



LOW BACKLASH PLANETARY GEARBOXES



you make
every **second**
count



So we make
every **arc second**
count*

* Reckon offers 1 arc-min backlash
from size 90 mm (depending on the ratio) to size 285 mm

 **RECKON**
INNOVATION NEEDS PERFORMANCE

 **RECKON**[®]
Innovation needs performance

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How do planetary gearboxes work?

The sun gear (1) rotates together with your motor shaft.

It meshes simultaneously with 3 or more planet gears (2)

The planet gears rotate simultaneously around the sun gear and inside the ring gear (3)

> The reduction ratio between sun gear and planet gears is:

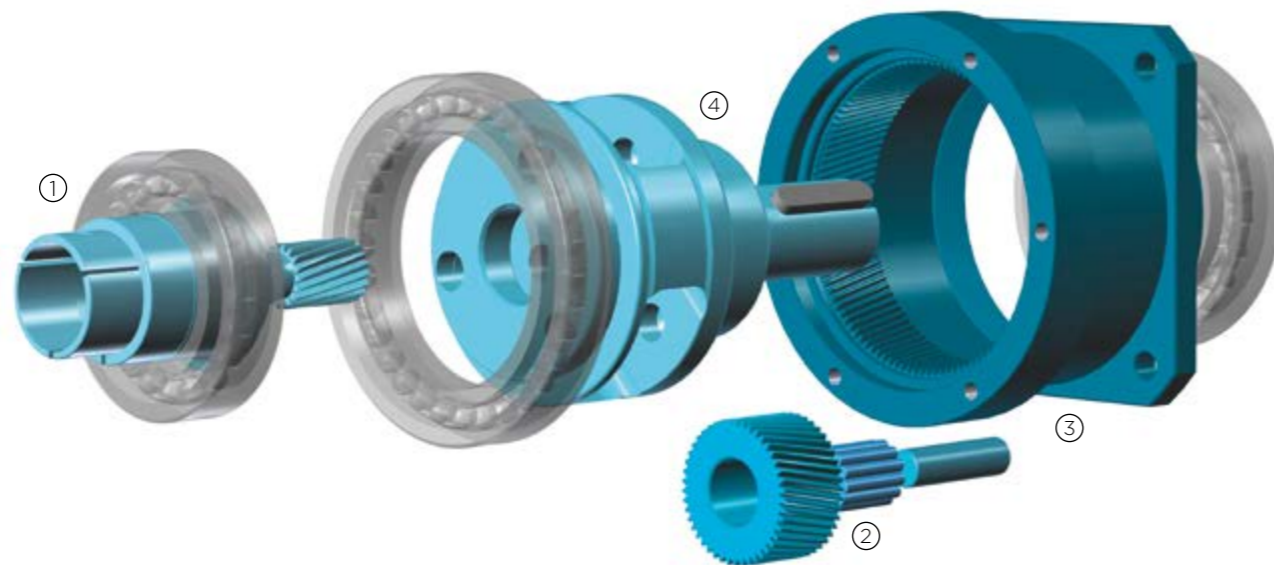
Planet gears' number of teeth (Z2) / Sun gear's number of teeth (Z1)

> The reduction ratio between the planet gears and the ring gear is :

Ring gear's number of teeth (Z3) / planet gears number of teeth (Z2)

The planet gears rotate inside the ring gear the same direction your motor does.

Since they are inserted in the planet carrier (4), the output shaft rotates the same speed the planet gears rotate inside the ring gear.



Total reduction ratio between the sun gear and the output shaft is: $1 + Z3/Z1$. It is an exact number, which means the number of rotation of the output shaft is exactly proportional to the number of rotation on the input shaft. However, within one rotation, the angular position of the shaft cannot be considered exact, its precision depends on the precision of the inner elements of the gearbox and is more or less equivalent to the backlash.

Considering the need for a minimal number of teeth on the sun gear, it is generally considered that 1-stage gearboxes should not offer ratios above 10. Planetary gearboxes with ratios above 10 usually pile-up stages, so a ratio 25 gearbox is made of 2 ratio 5 stages.

Quality-based performance

All Reckon® planetary gearboxes feature the following elements:



High-precision, carburized, quenched gears.

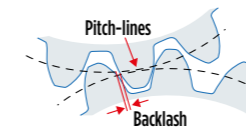
Offering superior performance, long lifetime and everlasting precision even under tough working conditions.



PerfectPitch™

PerfectPitch™ concept*

Offering silent operation and high reliability to your gearbox.



Low backlash

<1 arc-min backlash option available on most 1-stage models size 90 and above.



Balanced input coupling

Offers a strong grip, avoiding vibration and preserving your motor shaft bearings against radial efforts.



Double-supported, caged planet carriers**

Increasing stiffness and improving meshing of the gears during accelerations.



Bearings, seals and lubricants from premium suppliers

We source our components safely from renowned world-class suppliers.

* Available the WISER, LIVELY, BOOSTER and ULTIMATE series.

**Available on all Perfect Pitch™ compliant series.

THE RECKON® RANGE

15 coaxial lines. 8 right-angle lines. 23 configurations
from 5 Nm rated to 6216 Nm rated



IN-LINE GEARBOXES

ECO LINES



		ACCESS-FI	ACCESS-CI	ACCESS-SQ	SPIRIT-CI
Servo-grade gearbox		Yes	Yes	Yes	Yes
Toothing		Straight, carburized	Straight, carburized	Straight, carburized	Straight, carburized
Number of size in the line		4 sizes 40-120	4 sizes 40-120	4 sizes 40-120	4 sizes 40-120
Range of rated torques of the line		5 Nm to 205 Nm	5 Nm to 205 Nm	5 Nm to 205 Nm	5 Nm to 205 Nm
Standard Angular precision	Sizes 040 to 070	1 stage : ≤ 7 or 10 arc-min 2 stages : ≤ 10 or 13 arc-min	1 stage : ≤ 7 or 10 arc-min 2 stages : ≤ 10 or 13 arc-min	1 stage : ≤ 7 or 10 arc-min 2 stages : ≤ 10 or 13 arc-min	1 stage : ≤ 7 or 10 arc-min 2 stages : ≤ 10 or 13 arc-min
	Sizes 075 to 285	1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min
Reduced angular precision	Sizes 040 to 070	Not available	Not available	Not available	Not available
	Sizes 075 to 285	Not available	Not available	Not available	Not available
Efficiency		1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%
Output		Stainless steel shaft (with or without a key)	Shaft (with or without a key)	Shaft (with or without a key)	Rotating flange
Mounting interface (output side)		Round	Round	Square	Round
Mounting interface (motor side)		All Reckon gearboxes come with the flange and coupling adapted to your motor dimensions.			
Motor shaft connection		Balanced coupling	Balanced coupling	Balanced coupling	Balanced coupling
Acceleration capacity		+++	+++	+++	+
Fast reversals		+++	+++	+++	+
Radial loads		+++	+++	+++	++
Axial loads		+	+	+	+
Stiffness		++	++	++	+
Torque density		+++	+++	+++	++++
Lubricant		Food-grade lubricant optional	Sumico Japan High Pressure Grease (NLGI 2).		
Coating		None	Nippon Paint coating. Color code Capri Blue (RAL 5019), glossy finish.		
Housing		316L steel	Forged steel	Forged steel	Forged steel

SELECT LINES



WISER-CI	WISER-SQ	LIVELY-CI	LIVELY-SQ	X-TREME-SQ	BOOSTER-SQ	ULTIMATE-CI
Yes	Yes	Yes	Yes	Yes	Yes	Yes
Helical, carburized	Helical, carburized	Helical, carburized	Helical, carburized	Helical, carburized	Helical, carburized	Helical, carburized
3 sizes 60-120	3 sizes 60-120	7 sizes 40-235	7 sizes 40-235	7 sizes 60-240	3 sizes 60-120	7 sizes 47-285
14 Nm to 214 Nm	14 Nm to 214 Nm	5 Nm to 1,888 Nm	5 Nm to 1,888 Nm	16 Nm to 4,500 Nm	16 Nm to 260 Nm	5 Nm to 4500 Nm
1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 5 arc-min
1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min	1 stage : ≤ 5 arc-min 2 stages : ≤ 8 arc-min	1 stage : ≤ 3 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 3 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 3 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 3 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 3 arc-min 2 stages : ≤ 5 arc-min
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1 stage : ≤ 3 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 3 arc-min 2 stages : ≤ 5 arc-min	1 stage : ≤ 1 arc-min 2 stages : ≤ 3 arc-min	1 stage : ≤ 1 arc-min 2 stages : ≤ 3 arc-min	1 stage : ≤ 1 arc-min 2 stages : ≤ 3 arc-min	1 stage : ≤ 1 arc-min 2 stages : ≤ 3 arc-min	1 stage : ≤ 1 arc-min 2 stages : ≤ 3 arc-min
1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%	1 stage : 97% 2 stages : 94%
Shaft (with or without a key)	Shaft (with or without a key)	Shaft (with or without a key)	Shaft (with or without a key)	Shaft (with or without a key)	Shaft (with or without a key)	Rotating flange
Round	Square	Round	Square	Square	Square	Round
A bushing may be necessary to adapt the coupling to non-standard motor shafts - it is then supplied with the gearbox.					arbox.	
Balanced coupling	Balanced coupling	Balanced coupling	Balanced coupling	Balanced coupling	Balanced coupling	Balanced coupling
++	++	+++	+++	++++	++++	+++++
++	++	+++	+++	+++	++++	+++++
++	++	++	++	++++	+++	++++
+	+	+	+	++++	++	++++
++	++	+++	+++	++++	++++	+++++
++	++	+++	+++	++++	++++	+++++
Reckon gearboxes are lubricated for life. Special lubricants available for high speed operation, food-grade applications or high-temperature conditions.						
Nippon Paint coating. Color code Capri Blue (RAL 5019), glossy finish.						
Aluminum	Aluminum	Forged steel	Forged steel	Forged steel	Forged steel	Forged steel

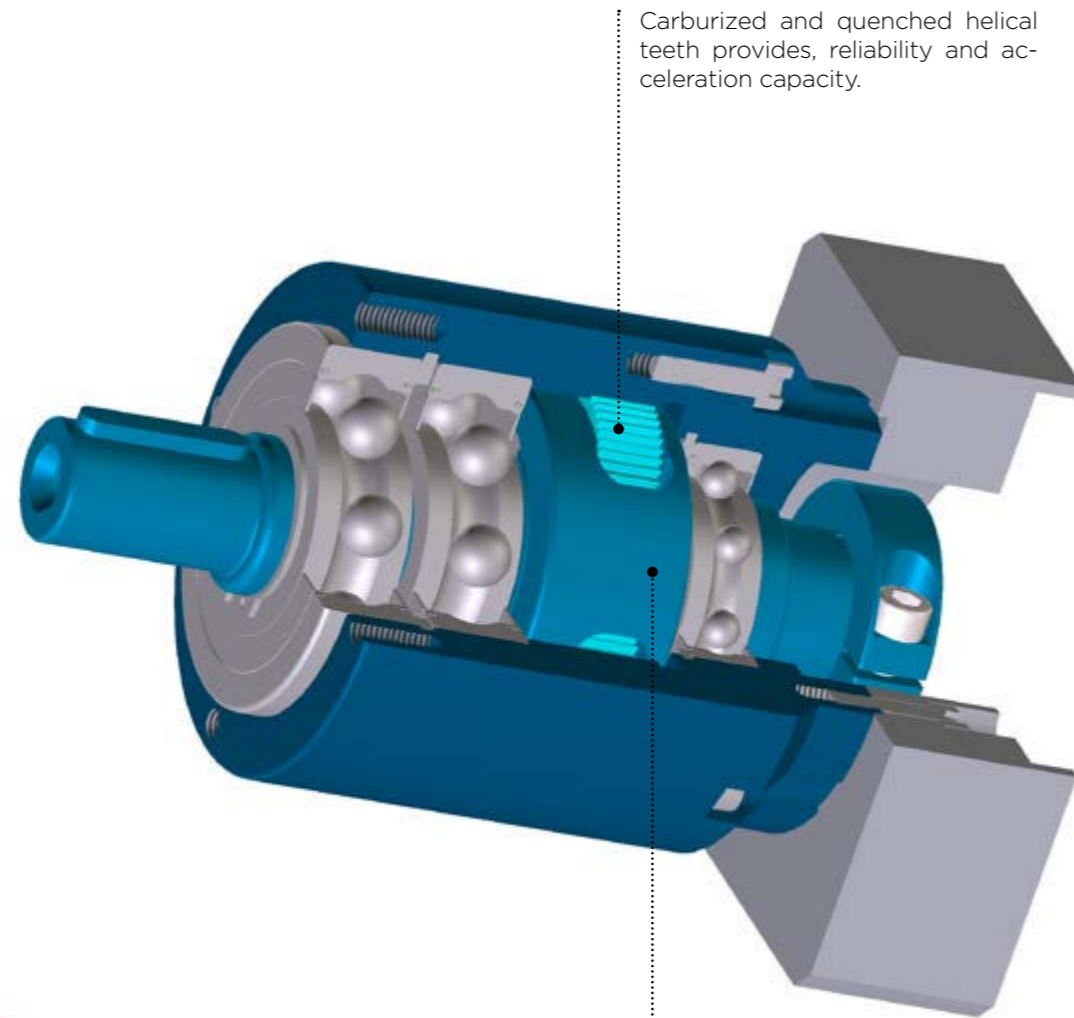
Do not hesitate to contact us if you need help, our R&D dept will be happy to assist you.

ACCESS-CI



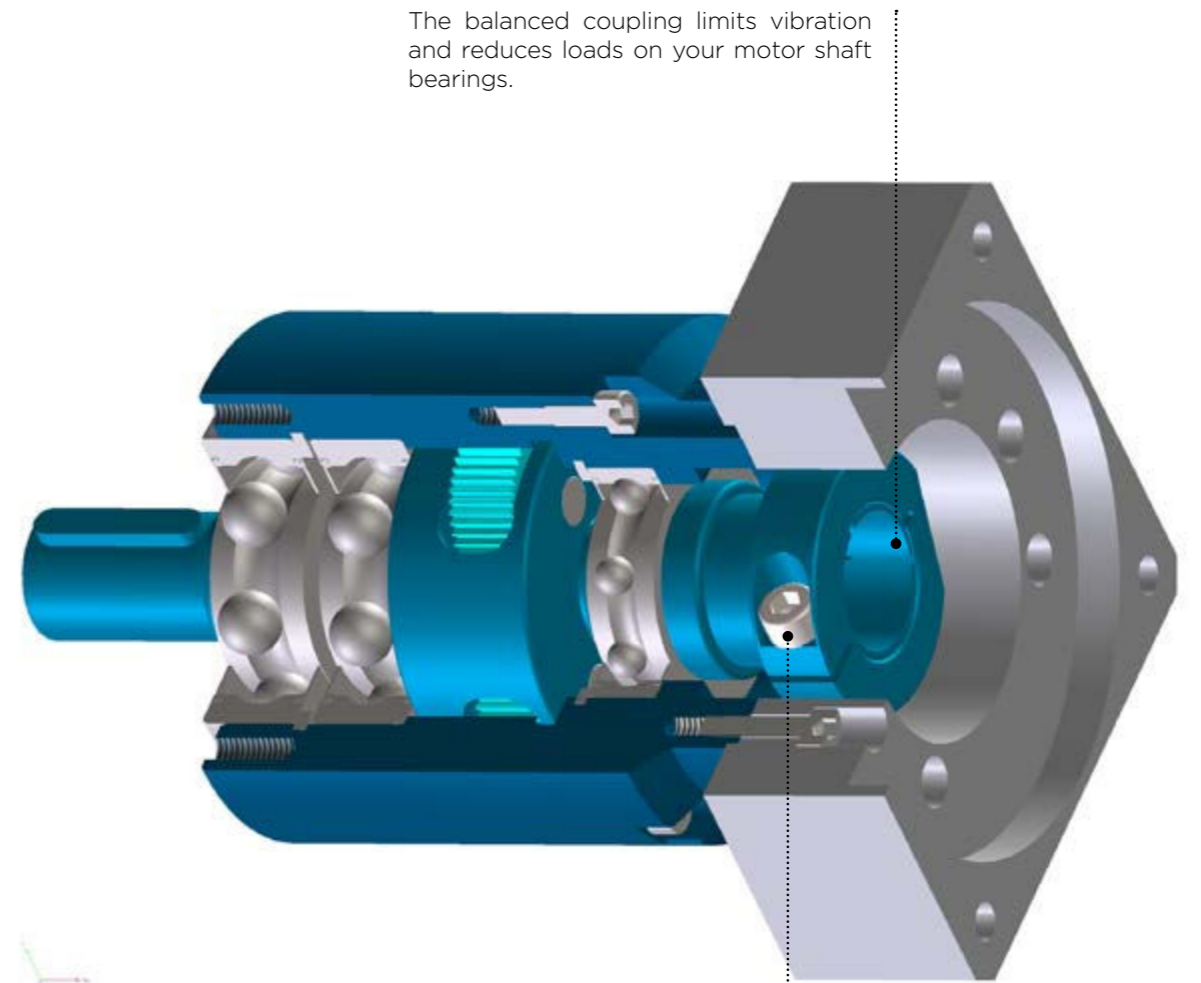
Acceleration capacity	+++
Fast reversals	+++
Radial load rating	+++
Axial load rating	+
Stiffness	+++
Precision	++
Economy	+++++

ACCESS-CI-ST_ Internal construction



Carburized and quenched helical teeth provides, reliability and acceleration capacity.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox. The caged planet carrier prevents the planets from tilting.



The balanced coupling limits vibration and reduces loads on your motor shaft bearings.

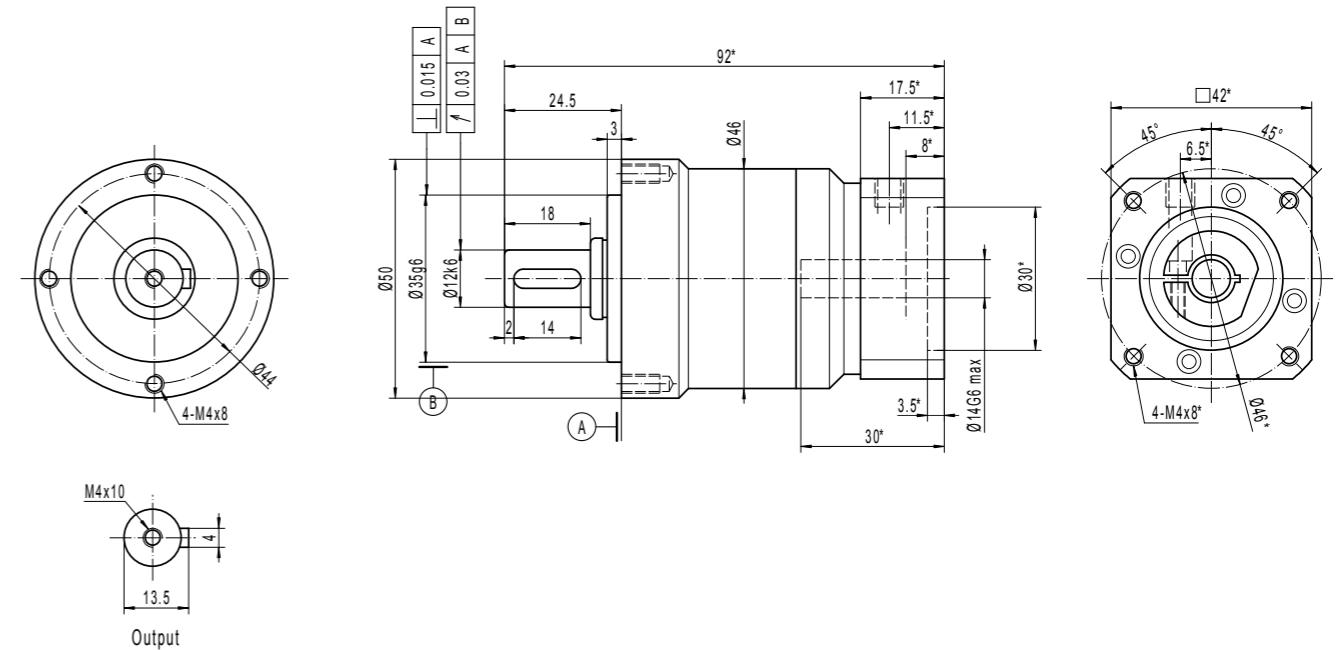
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	ACCESS-CI-ST			
		050-P*	070-P*	090-P*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	-	29	54	170
	4	11	30	105	205
	5	9	24	81	160
	7	7	22	66	153
	10	5	15	45	102
	12	-	29	54	170
	15	-	29	54	170
	16	11	30	105	205
	20	11	30	105	205
	21	-	29	54	170
	25	9	24	81	160
	28	11	30	105	205
	30	-	29	54	170
	35	9	24	81	160
	40	11	30	105	205
	49	7	22	66	153
	50	9	24	81	160
70	7	22	66	153	
100	5	15	45	102	
Peak torque ² T _{max} (Nm)	3	-	57	107	338
	4	19	61	184	361
	5	14	47	130	300
	7	14	46	128	292
	10	13	43	116	260
	12	-	57	107	338
	15	-	57	107	338
	16	19	61	184	361
	20	19	61	184	361
	21	-	57	107	338
	25	14	47	130	300
	28	19	61	184	361
	30	-	57	107	338
	35	14	47	130	300
	40	19	61	184	361
	49	14	46	128	292
	50	14	47	130	300
70	14	46	128	292	
100	13	43	116	260	
Emergency stop torque (Nm) ³	1,5 x T _{max}				
Max angular backlash (minutes)	1 stage	≤10	≤7	≤5	≤5
	2 stages	≤13	≤10	≤8	≤8
Nominal input speed (rpm) ⁴		4,000	3,700	3,500	2,700
Max input speed (rpm) ⁵		10,000	8,000	7,000	6,000
Max radial load (N) ⁶		800	1,700	2,800	5,000
Max axial load (N) ⁶		700	1,550	1,900	4,000
Efficiency (%) ⁷	1 stage	≥97			
	2 stages	≥94			
Torsional stiffness (Nm/min)		1,4	4,2	13	33
Life (h) ⁸		20,000			
Min / max ambient temperature ⁹		-15 / +45			
Max temperature of the body (°C)		90			
Protection class		IP 54			
Noise level (dB) ¹⁰		≤62	≤64	≤66	≤68
Lubrication		Lifetime lubrication (grease)			
Coating color		Capri blue (RAL 5019)			
Input flange		Anodized aluminum			

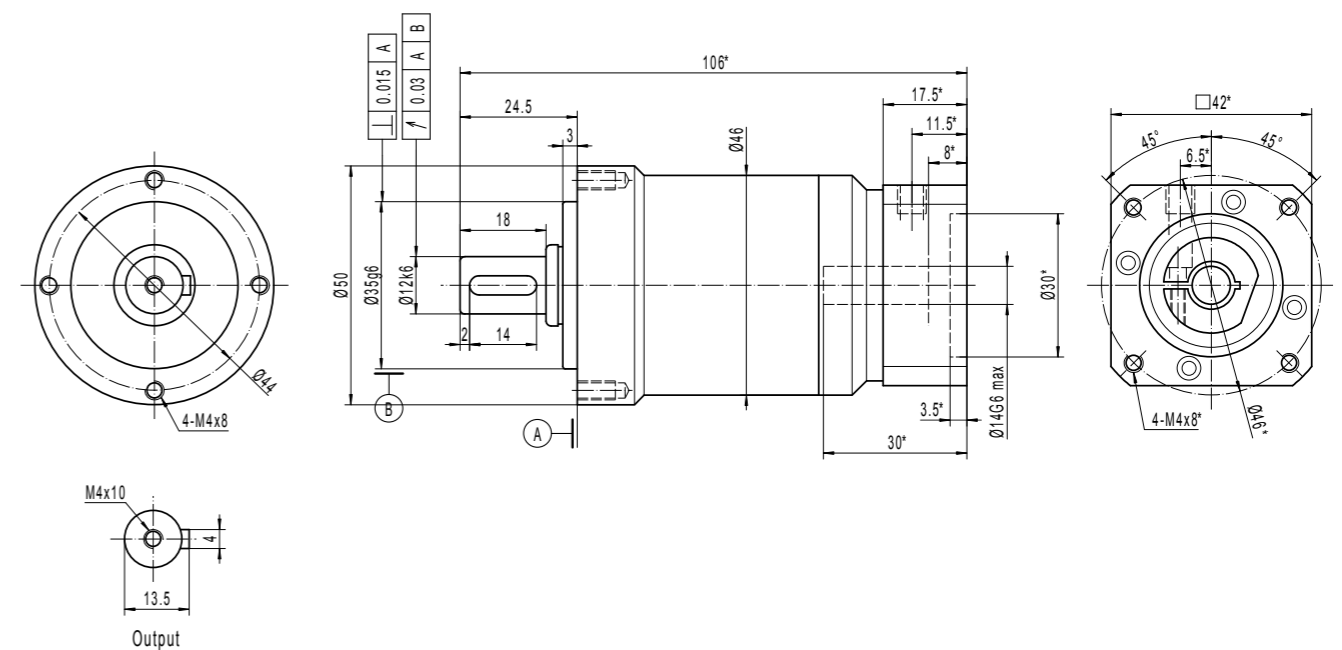
* Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information.
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied at the middle of the output shaft at 100 rpm.
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

ACCESS-CIT-ST-050 - 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

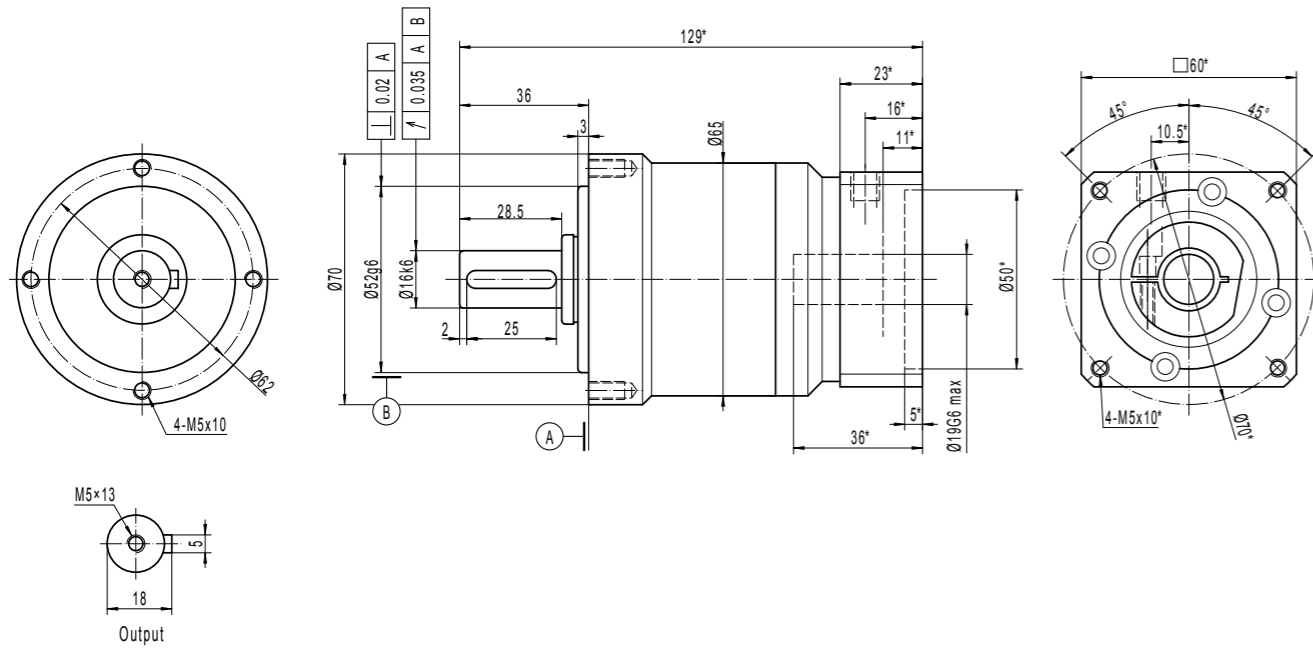


ACCESS-CI-ST-050 - 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

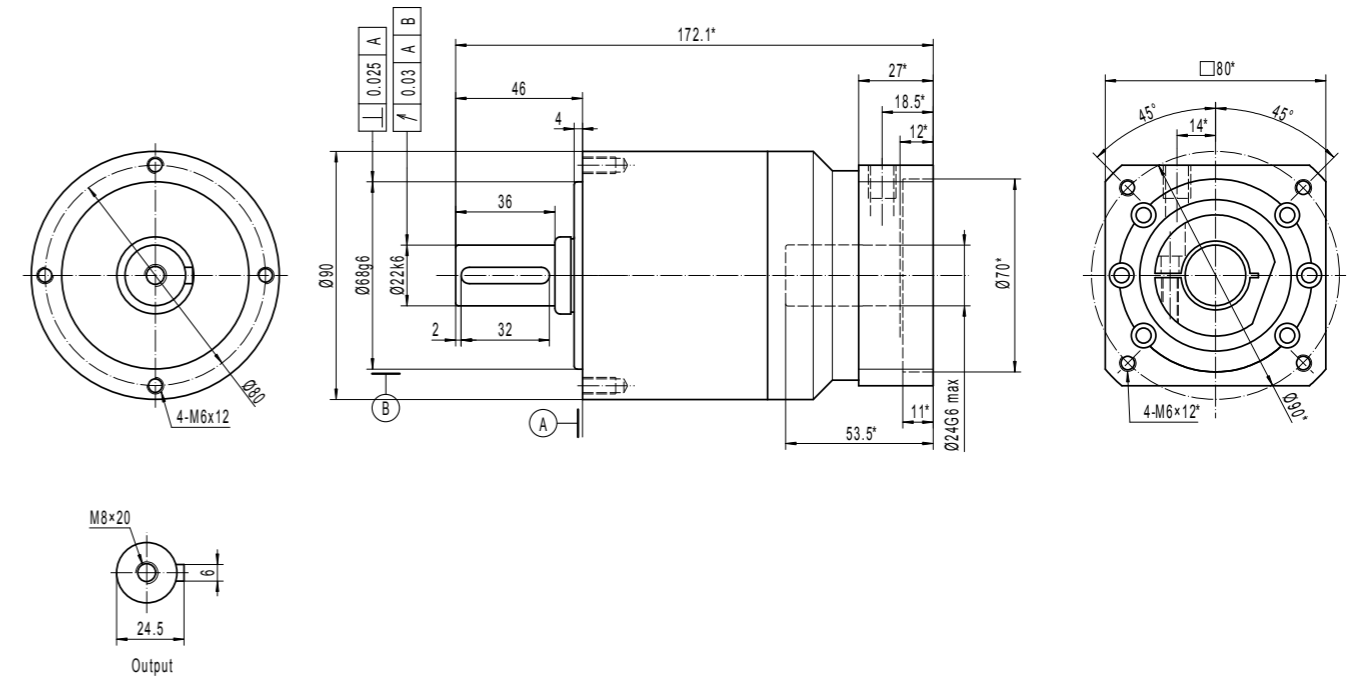


*VARIES WITH YOUR MOTOR DIMENSIONS

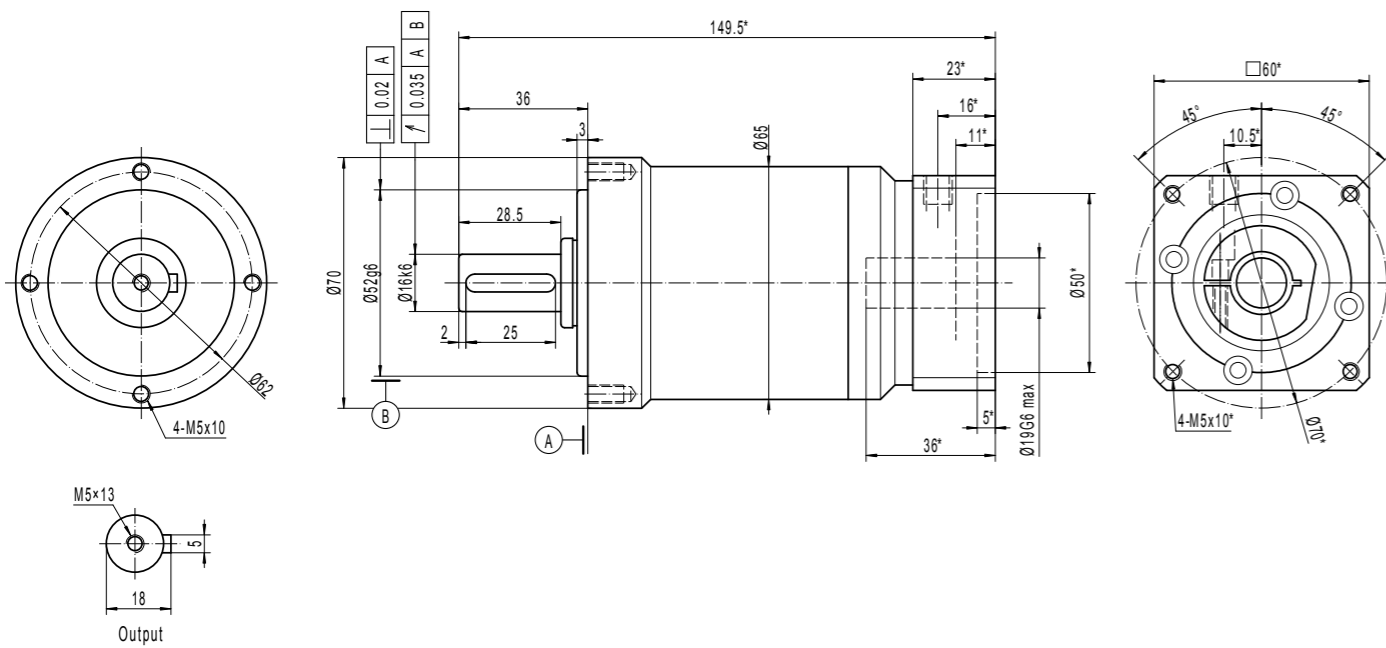
ACCESS-CI-ST-070-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



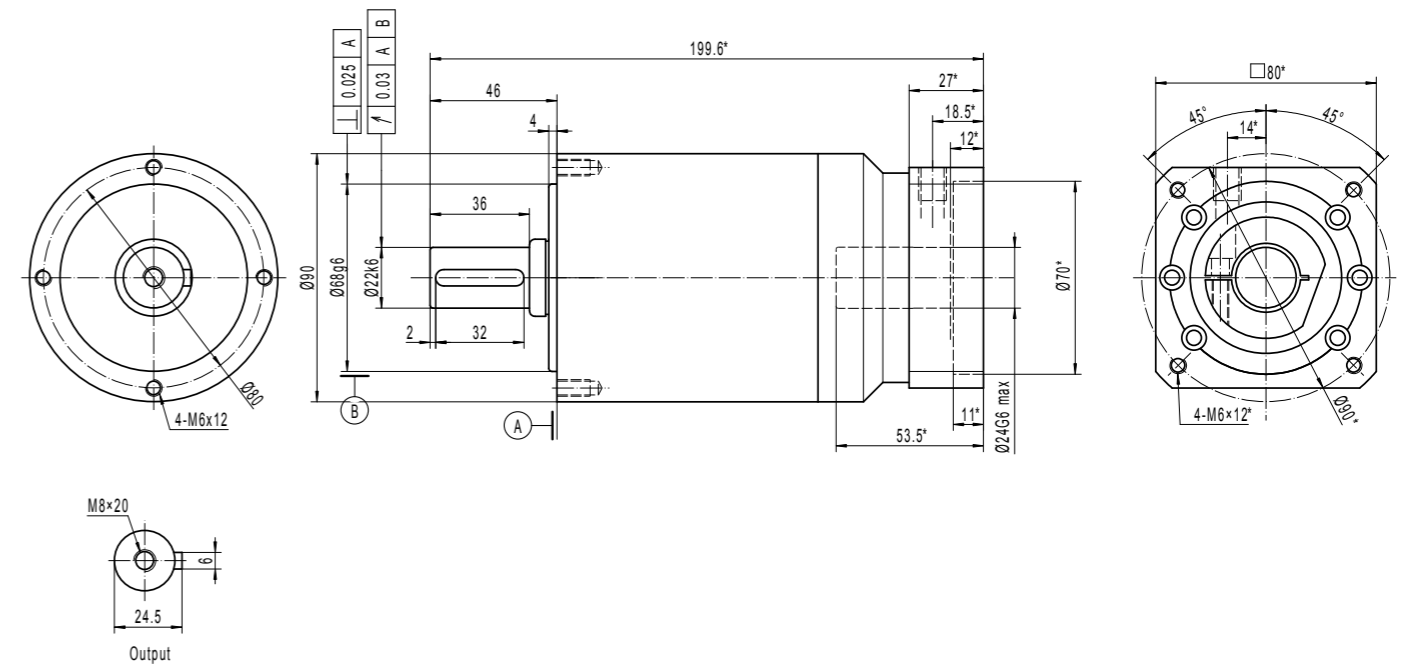
ACCESS-CI-ST-090-1 STAGE - RATIOS 3 TO 10
FOR MOTOR $\leq \varnothing 24$



ACCESS-CI-ST-070-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



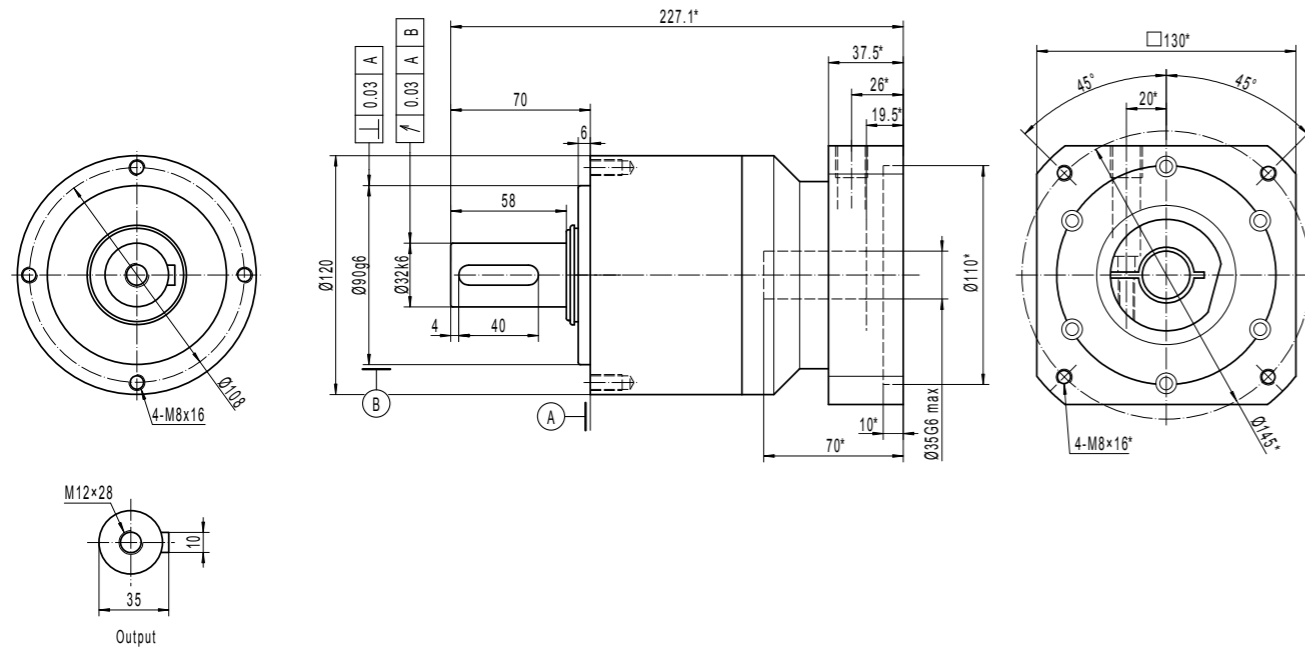
ACCESS-CI-ST-090-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



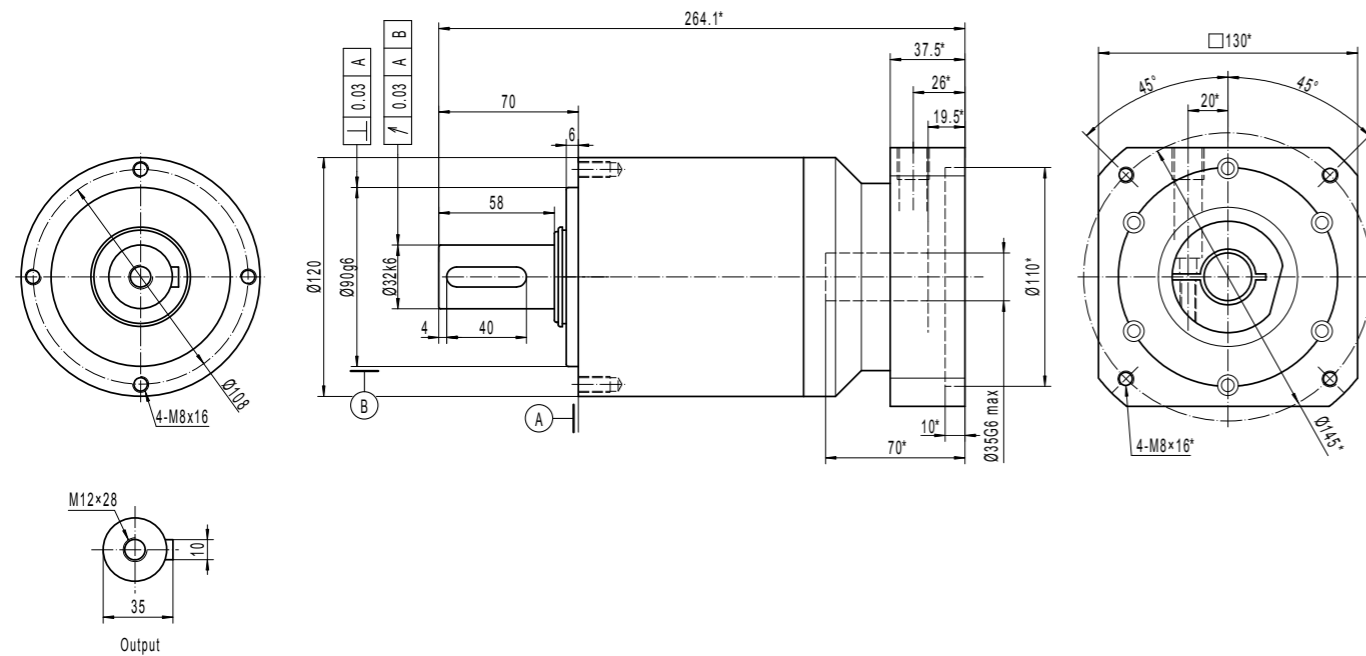
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-CI-ST-120-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$

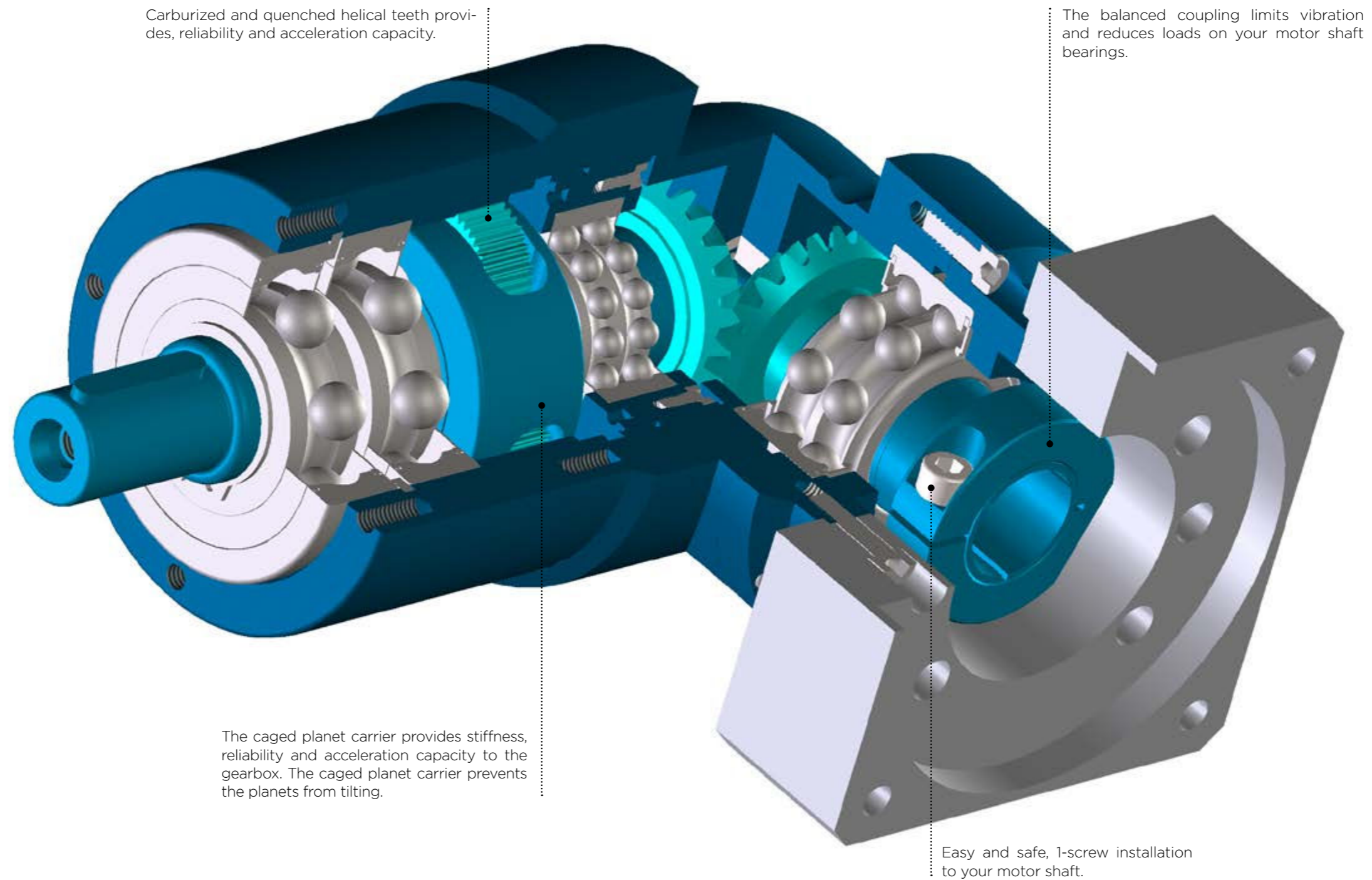


ACCESS-CI-ST-120-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-CI-RA_ Internal construction



Carburized and quenched helical teeth provides, reliability and acceleration capacity.

The balanced coupling limits vibration and reduces loads on your motor shaft bearings.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox. The caged planet carrier prevents the planets from tilting.

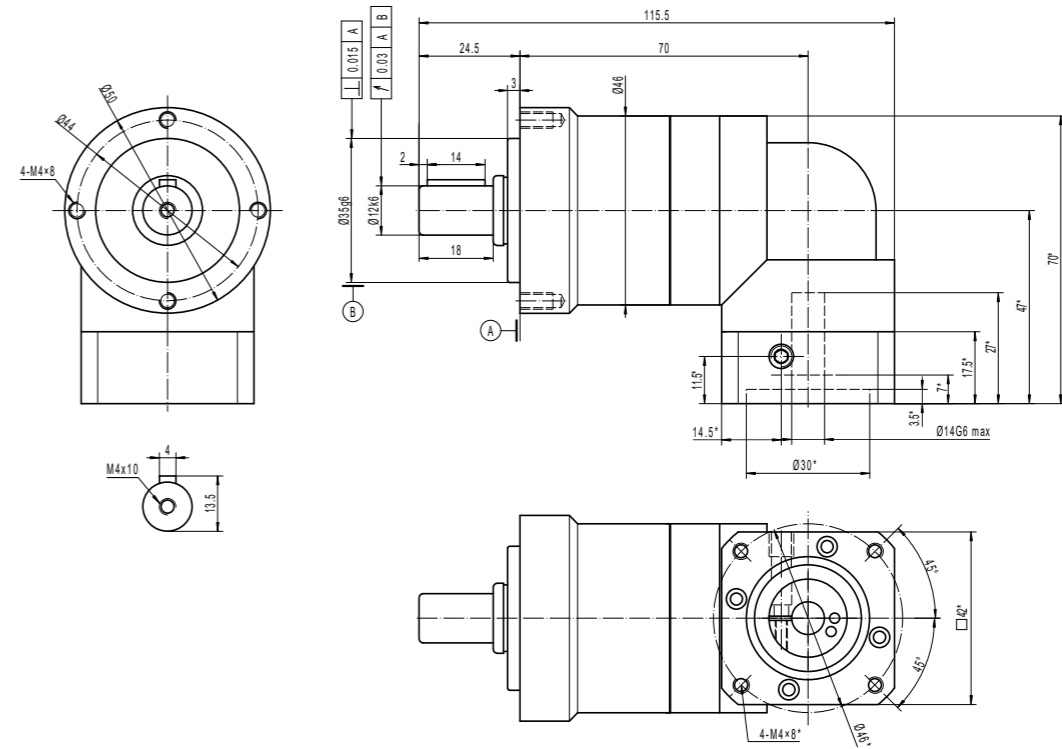
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	ACCESS-CI-RA			
		050-P*	070-P*	090-P*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	-	29	54	170
	4	11	30	105	205
	5	9	24	81	160
	7	7	22	66	153
	10	5	15	45	102
	12	-	29	54	170
	15	-	29	54	170
	16	11	30	105	205
	20	11	30	105	205
	21	-	29	54	170
	25	9	24	81	160
	28	11	30	105	205
	30	-	29	54	170
	35	9	24	81	160
	40	11	30	105	205
	49	7	22	66	153
	50	9	24	81	160
70	7	22	66	153	
100	5	15	45	102	
Peak torque ² T _{max} (Nm)	3	-	57	107	338
	4	19	61	184	361
	5	14	47	130	300
	7	14	46	128	292
	10	13	43	116	260
	12	-	57	107	338
	15	-	57	107	338
	16	19	61	184	361
	20	19	61	184	361
	21	-	57	107	338
	25	14	47	130	300
	28	19	61	184	361
	30	-	57	107	338
	35	14	47	130	300
	40	19	61	184	361
	49	14	46	128	292
	50	14	47	130	300
70	14	46	128	292	
100	13	43	116	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}			
Max angular backlash (minutes)	1 stage	<15	<13	<13	<13
	2 stages	<15	<15	<15	<13
Nominal input speed (rpm) ⁴		4,000	3,700	3,000	2,700
Max input speed (rpm) ⁵		10,000	8,000	7,000	6,000
Max radial load (N) ⁶		800	1,700	2,800	5,000
Max axial load (N) ⁶		700	1,550	1,900	4,000
Efficiency (%) ⁷	1 stage	≥94			
	2 stages	≥92			
Torsional stiffness (Nm/min)		1,4	4,2	13	33
Life (h) ⁸		20,000			
Min / max ambient temperature ⁹		-15 / +45			
Max temperature of the body (°C)		90			
Protection class		IP 54			
Noise level (dB) ¹⁰		<71	<73	<73	<77
Lubrication		Lifetime lubrication (grease)			
Coating color		Capri blue (RAL 5019)			
Input flange		Anodized aluminum			

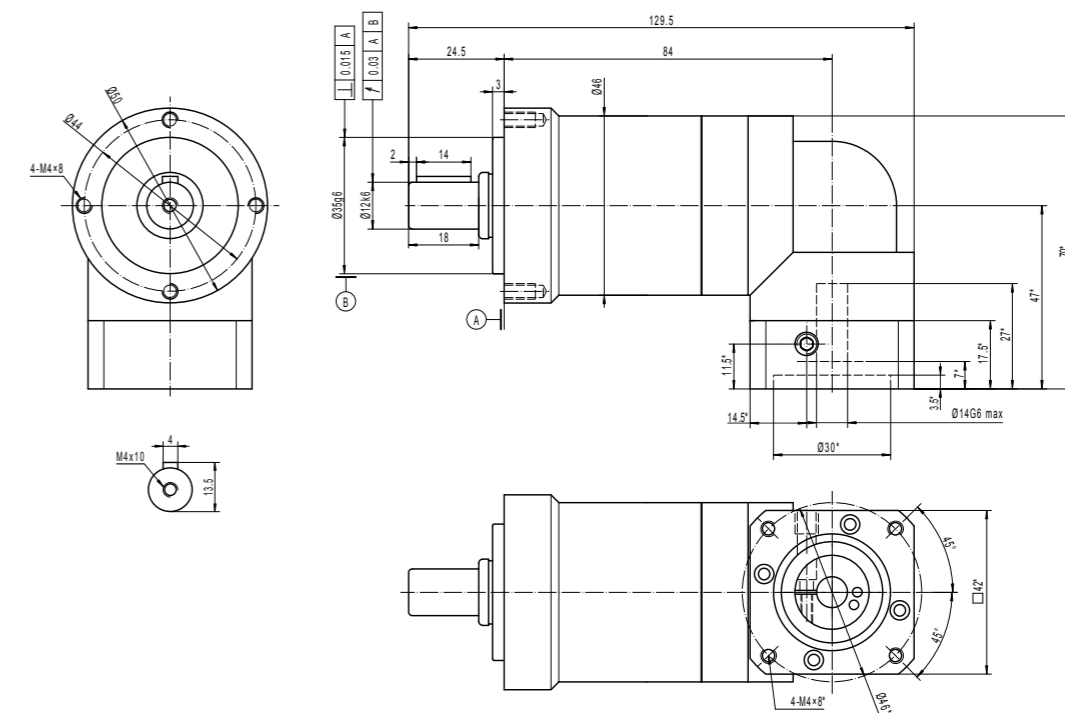
* Others ratios are available upon request.

- 1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
- 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
- 3: 1 000 occurrences maximum.
- 4: Speed at which the nominal torque is applicable 20,000 hours.
- 5: Peak speed only.
- 6: Applied at the middle of the output shaft at 100 rpm.
- 7: Measured at full load and at 25°C
- 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
- 9: Room temperature. Refer to temperature factors in dedicated section.
- 10: Ratio 10 at nominal speed, measured at 1m.

ACCESS-CI-RA-050- 1 STAGE- RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

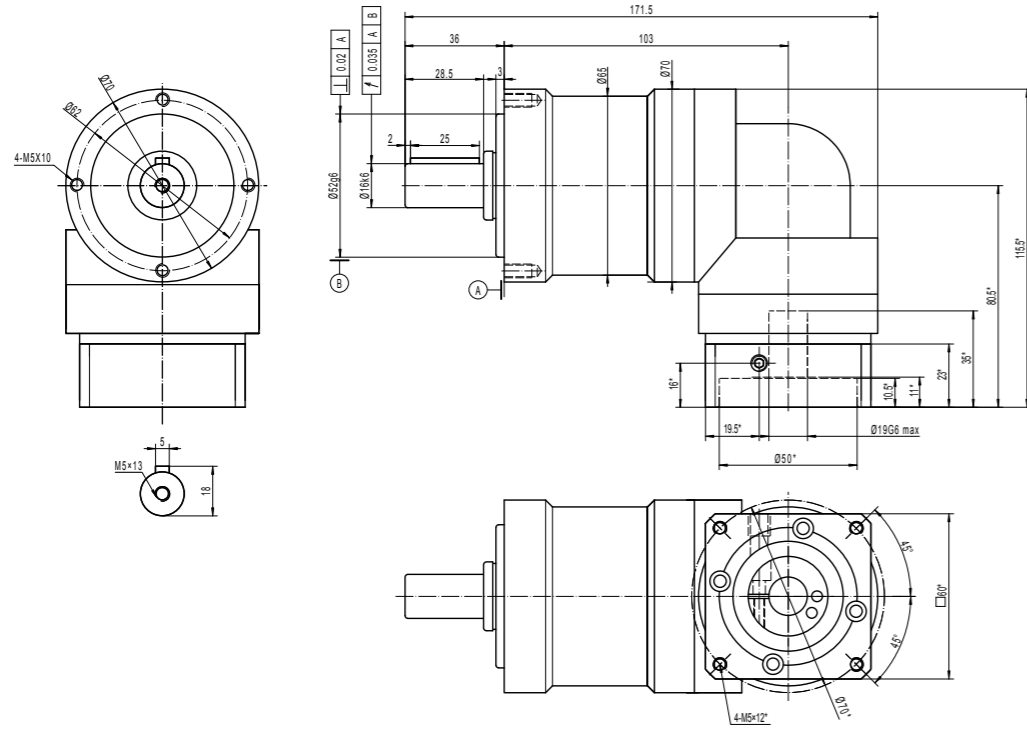


ACCESS-CI-RA-050- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

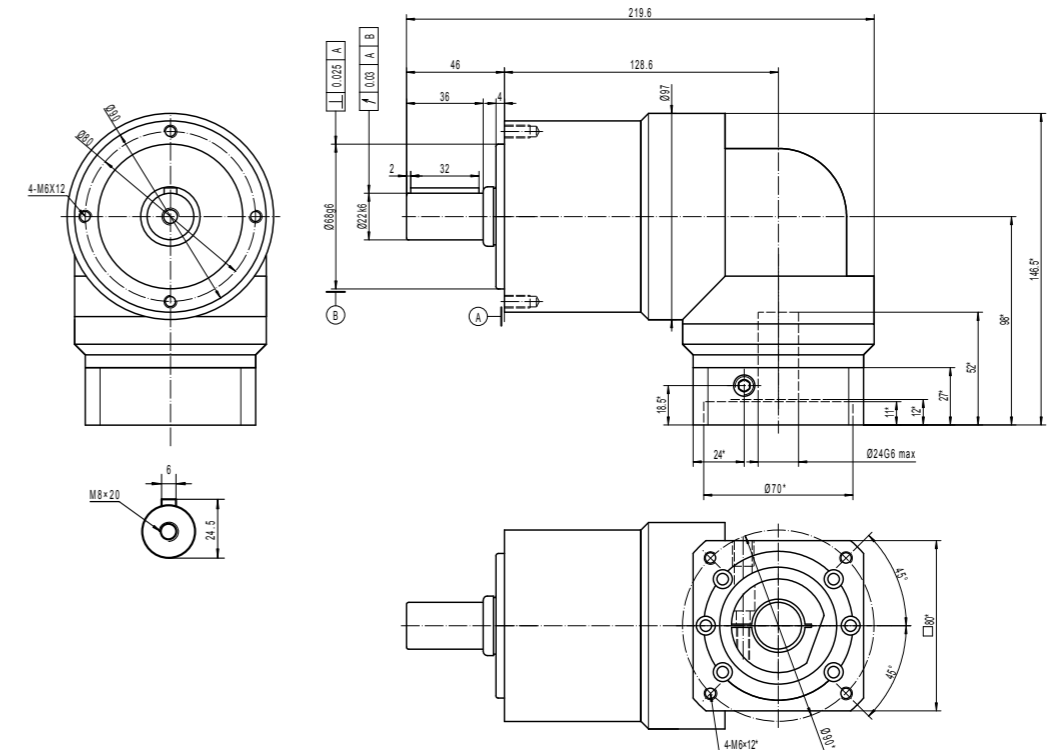


*VARIES WITH YOUR MOTOR DIMENSIONS

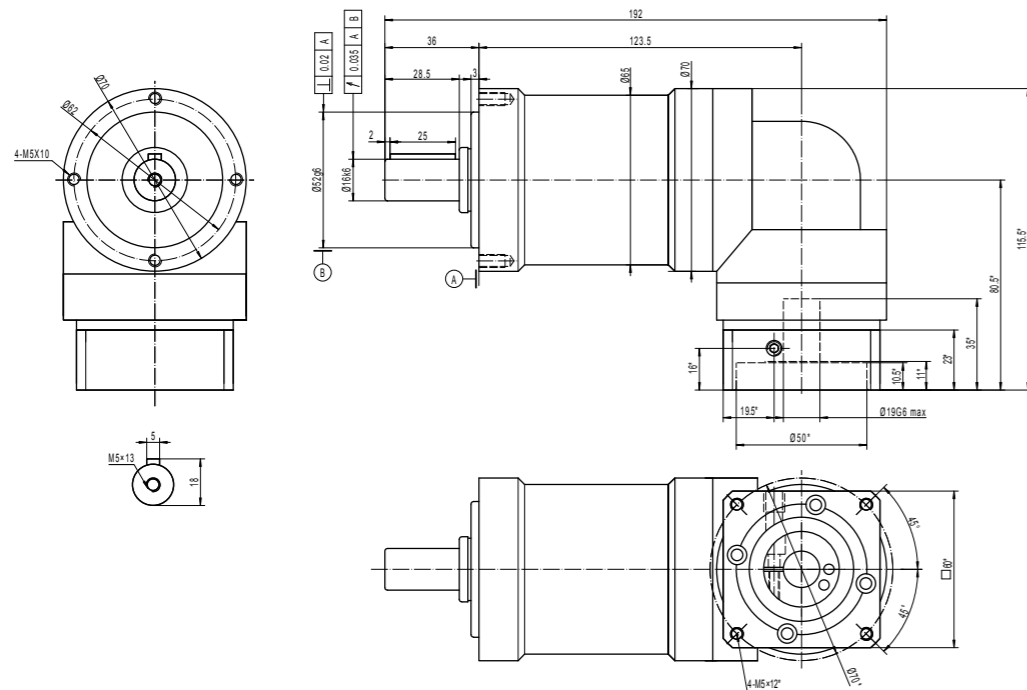
ACCESS-CI-RA-070- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



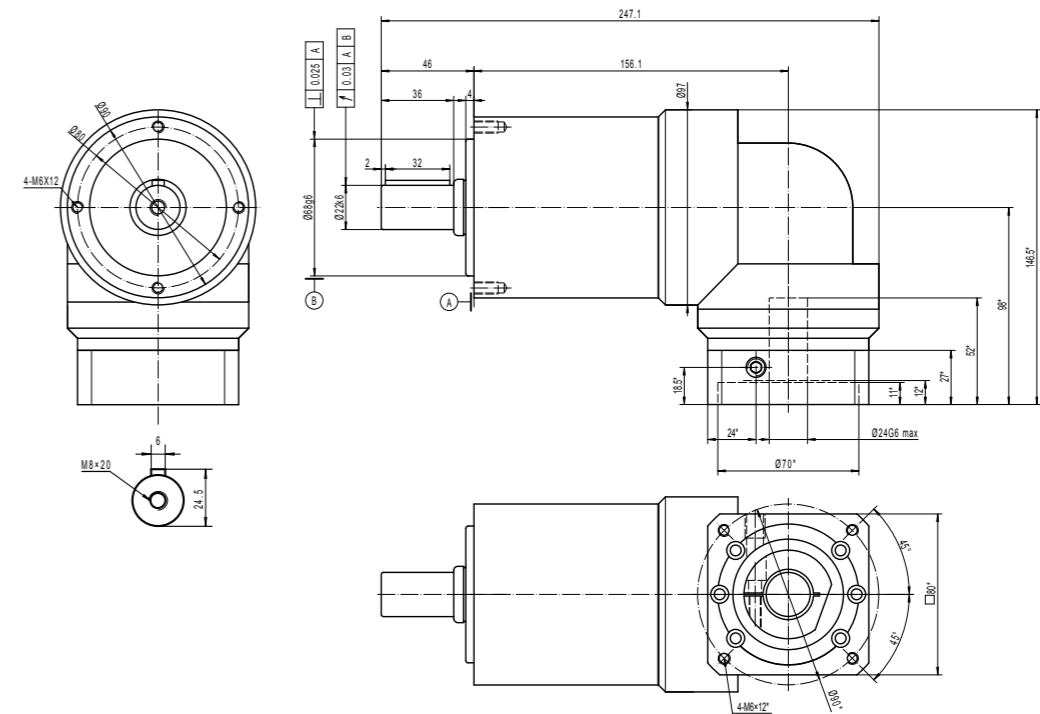
ACCESS-CI-RA-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



ACCESS-CI-RA-070- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



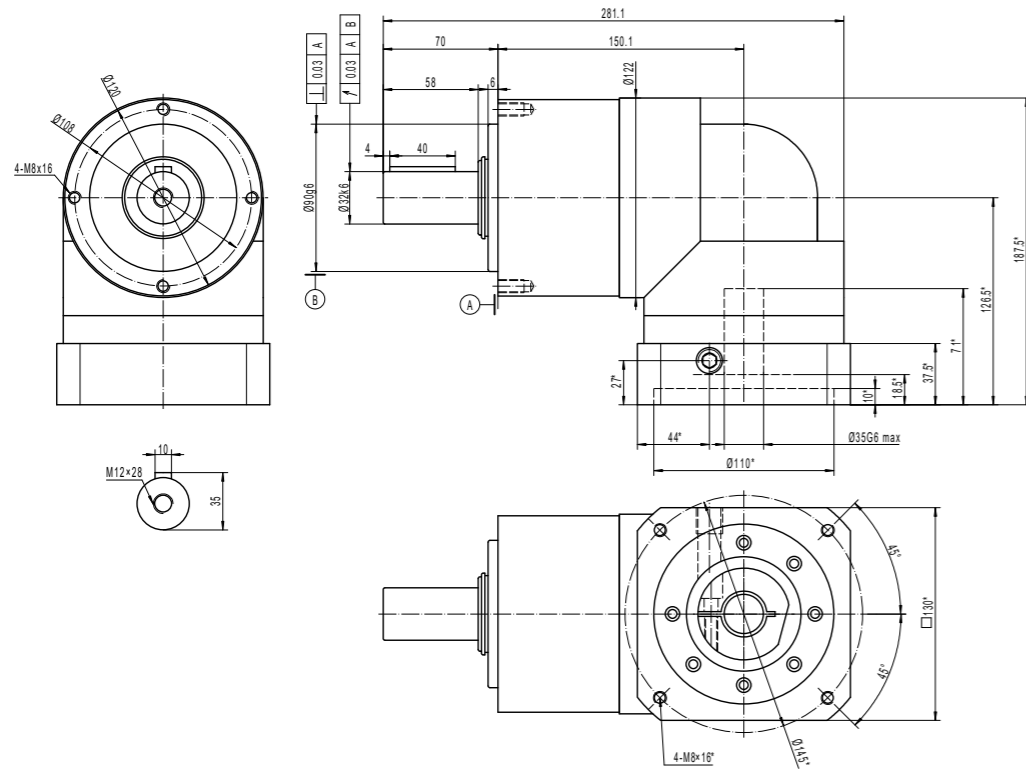
ACCESS-CI-RA-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



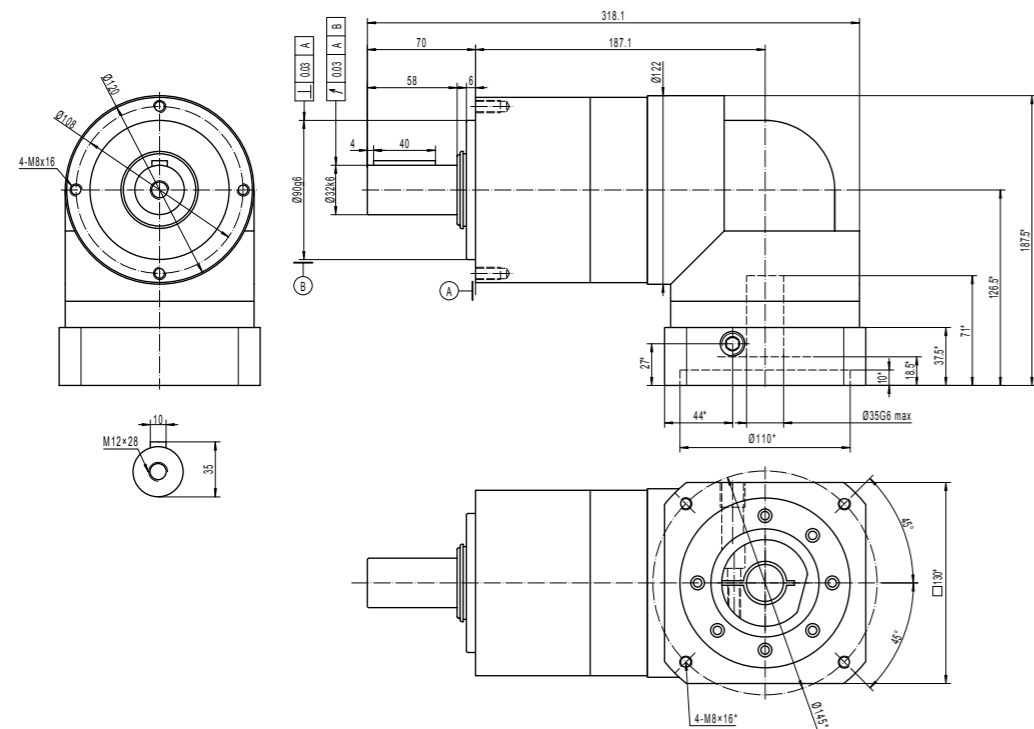
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-CI-RA-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



ACCESS-CI-RA-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



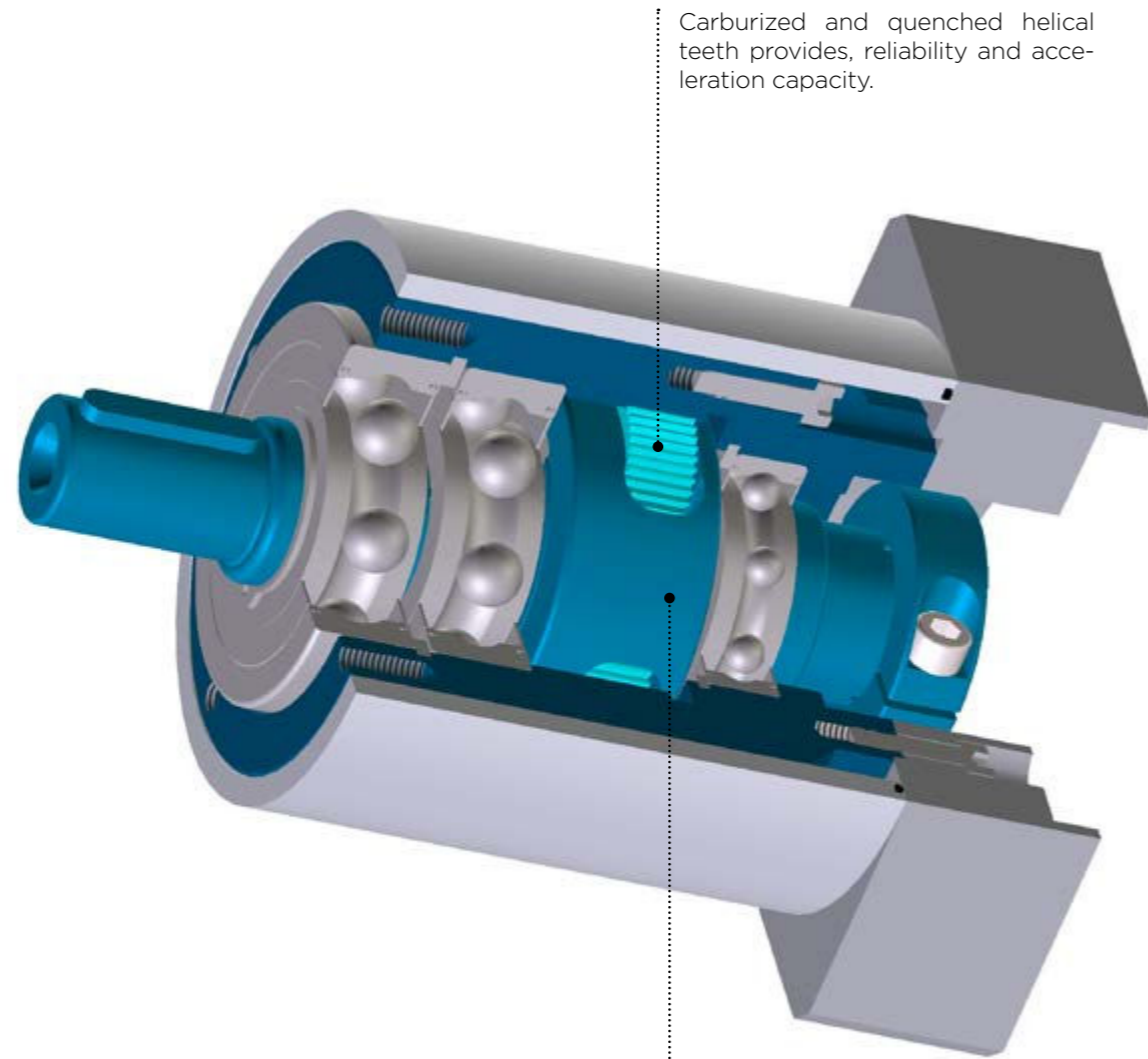
*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-FI-CI



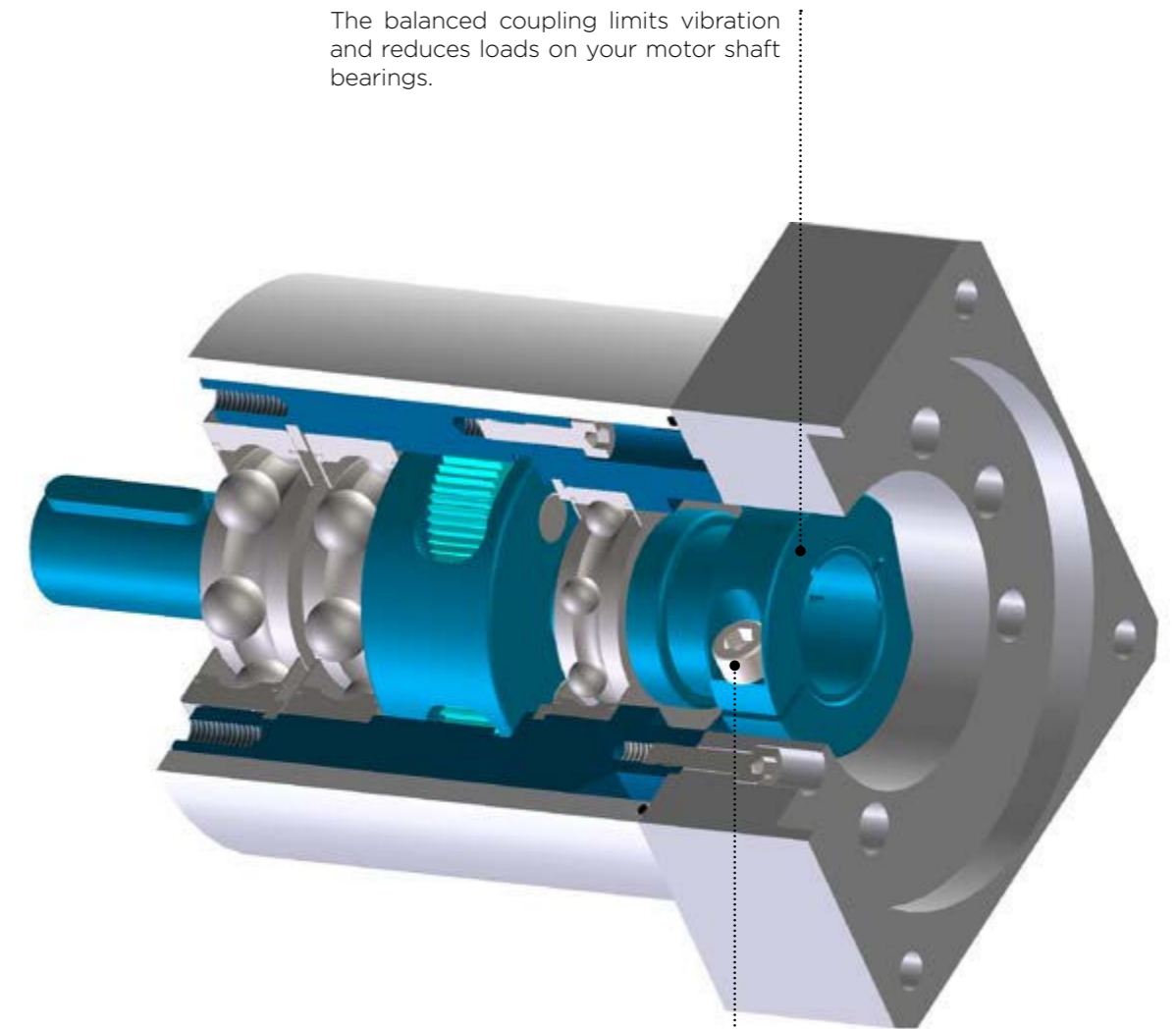
Acceleration capacity	+++
Fast reversals	+++
Radial load rating	+++
Axial load rating	+
Stiffness	+++
Precision	++
Economy	+++

ACCESS-FI-CI-ST_ Internal construction



Carburized and quenched helical teeth provides, reliability and acceleration capacity.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox. The caged planet carrier prevents the planets from tilting.



The balanced coupling limits vibration and reduces loads on your motor shaft bearings.

