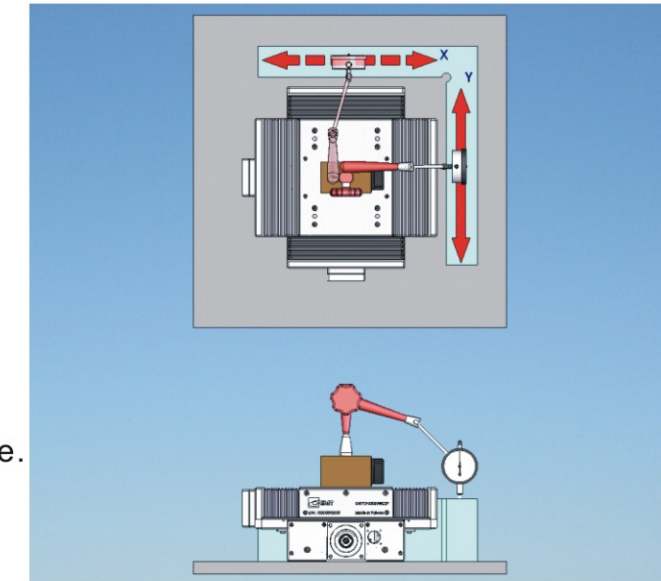
Backlash clearance (refer to JIS B 6201-1976 · 4-22)

Use gravity of table or center in moving range as datum, and put a specified load on it in the same transmission direct as moving forward to datum. Difference between basis and unloaded position after unloading is called Backlash clearance.



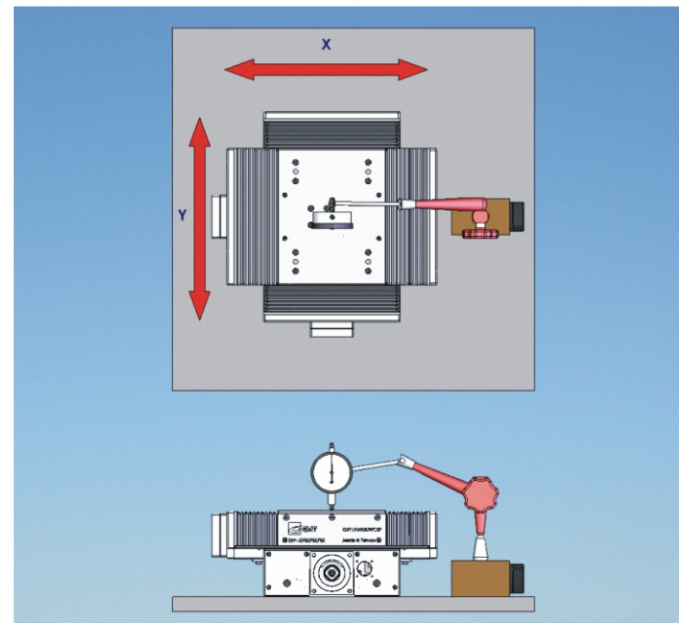
Parallel value B in XY action (refer to JIS B 6201-1976 · 7-52)

Parallel value comes from XY act and plane(XY positioning table intallation plane). (Gauge fixed and immovable) Fix gauge in the center of table stroke, and have sticks of gauge against installation plane of table. Test the table in full stroke of moving in X direction and Y direction, and take difference of maximum in moved distances as test value.



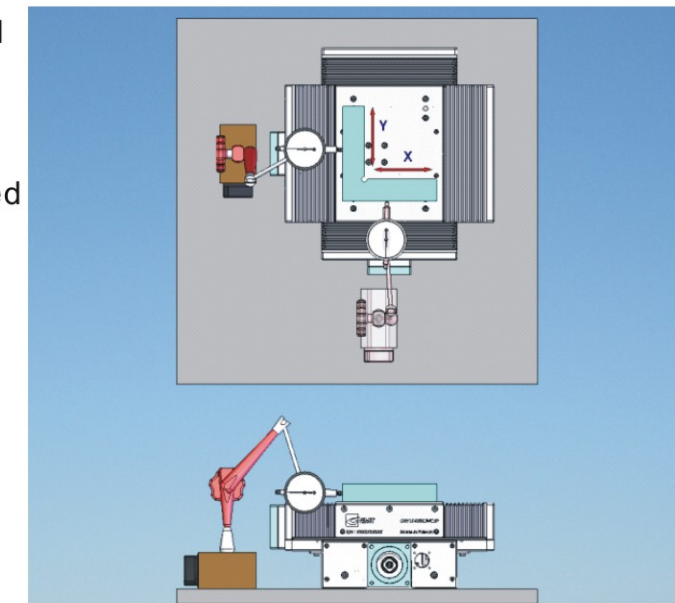
Parallel value A in XY action (refer to JIS B 6201-1976 · 7-51)

Parallel value comes from XY act and plane(XY positioning table intallation plane). (Gauge fixed and immovable) Fix gauge on installed plane of XY positioning table, and have sticks of gauge against center of table, and test in full stroke of table moving in XY direction. Take maximum difference in moved distances as test value.



Right angle value in XY action

Consist in right angle between X axis and Y axis. Use squares fixed as datum, and take gauge to test error value in vertical direction to the datum, maximum in moved distances is test value.



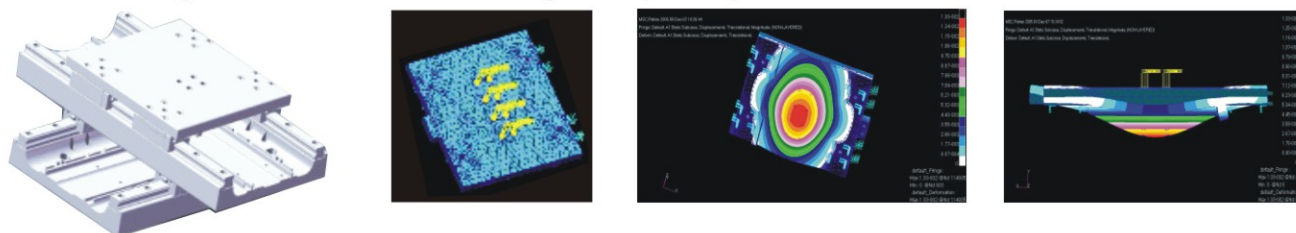
GMT XY-TABLE products use limited elements analysis software in application on construction and shape for optimized design.

◆ **Points to optimized design are as below :**

1. Reduce materials used in parts production, and decrease manufacture and transportation cost at the same time.
2. Due to material reduction, also decrease down entire weight of product greatly ; in opposite, energy loss dropped down by product weight decrease, but system efficiency raised. Meanwhile environment protection is also reached.
3. Decrease stress · increase construction strength.
4. Shape optimized design reduces material use, and improves the appearance of product, smooth and streamlined as well.
5. Optimized design could save a lot of time in the design process by automatic analysis software execution and programmable parameter, without large amount of manpower to shorten the development duration.


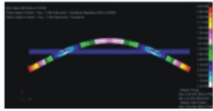
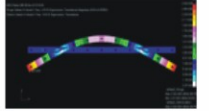
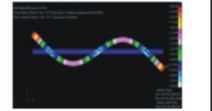


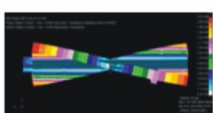
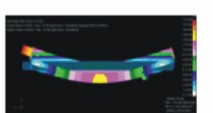
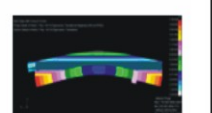
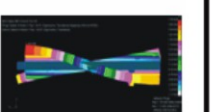

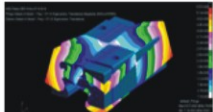
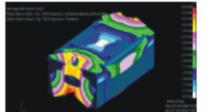
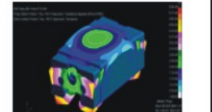
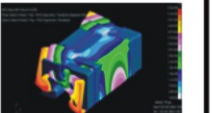

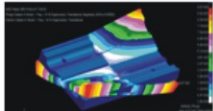
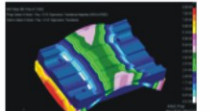
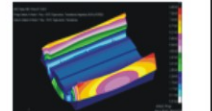
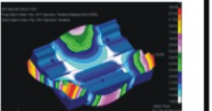
◆ **Five basic steps in optimized design :**

1. Initial design parameter
Before use Variable initialed into a design parameter, it needs to be appointed in the beginning before pre-work, so that it could avoid design parameter to be initialed again.
2. Definition
Main job of pre-work is producing limited element model required by optimized analysis. This is exactly the same as regular analysis.
3. Primary analysis execution
Optimized resolution is the same as regular ANSYS steps, is result in chief, such as stress, strain and distortion... etc.
4. Get feedback
Post-work step is usually used to take required value(ex: stress, strain), and this step is mainly collected and stored with target function and limited condition to parameter type.
5. Target function setting, conditions limitation and loops of optimized execution.
Final step is to optimize analysis process, mainly control of optimized process of design, such as parameter design, limit of maximum and minimum, and declaration about target function and convergence principal.



◆ **Product analysis items**

1. Slide distortioin analysis.
2. Max. load of Dual-axes plane moving to end of X and Y. (Self-load).
3. Max. load of Dual-axes plane moving to end of X and Y. (Side load).
4. Max. capacity of X · Y rails and table.
5. Heat deformation of rails, and table .
6. Mode analysis of rails · table · slide block and slide set.
7. Cosmos and Nastran construction verification.

		Mode 1	Mode 2	Mode 3	Mode 4
 Rail	Resonance frequency (Hz)	7 (bending)	9 (torsion)	20 (bending)	24 (torsion)
	Shape				
 Table	Resonance frequency (Hz)	24 (torsion)	35 (bending)	46 (bending)	62 (torsion)
	Shape				
 Slide block	Resonance frequency (Hz)	271 (torsion)	453 (bending)	506 (bending)	578 (torsion)
	Shape				
 Slide set	Resonance frequency (Hz)	17 (torsion)	23 (bending)	40 (bending)	41 (torsion)
	Shape				

Precise level

GX15

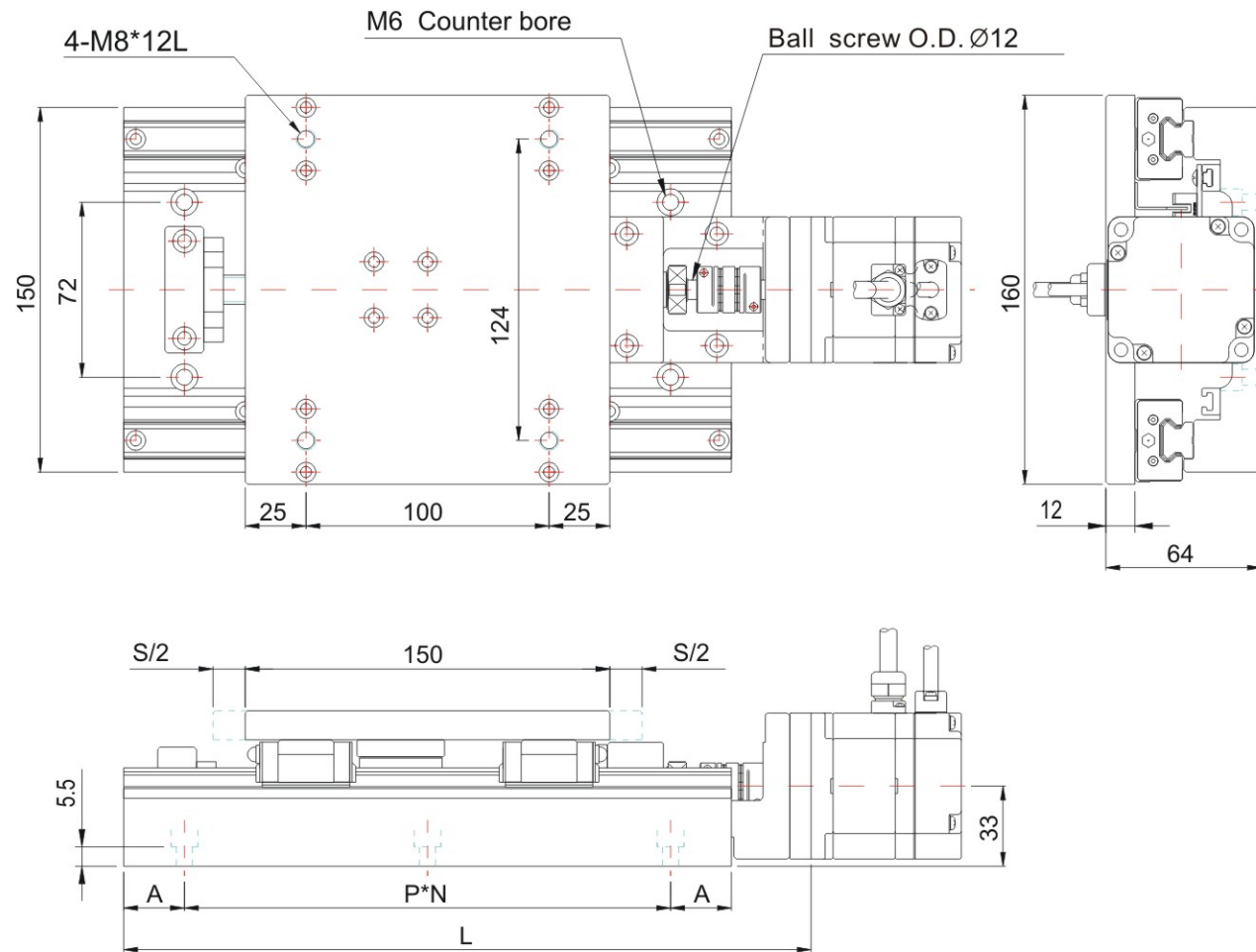
GX25

GX40

GXY15

GXY25

GXY40



Precise level

GX15

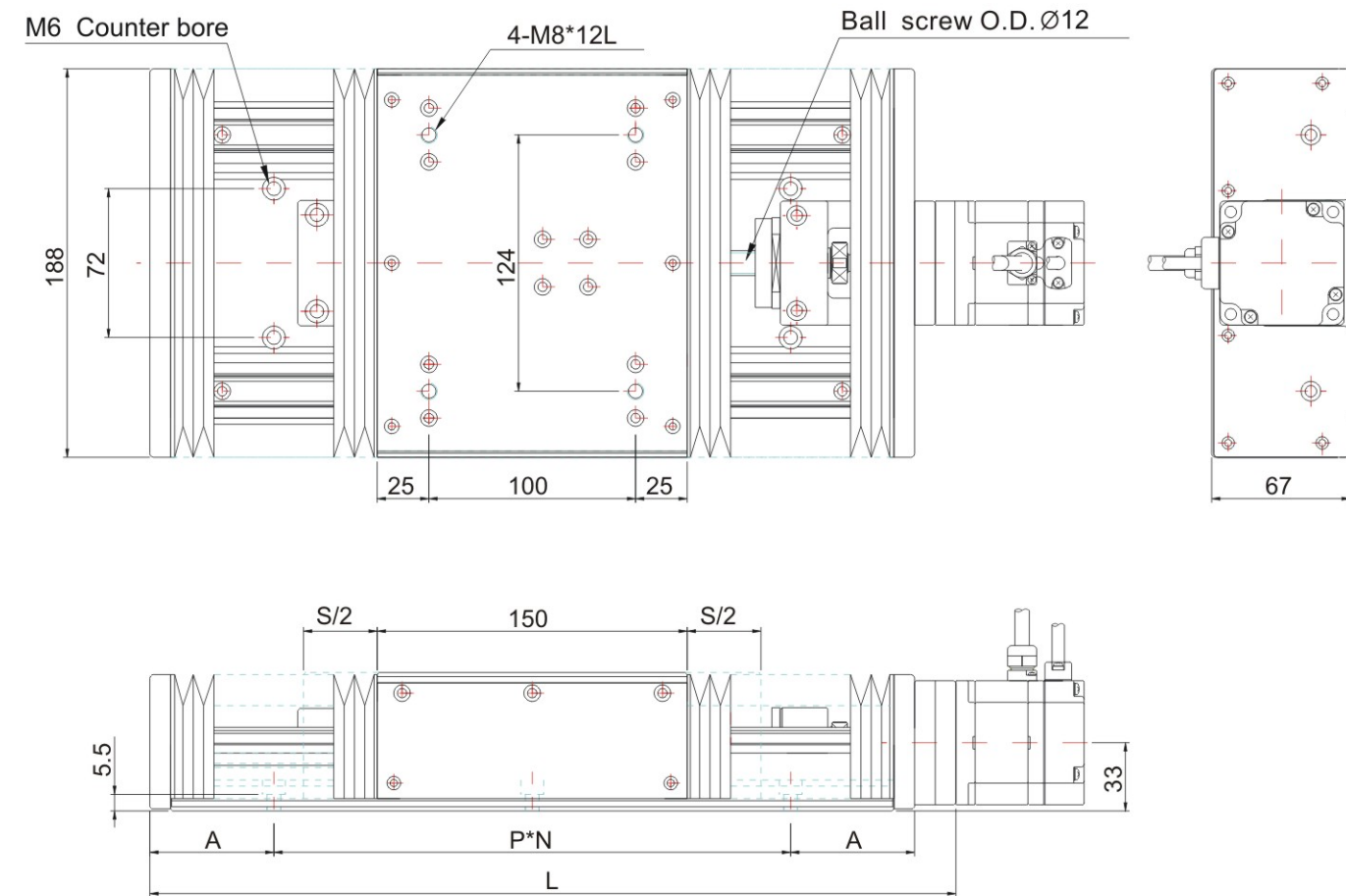
GX25

GX40

GXY15

GXY25

GXY40



◆ Specification

Unit : mm

Model no.		X axis Stroke	Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized							Dia.	Guide stroke	Accuracy	A	P*N		
GX15-05WP	GX15-05BP	±25	0.005	0.015	±0.002	40	P	Ø12	5	C5	37.5	125*1	234	3.7
GX15-10WP	GX15-10BP	±50	0.005	0.015							62.5	125*1	284	4.1
GX15-15WP	GX15-15BP	±75	0.01	0.02							25	125*2	334	4.6
GX15-20WP	GX15-20BP	±100	0.01	0.02							50	125*2	384	5.1
GX15-25WP	GX15-25BP	±125	0.02	0.03							75	125*2	434	5.6
GX15-30WP	GX15-30BP	±150	0.02	0.03							37.5	125*3	484	5.9

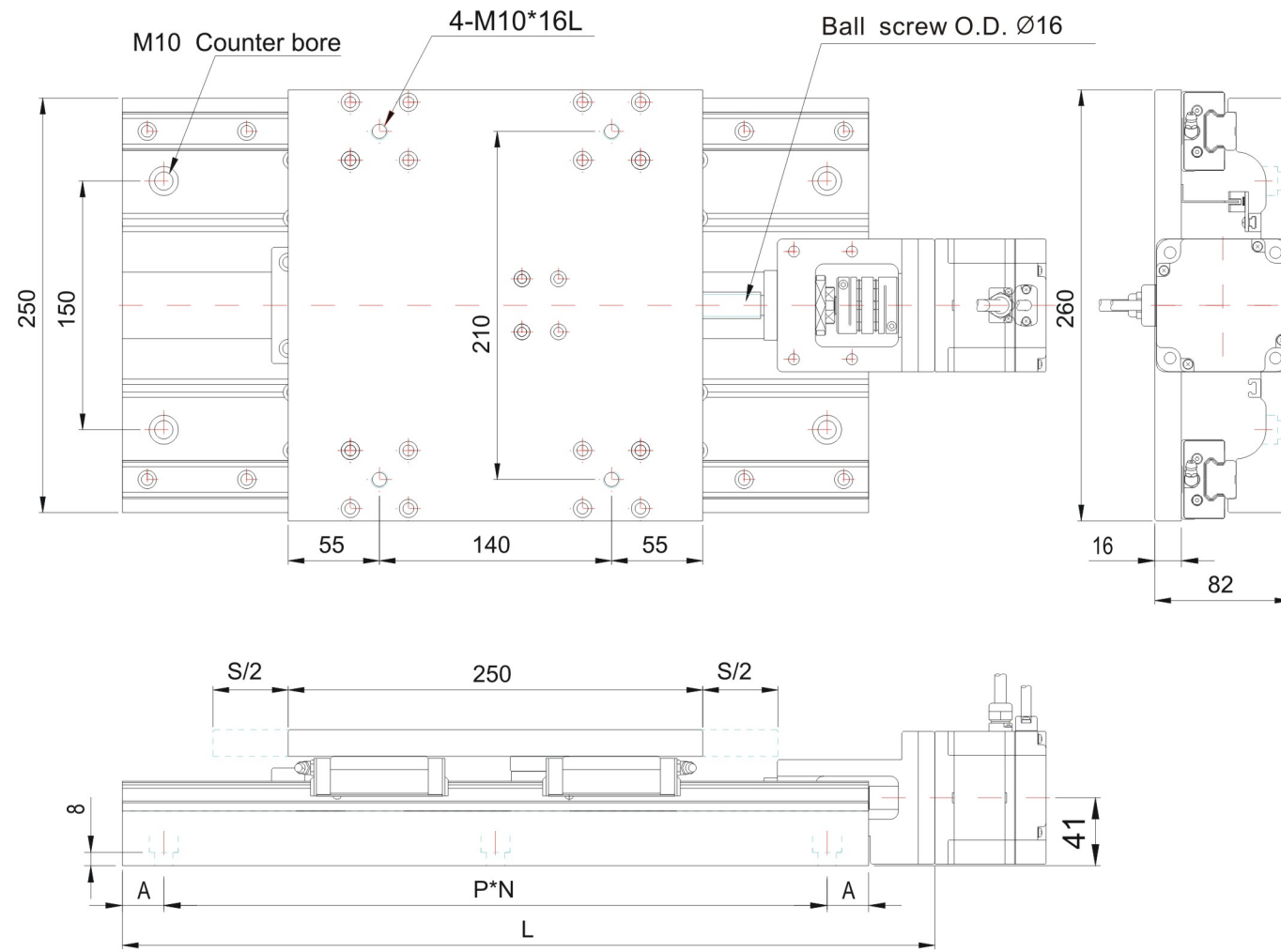
◆ Specification

Unit : mm

Model no.		X axis Stroke	Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized							Dia.	Guide stroke	Accuracy	A	P*N		
GX15-05JWP	GX15-05JBP	±25	0.005	0.015	±0.002	40	P	Ø12	5	C5	10	125*2	310	5.9
GX15-10JWP	GX15-10JBP	±50	0.005	0.015							50	125*2	390	6.7
GX15-15JWP	GX15-15JBP	±75	0.01	0.02							22.5	125*3	460	7.4
GX15-20JWP	GX15-20JBP	±100	0.01	0.02							67.5	125*3	550	8.3
GX15-25JWP	GX15-25JBP	±125	0.02	0.03							10	125*4	620	8.9
GX15-30JWP	GX15-30JBP	±150	0.02	0.03							12.5	125*5	690	9.5

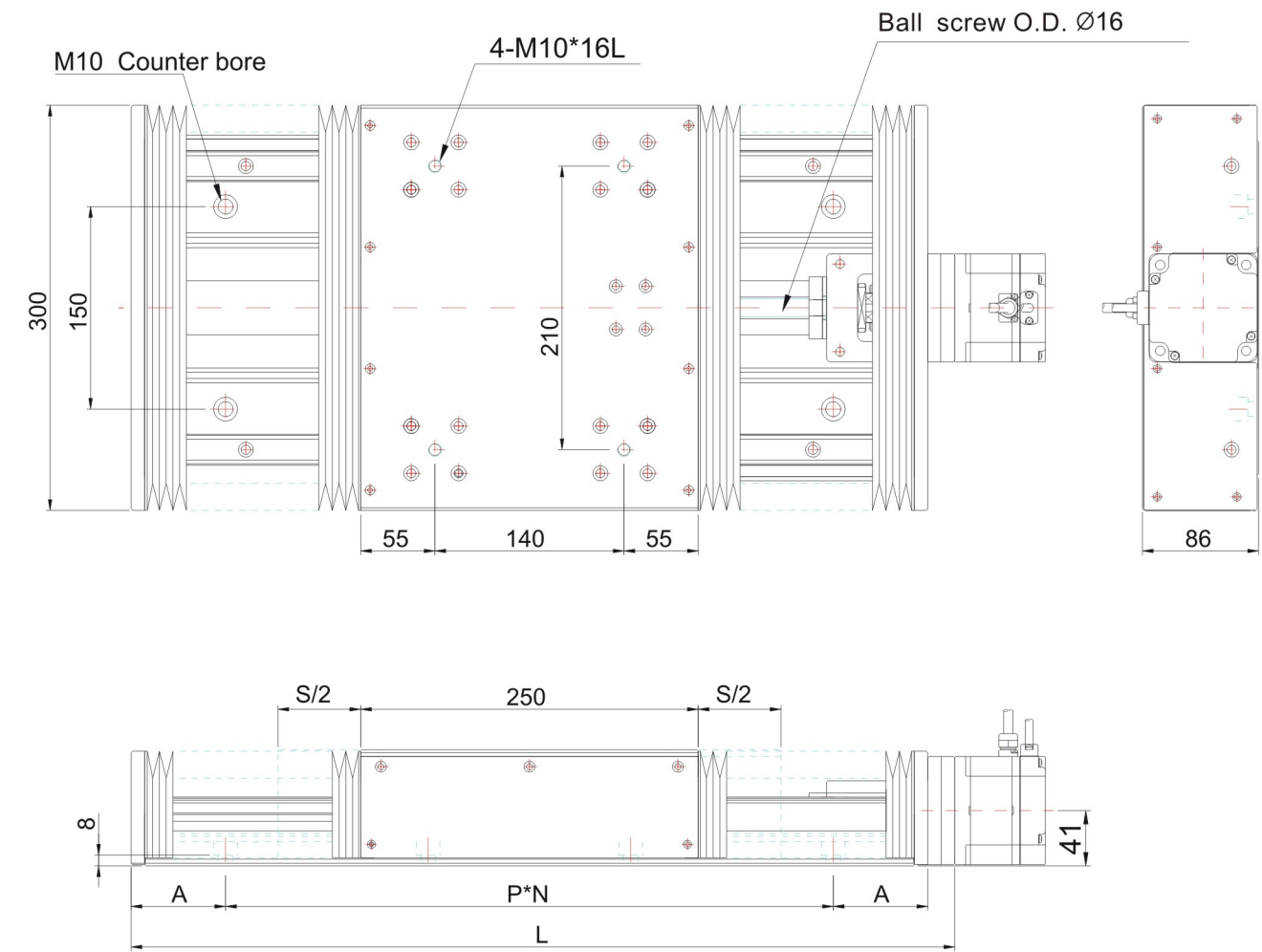
Precise level

- GX15
- GX25
- GX40
- GXY15
- GXY25
- GXY40



Precise level

- GX15
- GX25
- GX40
- GXY15
- GXY25
- GXY40



◆ Specification

Unit : mm

Model no.		X axis Stroke	Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized							Dia.	Guide stroke	Accuracy	A	P*N		
GX25-20WP	GX25-20BP	±100	0.015	0.025	±0.003	70	P	Ø16	5	C5	75	150*2	490	12.4
GX25-25WP	GX25-25BP	±125	0.015	0.025							25	150*3	540	13.1
GX25-30WP	GX25-30BP	±150	0.025	0.035							50	150*3	590	14.5
GX25-40WP	GX25-40BP	±200	0.025	0.035							25	150*4	690	16.4
GX25-50WP	GX25-50BP	±250	0.035	0.05							75	150*4	790	18.2

◆ Specification

Unit : mm

Model no.		X axis Stroke	Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized							Dia.	Guide stroke	Accuracy	A	P*N		
GX25-20JWP	GX25-20JBP	±100	0.015	0.025	±0.003	70	P	Ø16	5	C5	60	150*3	610	18.6
GX25-25JWP	GX25-25JBP	±125	0.015	0.025							15	150*4	670	19.2
GX25-30JWP	GX25-30JBP	±150	0.025	0.035							50	150*4	740	21
GX25-40JWP	GX25-40JBP	±200	0.025	0.035							40	150*5	870	23.5
GX25-50JWP	GX25-50JBP	±250	0.035	0.05							25	150*6	990	25

Precise level

GX15

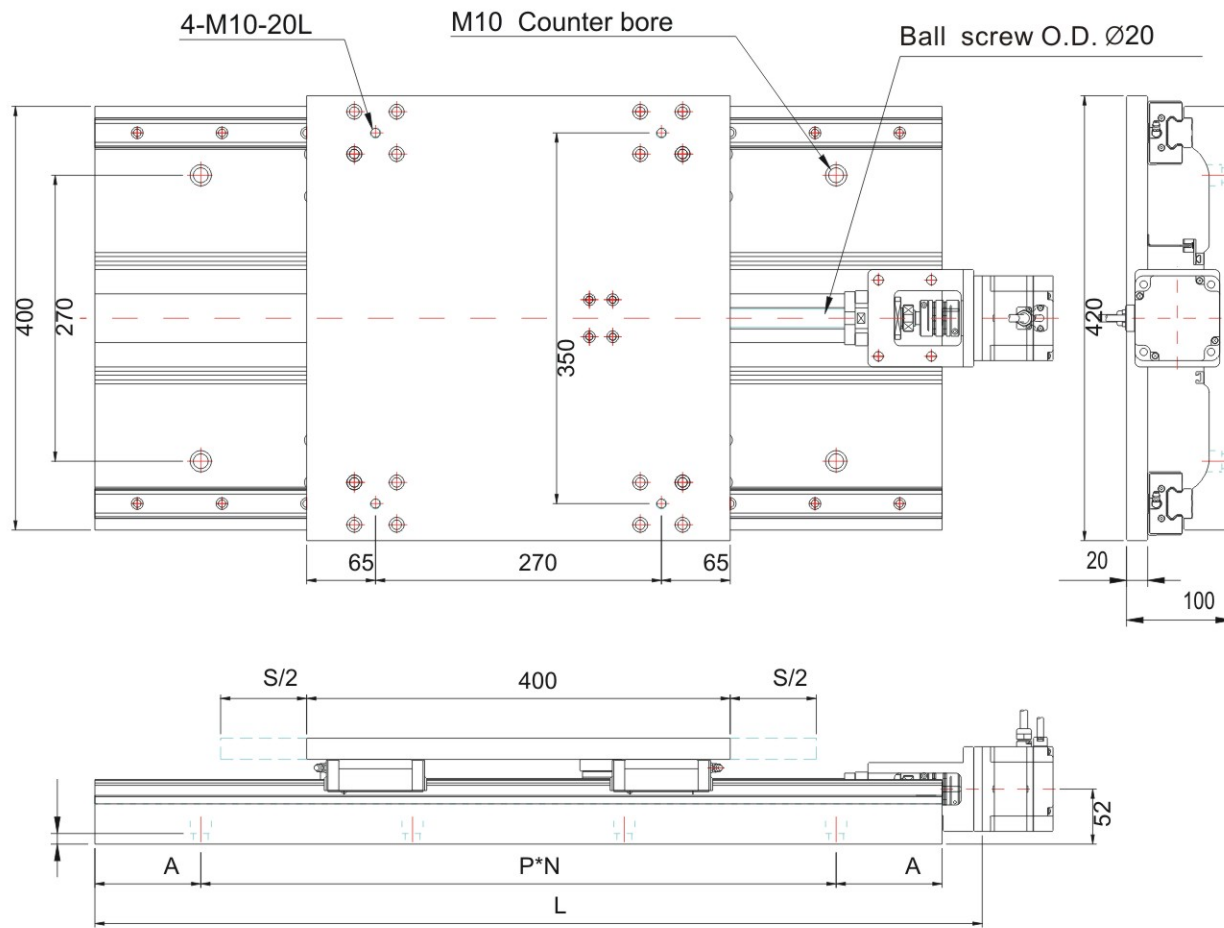
GX25

GX40

GXY15

GXY25

GXY40



◆ Specification

Unit : mm

Model no.		X axis Stroke	Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized							Dia.	Guide stroke	Accuracy	A	P*N		
GX40-40WP	GX40-40BP	±200	0.05	0.08	±0.005	80	P	Ø20	5	C5	100	200*3	840	38.6
GX40-50WP	GX40-50BP	±250	0.05	0.08							50	200*4	940	42.1

Precise level

GX15

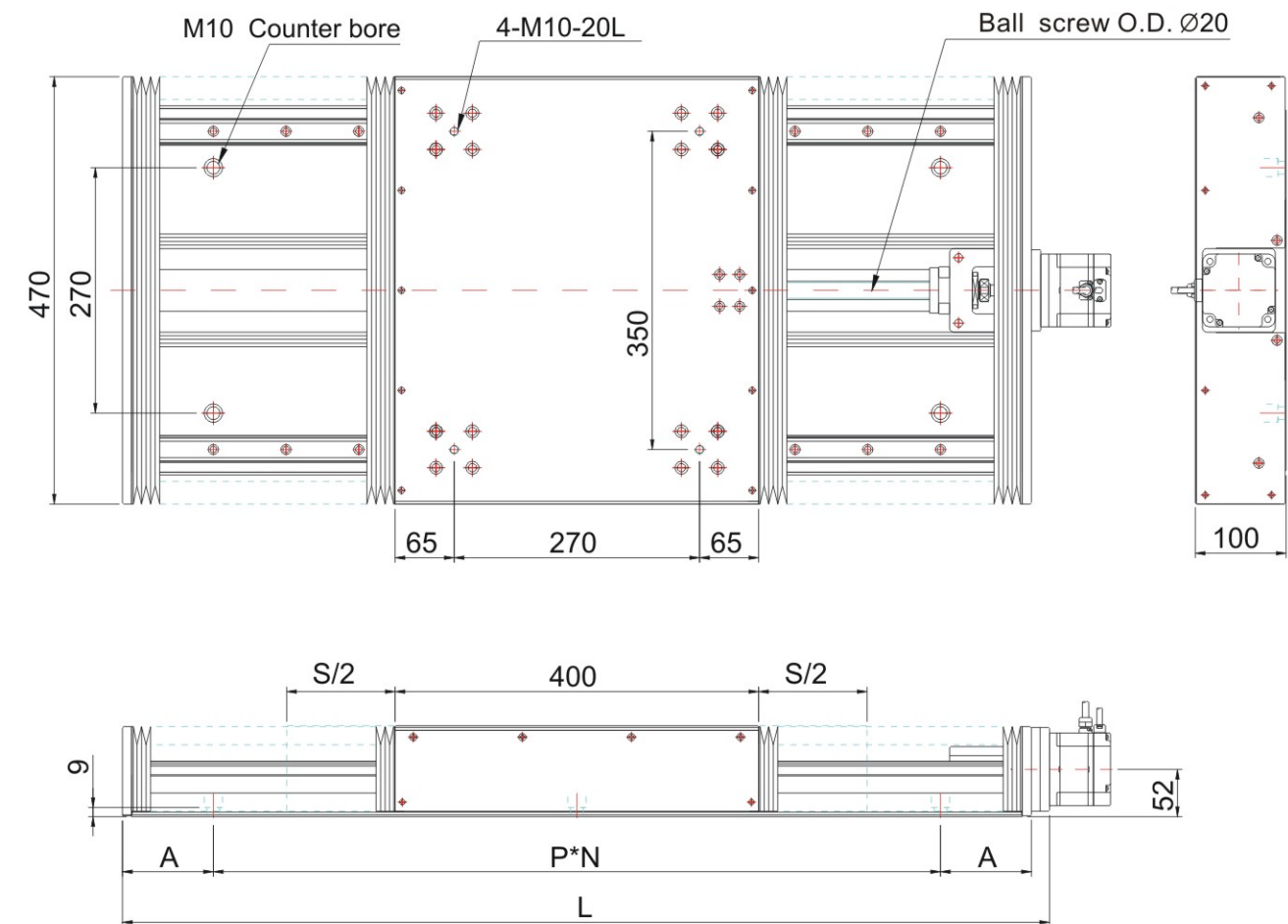
GX25

GX40

GXY15

GXY25

GXY40



◆ Specification

Unit : mm

Model no.		X axis Stroke	Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized							Dia.	Guide stroke	Accuracy	A	P*N		
GX40-40JWP	GX40-40JBP	±200	0.05	0.08	±0.005	80	P	Ø20	5	C5	90	200*4	1020	50.5
GX40-50JWP	GX40-50JBP	±250	0.05	0.08							50	200*5	1140	53.1