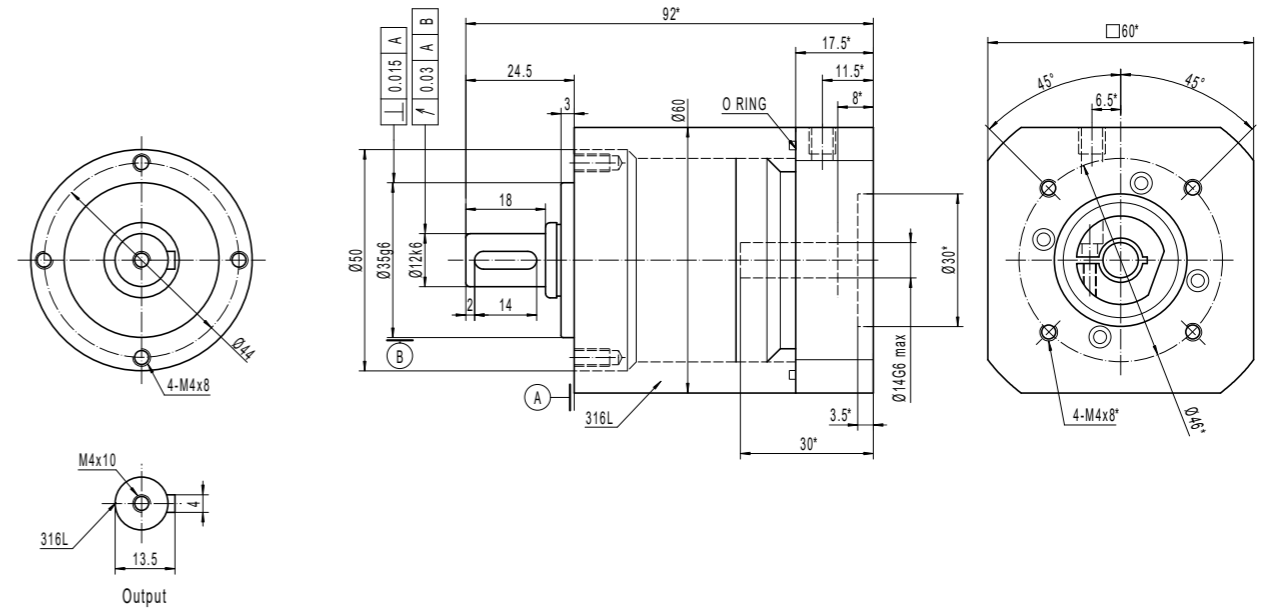
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	ACCESS-FI-CI-ST			
		050-P*	070-P*	090-P*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	-	29	54	170
	4	11	30	105	205
	5	9	24	81	160
	7	7	22	66	153
	10	5	15	45	102
	12	-	29	54	170
	15	-	29	54	170
	16	11	30	105	205
	20	11	30	105	205
	21	-	29	54	170
	25	9	24	81	160
	28	11	30	105	205
	30	-	29	54	170
	35	9	24	81	160
	40	11	30	105	205
	49	7	22	66	153
	50	9	24	81	160
70	7	22	66	153	
100	5	15	45	102	
Peak torque ² T _{max} (Nm)	3	-	57	107	338
	4	19	61	184	361
	5	14	47	130	300
	7	14	46	128	292
	10	13	43	116	260
	12	-	57	107	338
	15	-	57	107	338
	16	19	61	184	361
	20	19	61	184	361
	21	-	57	107	338
	25	14	47	130	300
	28	19	61	184	361
	30	-	57	107	338
	35	14	47	130	300
	40	19	61	184	361
	49	14	46	128	292
	50	14	47	130	300
70	14	46	128	292	
100	13	43	116	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}			
Max angular backlash (minutes)	1 stage	≤10	≤7	≤5	≤5
	2 stages	≤13	≤10	≤8	≤8
Nominal input speed (rpm) ⁴		4,000	3,700	3,500	2,700
Max input speed (rpm) ⁵		10,000	8,000	7,000	6,000
Max radial load (N) ⁶		800	1,700	2,800	5,000
Max axial load (N) ⁶		700	1,550	1,900	4,000
Efficiency (%) ⁷	1 stage	≥97			
	2 stages	≥94			
Torsional stiffness (Nm/min)		1,4	4,2	13	33
Life (h) ⁸		20,000			
Min / max ambient temperature ⁹		-30 / +45			
Max temperature of the body (°C)		90			
Protection class		IP 54			
Noise level (dB) ¹⁰		≤62	≤64	≤66	≤68
Lubrication		Lifetime lubrication (grease) food-grade lubrication optional			
Coating color		No coating (316L stainless steel)			
Input flange		Anodized aluminum			

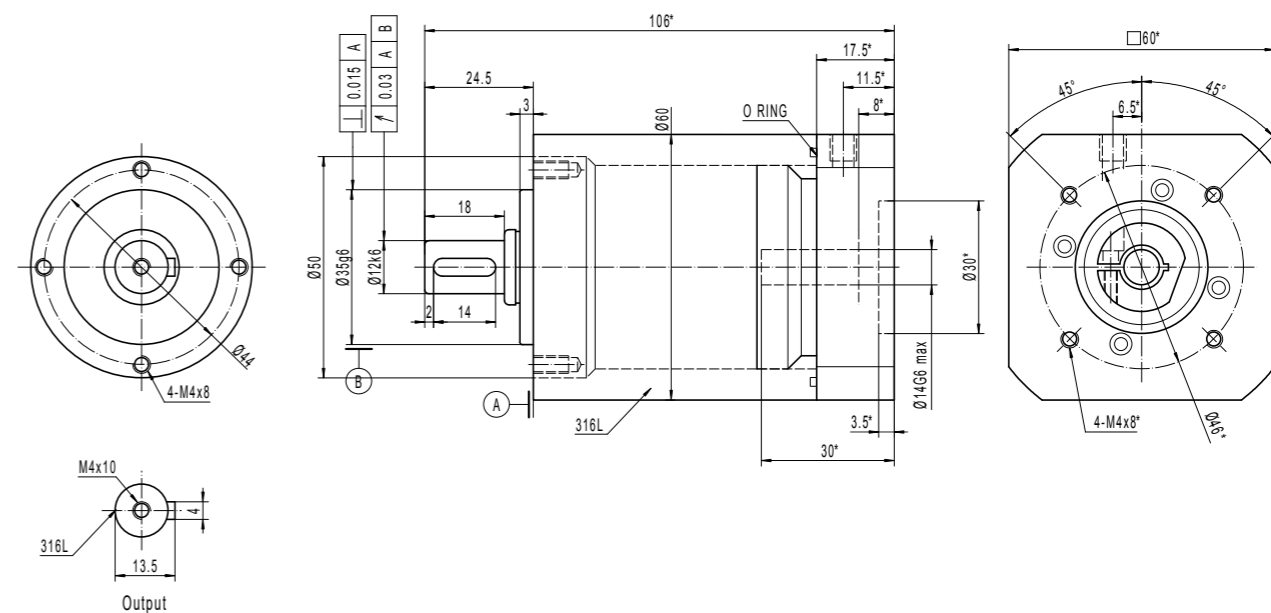
* 2 stages gearboxes are with a powerful input (P)

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied at the middle of the output shaft at 100 rpm.
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

ACCESS-FI-CI-ST-050- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

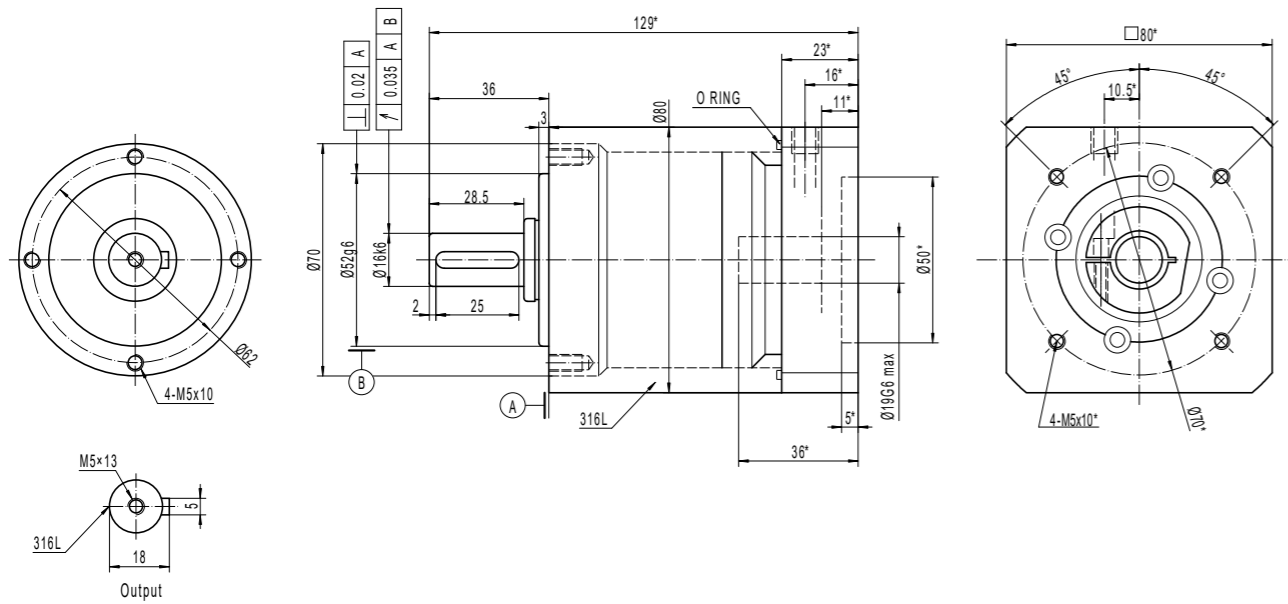


ACCESS-FI-CI-ST-050- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

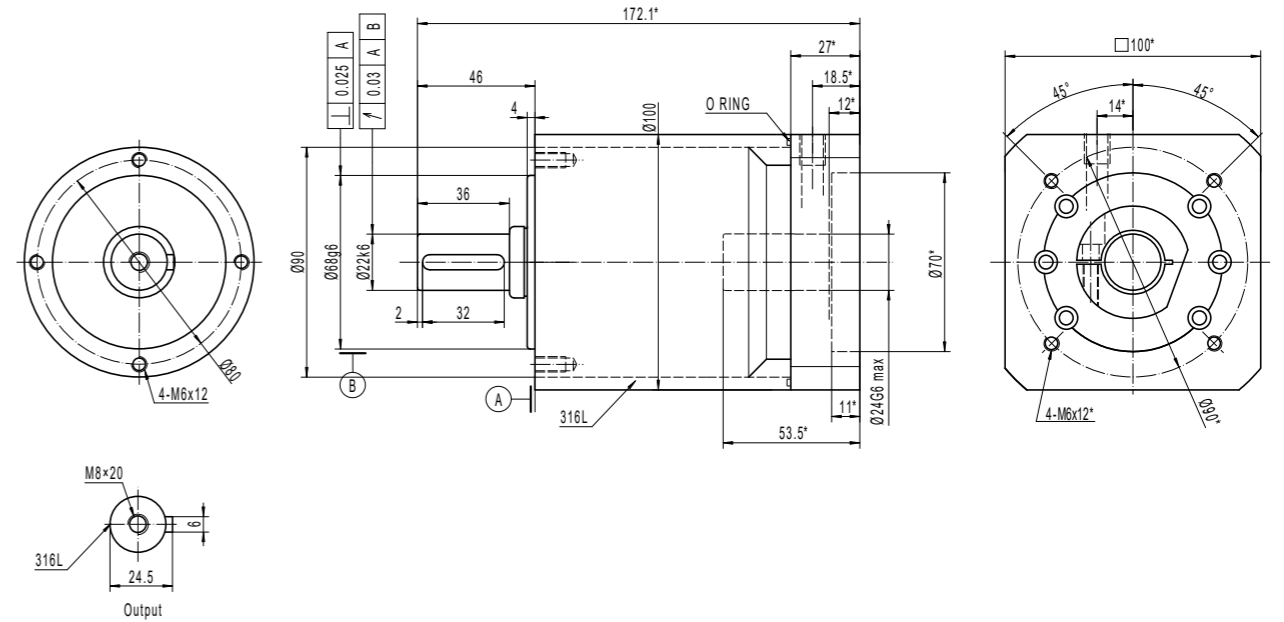


*VARIES WITH YOUR MOTOR DIMENSIONS

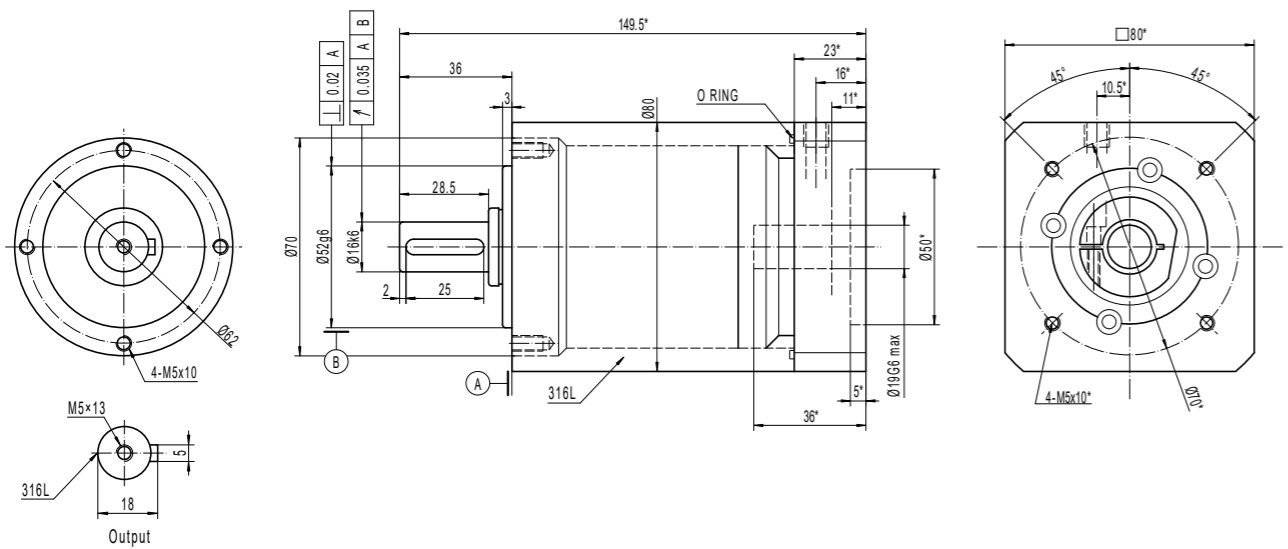
ACCESS-FI-CI-ST-070- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



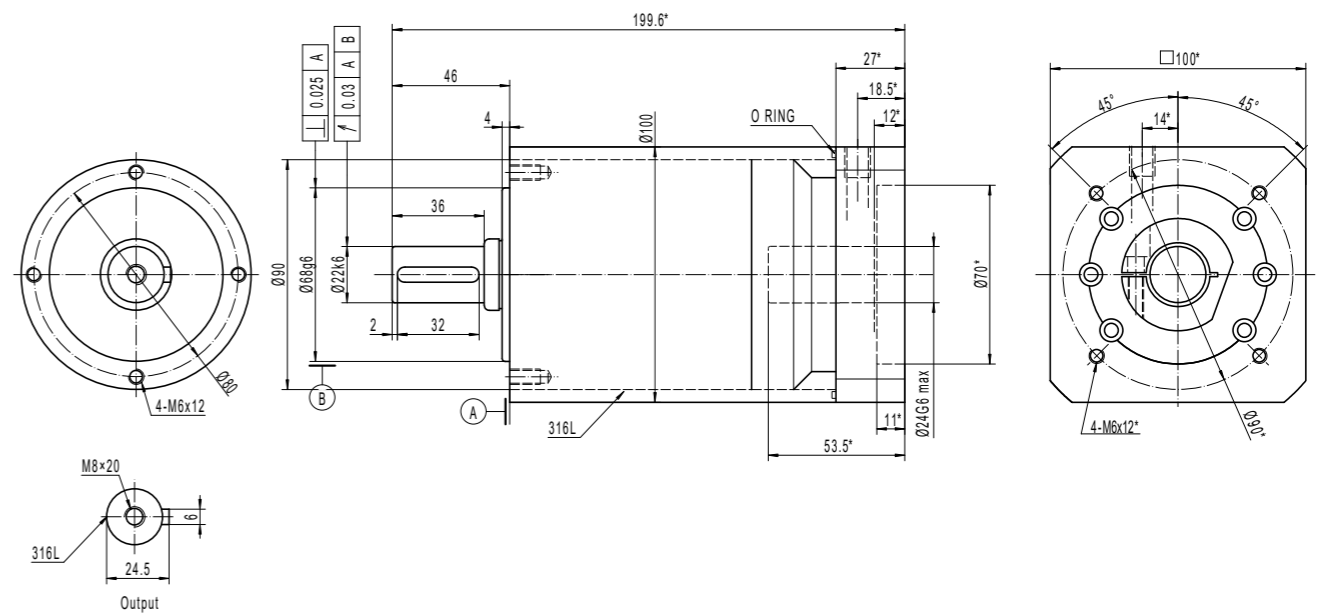
ACCESS-FI-CI-ST-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



ACCESS-FI-CI-ST-070- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



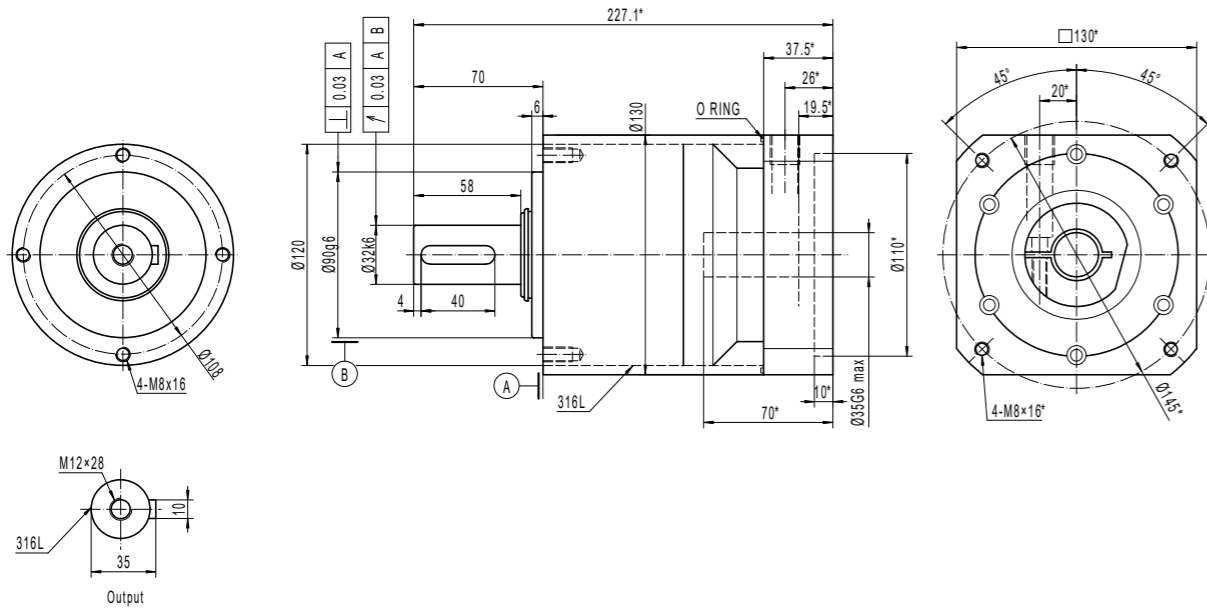
ACCESS-FI-CI-ST-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



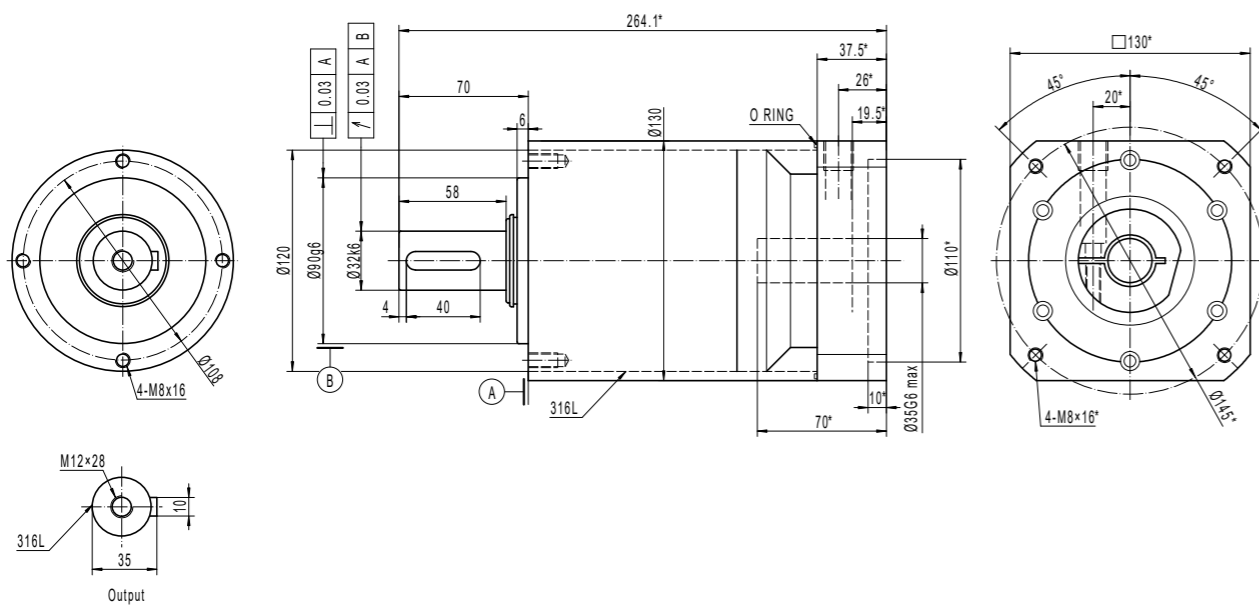
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-FI-CI-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



ACCESS-FI-CI-ST-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



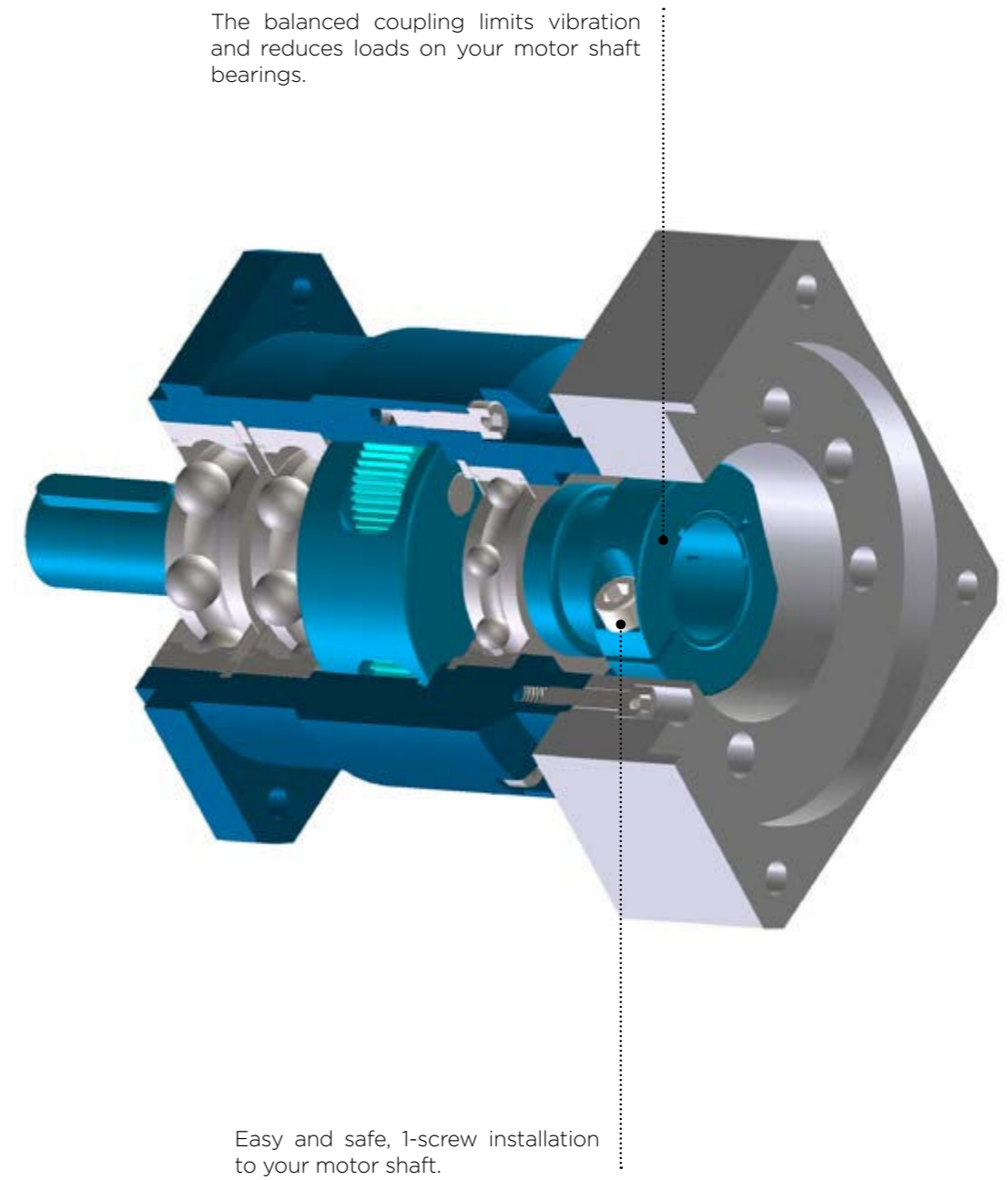
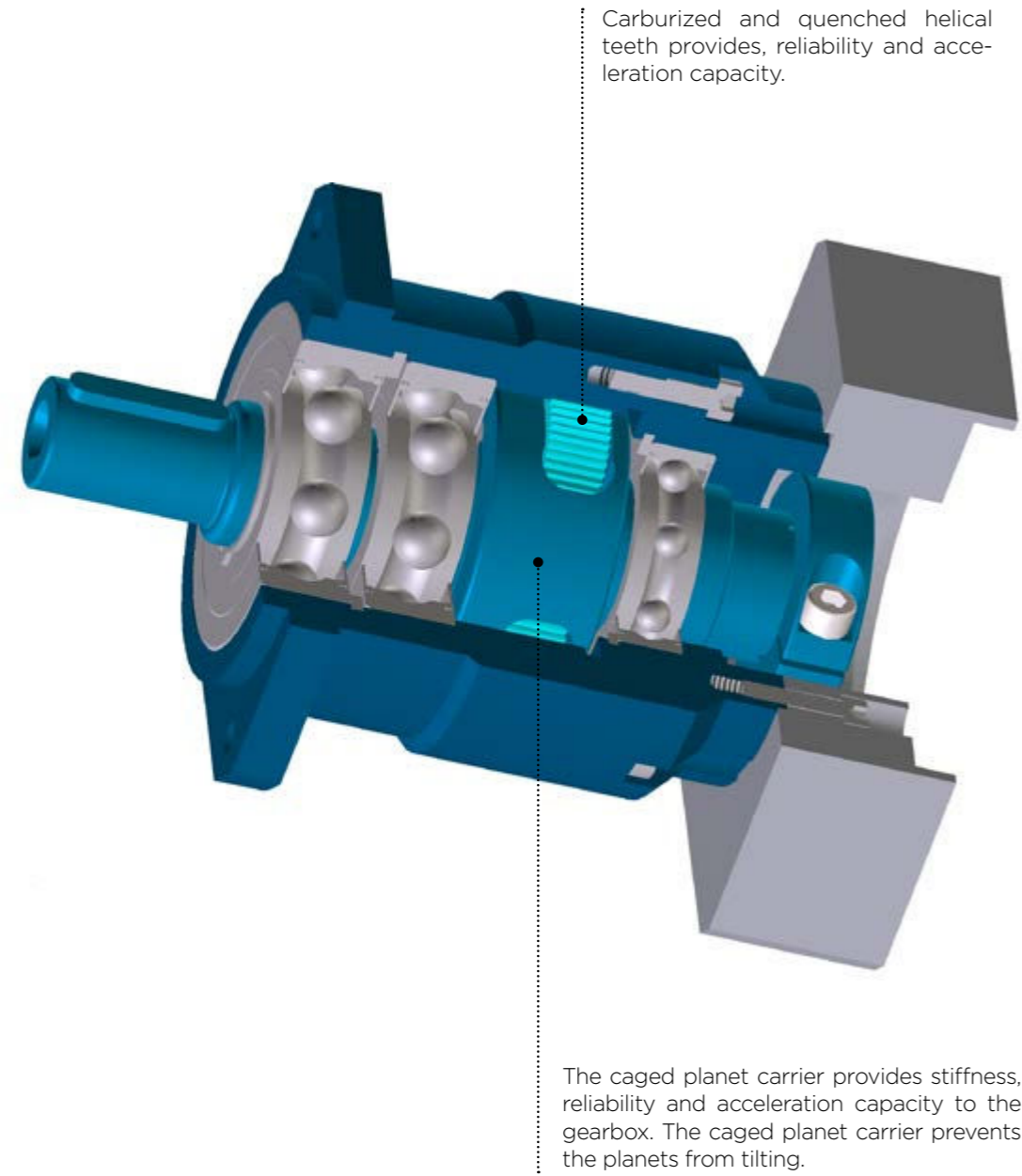
*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-SQ



Acceleration capacity	+++
Fast reversals	+++
Radial load rating	+++
Axial load rating	+
Stiffness	+++
Precision	++
Economy	+++++

ACCESS-SQ-ST_ Internal construction

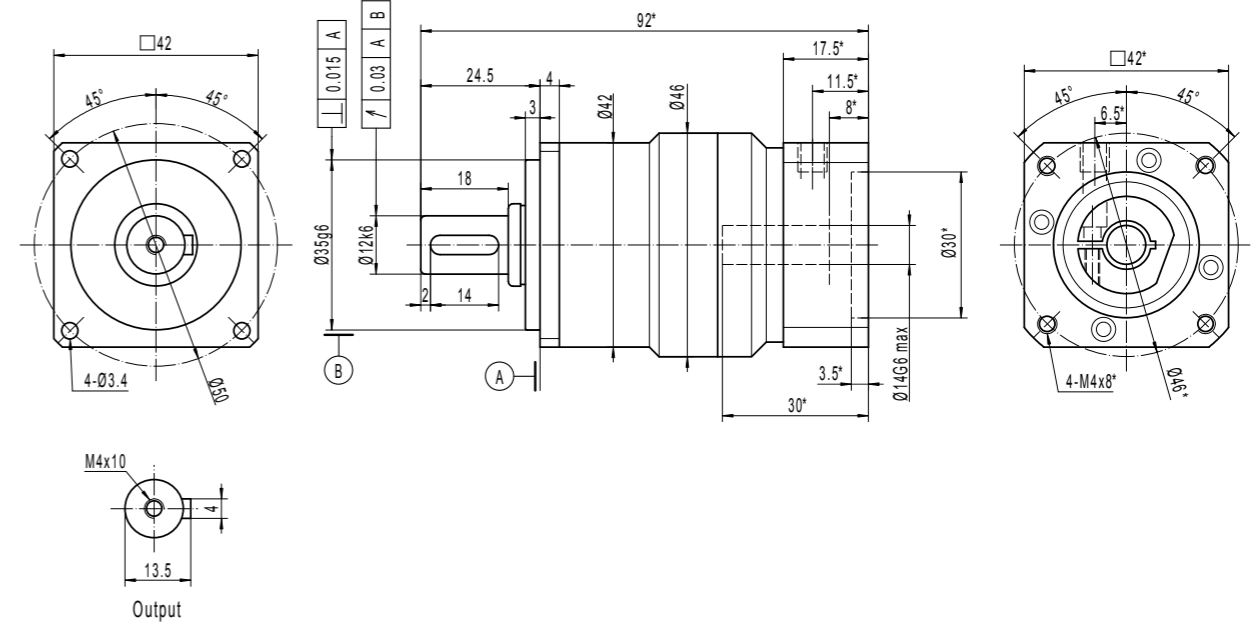


	Ratio**	ACCESS-SQ-ST			
		040-P*	060-P*	090-P*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	-	29	54	170
	4	11	30	105	205
	5	9	24	81	160
	7	7	22	66	153
	10	5	15	45	102
	12	-	29	54	170
	15	-	29	54	170
	16	11	30	105	205
	20	11	30	105	205
	21	-	29	54	170
	25	9	24	81	160
	28	11	30	105	205
	30	-	29	54	170
	35	9	24	81	160
	40	11	30	105	205
	49	7	22	66	153
	50	9	24	81	160
70	7	22	66	153	
100	5	15	45	102	
Peak torque ² T _{max} (Nm)	3	-	57	107	338
	4	19	61	184	361
	5	14	47	130	300
	7	14	46	128	292
	10	13	43	116	260
	12	-	57	107	338
	15	-	57	107	338
	16	19	61	184	361
	20	19	61	184	361
	21	-	57	107	338
	25	14	47	130	300
	28	19	61	184	361
	30	-	57	107	338
	35	14	47	130	300
	40	19	61	184	361
	49	14	46	128	292
	50	14	47	130	300
70	14	46	128	292	
100	13	43	116	260	
Emergency stop torque (Nm) ³	1,5 x T _{max}				
Max angular backlash (minutes)	1 stage	≤10	≤7	≤5	≤5
	2 stages	≤13	≤10	≤8	≤8
Nominal input speed (rpm) ⁴		4,000	3,700	3,500	2,700
Max input speed (rpm) ⁵		10,000	8,000	7,000	6,000
Max radial load (N) ⁶		800	1,700	2,800	5,000
Max axial load (N) ⁶		700	1,550	1,900	4,000
Efficiency (%) ⁷	1 stage	≥97			
	2 stages	≥94			
Torsional stiffness (Nm/min)		1,4	4,2	13	33
Life (h) ⁸		20,000			
Min / max ambient temperature ⁹		-15 / +45			
Max temperature of the body (°C)		90			
Protection class		IP 54			
Noise level (dB) ¹⁰		≤62	≤64	≤66	≤68
Lubrication		Lifetime lubrication (grease)			
Coating color		Capri blue (RAL 5019)			
Input flange		Anodized aluminum			

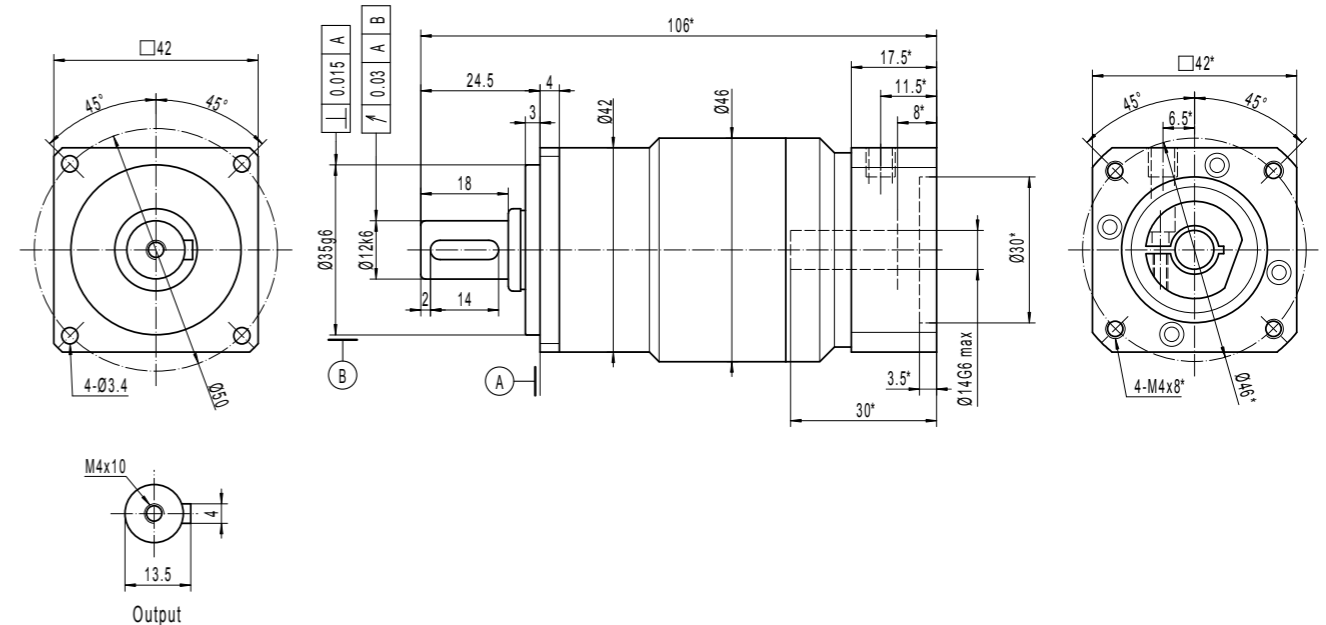
* Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied at the middle of the output shaft at 100 rpm.
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

ACCESS-SQ-ST-040- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

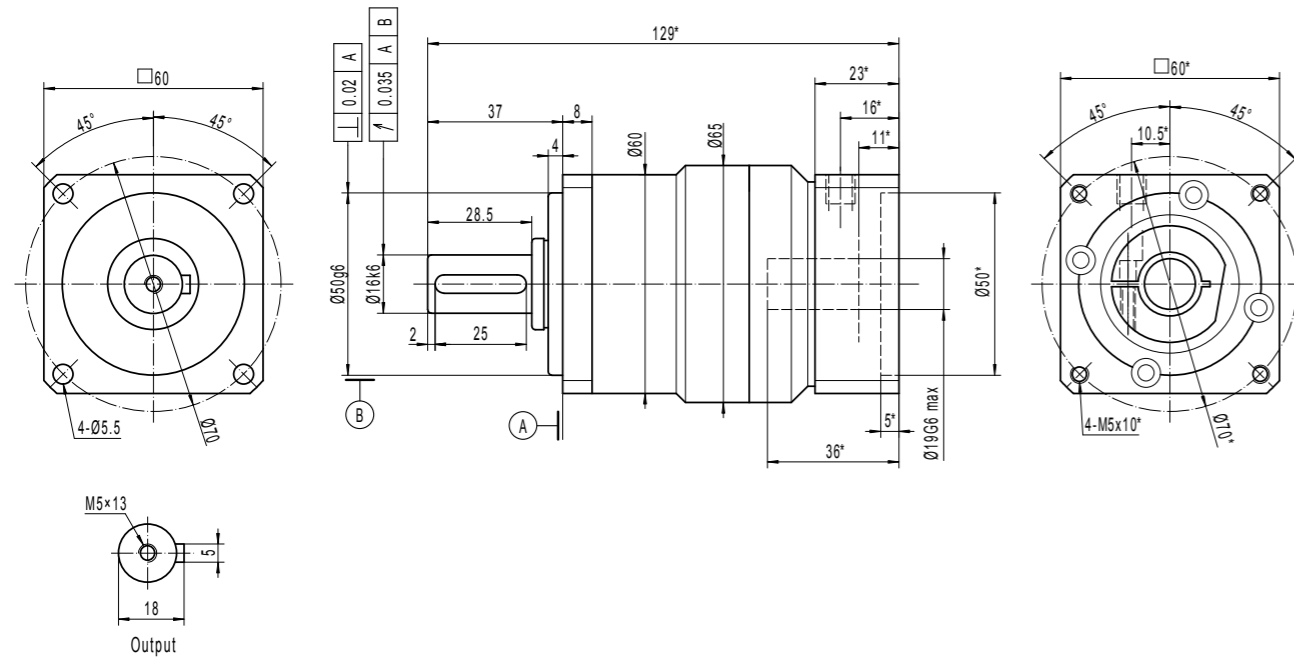


ACCESS-SQ-ST-040- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

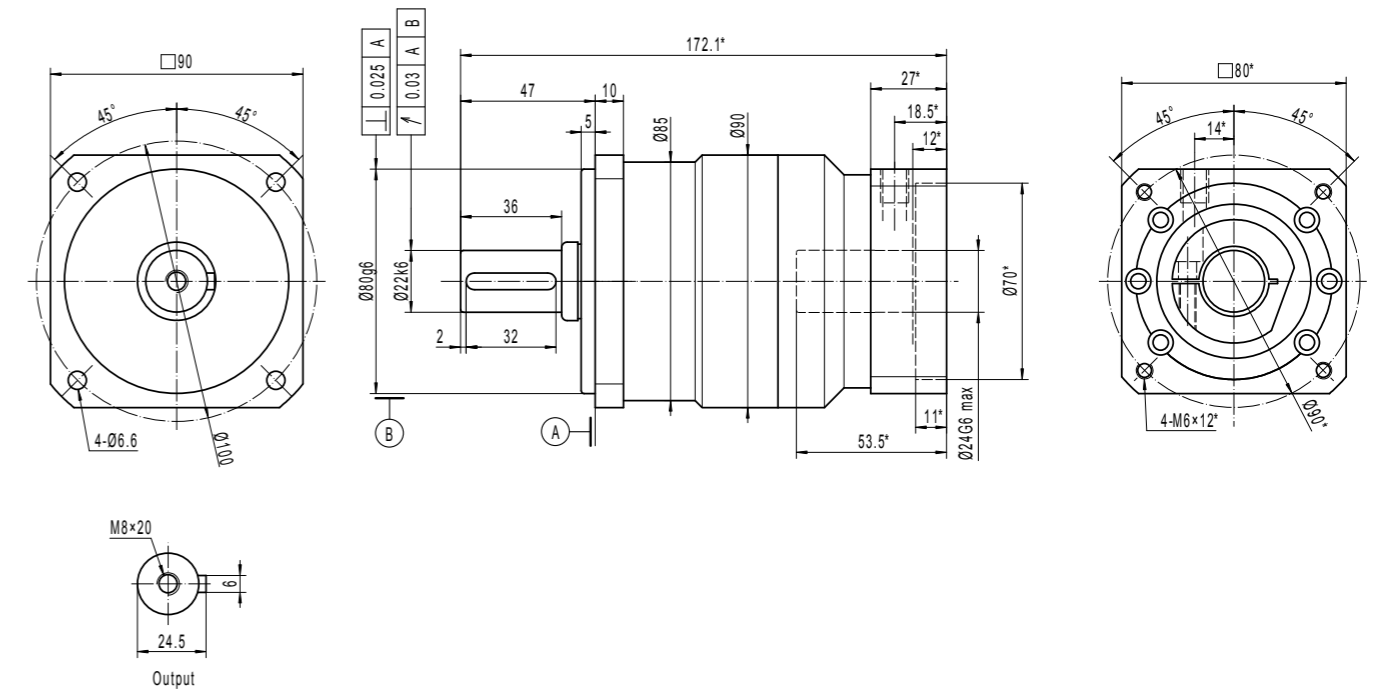


*VARIES WITH YOUR MOTOR DIMENSIONS

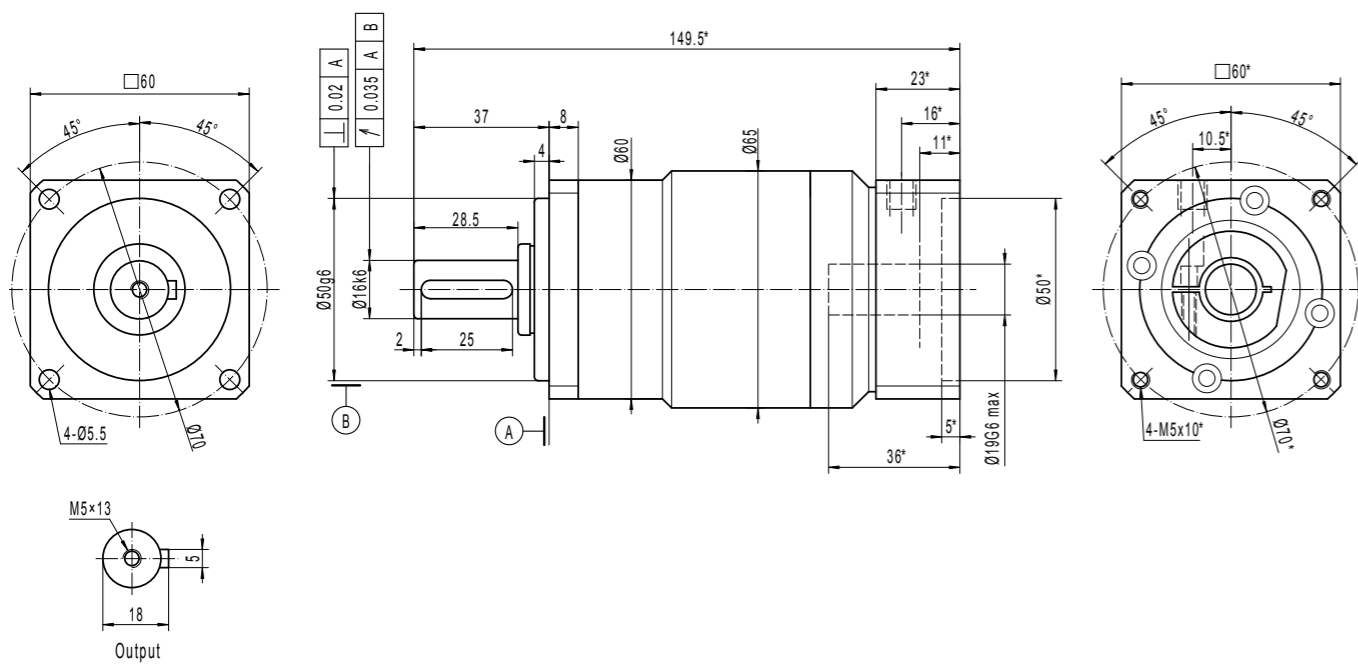
ACCESS-SQ-ST-060-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



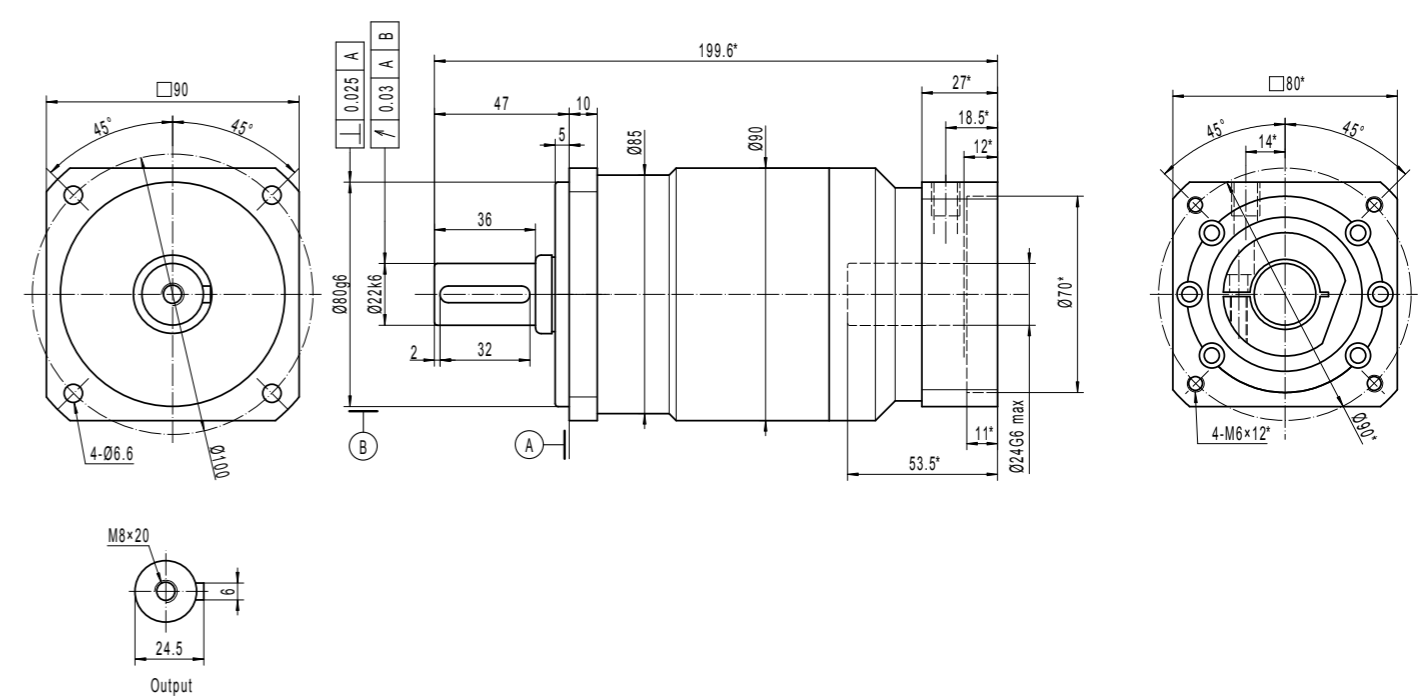
ACCESS-SQ-ST-090-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



ACCESS-SQ-ST-060-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



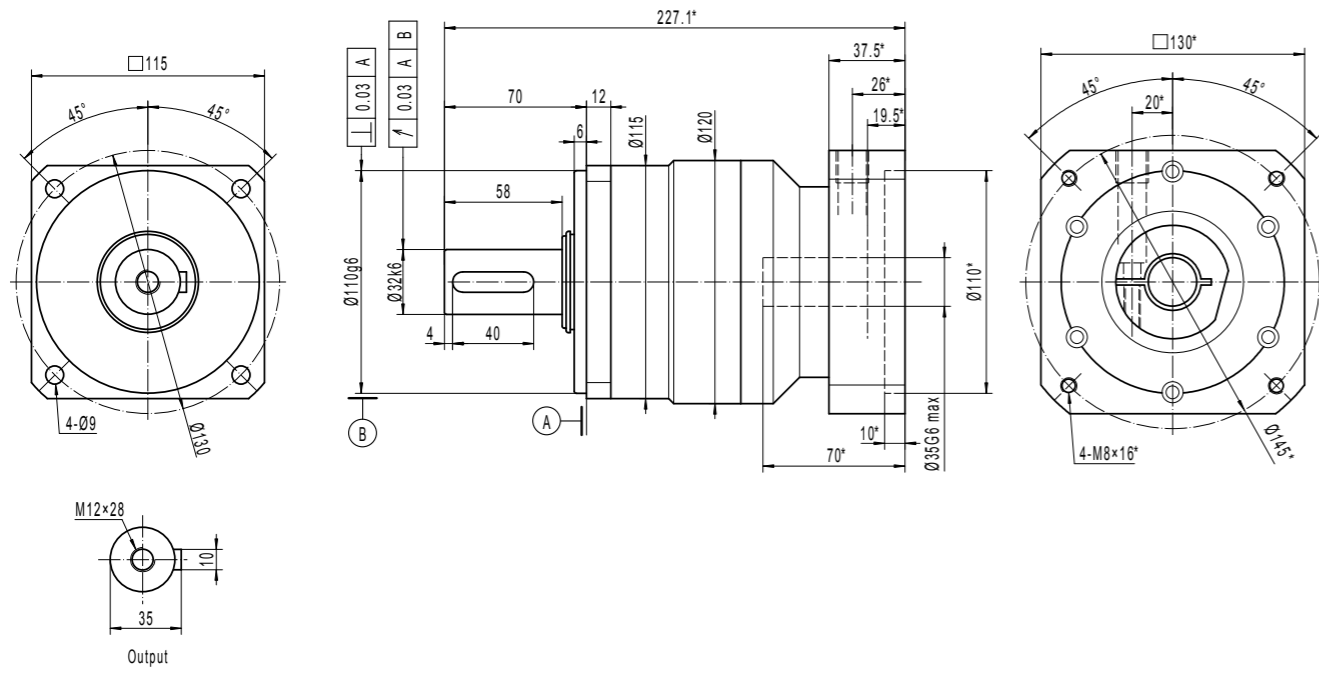
ACCESS-SQ-ST-090-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



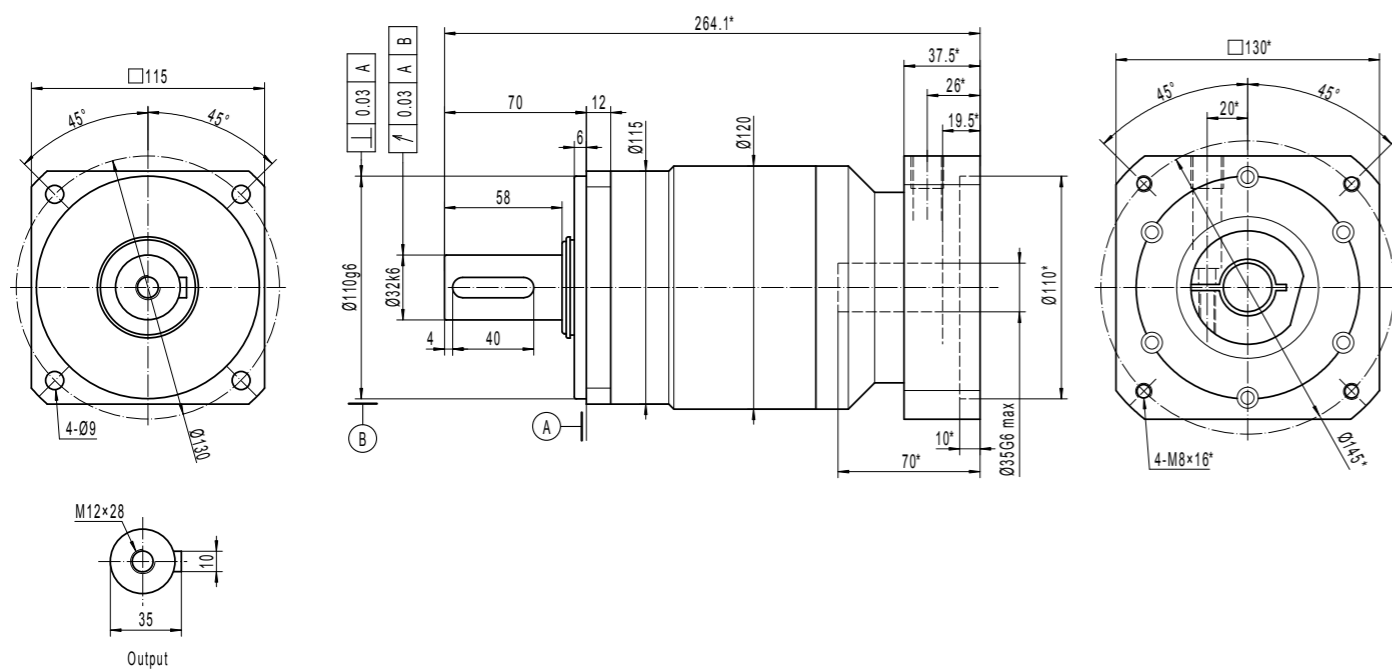
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-SQ-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$

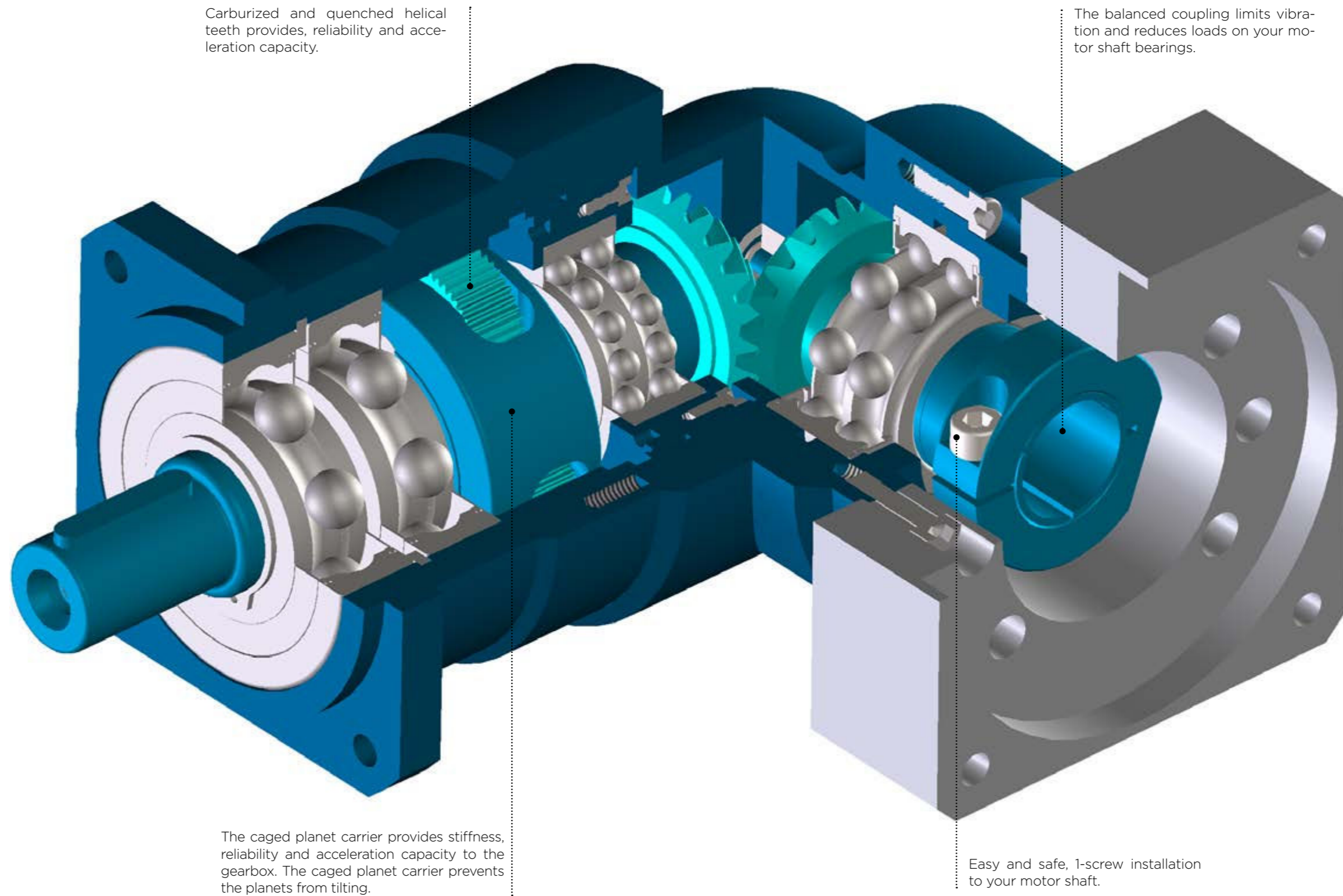


ACCESS-SQ-ST-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-SQ-RA_ Internal construction

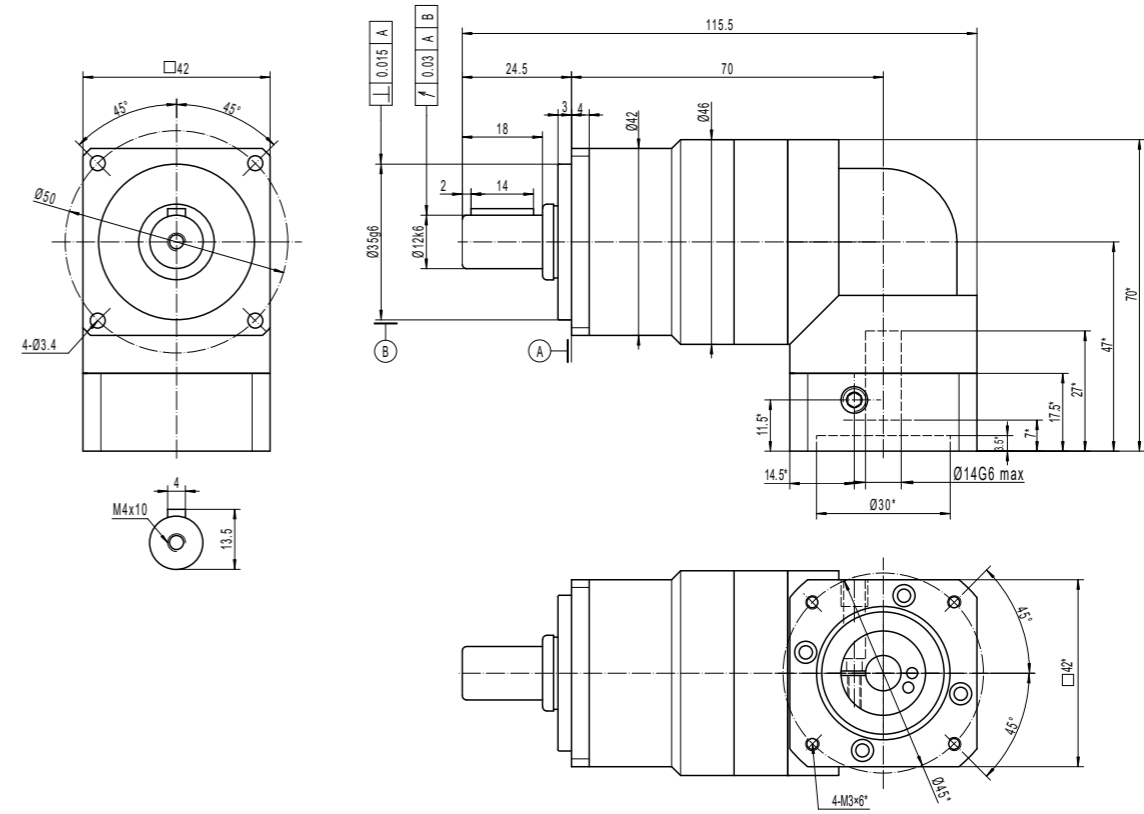


	Ratio**	ACCESS-SQ-RA			
		040-P*	060-P*	090-P*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	-	29	54	170
	4	11	30	105	205
	5	9	24	81	160
	7	7	22	66	153
	10	5	15	45	102
	12	-	29	54	170
	15	-	29	54	170
	16	11	30	105	205
	20	11	30	105	205
	21	-	29	54	170
	25	9	24	81	160
	28	11	30	105	205
	30	-	29	54	170
	35	9	24	81	160
	40	11	30	105	205
	49	7	22	66	153
	50	9	24	81	160
70	7	22	66	153	
100	5	15	45	102	
Peak torque ² T _{max} (Nm)	3	-	57	107	338
	4	19	61	184	361
	5	14	47	130	300
	7	14	46	128	292
	10	13	43	116	260
	12	-	57	107	338
	15	-	57	107	338
	16	19	61	184	361
	20	19	61	184	361
	21	-	57	107	338
	25	14	47	130	300
	28	19	61	184	361
	30	-	57	107	338
	35	14	47	130	300
	40	19	61	184	361
	49	14	46	128	292
	50	14	47	130	300
70	14	46	128	292	
100	13	43	116	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}			
Max angular backlash (minutes)	1 stage	≤15	≤13	≤13	≤13
	2 stages	≤15	≤15	≤15	≤13
Nominal input speed (rpm) ⁴		4,000	3,700	3,500	2,700
Max input speed (rpm) ⁵		10,000	8,000	7,000	6,000
Max radial load (N) ⁶		800	1,700	2,800	5,000
Max axial load (N) ⁶		700	1,550	1,900	4,000
Efficiency (%) ⁷	1 stage	≥94			
	2 stages	≥92			
Torsional stiffness (Nm/min)		1,4	4,2	13	33
Life (h) ⁸		20,000			
Min / max ambient temperature ⁹		-15 / +45			
Max temperature of the body (°C)		90			
Protection class		IP 54			
Noise level (dB) ¹⁰		≤71	≤73	≤73	≤77
Lubrication		Lifetime lubrication (grease)			
Coating color		Capri blue (RAL 5019)			
Input flange		Anodized aluminum			

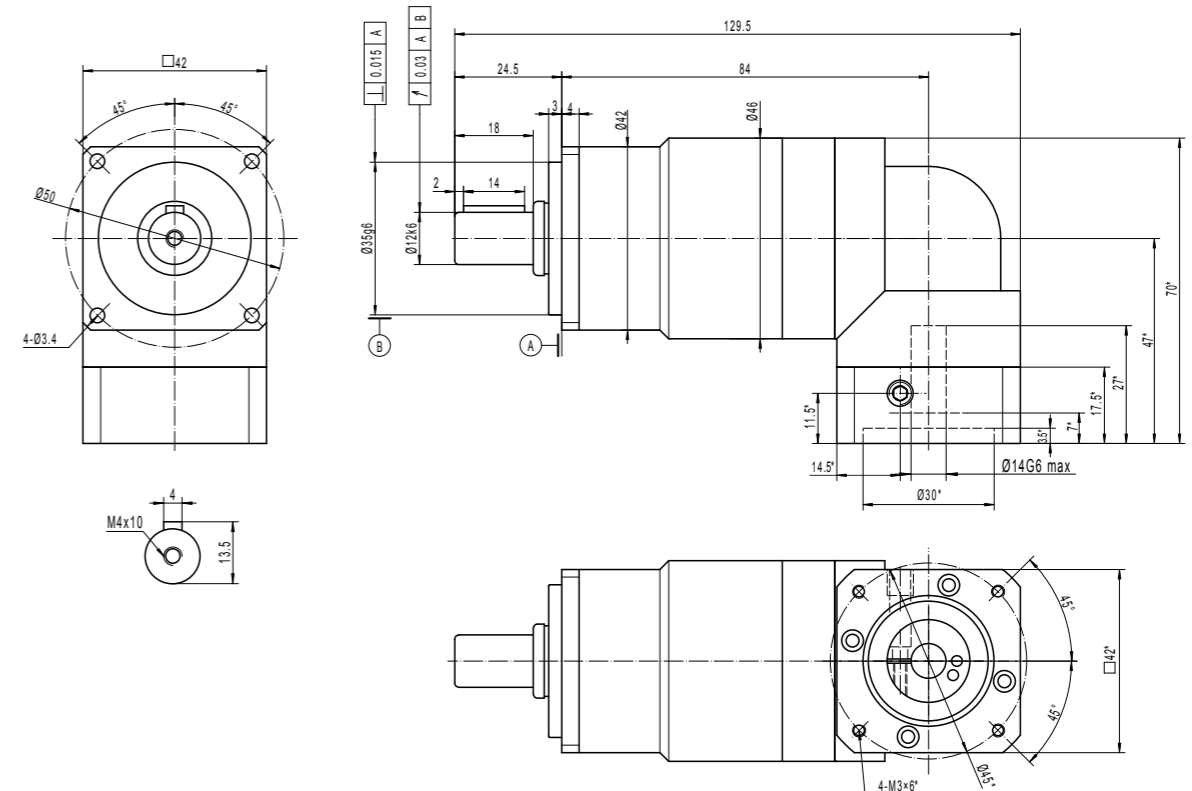
* Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied at the middle of the output shaft at 100 rpm.
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

ACCESS-SQ-RA-040- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

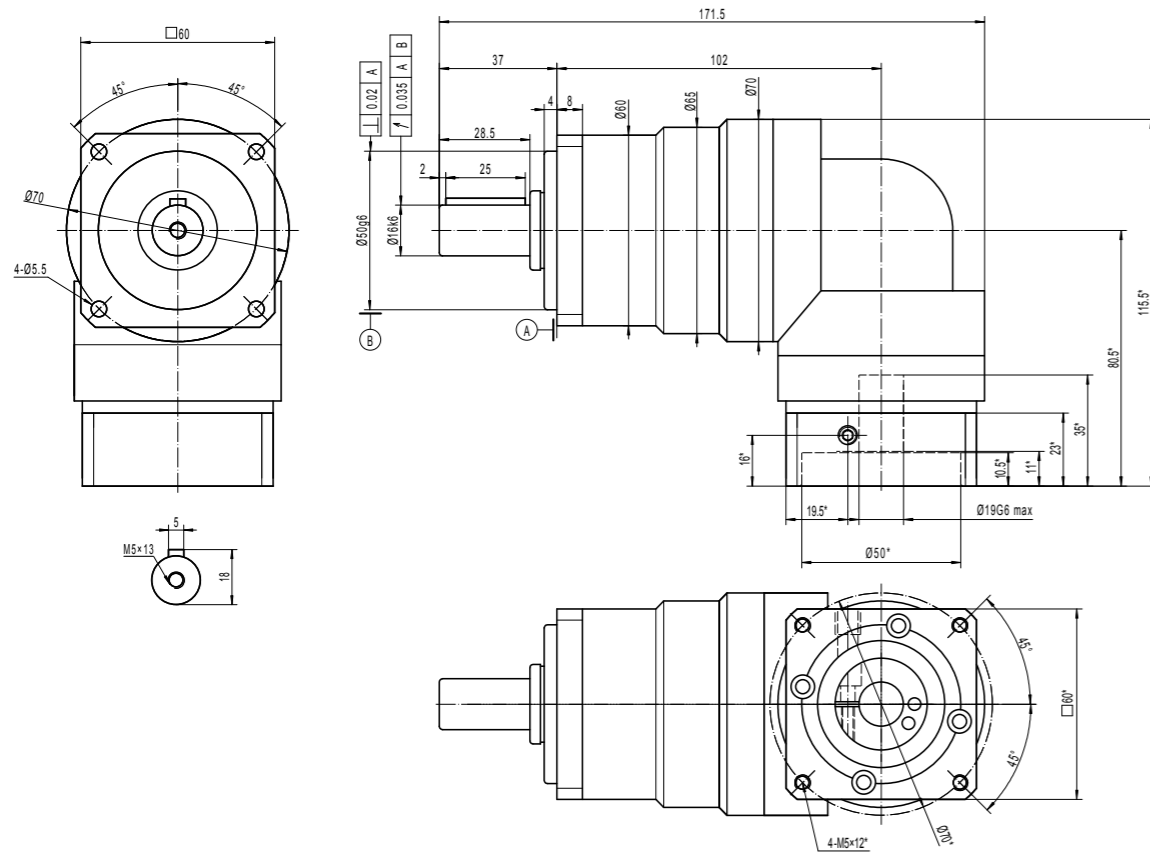


ACCESS-SQ-RA-040- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

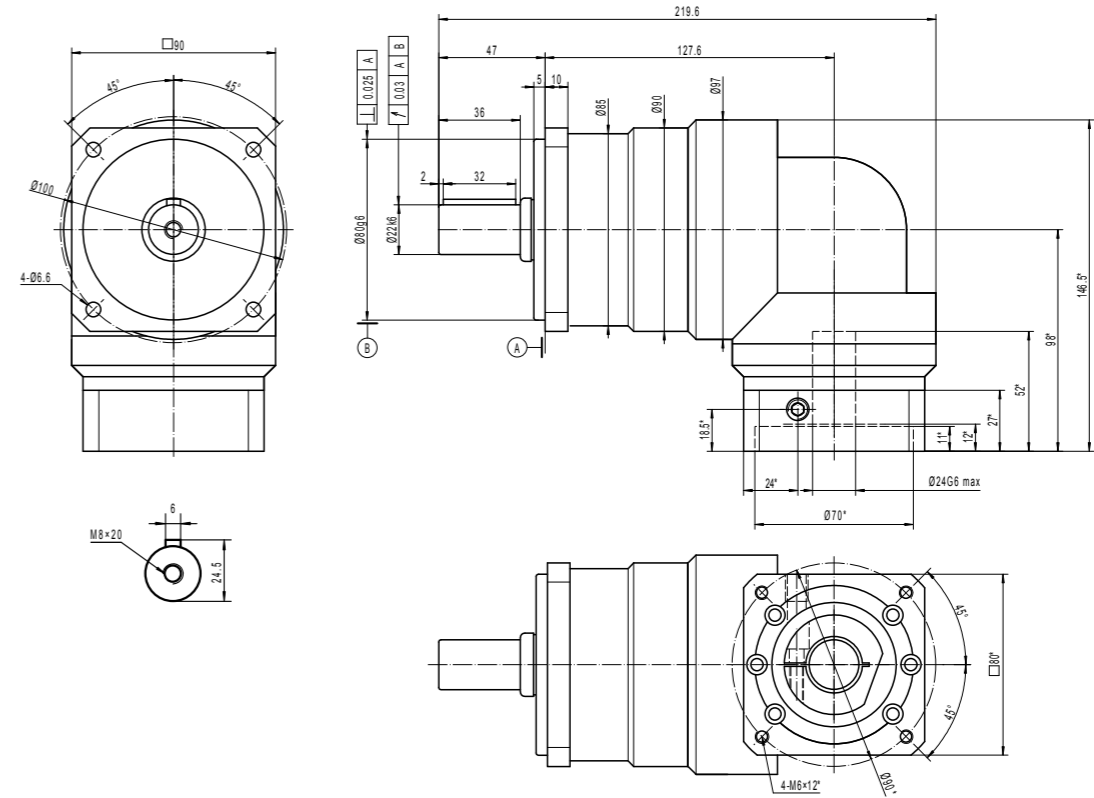


*VARIES WITH YOUR MOTOR DIMENSIONS

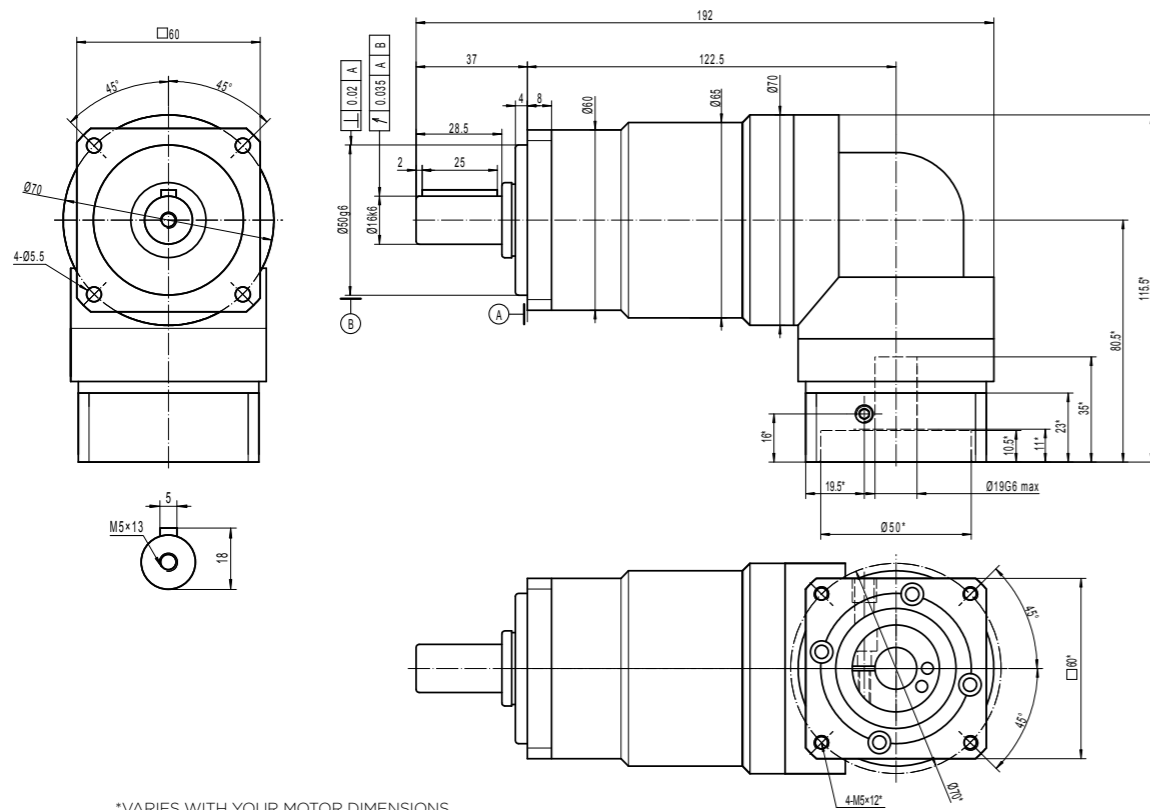
ACCESS-SQ-RA-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



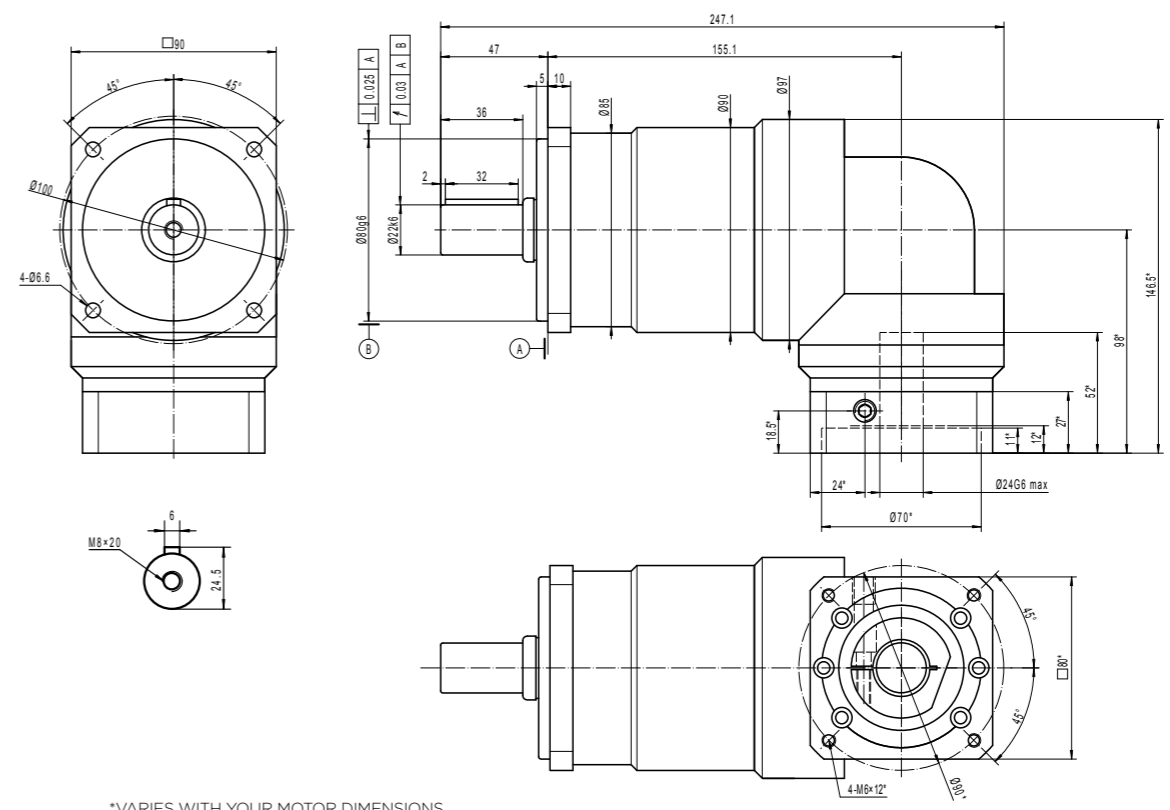
ACCESS-SQ-RA-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



ACCESS-SQ-RA-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



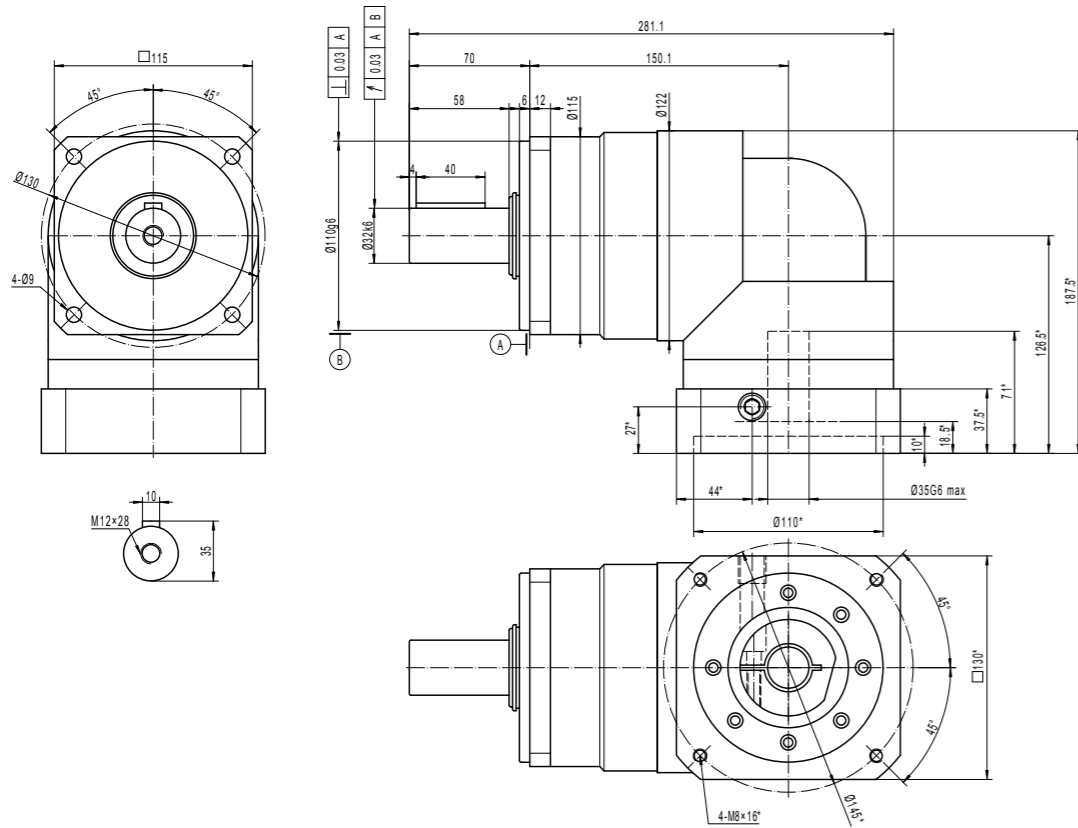
ACCESS-SQ-RA-090- 2 STAGES - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



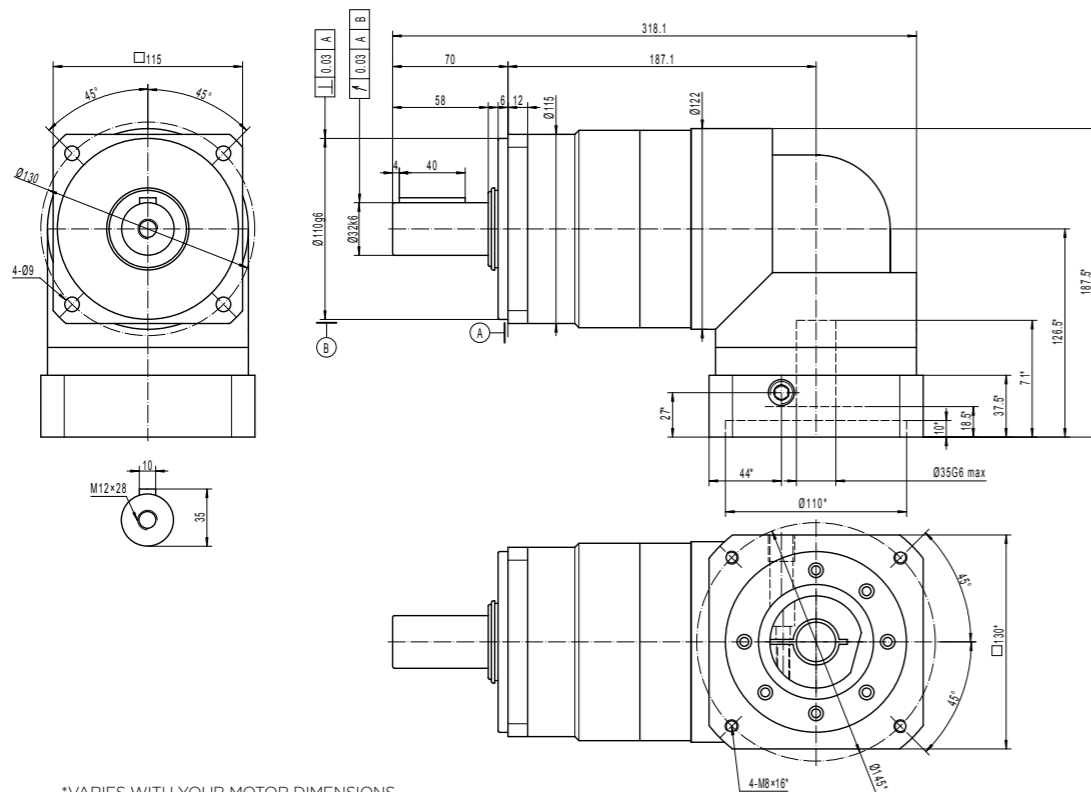
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ACCESS-SQ-RA-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



ACCESS-SQ-RA-120- 2 STAGES - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



*VARIES WITH YOUR MOTOR DIMENSIONS

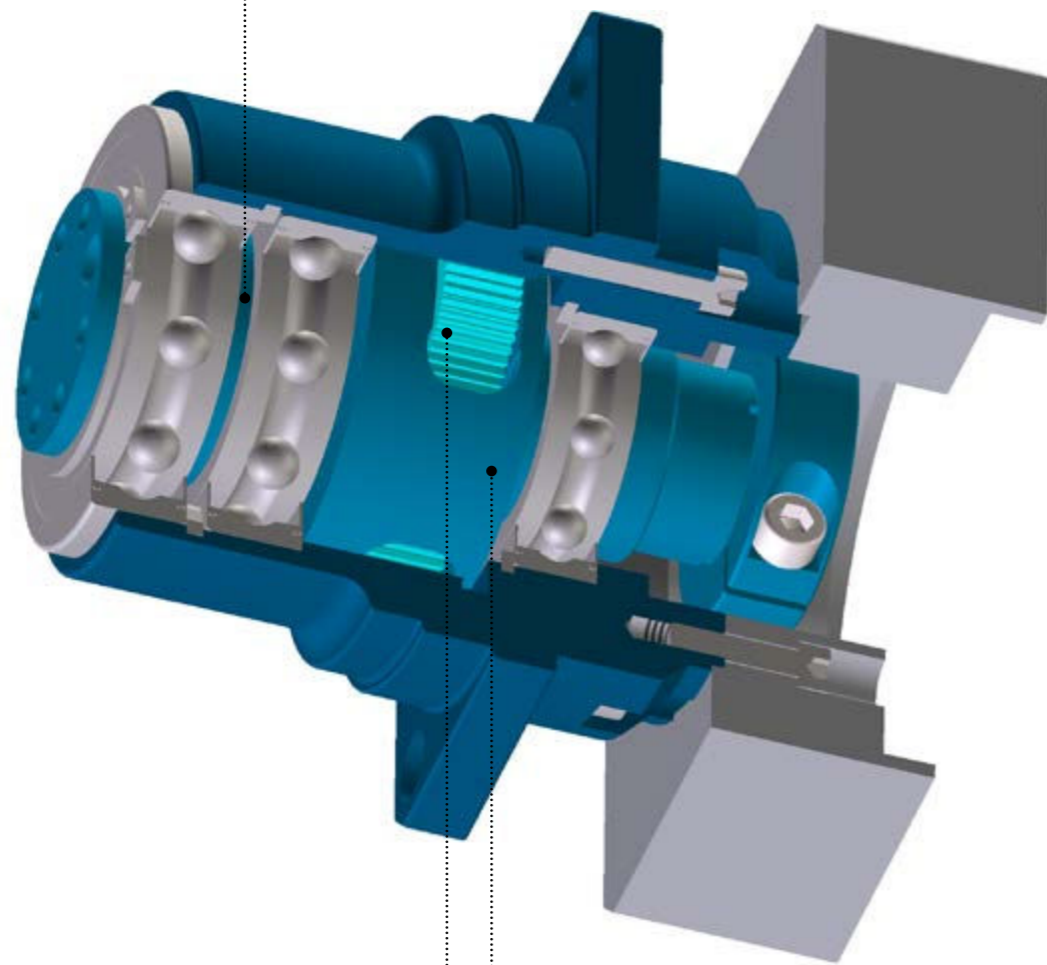
ACCESS-PU



Acceleration capacity	+++
Fast reversals	+++
Radial load rating	+++
Axial load rating	+
Stiffness	+++
Precision	++
Economy	+++

ACCESS-PU-ST_ Internal construction

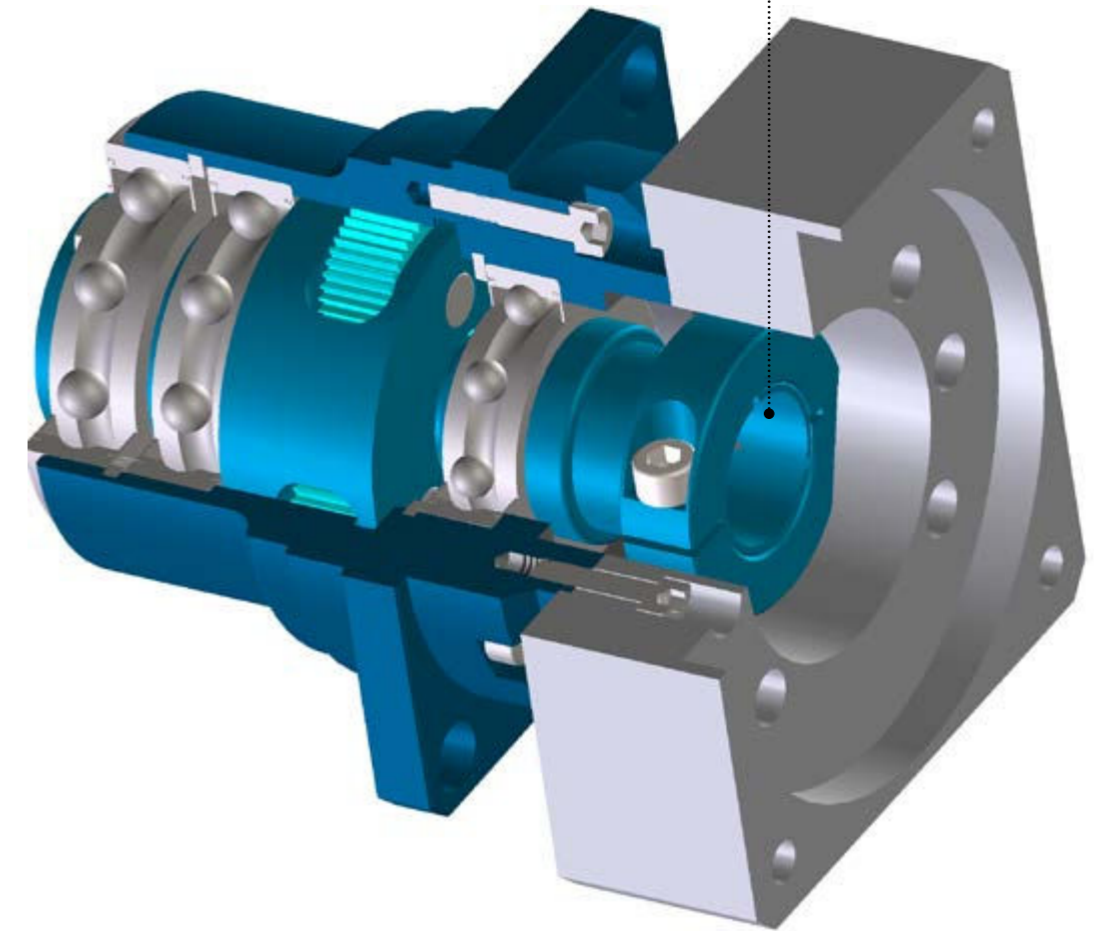
When using a belt and pulley system (or an AVG wheel), the localization of the of the 2 bearings allows converting the tilting moment into a radial load, which is distributed between the 2 bearings. Bearing life is longer in these conditions.



Carburized and quenched helical teeth provides, reliability and acceleration capacity.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox. The caged planet carrier prevents the planets from tilting.

The balanced coupling limits vibration and reduces loads on your motor shaft bearings.

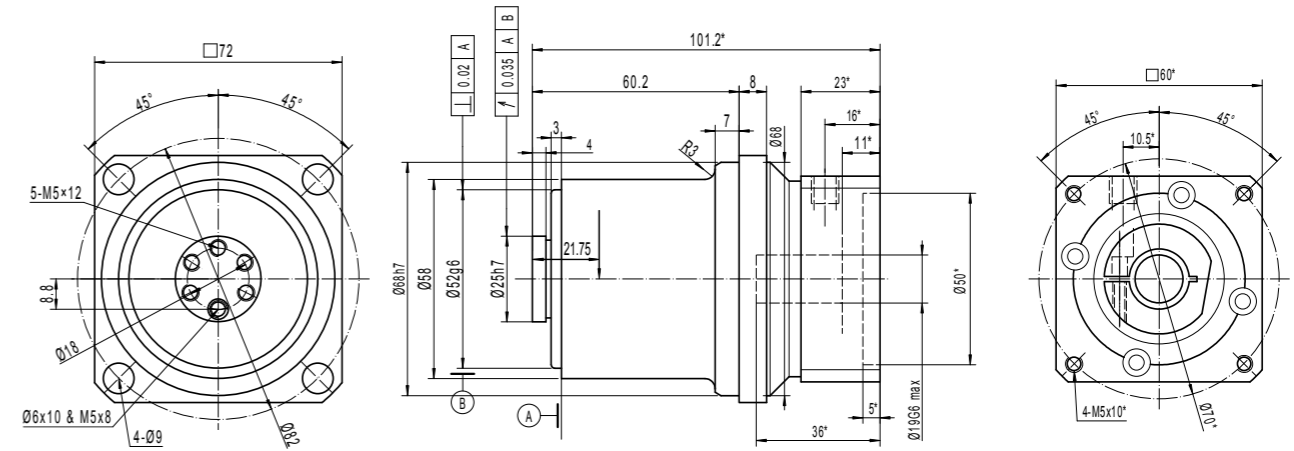


	Ratio**	ACCESS-PU-ST		
		060-P*	090-P*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	29	54	170
	4	30	105	205
	5	24	81	160
	7	22	66	153
	10	15	45	102
	12	29	54	170
	15	29	54	170
	16	30	105	205
	20	30	105	205
	21	29	54	170
	25	24	81	160
	28	30	105	205
	30	29	54	170
	35	24	81	160
	40	30	105	205
	49	22	66	153
	50	24	81	160
70	22	66	153	
100	15	45	102	
Peak torque ² T _{max} (Nm)	3	57	107	338
	4	61	184	361
	5	47	130	300
	7	46	128	292
	10	43	116	260
	12	57	107	338
	15	57	107	338
	16	61	184	361
	20	61	184	361
	21	57	107	338
	25	47	130	300
	28	61	184	361
	30	57	107	338
	35	47	130	300
	40	61	184	361
	49	46	128	292
	50	47	130	300
70	46	128	292	
100	43	116	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}		
Max angular backlash (minutes)	1 stage	≤7	≤5	≤5
	2 stages	≤10	≤8	≤8
Nominal input speed (rpm) ⁴		3,700	3,500	2,700
Max input speed (rpm) ⁵		8,000	7,000	6,000
Max radial load (N) ⁶		3,000	4,300	9,500
Max axial load (N) ⁶		1,550	1,900	4,000
Efficiency (%) ⁷	1 stage	≥97		
	2 stages	≥94		
Torsional stiffness (Nm/min)		4,2	13	33
Life (h) ⁸		20,000		
Min / max ambient temperature ⁹		-15 / +45		
Max temperature of the body (°C)		90		
Protection class		IP 54		
Noise level (dB) ¹⁰		≤64	≤66	≤68
Lubrication		Lifetime lubrication (grease)		
Coating color		Capri blue (RAL 5019)		
Input flange		Anodized aluminum		

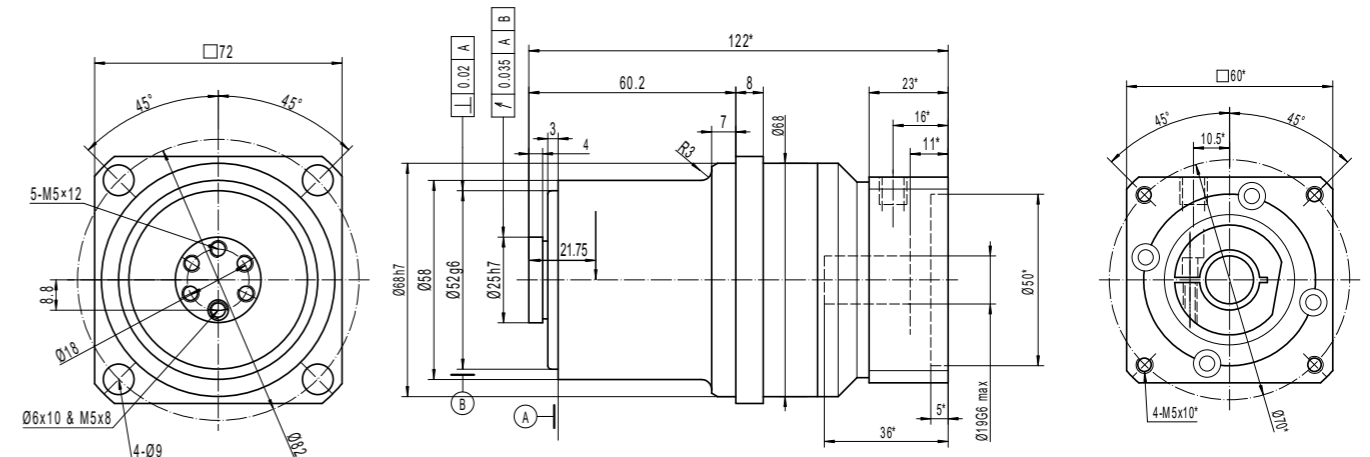
* Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied on the front face of the output shaft at 100 rpm
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

**ACCESS-PU-ST-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø19**

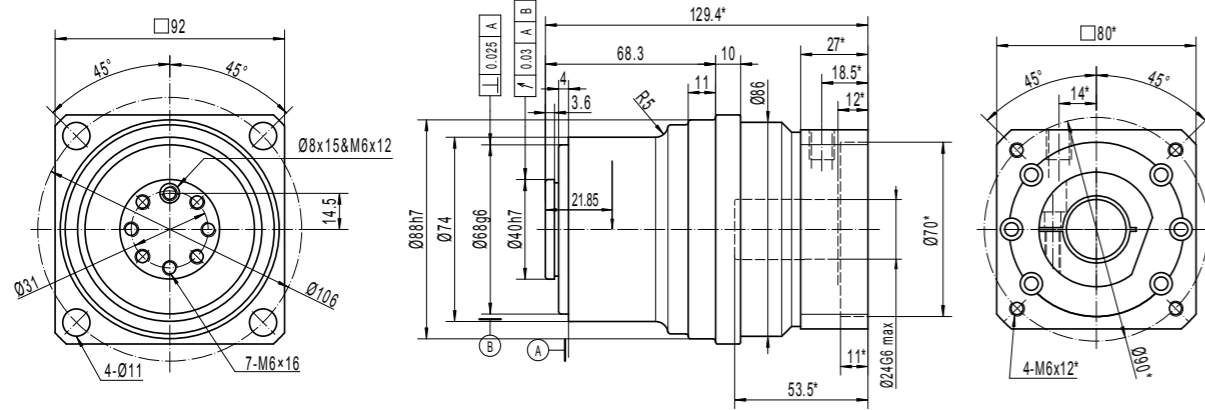


**ACCESS-PU-ST-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø19**

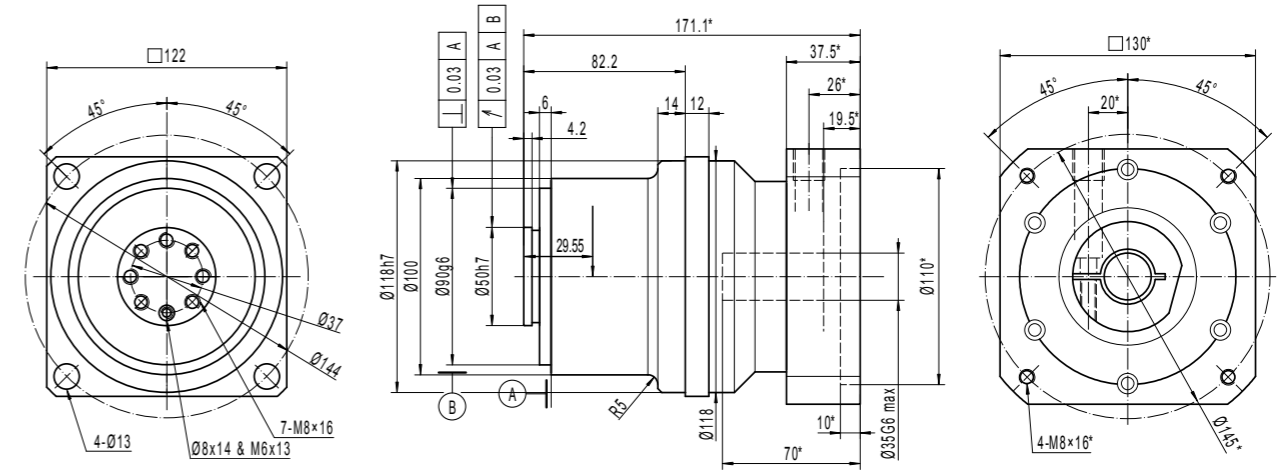


*VARIES WITH YOUR MOTOR DIMENSIONS

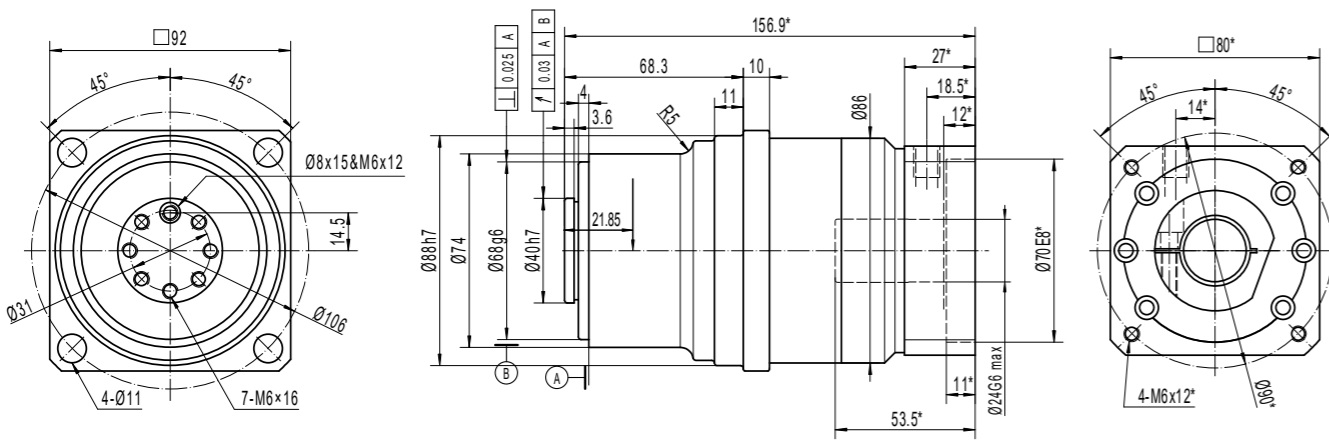
ACCESS-PU-ST-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



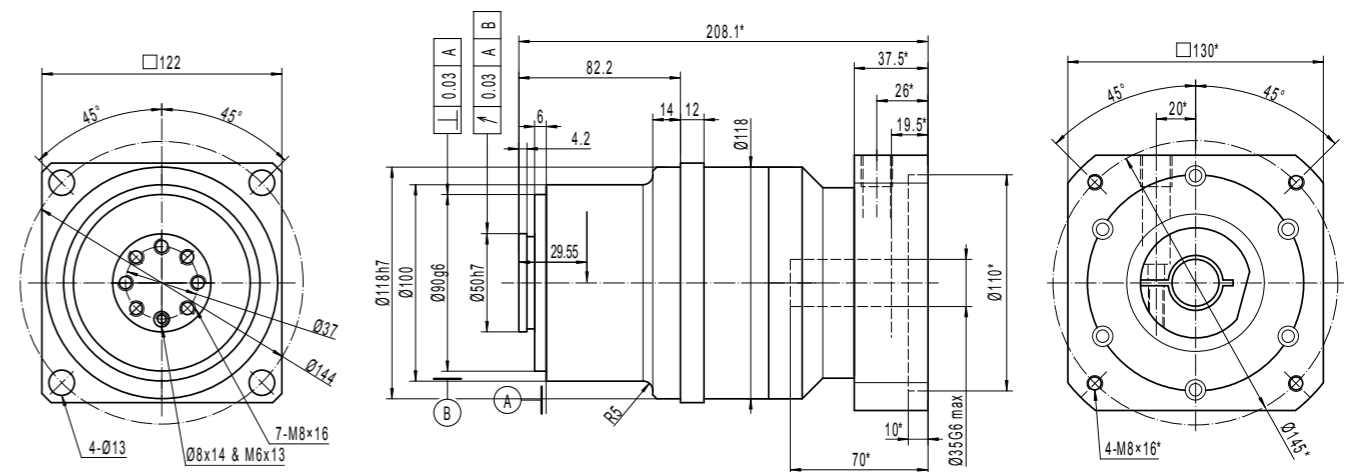
ACCESS-PU-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



ACCESS-PU-ST-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



ACCESS-PU-ST-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

SPIRIT-CI

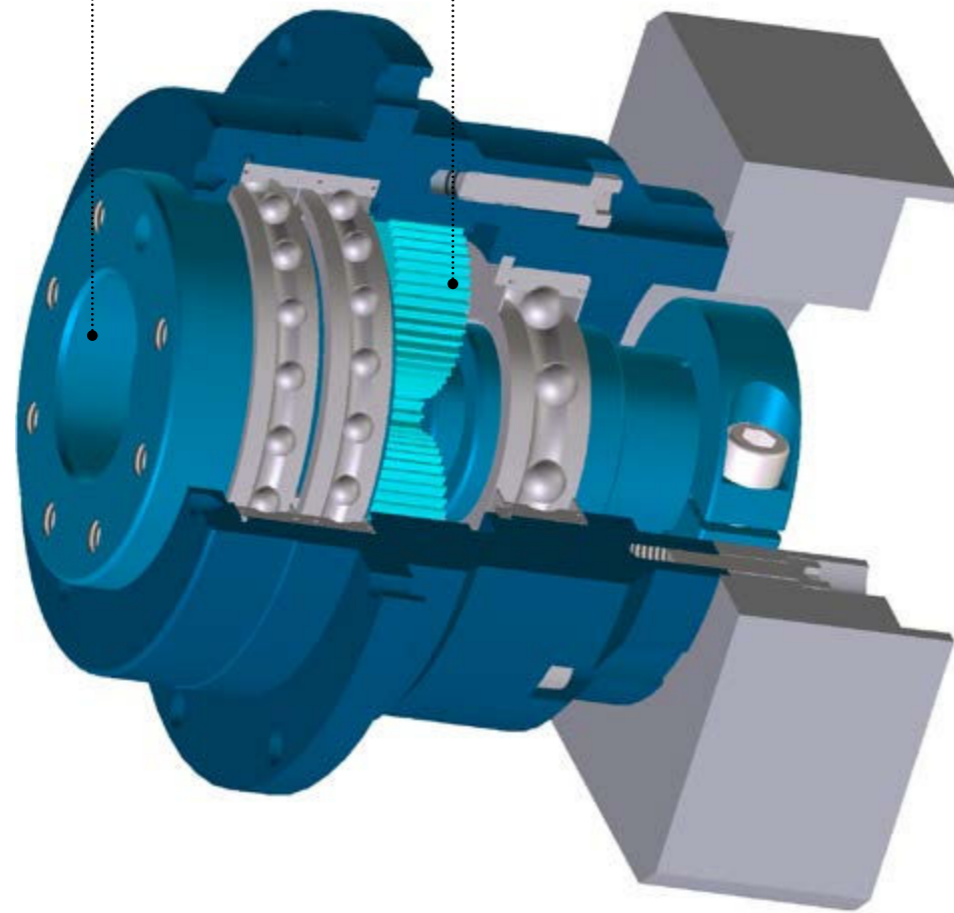


Acceleration capacity	++
Fast reversals	+
Radial load rating	++
Axial load rating	+
Stiffness	++
Precision	++
Economy	+++++

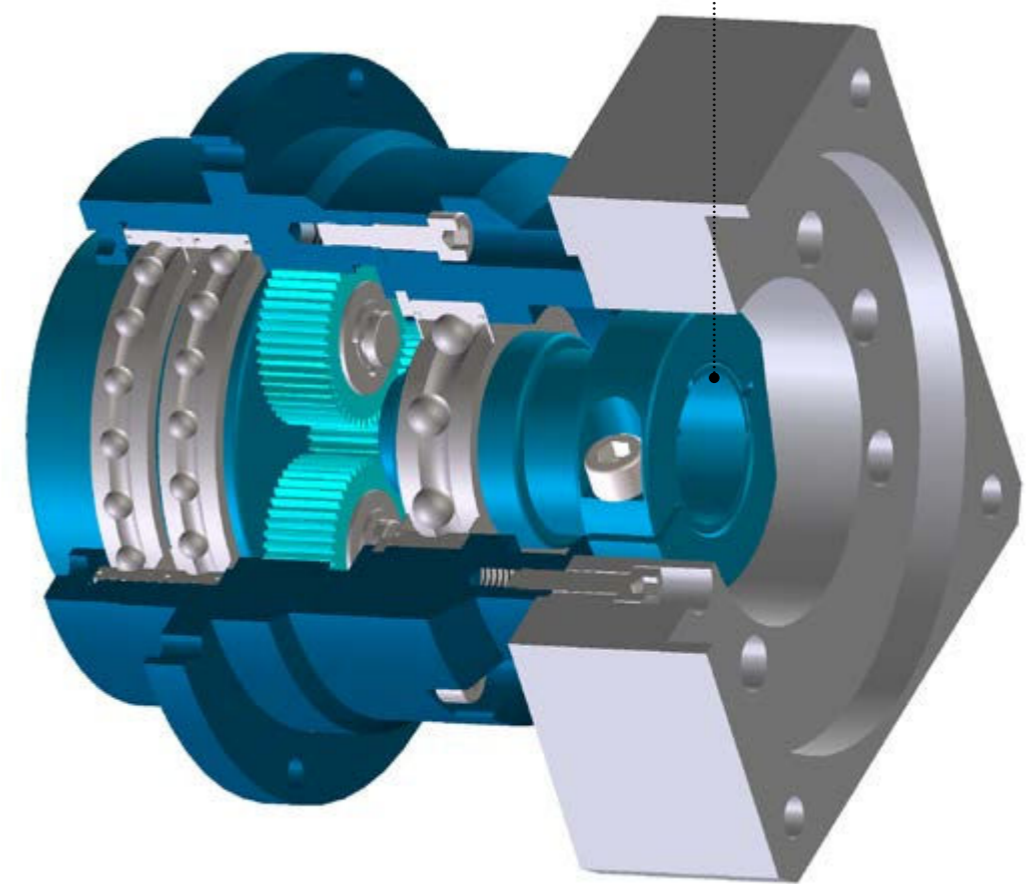
SPIRIT-CI_ST_ Internal construction

Easy installation on an AGV/AMR wheel, using standard ISO dimensions

Carburized and quenched helical teeth provides, reliability and acceleration capacity.



The balanced coupling limits vibration and reduces loads on your motor shaft bearings.

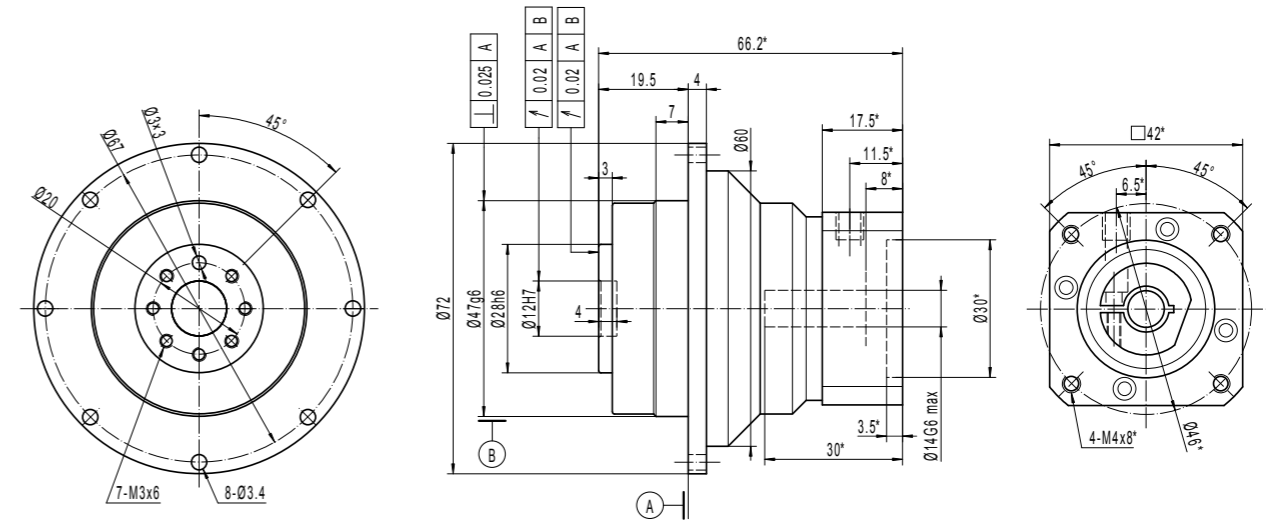


	Ratio**	SPiRiT-CI-ST			
		047-P*	064-P*	090-P*	110-P*
Nominal torque ¹ T _{2N} (Nm)	3	-	-	46	170
	4	11	30	105	205
	5	9	24	76	160
	7	7	18	51	126
	10	5	12	35	85
	12	-	-	46	170
	15	-	-	46	170
	16	11	30	105	205
	20	11	30	105	205
	21	-	29	46	170
	25	9	24	76	160
	28	11	30	105	205
	30	-	-	46	170
	35	9	24	76	160
	40	11	30	105	205
	49	7	18	51	126
	50	9	24	76	160
	70	7	18	51	126
	100	5	12	35	85
	Peak torque ² T _{max} (Nm)	3	-	-	107
4		19	54	148	361
5		14	38	99	241
7		13	35	94	230
10		13	33	85	207
12		-	-	107	338
15		-	-	107	338
16		19	54	148	361
20		19	54	148	361
21		-	-	107	338
25		14	38	99	241
28		19	54	148	361
30		-	-	107	338
35		14	38	99	241
40		19	54	148	361
49		13	35	94	230
50		14	38	99	241
70		13	35	94	230
100		13	33	85	207
Emergency stop torque (Nm) ³			1,5 x T _{max}		
Max angular backlash (minutes)	1 stage	≤10	≤7	≤5	≤5
	2 stages	≤13	≤10	≤8	≤8
Nominal input speed (rpm) ⁴		4,000	3,700	3,500	2,700
Max input speed (rpm) ⁵		8,000	6,000	6,000	5,000
Tilting moment (Nm) ⁶		9	15	43	110
Max axial load (N) ⁶		535	765	1,450	2,880
Efficiency (%) ⁷	1 stage	≥97			
	2 stages	≥94			
Torsional stiffness (Nm/min)		4	12	27	75
Life (h) ⁸		20,000			
Min / max ambient temperature ⁹		-15 / +45			
Max temperature of the body (°C)		90			
Protection class		IP 54			
Noise level (dB) ¹⁰		≤63	≤65	≤67	≤69
Lubrication		Lifetime lubrication (grease)			
Coating color		Capri blue (RAL 5019)			
Input flange		Anodized aluminum			

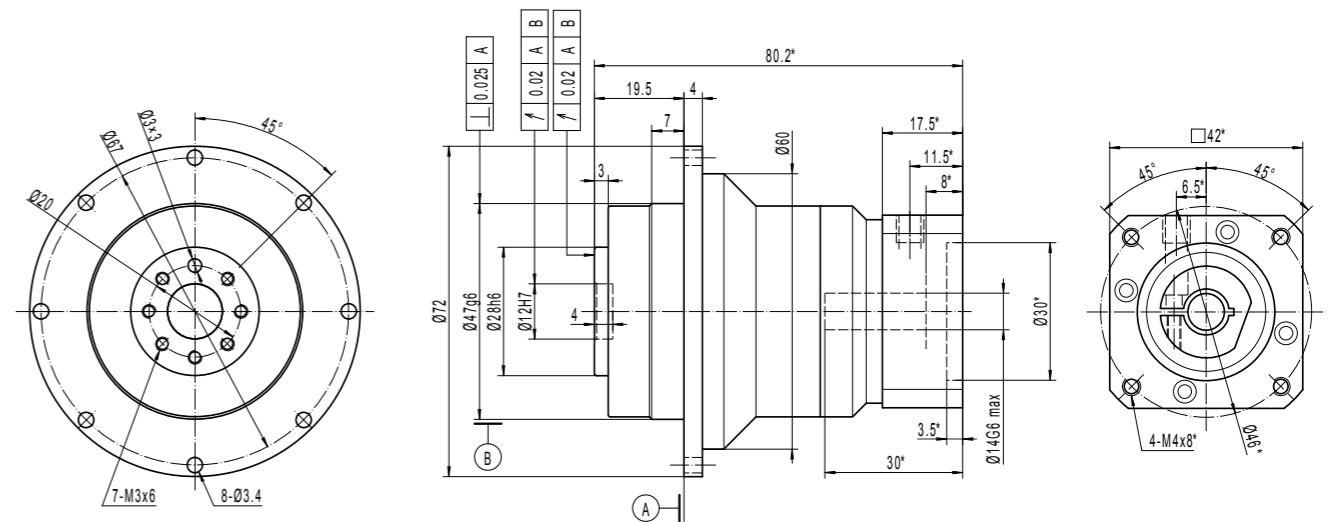
* Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2 : Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C , Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3 : 1 000 occurrences maximum.
 4 : Speed at which the nominal torque is applicable 20,000 hours.
 5 : Peak speed only.
 6 : Applied at the middle of the output shaft at 100 rpm.
 7 : Measured at full load and at 25°C
 8 : Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9 : Room temperature. Refer to temperature factors in dedicated section.
 10 : Ratio 10 at nominal speed, measured at 1m.

SPiRiT-CI-ST-047- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

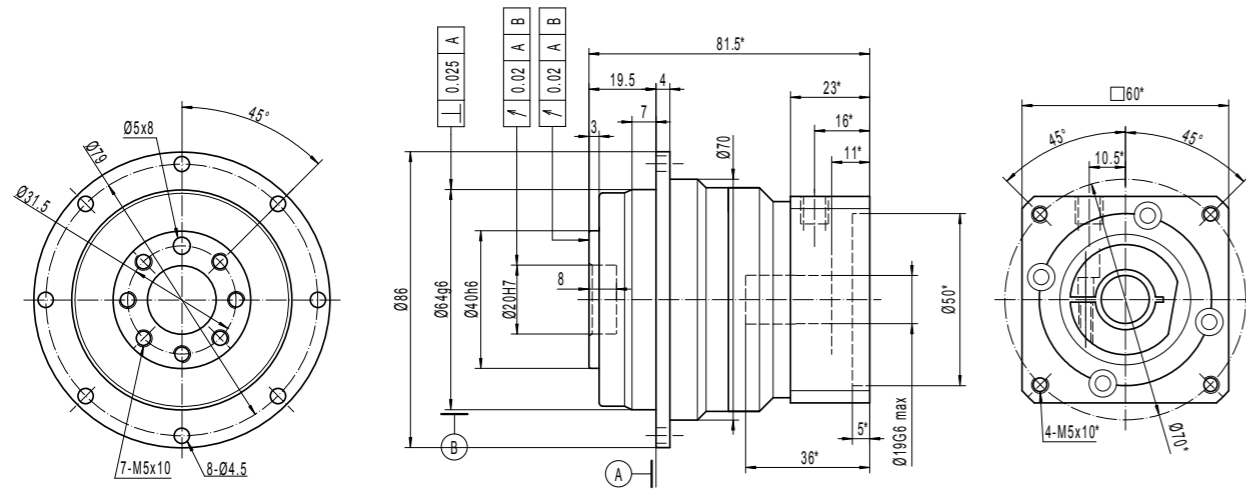


SPiRiT-CI-ST-047- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

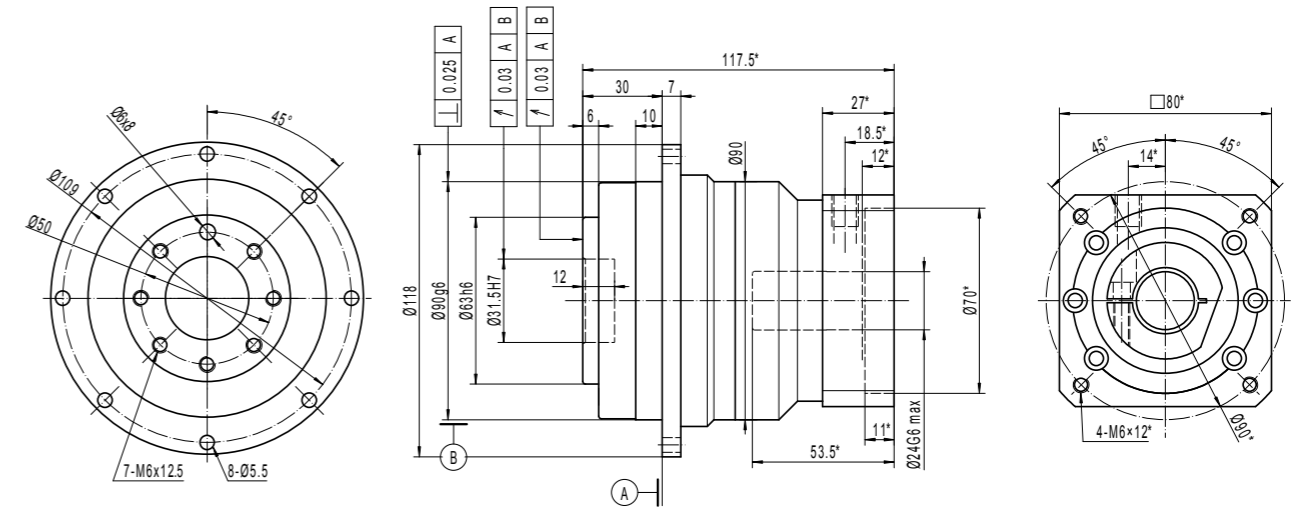


*VARIES WITH YOUR MOTOR DIMENSIONS

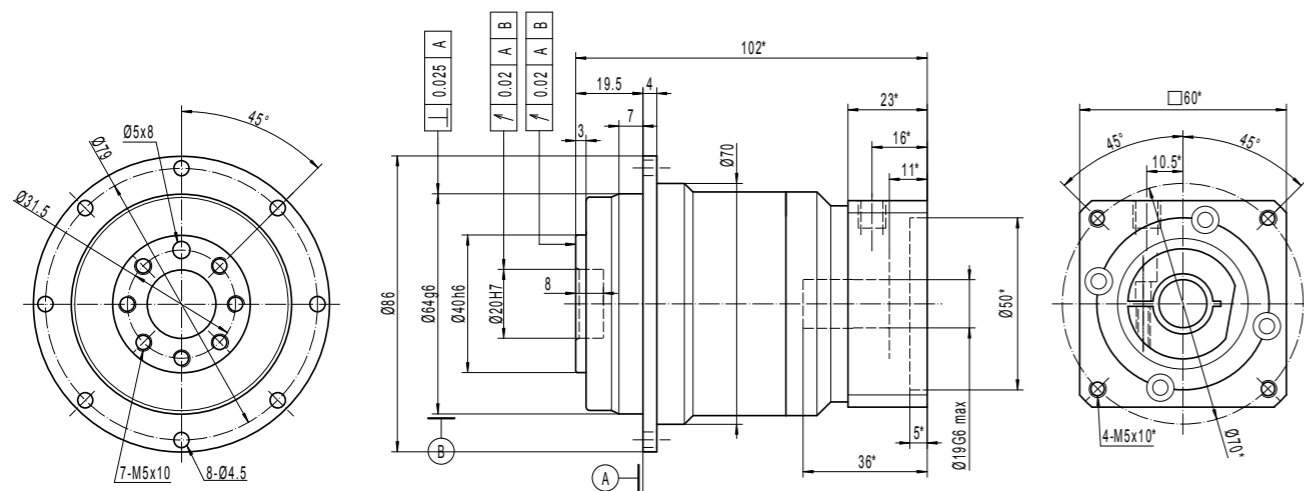
SPiRiT-CI-ST-064- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



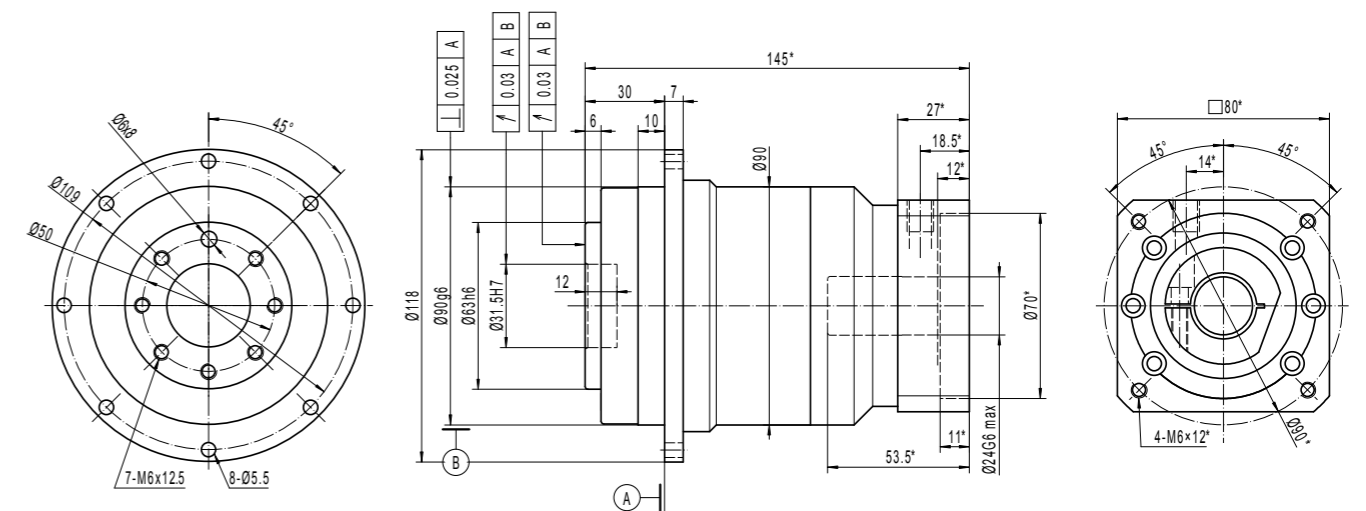
SPiRiT-CI-ST-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



SPiRiT-CI-ST-064- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



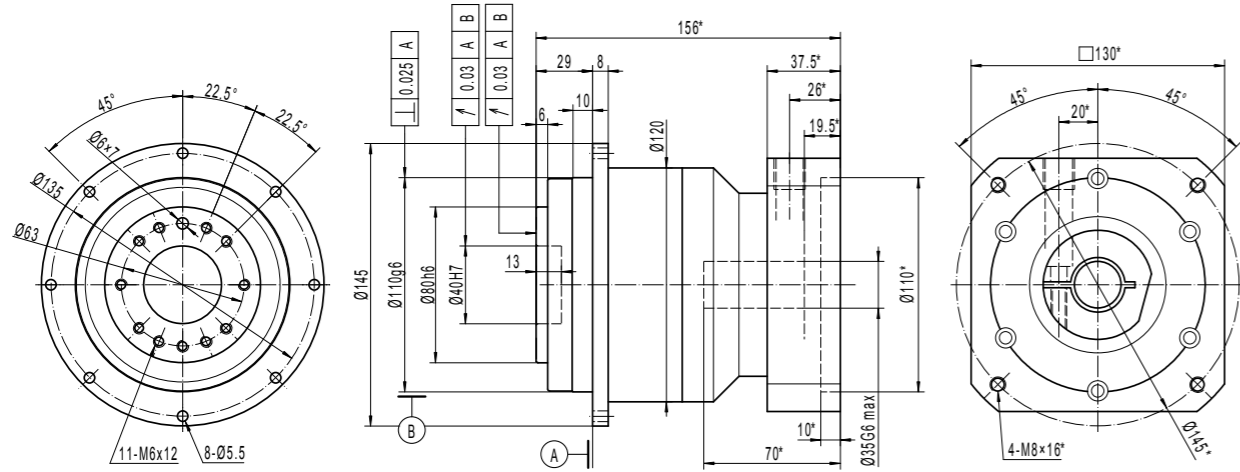
SPiRiT-CI-ST-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



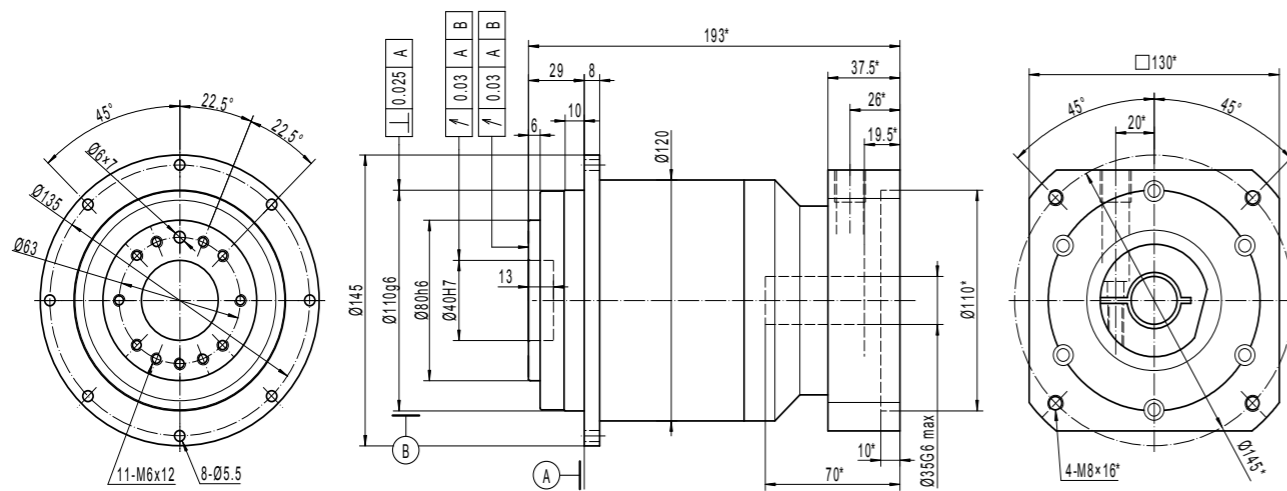
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

SPIRIT-CI-ST-110- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



SPIRIT-CI-ST-110- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



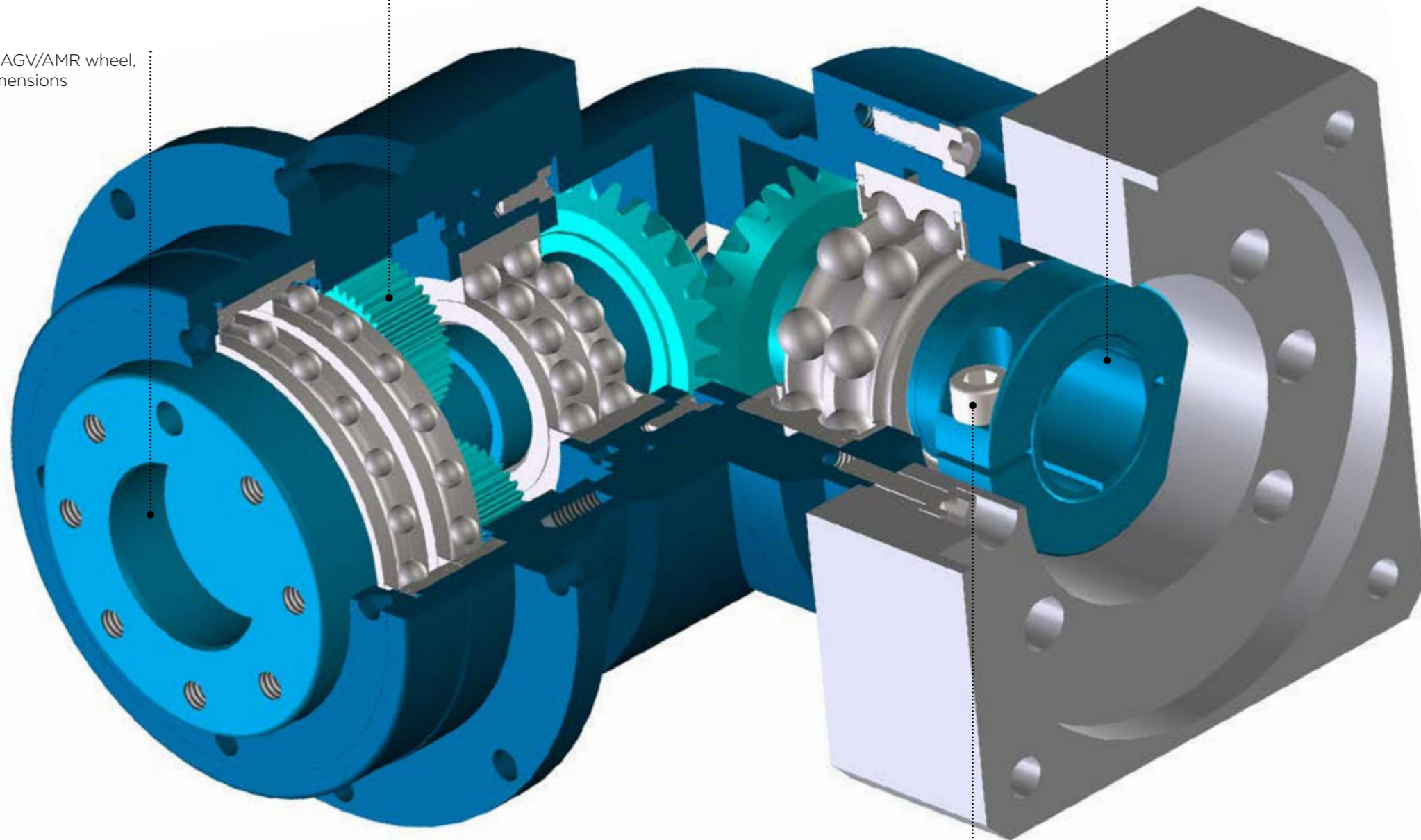
*VARIES WITH YOUR MOTOR DIMENSIONS

SPIRIT-CI-RA_ Internal construction

Easy installation on an AGV/AMR wheel, using standard ISO dimensions

Carburized and quenched helical teeth provides, reliability and acceleration capacity.

The balanced coupling limits vibration and reduces loads on your motor shaft bearings.



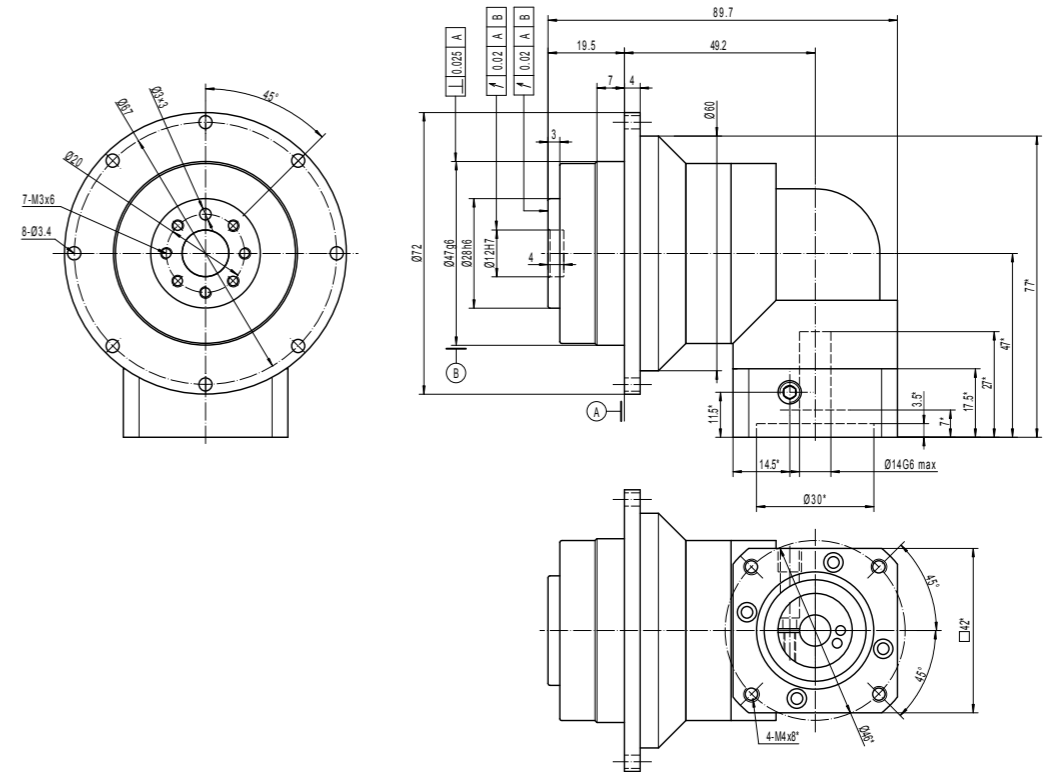
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	SPIRIT-CI-RA			
		047-P*	064-P*	090-P*	110-P*
Nominal torque ¹ T _{2N} (Nm)	3	-	-	46	170
	4	11	30	105	205
	5	9	24	76	160
	7	7	18	51	126
	10	5	12	35	85
	12	-	-	46	170
	15	-	-	46	170
	16	11	30	105	205
	20	11	30	105	205
	21	-	29	46	170
	25	9	24	76	160
	28	11	30	105	205
	30	-	-	46	170
	35	9	24	76	160
	40	11	30	105	205
	49	7	18	51	126
	50	9	24	76	160
70	7	18	51	126	
100	5	12	35	85	
Peak torque ² T _{max} (Nm)	3	-	-	107	338
	4	19	54	148	361
	5	14	38	99	241
	7	13	35	94	230
	10	13	33	85	207
	12	-	-	107	338
	15	-	-	107	338
	16	19	54	148	361
	20	19	54	148	361
	21	-	-	107	338
	25	14	38	99	241
	28	19	54	148	361
	30	-	-	107	338
	35	14	38	99	241
	40	19	54	148	361
	49	13	35	94	230
	50	14	38	99	241
70	13	35	94	230	
100	13	33	85	207	
Emergency stop torque ³ (Nm)	1,5 x T _{max}				
Max angular backlash (minutes)	1 stage	≤15	≤13	≤13	≤13
	2 stages	≤15	≤15	≤15	≤13
Nominal input speed ⁴ (rpm)		4,000	3,700	3,500	2,700
Max input speed ⁵ (rpm)		8,000	6,000	6,000	5,000
Tilting moment ⁶ (Nm)		9	15	43	110
Max axial load ⁶ (N)		535	765	1,450	2,880
Efficiency ⁷ (%)	1 stage	≥94			
	2 stages	≥92			
Torsional stiffness (Nm/min)		4	12	27	75
Life (h) ⁸	20,000				
Min / max ambient temperature ⁹	-15 / +45				
Max temperature of the body (°C)	90				
Protection class	IP 54				
Noise level ¹⁰ (dB)		≤72	≤74	≤74	≤78
Lubrication	Lifetime lubrication (grease)				
Coating color	Capri blue (RAL 5019)				
Input flange	Anodized aluminum				

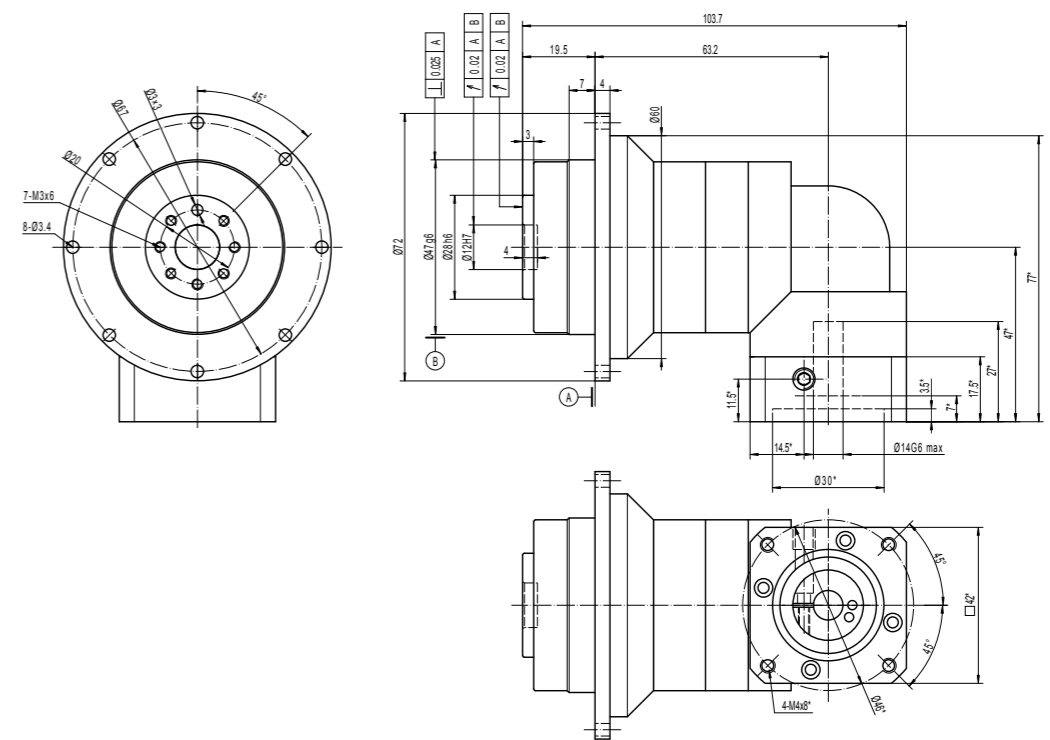
* 2 stages gearboxes are with a powerful input (P)
** Others ratios are available upon request.

1 : Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
2 : Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
3 : 1 000 occurrences maximum.
4 : Speed at which the nominal torque is applicable 20,000 hours.
5 : Peak speed only.
6 : Applied on the front face of the output shaft at 100 rpm
7 : Measured at full load and at 25°C
8 : Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
9 : Room temperature. Refer to temperature factors in dedicated section.
10 : Ratio 10 at nominal speed, measured at 1m.

**SPIRIT-CI-RA-047- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14**



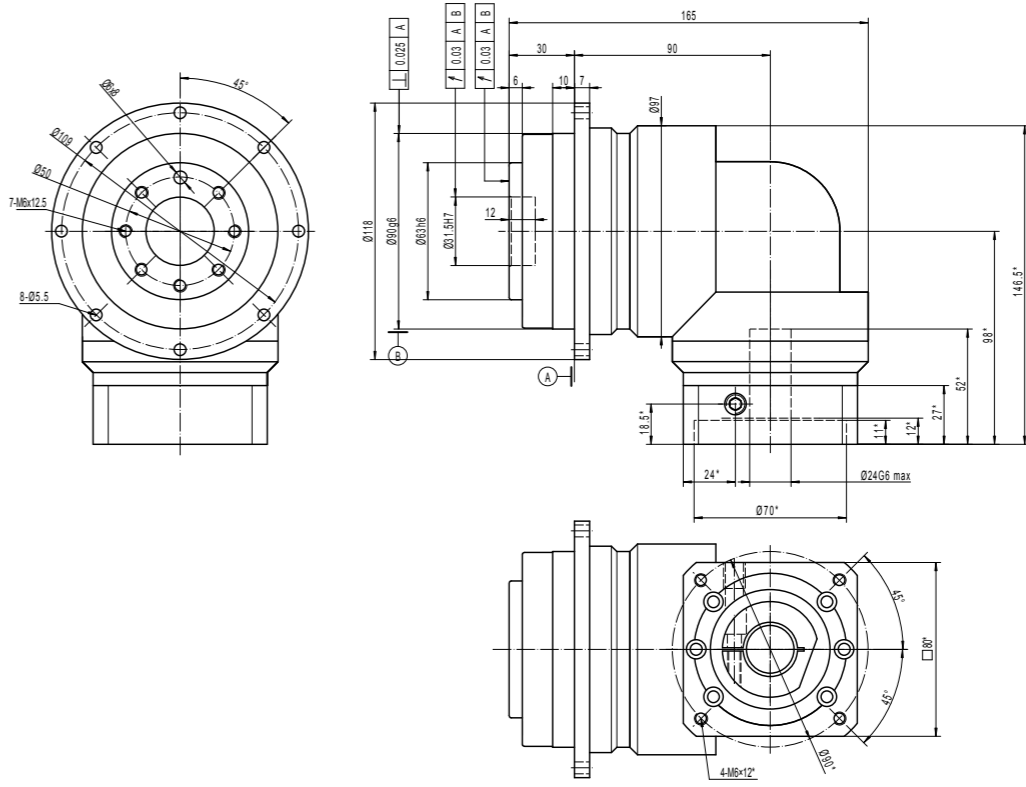
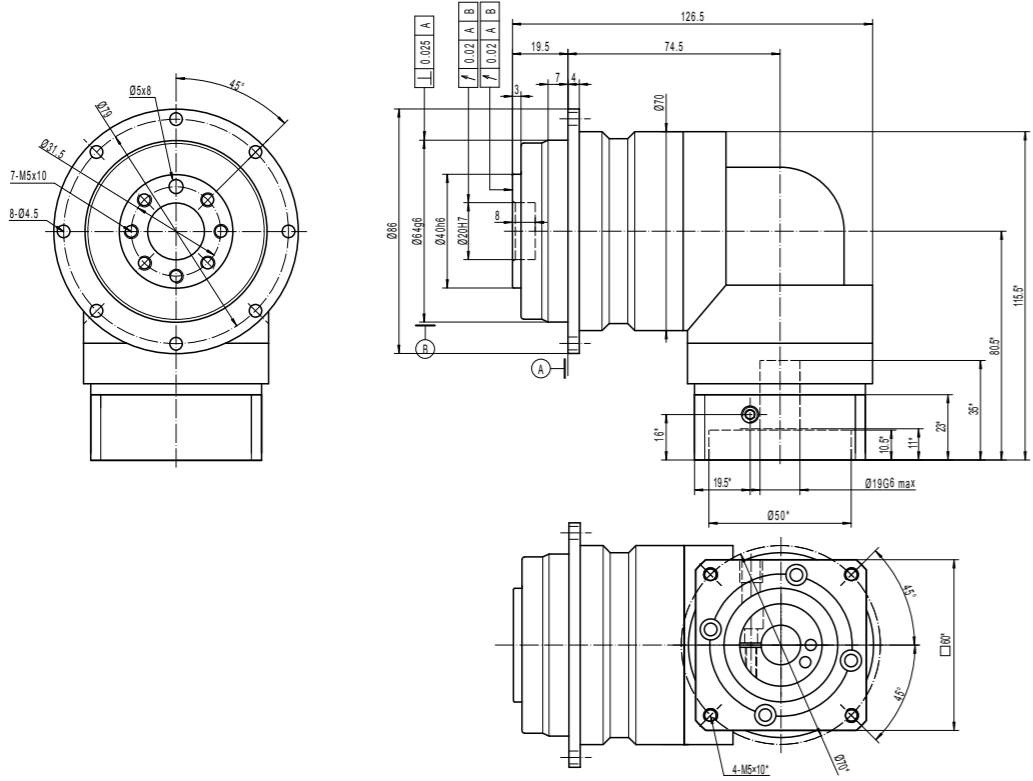
**SPIRIT-CI-RA-047- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14**



*VARIES WITH YOUR MOTOR DIMENSIONS

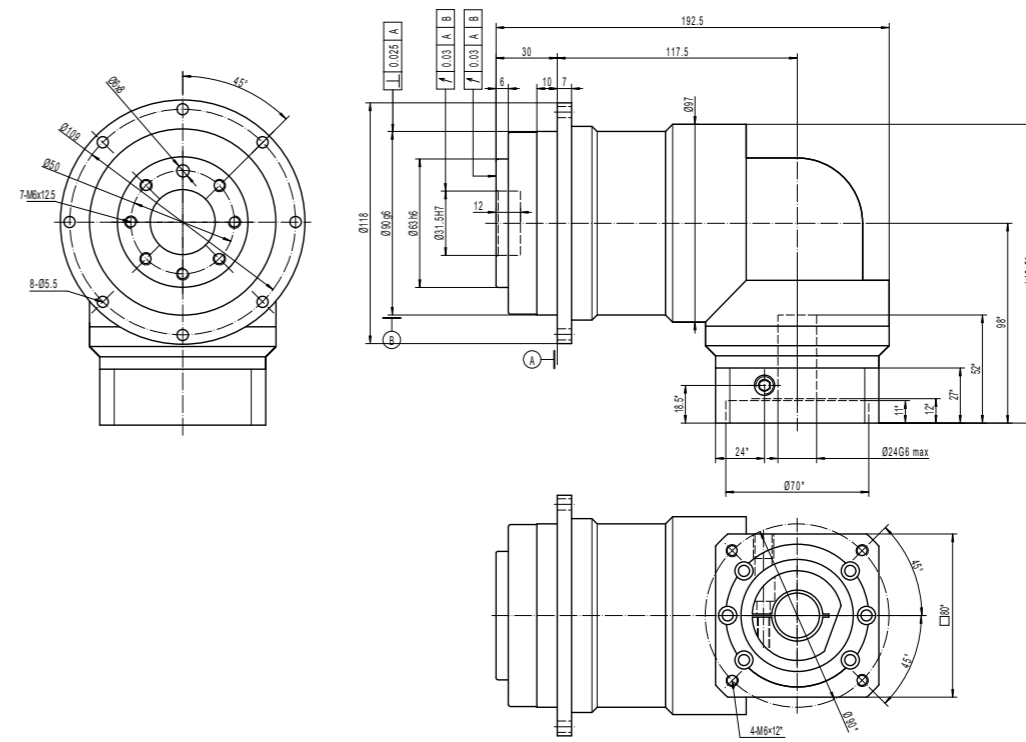
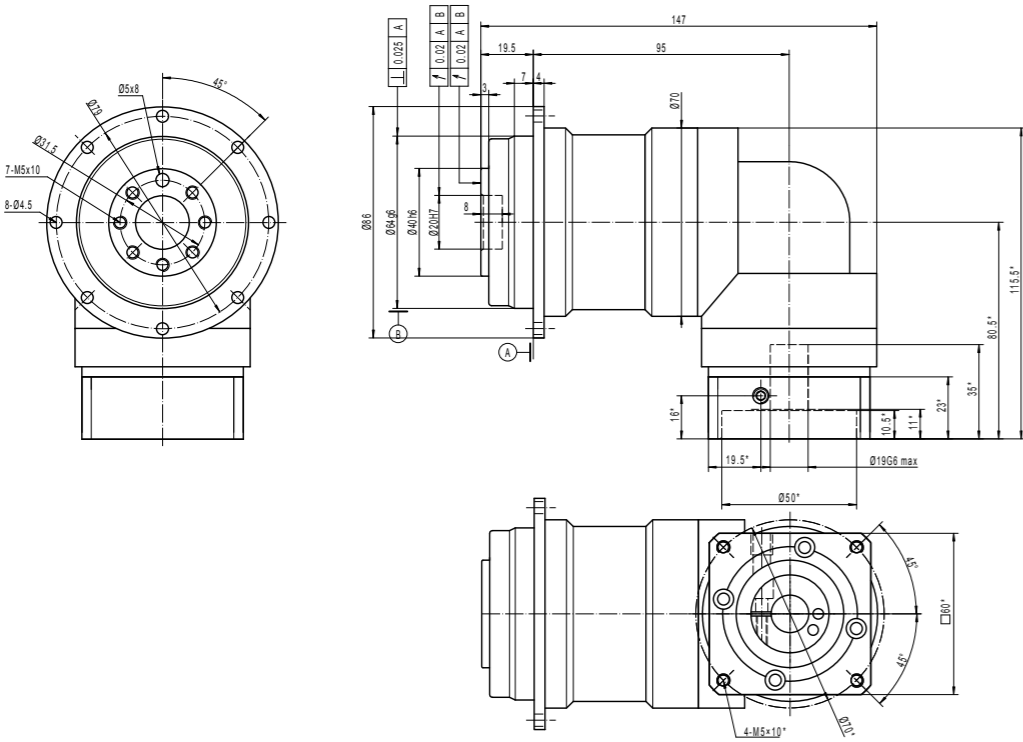
SPiRiT-CI-RA-064- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$

SPiRiT-CI-RA-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



SPiRiT-CI-RA-064- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$

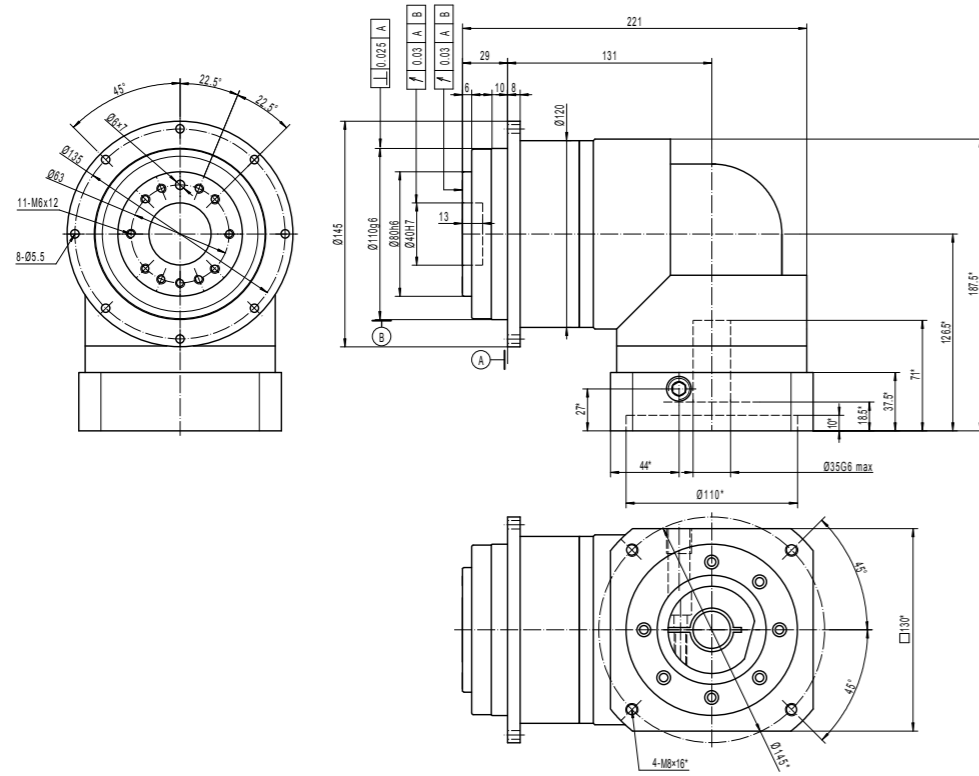
SPiRiT-CI-RA-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



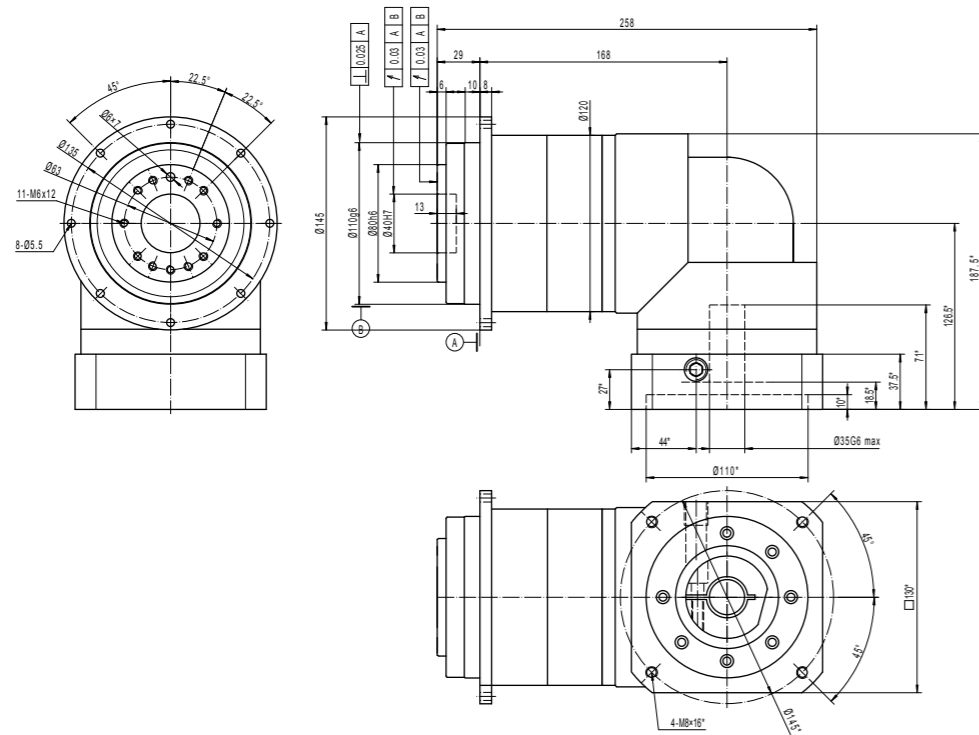
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

SPIRIT-CI-RA-110- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



SPIRIT-CI-RA-110- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



*VARIES WITH YOUR MOTOR DIMENSIONS

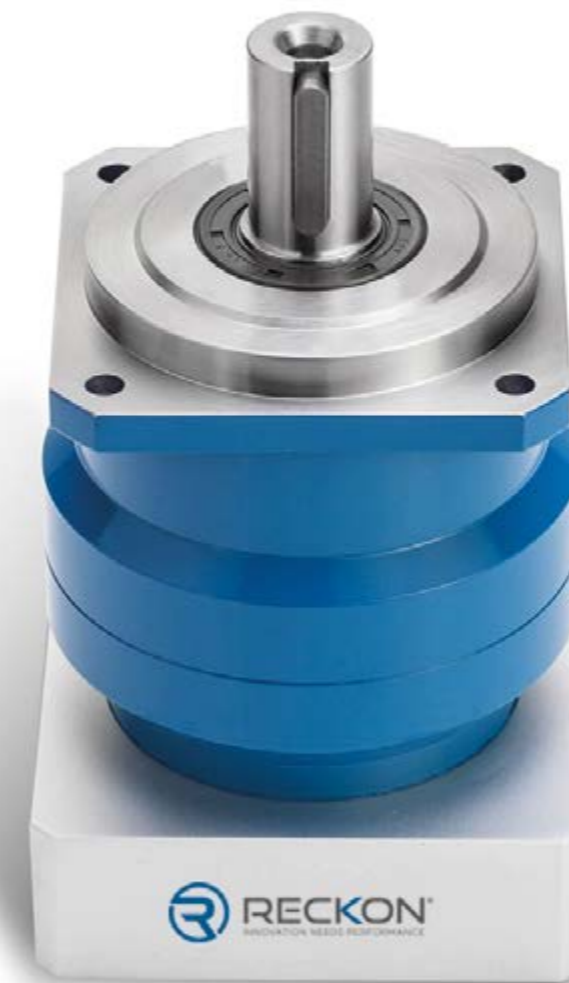
Meeting tomorrow's **health&safety** requirements implies reducing your system's operating noise level now.



Acoustic waves are emitted by most geared systems having their contact ratio (number of teeth being in contact at the same time in a gearbox) below 2 - like most spur geared systems.

Using helical gears allows increasing the contact ratio above 2 to offer quiet operation.

That's why all gearboxes presented hereafter only use helical gears.



Reliability is everything.

Helical gears are recognized for their quiet operation, but on the other hand they generate strong axial loads to the internal elements of the gearbox (such as friction disks, planet carriers or bearings) so using them unconsciously can be prejudicial to a planetary gearbox life.



So we developed the **PerfectPitch™ Concept**.



PerfectPitch™

The PerfectPitch™ concept is a combination of features that we believe are necessary to provide quiet, reliable planetary gearboxes.