Precise level

GX15

GX25

GX40

GXY15

GXY25

GXY40

Precise level

GX15

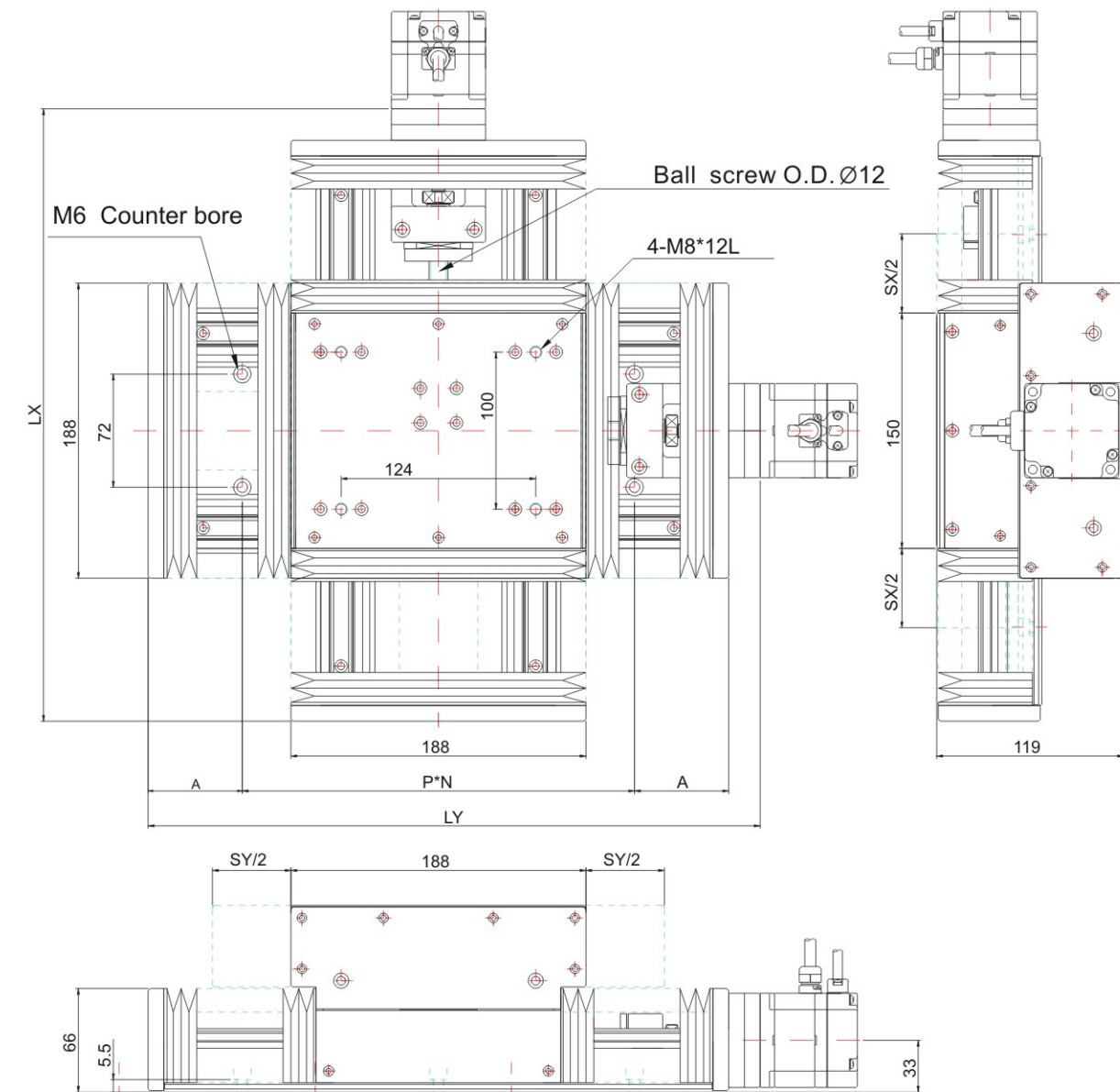
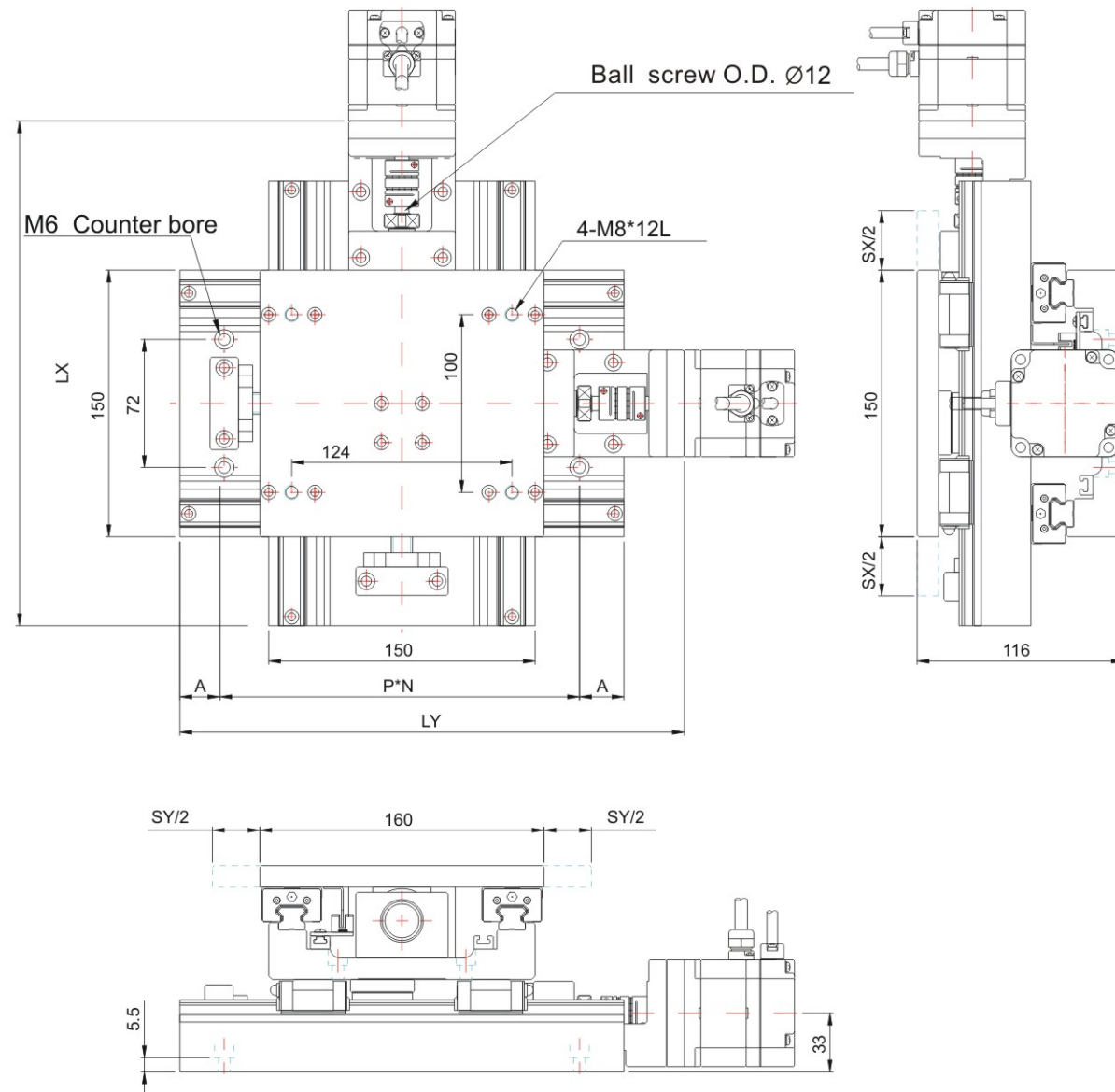
GX25

GX40

GXY15

GXY25

GXY40



◆ Specification

Unit : mm

Model no.		Stroke		Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis						Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY15-0505WP	GXY15-0505BP	±25	±25	0.005	0.025	±0.002	30	P	Ø12	5	C5	37.5	125*1	234	234	6.7
GXY15-0510WP	GXY15-0510BP	±25	±50	0.008	0.03							62.5	125*1	234	284	7.1
GXY15-0515WP	GXY15-0515BP	±25	±75	0.012	0.04							25	125*2	234	334	7.6
GXY15-1010WP	GXY15-1010BP	±50	±50	0.015	0.05							62.5	125*1	284	284	7.6
GXY15-1015WP	GXY15-1015BP	±50	±75	0.018	0.08							25	125*2	284	334	8
GXY15-1515WP	GXY15-1515BP	±75	±75	0.02	0.1							25	125*2	334	334	8.5

◆ Specification

Unit : mm

Model no.		Stroke		Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis						Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY15-0505JWP	GXY15-0505JBP	±25	±25	0.005	0.025	±0.002	30	P	Ø12	5	C5	10	125*2	310	310	10.7
GXY15-0510JWP	GXY15-0510JBP	±25	±50	0.008	0.03							50	125*2	310	390	11.3
GXY15-0515JWP	GXY15-0515JBP	±25	±75	0.012	0.04							22.5	125*3	310	460	12.2
GXY15-1010JWP	GXY15-1010JBP	±50	±50	0.015	0.05							50	125*2	390	390	11.9
GXY15-1015JWP	GXY15-1015JBP	±50	±75	0.018	0.08							22.5	125*3	390	460	12.7
GXY15-1515JWP	GXY15-1515JBP	±75	±75	0.02	0.1							22.5	125*3	460	460	13.4

Precise level

GX15

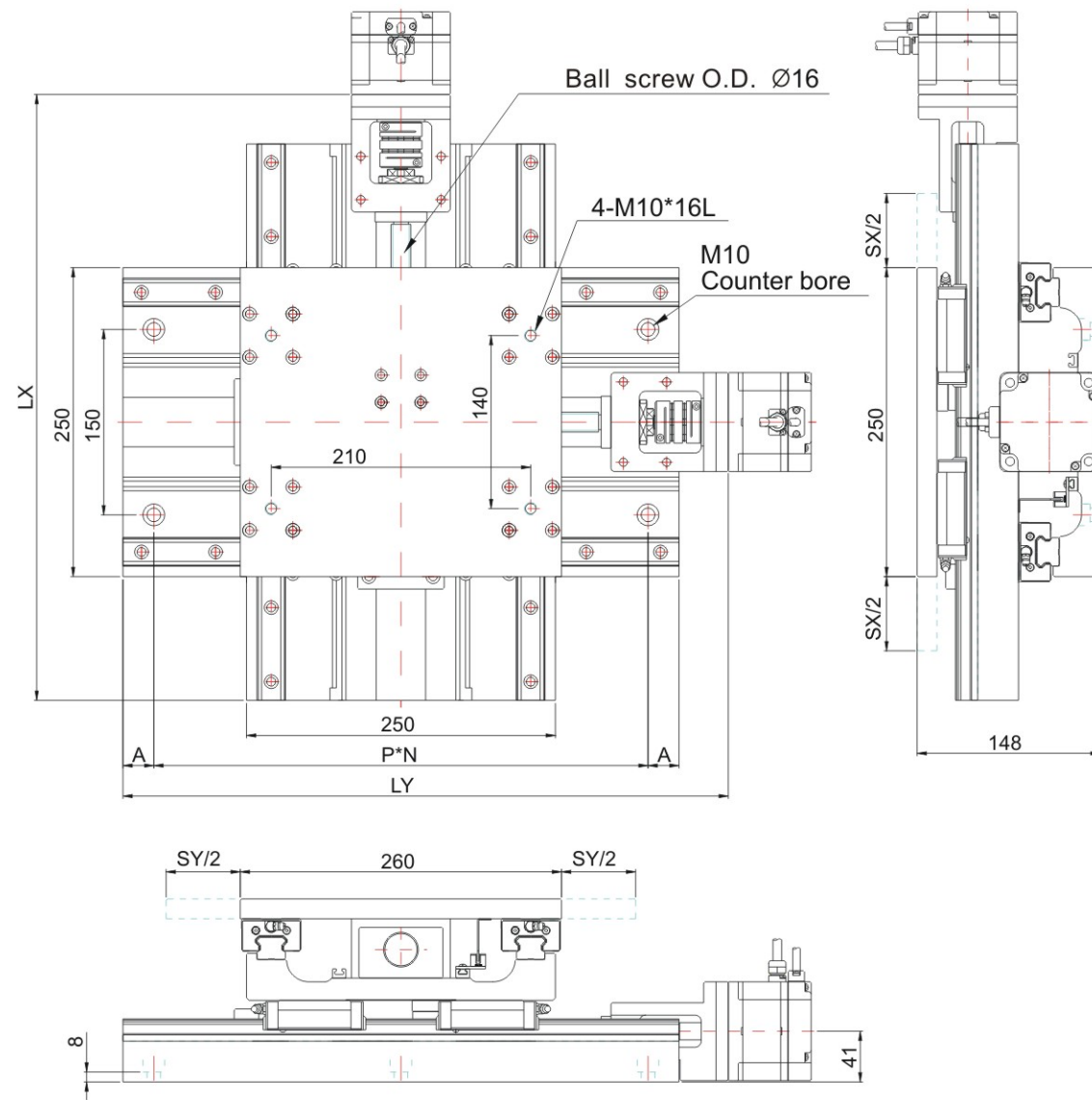
GX25

GX40

GXY15

GXY25

GXY40



◆ Specification

Unit : mm

Model no.		Stroke		Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis						Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY25-2020WP	GXY25-2020BP	100	100	0.02	0.08	±0.003	55	P	Ø16	5	C5	75	150*2	490	490	22.8
GXY25-2025WP	GXY25-2025BP	100	125	0.02	0.08							25	150*3	490	540	23.1
GXY25-2030WP	GXY25-2030BP	100	150	0.025	0.09							50	150*3	490	590	24.5
GXY25-2525WP	GXY25-2525BP	125	125	0.025	0.09							25	150*3	540	540	23.4
GXY25-2530WP	GXY25-2030BP	125	150	0.03	0.1							50	150*3	540	590	24.8
GXY25-3030WP	GXY25-3030BP	150	150	0.03	0.1							50	150*3	590	590	26.2