- Reckon® gearboxes use the smallest helix angle in order to provide quiet operation while limiting induced axial loads to the minimum and extend bearing life.
- We only use carburized and quenched planet gears, as they allow the toughest operating conditions (sharp acceleration, emergency stops, fast reversal...) and show higher performances.
- All gear calculations are based on a 20,000 hour life with a servomotor at rated torque and rated speed (or 10,000 hours in case of continuous direction). Maximum acceleration torques are based on a 2,000 hour life (1,000 hours for continuous direction movement).
- Our published data is amongst the most conservative on the market. Reckon wants every customer to be satisfied, rather than claiming unlikely product performance and jeopardizing your machine quality. The published data (torque ratings) relates to the weakest internal component, and was calculated with the most advanced gearbox engineering software on the market.
- Reckon® planet gears only rotate on hand-assembled needles (full complement needle rollers), as they allow more torque and a longer lifetime than caged bearings.
- We designed our planet carriers with caged planet carriers (except on the Spirit line), so the planets cannot displace axially or tilt. A cage provides a high stiffness and ensures that gears pitch-lines remain well aligned during the acceleration phases. Contact pressures are better distributed alongside the pitch-lines rather than focused at teeth ends.
- The planet carriers of "Perfect Pitch™" gearboxes are dual-supported (one bearing on each side of the planet gears). This construction increases stiffness, thus protects the gears against breakage at teeth edges. This allows a better distribution of the contact pressure alongside the pitch-line rather than focusing on the teeth edges. It prevents the shaft from tilting

WISER-CI



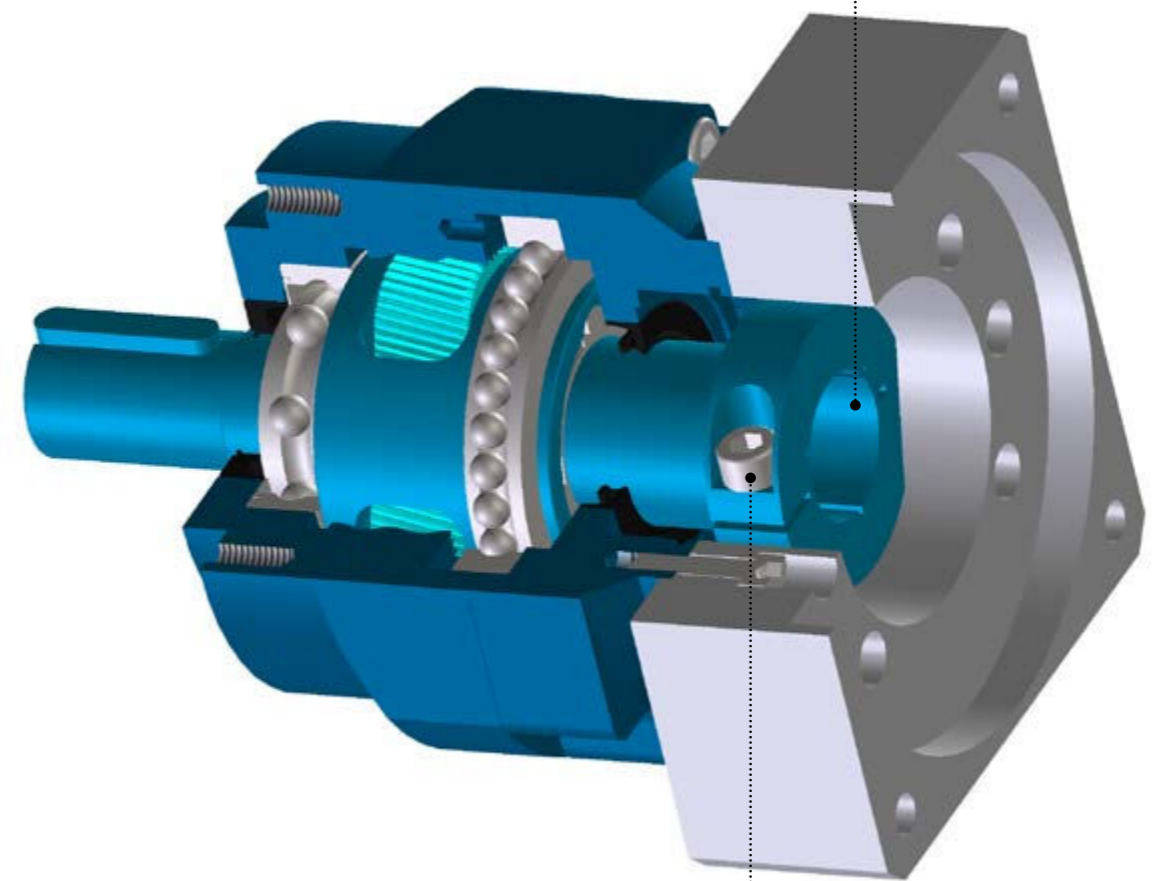
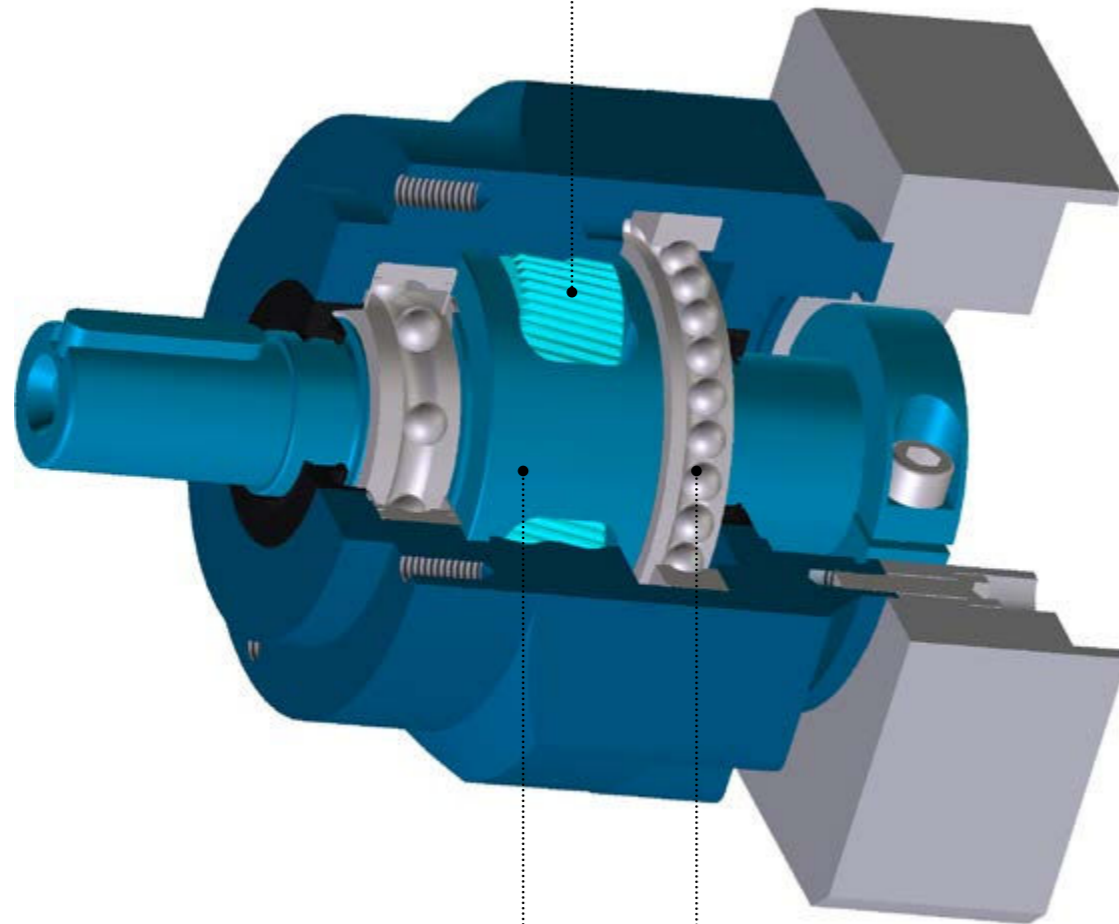
Acceleration capacity	++
Fast reversals	++
Radial load rating	++
Axial load rating	+
Stiffness	++
Precision	++++
Economy	++++

WISER-CI-ST_ Internal construction

WISER is our entry-level helical gearbox.

Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.

The balanced coupling limits vibration and reduces loads on your motor shaft bearings.



The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

The planet carrier is dual-supported by radial ball bearings. This configuration guarantees the perfect alignment of gears during operation.

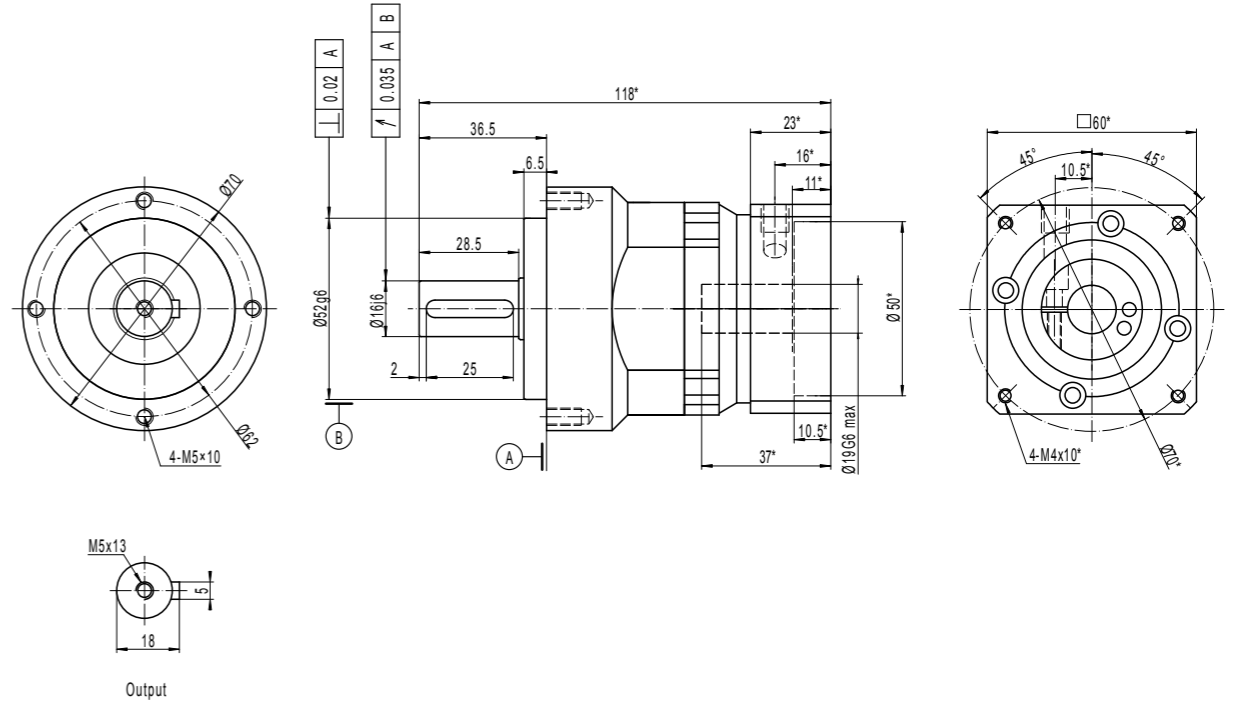
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	WISER-CI-ST		
		060-P	090-R	120-R
Nominal torque ¹ T _{2N} (Nm)	3	18	70	200
	4	37	129	214
	5	29	100	167
	6	27	81	179
	7	24	71	178
	8	18	55	164
	9	16	47	-
	10	14	42	110
	12	18	65	200
	15	18	68	183
	16	37	86	214
	20	37	90	214
	21	18	51	137
	25	29	100	167
	28	37	68	183
	30	27	81	179
	35	29	85	167
	40	37	40	113
	42	27	81	179
	49	24	71	178
50	29	49	141	
60	27	59	170	
70	24	69	178	
80	18	55	164	
90	16	47	-	
100	14	42	110	
Peak torque ² T _{max} (Nm)	3	55	169	378
	4	49	160	415
	5	40	112	300
	6	38	114	327
	7	38	115	279
	8	37	111	322
	9	36	104	-
	10	36	107	260
	12	55	92	242
	15	55	86	206
	16	49	122	322
	20	49	115	275
	21	55	85	212
	25	40	112	300
	28	49	113	282
	30	38	114	327
	35	40	112	300
	40	49	109	259
	42	38	114	327
	49	38	115	279
50	40	112	300	
60	38	114	327	
70	38	115	279	
80	37	111	322	
90	36	104	-	
100	36	107	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}		
Max angular backlash (minutes)	1 stage	Standard : ≤5 ; Option : ≤3		
	2 stages	Standard : ≤8 ; Option : ≤5		
Nominal input speed (rpm) ⁴		4,000	3,100	2,800
Max input speed (rpm) ⁵		7,500	6,000	5,500
Max radial load (N) ⁶		1,100	2,200	3,600
Max axial load (N) ⁶		900	1,950	3,000
Efficiency (%) ⁷	1 stage	≥97		
	2 stages	≥94		
Torsional stiffness (Nm/min)		6	13	24
Life (h) ⁸		20,000		
Min / max ambient temperature ⁹		-15 / +45		
Max temperature of the body (°C)		90		
Protection class		IP 65		
Noise level (dB) ¹⁰		≤61	≤63	≤64
Lubrication		Lifetime lubrication (grease)		
Coating color		Capri blue (RAL 5019)		
Input flange		Anodized aluminum		

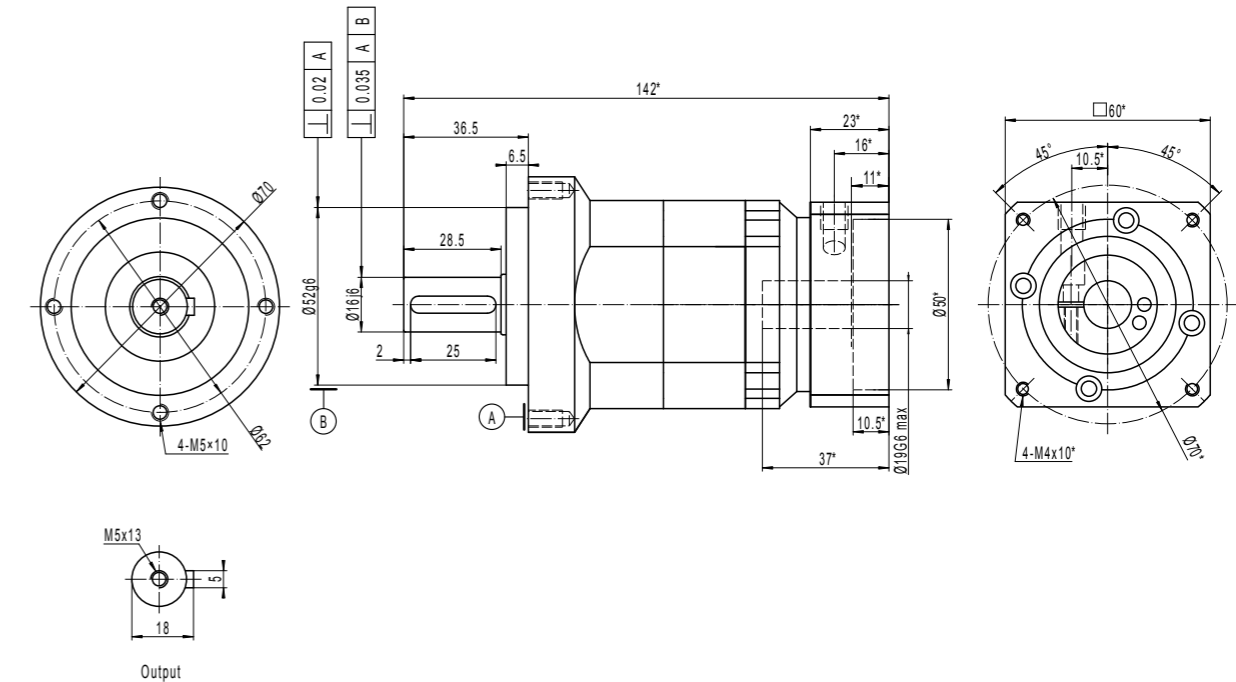
* Others ratios are available upon request.

- 1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
- 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
- 3: 1 000 occurrences maximum.
- 4: Speed at which the nominal torque is applicable 20,000 hours.
- 5: Peak speed only.
- 6: Applied at the middle of the output shaft at 100 rpm.
- 7: Measured at full load and at 25°C
- 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
- 9: Room temperature. Refer to temperature factors in dedicated section.
- 10: Ratio 10 at nominal speed, measured at 1m.

**WISER-CI-ST-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø19**

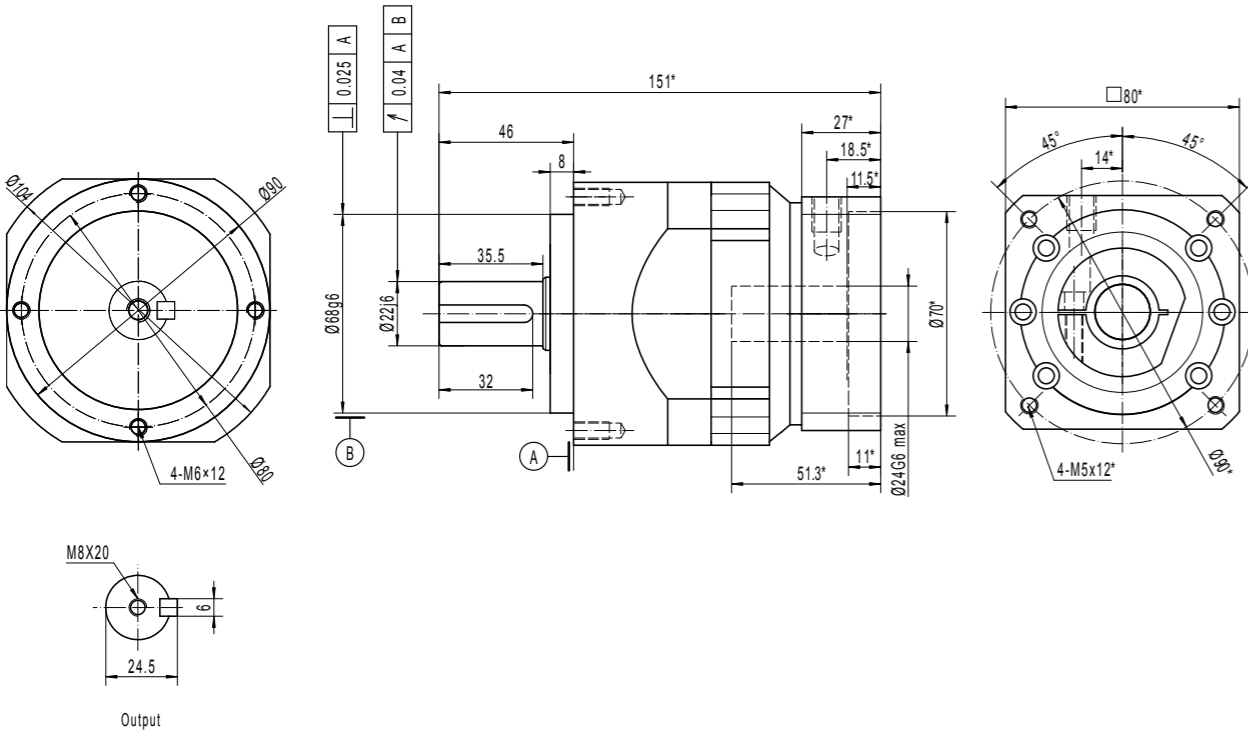


**WISER-CI-ST-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø19**

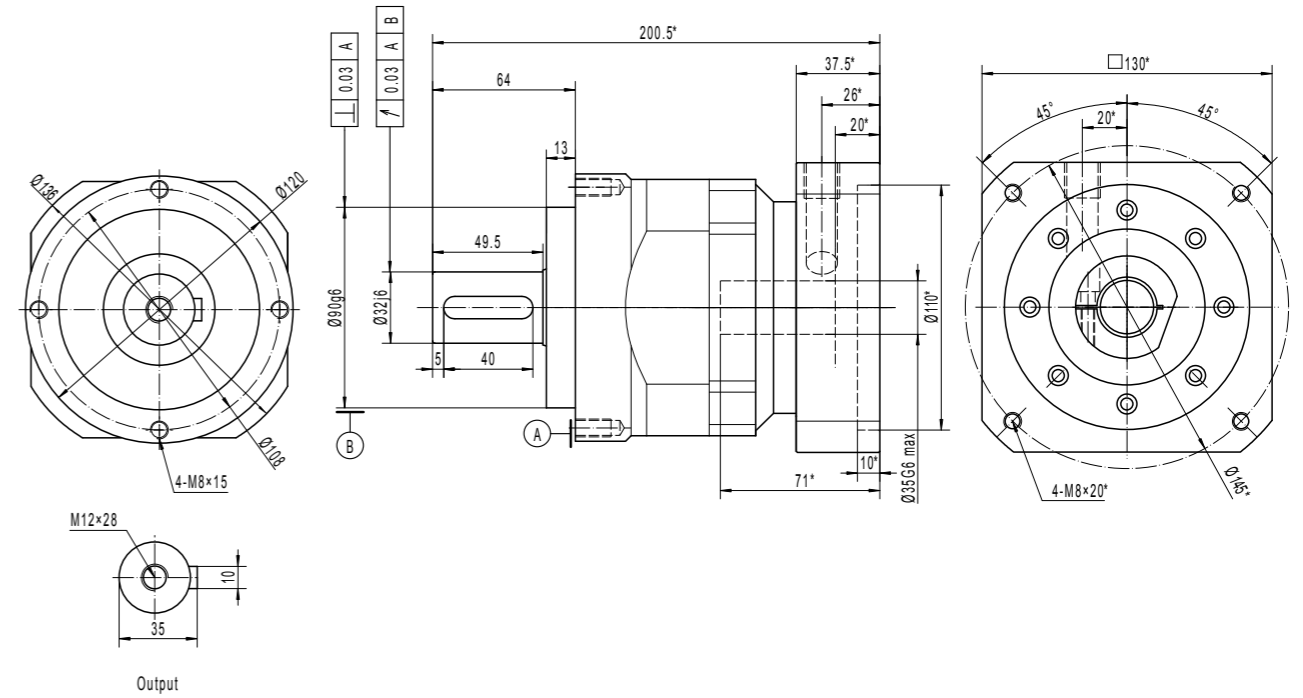


*VARIES WITH YOUR MOTOR DIMENSIONS

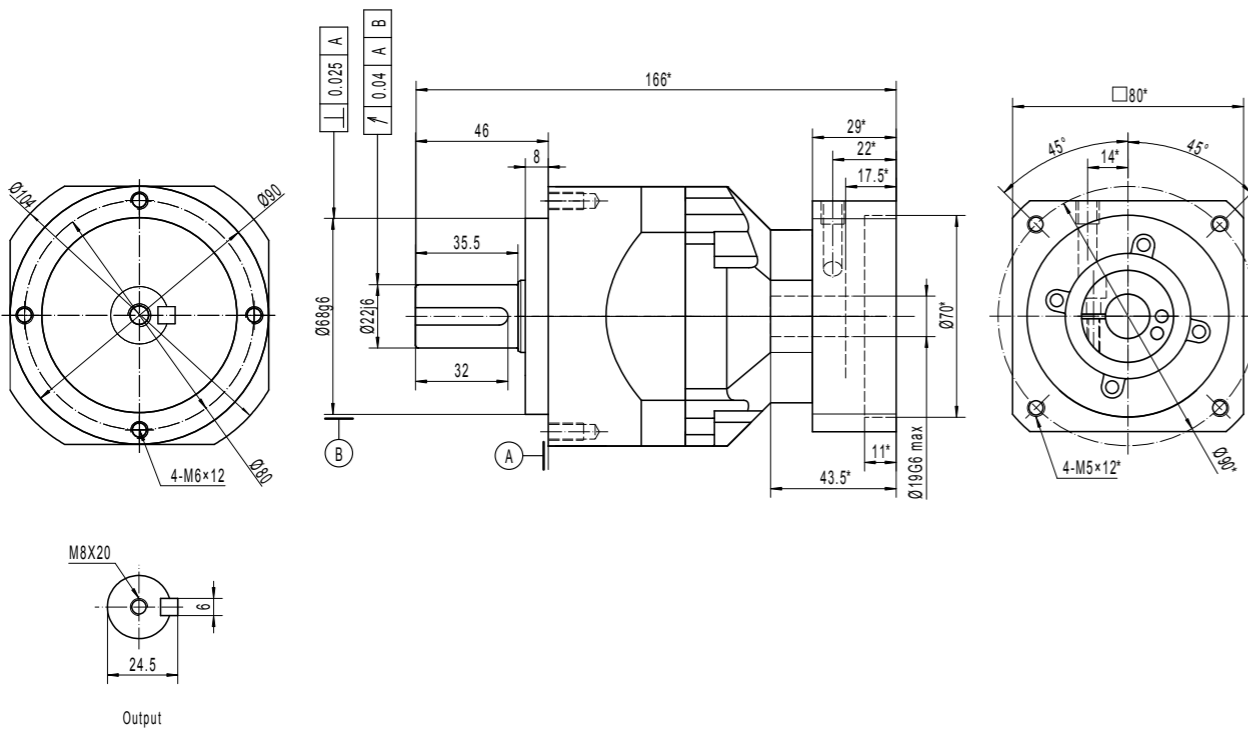
WISER-CI-ST-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



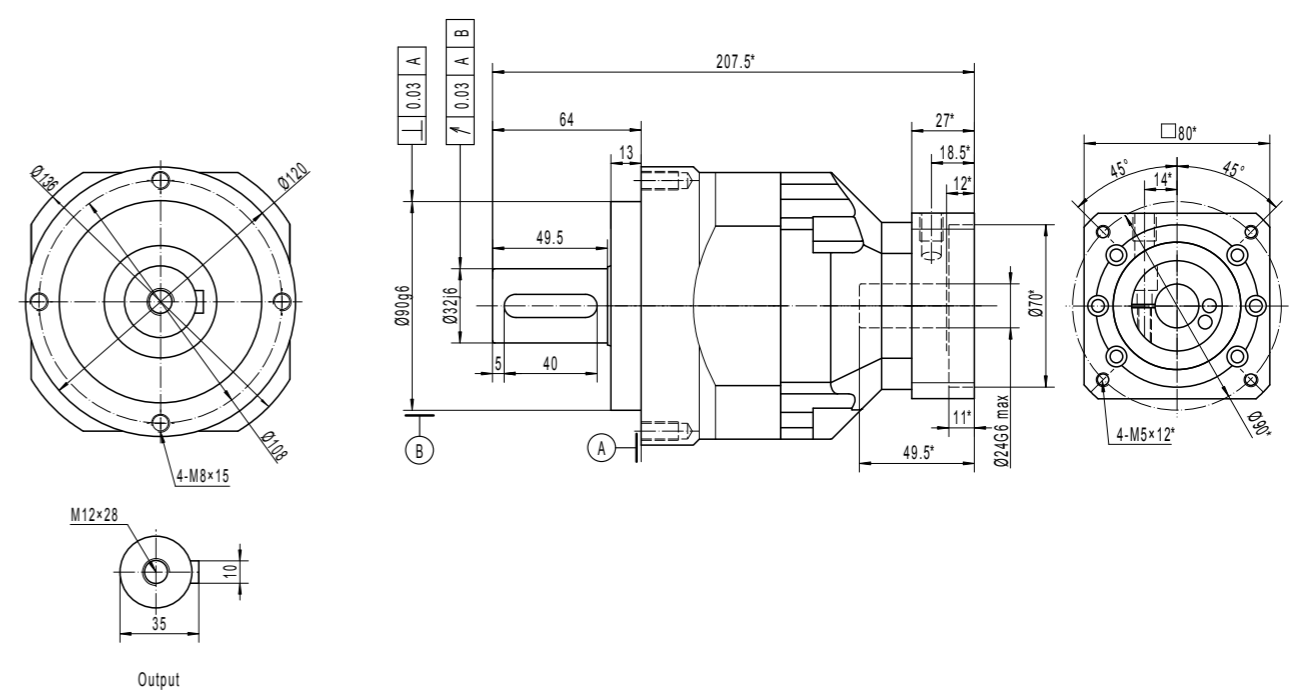
WISER-CI-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



WISER-CI-ST-090- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



WISER-CI-ST-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

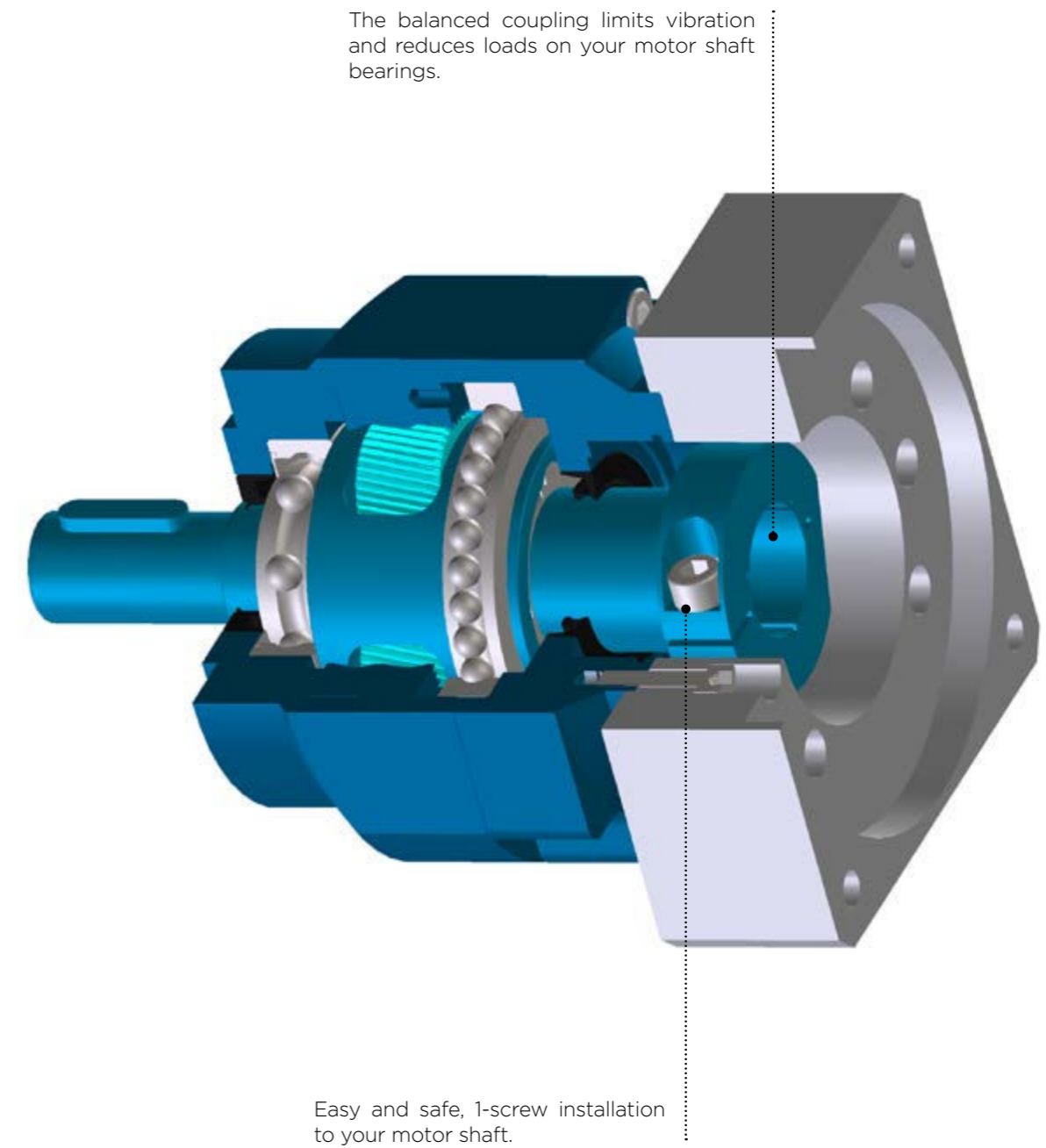
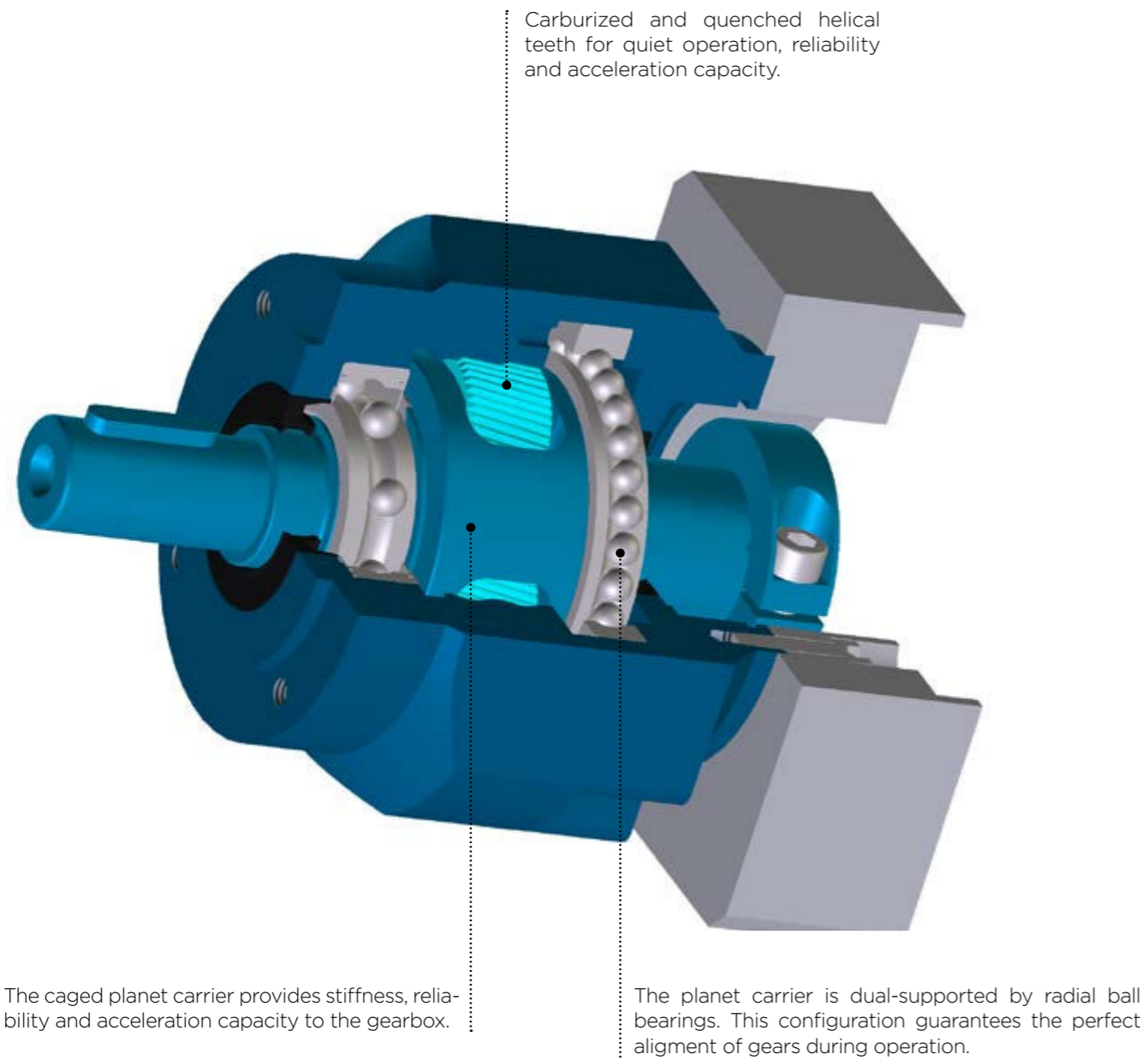
WISER-X-CI



Acceleration capacity	++
Fast reversals	++
Radial load rating	++
Axial load rating	+
Stiffness	++
Precision	++++
Economy	++++

WISER-X-CI-ST_ Internal construction

WISER is our entry-level helical gearbox.

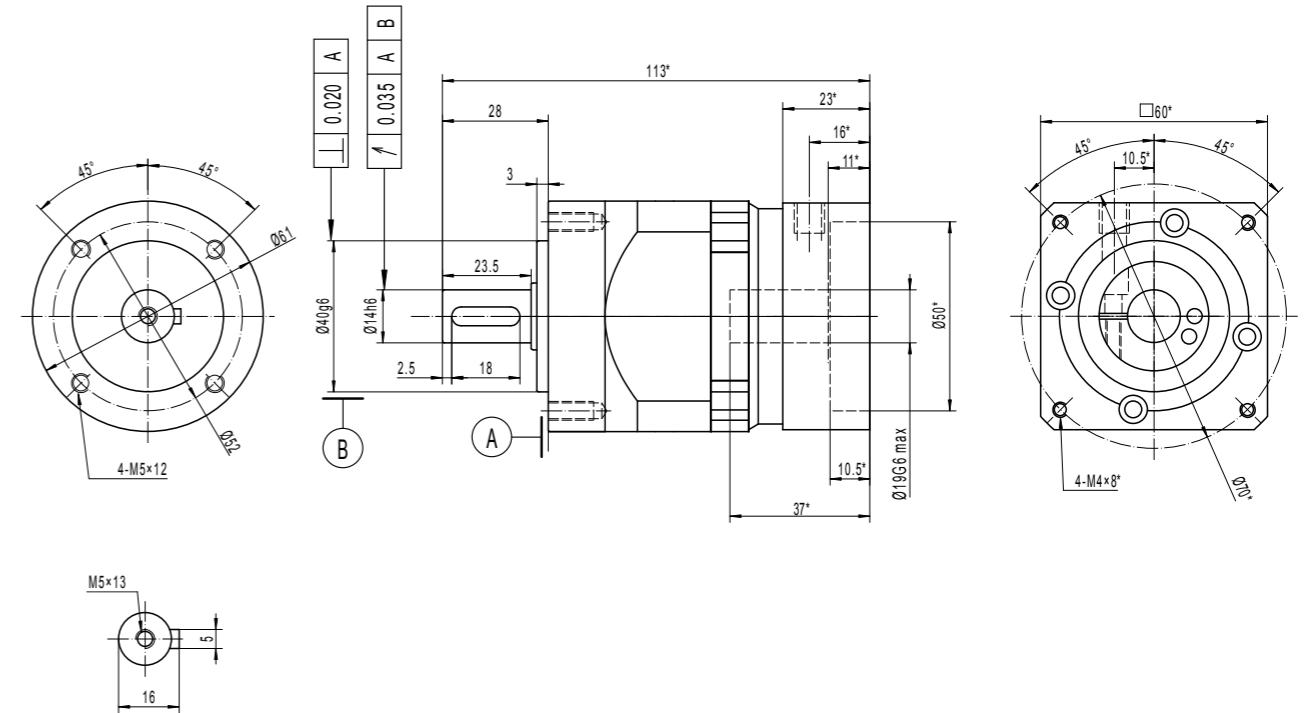


	Ratio*	WISER-X-CI-ST		
		060-P	090-R	120-R
Nominal torque ¹ T _{2N} (Nm)	3	18	70	200
	4	37	129	214
	5	29	100	167
	6	27	81	179
	7	24	71	178
	8	18	55	164
	9	16	47	-
	10	14	42	110
	12	18	65	200
	15	18	68	183
	16	37	86	214
	20	37	90	214
	21	18	51	137
	25	29	100	167
	28	37	68	183
	30	27	81	179
	35	29	85	167
	40	37	40	113
	42	27	81	179
	49	24	71	178
50	29	49	141	
60	27	59	170	
70	24	69	178	
80	18	55	164	
90	16	47	-	
100	14	42	110	
Peak torque ² T _{max} (Nm)	3	55	169	378
	4	49	160	415
	5	40	112	300
	6	38	114	327
	7	38	115	279
	8	37	111	322
	9	36	104	-
	10	36	107	260
	12	55	92	242
	15	55	86	206
	16	49	122	322
	20	49	115	275
	21	55	85	212
	25	40	112	300
	28	49	113	282
	30	38	114	327
	35	40	112	300
	40	49	109	259
	42	38	114	327
	49	38	115	279
50	40	112	300	
60	38	114	327	
70	38	115	279	
80	37	111	322	
90	36	104	-	
100	36	107	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}		
Max angular backlash (minutes)	1 stage	Standard : ≤5 ; Option : ≤3		
	2 stages	Standard : ≤8 ; Option : ≤5		
Nominal input speed (rpm) ⁴		4,000	3,100	2,800
Max input speed (rpm) ⁵		7,500	6,000	5,500
Max radial load (N) ⁶		1,100	2,200	3,600
Max axial load (N) ⁶		900	1,950	3,000
Efficiency (%) ⁷	1 stage	≥97		
	2 stages	≥94		
Torsional stiffness (Nm/min)		6	13	24
Life (h) ⁸		20,000		
Min / max ambient temperature ⁹		-15 / +45		
Max temperature of the body (°C)		90		
Protection class		IP 65		
Noise level (dB) ¹⁰		≤61	≤63	≤64
Lubrication		Lifetime lubrication (grease)		
Coating color		Capri blue (RAL 5019)		
Input flange		Anodized aluminum		

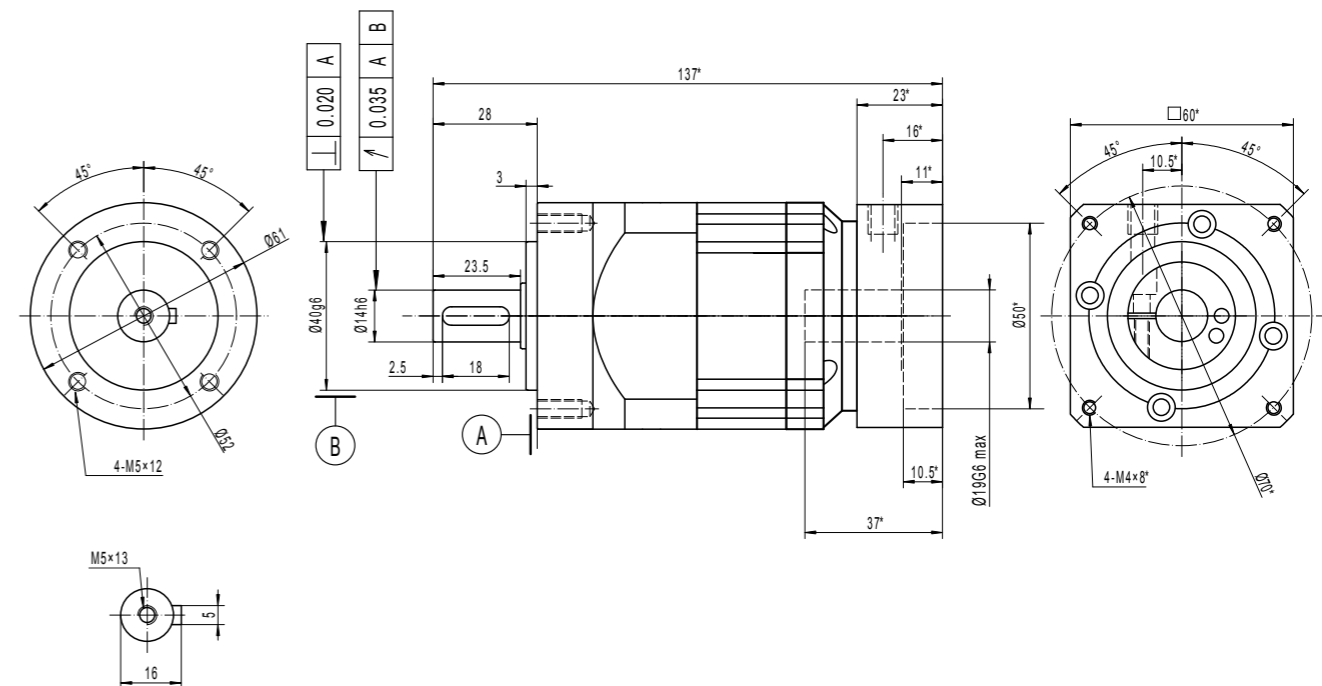
* Others ratios are available upon request.

- 1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied at the middle of the output shaft at 100 rpm.
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

WISER-X-CI-ST-060-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø19

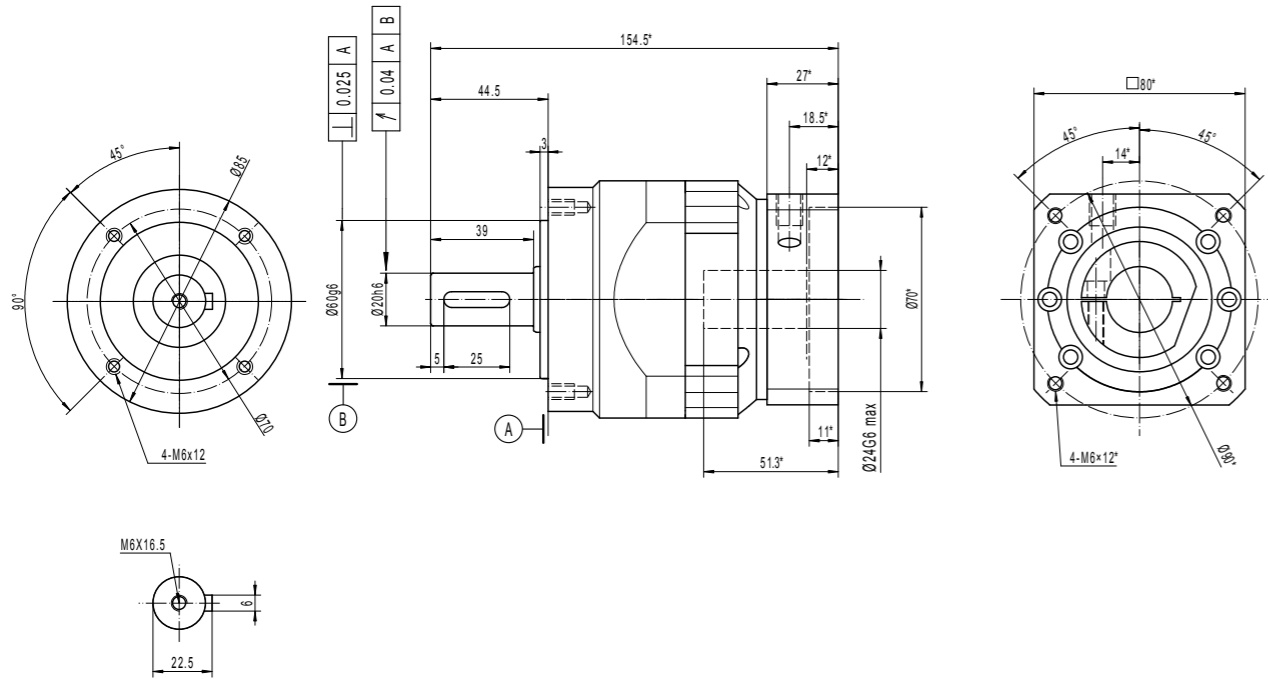


WISER-X-CI-ST-060-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø19

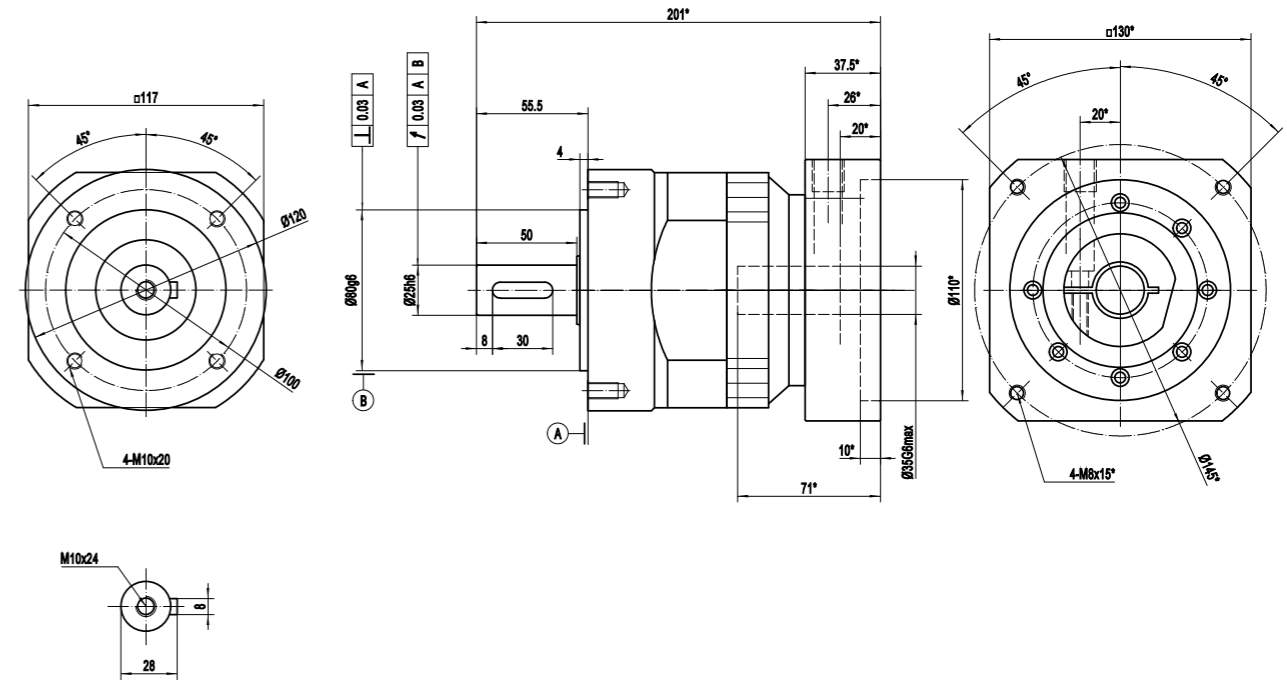


*VARIES WITH YOUR MOTOR DIMENSIONS

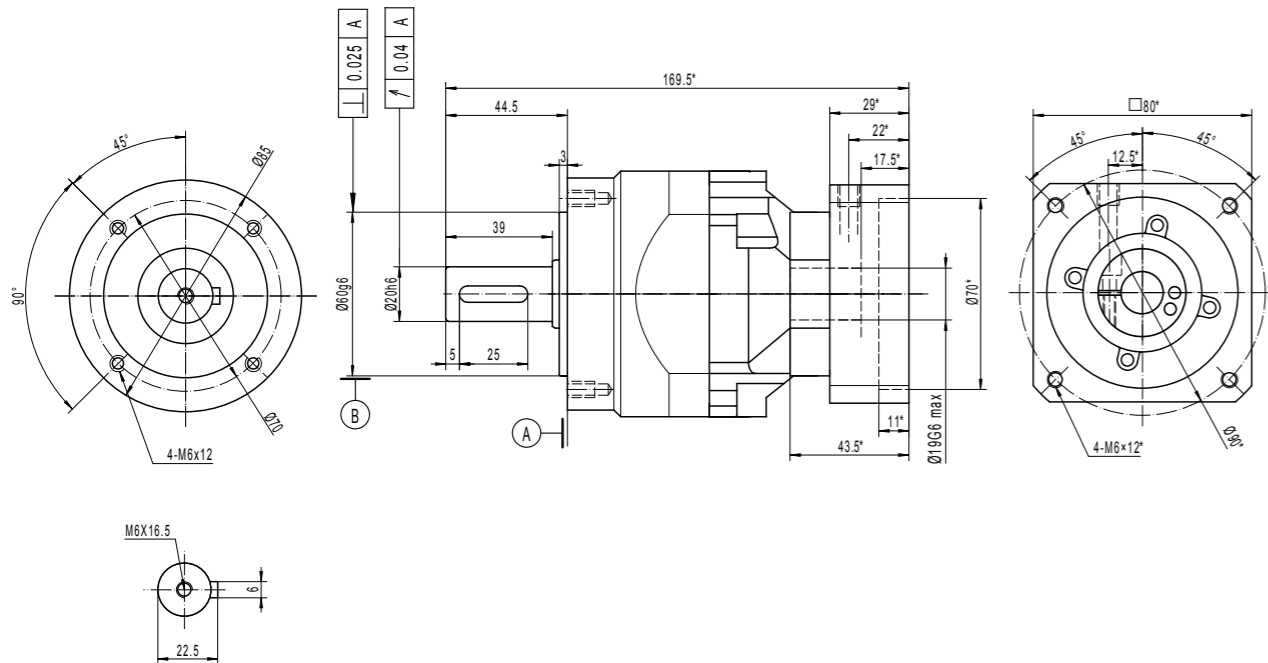
WISER-X-CI-ST-090-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



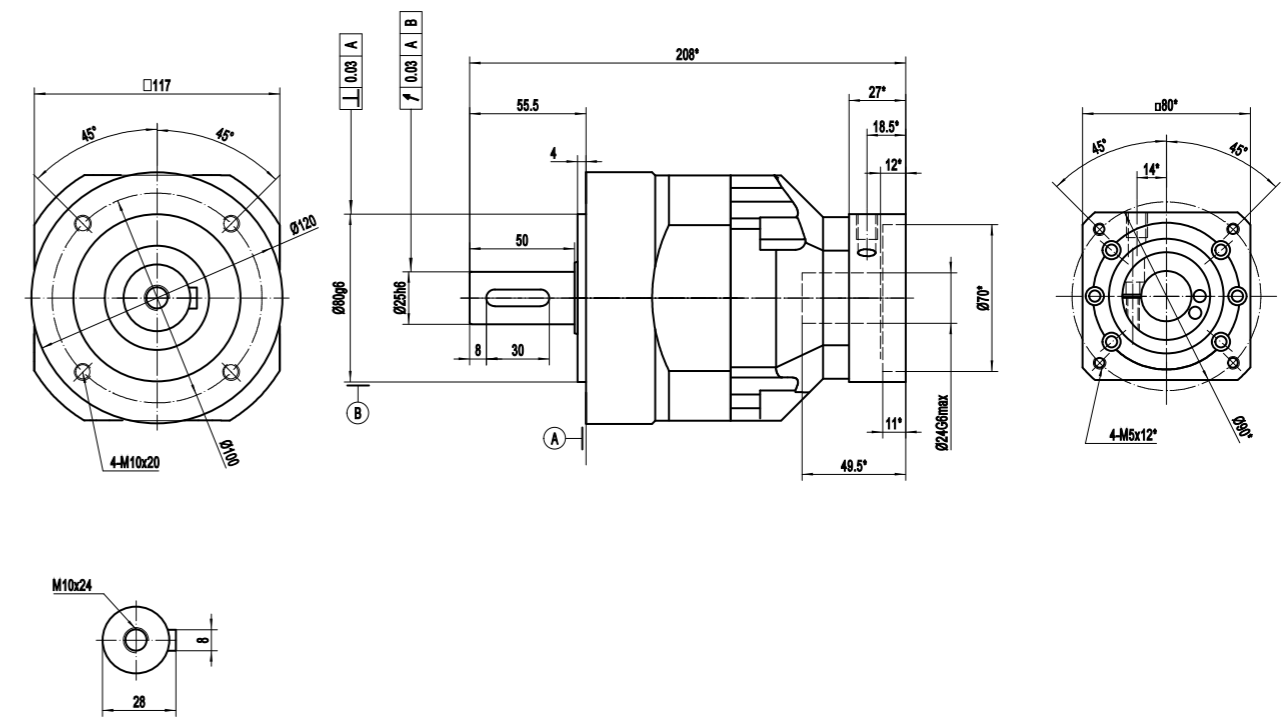
WISER-X-CI-ST-120-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



WISER-X-CI-ST-090-2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



WISER-X-CI-ST-120-2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

WISER-SQ

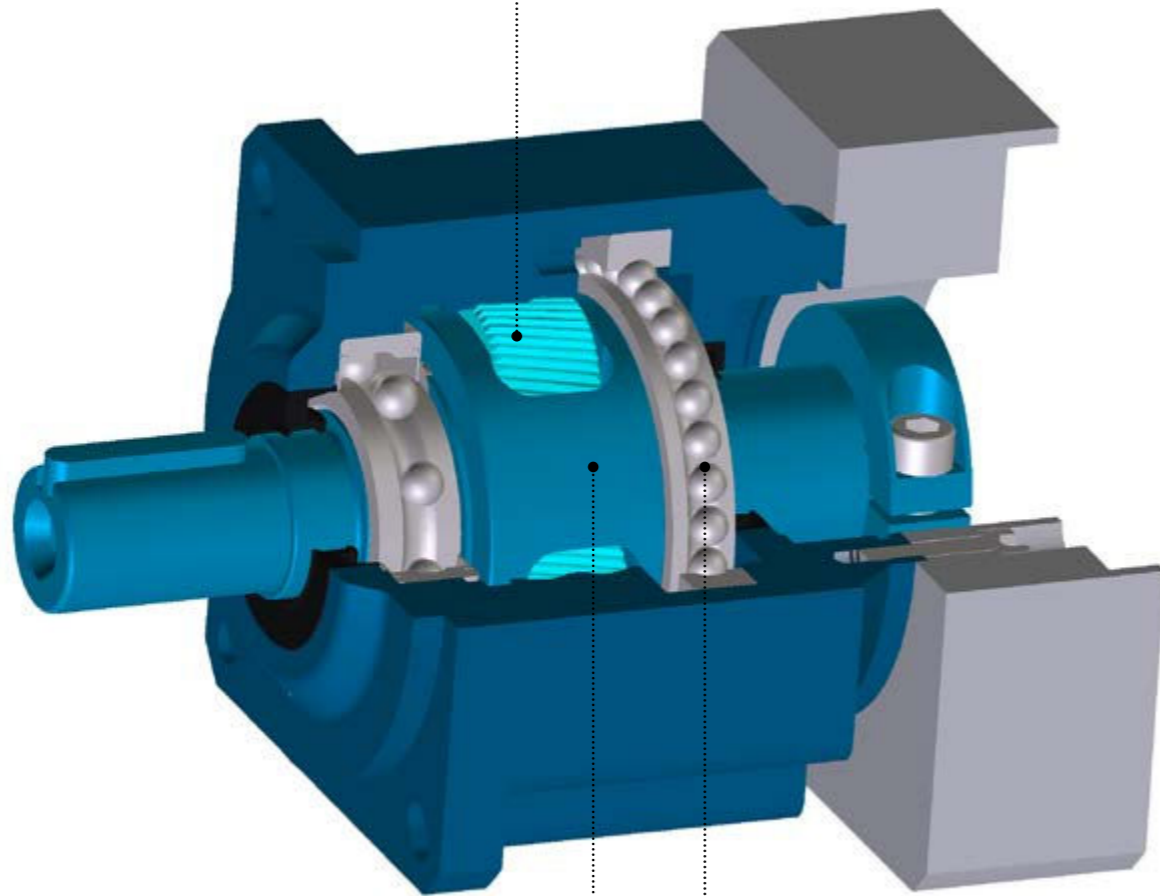


Acceleration capacity	++
Fast reversals	++
Radial load rating	++
Axial load rating	+
Stiffness	++
Precision	++++
Economy	++++

WISER-SQ-ST_ Internal construction

WISER is our entry-level helical gearbox.

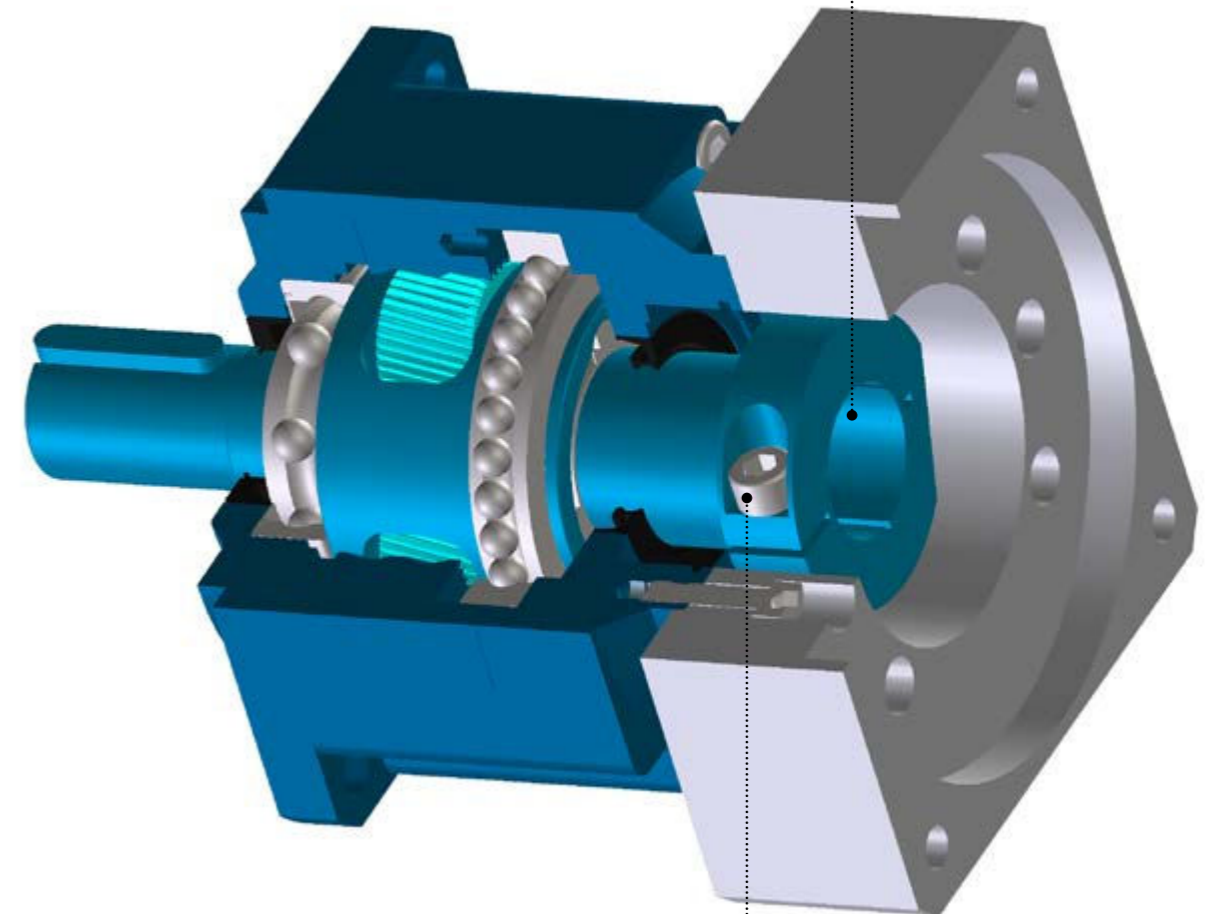
Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.



The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

The planet carrier is dual-supported by radial ball bearings. This configuration guarantees the perfect alignment of gears during operation.

The balanced coupling limits vibration and reduces loads on your motor shaft bearings.



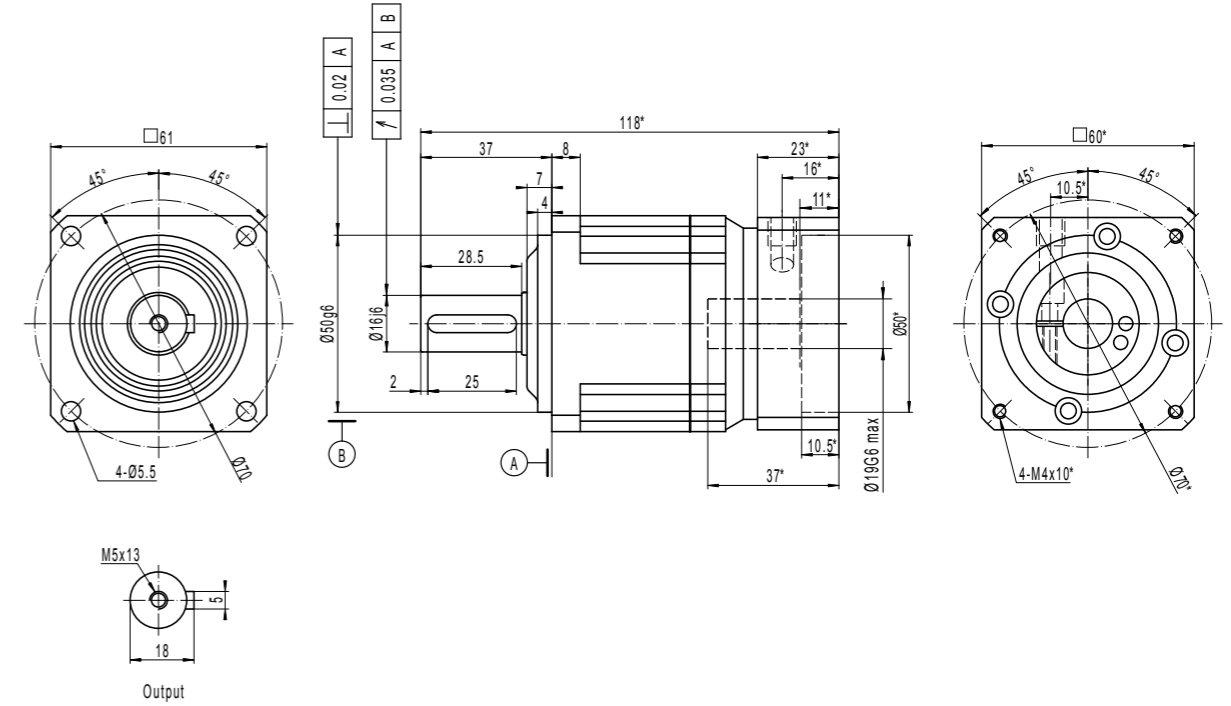
Easy and safe, 1-screw installation to your motor shaft.

	Ratio*	WISER-SQ-ST		
		060-P	090-R	120-R
Nominal torque ¹ T _{2N} (Nm)	3	18	70	200
	4	37	129	214
	5	29	100	167
	6	27	81	179
	7	24	71	178
	8	18	55	164
	9	16	47	-
	10	14	42	110
	12	18	65	200
	15	18	68	183
	16	37	86	214
	20	37	90	214
	21	18	51	137
	25	29	100	167
	28	37	68	183
	30	27	81	179
	35	29	85	167
	40	37	40	113
	42	27	81	179
	49	24	71	178
50	29	49	141	
60	27	59	170	
70	24	69	178	
80	18	55	164	
90	16	47	-	
100	14	42	110	
Peak torque ² T _{max} (Nm)	3	55	169	378
	4	49	160	415
	5	40	112	300
	6	38	114	327
	7	38	115	279
	8	37	111	322
	9	36	104	-
	10	36	107	260
	12	55	92	242
	15	55	86	206
	16	49	122	322
	20	49	115	275
	21	55	85	212
	25	40	112	300
	28	49	113	282
	30	38	114	327
	35	40	112	300
	40	49	109	259
	42	38	114	327
	49	38	115	279
50	40	112	300	
60	38	114	327	
70	38	115	279	
80	37	111	322	
90	36	104	-	
100	36	107	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}		
Max angular backlash (minutes)	1 stage	Standard : ≤5 ; Option : ≤3		
	2 stages	Standard : ≤8 ; Option : ≤5		
Nominal input speed (rpm) ⁴		4,000	3,100	2,800
Max input speed (rpm) ⁵		7,500	6,000	5,500
Max radial load (N) ⁶		1,100	2,200	3,600
Max axial load (N) ⁶		900	1,950	3,000
Efficiency (%) ⁷	1 stage	≥97		
	2 stages	≥94		
Torsional stiffness (Nm/min)		6	13	24
Life (h) ⁸		20,000		
Min / max ambient temperature ⁹		-15 / +45		
Max temperature of the body (°C)		90		
Protection class		IP 65		
Noise level (dB) ¹⁰		≤61	≤63	≤64
Lubrication		Lifetime lubrication (grease)		
Coating color		Capri blue (RAL 5019)		
Input flange		Anodized aluminum		

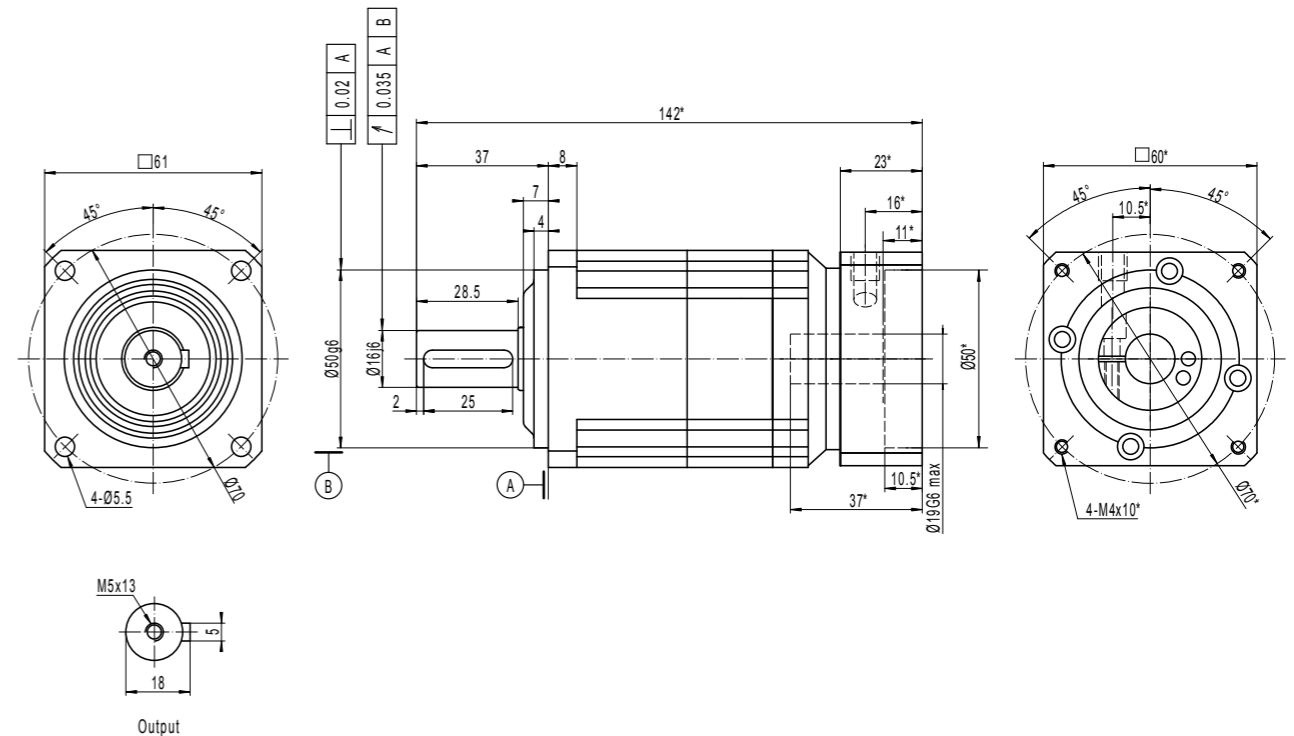
* Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied at the middle of the output shaft at 100 rpm.
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

WISER-SQ-ST-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø19

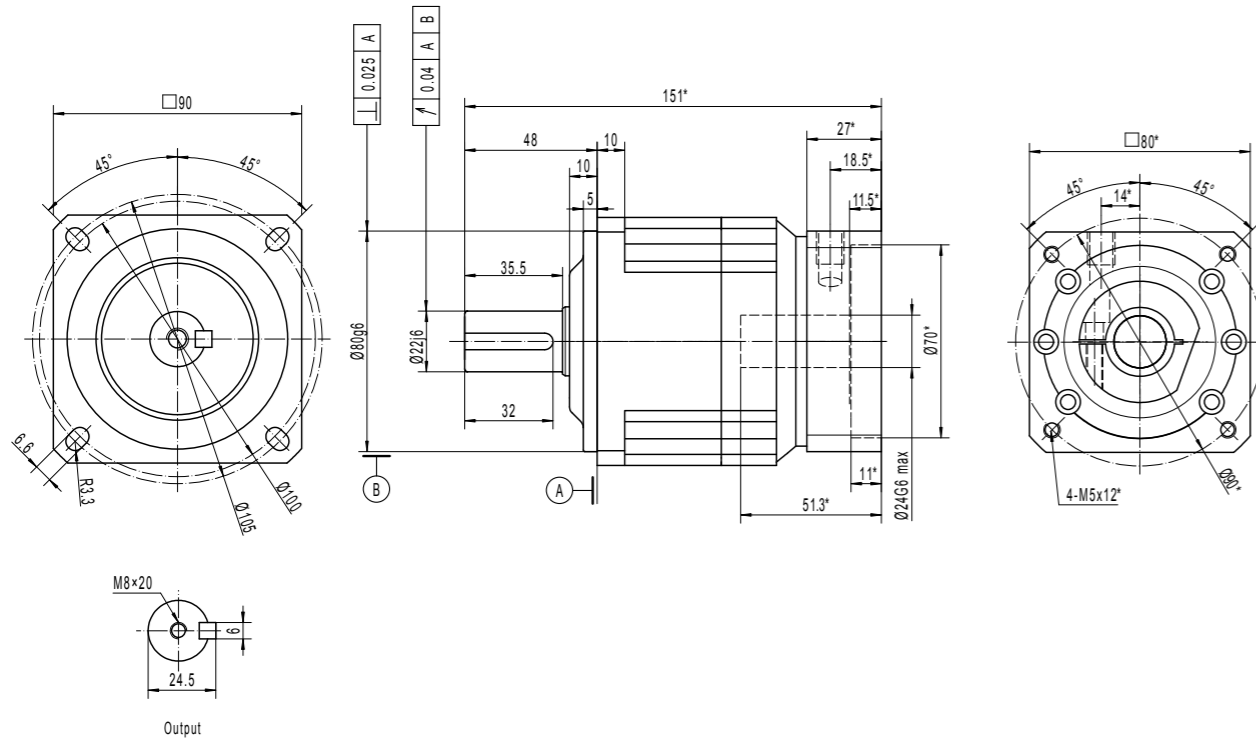


WISER-SQ-ST-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø19

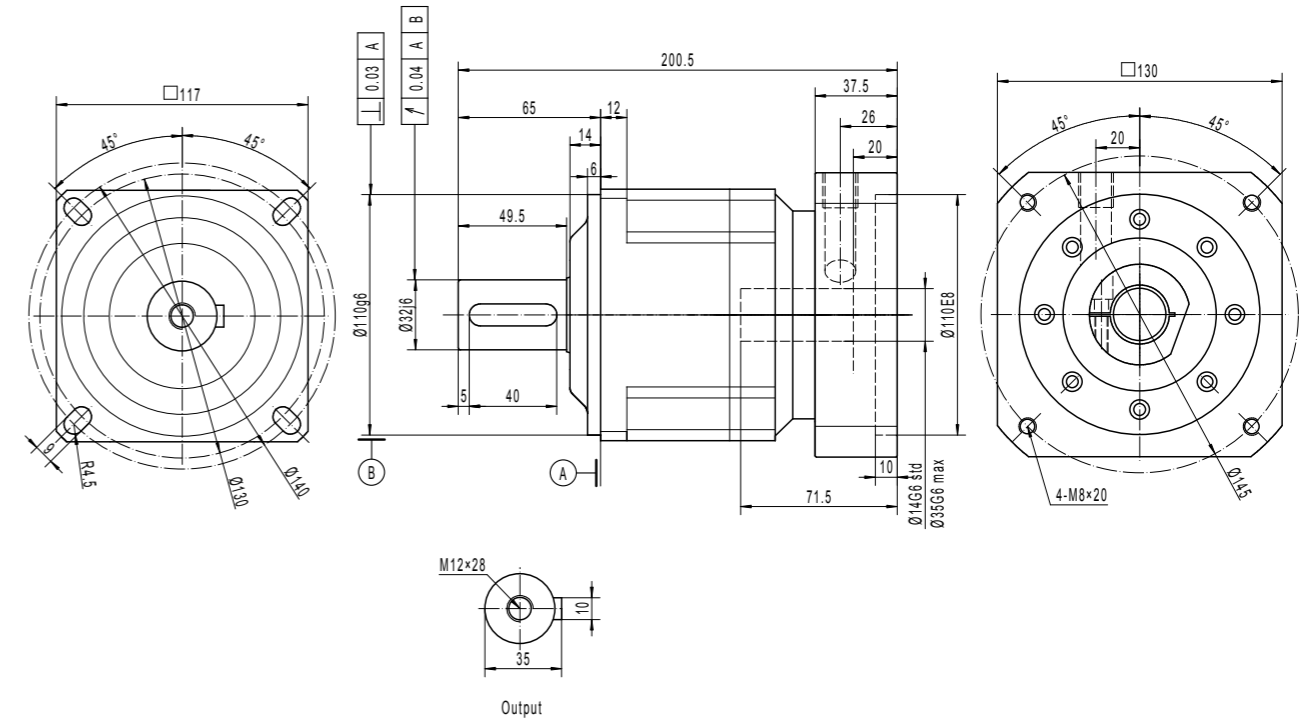


*VARIES WITH YOUR MOTOR DIMENSIONS

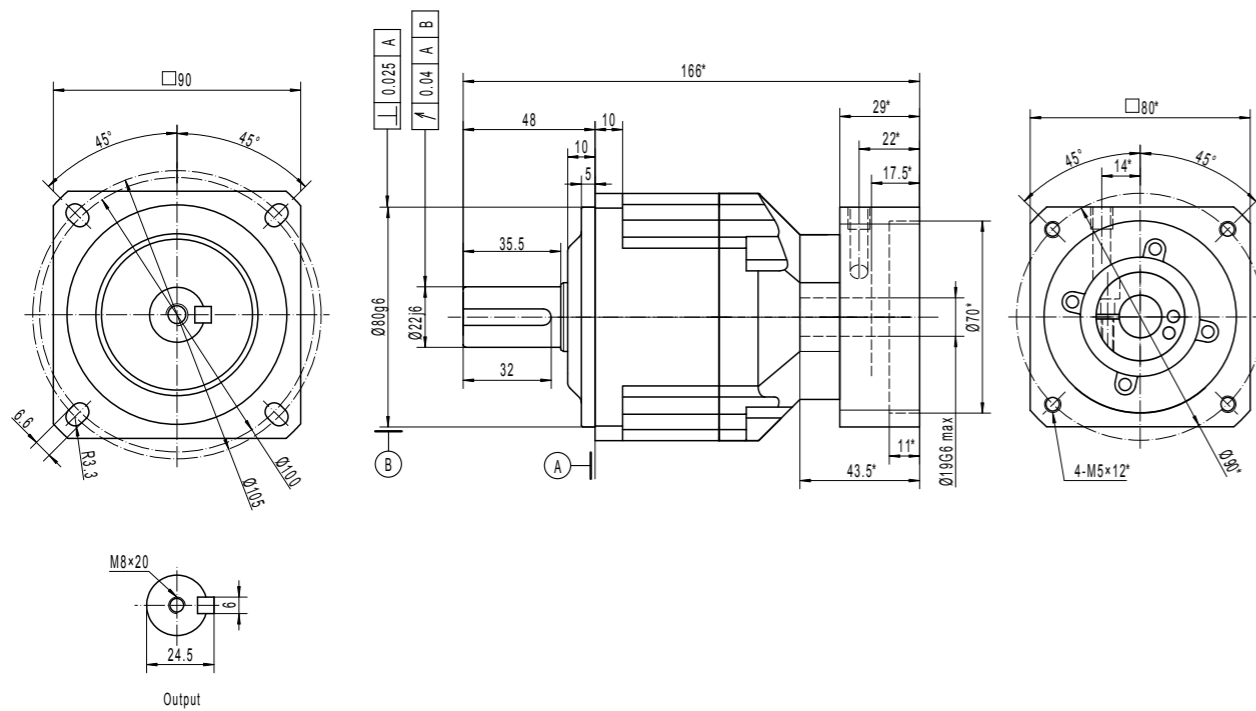
WISER-SQ-ST-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



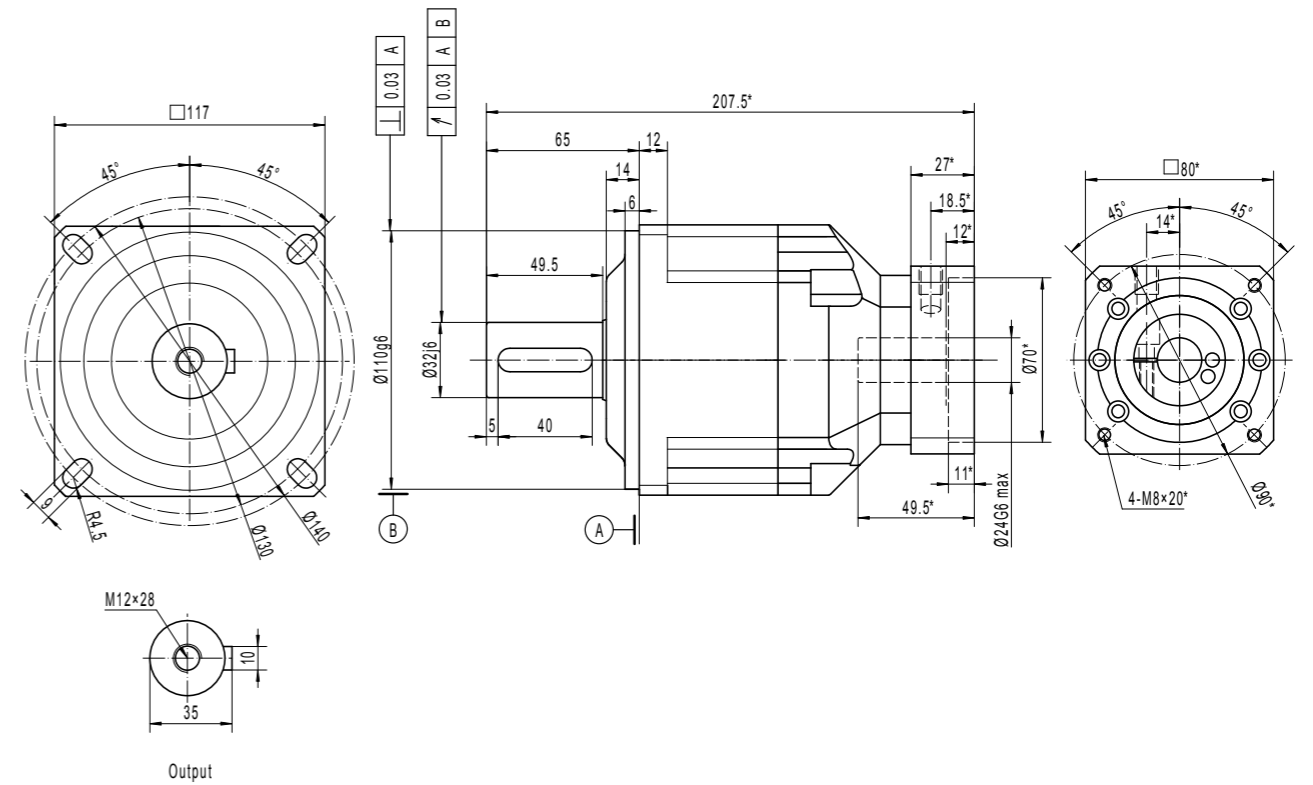
WISER-SQ-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



WISER-SQ-ST-090- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



WISER-SQ-ST-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

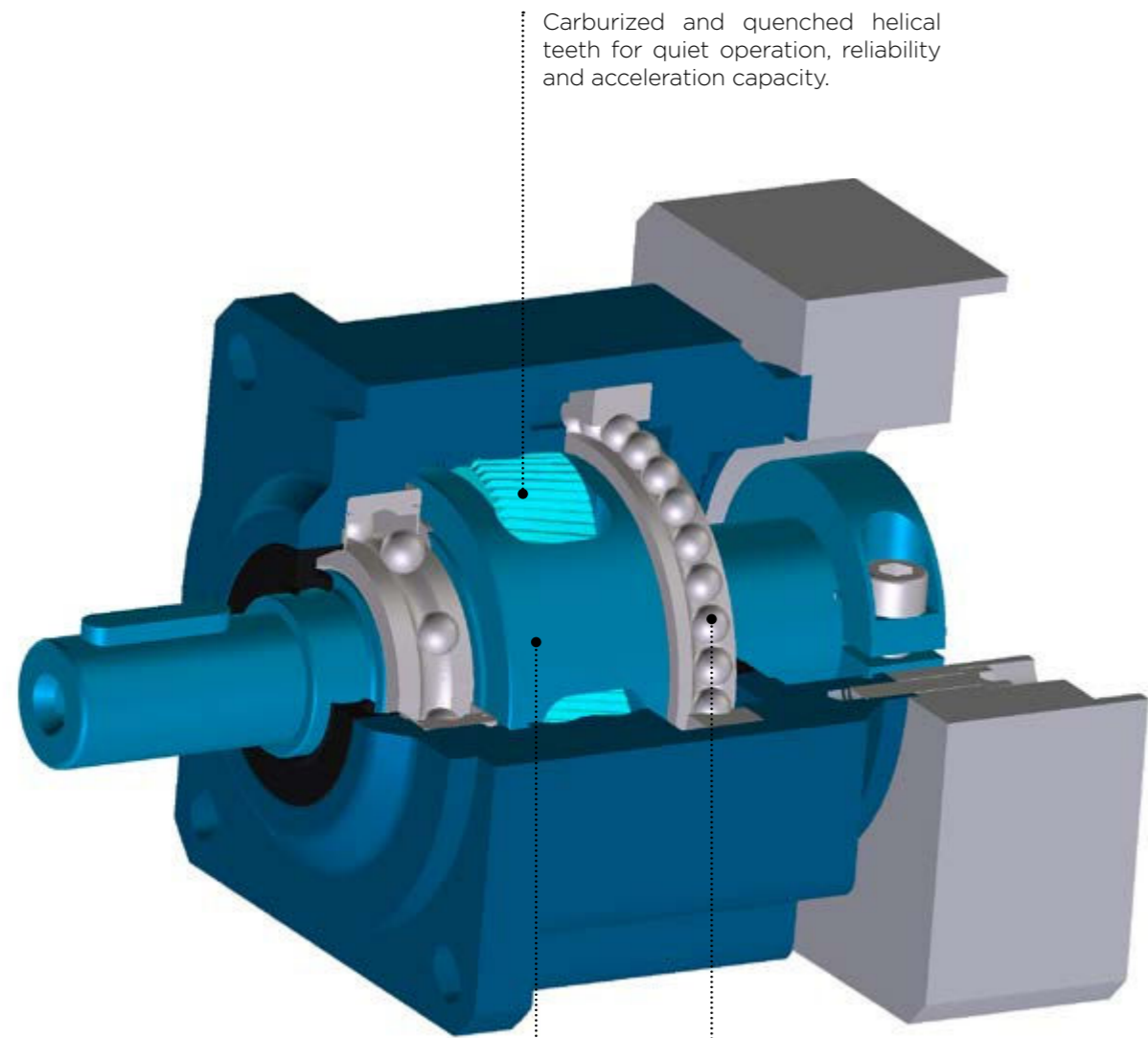
WISER-X-SQ



Acceleration capacity	++
Fast reversals	++
Radial load rating	++
Axial load rating	+
Stiffness	++
Precision	++++
Economy	++++

WISER-X-SQ-ST_ Internal construction

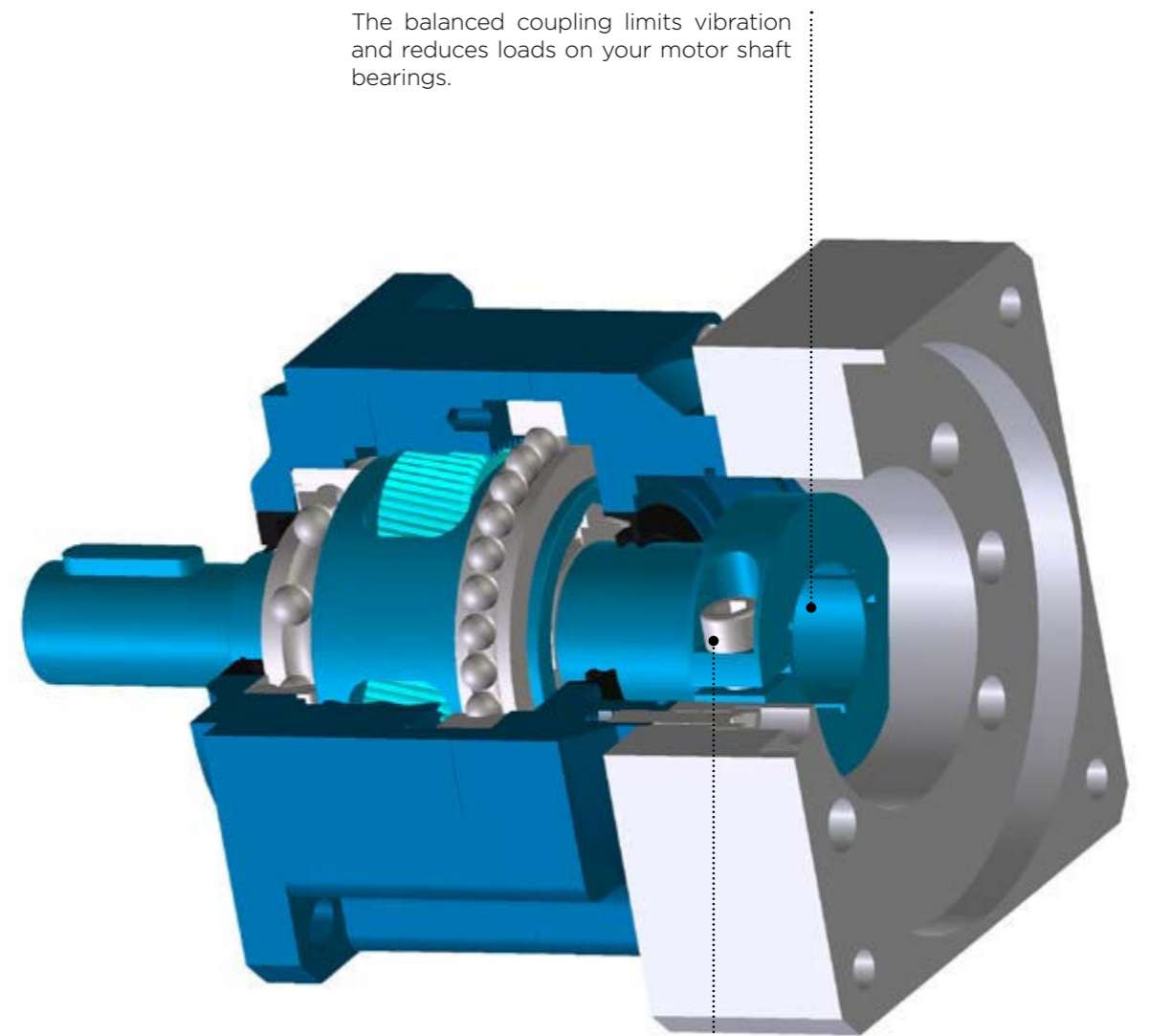
WISER is our entry-level helical gearbox.



Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

The planet carrier is dual-supported by radial ball bearings. This configuration guarantees the perfect alignment of gears during operation.



The balanced coupling limits vibration and reduces loads on your motor shaft bearings.

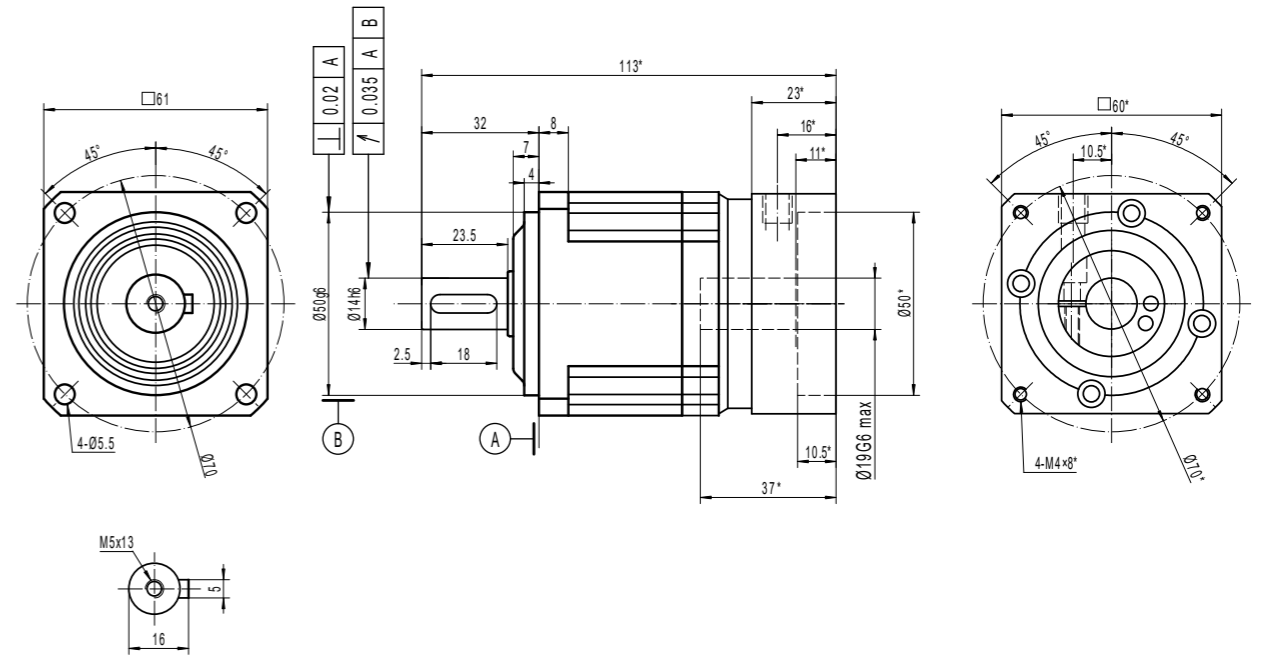
Easy and safe, 1-screw installation to your motor shaft.

	Ratio*	WISER-X-SQ-ST		
		060-R	090-R	120-R
Nominal torque ¹ T _{2N} (Nm)	3	18	70	200
	4	37	129	214
	5	29	100	167
	6	27	81	179
	7	24	71	178
	8	18	55	164
	9	16	47	-
	10	14	42	110
	12	18	65	200
	15	18	68	183
	16	37	86	214
	20	37	90	214
	21	18	51	137
	25	29	100	167
	28	37	68	183
	30	27	81	179
	35	29	85	167
	40	37	40	113
	42	27	81	179
	49	24	71	178
50	29	49	141	
60	27	59	170	
70	24	69	178	
80	18	55	164	
90	16	47	-	
100	14	42	110	
Peak torque ² T _{max} (Nm)	3	55	169	378
	4	49	160	415
	5	40	112	300
	6	38	114	327
	7	38	115	279
	8	37	111	322
	9	36	104	-
	10	36	107	260
	12	55	92	242
	15	55	86	206
	16	49	122	322
	20	49	115	275
	21	55	85	212
	25	40	112	300
	28	49	113	282
	30	38	114	327
	35	40	112	300
	40	49	109	259
	42	38	114	327
	49	38	115	279
50	40	112	300	
60	38	114	327	
70	38	115	279	
80	37	111	322	
90	36	104	-	
100	36	107	260	
Emergency stop torque (Nm) ³		1,5 x T _{max}		
Max angular backlash (minutes)	1 stage	Standard : ≤5 ; Option : ≤3		
	2 stages	Standard : ≤8 ; Option : ≤5		
Nominal input speed (rpm) ⁴		4,000	3,100	2,800
Max input speed (rpm) ⁵		7,500	6,000	5,500
Max radial load (N) ⁶		1,100	2,200	3,600
Max axial load (N) ⁶		900	1,950	3,000
Efficiency (%) ⁷	1 stage	≥97		
	2 stages	≥94		
Torsional stiffness (Nm/min)		6	13	24
Life (h) ⁸		20,000		
Min / max ambient temperature ⁹		-15 / +45		
Max temperature of the body (°C)		90		
Protection class		IP 65		
Noise level (dB) ¹⁰		≤61	≤63	≤64
Lubrication		Lifetime lubrication (grease)		
Coating color		Capri blue (RAL 5019)		
Input flange		Anodized aluminum		

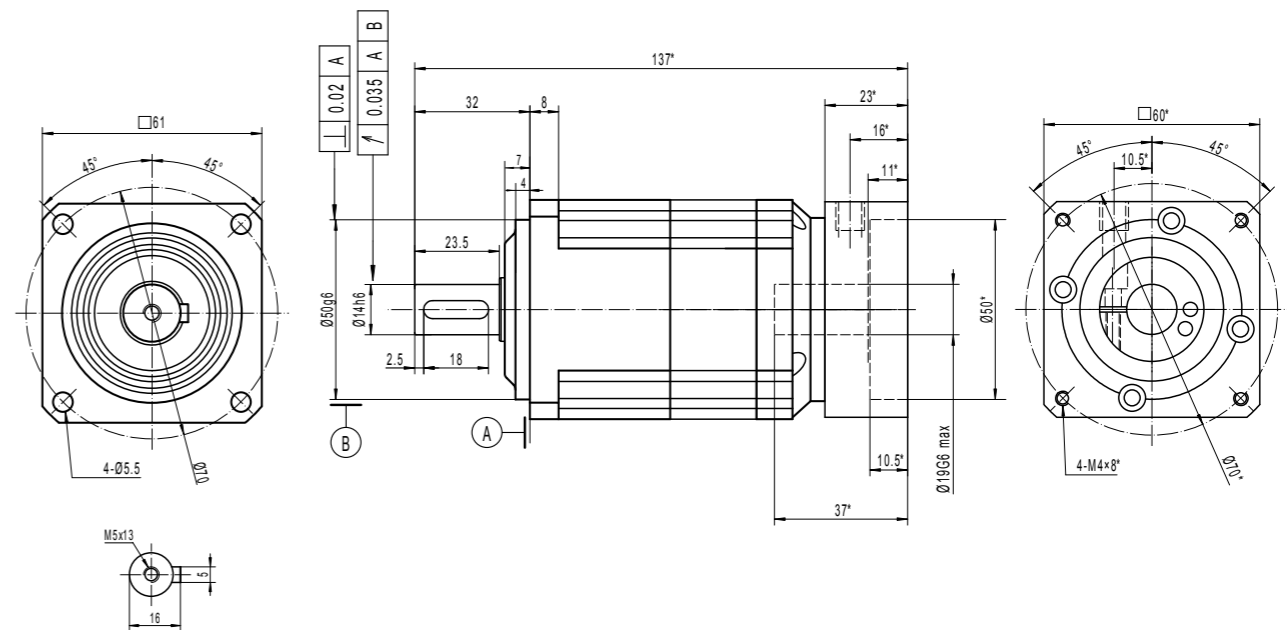
* Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20,000 hours.
 5: Peak speed only.
 6: Applied at the middle of the output shaft at 100 rpm.
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

WISER-X-SQ-ST-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø19

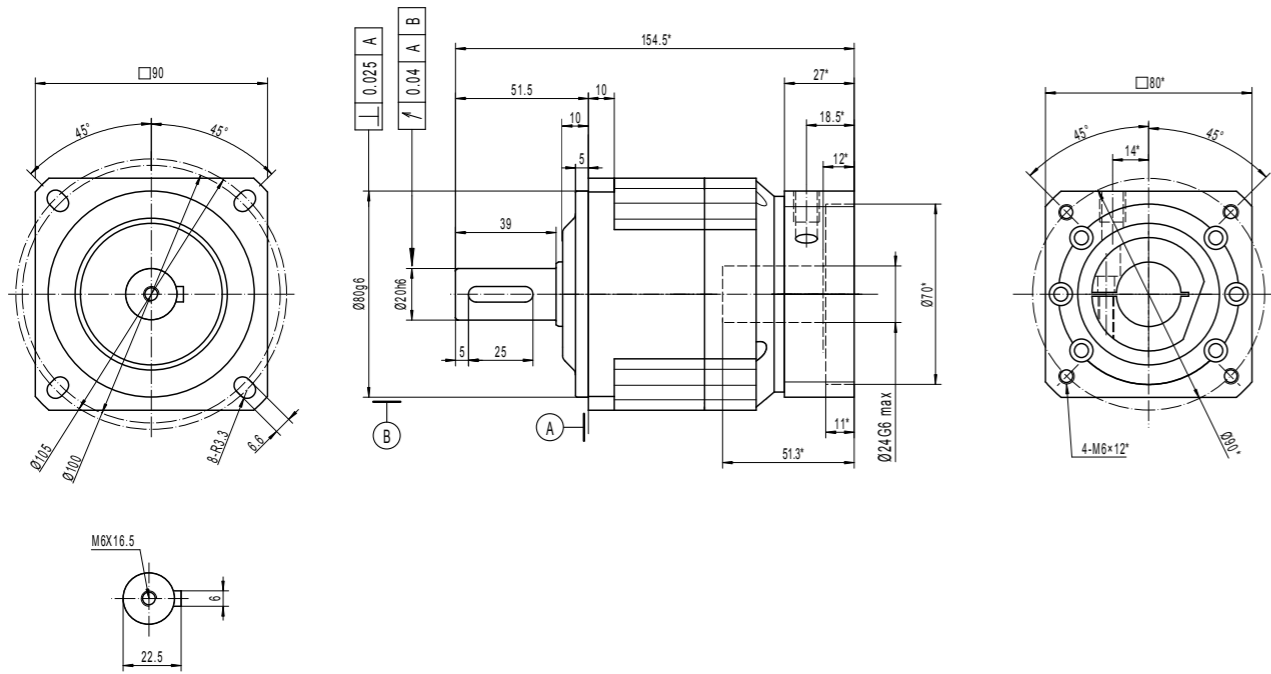


WISER-X-SQ-ST-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø19

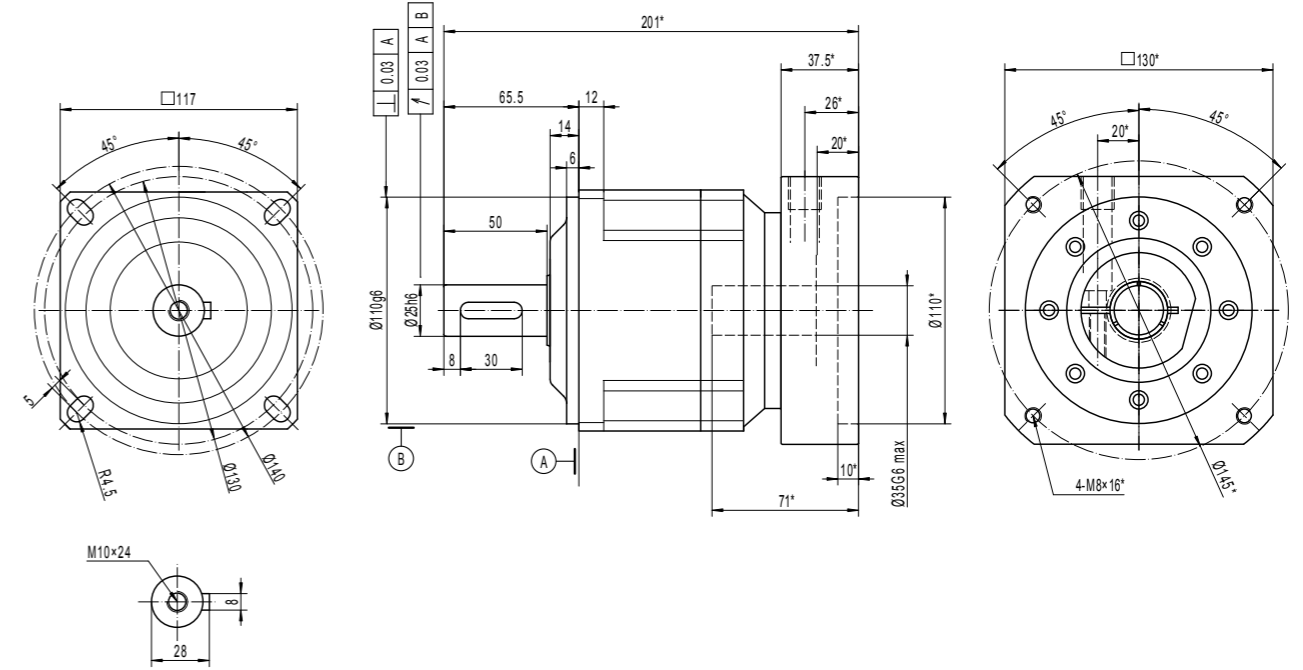


*VARIES WITH YOUR MOTOR DIMENSIONS

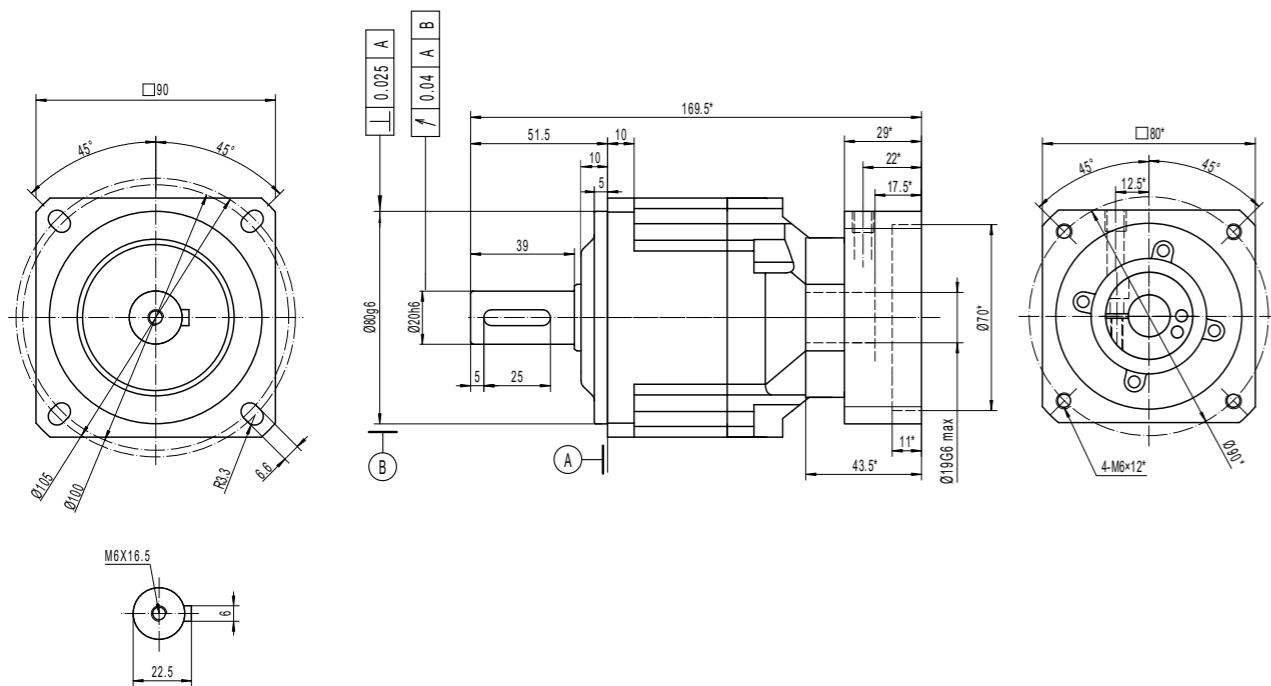
WISER-X-SQ-ST-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



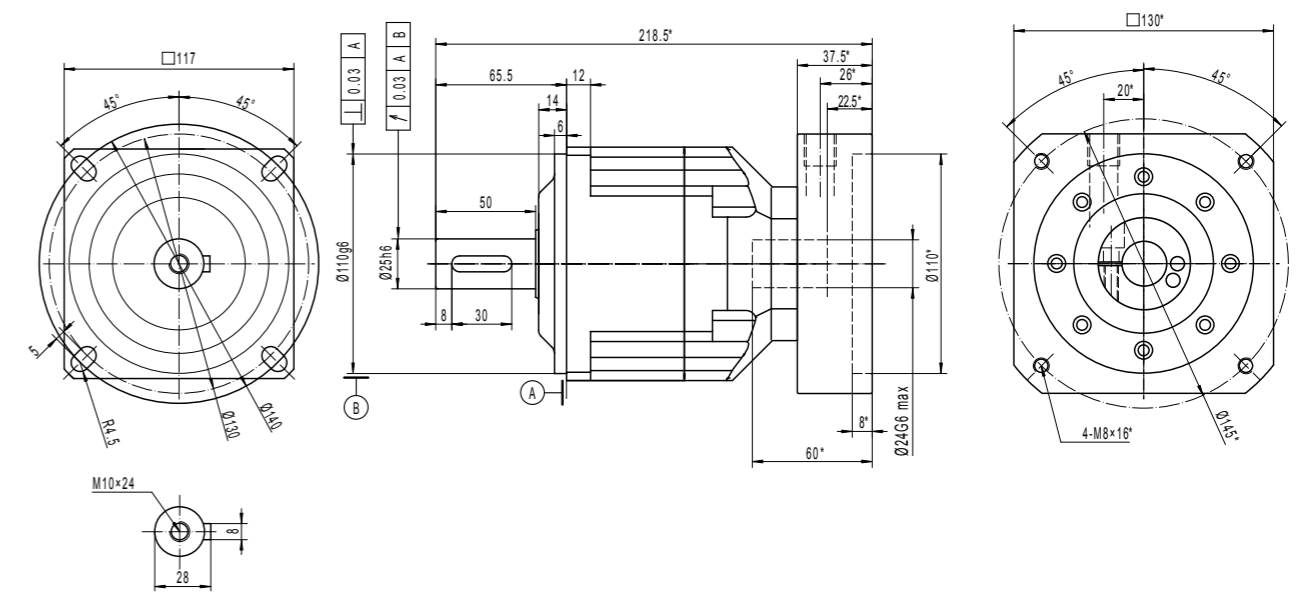
WISER-X-SQ-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



WISER-X-SQ-ST-090- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



WISER-X-SQ-ST-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

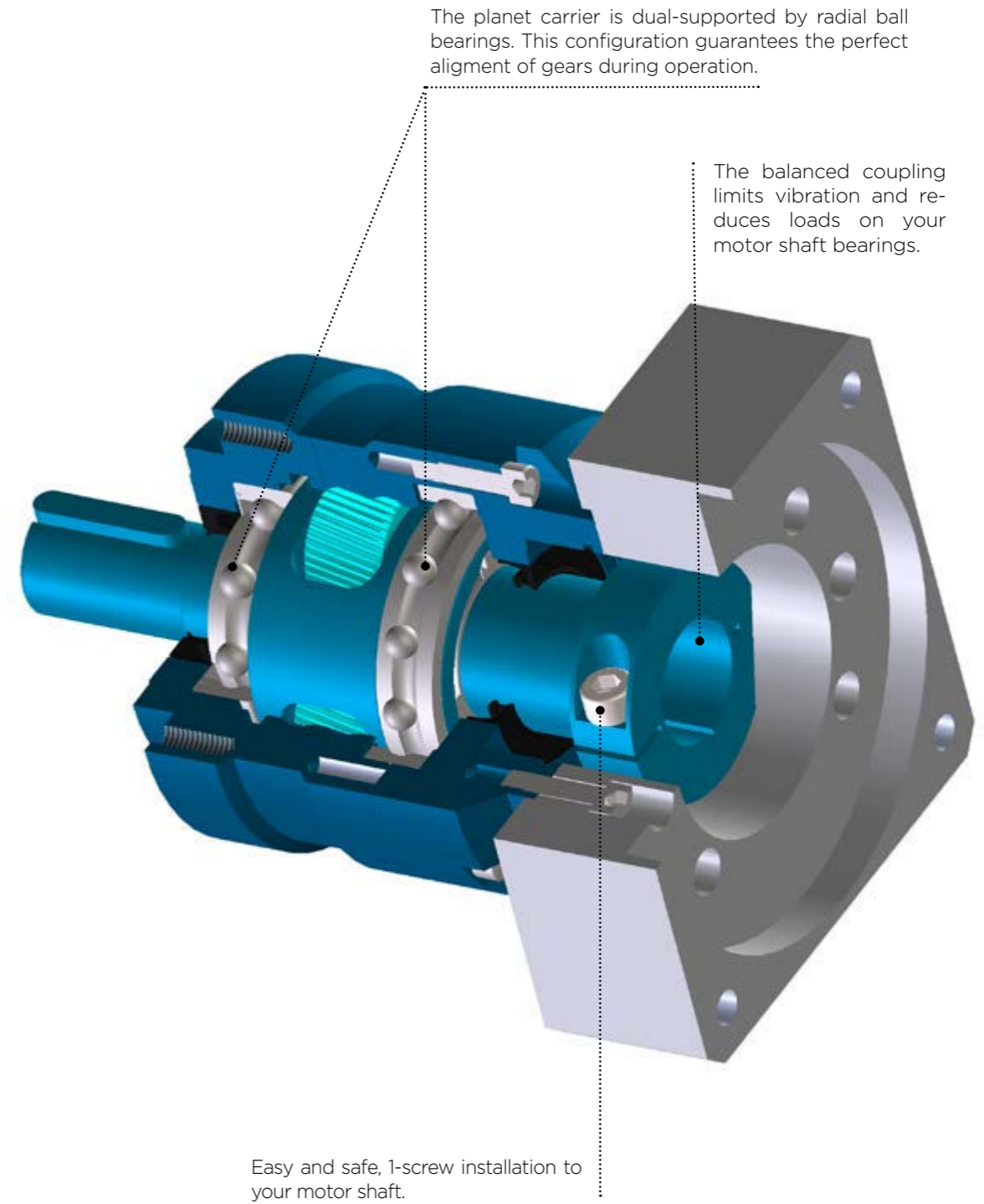
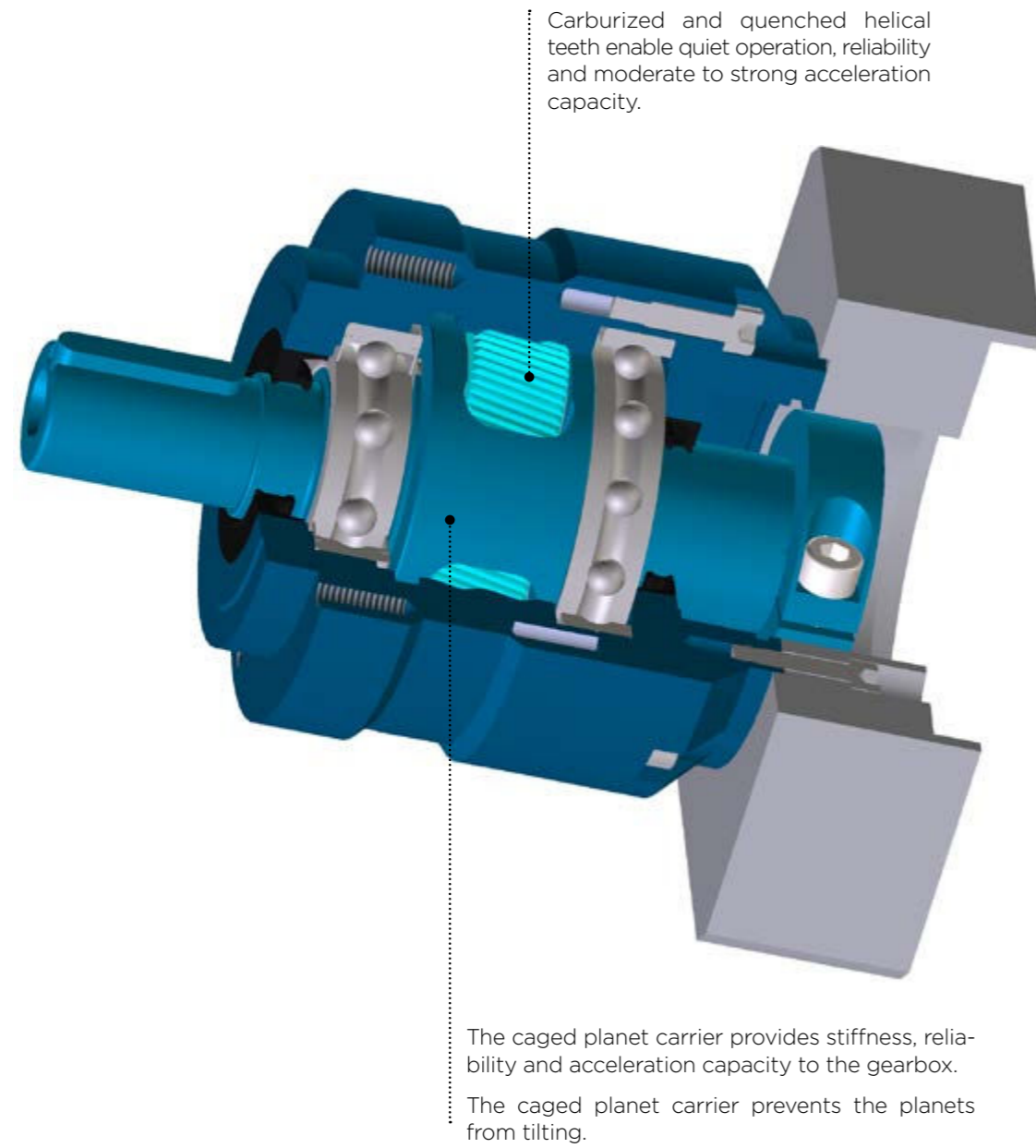
LIVELY-CI



Acceleration capacity	+++
Fast reversals	+++
Radial efforts	++
Axial efforts	+
Stiffness	+++
Precision	++++
Economy	++++

LIVELY-CI-ST_ Internal construction

LIVELY is an economical, yet precise and reliable planetary gearbox designed for moderate acceleration or continuous operation.

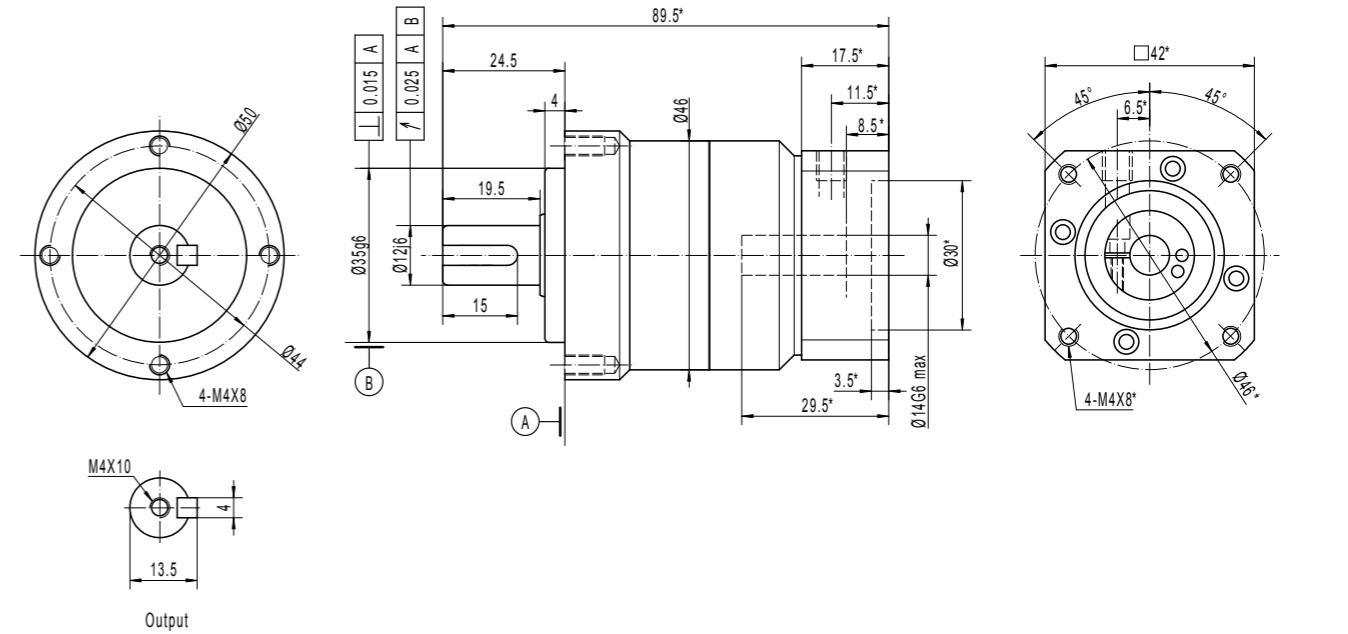


	Ratio**	LIVELY-CI-ST											
		040-P*	060-P*	090-R*	090-P*	120-R*	120-P*	155-R*	155-P*	205-R*	205-P*	235-R*	235-P*
Nominal torque ¹ T _{2N} (Nm)	3	5	18	70	200	384	840	1370					
	4	8	37	129	214	407	1180	1888					
	5	11	29	100	167	317	732	1180	1888				
	6	-	27	81	179	440	927	1480					
	7	8	24	71	178	465	983	1570					
	8	-	18	55	164	408	945	1468					
	9	-	16	47	-	353	818	1280					
	10	5	14	42	110	308	727	1140					
	12	5	18	65	70	200	200	283	384	549	840	1,370	1,370
	15	5	18	68	70	183	200	295	384	788	840	1,370	1,370
	16	8	37	86	129	214	214	377	407	732	1,180	1,888	1,888
	20	8	37	90	129	214	214	393	407	1,051	1,180	1,888	1,888
	21	5	18	51	70	137	200	269	384	715	840	1,370	1,370
	25	11	29	100	100	167	167	438	438	925	925	1,475	1,475
	28	8	37	68	129	183	214	359	407	953	1,180	1,888	1,888
	30	-	27	81	81	179	179	440	440	927	927	1,480	1,480
	35	11	29	85	100	167	167	438	438	925	925	1,475	1,475
	40	8	37	40	113	113	214	218	407	571	1,180	1,384	1,888
	42	-	27	81	81	179	179	440	440	927	927	1,480	1,480
	49	8	24	71	71	178	178	465	465	983	983	1,570	1,570
50	11	29	49	100	141	167	273	438	714	925	1,475	1,475	
60	-	27	59	81	170	179	327	440	857	927	1,480	1,480	
70	8	24	69	71	178	178	382	465	983	983	1,570	1,570	
80	-	18	55	55	164	164	408	408	945	945	1,468	1,468	
90	-	16	47	47	-	-	353	353	818	818	1,280	1,280	
100	5	14	42	42	110	110	308	308	727	727	1,140	1,140	
Peak torque ² T _{max} (Nm)	3	15	55	169	378	628	1,338	2,635					
	4	14	49	160	415	786	1,786	3,515					
	5	14	40	112	300	870	1,843	2,945					
	6	-	38	114	327	815	1,770	2,700					
	7	14	38	115	327	815	1,770	2,700					
	8	-	37	111	322	765	1,670	2,550					
	9	-	36	104	-	-	728	1,589	2,450				
	10	13	36	107	260	715	1,580	2,445					
	12	15	55	92	169	242	378	502	628	1,096	1,338	2,635	2,635
	15	15	55	86	169	206	378	477	628	1,328	1,338	2,635	2,635
	16	14	49	122	160	322	415	669	810	1,462	1,786	3,515	3,515
	20	14	49	115	160	275	415	636	810	1,770	1,786	3,515	3,515
	21	15	55	85	169	212	378	457	628	1,230	1,338	2,635	2,635
	25	14	40	112	112	300	300	795	870	1,843	1,843	2,945	2,945
	28	14	49	113	160	282	415	609	810	1,640	1,786	3,515	3,515
	30	-	38	114	114	327	327	815	815	1,770	1,770	2,700	2,700
	35	14	40	112	112	300	300	762	870	1,843	1,843	2,945	2,945
	40	14	49	109	160	259	415	560	810	1,471	1,786	3,320	3,515
	42	-	38	114	114	327	327	815	815	1,770	1,770	2,700	2,700
	49	14	38	115	115	279	279	804	804	1,760	1,760	2,695	2,695
50	14	40	112	112	300	300	700	870	1,839	1,843	2,945	2,945	
60	-	38	114	114	327	327	815	815	1,770	1,770	2,700	2,700	
70	14	38	115	115	279	279	804	804	1,760	1,760	2,695	2,695	
80	-	37	111	111	322	322	765	765	1,670	1,670	2,550	2,550	
90	-	36	104	104	-	-	728	728	1,589	1,589	2,450	2,450	
100	13	36	107	107	260	260	715	715	1,580	1,580	2,445	2,445	
Emergency stop torque (Nm) ³		1,5 x T _{max}											
Max angular backlash (minutes)	1 stage	Standard : ≤5 ; Option : ≤3											
	2 stages	Standard : ≤3 ; Option : ≤1											
Nominal input speed (rpm) ⁴		4,000	4,000	3,100	2,800	2,600	2,300	2,000					
Max input speed (rpm) ⁵		8,000	7,500	6,000	5,500	5,000	4,500	3,000					
Max radial load (N) ⁶		700	1,100	2,200	3,600	9,000	14,500	20,500					
Max axial load (N) ⁶		610	900	1,950	3,000	8,300	13,500	19,000					
Efficiency (%) ⁷	1 stage	≥97											
	2 stages	≥94											
Torsional stiffness (Nm/min)		3	7	14	33	63	180	410					
Life (h) ⁸		20,000											
Min / max ambient temperature ⁹		-15 / +45											
Max temperature of the body (°C)		90											
Protection class		IP 65											
Noise level (dB) ¹⁰		≤59	≤61	≤63	≤64	≤66	≤68	≤71					
Lubrication		Lifetime lubrication (grease)											
Coating color		Capri blue (RAL 5019)											
Input flange		Anodized aluminum											

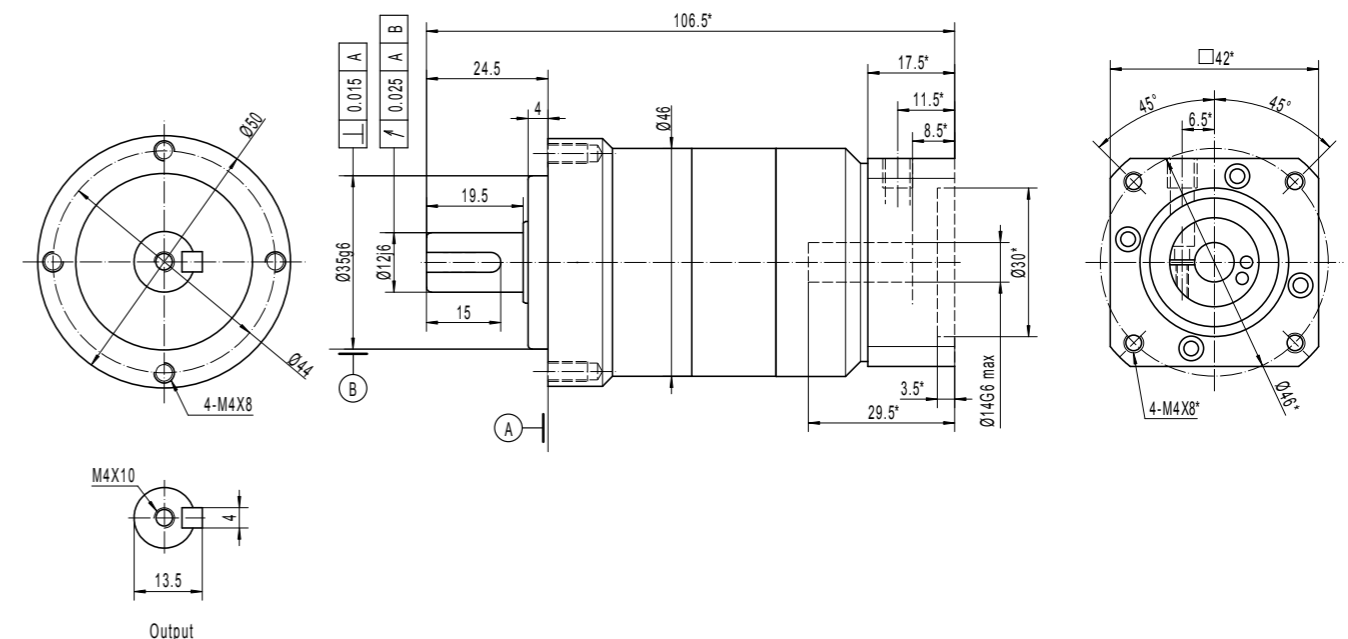
* 2 stage-gearboxes, can be equipped with a light, space-saving, low inertia input stage (R) or with a larger input stage (P), offering more power (as a paying option).
** Others ratios are available upon request.

- 1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
- 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
- 3: 1 000 occurrences maximum.
- 4: Speed at which the nominal torque is applicable 20,000 hours.
- 5: Peak speed only.
- 6: Applied at the middle of the output shaft at 100 rpm.
- 7: Measured at full load and at 25°C
- 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
- 9: Room temperature. Refer to temperature factors in dedicated section.
- 10: Ratio 10 at nominal speed, measured at 1m.

LIVELY-CI-ST-040- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø14

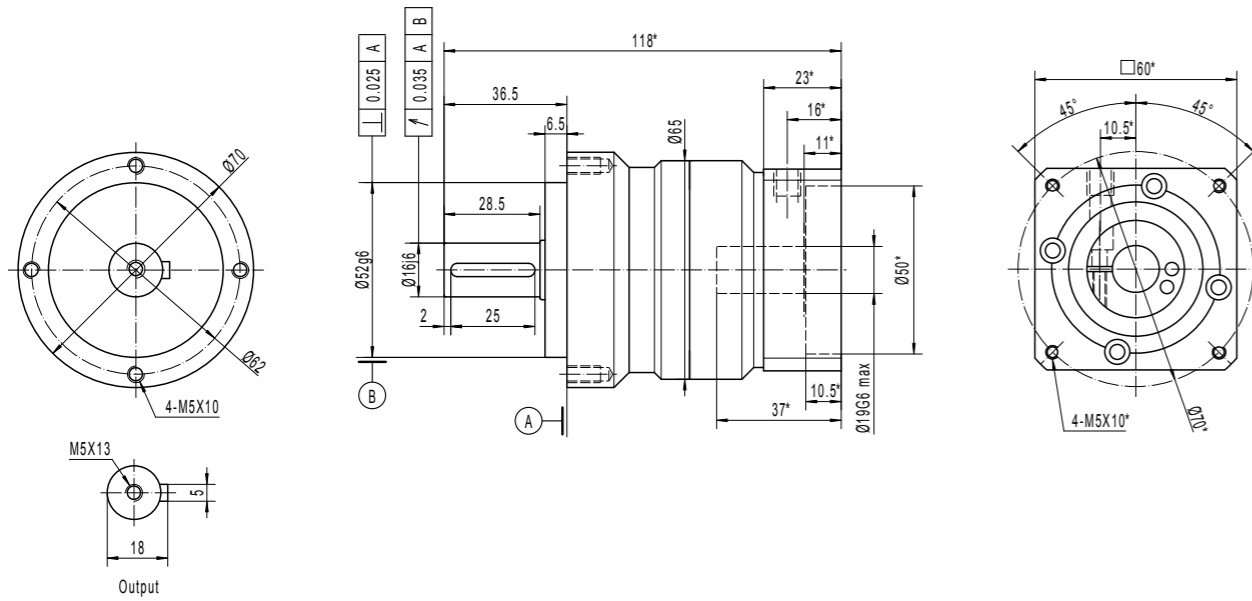


LIVELY-CI-ST-040- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø14

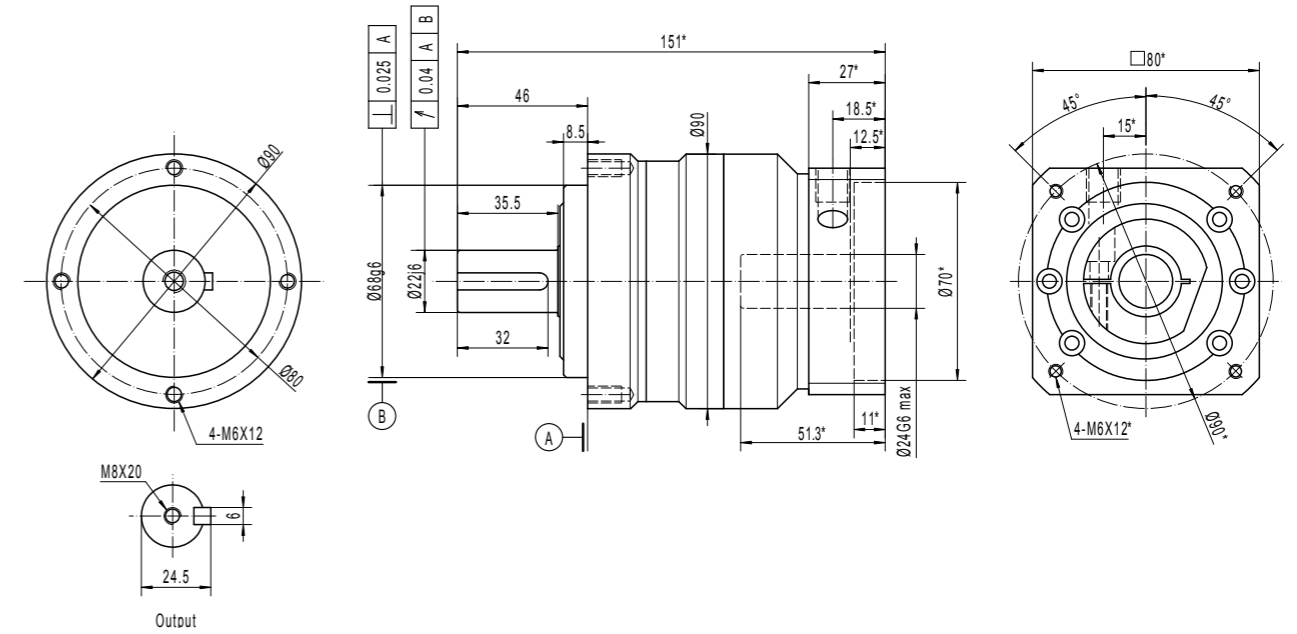


*VARIES WITH YOUR MOTOR DIMENSIONS

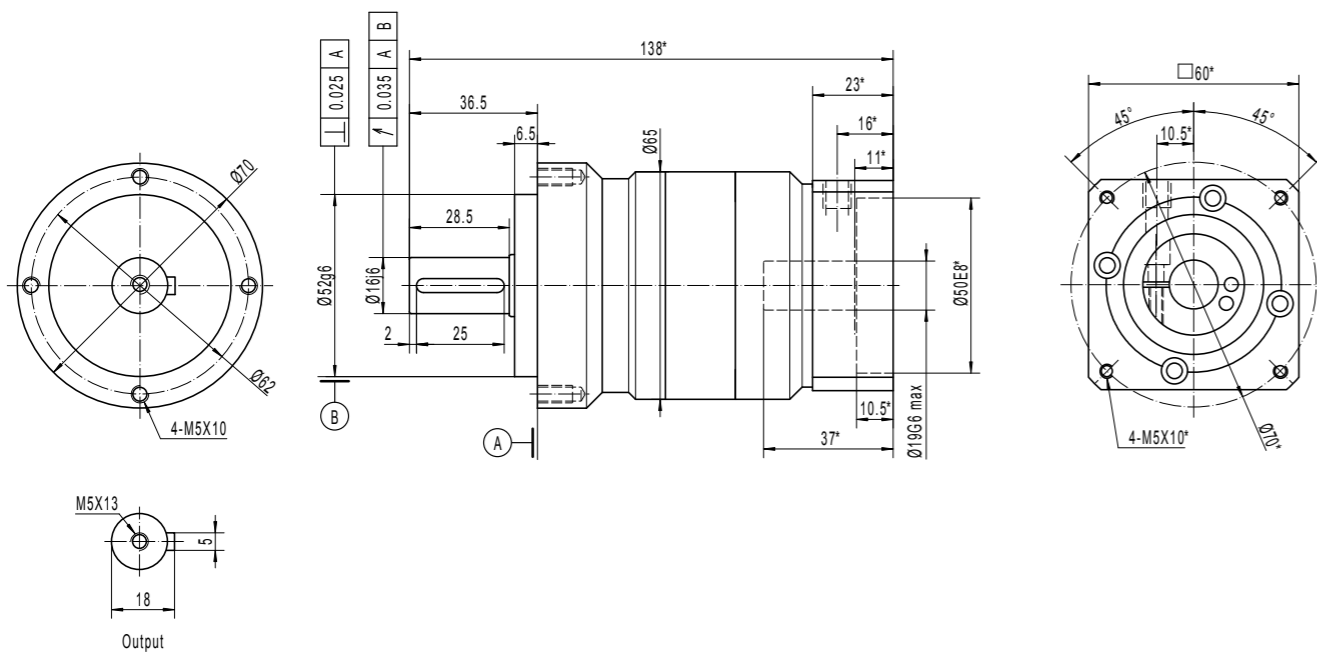
LIVELY-CI-ST-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



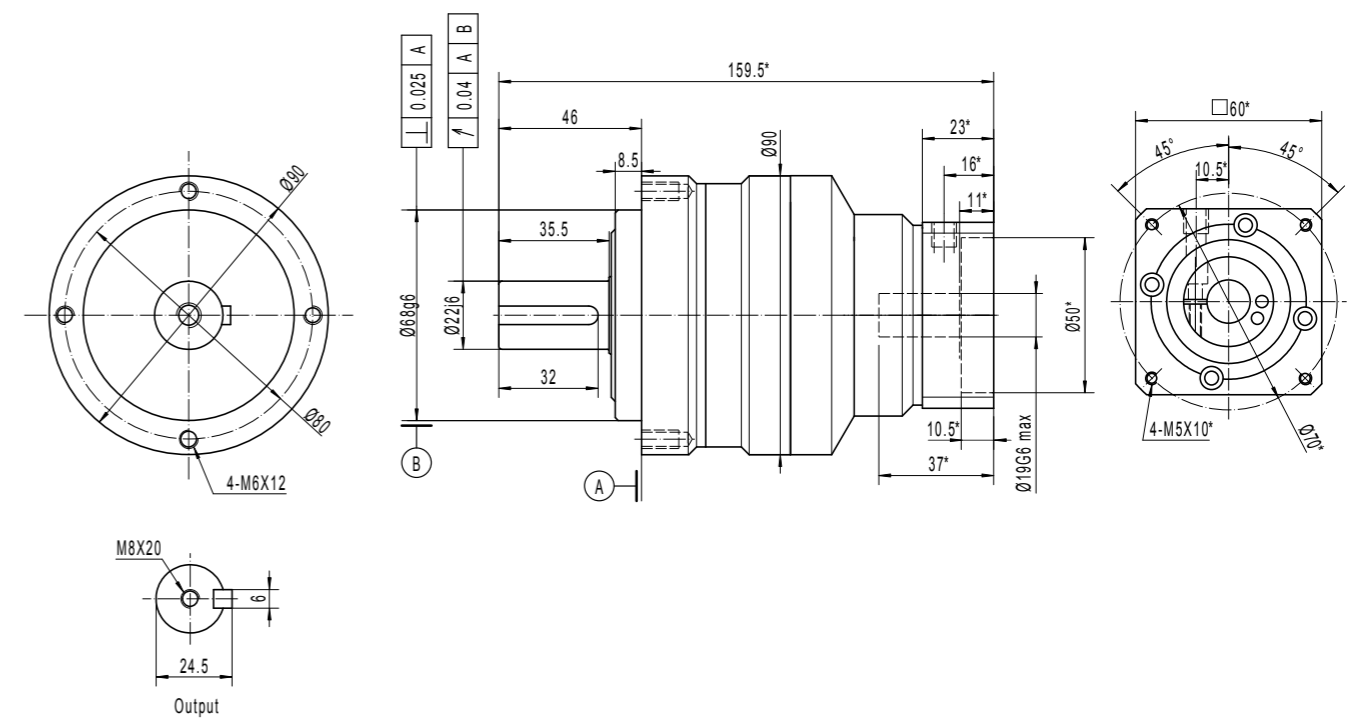
LIVELY-CI-ST-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-CI-ST-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



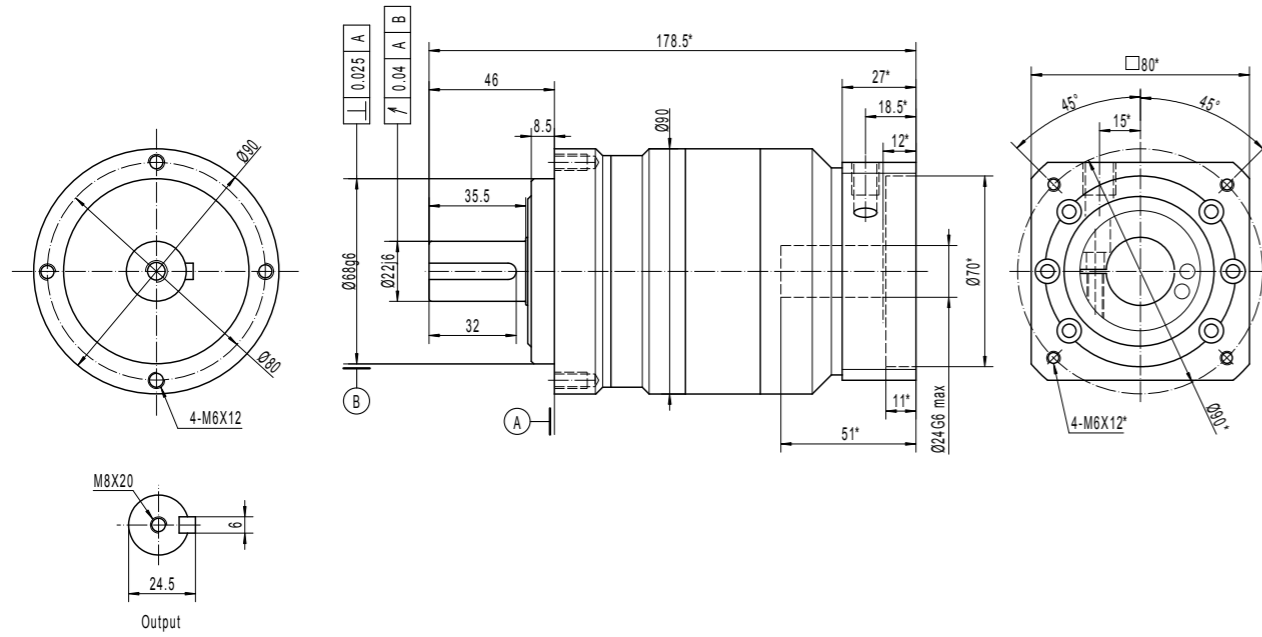
LIVELY-CI-ST-090- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



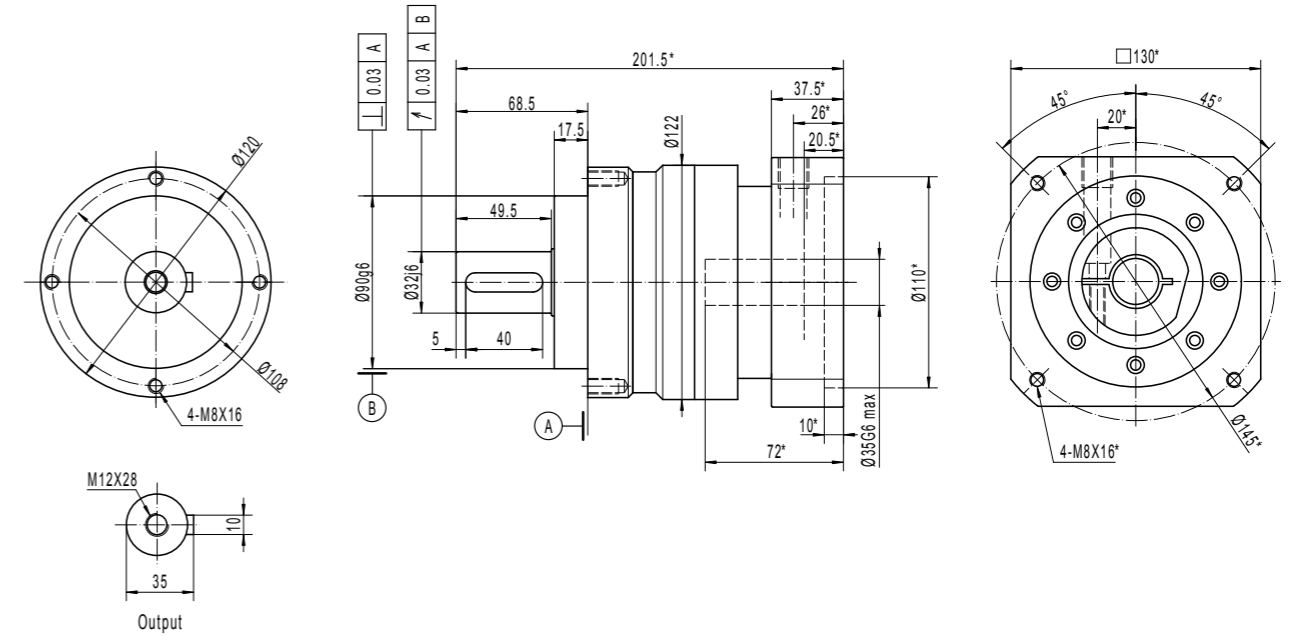
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

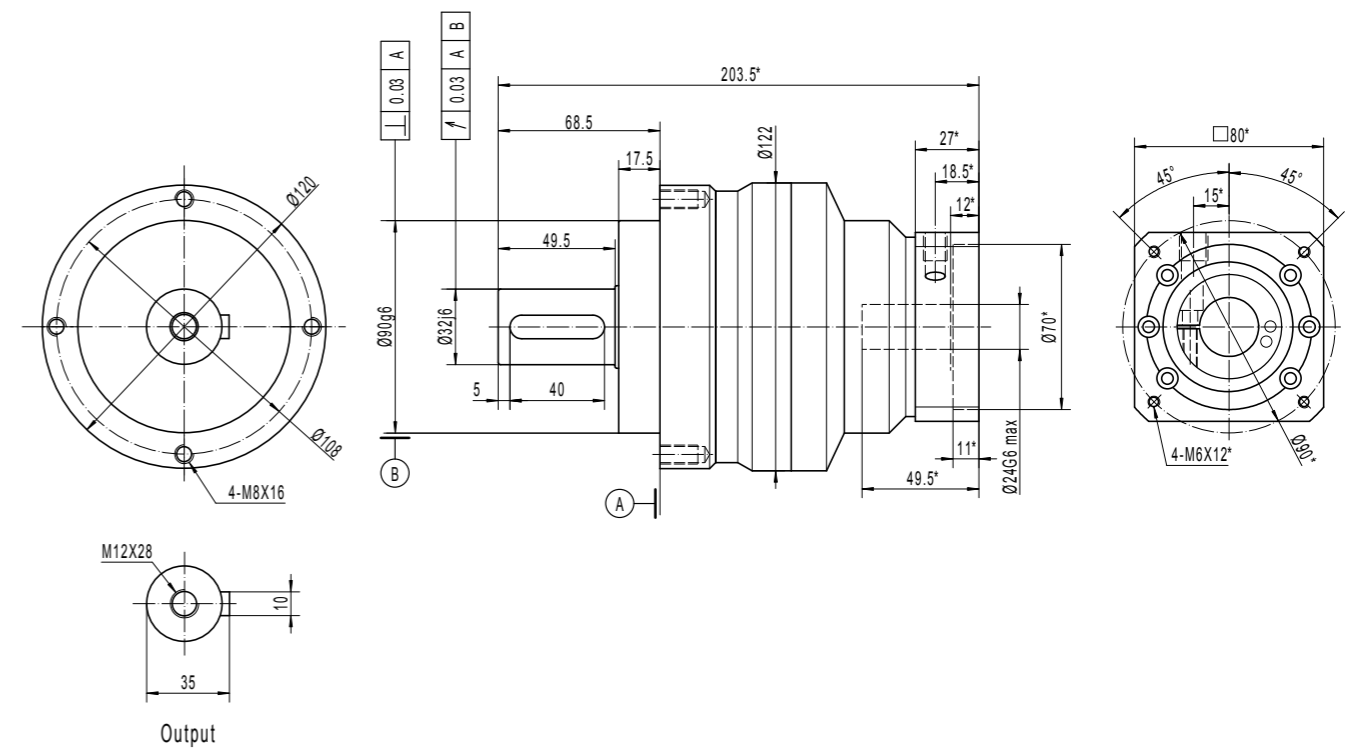
LIVELY-CI-ST-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-CI-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



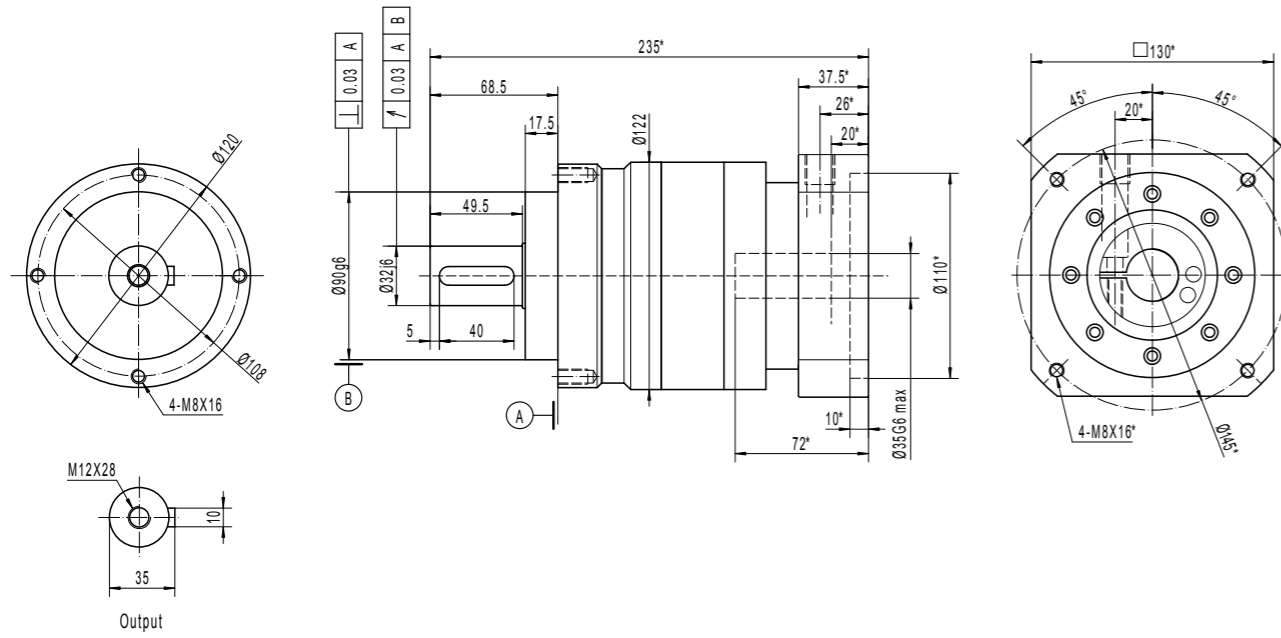
LIVELY-CI-ST-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



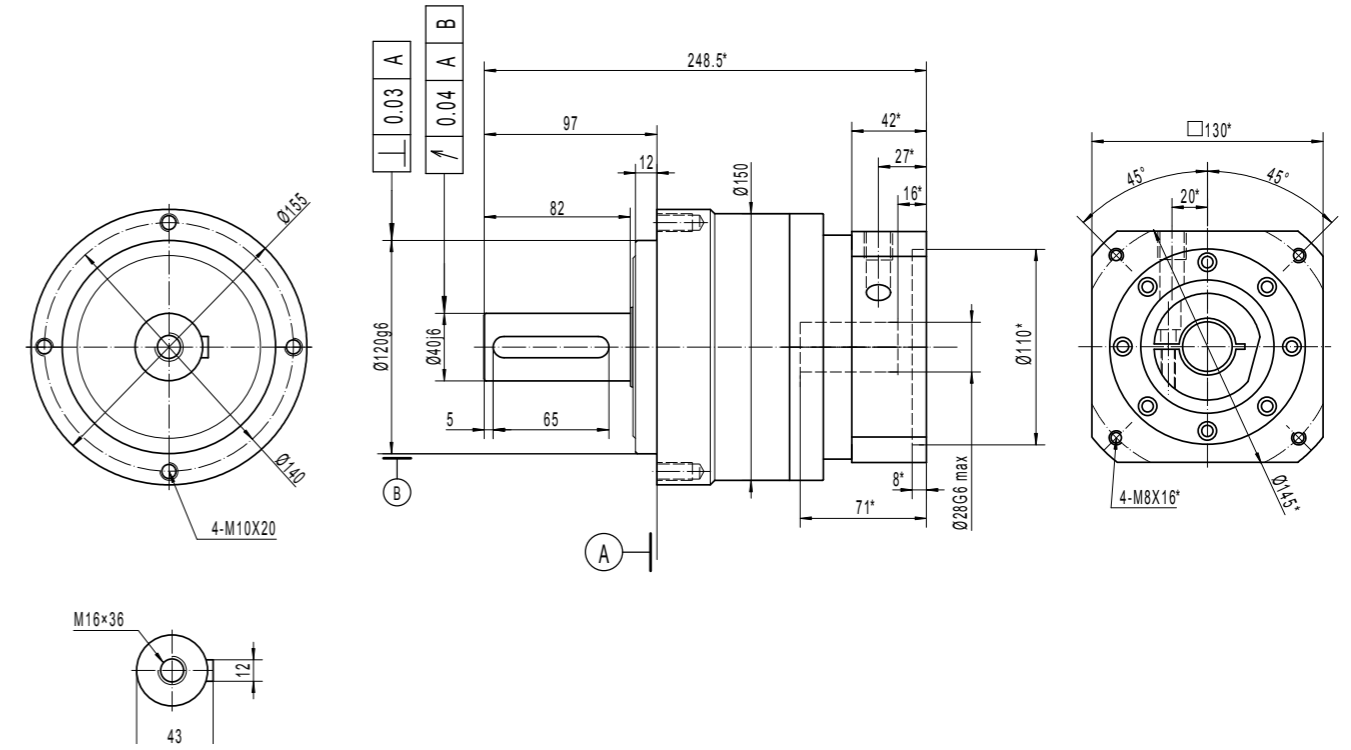
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

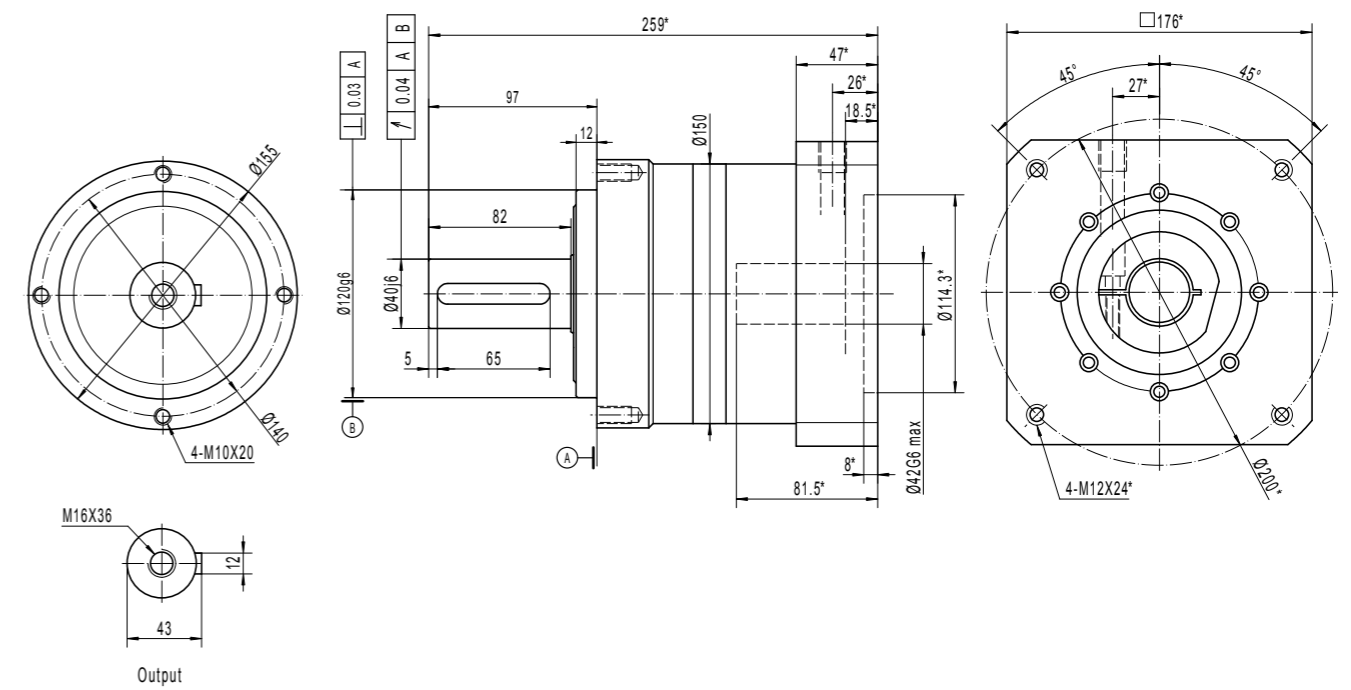
LIVELY-CI-ST-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



LIVELY-CI-ST-155- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 28$



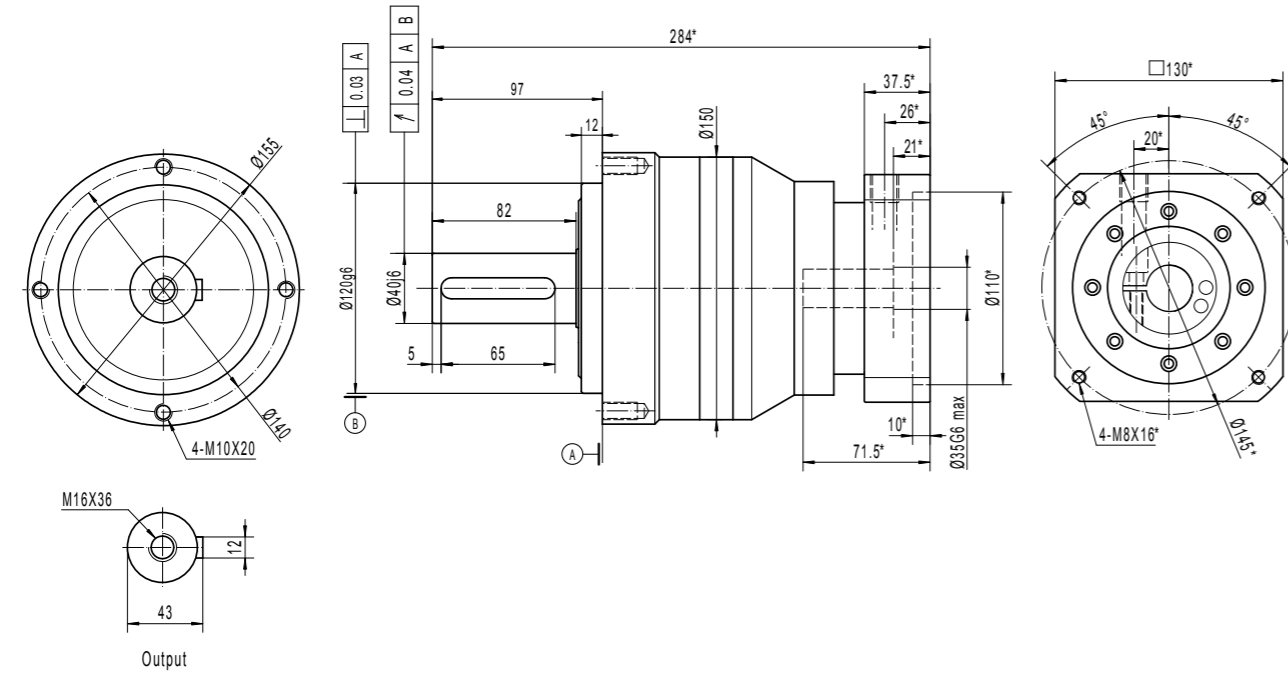
LIVELY-CI-ST-155- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



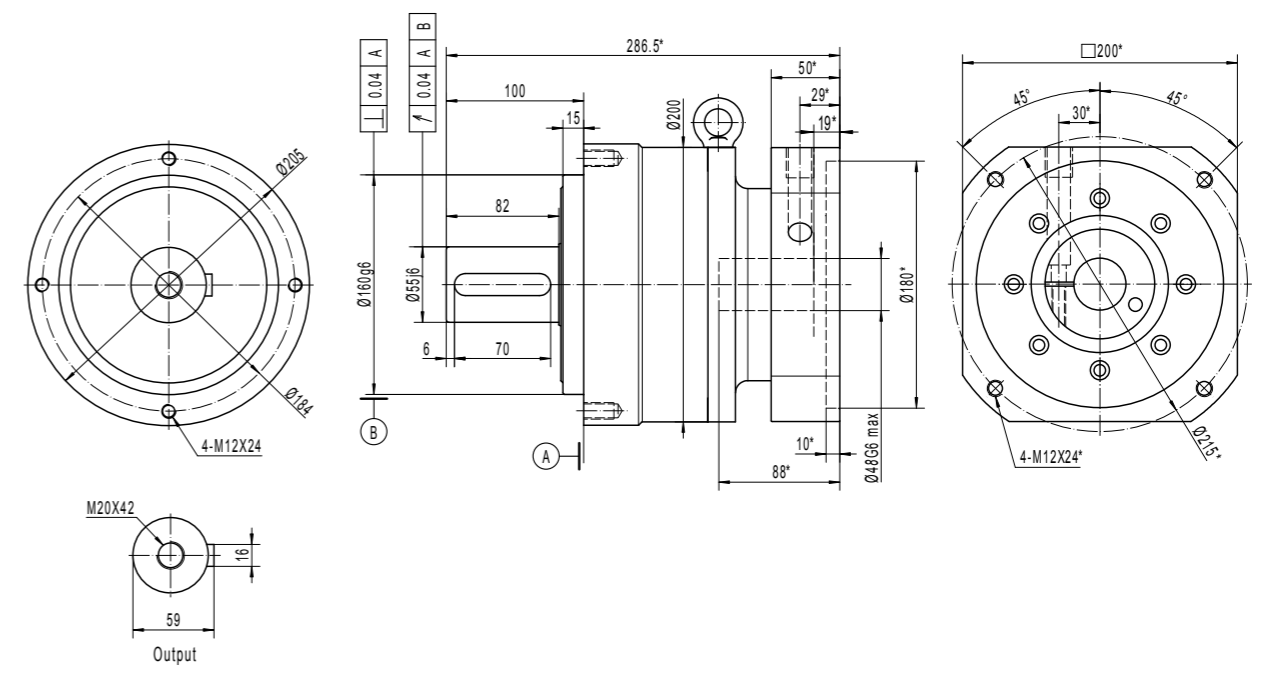
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