Precise level

GX15

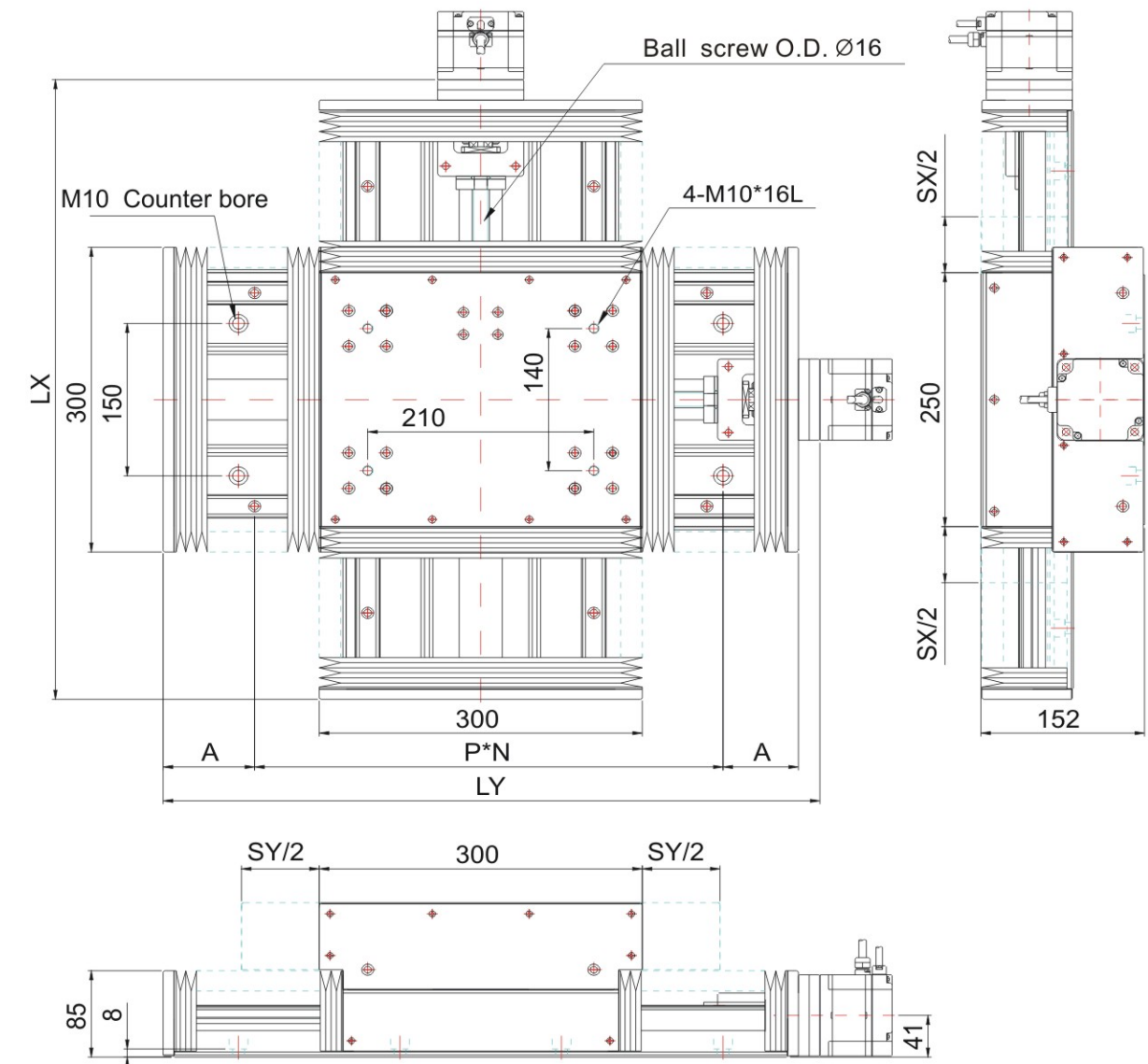
GX25

GX40

GXY15

GXY25

GXY40



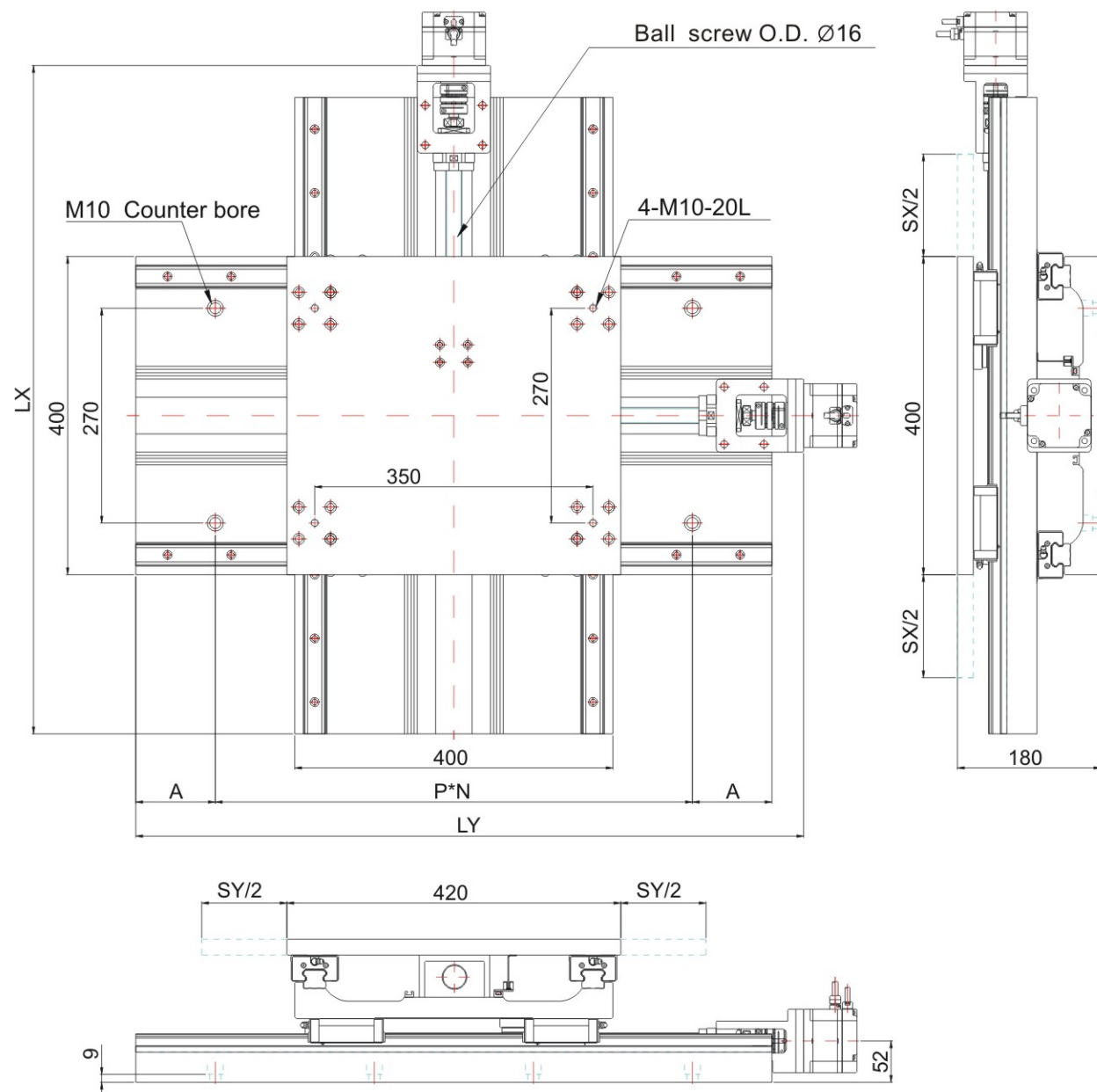
◆ Specification

Unit : mm

Model no.		Stroke		Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis						Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY25-2020JWP	GXY25-2020JBP	100	100	0.02	0.08	±0.003	55	P	Ø16	5	C5	60	150*3	610	610	32.7
GXY25-2025JWP	GXY25-2025JBP	100	125	0.02	0.08							15	150*4	610	670	33.4
GXY25-2030JWP	GXY25-2030JBP	100	150	0.025	0.09							50	150*4	610	740	35.3
GXY25-2525JWP	GXY25-2525JBP	125	125	0.025	0.09							15	150*4	670	670	34
GXY25-2530JWP	GXY25-2030JBP	125	150	0.03	0.1							50	150*4	670	740	35.9
GXY25-3030JWP	GXY25-3030JBP	150	150	0.03	0.1							50	150*4	740	740	37.4

Precise level

- GX15
- GX25
- GX40
- GXY15
- GXY25
- GXY40



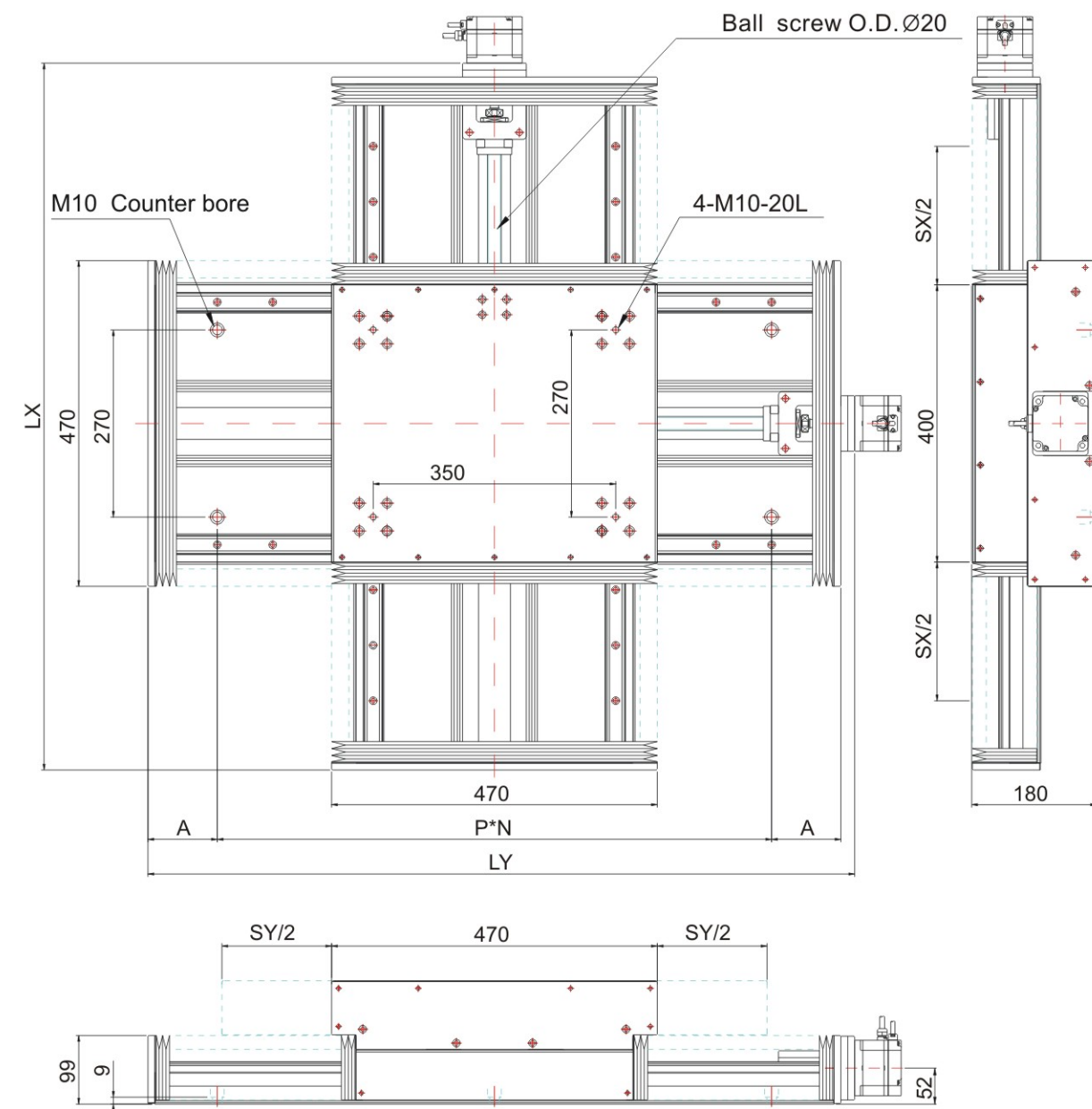
◆ Specification

Unit : mm

Model no.		Stroke		Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis						Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY40-4040WP	GXY40-4040BP	200	200	0.04	0.12	±0.005	60	P	Ø20	5	C5	100	200*3	840	840	68.3
GXY40-4050WP	GXY40-4050BP	200	250	0.04	0.13							50	200*4	840	940	71.7
GXY40-5050WP	GXY40-5050BP	250	250	0.05	0.15							50	200*4	940	940	75.1

Precise level

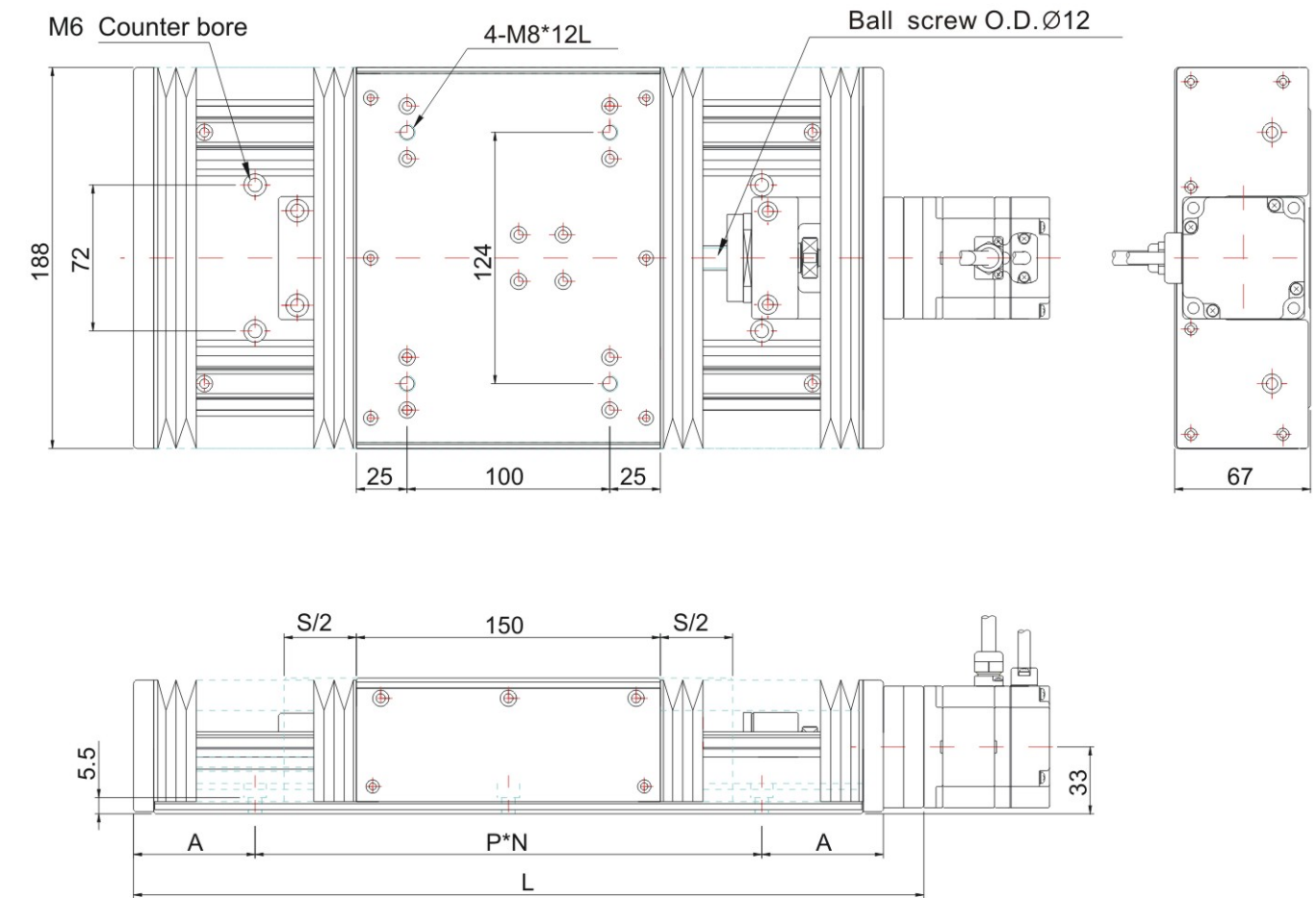
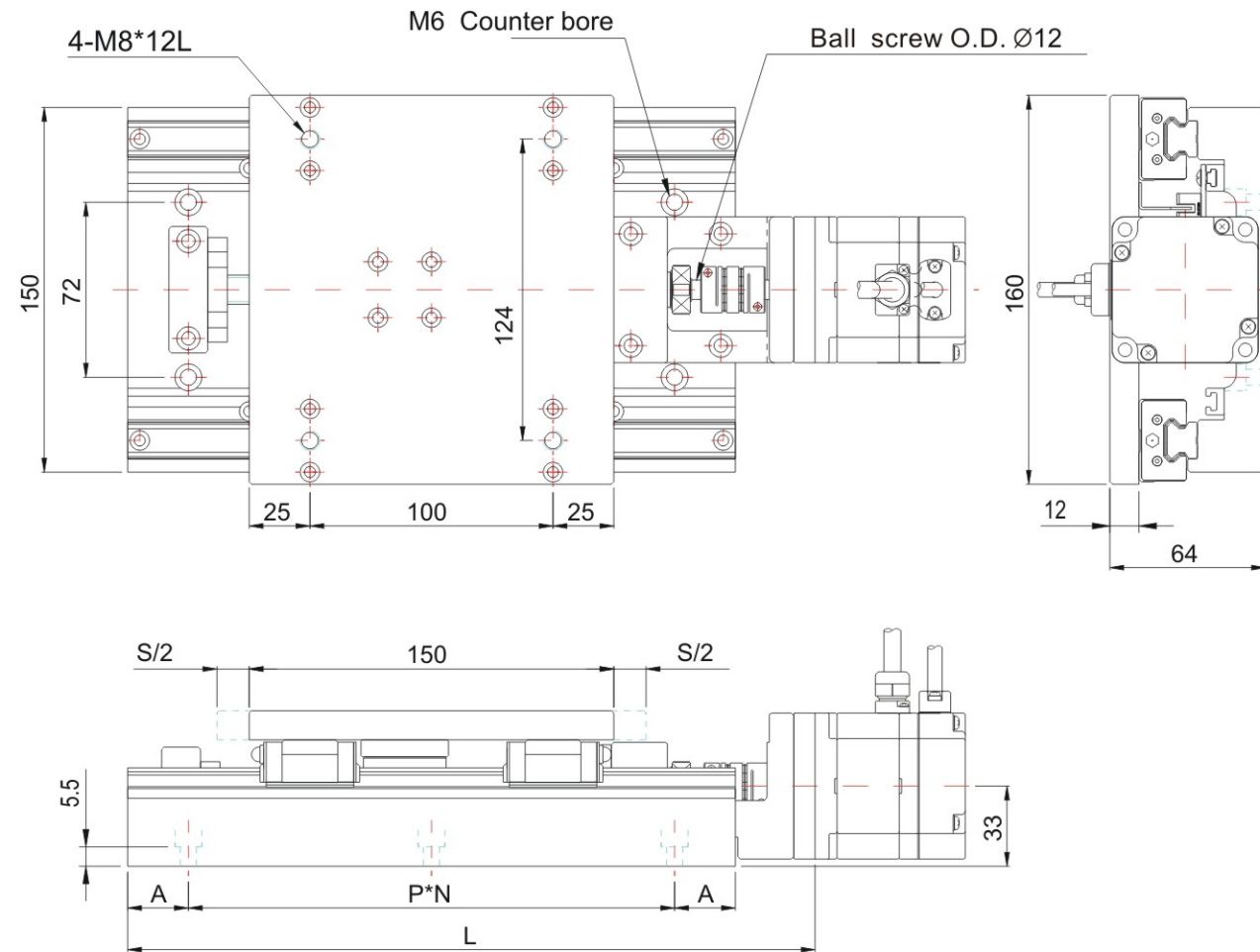
- GX15
- GX25
- GX40
- GXY15
- GXY25
- GXY40