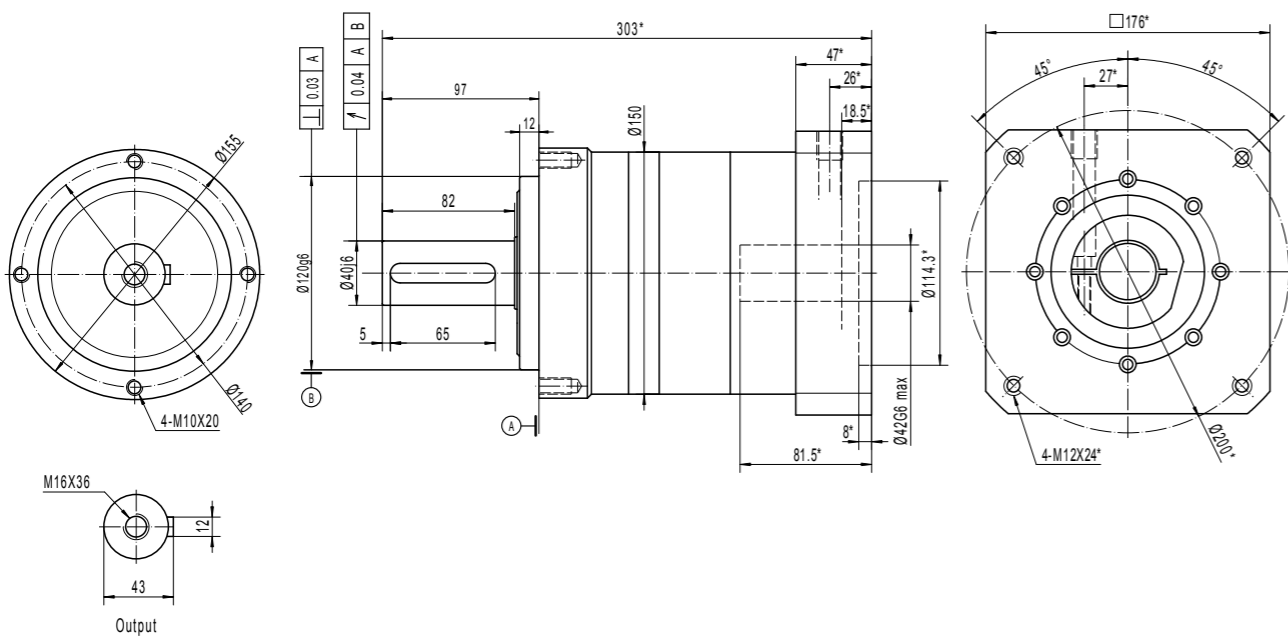
LIVELY-CI-ST-155- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



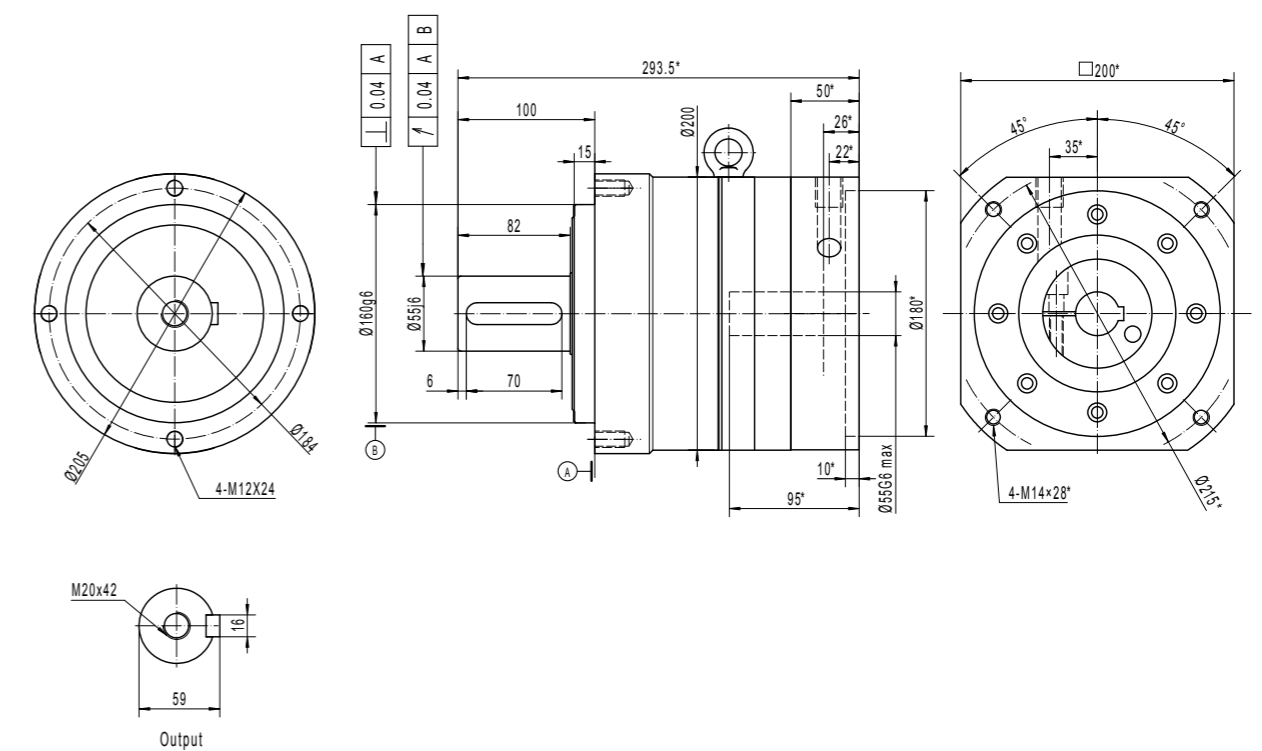
LIVELY-CI-ST-205- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 48$



LIVELY-CI-ST-155- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



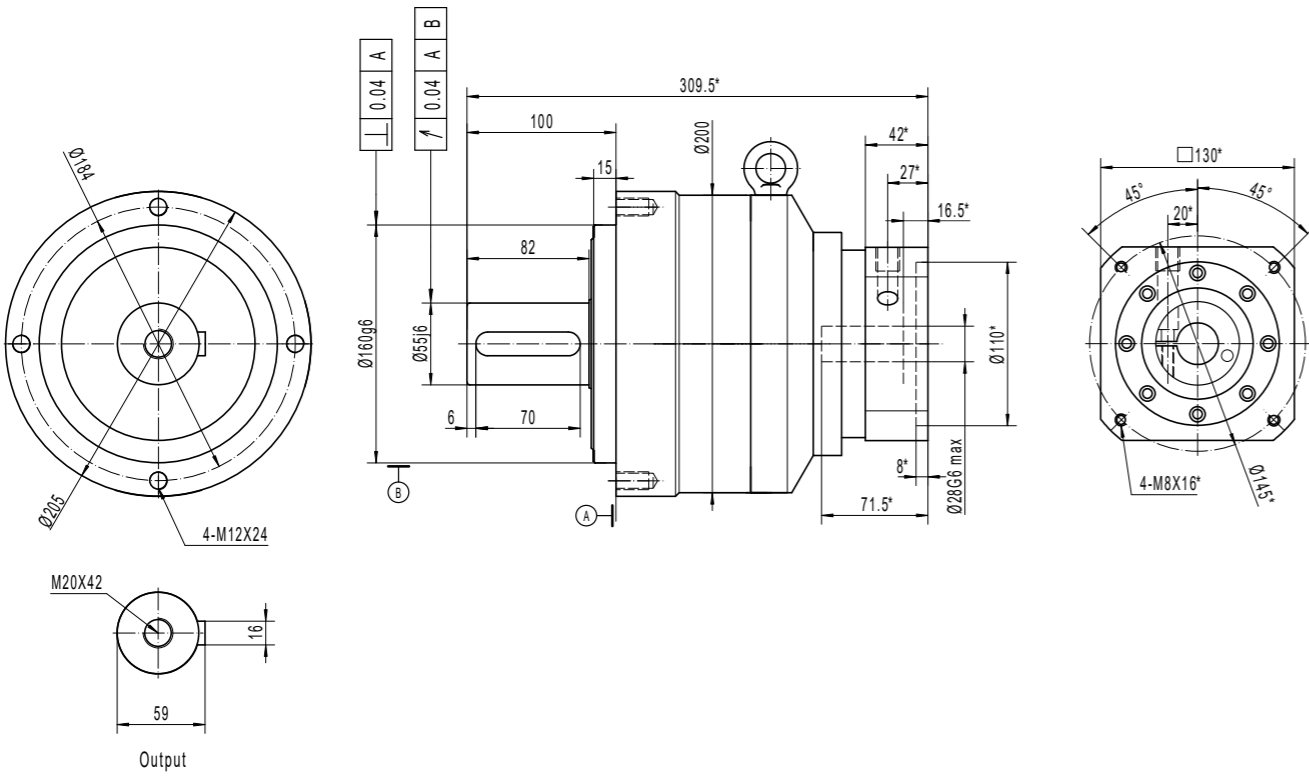
LIVELY-CI-ST-205- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 55$



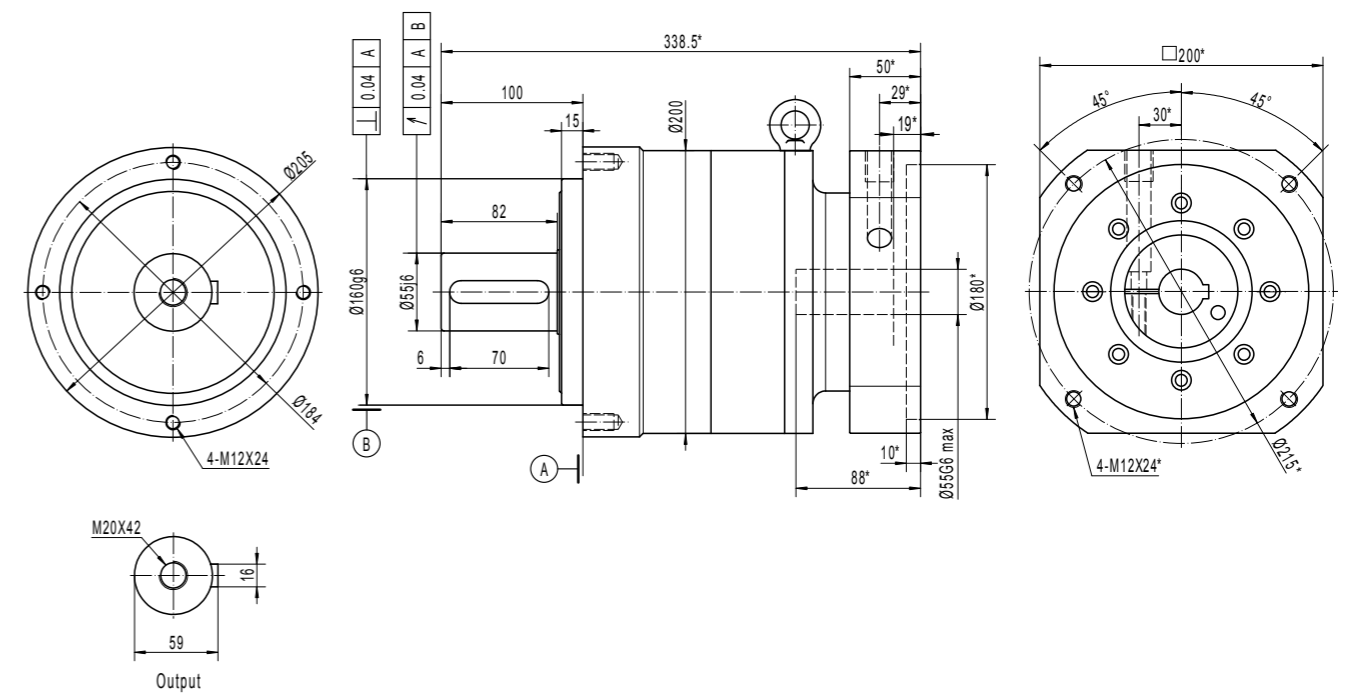
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

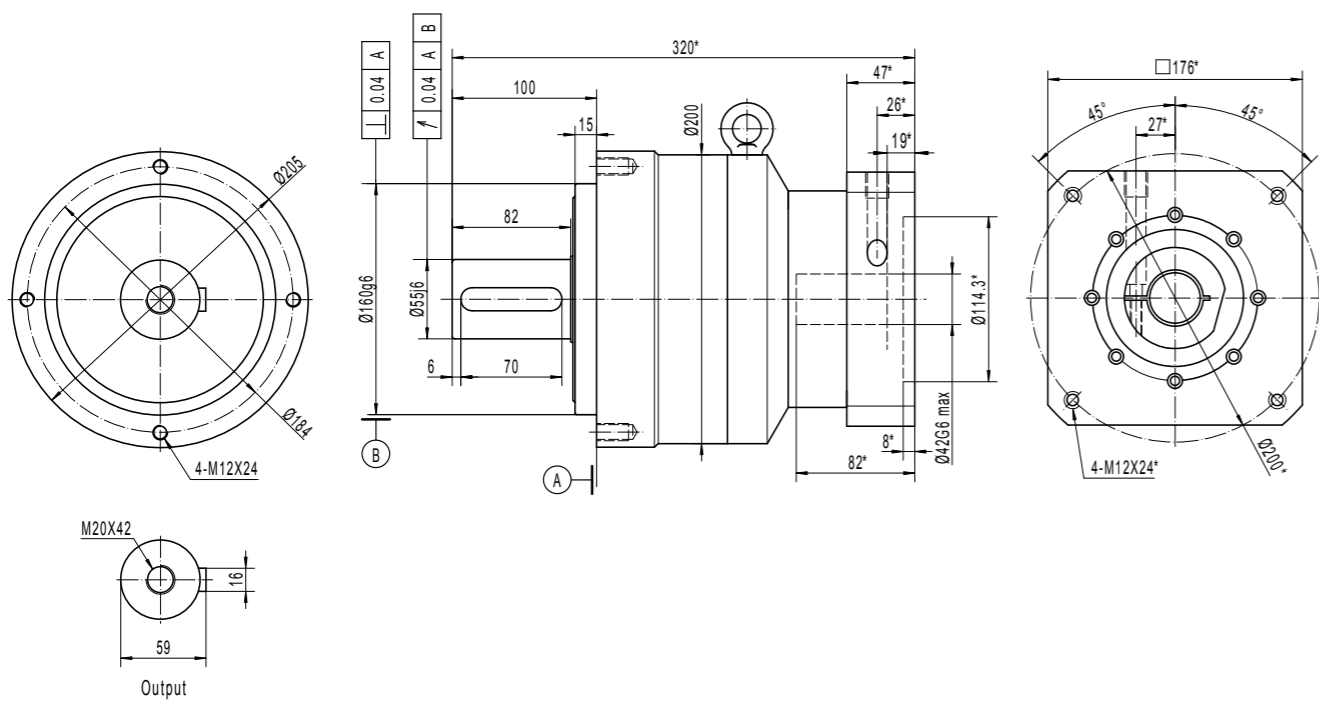
LIVELY-CI-ST-205- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 28$



LIVELY-CI-ST-205- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 55$



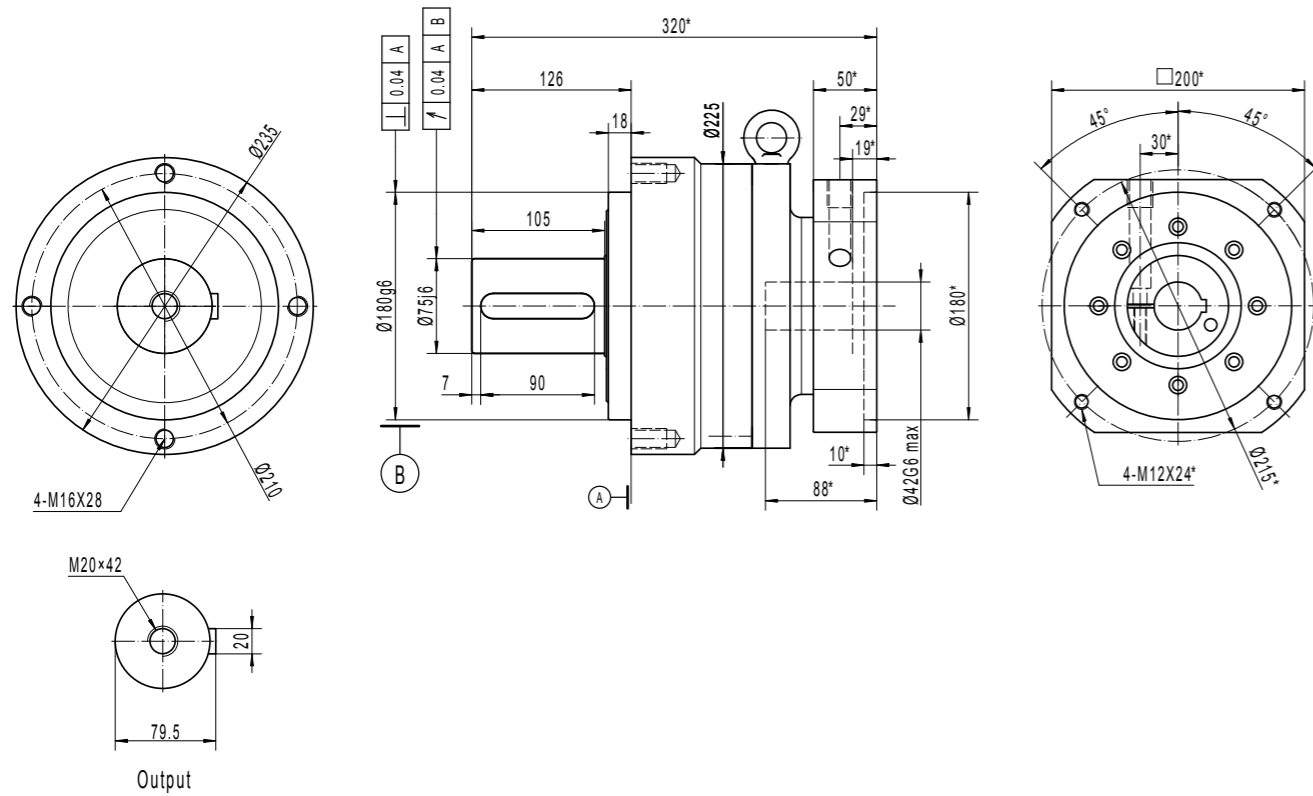
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FOR MOTOR SHAFT $\leq \varnothing 42$



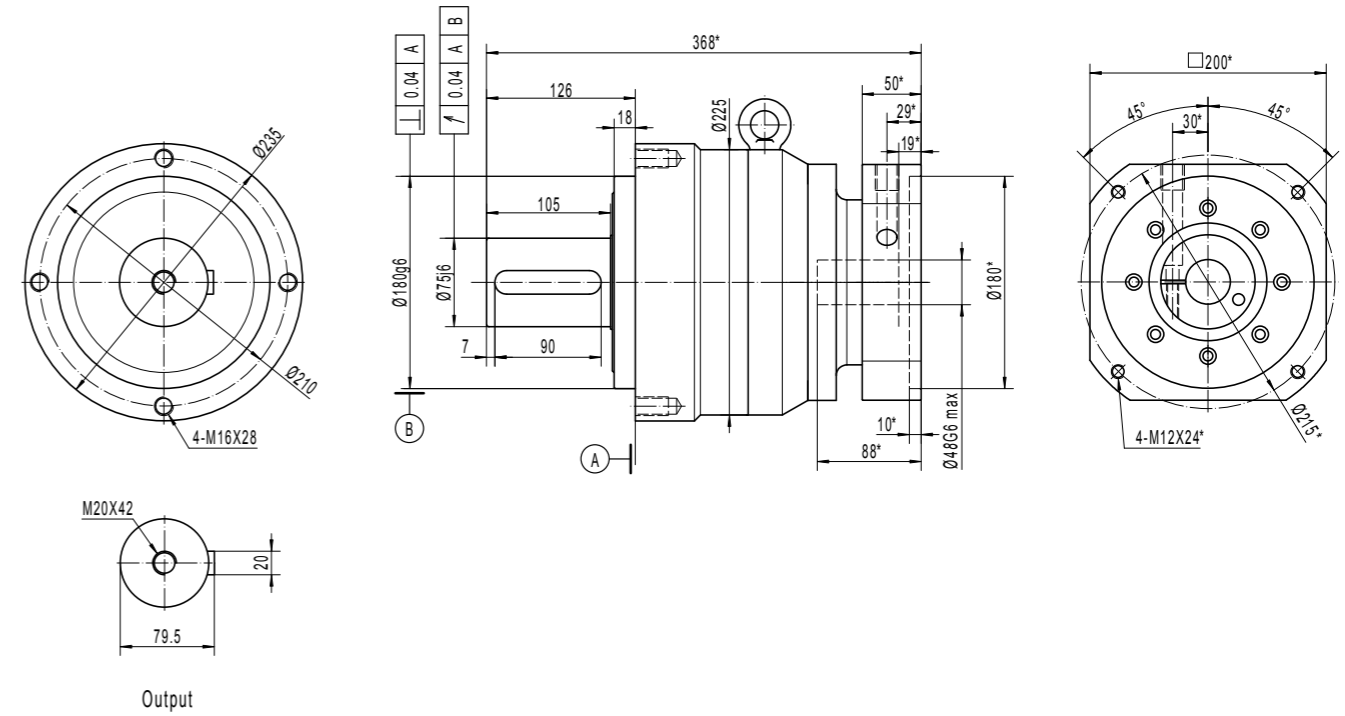
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

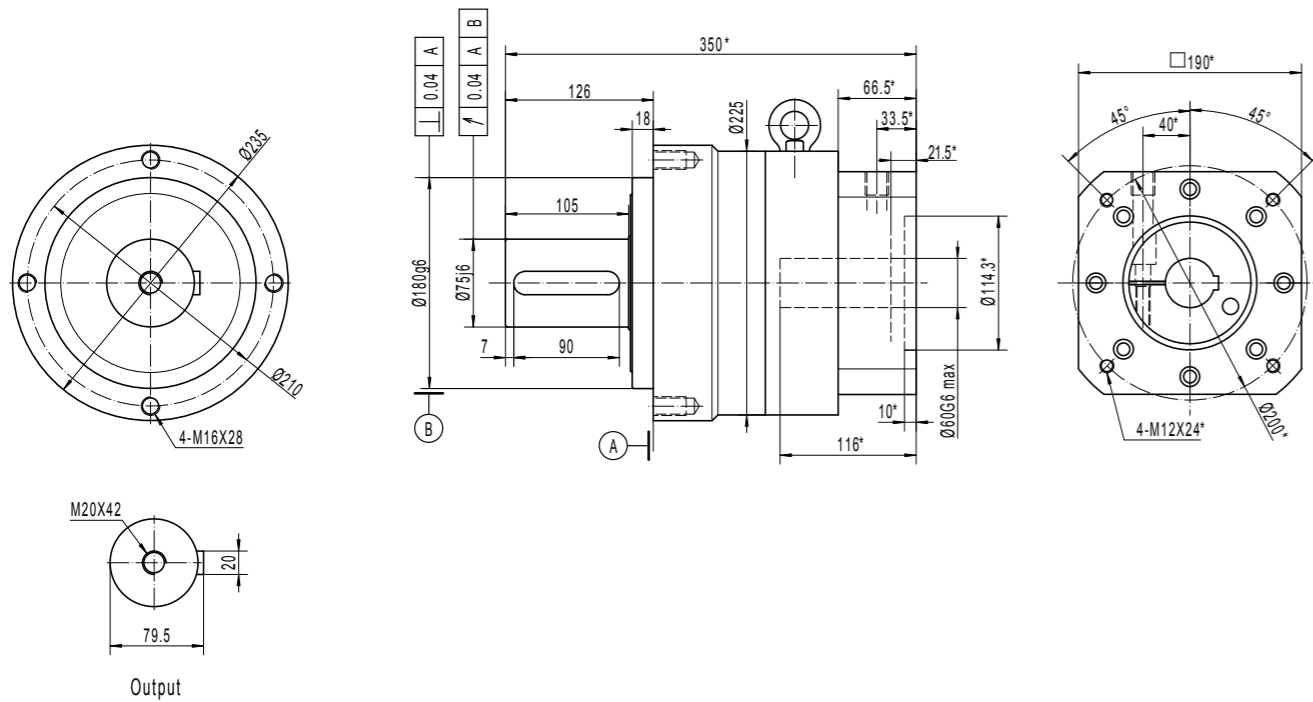
LIVELY-CI-ST-235- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



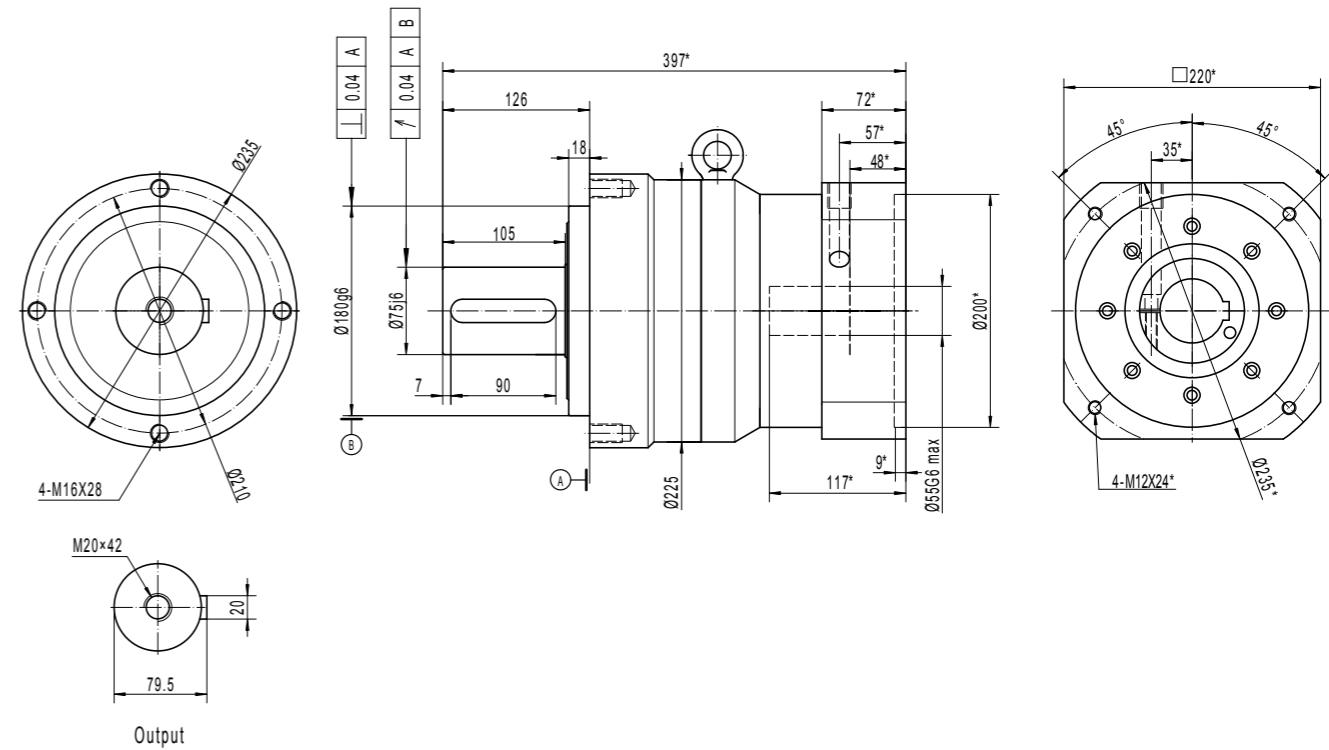
LIVELY-CI-ST-235- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 48$



LIVELY-CI-ST-235- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 60$



LIVELY-CI-ST-235- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 55$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

LIVELY-CI-RA_ Internal construction

The ring gear is monobloc with the external housing, to provide greater rigidity and allow dynamic changes of torque and moderate reversals.

Carburized and quenched helical teeth enable quiet operation, reliability and moderate to strong acceleration capacity.

Carburized and quenched, spiral-bevel gears provide acceleration capacity and quiet operation.

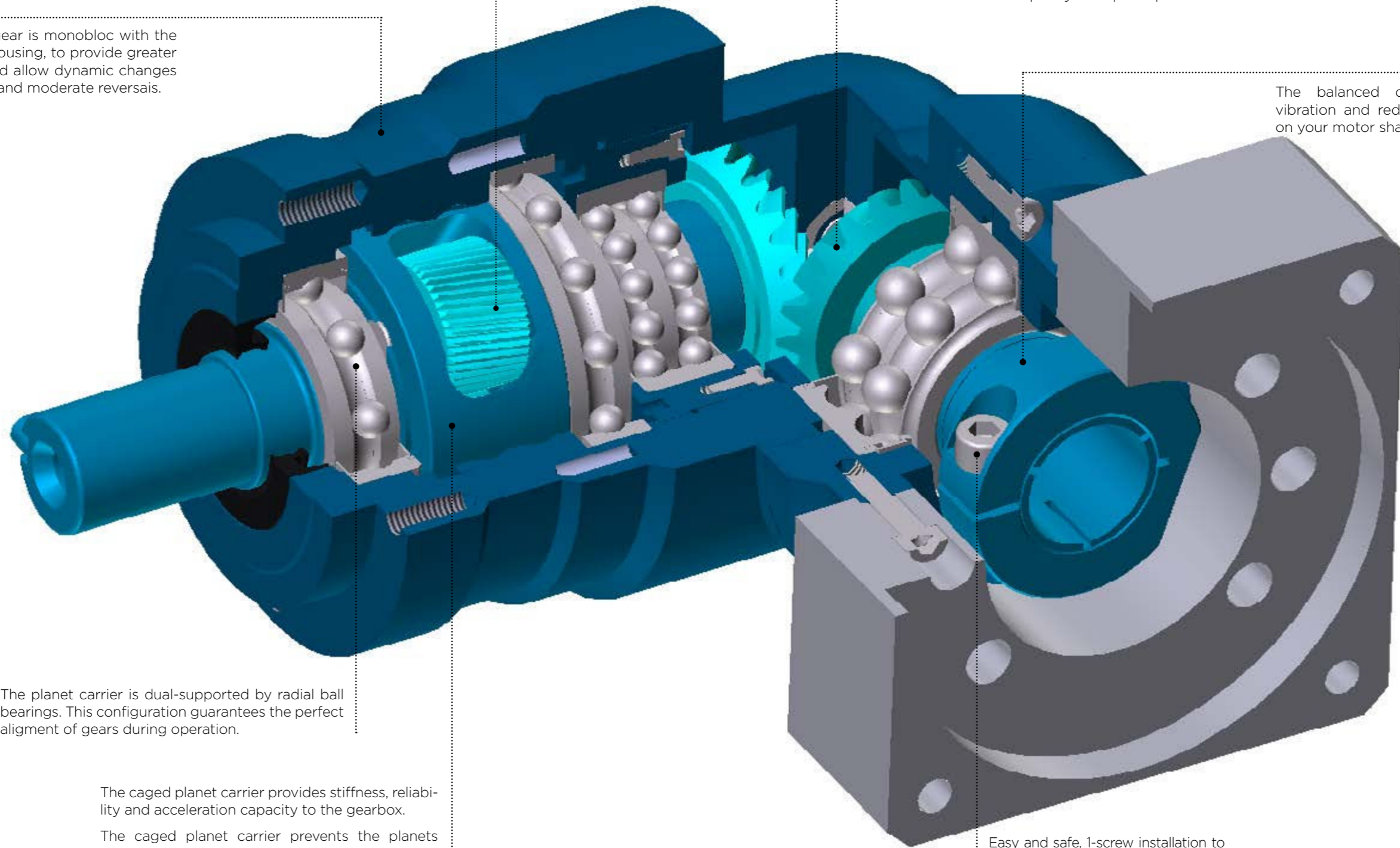
The balanced coupling limits vibration and reduces the loads on your motor shaft bearings.

The planet carrier is dual-supported by radial ball bearings. This configuration guarantees the perfect alignment of gears during operation.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

The caged planet carrier prevents the planets from tilting.

Easy and safe, 1-screw installation to your motor shaft.

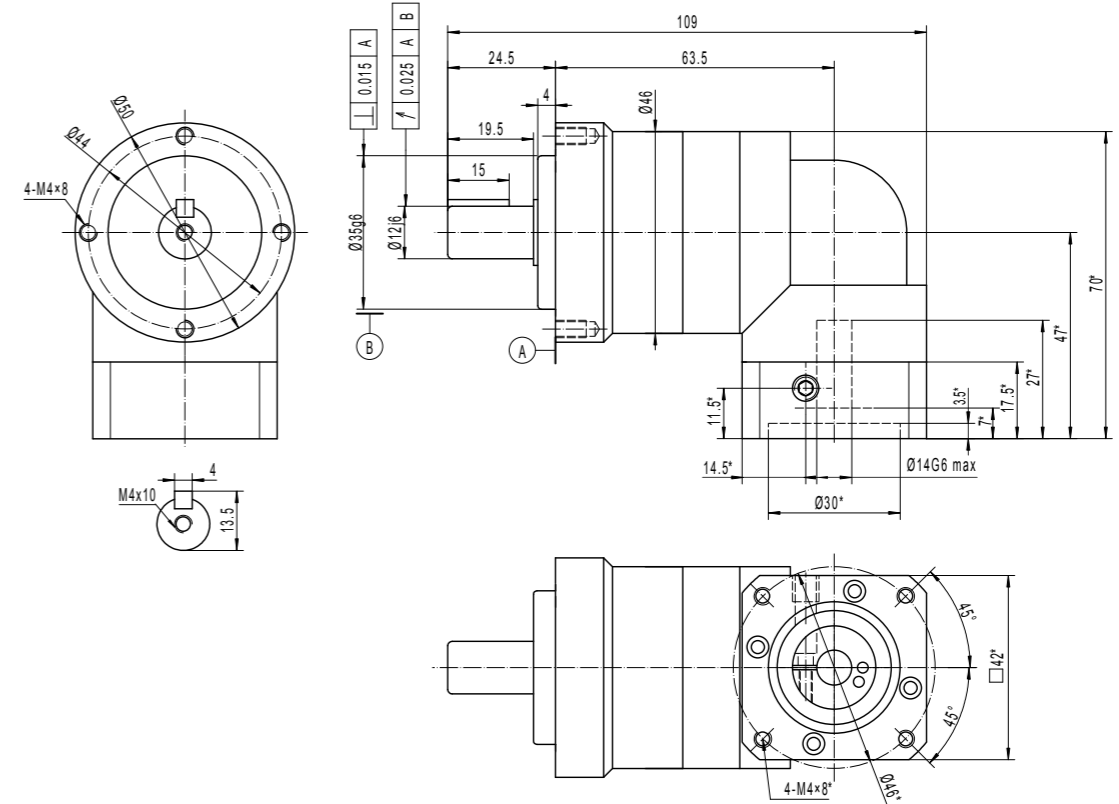


	Ratio**	LIVELY-CI-RA								
		040-P*	060-P*	090-R*	090-P*	120-R*	120-P*	155-R*	155-P*	205-R*
Nominal torque ¹ T _{2N} (Nm)	3	5	18	70		200		384	840	
	4	8	37	129		214		407	1180	
	5	11	29	100		167		438	925	
	6	-	27	81		179		440	927	
	7	8	24	71		178		465	983	
	8	-	18	55		164		408	945	
	9	-	16	47		-		353	818	
	10	5	14	42		110		308	727	
	12	5	18	65	70	200	200	283	384	549
	15	5	18	68	70	183	200	295	384	788
	16	8	37	86	129	214	214	377	407	732
	20	8	37	90	129	214	214	393	407	1051
	21	5	18	51	70	137	200	269	384	715
	25	11	29	100	100	167	167	438	438	925
	28	8	37	68	129	183	214	359	407	953
	30	-	27	81	81	179	179	440	440	927
	35	11	29	85	100	167	167	438	438	925
	40	8	37	40	113	113	214	218	407	571
	42	-	27	81	81	179	179	440	440	927
	49	8	24	71	71	178	178	465	465	983
	50	11	29	49	100	141	167	273	438	714
60	-	27	59	81	170	179	327	440	857	
70	8	24	69	71	178	178	382	465	983	
80	-	18	55	55	164	164	408	408	945	
90	-	16	47	47	-	-	353	353	818	
100	5	14	42	42	110	110	308	308	727	
Peak torque ² T _{max} (Nm)	3	15	55	169		378		628	1,338	
	4	14	49	160		415		810	1,786	
	5	14	40	112		300		870	1,843	
	6	-	38	114		327		815	1,770	
	7	14	38	115		279		804	1,760	
	8	-	37	111		322		765	1,670	
	9	-	36	104		-		728	1,589	
	10	13	36	107		260		715	1,580	
	12	15	55	92	169	242	378	502	628	1,096
	15	15	55	86	169	206	378	477	628	1,328
	16	14	49	122	160	322	415	669	810	1,462
	20	14	49	115	160	275	415	636	810	1,770
	21	15	55	85	169	212	378	457	628	1,230
	25	14	40	112	112	300	300	795	870	1,843
	28	14	49	113	160	282	415	609	810	1,640
	30	-	38	114	114	327	327	815	815	1,770
	35	14	40	112	112	300	300	762	870	1,843
	40	14	49	109	160	259	415	560	810	1,471
	42	-	38	114	114	327	327	815	815	1,770
	49	14	38	115	115	279	279	804	804	1,760
	50	14	40	112	112	300	300	700	870	1,839
60	-	38	114	114	327	327	815	815	1,770	
70	14	38	115	115	279	279	804	804	1,760	
80	-	37	111	111	322	322	765	765	1,670	
90	-	36	104	104	-	-	728	728	1,589	
100	13	36	107	107	260	260	715	715	1,580	
Emergency stop torque (Nm) ³		1,5 x T _{max}								
Max angular backlash (minutes)	1 stage	Standard : ≤8 ; Option : ≤6			Standard : ≤8 ; Option : ≤4					
	2 stages	Standard : ≤8 ; Option : ≤6			Standard : ≤8 ; Option : ≤6					
Nominal input speed (rpm) ⁴		4 000	4 000	3,100	2,800	2,600	2,300			
Max input speed (rpm) ⁵		8 000	7 500	6,000	5,500	5,000	4,500			
Max radial load (N) ⁶		700	1100	2,200	3,600	9,000	14,500			
Max axial load (N) ⁶		610	900	1,950	3,000	8,300	13,500			
Efficiency (%) ⁷	1 stage	≥94								
	2 stages	≥92								
Torsional stiffness (Nm/min)		3	7	14	33	63	180			
Life (h) ⁸		20,000								
Min / max ambient temperature ⁹		-15 / +45								
Max temperature of the body (°C)		90								
Protection class		IP 65								
Noise level (dB) ¹⁰		≤68	≤70	≤70	≤74	≤78	≤82			
Lubrication		Lifetime lubrication (grease)								
Coating color		Capri blue (RAL 5019)								
Input flange		Anodized aluminum								

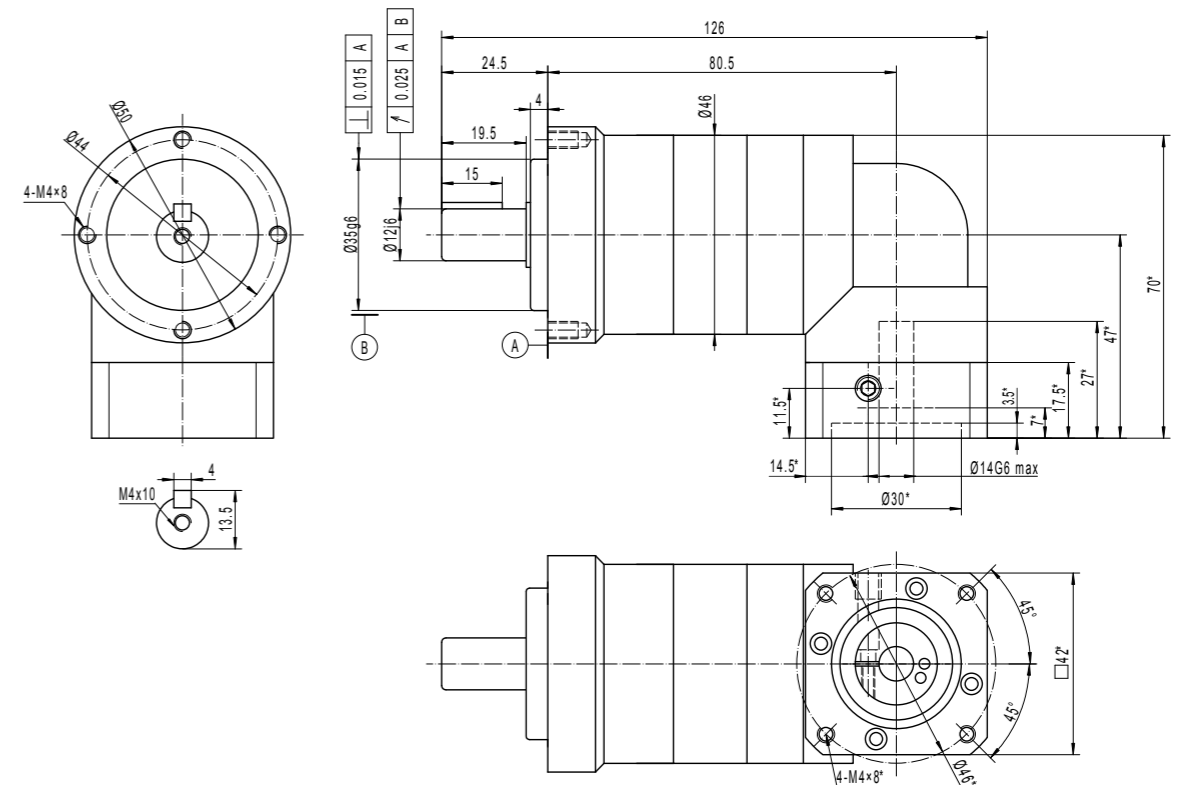
* 2 stage-gearboxes, can be equipped with a light, space-saving, low inertia input stage (R) or with a larger input stage (P), offering more power (as a paying option).
** Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
3: 1 000 occurrences maximum.
4: Speed at which the nominal torque is applicable 20,000 hours.
5: Peak speed only.
6: Applied at the middle of the output shaft at 100 rpm.
7: Measured at full load and at 25°C
8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
9: Room temperature. Refer to temperature factors in dedicated section.
10: Ratio 10 at nominal speed, measured at 1m.

LIVELY-CI-RA-040- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

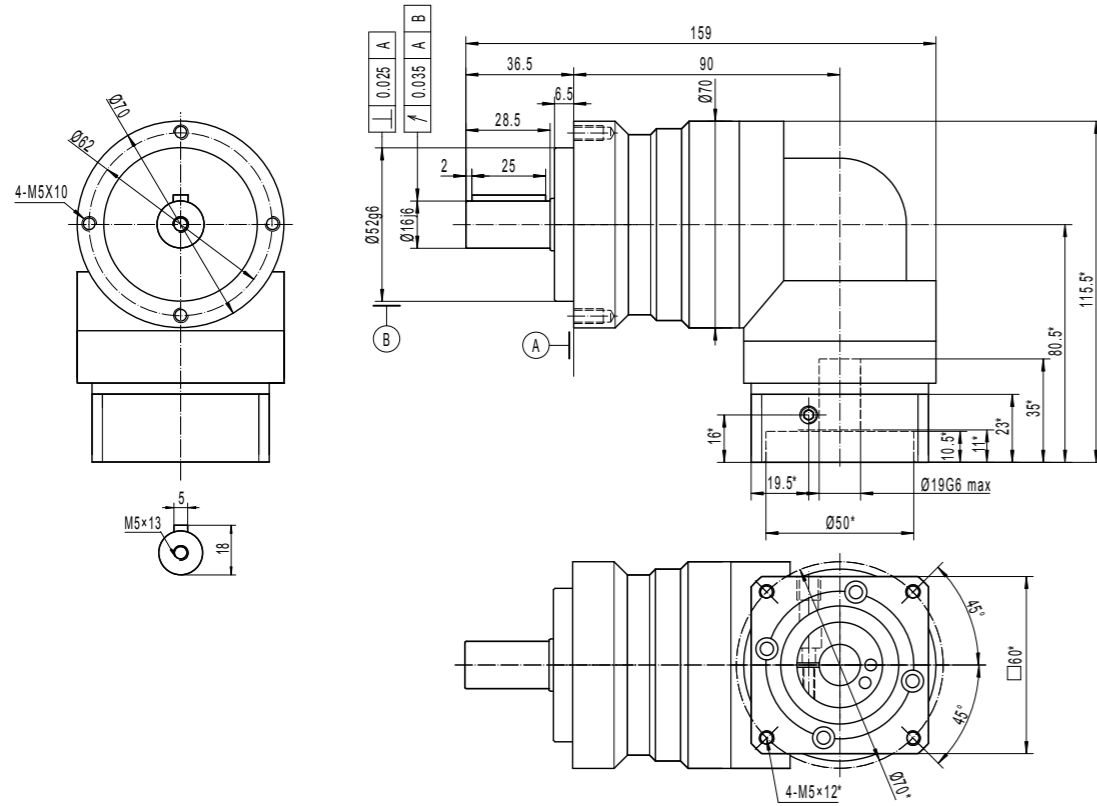


LIVELY-CI-RA-040- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

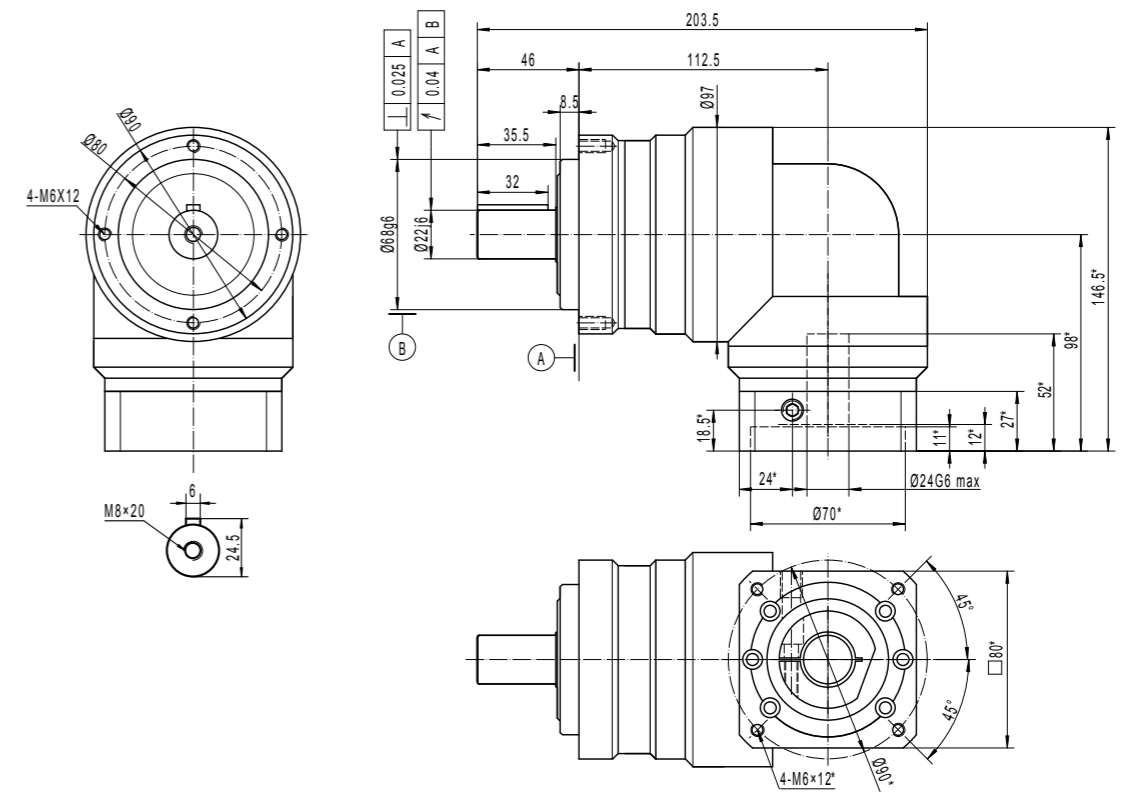


*VARIES WITH YOUR MOTOR DIMENSIONS

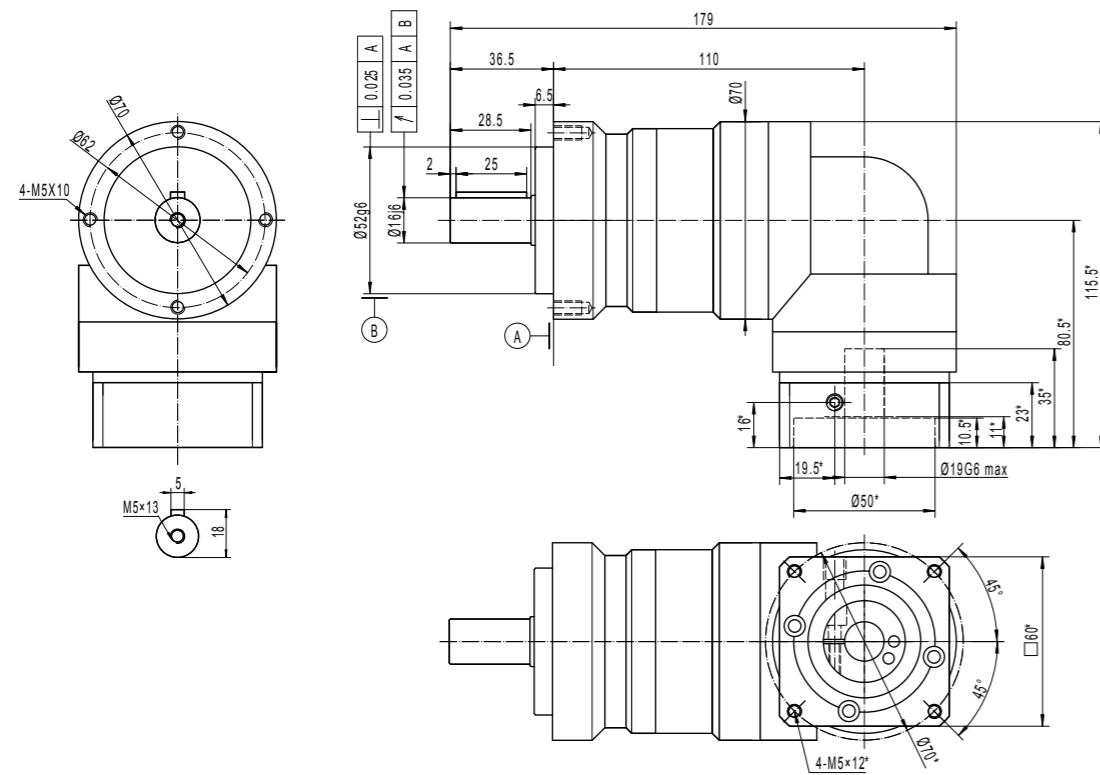
LIVELY-CI-RA-060-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



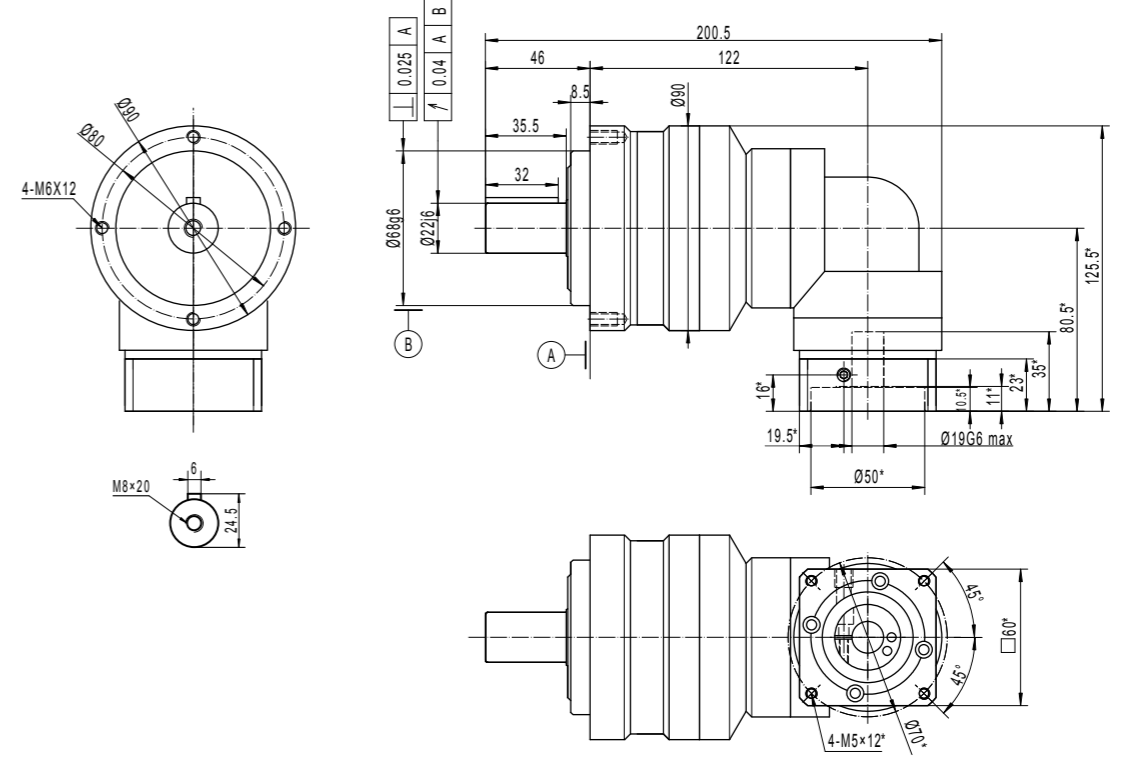
LIVELY-CI-RA-090-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-CI-RA-060-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



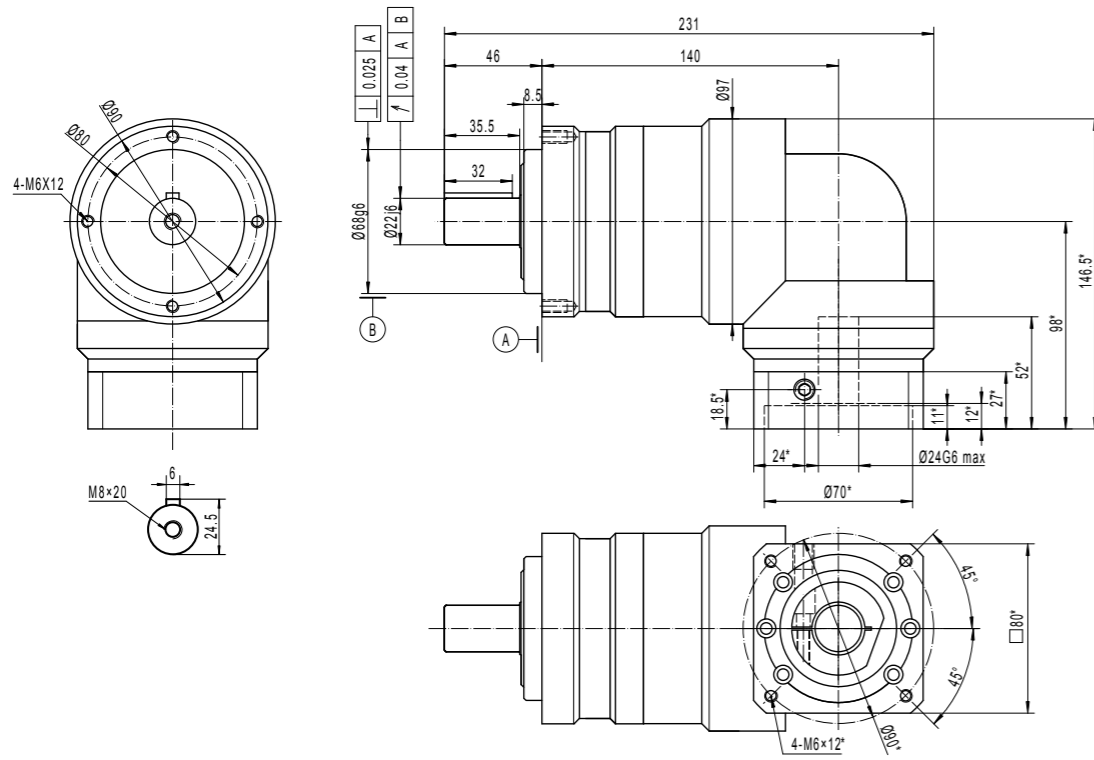
LIVELY-CI-RA-090-2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



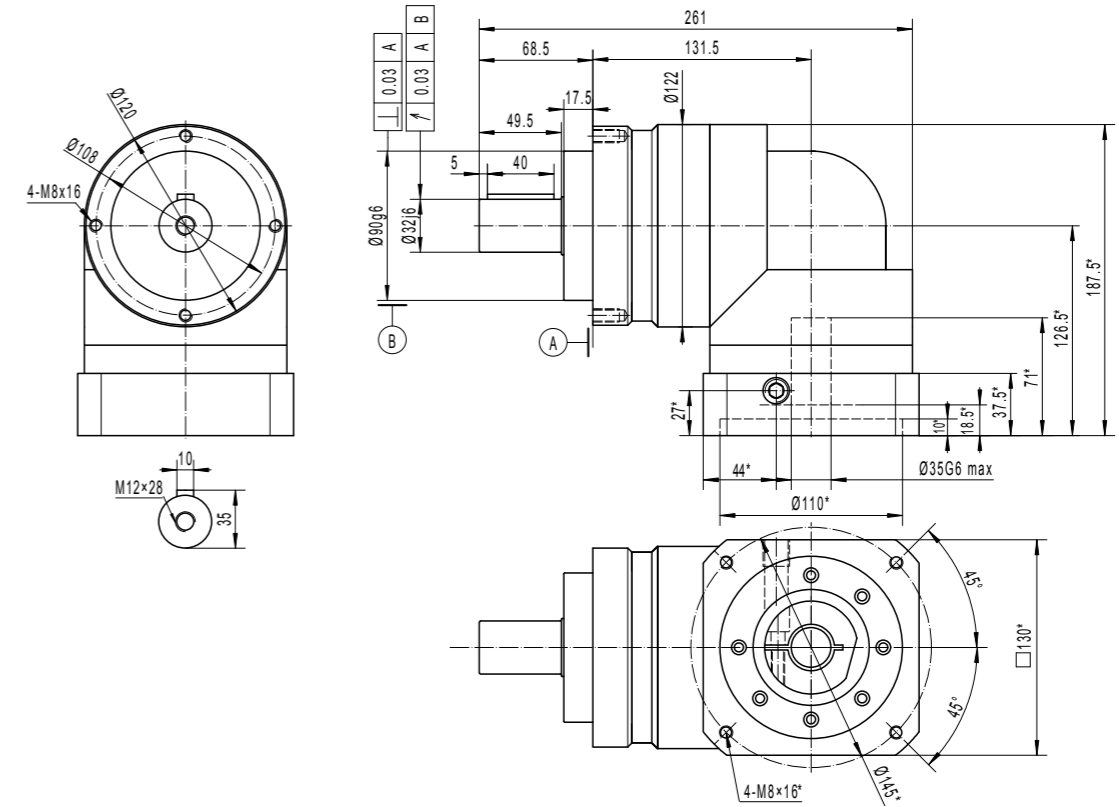
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

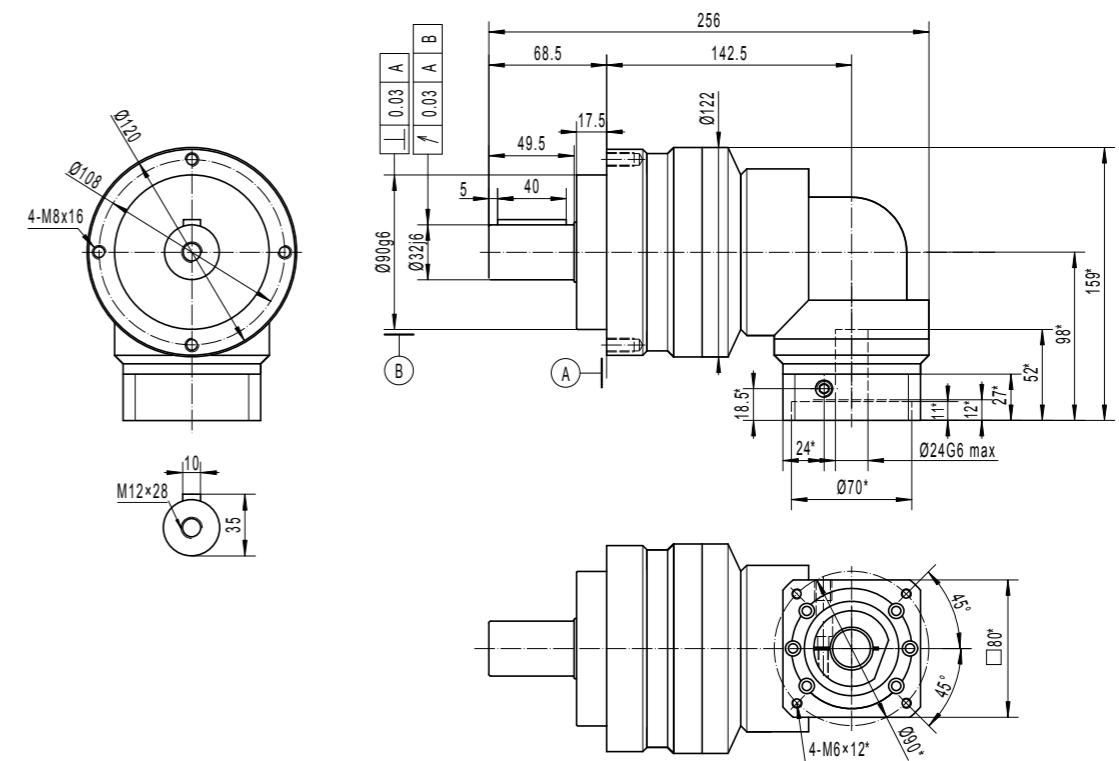
LIVELY-CI-RA-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-CI-RA-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



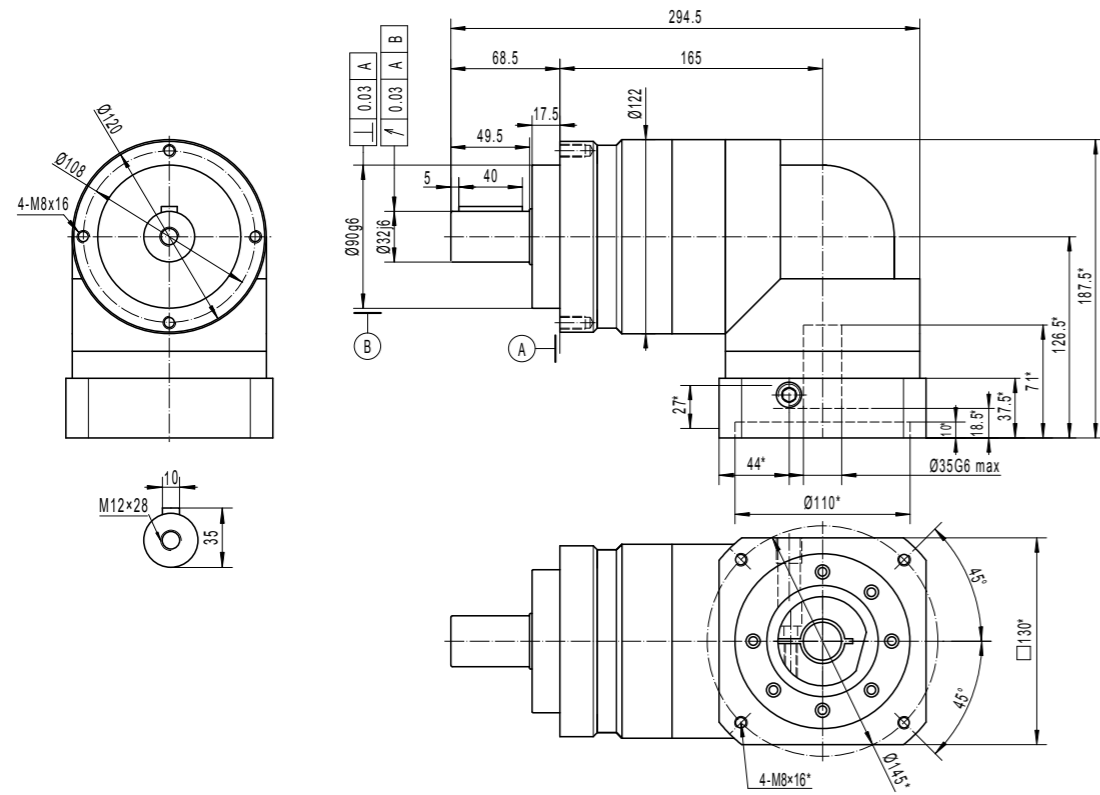
LIVELY-CI-RA-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



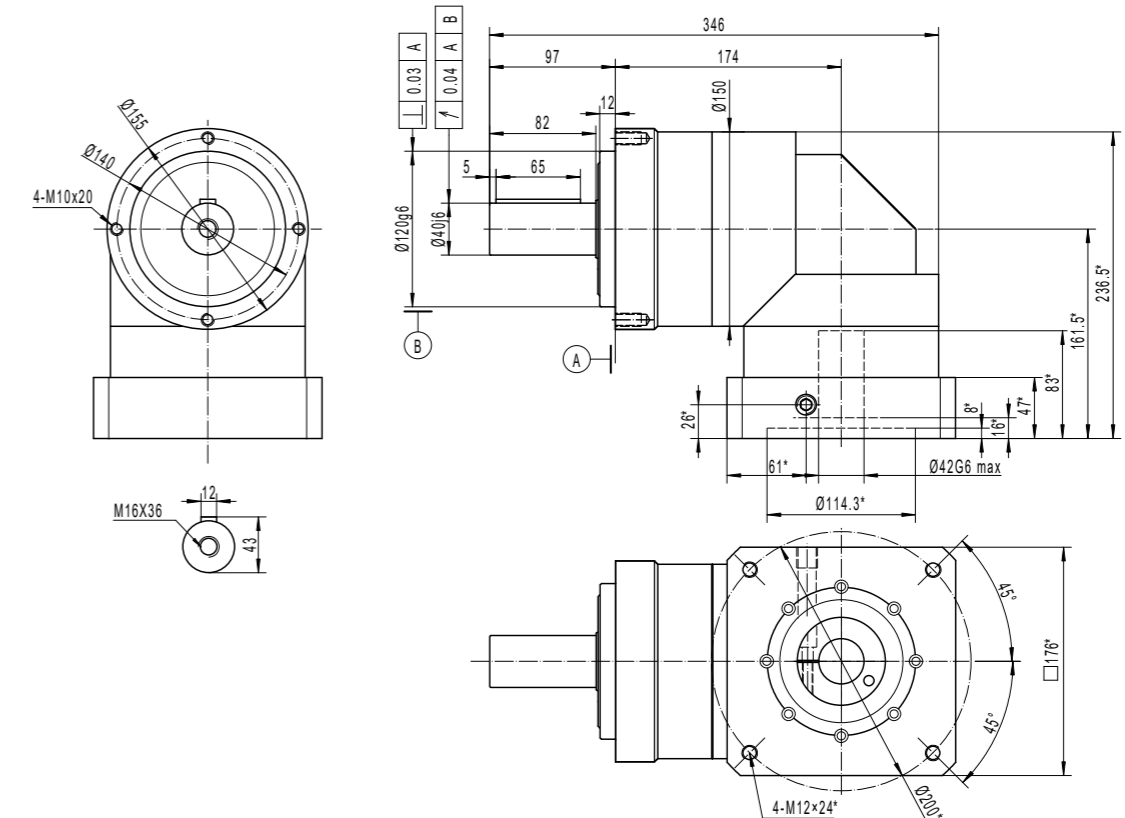
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

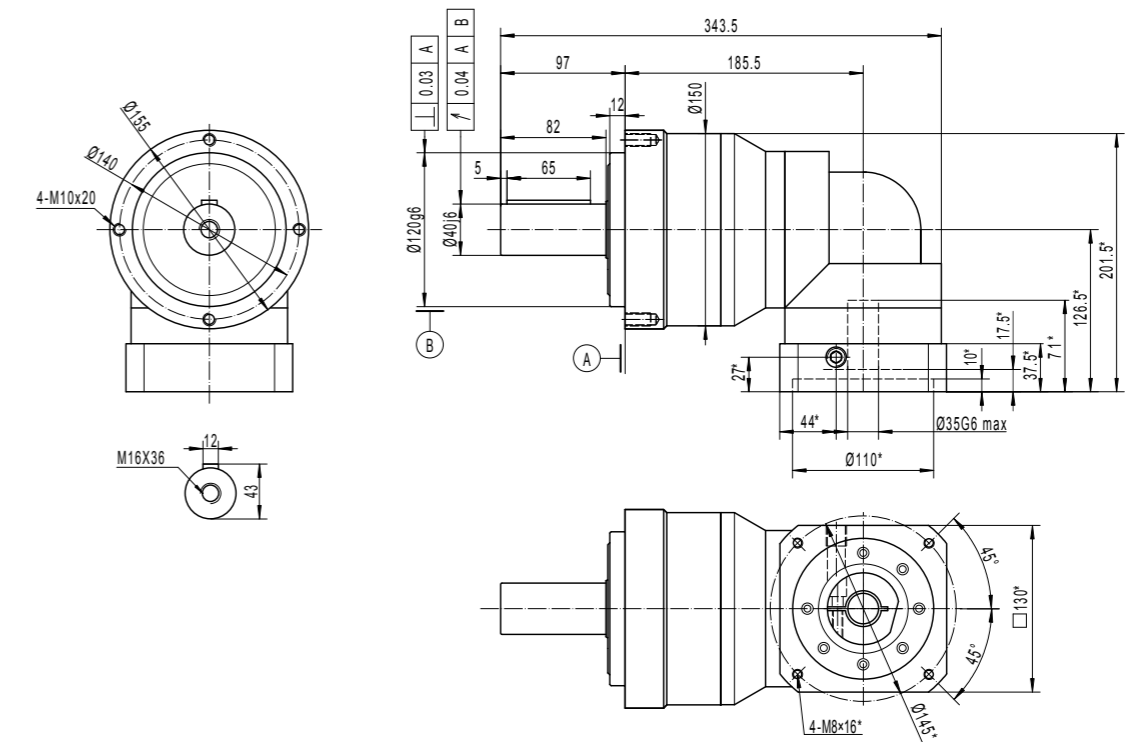
LIVELY-CI-RA-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



LIVELY-CI-RA-155- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



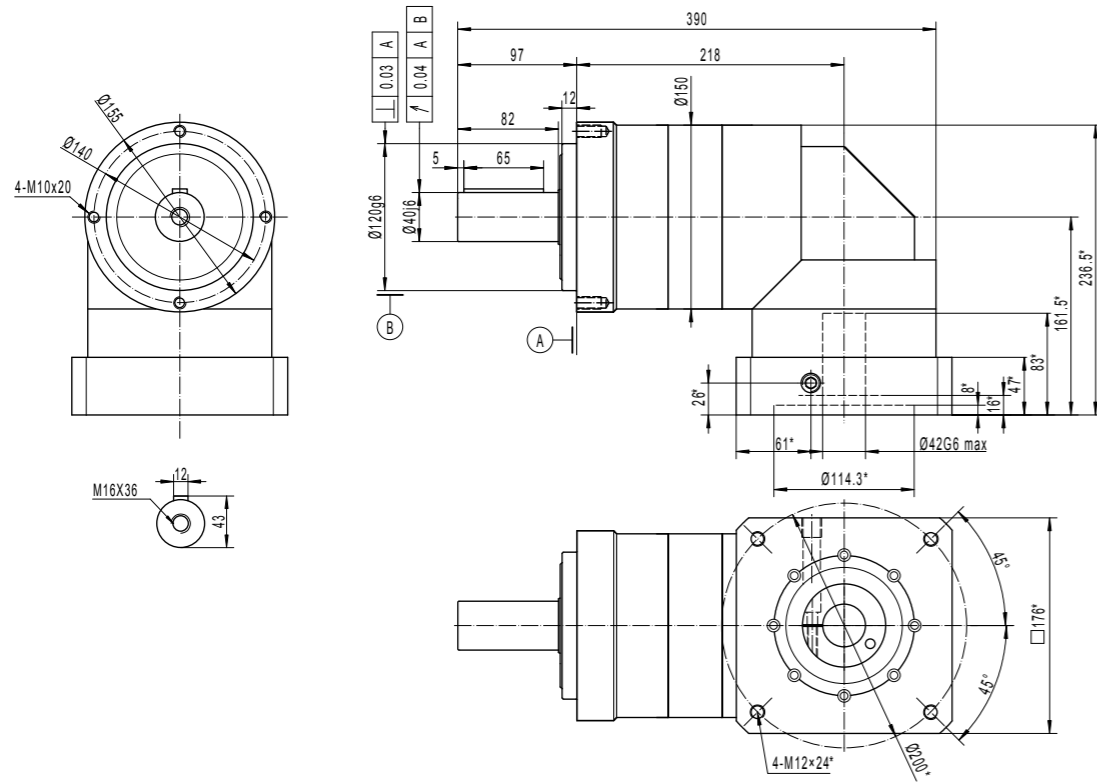
LIVELY-CI-RA-155- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



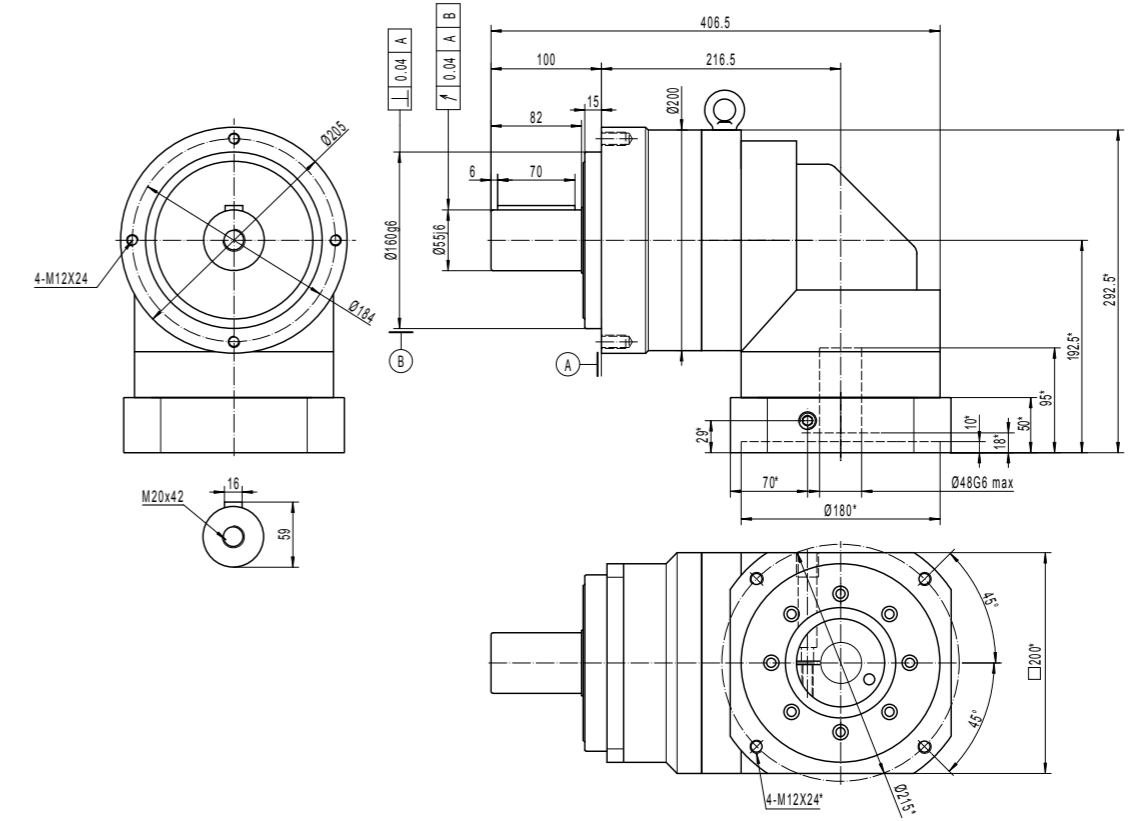
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

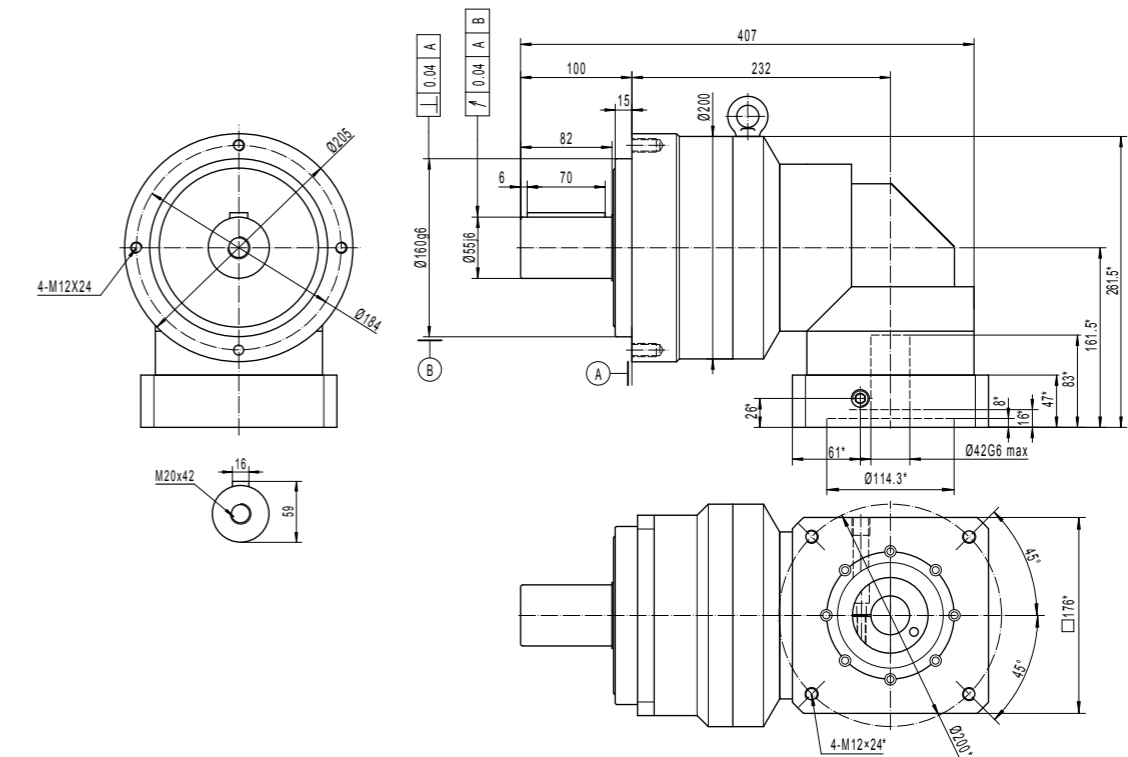
LIVELY-CI-RA-155- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



LIVELY-CI-RA-205- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 48$



LIVELY-CI-RA-205- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

LIVELY-SQ

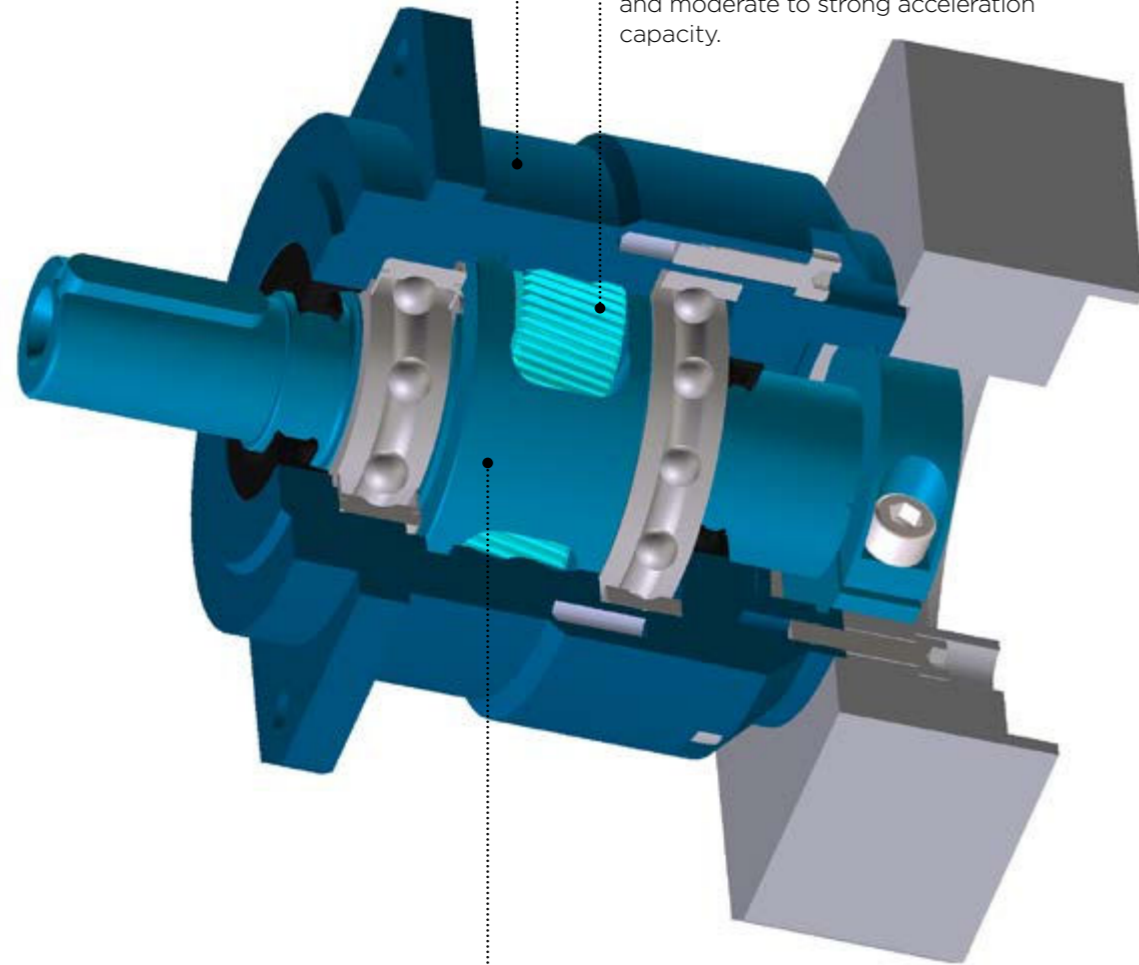


Acceleration capacity	+++
Fast reversals	+++
Radial efforts	++
Axial efforts	+
Stiffness	+++
Precision	++++
Economy	++++

LIVELY-SQ-ST_ Internal construction

Lively's ring gear is monobloc with the external housing, to provide greater rigidity and allow dynamic changes of torque and moderate reversals.

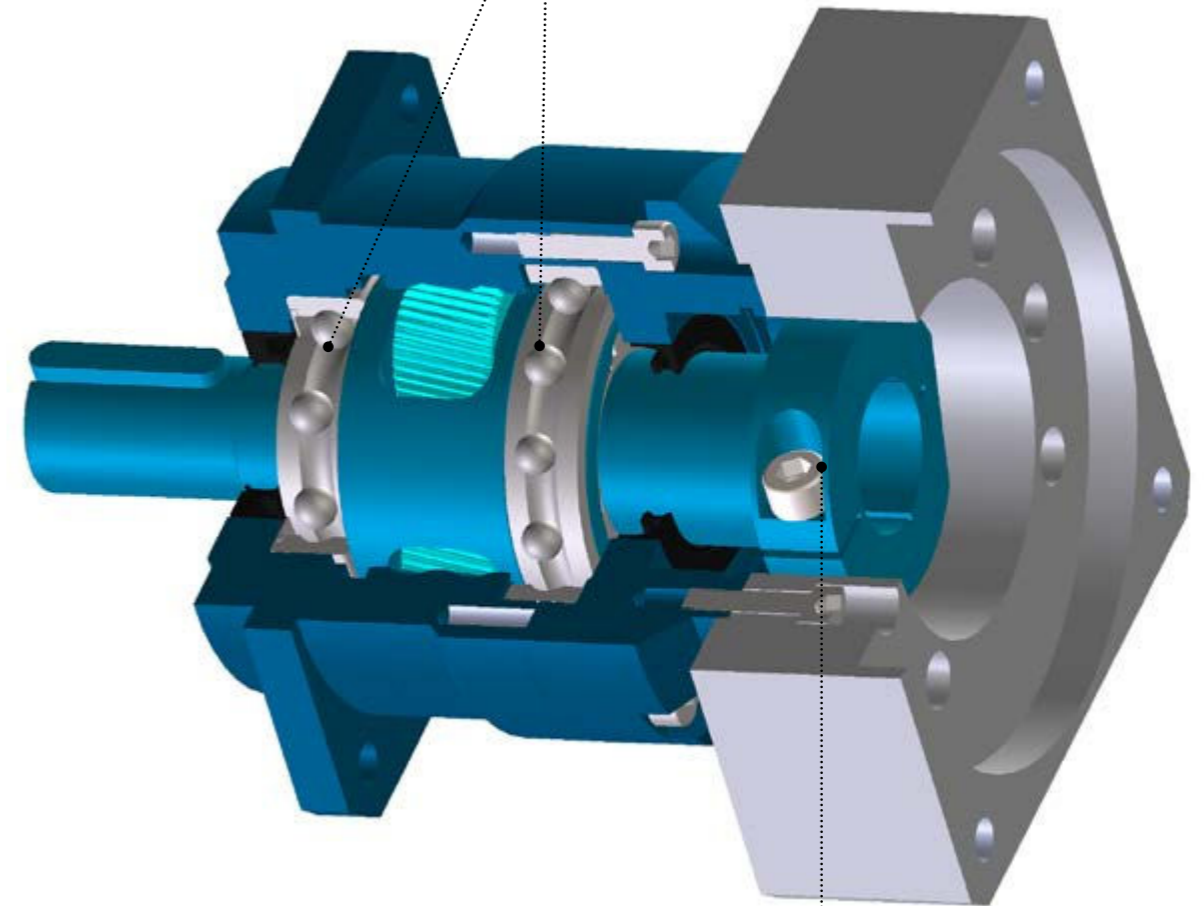
Carburized and quenched helical teeth enable quiet operation, reliability and moderate to strong acceleration capacity.



The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

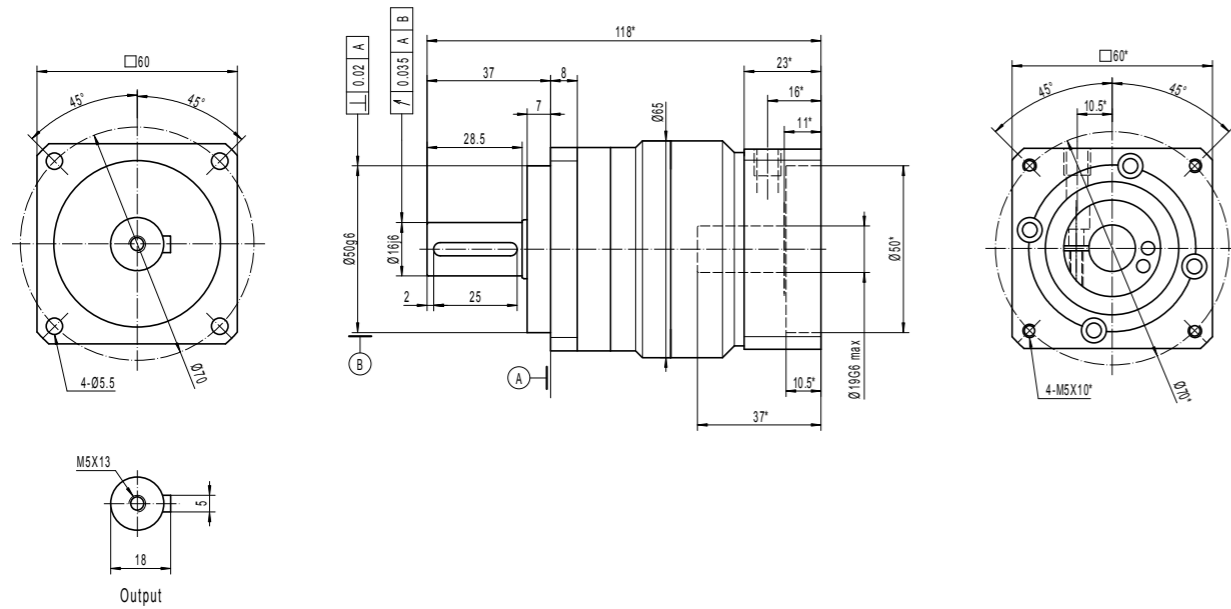
The caged planet carrier prevents the planets from tilting.

The planet carrier is dual-supported by radial ball bearings. This configuration guarantees the perfect alignment of gears during operation.

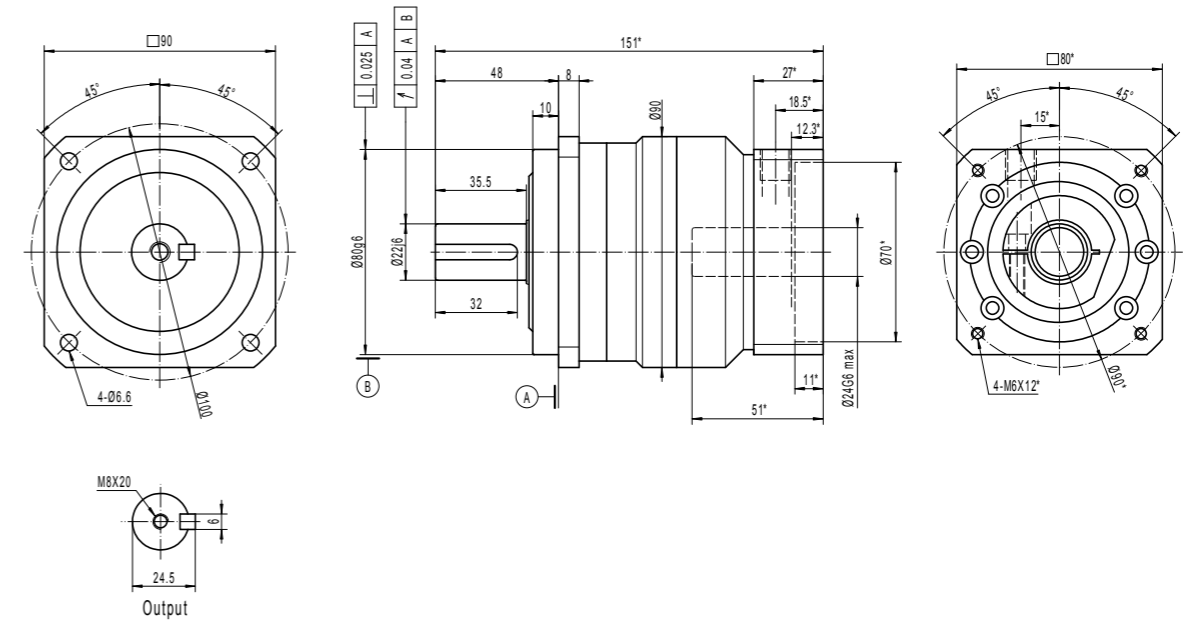


The balanced coupling limits vibration and reduces loads on your motor shaft bearings.

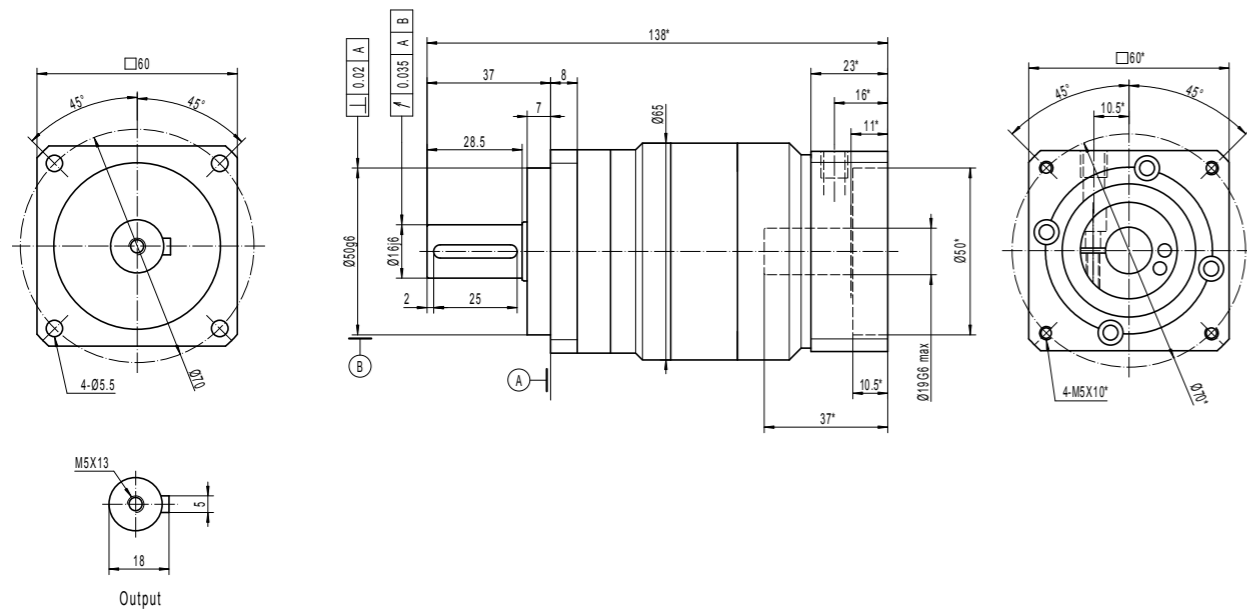
LIVELY-SQ-ST-060-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



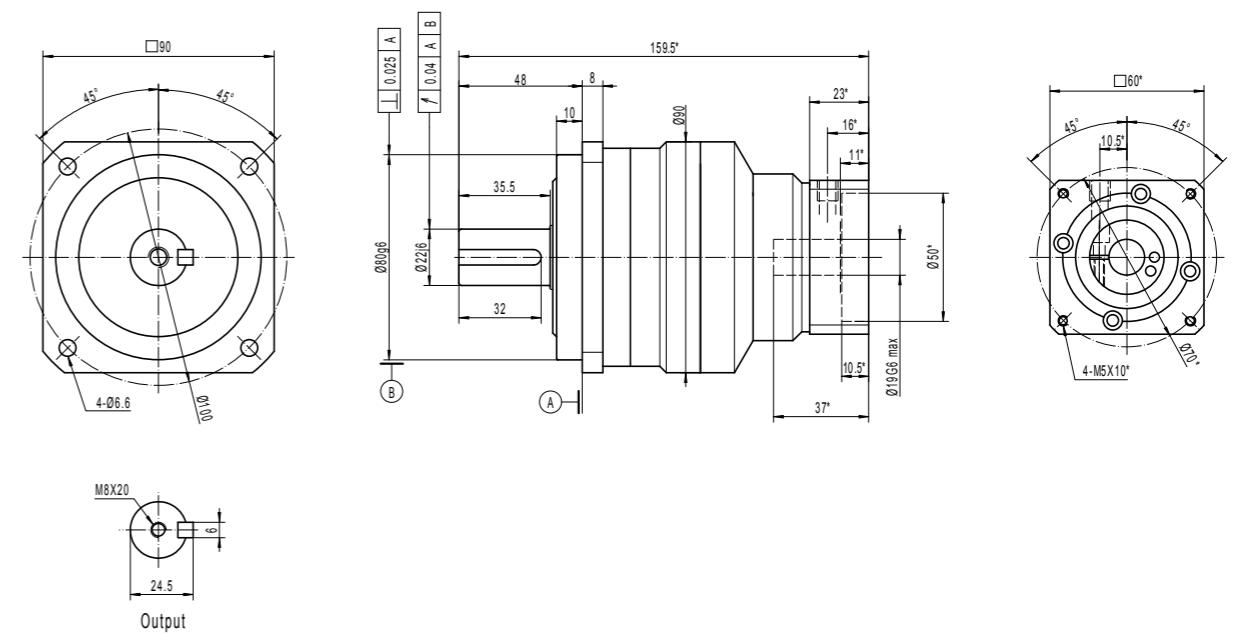
LIVELY-SQ-ST-090-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-SQ-ST-060-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



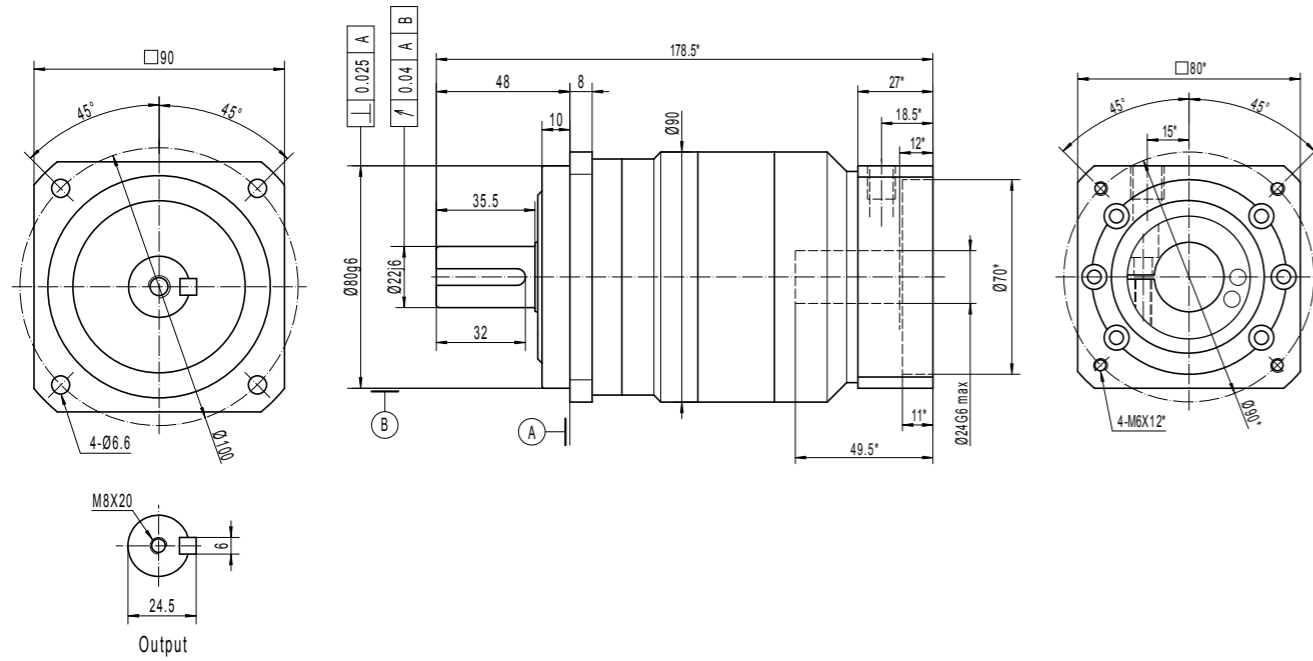
LIVELY-SQ-ST-090-2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



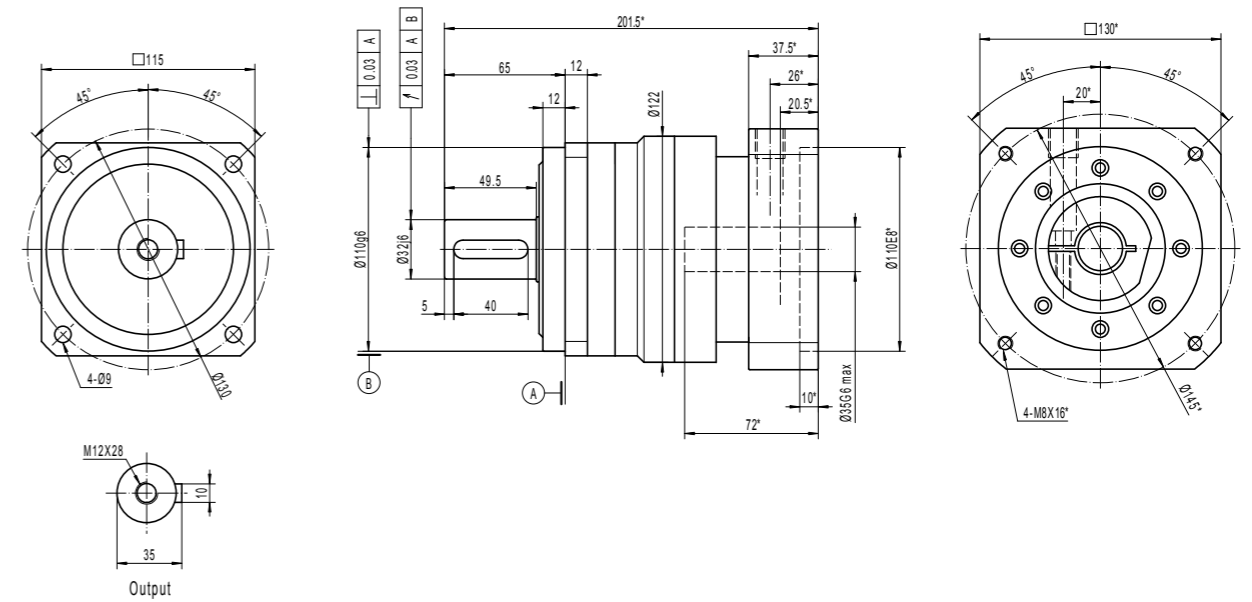
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

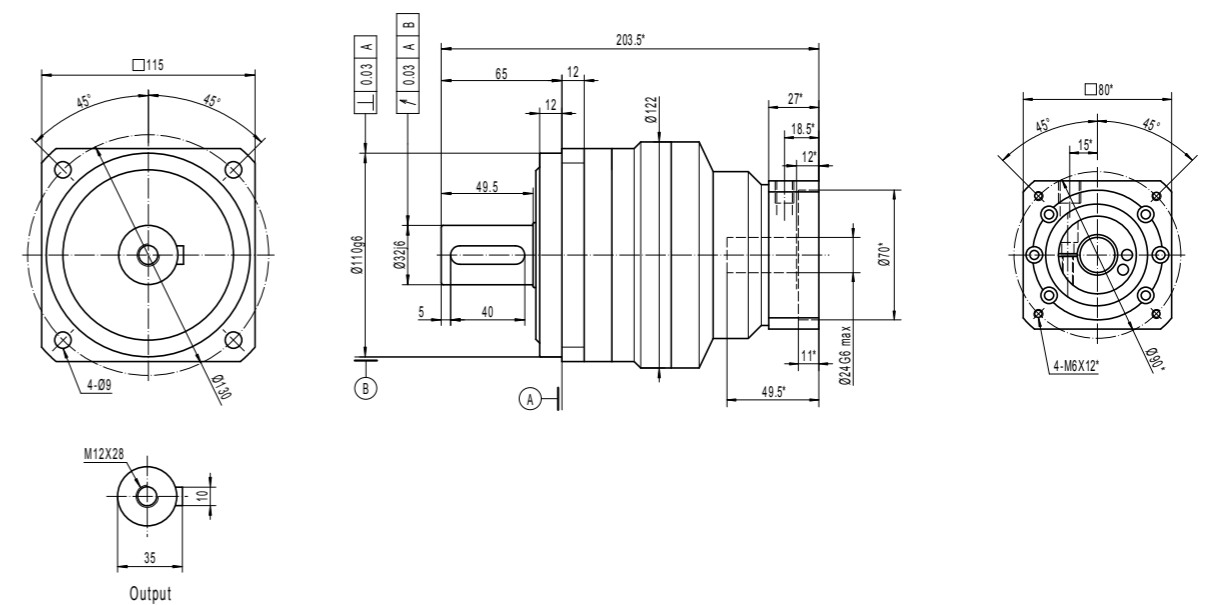
LIVELY-SQ-ST-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-SQ-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



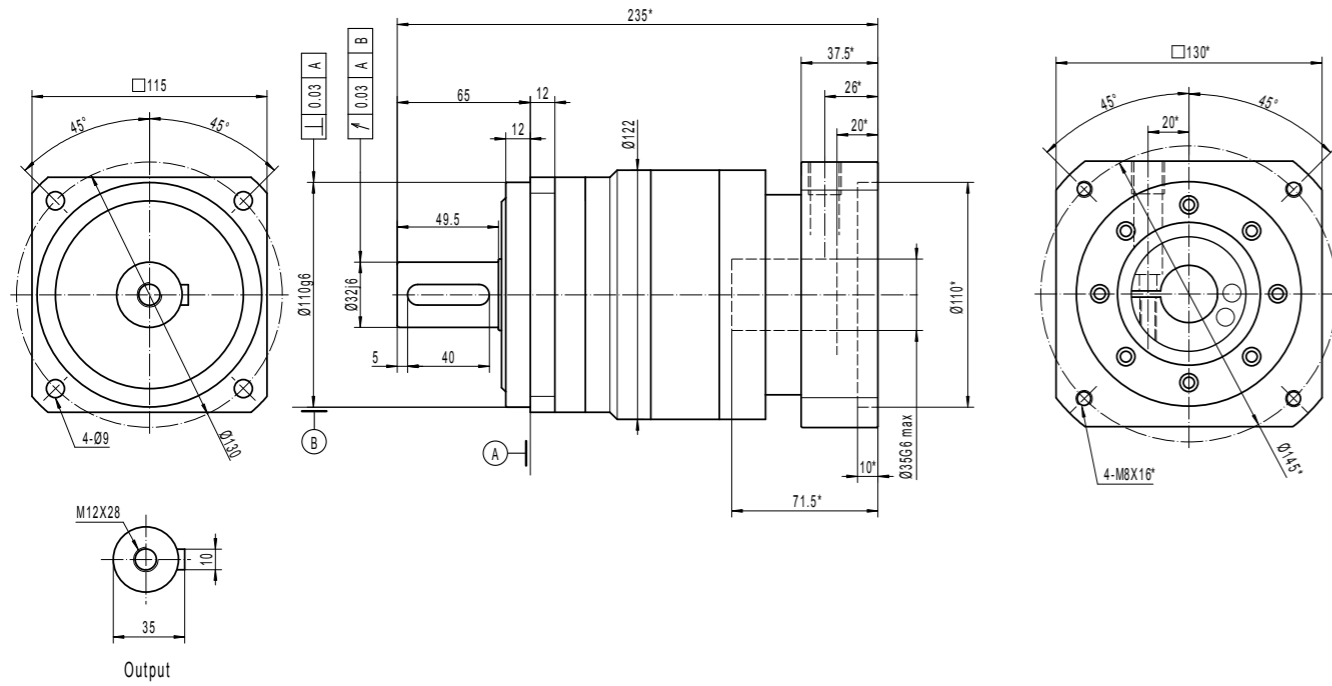
LIVELY-SQ-ST-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



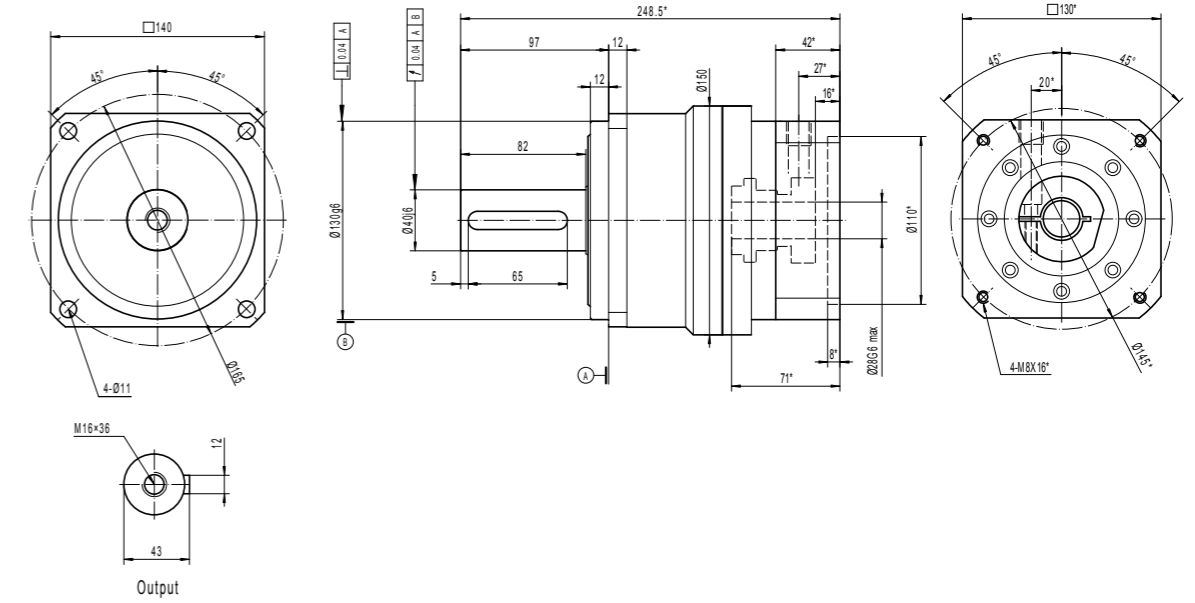
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

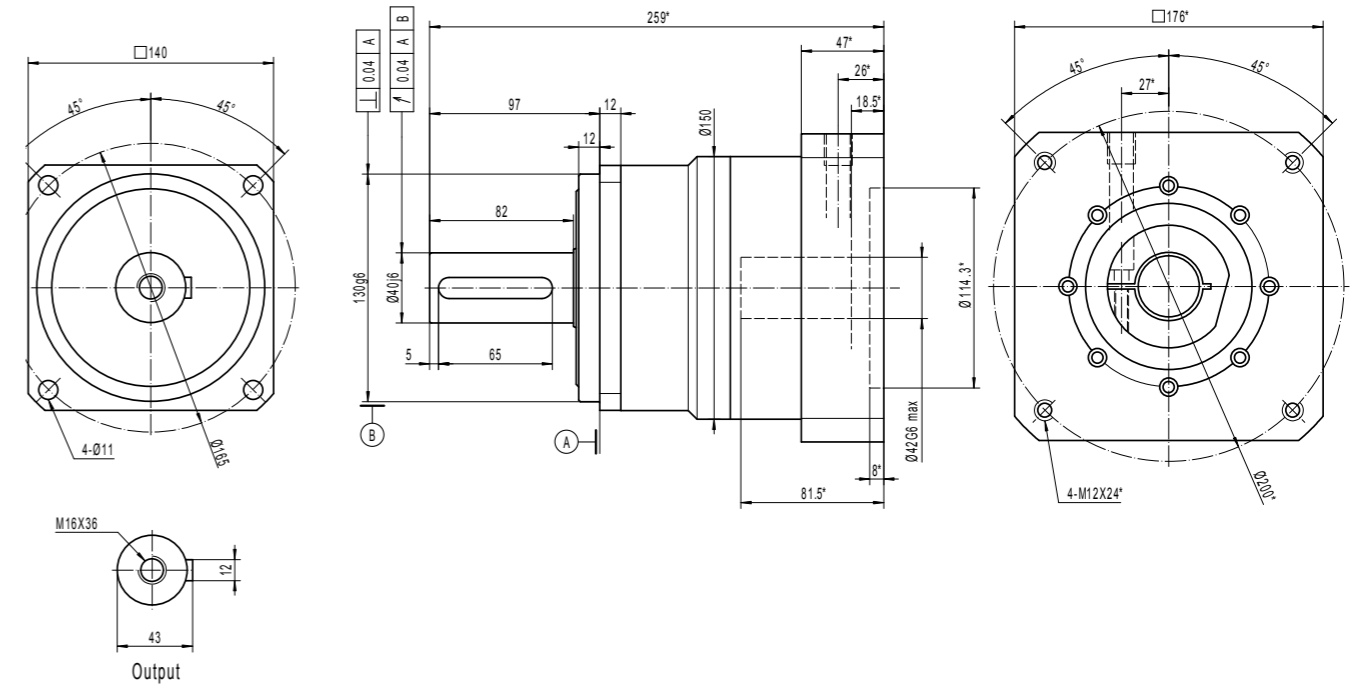
LIVELY-SQ-ST-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



LIVELY-SQ-ST-140- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 28$



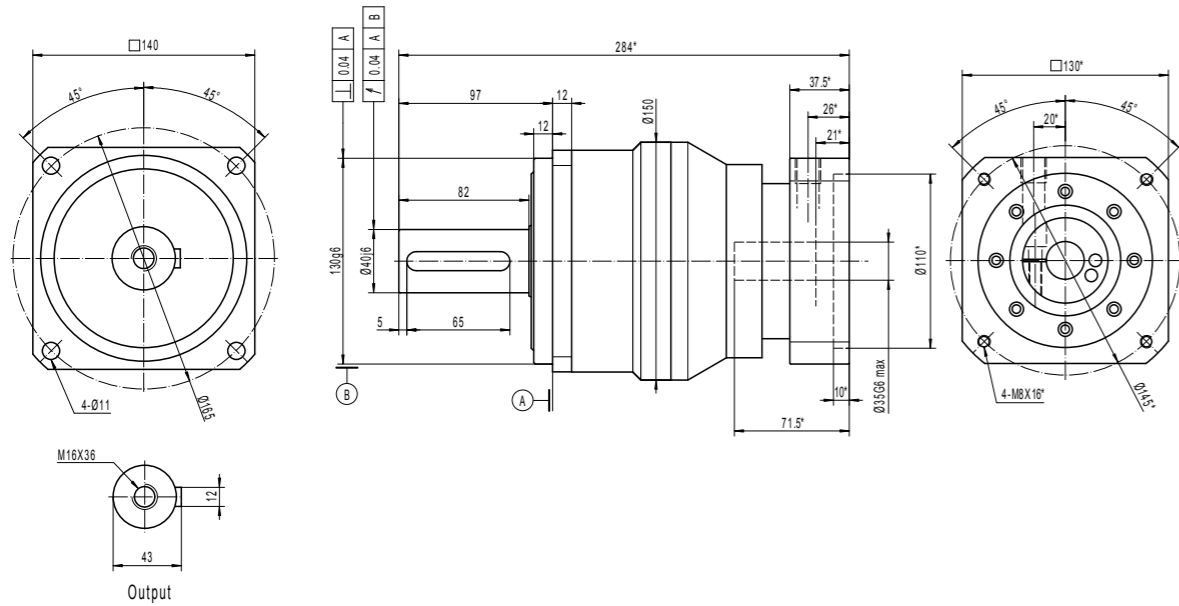
LIVELY-SQ-ST-140- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



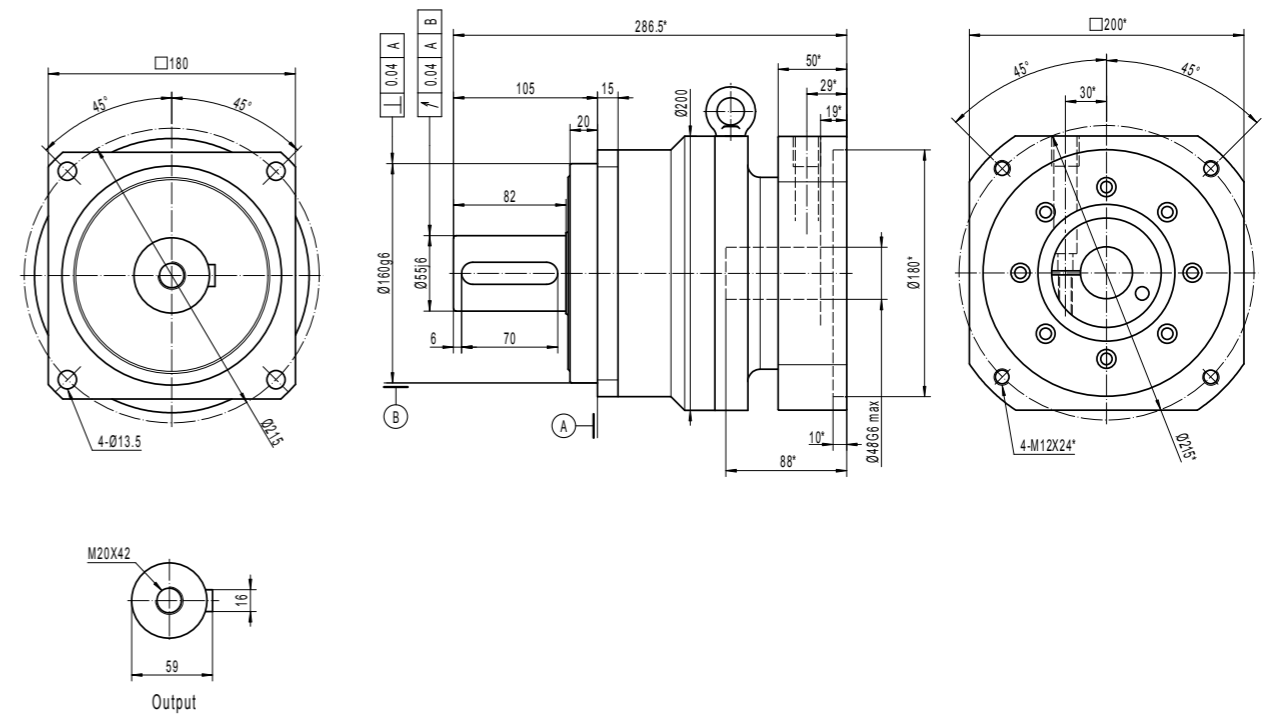
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

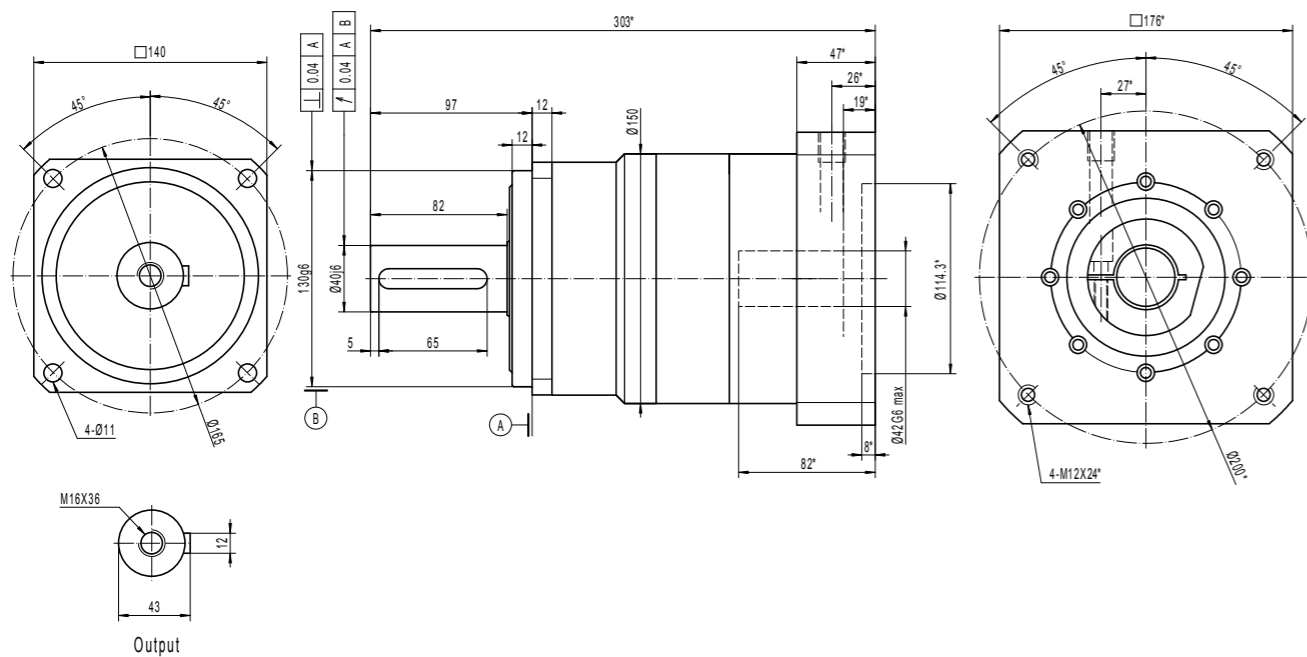
LIVELY-SQ-ST-140- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



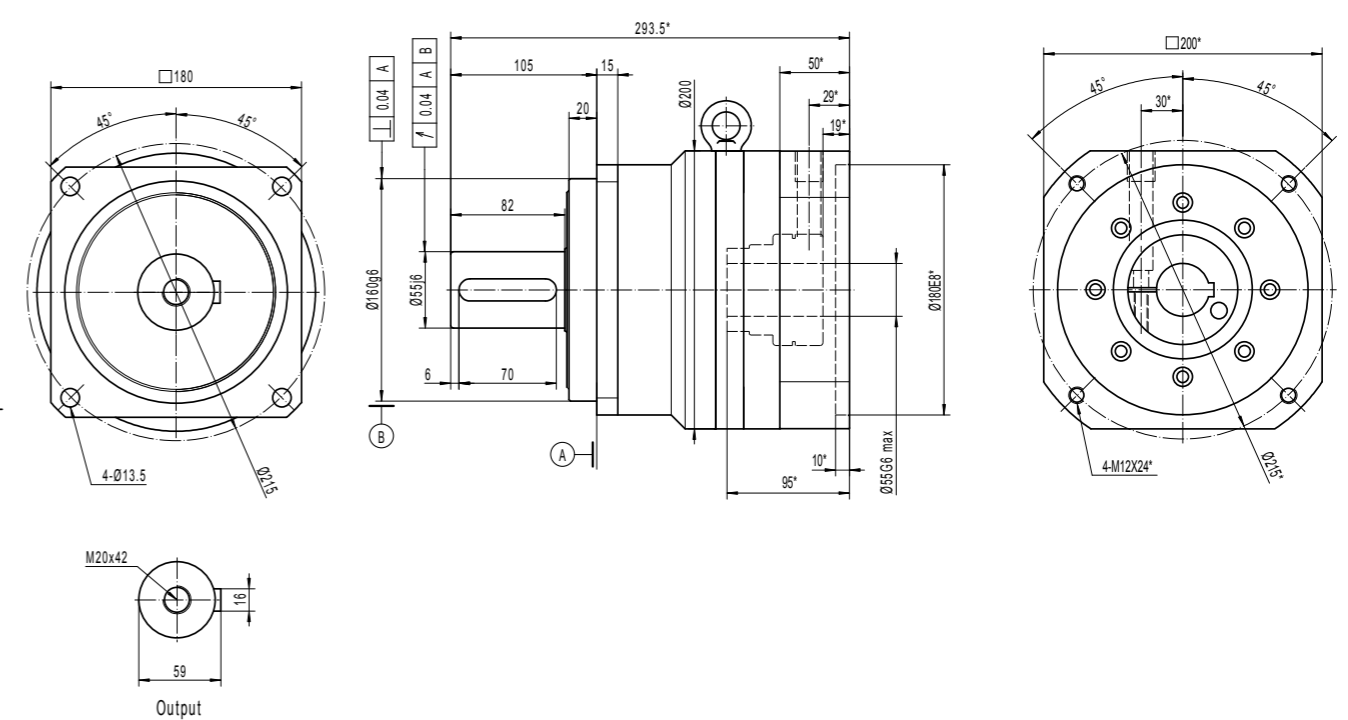
LIVELY-SQ-ST-180- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 48$



LIVELY-SQ-ST-140- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



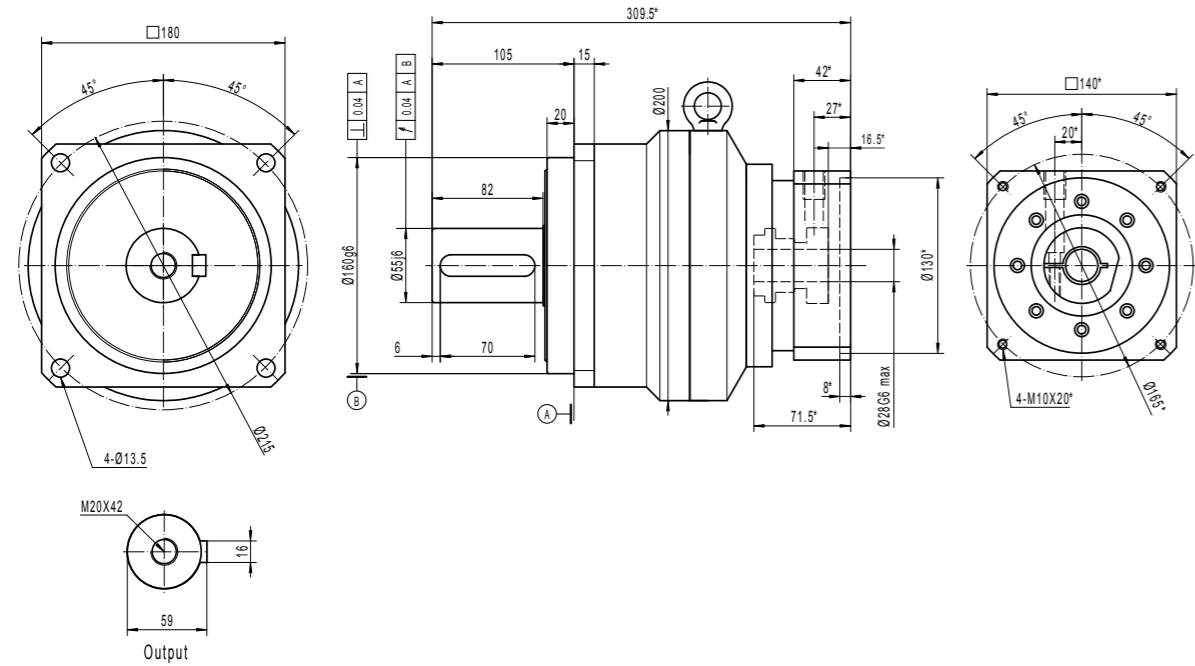
LIVELY-SQ-ST-180- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 55$



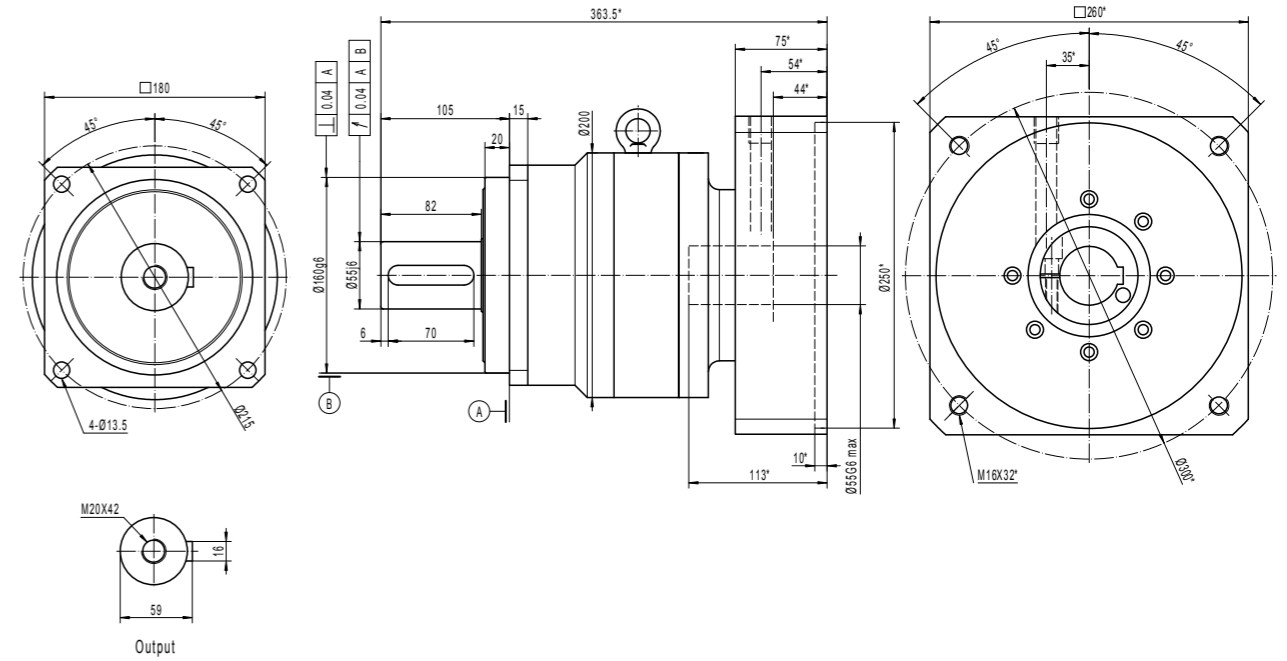
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

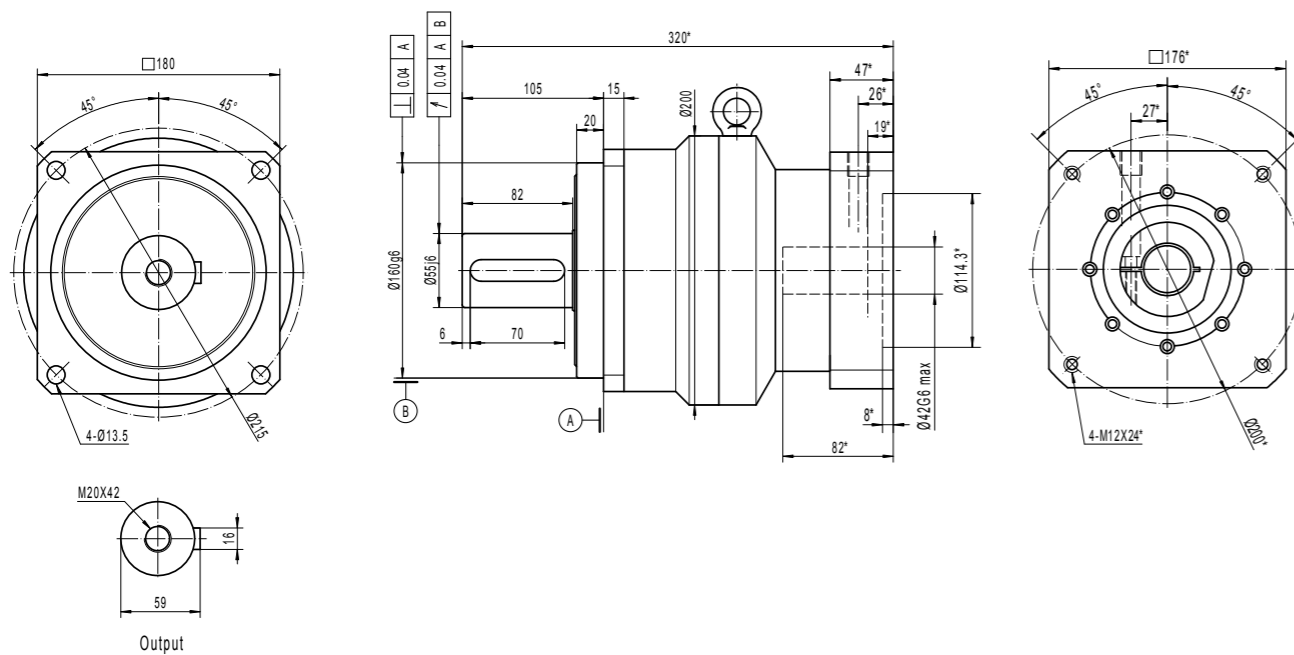
LIVELY-SQ-ST-180- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 28$



LIVELY-SQ-ST-180- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 55$



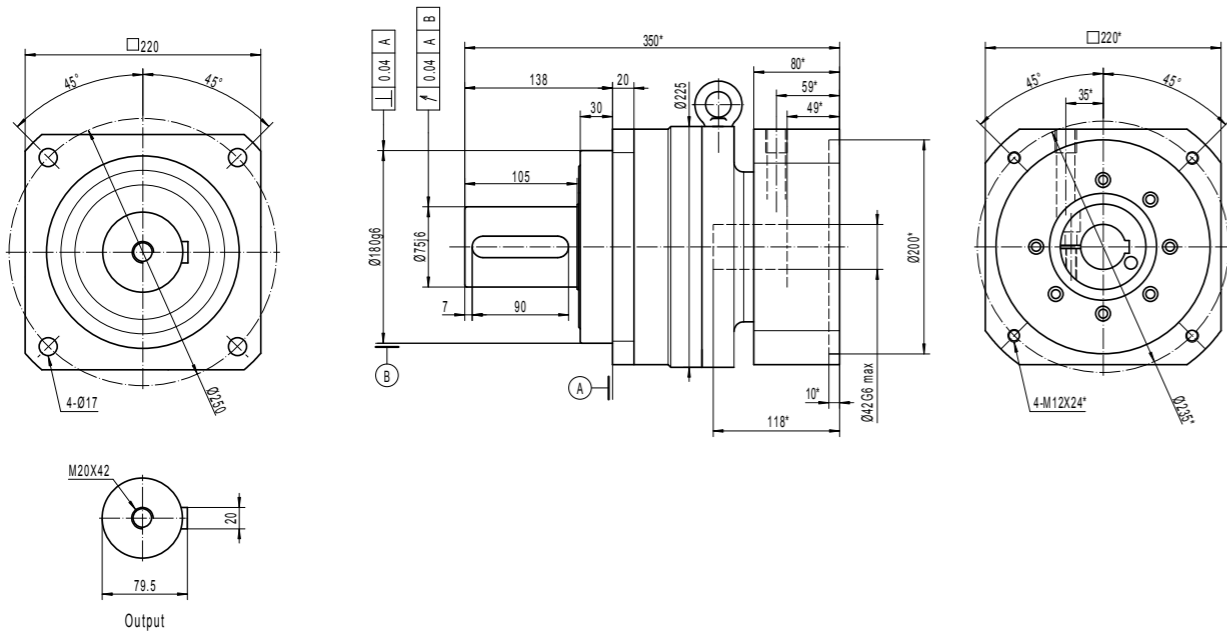
LIVELY-SQ-ST-180- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



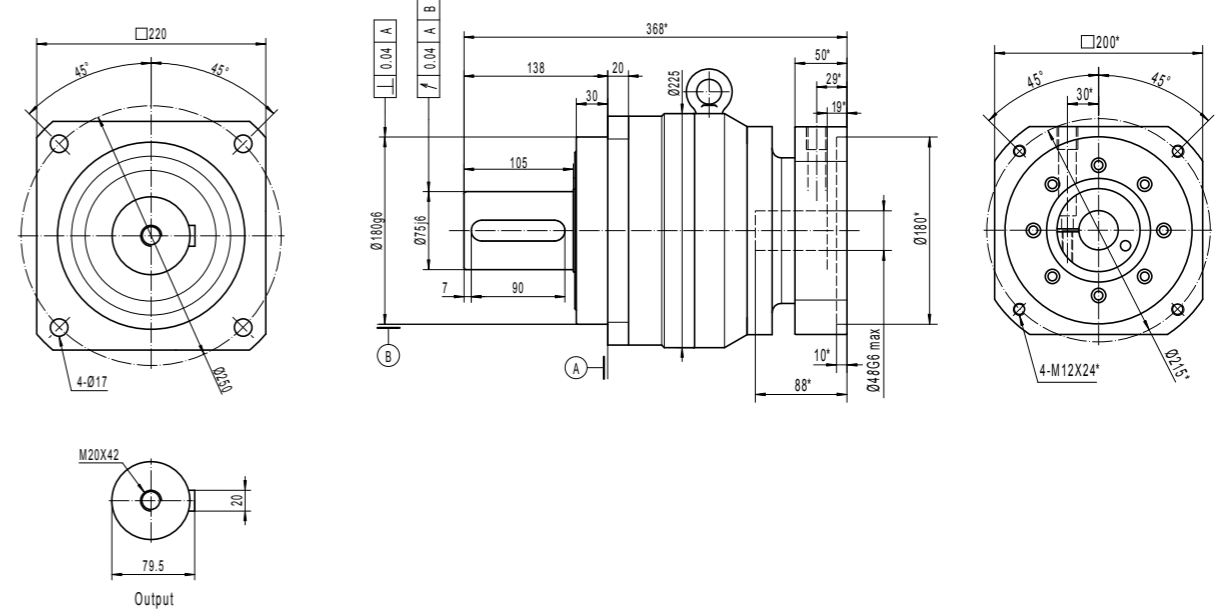
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

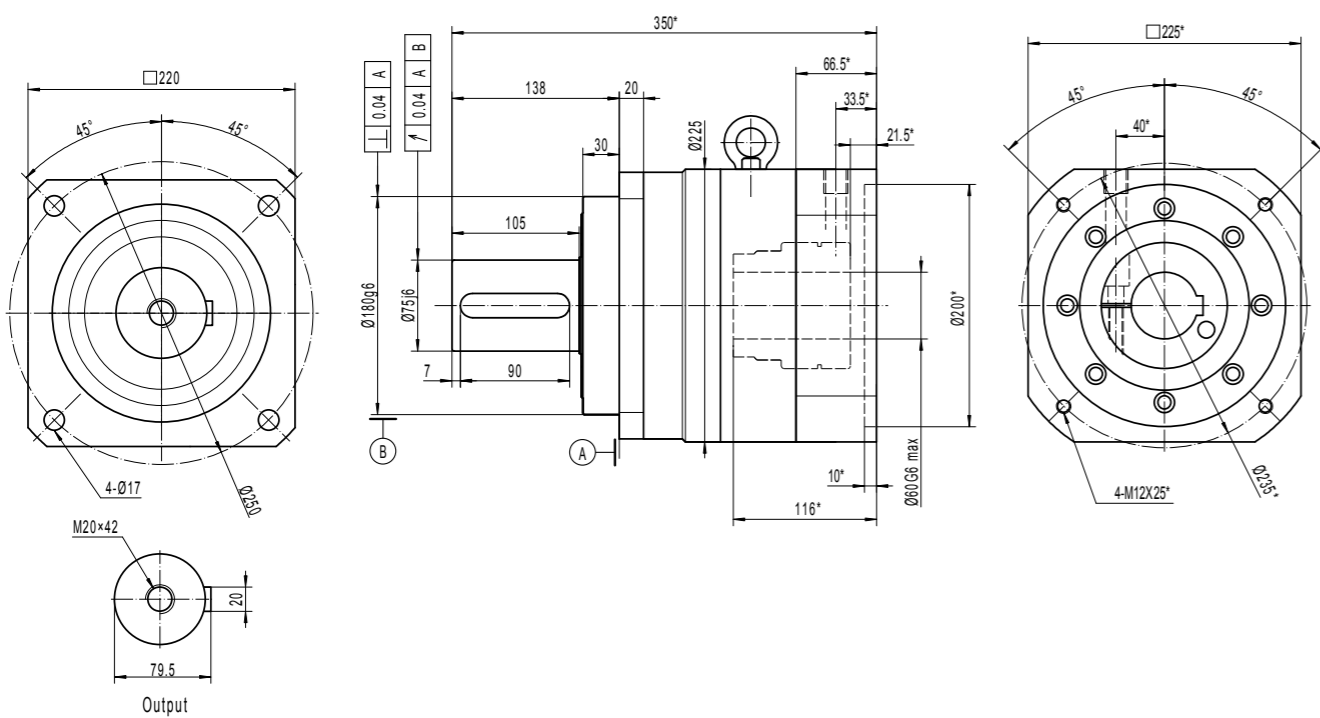
LIVELY-SQ-ST-220-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



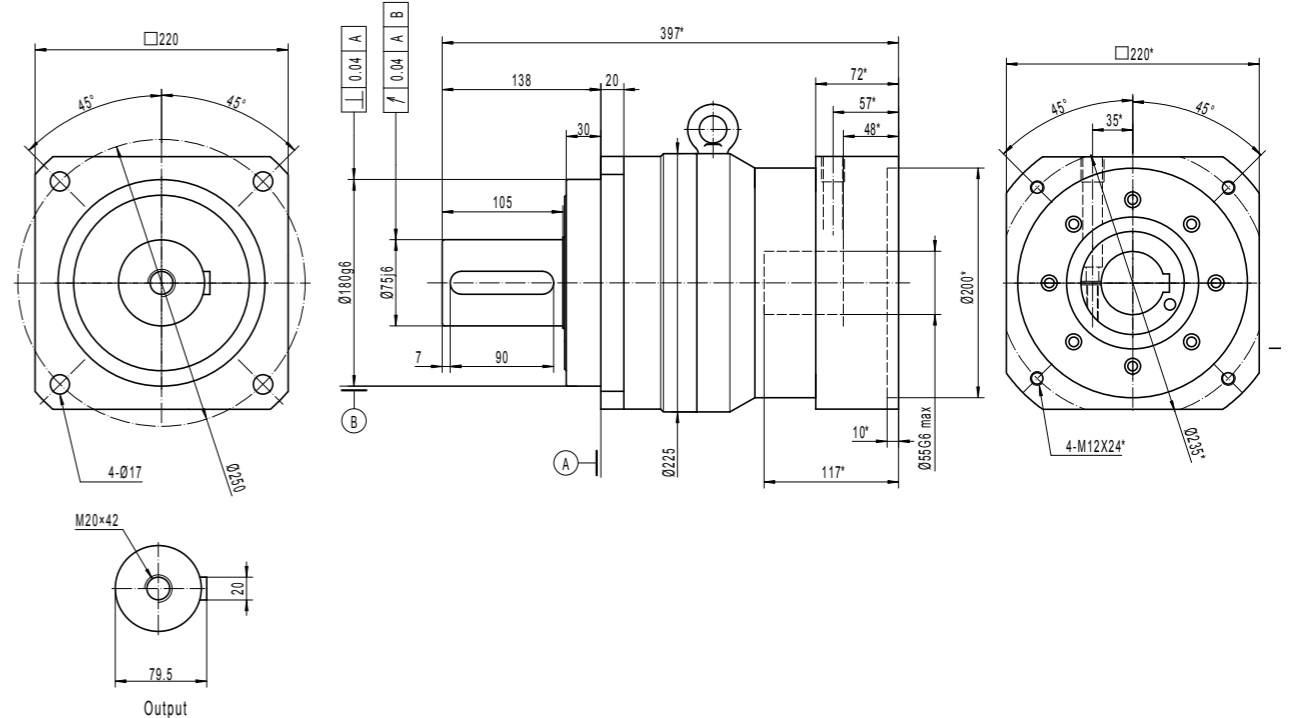
LIVELY-SQ-ST-220-2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 48$



LIVELY-SQ-ST-220-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 60$



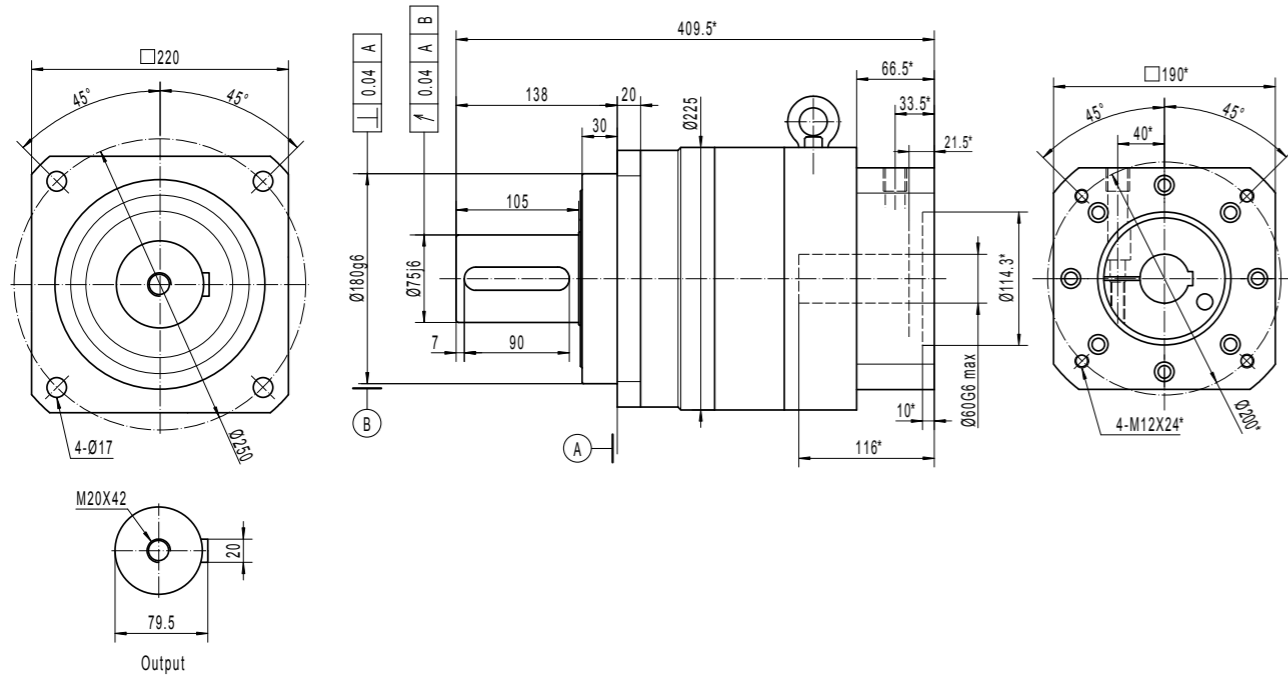
LIVELY-SQ-ST-220-2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 55$



*VARIES WITH YOUR MOTOR DIMENSIONS

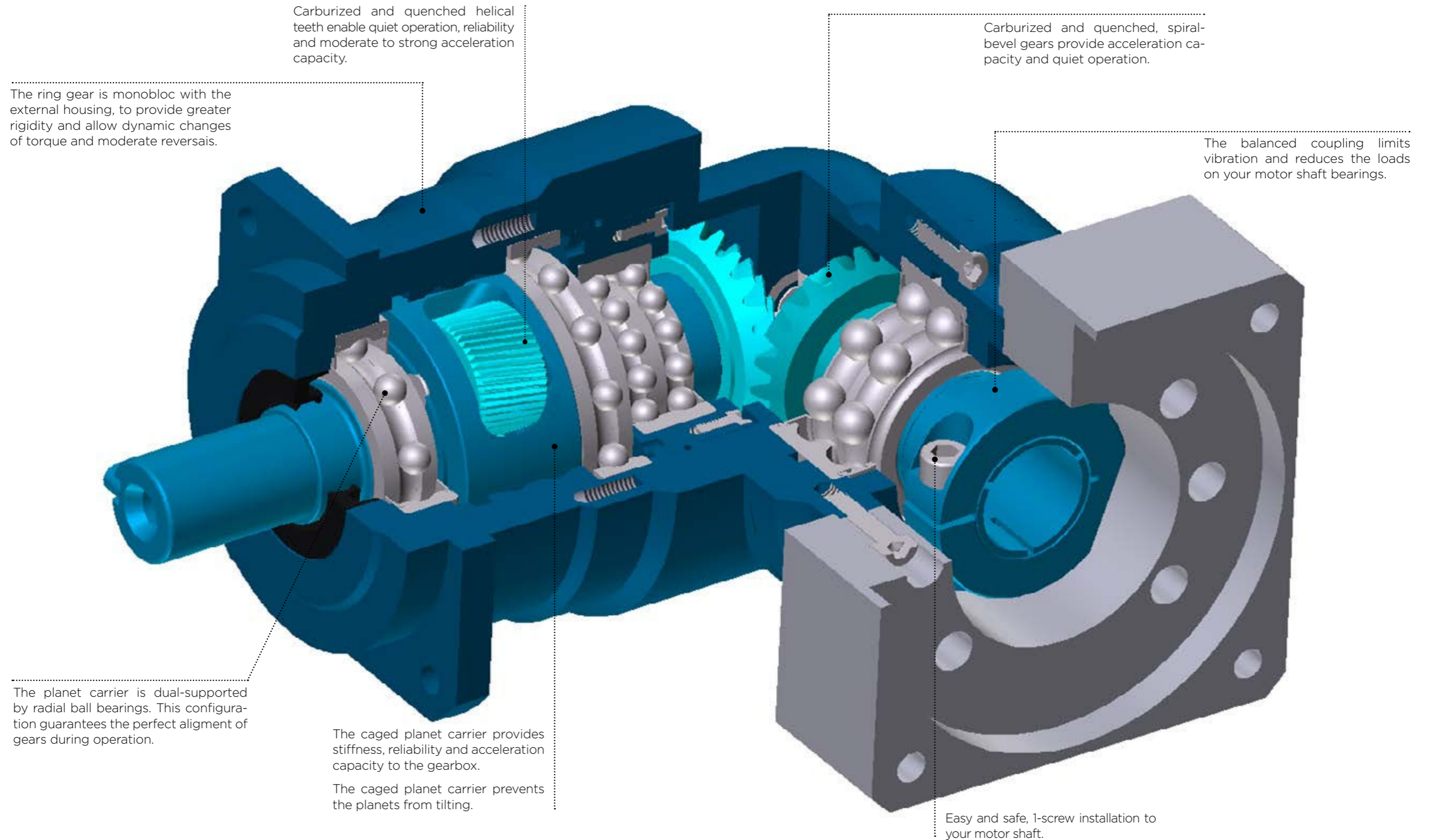
*VARIES WITH YOUR MOTOR DIMENSIONS

LIVELY-SQ-ST-220- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \text{Ø}60$

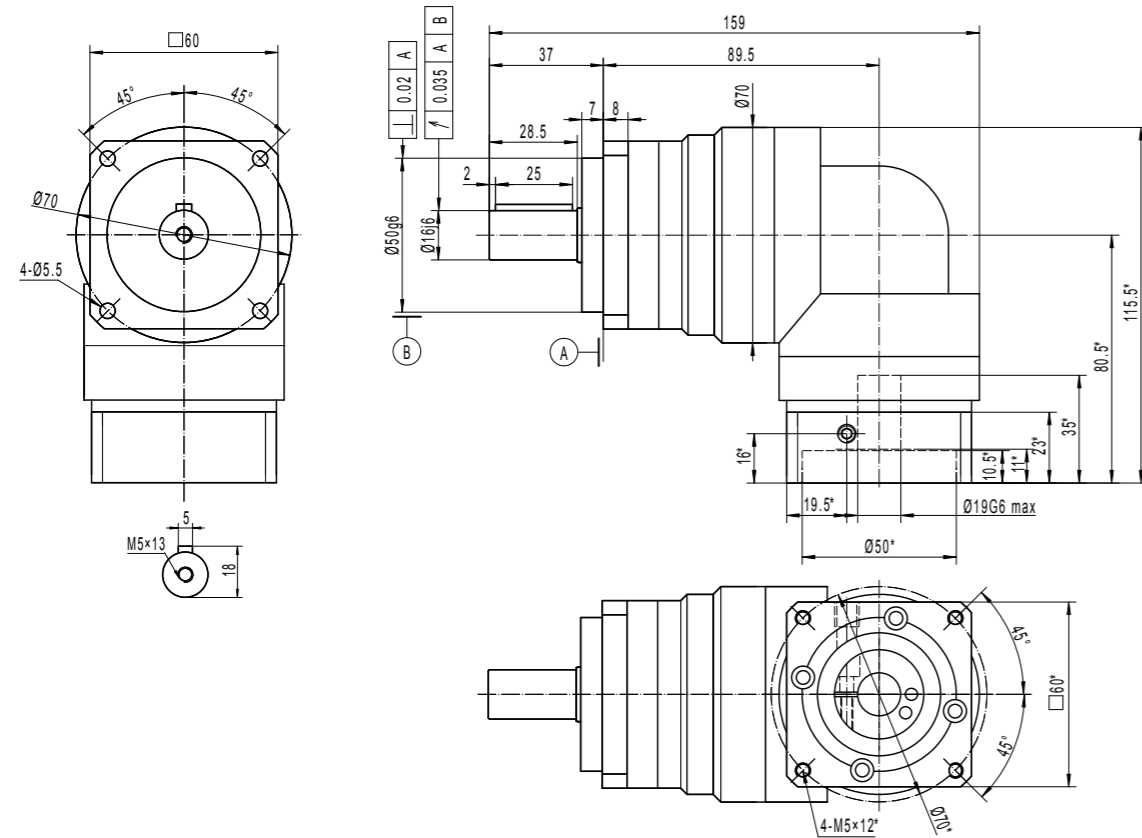


*VARIES WITH YOUR MOTOR DIMENSIONS

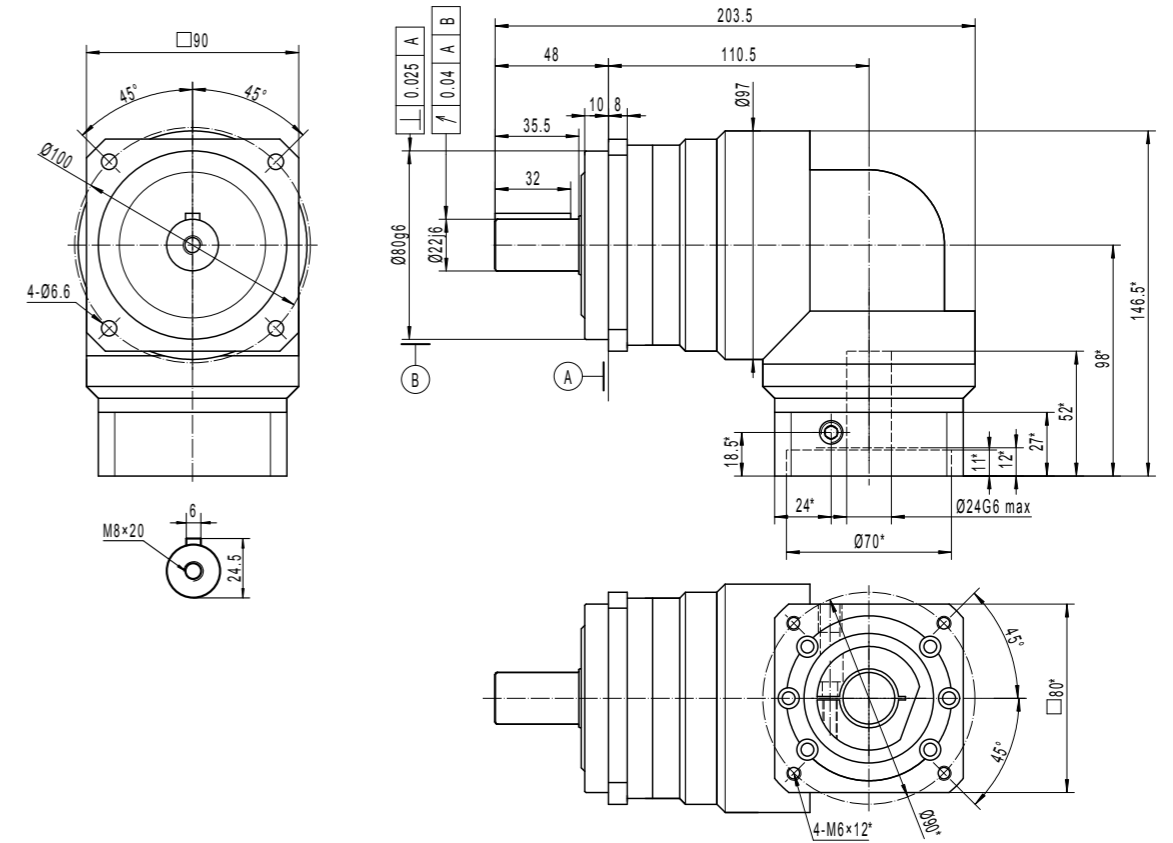
LIVELY-SQ-RA_ Internal construction



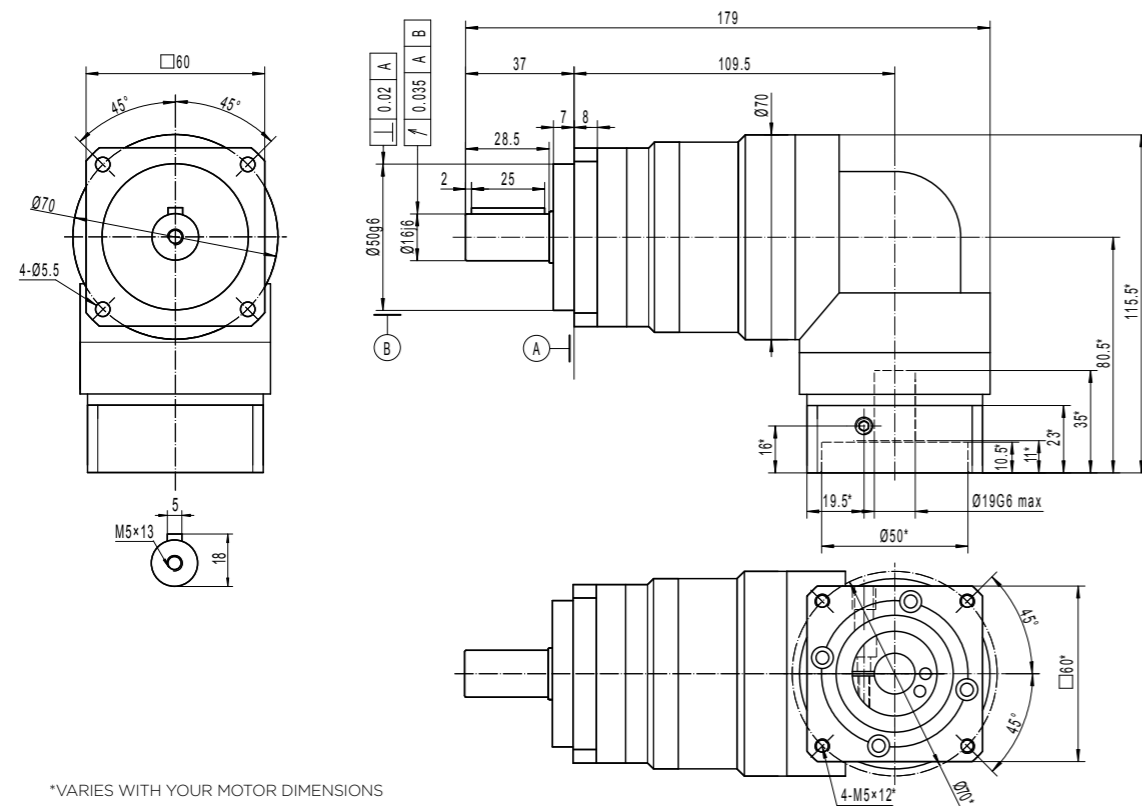
LIVELY-SQ-RA-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