◆ Specification

Unit : mm

Model no.		Stroke		Straightness	Accuracy by position	Round movement accuracy	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis						Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY40-4040JWP	GXY40-4040JBP	200	200	0.04	0.12	±0.005	60	P	Ø20	5	C5	90	200*4	1020	1020	90.2
GXY40-4050JWP	GXY40-4050JBP	200	250	0.04	0.13							50	200*5	1020	1140	93
GXY40-5050JWP	GXY40-5050JBP	250	250	0.05	0.15							50	200*5	1140	1140	95.7



◆ Specification

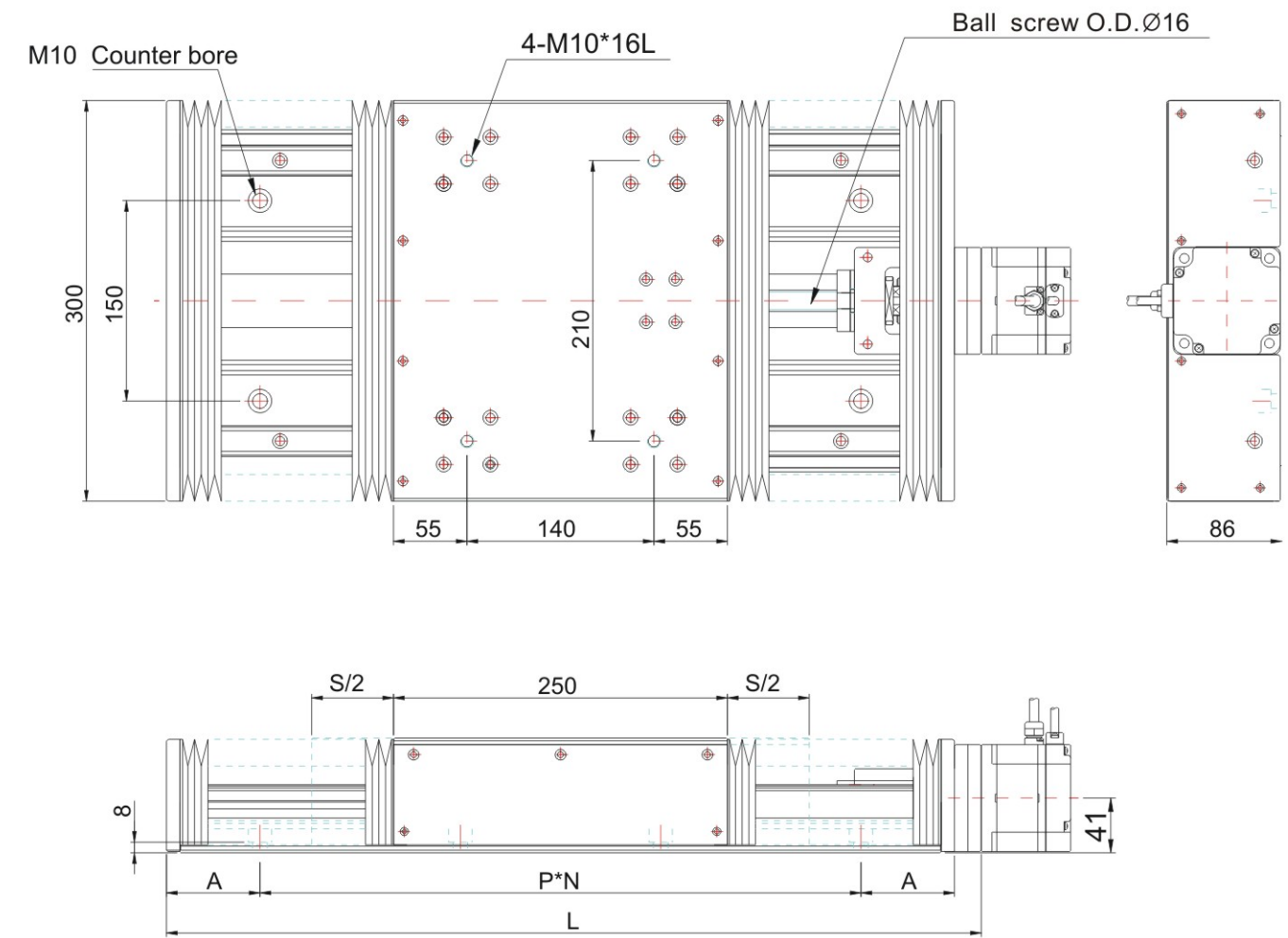
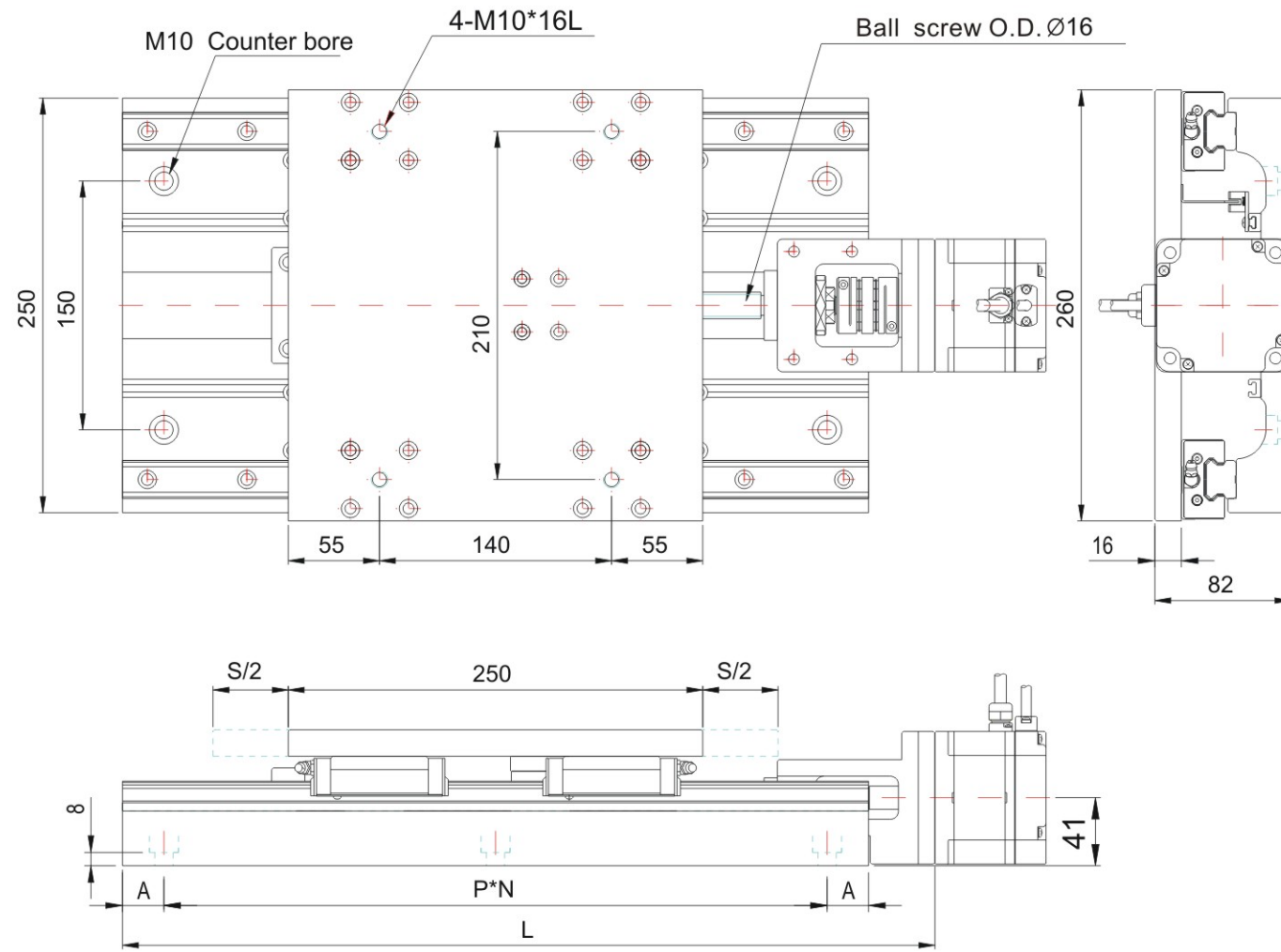
Unit : mm

Model no.		X axis Stroke	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized				Dia.	Guide stroke	Accuracy	A	P*N		
GX15-05WR	GX15-05BR	±25	40	H	Ø12	5	R	37.5	125*1	234	3.7
GX15-10WR	GX15-10BR	±50						62.5	125*1	284	4.1
GX15-15WR	GX15-15BR	±75						25	125*2	334	4.6
GX15-20WR	GX15-20BR	±100						50	125*2	384	5.1
GX15-25WR	GX15-25BR	±125						75	125*2	434	5.6
GX15-30WR	GX15-30BR	±150						37.5	125*3	484	5.9

◆ Specification

Unit : mm

Model no.		X axis Stroke	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized				Dia.	Guide stroke	Accuracy	A	P*N		
GX15-05JWR	GX15-05JBR	±25	40	H	Ø12	5	R	10	125*2	310	5.9
GX15-10JWR	GX15-10JBR	±50						50	125*2	390	6.7
GX15-15JWR	GX15-15JBR	±75						22.5	125*3	460	7.4
GX15-20JWR	GX15-20JBR	±100						67.5	125*3	550	8.3
GX15-25JWR	GX15-25JBR	±125						10	125*4	620	8.9
GX15-30JWR	GX15-30JBR	±150						12.5	125*5	690	9.5



◆ Specification

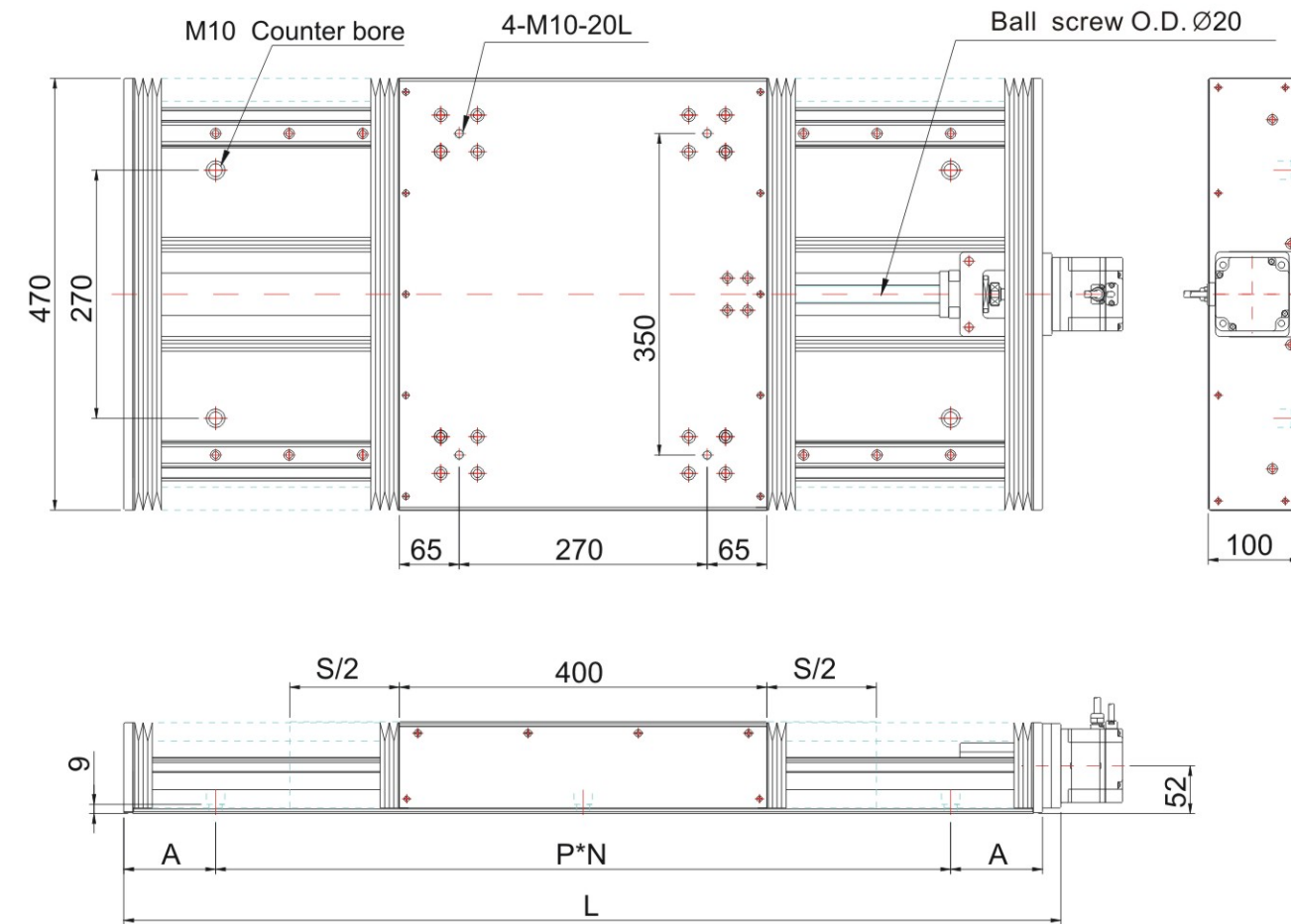
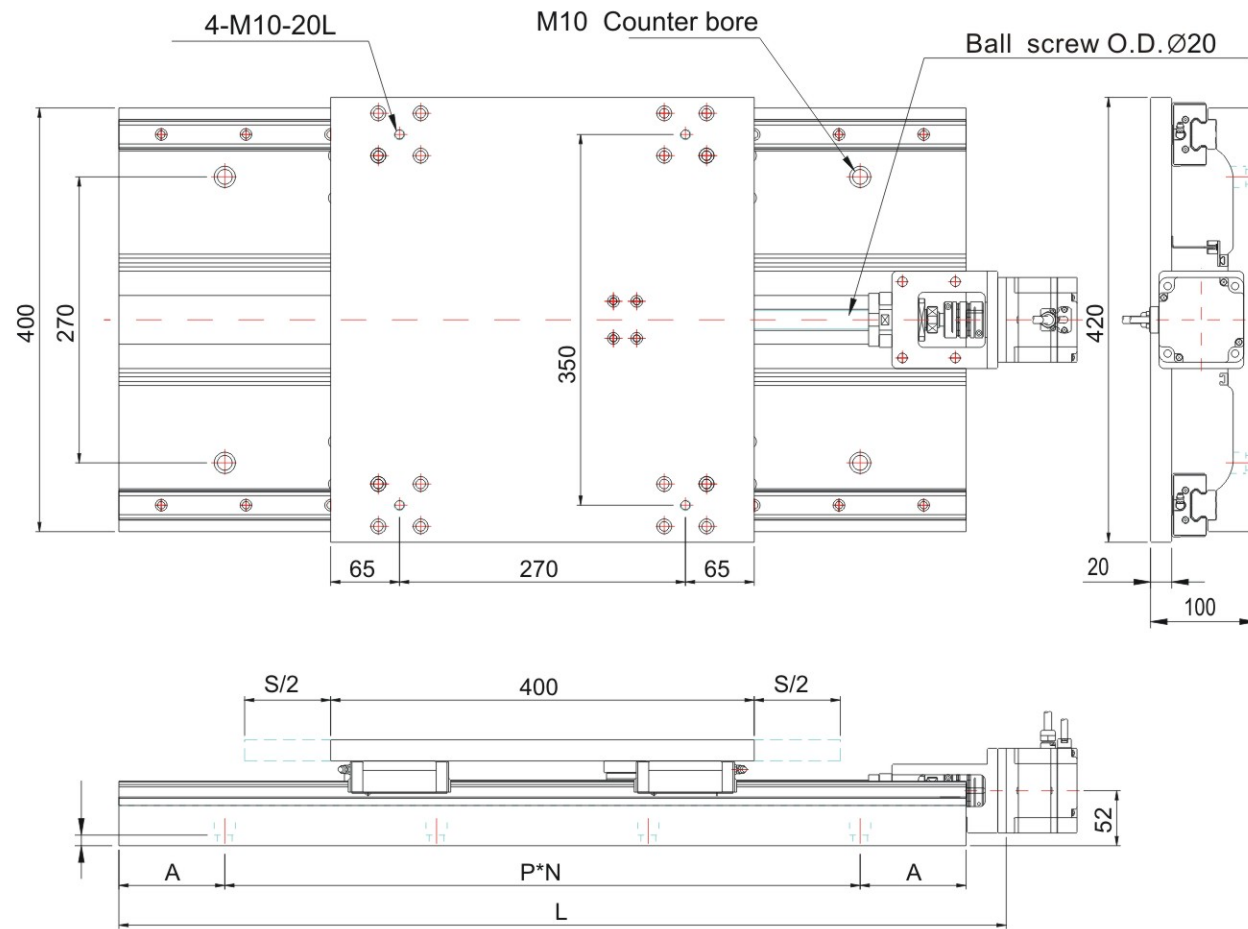
Unit : mm

Model no.		X axis Stroke	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized				Dia.	Guide stroke	Accuracy	A	P*N		
GX25-20WR	GX25-20BR	±100	70	H	Ø16	5	R	75	150*2	490	12.4
GX25-25WR	GX25-25BR	±125						25	150*3	540	13.1
GX25-30WR	GX25-30BR	±150						50	150*3	590	14.5
GX25-40WR	GX25-40BR	±200						25	150*4	690	16.4
GX25-50WR	GX25-50BR	±250						75	150*4	790	18.2

◆ Specification

Unit : mm

Model no.		X axis Stroke	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized				Dia.	Guide stroke	Accuracy	A	P*N		
GX25-20JWR	GX25-20JBR	±100	70	H	Ø16	5	R	60	150*3	610	18.6
GX25-25JWR	GX25-25JBR	±125						15	150*4	670	19.2
GX25-30JWR	GX25-30JBR	±150						50	150*4	740	21
GX25-40JWR	GX25-40JBR	±200						40	150*5	870	23.5
GX25-50JWR	GX25-50JBR	±250						25	150*6	990	25



◆ Specification

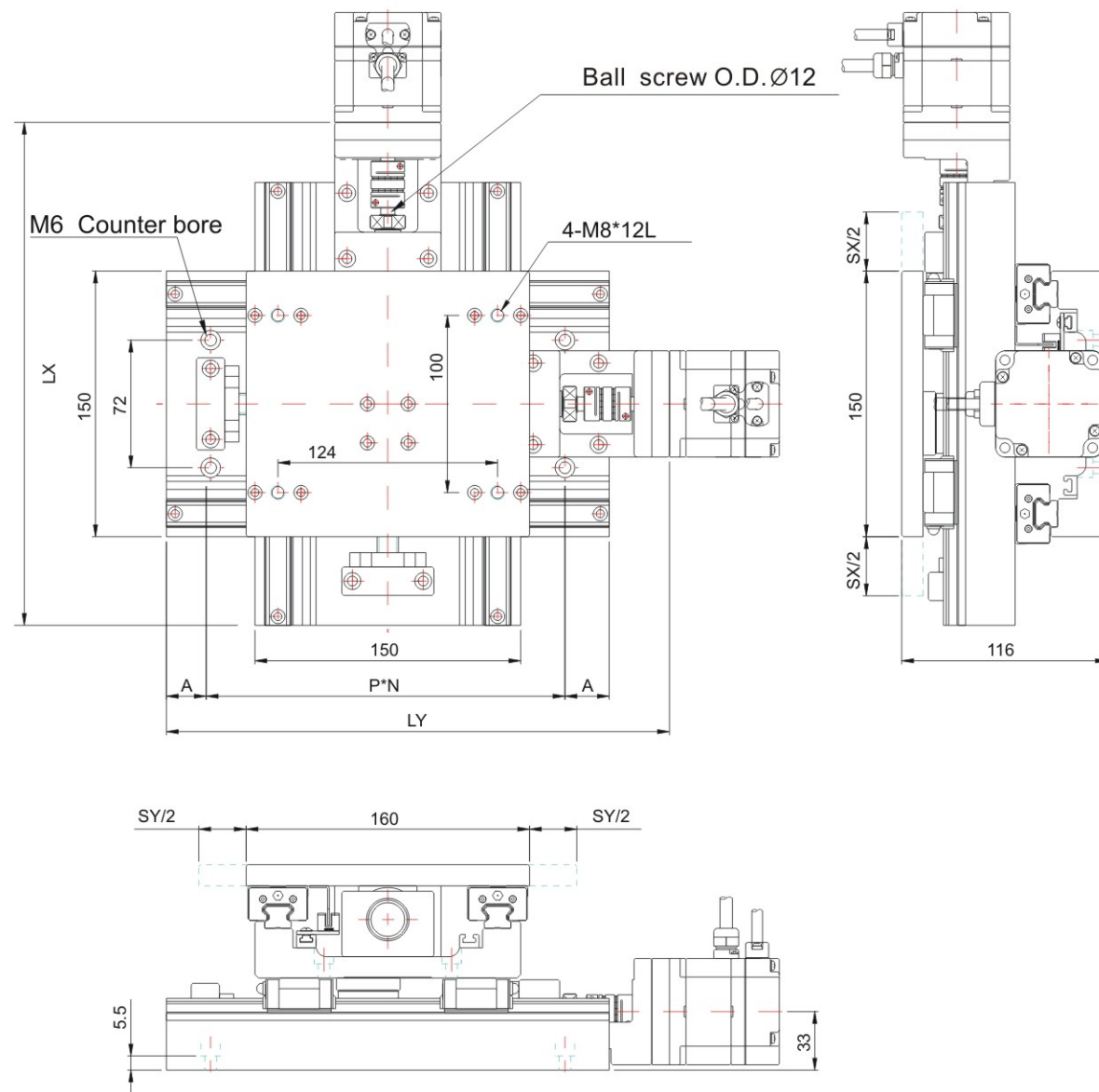
Unit : mm

Model no.		X axis Stroke	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized				Dia.	Guide stroke	Accuracy	A	P*N		
GX40-40WR	GX40-40BR	±200	80	H	Ø20	5	R	100	200*3	840	38.6
GX40-50WR	GX40-50BR	±250						50	200*4	940	42.1

◆ Specification

Unit : mm

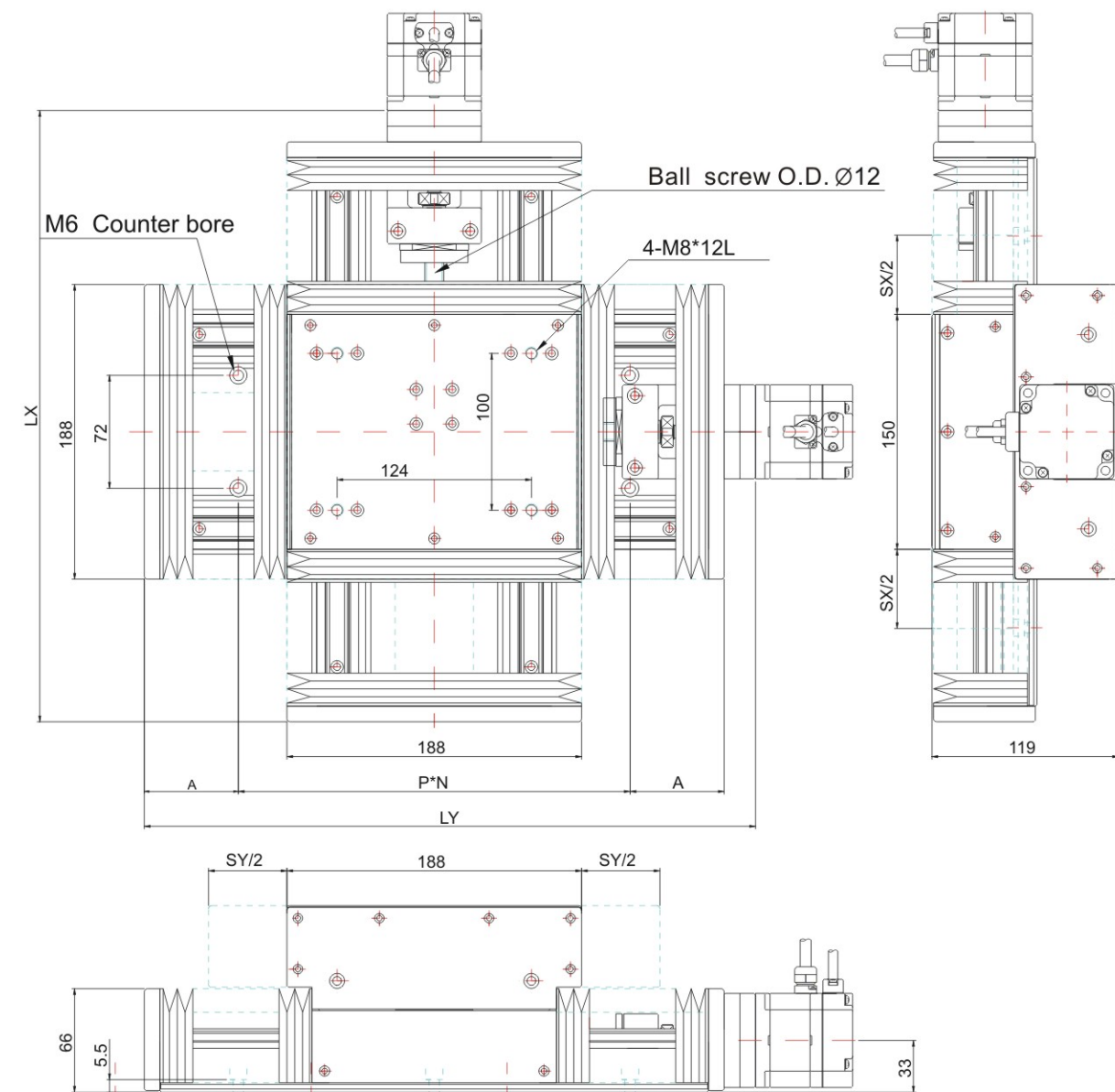
Model no.		X axis Stroke	Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length (L)	Weight (kg)
Primary anodized	Black anodized				Dia.	Guide stroke	Accuracy	A	P*N		
GX40-40JWR	GX40-40JBR	±200	80	H	Ø20	5	R	90	200*4	1020	50.5
GX40-50JWR	GX40-50JBR	±250						50	200*5	1140	53.1



◆ Specification

Unit : mm

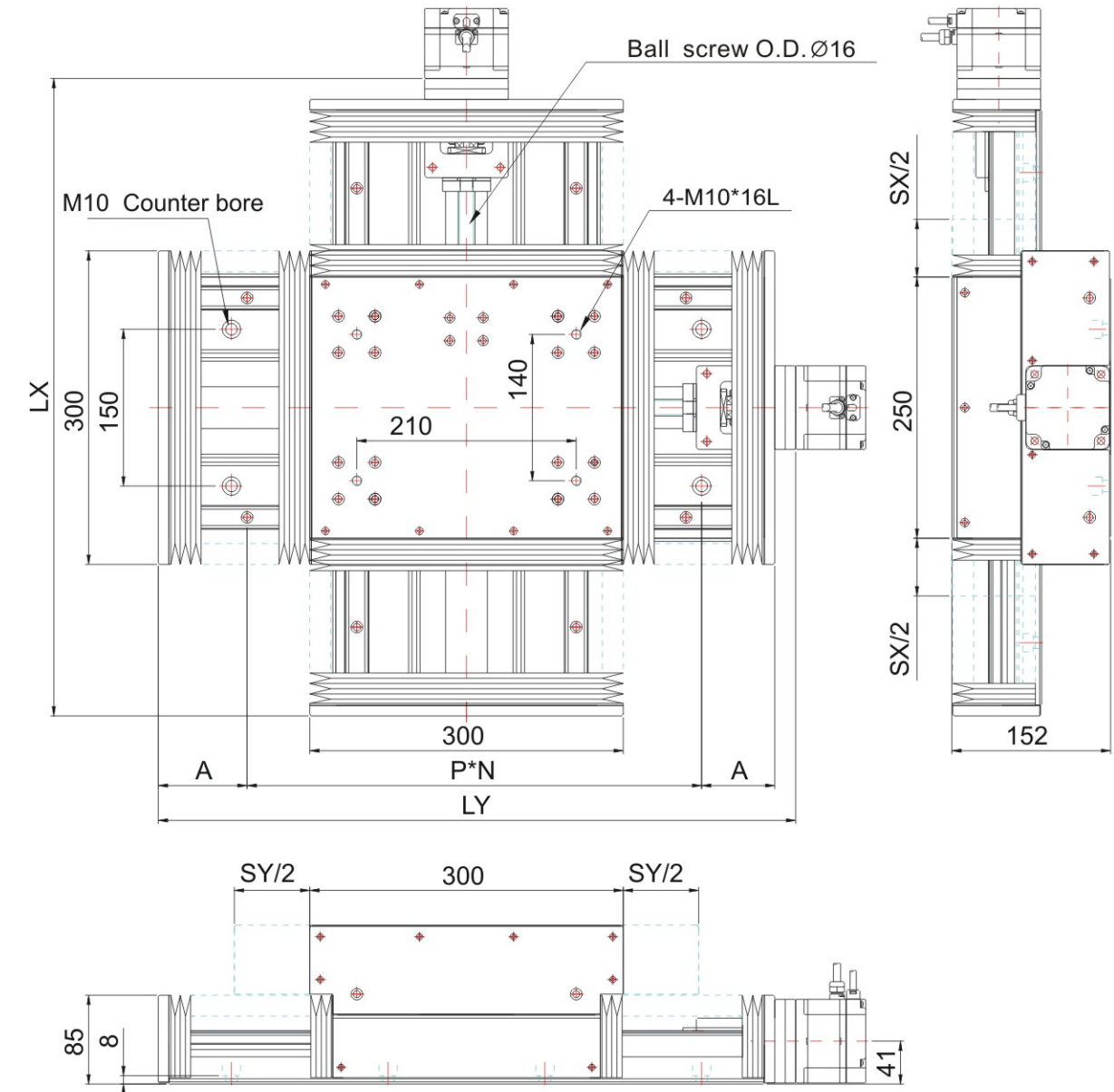
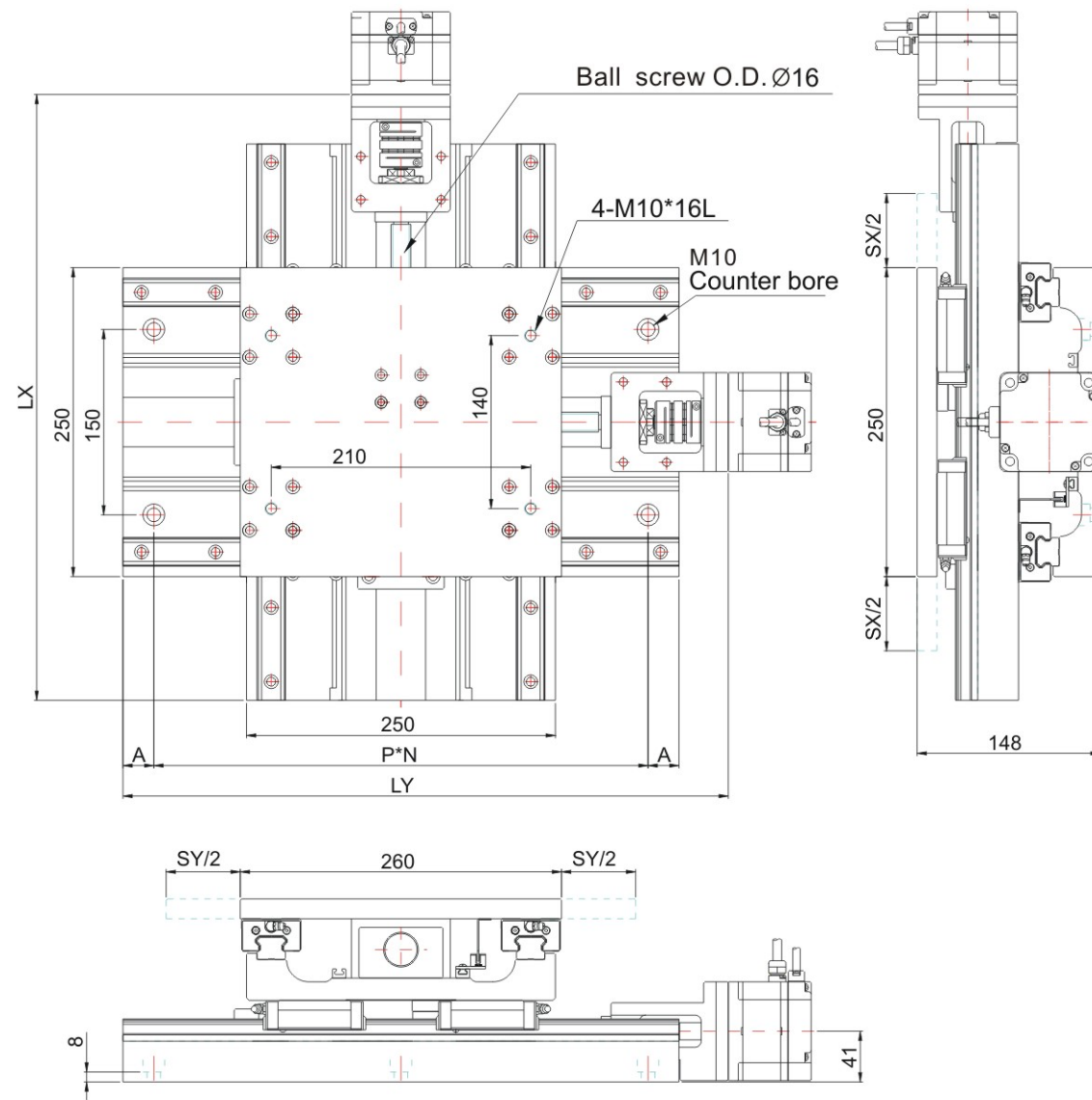
Model no.		Stroke		Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis			Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY15-0505WR	GXY15-0505BR	±25	±25	30	H	Ø12	5	R	37.5	125*1	234	234	6.7
GXY15-0510WR	GXY15-0510BR	±25	±50						62.5	125*1	234	284	7.1
GXY15-0515WR	GXY15-0515BR	±25	±75						25	125*2	234	334	7.6
GXY15-1010WR	GXY15-1010BR	±50	±50						62.5	125*1	284	284	7.6
GXY15-1015WR	GXY15-1015BR	±50	±75						25	125*2	284	334	8
GXY15-1515WR	GXY15-1515BR	±75	±75						25	125*2	334	334	8.5



◆ Specification

Unit : mm

Model no.		Stroke		Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis			Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY15-0505JWR	GXY15-0505JBR	±25	±25	30	H	Ø12	5	R	10	125*2	310	310	10.7
GXY15-0510JWR	GXY15-0510JBR	±25	±50						50	125*2	310	390	11.3
GXY15-0515JWR	GXY15-0515JBR	±25	±75						22.5	125*3	310	460	12.2
GXY15-1010JWR	GXY15-1010JBR	±50	±50						50	125*2	390	390	11.9
GXY15-1015JWR	GXY15-1015JBR	±50	±75						22.5	125*3	390	460	12.7
GXY15-1515JWR	GXY15-1515JBR	±75	±75						22.5	125*3	460	460	13.4



◆ Specification

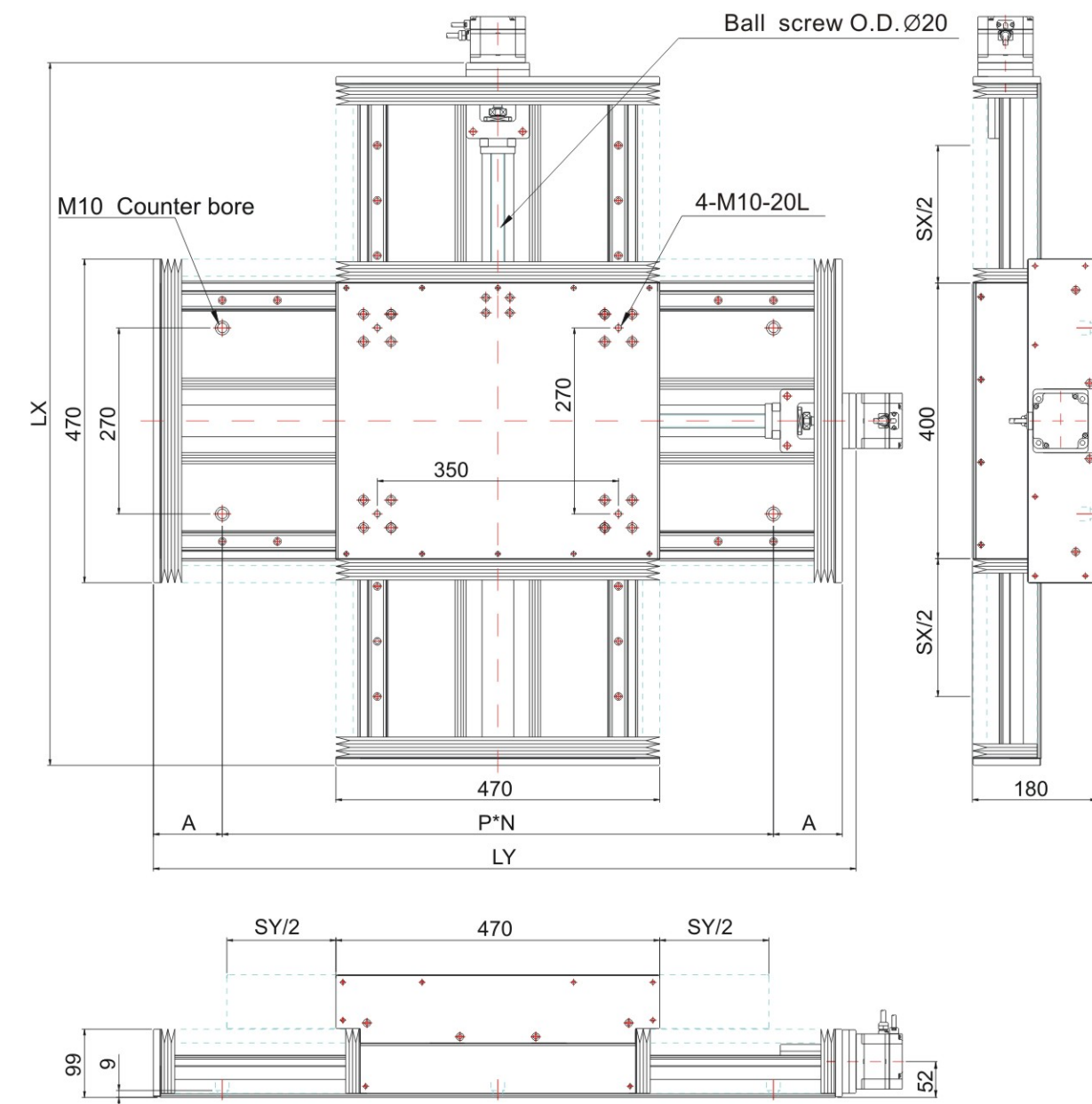
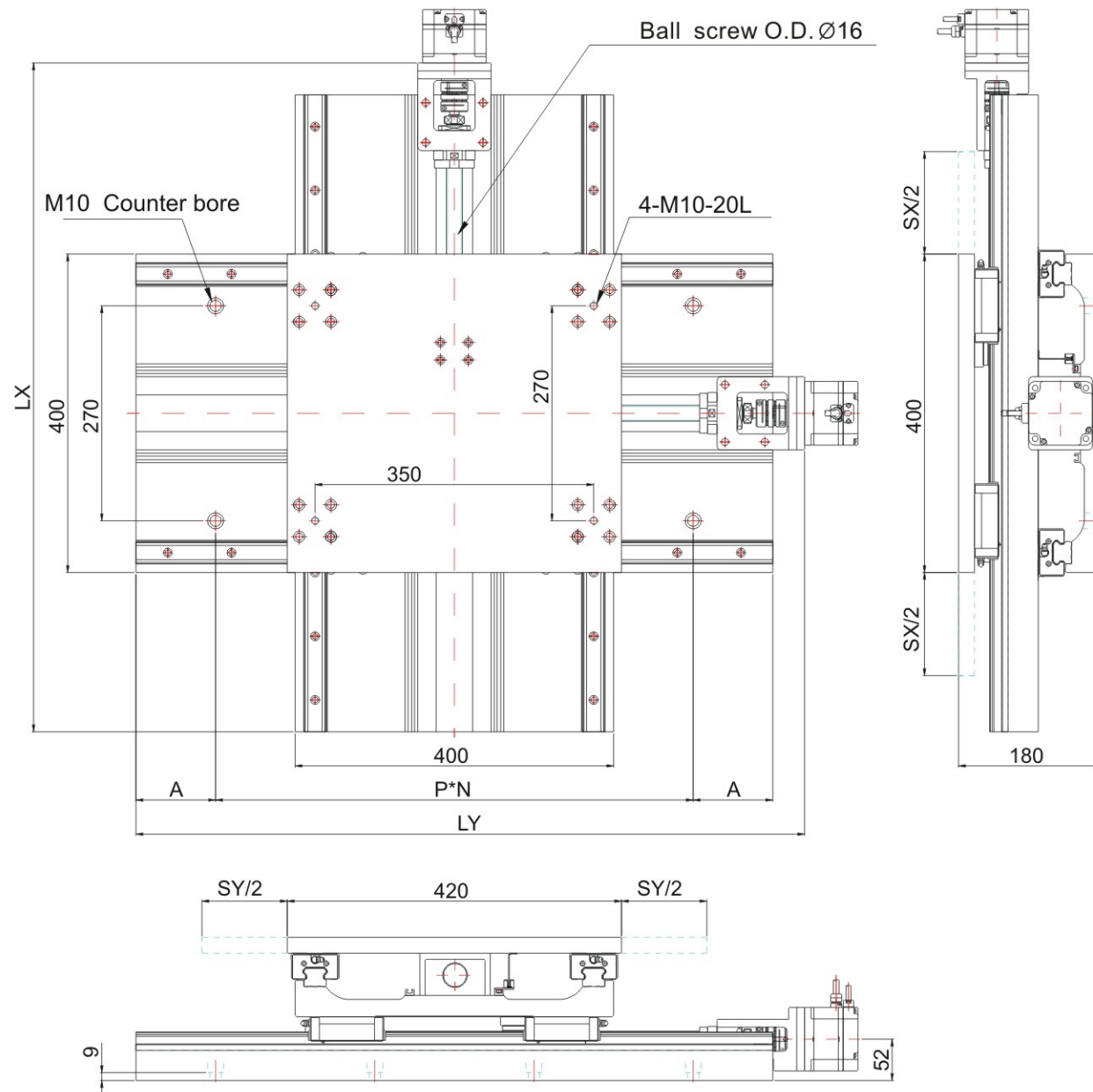
Unit : mm

Model no.		Stroke		Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis			Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY25-2020WR	GXY25-2020BR	±100	±100	55	H	Ø16	5	R	75	150*2	490	490	22.8
GXY25-2025WR	GXY25-2025BR	±100	±125						25	150*3	490	540	23.1
GXY25-2030WR	GXY25-2030BR	±100	±150						50	150*3	490	590	24.5
GXY25-2525WR	GXY25-2525BR	±125	±125						25	150*3	540	540	23.4
GXY25-2530WR	GXY25-2530BR	±125	±150						50	150*3	540	590	24.8
GXY25-3030WR	GXY25-3030BR	±150	±150						50	150*3	590	590	26.2

◆ Specification

Unit : mm

Model no.		Stroke		Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis			Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY25-2020JWR	GXY25-2020JBR	±100	±100	55	H	Ø16	5	R	60	150*3	610	610	32.7
GXY25-2025JWR	GXY25-2025JBR	±100	±125						15	150*4	610	670	33.4
GXY25-2030JWR	GXY25-2030JBR	±100	±150						50	150*4	610	740	35.3
GXY25-2525JWR	GXY25-2525JBR	±125	±125						15	150*4	670	670	34
GXY25-2530JWR	GXY25-2530JBR	±125	±150						50	150*4	670	740	35.9
GXY25-3030JWR	GXY25-3030JBR	±150	±150						50	150*4	740	740	37.4



◆ Specification

Unit : mm

Model no.		Stroke		Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis			Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY40-4040WR	GXY40-4040BR	±200	±200	60	H	Ø20	5	R	100	200*3	840	840	68.3
GXY40-4050WR	GXY40-4050BR	±200	±250						50	200*4	840	940	71.7
GXY40-5050WR	GXY40-5050BR	±200	±250						50	200*4	940	940	75.1

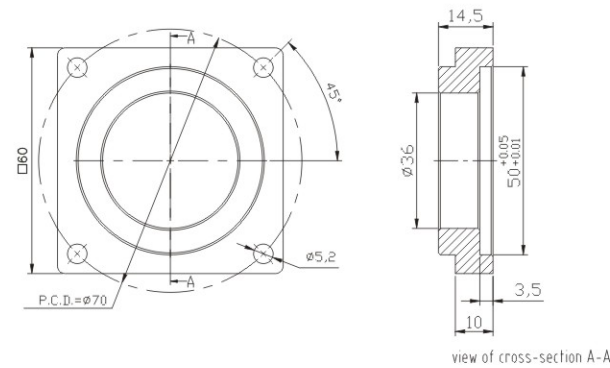
◆ Specification

Unit : mm

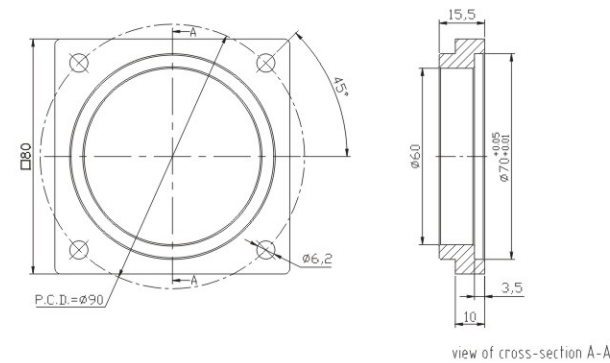
Model no.		Stroke		Capacity (kgf)	Linear rail accuracy	Screw shaft			Mounting dimension		Length		Weight (kg)
Primary anodized	Black anodized	X axis	Y axis			Dia.	Guide stroke	Accuracy	A	P*N	LX	LY	
GXY40-4040JWR	GXY40-4040JBR	±200	±200	60	H	Ø20	5	R	90	200*4	1020	1020	90.2
GXY40-4050JWR	GXY40-4050JBR	±200	±250						50	200*5	1020	1140	93
GXY40-5050JWR	GXY40-5050JBR	±200	±250						50	200*5	1140	1140	95.7

Company Model no.	MITSUBISHI	FUJI	YASKAWA
GX15-05-90	HC-KFS23(200W)	GYS201DC2(200W)	SGMAH-02(200W)
	HC-KFS43(400W)	GYS401DC2(400W)	SGMAH-04(400W)
	HC-MFS23(200W)		
	HC-MFS43(400W)		
GX25-20-90	HC-KFS73(750W)	GYS751DC2(750W)	SGMAH-08(750W)
	HC-MFS73(750W)		
GX40-40-90	HC-KFS73(750W)	GYS751DC2(750W)	SGMAH-08(750W)
	HC-MFS73(750W)		

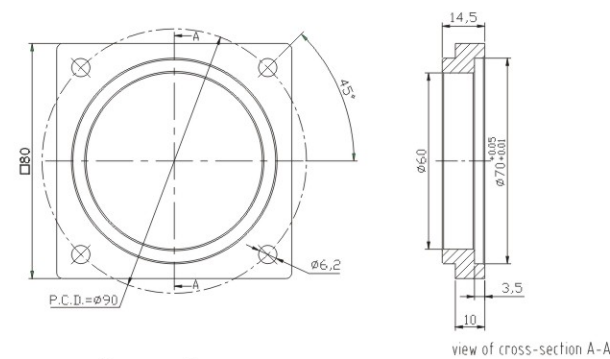
◆ GX15-05-90



◆ GX25-20-90

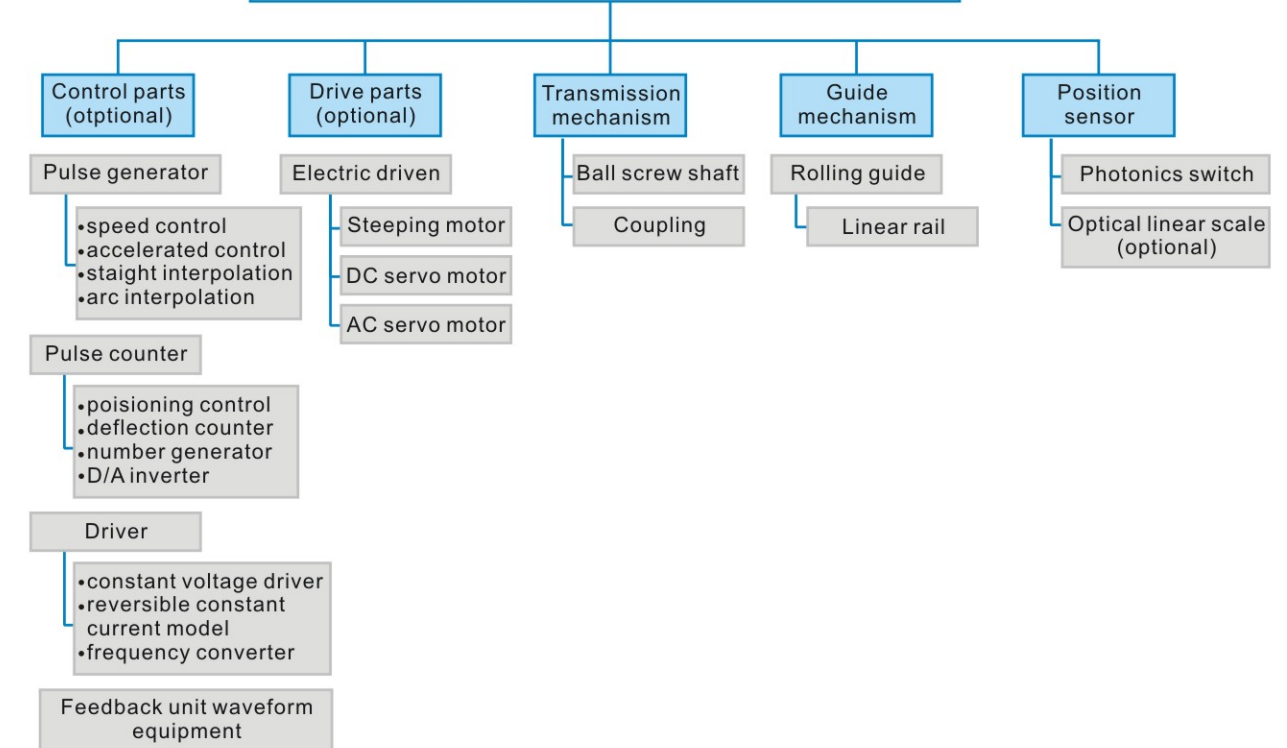


◆ GX40-40-90



- ◆ Above model no. applied to motor are for reference. Please recheck with manufacturer before purchasement.
- ◆ Motor could be matched with those out of above list. Please confirm installation dimensions.

Components of positioning control unit in XY TABLE



◆ Control Mode Comparison

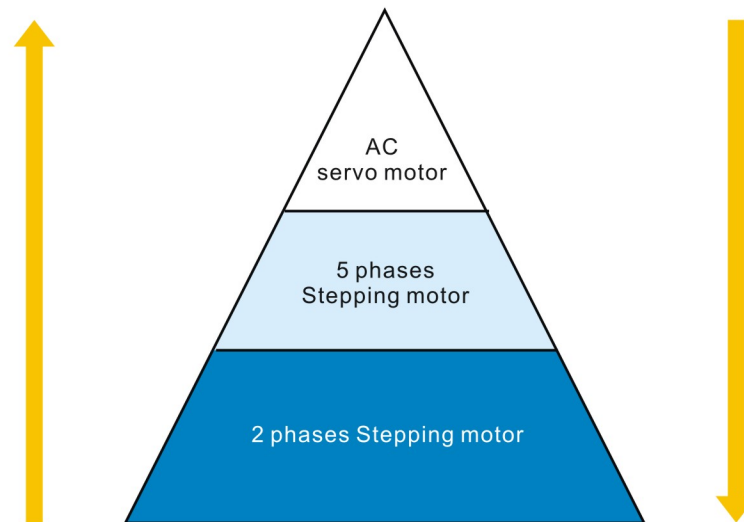
Mode	Component	Advantage	Defect
Open loop		<ul style="list-style-type: none"> • Simple configuration • Low price 	<ul style="list-style-type: none"> • Slip with ease • Unusable in max. capacity • Positioning accuracy decided by table quality
Semi-closed loop		<ul style="list-style-type: none"> • High speed feedback • Usable in max. capacity 	<ul style="list-style-type: none"> • Higher price • Carbon brush life in Motor • Positioning accuracy decided by table quality
Close loop		<ul style="list-style-type: none"> • Precise positioning 	<ul style="list-style-type: none"> • Highest price • Complicated configuration in servo system, not easy to adjust

◆ Stepping motor and DC servo motor

Stepping motor and DC servo motor are usually used as power source to drive the positioning table. Each one has its feature for selection up on application needs. AC servo motor is also brushless DC motor with similar character as DC servo motor.

Motor	Advantages	Defect
2 phases Stepping motor 1/4000	<ul style="list-style-type: none"> Cheaper drive circuit Simple configuration Resolution (mm)- 1/200, 1/400, 1/800 	<ul style="list-style-type: none"> Bigger, unbalance torque, needs anti-vibration (especially in low rpm) Drive in mid, high speed, need proper speed adjustment (Torque decrease while high speed running>>slip out) Motor overheating
5 phases Stepping motor and DC servo motor	<p>Compare to 2 phase motor</p> <ul style="list-style-type: none"> Rotate smoother Low vibration High resolution 1/500、1/1000 1/1500、1/10000 High speed feedback Low damping character 	<ul style="list-style-type: none"> Torque decrease while high speed running >>slip out Motor overheating
DC servo motor and AC servo motor	<ul style="list-style-type: none"> Low vibration High speed, high feedback Position confirm by decoder, no worry about slip out. Usable in max. capacity (Max. torque = couple times to rated toque) High resolution(resolved by decoder and multiple circuit to 1/1000, 1/2000...) 	<ul style="list-style-type: none"> Higher price in motor driven circuit Carbon brush life and abrasion pollution concerned if attached on motor. Motor overheating needs to be noticed in high speed adjustment and high frequency heavy loading.

- Low vibration
- High speed
- High feedback



- Price
- Simple configuration

◆ Discussion of Resolution

Resolution(the minimum unit) means table movement in each pulse signal(mm/ pulse). In other word, the value acquired by guide stroke of ball screw divided by division of motor revolution. (in situation without gear)

$$\text{Discussion of Resolution} = \frac{\text{Guide stroke of ball screw shaft}}{\text{Division of motor revolution}}$$

(Ex:) $\frac{5\text{mm}}{1000\text{p}} = 0.005\text{mm/pulse}$

In stepping motor, division of motor revolution is decided by basic division and driver magnetization.

2 phases stepping motor 200, 400 , 800

5 phases stepping motor 500, 1000, 5000, 10000

In semi-closed loop mode(DC motor, AC servo motor), is decided by decoder division and multiple of electricity(1,2,4).

2000 pulse or 4000 pulse is also as option to use, when decoder is 1000 pulse.

In close-loop mode, resolution is nothing with guide stroke, but decided by optical linear scale(10 μm, 20 μm),and division circuit of electricity.

5 μm/p & 1 μm/pin general, 0.1 μm/pin high resolution.

◆ Speed

Top table speed V(mm/s) is decided by max. limited rotation numbers (rpm) and guide stroke of ball screw (mm/rev).

$$\text{Table speed } V = l \times \frac{N}{60} \text{ mm/s}$$

(Ex:) $l = 10\text{mm/rev}$, and applied $N=3,000 \text{ rpm}$ motor.

$$\text{Table speed } V = 10 \times \frac{3000}{60} = 5000\text{mm/s}$$

Comparing to load torque of table, output torque of motor must be in well balance. More caution on using stepping motor in high speed revolution, due to extreme decrease during torque outputting, especially over 1500 rpm.

Using DC motor or AC servo motor, the max. RPM sometimes would be also affected by wave number of decoder(limited by positioning deviation counter), besides motor function.

(Ex:) Max. wave no. in deviation = 100 kpps, ball screw $l = 10\text{mm/rev}$, decoder division $P = 1000$.

- Using resolution 0.01 mm/ p
Wave no. in deviation counter $f = 500/0.01 = 50 \text{ kpps} < 100\text{kpps}$, speed would upto 500mm/sec, whiel $N - 3000\text{rpm}$.
- 4 times to decoder, equal to 4000 p/rev, resolution turned into $10/4000 = 0.0025 \text{ mm/ p}$, table speed $V = 100,000 \times 0.0025 \times 250 \text{ mm/ sec}$
motor RPM $N = 250/10 \times 60 = 1500 \text{ rpm}$

◆ Motor type with Resolution and Max. speed Comparison list

Motor Models	Division	Max. wave no.	Guide stroke of ball screw shaft (mm/rev)											
			2		4		5		8		10		20	
			Pulse/rev	Kpps	Reslution (μm)	Top speed (mm/S)	Reslution (μm)	Top speed (mm/S)	Reslution (μm)	Top speed (mm/S)	Reslution (μm)	Top speed (mm/S)	Reslution (μm)	Top speed (mm/S)
2 phases stepping motor	200	6	10	60	20	120	25	150	40	240	50	300	100	600
	400	12	5		10		12.5		20		25		50	
	800	24	2.5		5		6.25		10		12.5		25	
5 phases stepping motor	500	20	4	80	8	160	10	200	16	320	20	400	40	800
	1000	40	2		4		5		8		10		20	
	5000	200	0.4		0.8		1		1.6		2		4	
10000	400	0.2	0.4	100	0.4	200	0.5	250	0.8	400	1	500	2	1000
	800	40	2.5		5		6.25		10		12.5		25	
	1000	50	2		4		5		8		10		20	
DC servo motor (AC servo motor)	2000	100	1	100	2	200	2.5	250	4	400	5	500	10	1000
	4000	200	0.5		1		1.25		2		2.5		5	
	Close-loop mode with optical linear scale	Max. wave no.	Resolution		Top speed (nothing to guide stroke of ball screw)									
300 kpps	300 kpps	0.1 μm	30 mm/S											
		0.5 μm	150 mm/S											
		1.0 μm	300 mm/S											
(Special control system required to raise speed)														

To judge linear rail guide model fit or not by these results.

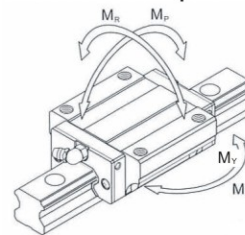
Checking computation of load capacity is to get static safety factor by basic rated static load(Co), and also ensure static load limit; checking computation of life is to calculate rated life by basic rated dynamic load. Life of linear rail guide means grand distance accumulated of circulatory stress effect brought from balls or rolling plane till peeling off from metal surface caused by rolling fatigue of material.

Basic static load Co

The contact area in between balls with rolling plane on linear rail guide would appear partial eternal-distortion while against overload or shock during running in static or low speed. In case of distortion out of limitation would affect smoothness of linear rail motion. Basic rated static load(Co), is static load in same direction and equivalence, where max. stress occurring in contact surface have eternal distortion sum between ball and rolling plane reached to 0.0001 times to the ball diameter, also called allowed limit of staticload.

Allowed static torque Mo

While act torque on linear rail guide, the max. stress occurs from balls on two ends of guides, seeing ball stress dispersed on linearl guides. Allowed static torque (Mo), is static torque in same direction and equivalence, where max. stress occurring in contact surface appear eternal distortion sum between balls and rolling plane reached to 0.0001 times to the ball diameter, also called allowedlimit of static torque. In linear rail guide, torque is defined as MP · My and MR, 3 directions as drawing below.



Static safety factor fs

While linear rail guides are applied to vibration, shock or intense running stop, due to inertia force or outer torque effects, hard load would occur. Under this load situation, static safety factor is considered necessarily. Static safety factor(fs) is shown as mutiples to load which basic rated static load(Co) on linear rail guide act onas follow formulas. All datums of static safety factors in various application as below:

$$f_s = \frac{C_o}{P}$$

fs : static safety factor
Co : basic static load(N)

or

$$f_s = \frac{M_o}{M}$$

Mo : allowed static torque(N · m)
P : calculated load(N)
M : calculated torque(N · m)

Datum of static safety factor

Machine	Load condition	lower limit of fs
General machine	Regular load	1.0 ~ 1.3
	Vibration, shock	2.0 ~ 3.0
Machine tool	Regular load	1.0 ~ 1.5
	Vibration, shock	2.5 ~ 7.0

Basic dynamic load C

There are a little differences in life of linear rail guides, even same batch of products running in same condition. Therefore, to ensure life of linear rail guide, defined rated life is used as below. Rated life(L), means total distance of same batch of linear rail guides in same specification run under common conditions, 90% of appearance without peeling off caused by surface fatigue. While linear rail guide runs with load, basic rated dynamic load is required to calculate its life. Basic rated dynamic load(C), stands for load of same batch of linear rail guides in same specification running in common condition have rated life, 50km(rolling ball), same direction and equivalent.

Life calculation

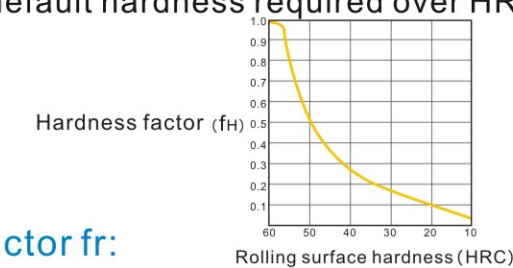
Rated life of linear rail guides depend on actual load. Use basic rated dynamic load(C), and work load(P) in optional spec to calculate usage life. Usage life of linear rails change by running situation, plane hardness and surrounding temperature. When rolling stuff is ball, we could use formula as below to calculate life:

$$L = \left\{ \frac{f_H \cdot f_r}{f_w} \times \frac{C}{P} \right\}^3 \times 50$$

L : rated life(km) fH : hardness factor
C : basic dynamic load(N) fr : temperature factor
P : work load(N) fw : load factor

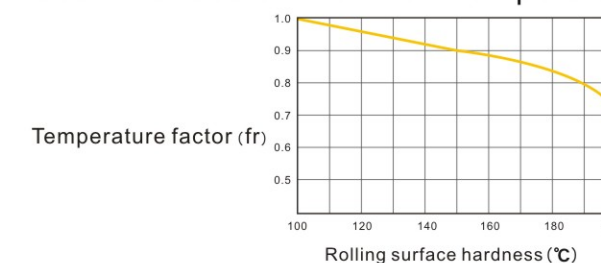
Hardness factor fh:

Hardness of plane where linear rail guide run must be HRC58~64. Load capacity of linear rail guide would decrease if hardness under the range. Basic rated dynamic load and static load shall multiply relative hardness fh individually, as chart below. Linear rail guide default hardness required over HRC58, so Fh=1.0



Temperature factor fr:

Life of linear rail guide would be affected by high temperature, especially used in environment over 100°C. Basic rated dynamic load and static load shall multiply relative temperature factor fr individually, as chart below. Accessories are made of plastic or rubber. Recommended environment temperature is under 100°C.



◆ **Load factor fw**

Load of linear rail could be taken by calculation, but calculated value is less than load in actual running with vibration and shock. Considering different running conditions and speed, it's recommended to take experienced load factor divided by basic dynamic load.

Running condition	Speed	fw
Smooth without shock	V ≤ 15m/min	1.0 ~ 1.2
Regular shock with vibration	15 ≤ V ≤ 60m/min	1.2 ~ 1.5
Medium shock with vibration	60 ≤ V ≤ 120m/min	1.5 ~ 2.0
Hard shock with vibration	V ≤ 120m/min	2.0 ~ 3.5

◆ **Calculation of life hours(Lh)**

If stroke length and travel times used in linear rail guides are constant, we could have conversion of life hours(Lh) with rated life(L) acquired by above formula.

L_h : life hour (Hr)

L : rated life distance calculation(km)

l_s : stroke length(m)

n₁ : travel times per min(min-1)

$$L_h = \frac{L * 10^3}{2 * l_s * n_1 * 60}$$

◆ **Life of ball screw**

Even if in correct usage, it would be unusable due to degeneration after a period. Period from beginning to disablement is called life of ball screw, generally 2 kinds divided :

- (1) Fatigue life : in case of peeling off.
- (2) Accuracy life : accuracy degradation caused by abrasion.

◆ **Fatigue life could be calculated by basic dynamic rated load, same as rolling bearing's.**

◆ **Basic dynamic rated load Ca** : Dynamic load means same batch of ball screw in same specification runs under common conditions for a million times, and 90% of them without peeling off from screw shafts. This axial load is called dynamic rated load(Ca). In selection of ball screw , shorter or longer life are inappropriate. The one in longer life is oversized, and not economical. Fatigue life goals to variety purposes of ball screw are shown for reference as list below .

- Machine tool..... 20000 hours
- Production machinery..... 10000 hours
- Automatic control equipment..... 15000 hours
- Measure instrument..... 15000 hours

◆ **Life calculation**

Fatigue life could be shown as 3 ways :

a : total rotated numbers b : total running time c : total stroke length

L : fatigue life , shown in total rotated numbers

L_t : fatigue life, shown in total running time

L_s : fatigue life, shown in total stroke length

Ca : basic dynamic rated load

Fa : axial load

n : max. speed of motor

l : guide stroke

fw : load factor

$$L = \left\{ \frac{Ca}{Fa * fw} \right\}^3 * 10^6$$

$$L_t = \frac{L}{60 * n}$$

$$L_s = \frac{L * l}{10^6}$$

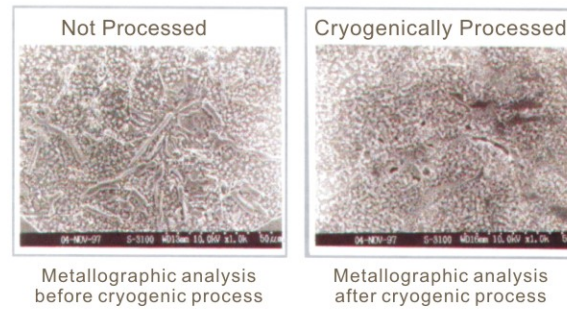
Load factor fw		
Vibration & shock	Speed (V)	fw
Light	V < 15 (m/min)	1.0 ~ 1.2
Medium	15 < V < 60 (m/min)	1.2 ~ 1.5
Hard	V > 60 (m/min)	1.5 ~ 3.0

All **GMT XY-TABLE** is well been cryogenic processing. Cryogenic process is to place the part in the medium with temperature under 196°C, followed step by step progress of new technic to improve material character. Found by relevant search, cryogenic process is not only obviously increase on strength and life of black (colour)metal, plastic and china...etc, but also improve the structure evenly. Increase of dimension stability brings huge economic benefit and promising application in aviation · aerospace · optics · creatures · chemistry · machinery, electronic and light industry.

◆ Purpose of cryogenic process

Improving physical character (mechanical character) of metal or other material by progress of subzero processing, to raise usage life, efficiency and quality of parts or workpiece.

Ex: Comparison of metallographic analysis



◆ Benefic analysis of aluminum alloy after cryogenic process:

Improvement during process or in the end of process:

- (1) Deformation of microstructure stress caused by designed material shape.
- (2) Effectively controlling aging deformation.
- (3) After mechanical testing, mechanism strength has been obviously improved, and perfectly perform the desinged mechanism.

Practical application : After dissolving aluminum alloy(Duralumin),have it with cryogenic process and unfrozen immediately. It could not only speed up aging, but reduce most of residual stress at same time to improve mechanical character. Found by another info, aluminum alloy casting with cryogenic process has improvement of processed ability.

Material	Parts	Hardness	Durability	Processing life	Dimension stability	Others
SKH	Drill, Cutting, Tools	+	+	+	+	1 time temper
SKD11	Blanking Die, Punch, Cutting Blade, Roller	+	+	+	+	Avoid broken by grinding
SKD61	Aluminum extrusion die	+	+			
SUJ	Rail, Roll Guide	+	+		+	
Inner parts	Bearing, Gear, Bushing, Cam	+	+		+	Avoid broken by grinding
SUS	Austenite (300)	+	+		+	Improvement of corrosion resistance
	Martensitic (420J2 · 440)	+	+		+	
	Separated (630 · 631)	+	+	+	+	
18Ni 280Grade	18%Ni type	+	+		+	Speed up sging
	25%Ni type	+	+		+	Speed up sging
Sintering alloy	Cutting tools · Roller · Automobile parts		+	+	+	Reduce residual stress
Cu alloy	Electrode · Fire gate					
AL alloy	Automatic machinery · precision processing · die manufacture · electronic and precision instrument · SMT · PC board soldering device		+		+	Improvement of processed ability



Lined writing area with horizontal dashed lines.