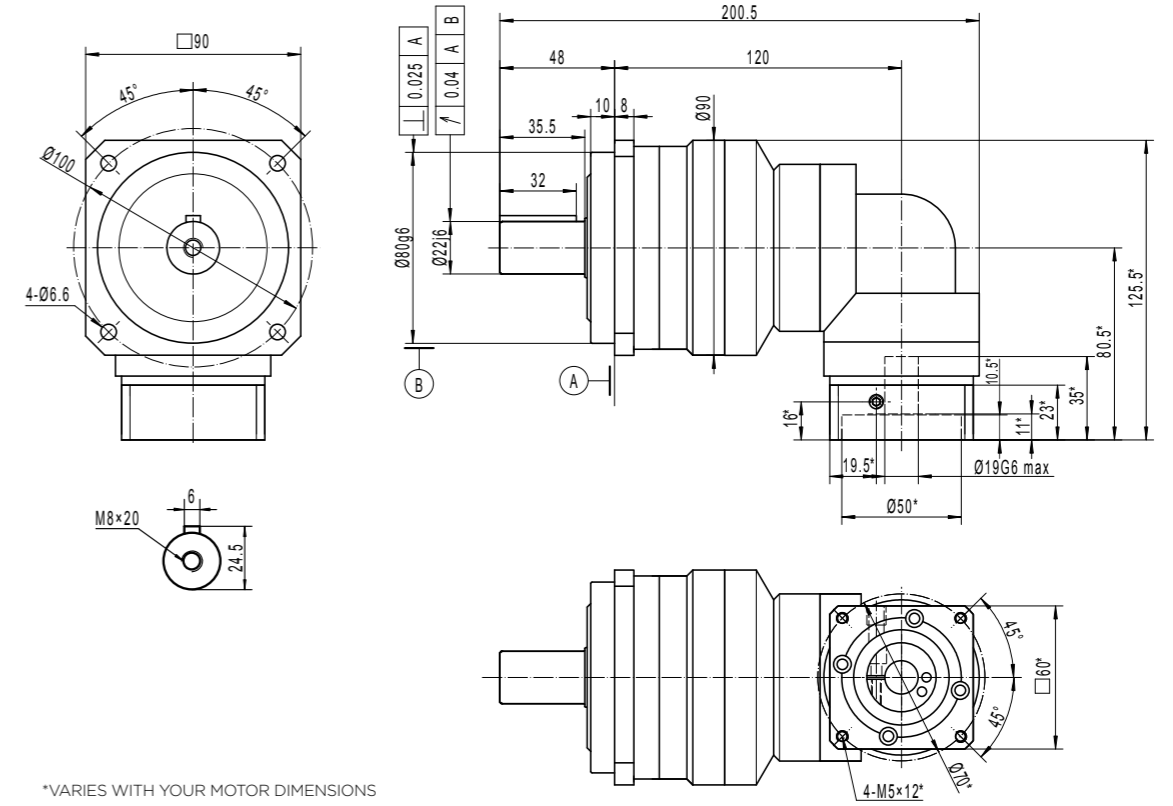
LIVELY-SQ-RA-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-SQ-RA-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



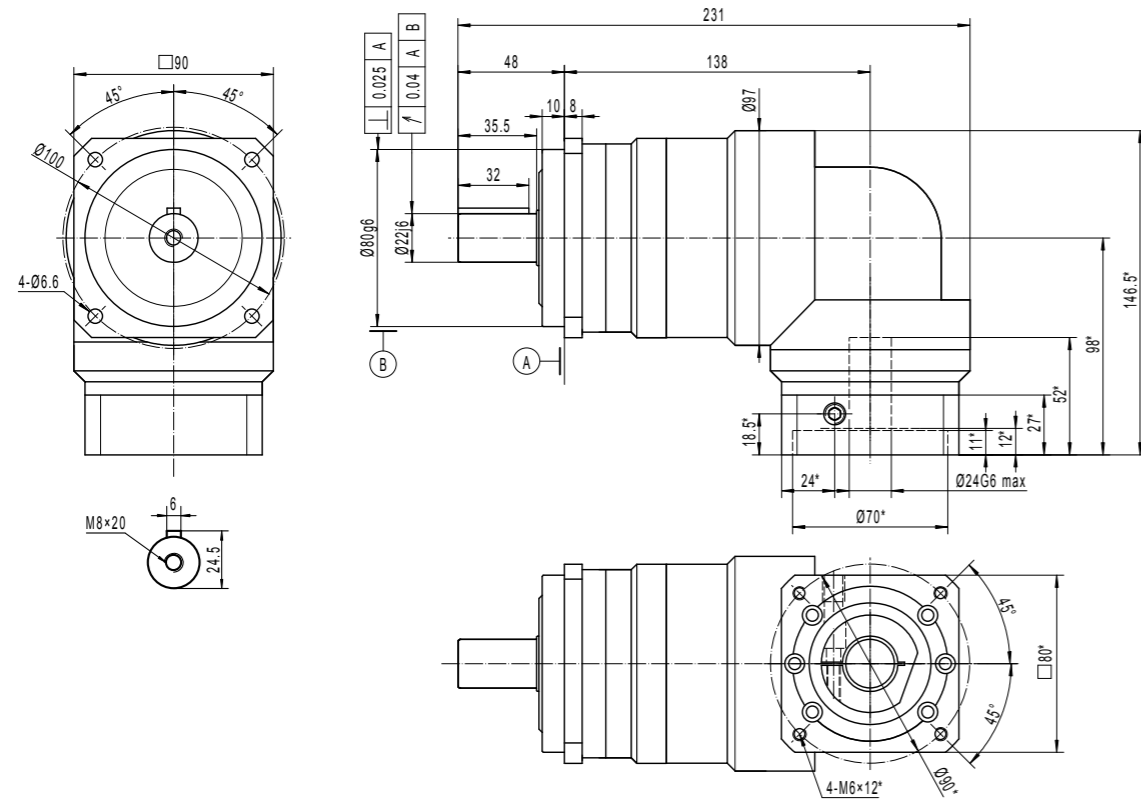
LIVELY-SQ-RA-090- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



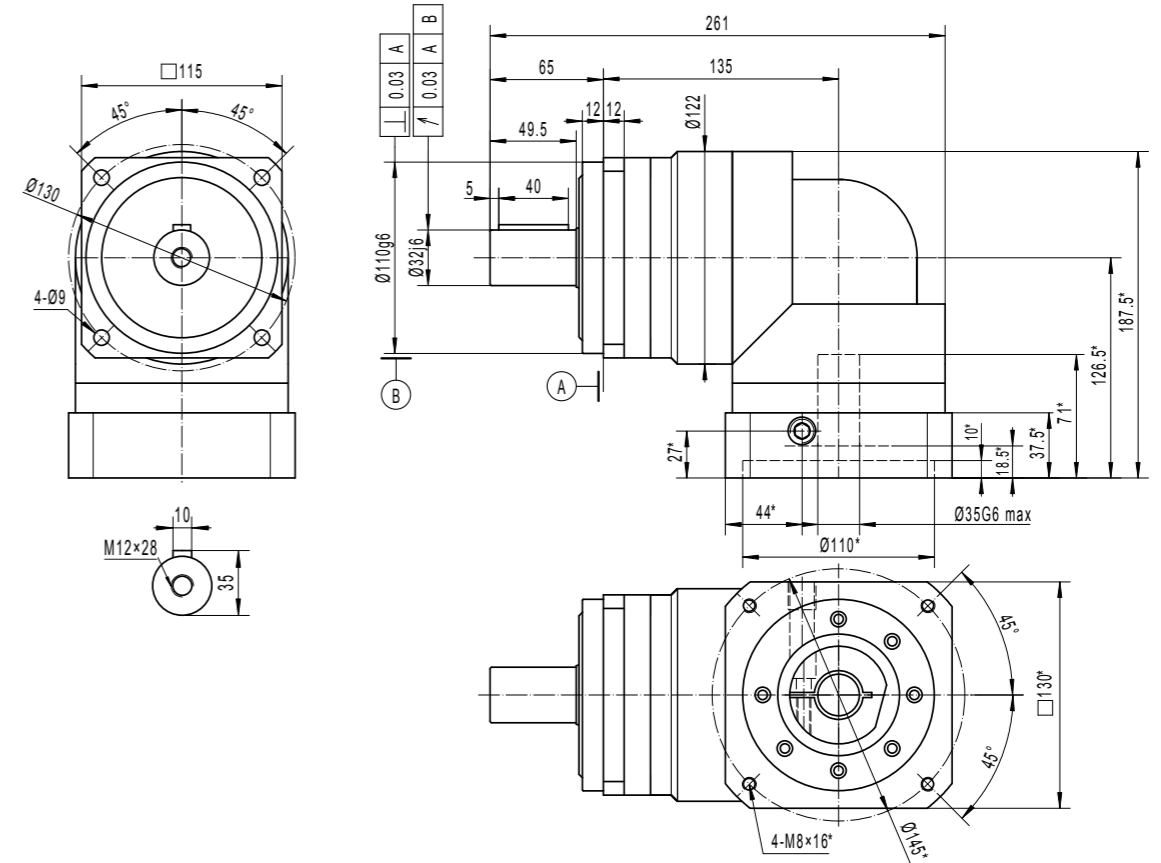
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

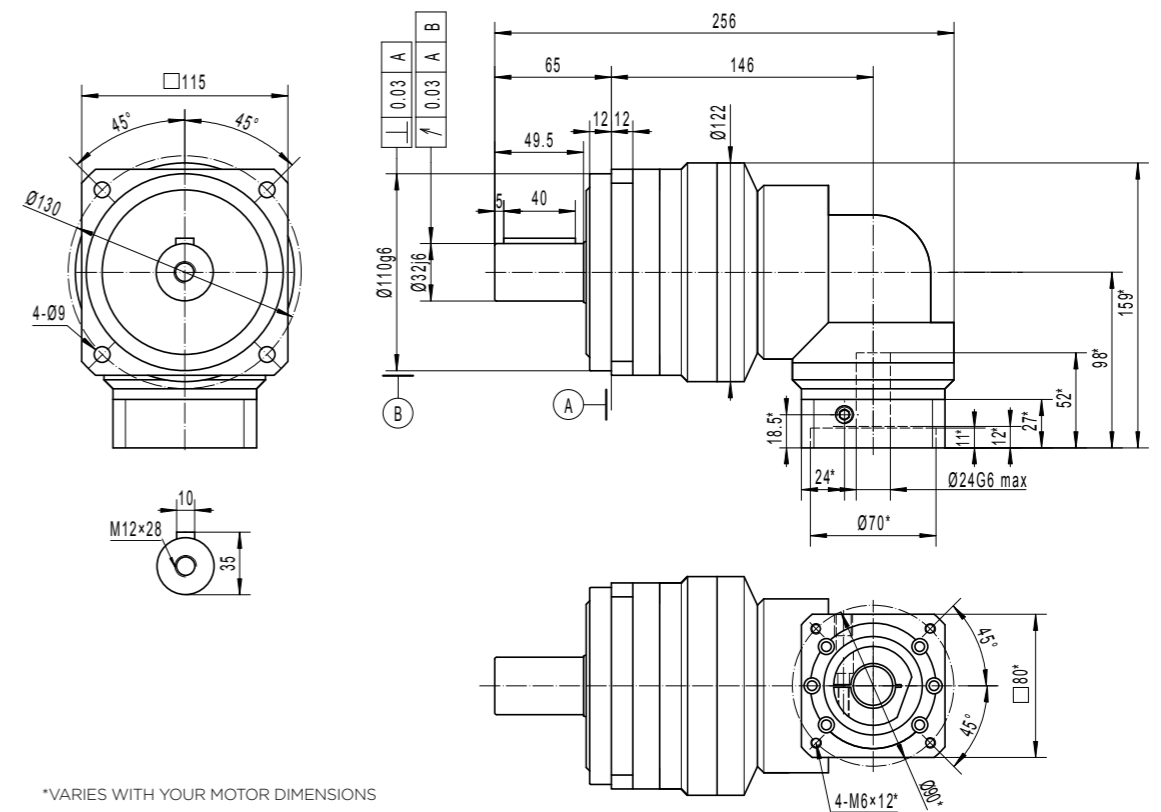
LIVELY-SQ-RA-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



LIVELY-SQ-RA-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



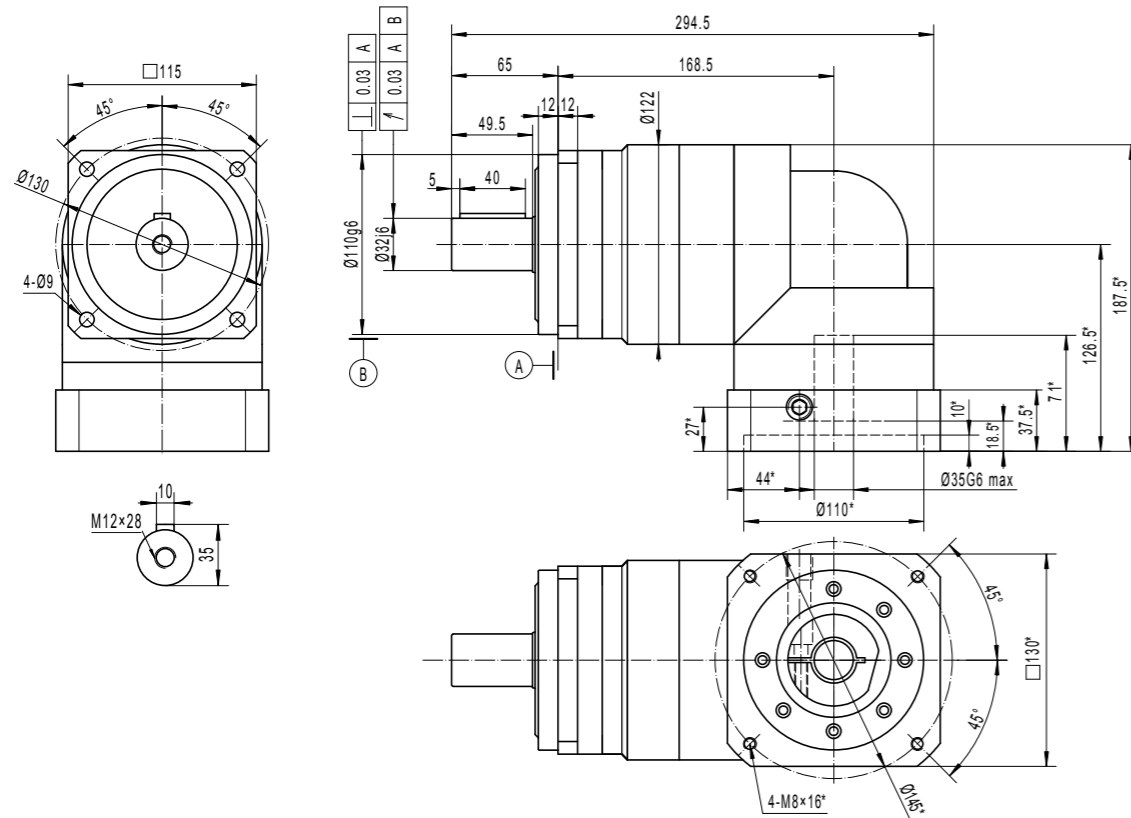
LIVELY-SQ-RA-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



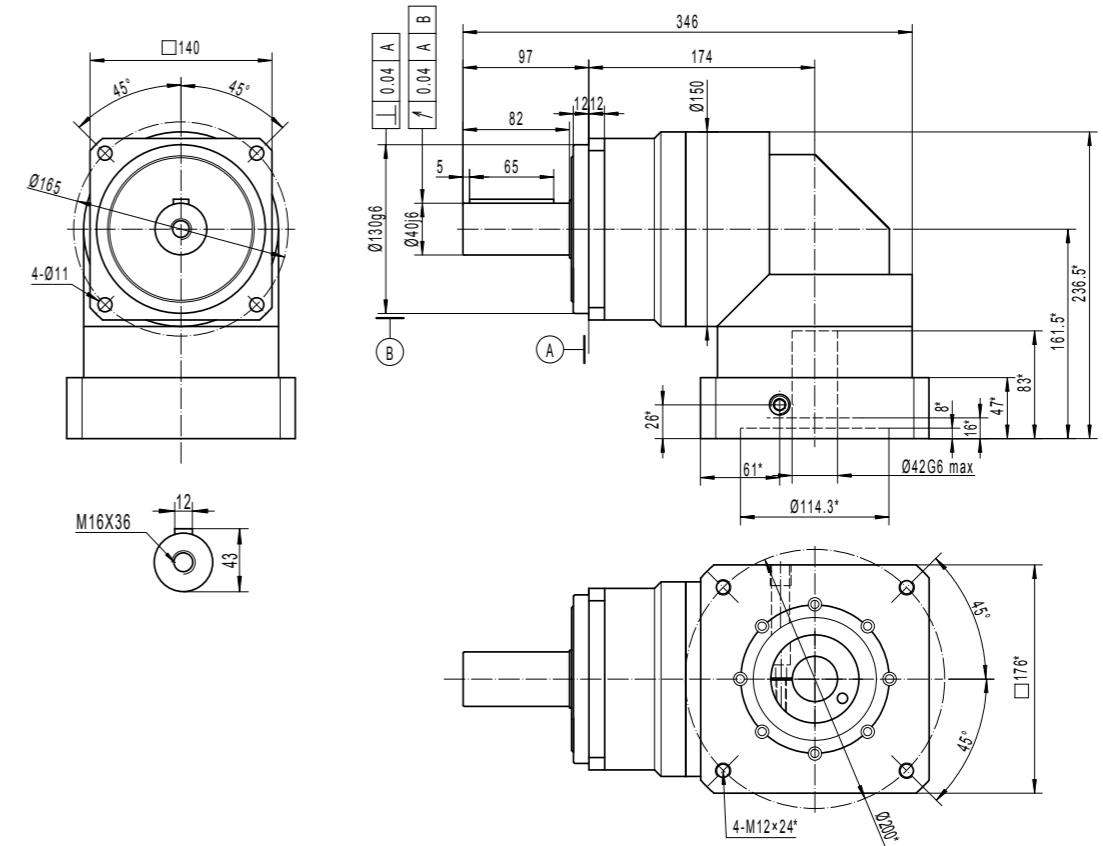
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

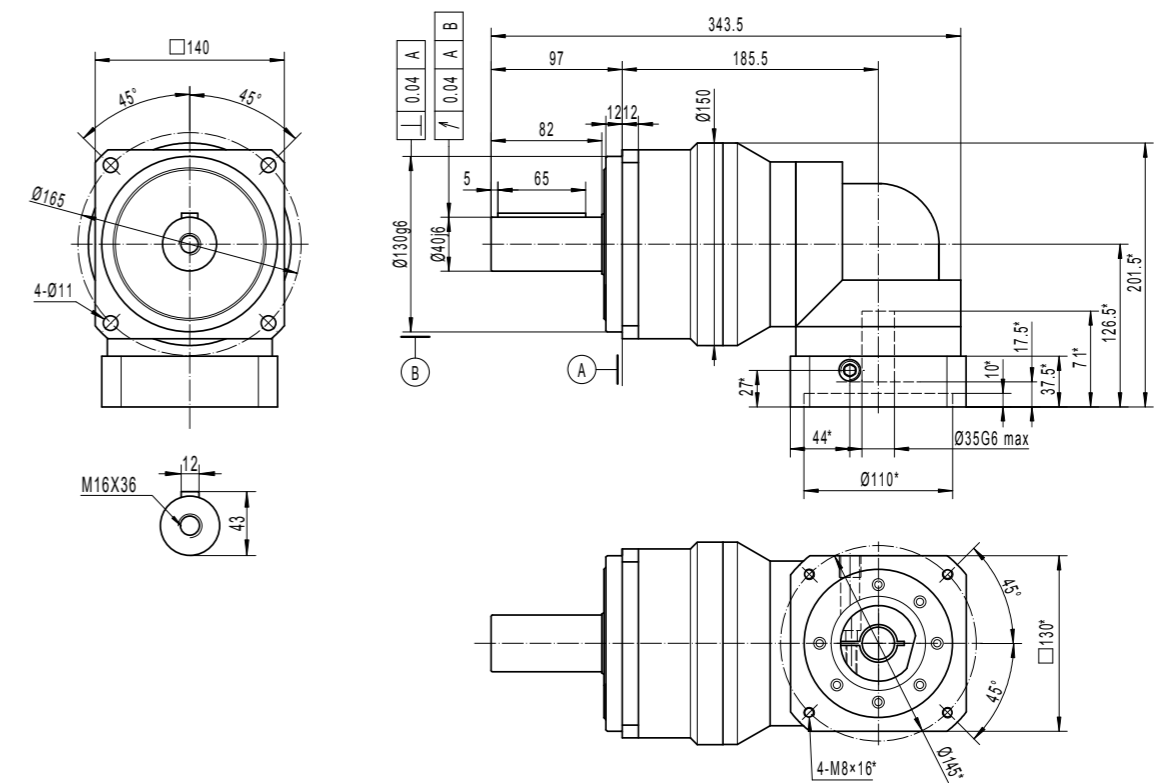
LIVELY-SQ-RA-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



LIVELY-SQ-RA-140- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



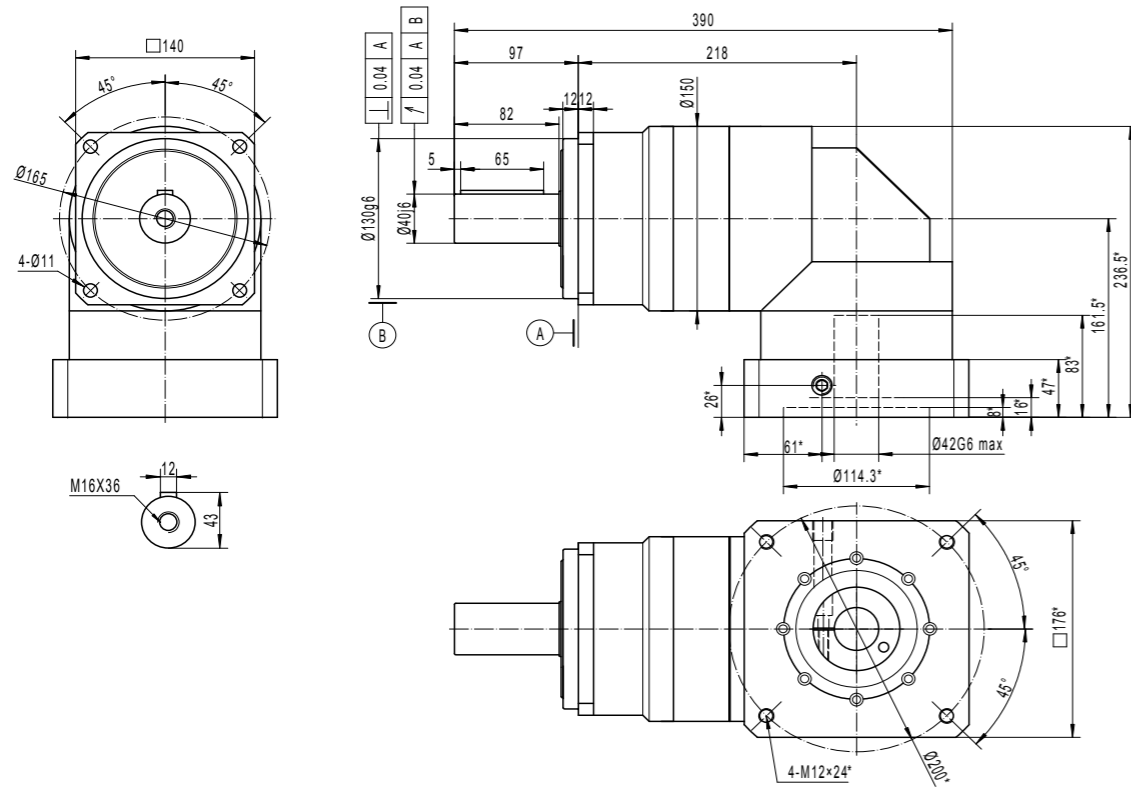
LIVELY-SQ-RA-140- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



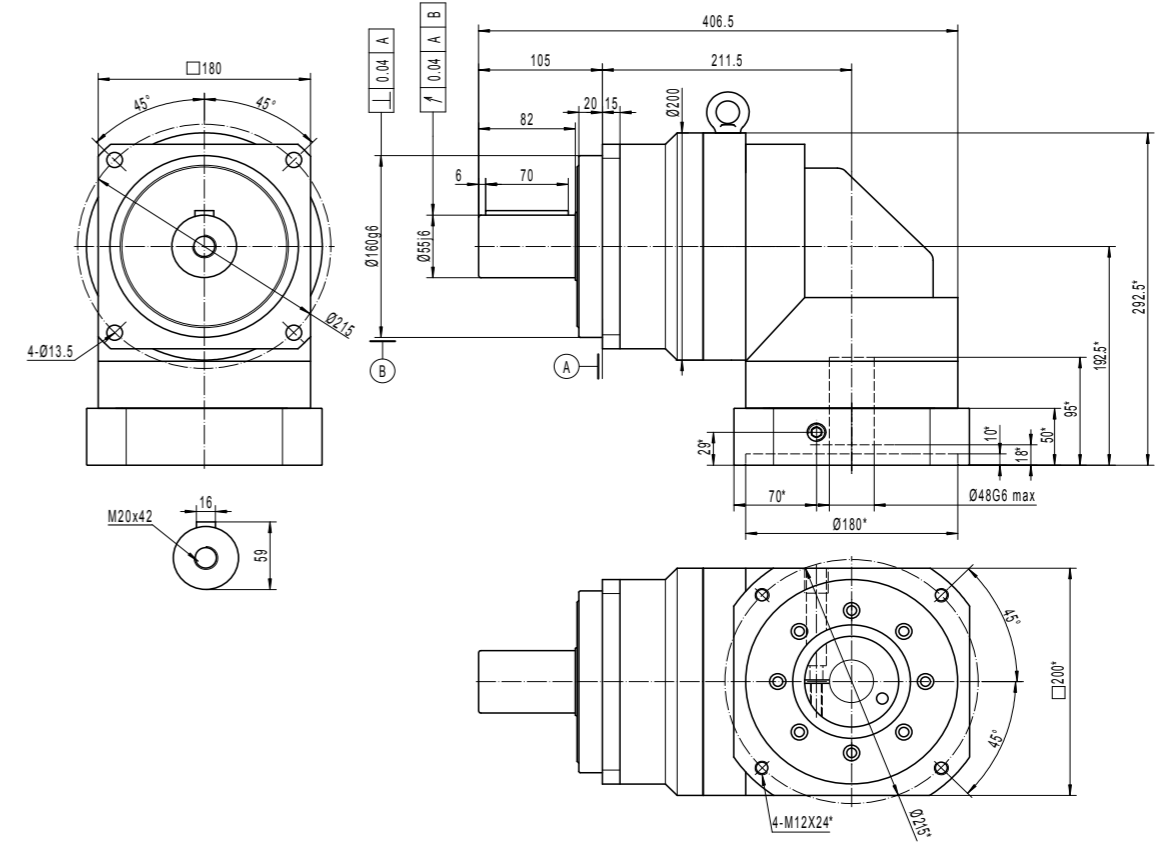
*VARIES WITH YOUR MOTOR DIMENSIONS

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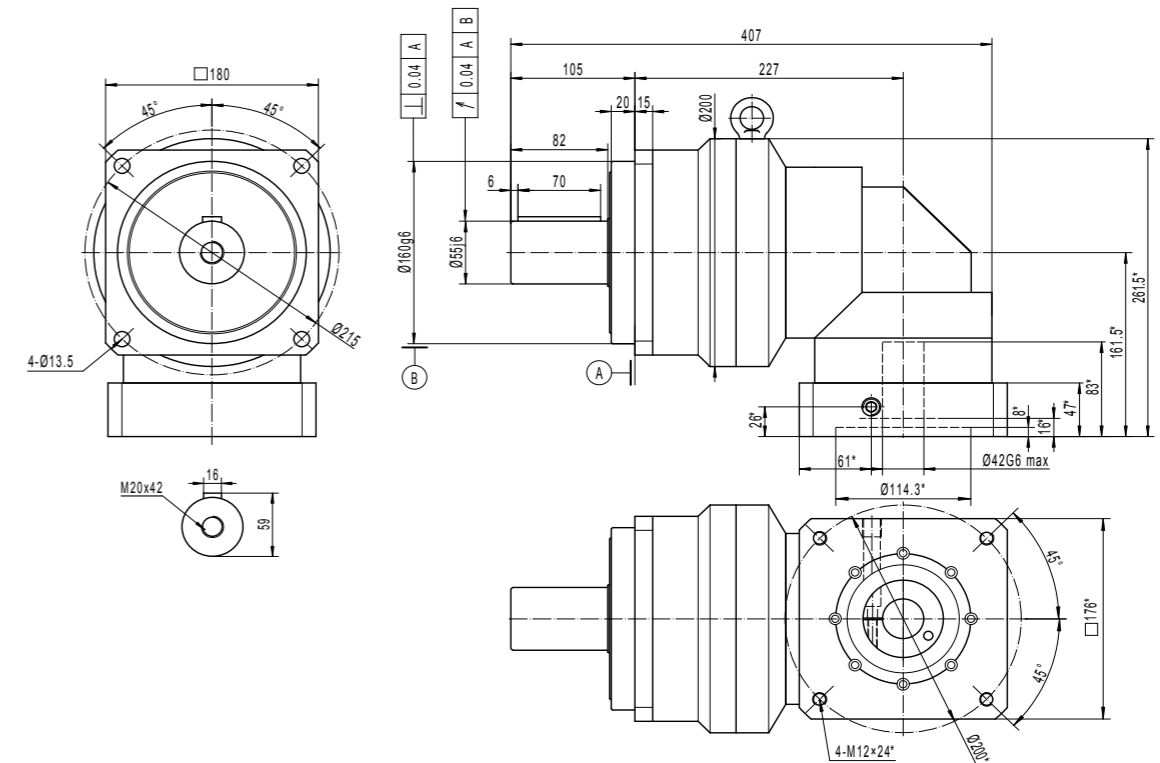
LIVELY-SQ-RA-140- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



LIVELY-SQ-RA-180- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 48$



LIVELY-SQ-RA-180- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

X-TREME-SQ



Acceleration capacity	++++
Fast reversals	+++
Radial efforts	+++++
Axial efforts	+++++
Stiffness	++++
Precision	+++++
Economy	++++

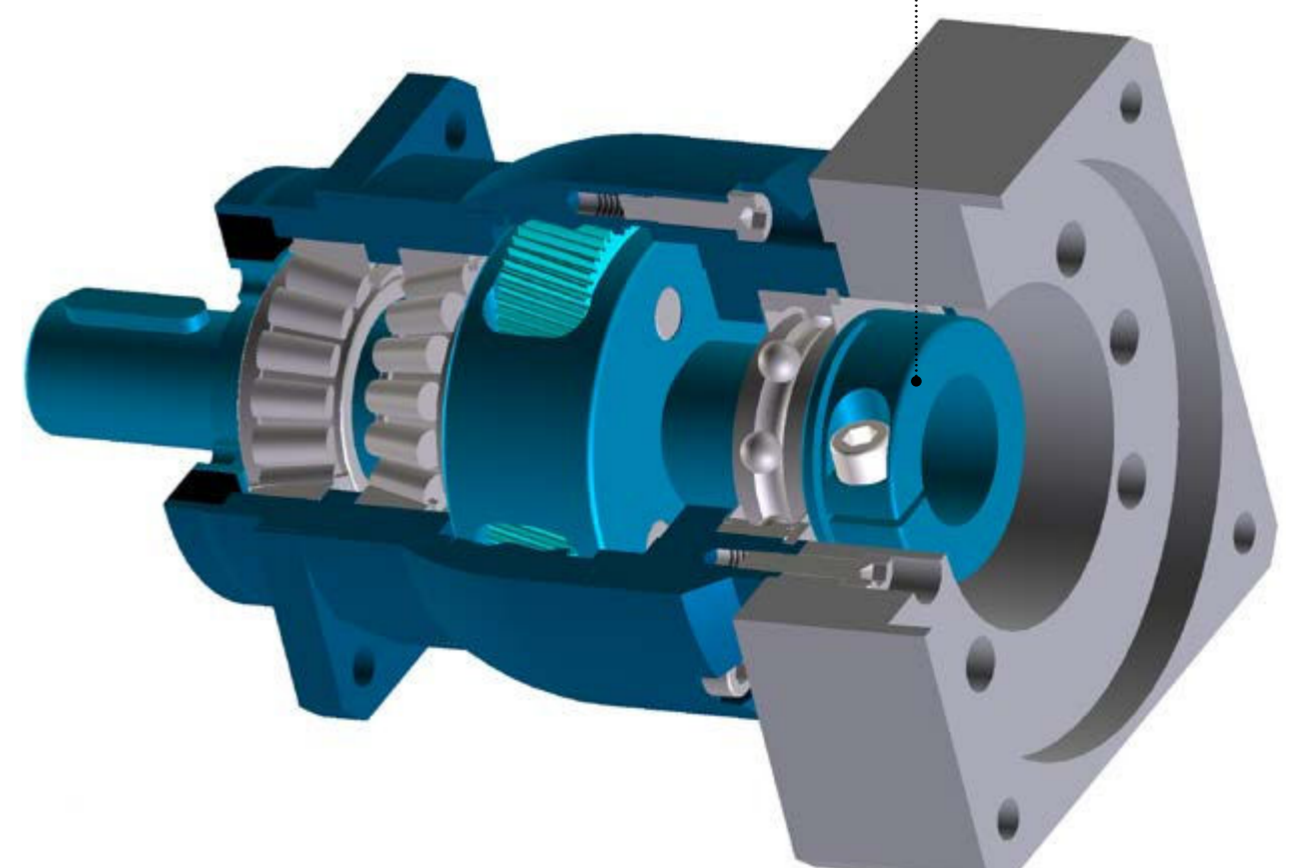
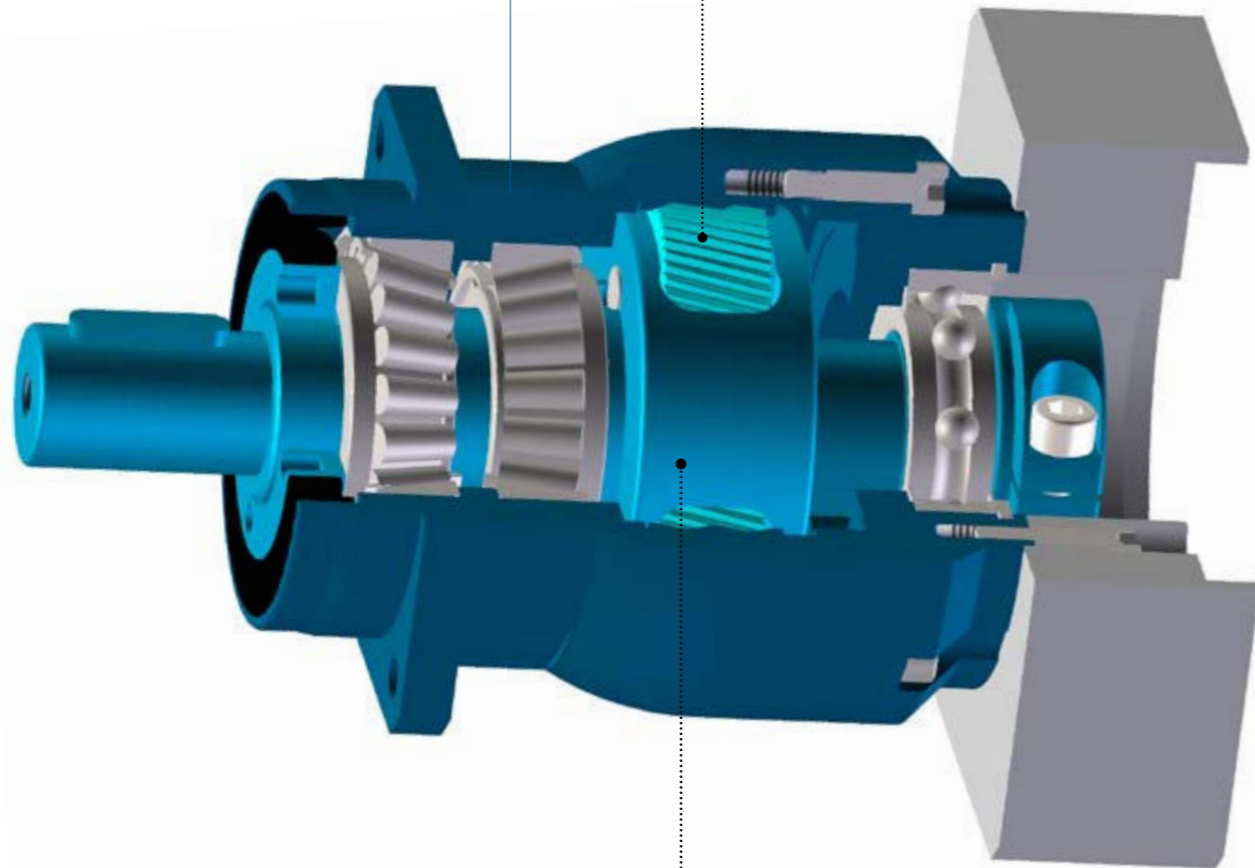
X-TREME-SQ-ST_ Internal construction

X-TREME is a high-precision planetary gearbox. It was designed for applications requiring high combined radial and axial loads (like high speed helical racks and pinions) with extreme precision.

The ring gear is monobloc with the external housing and the output flange to allow higher stiffness and very dynamic reversals.

Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.

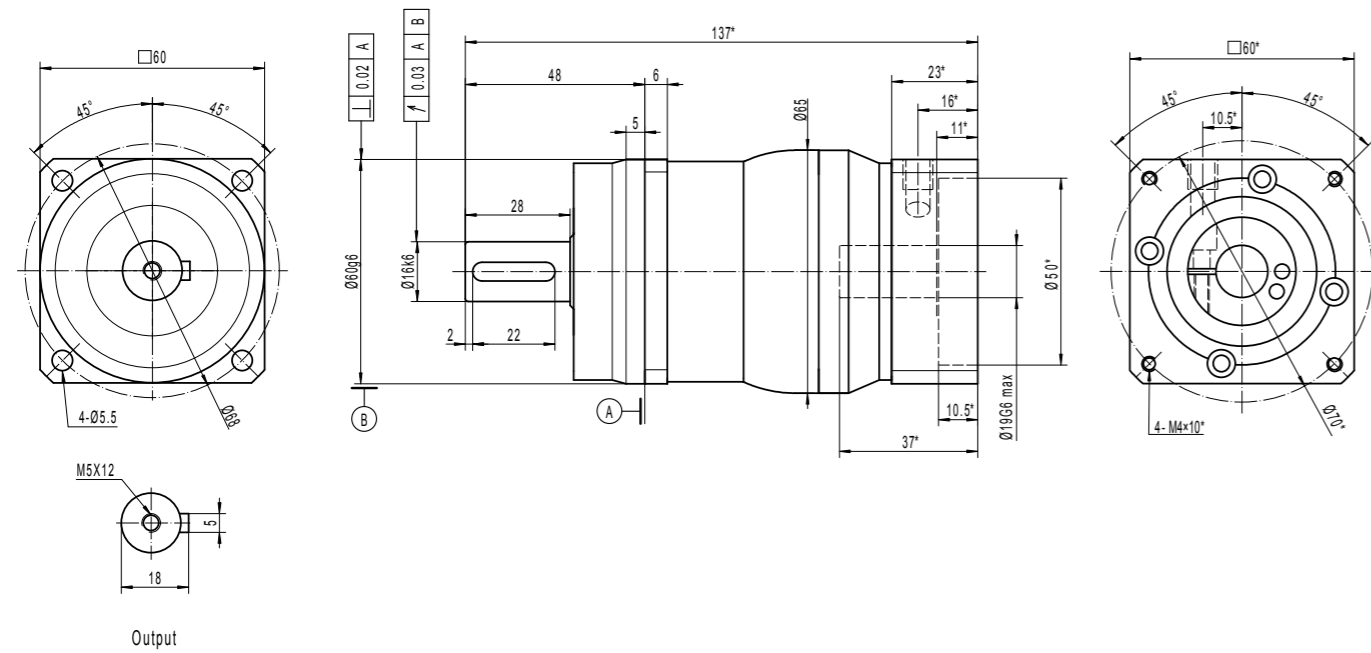
The balanced coupling limits vibration and reduce loads on your motor shaft bearings.



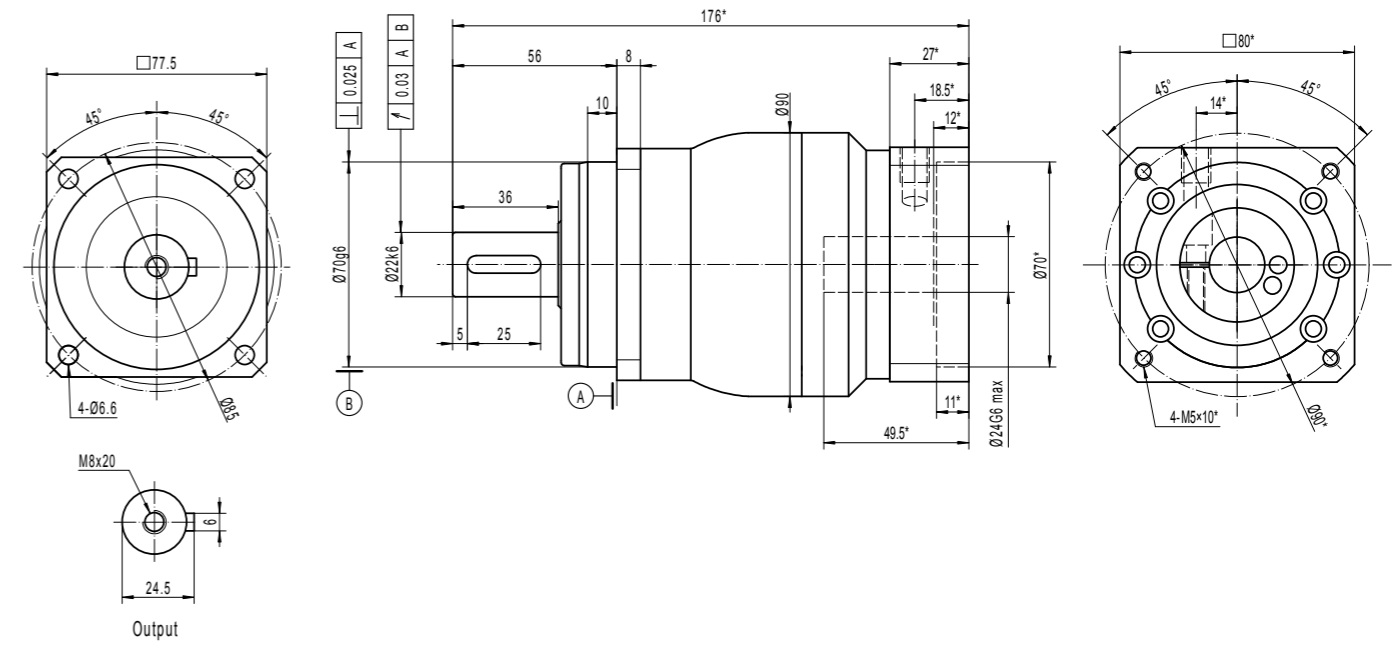
The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

The caged planet carrier prevents the planets from tilting.

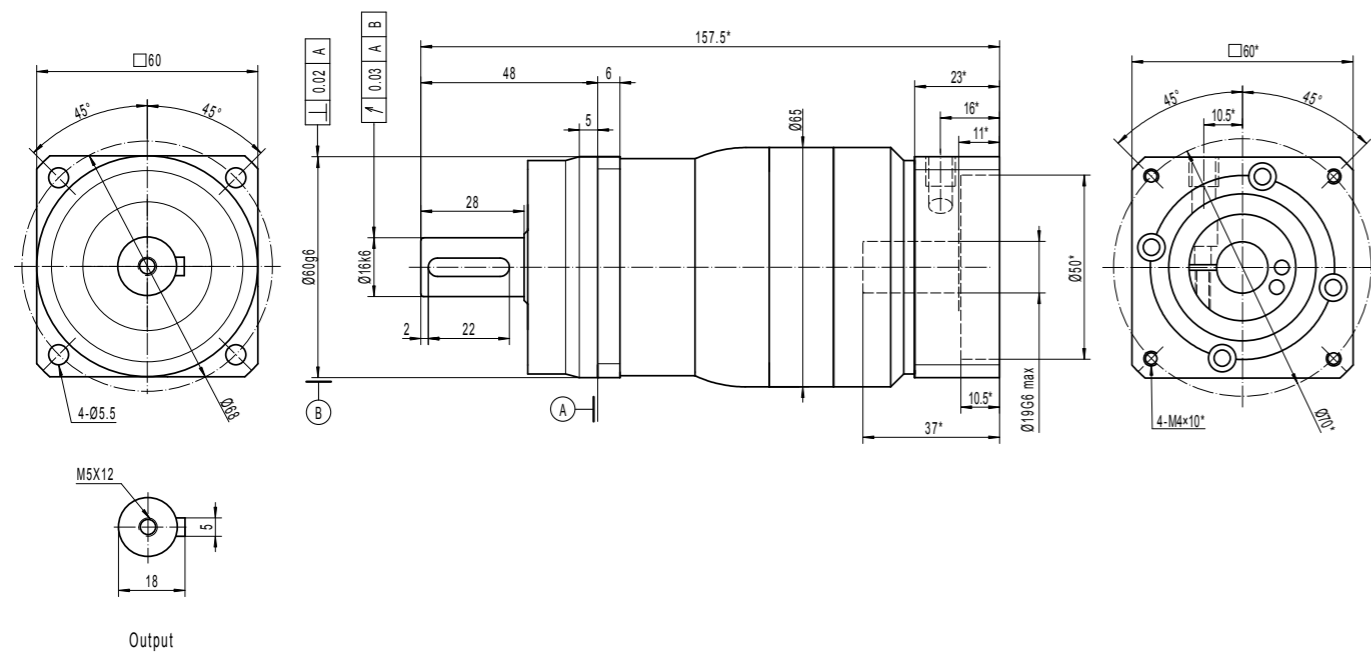
X-TREME-SQ-ST-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



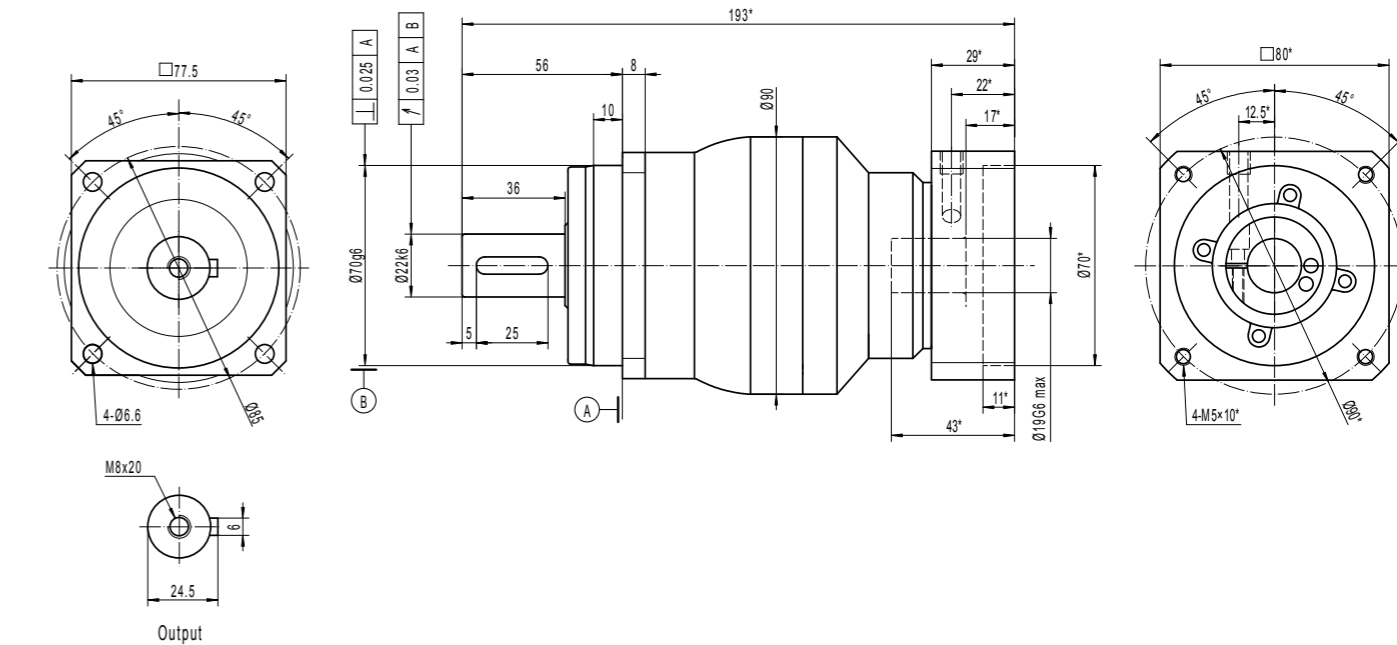
X-TREME-SQ-ST-075- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



X-TREME-SQ-ST-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



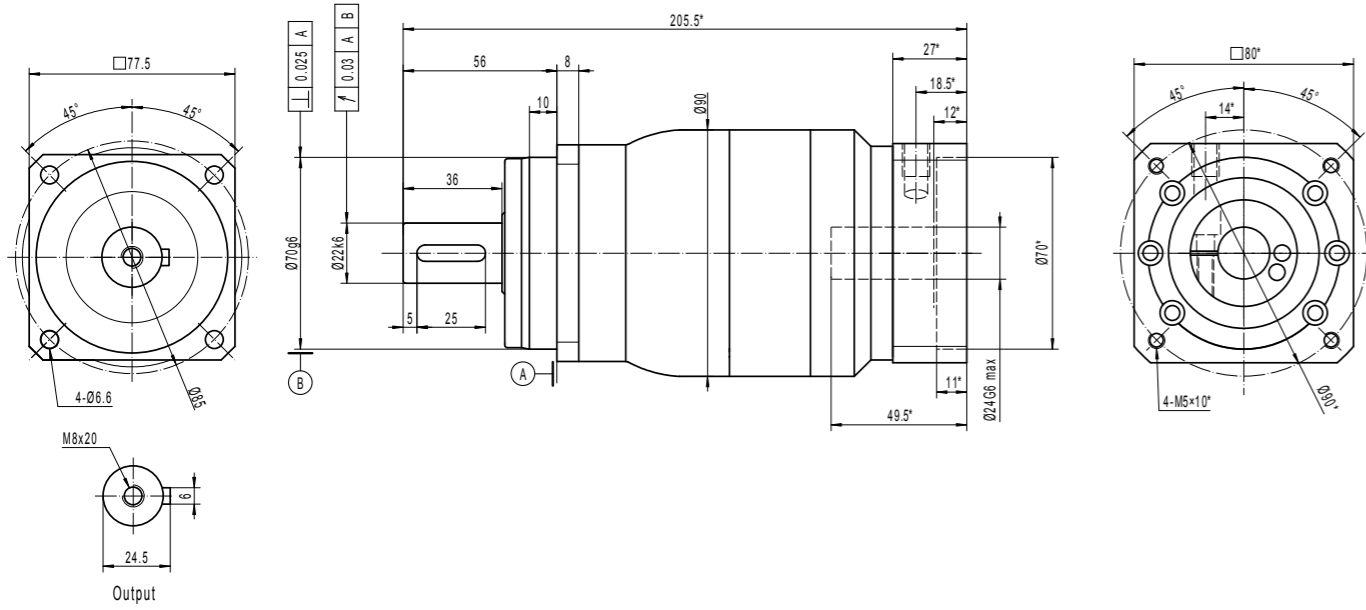
X-TREME-SQ-ST-075- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



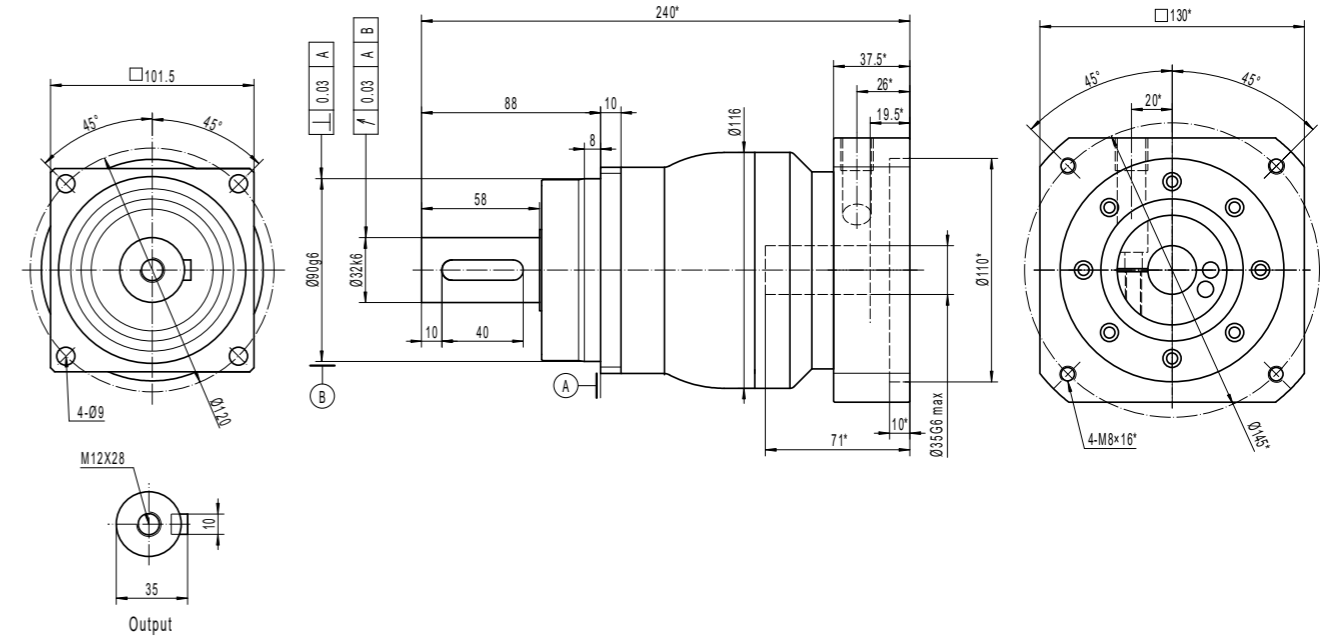
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

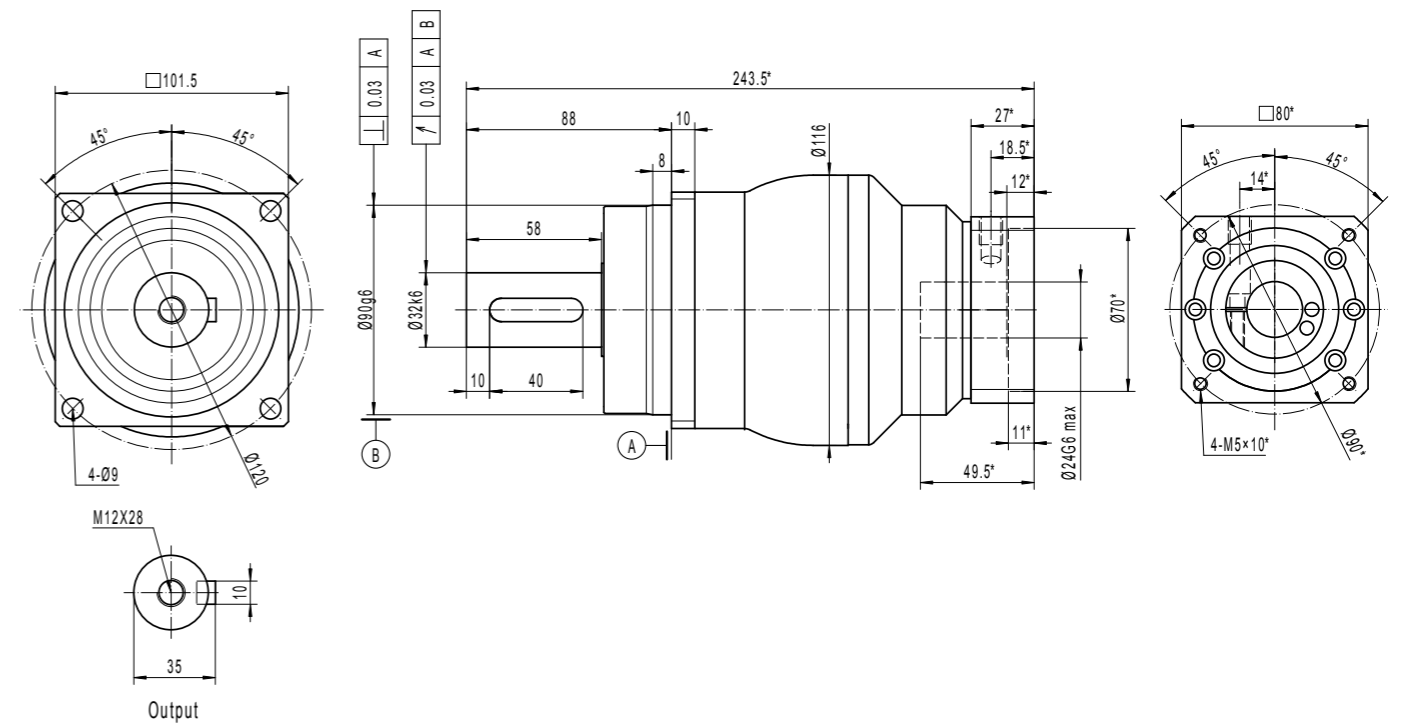
X-TREME-SQ-ST-075- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



X-TREME-SQ-ST-100- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



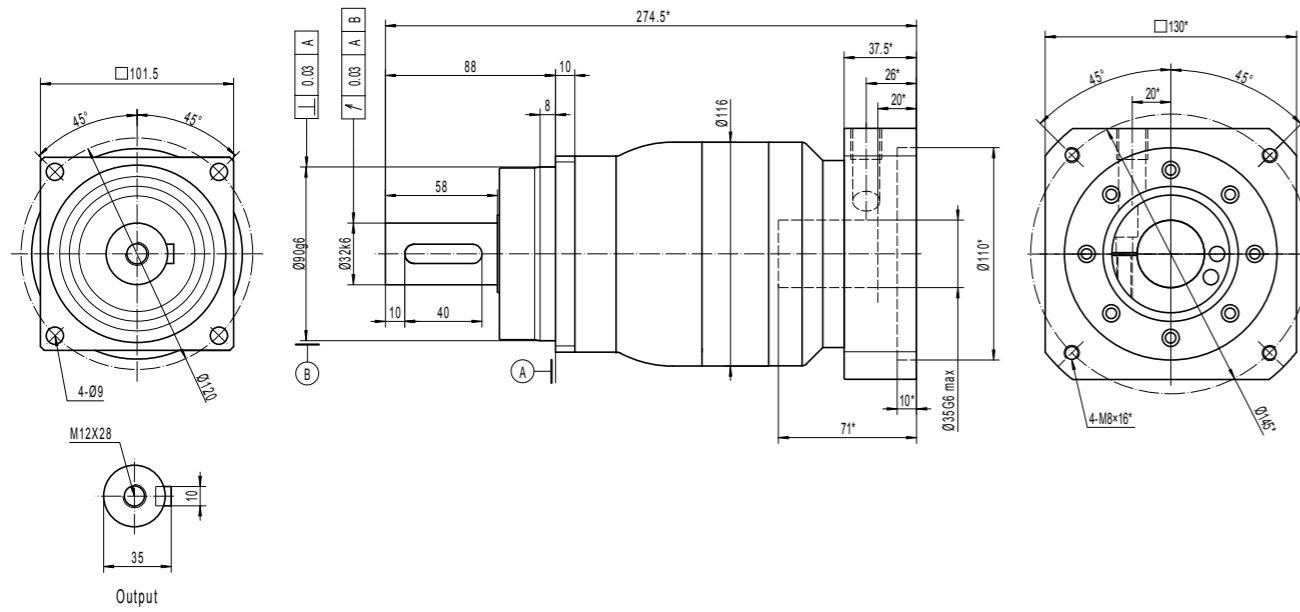
X-TREME-SQ-ST-100- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\varnothing 24$



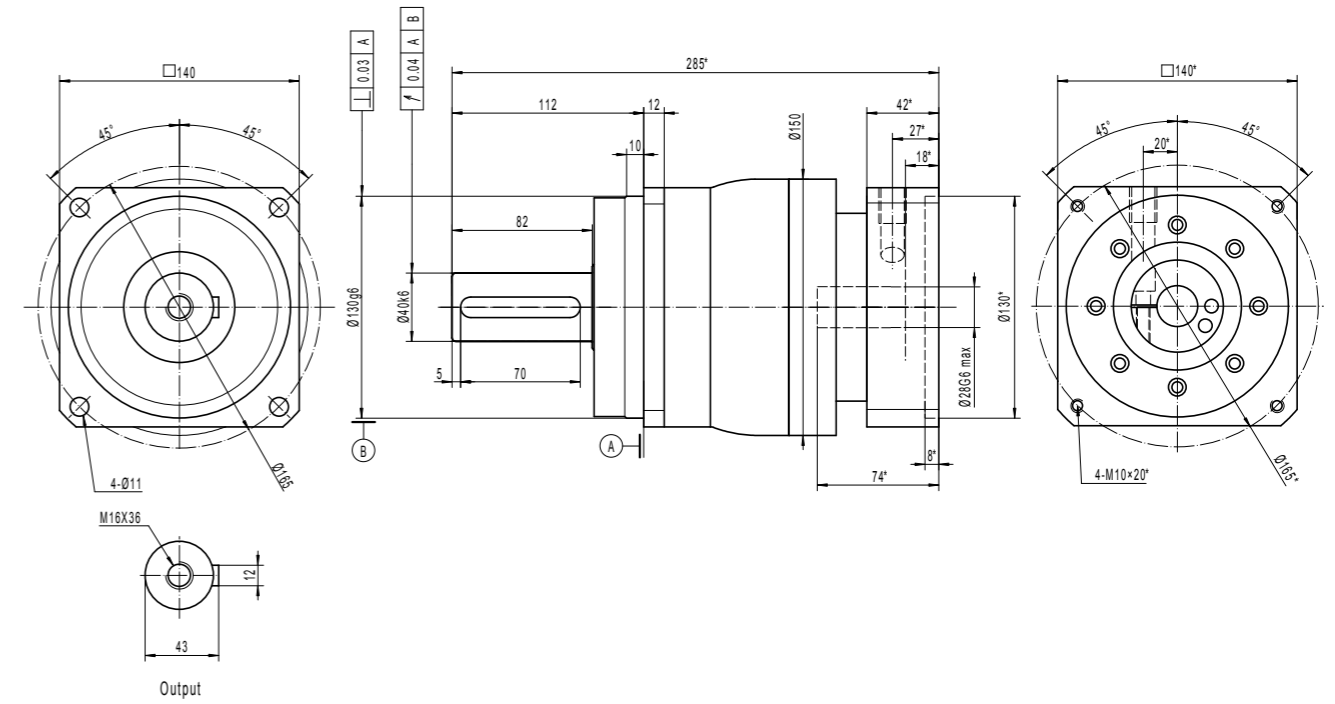
*VARIES WITH YOUR MOTOR DIMENSIONS

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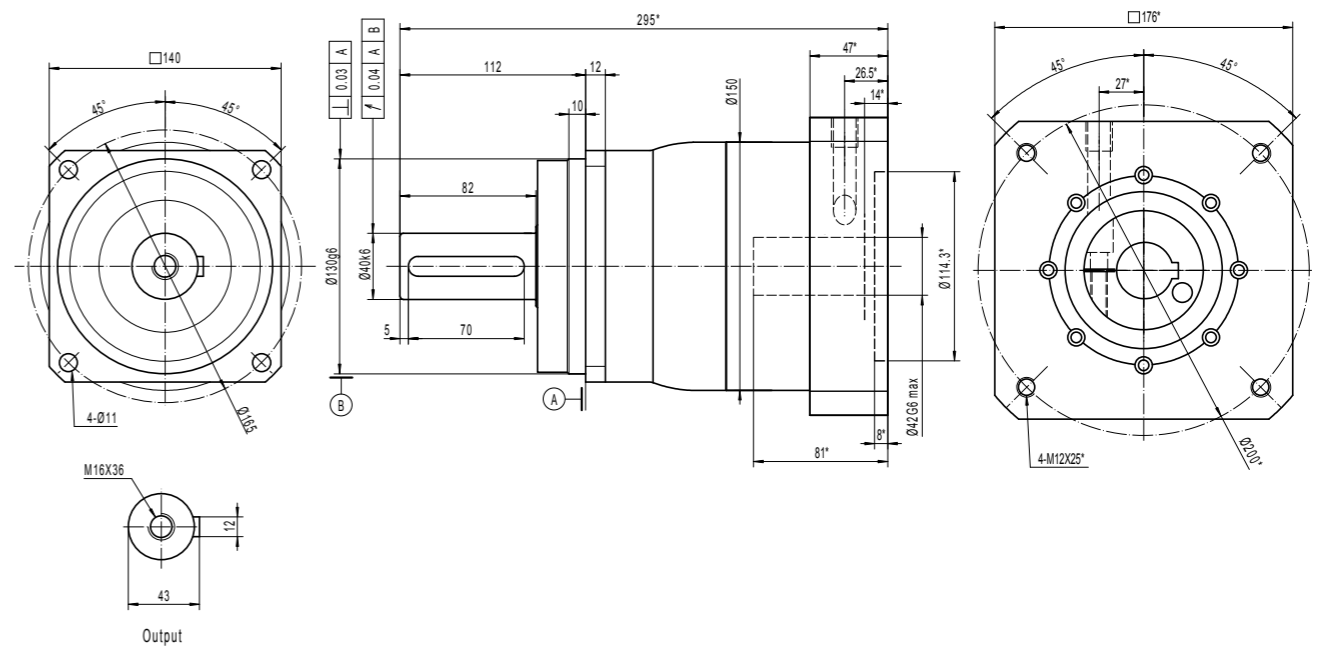
X-TREME-SQ-ST-100- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



X-TREME-SQ-ST-140- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 28$



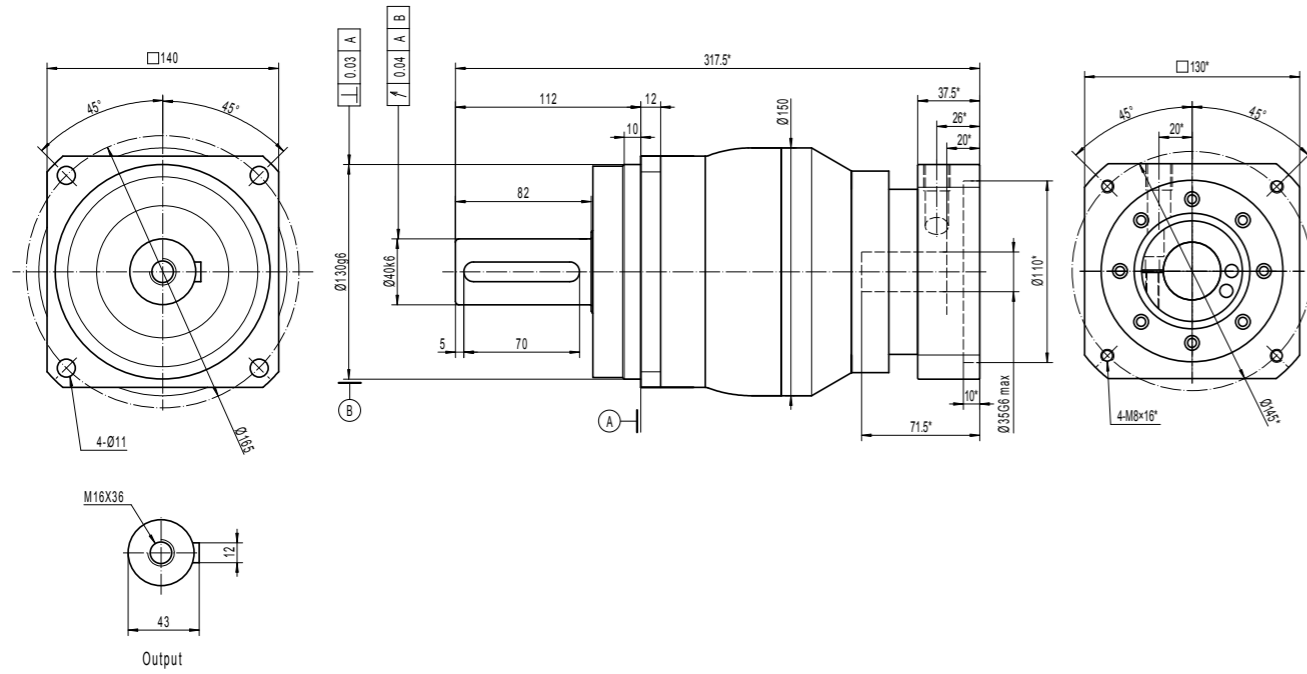
X-TREME-SQ-ST-140- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



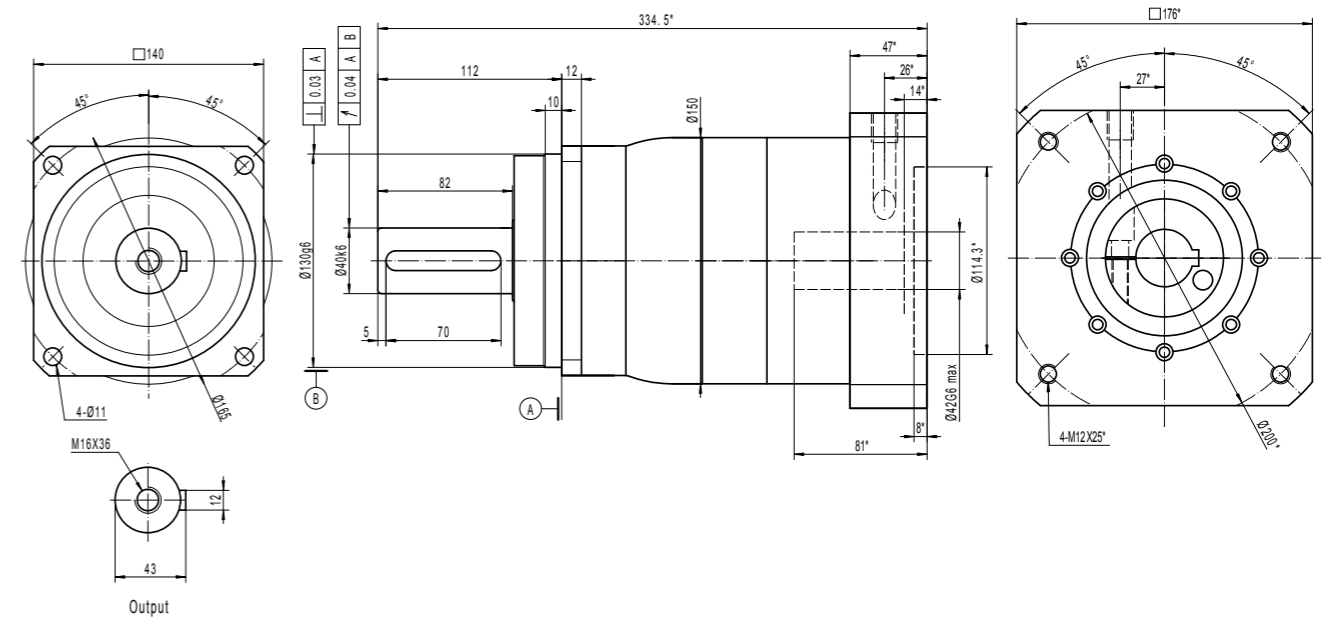
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

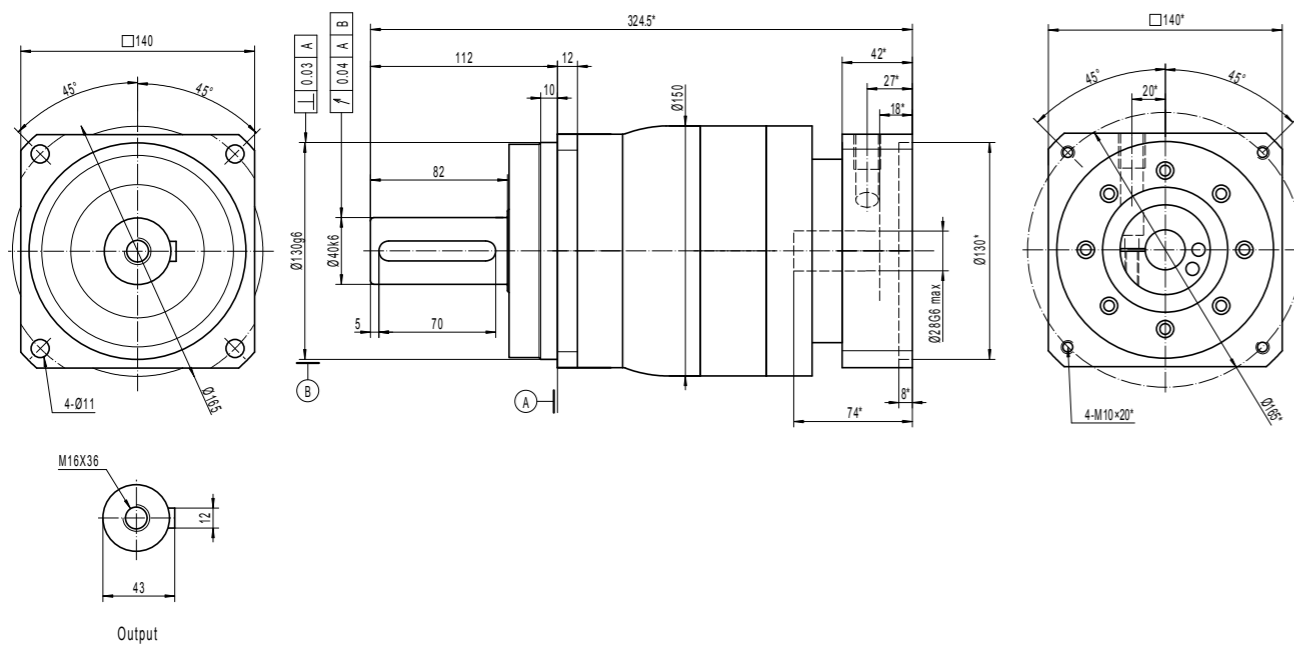
X-TREME-SQ-ST-140- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



X-TREME-SQ-ST-140- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



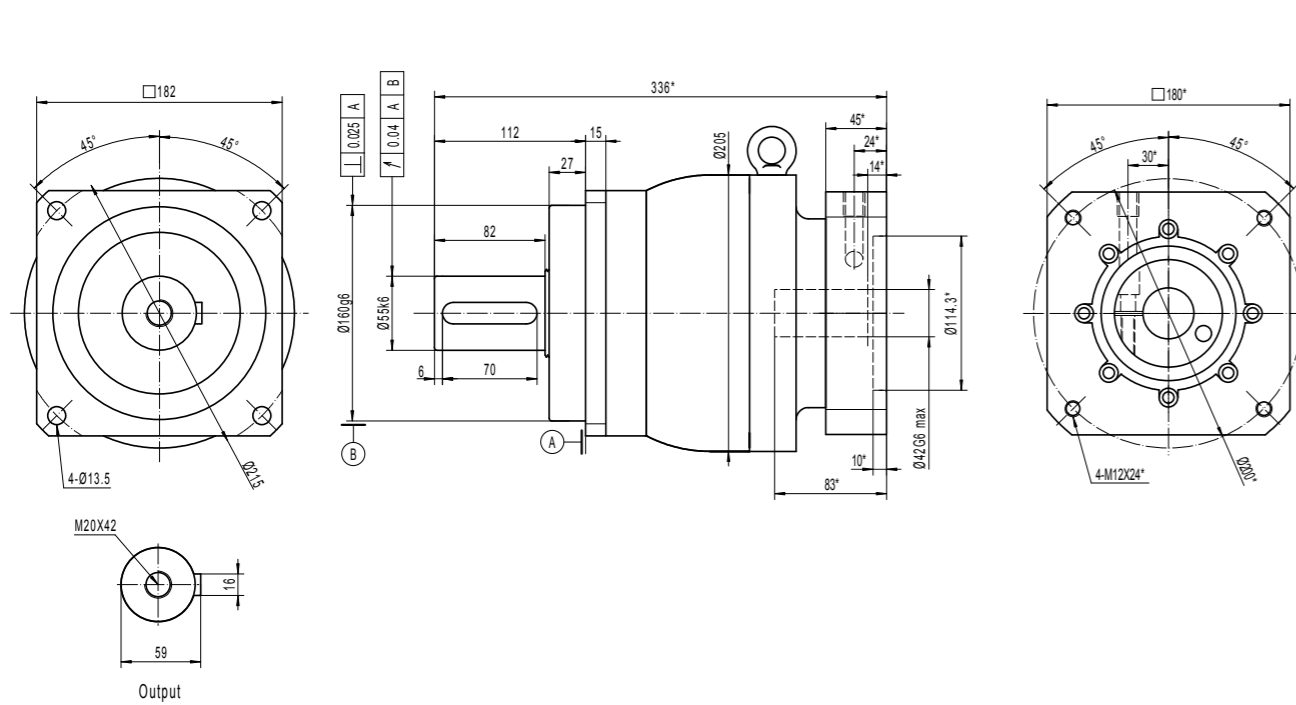
X-TREME-SQ-ST-140- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 28$



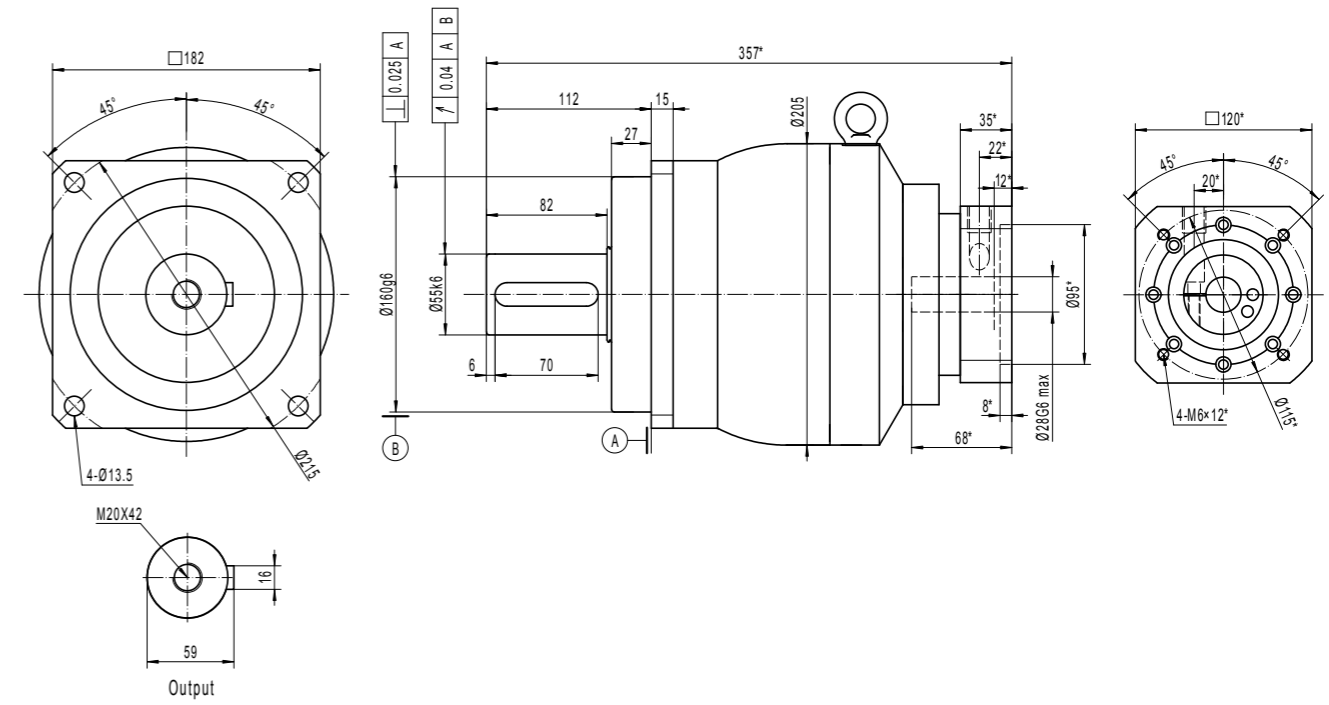
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

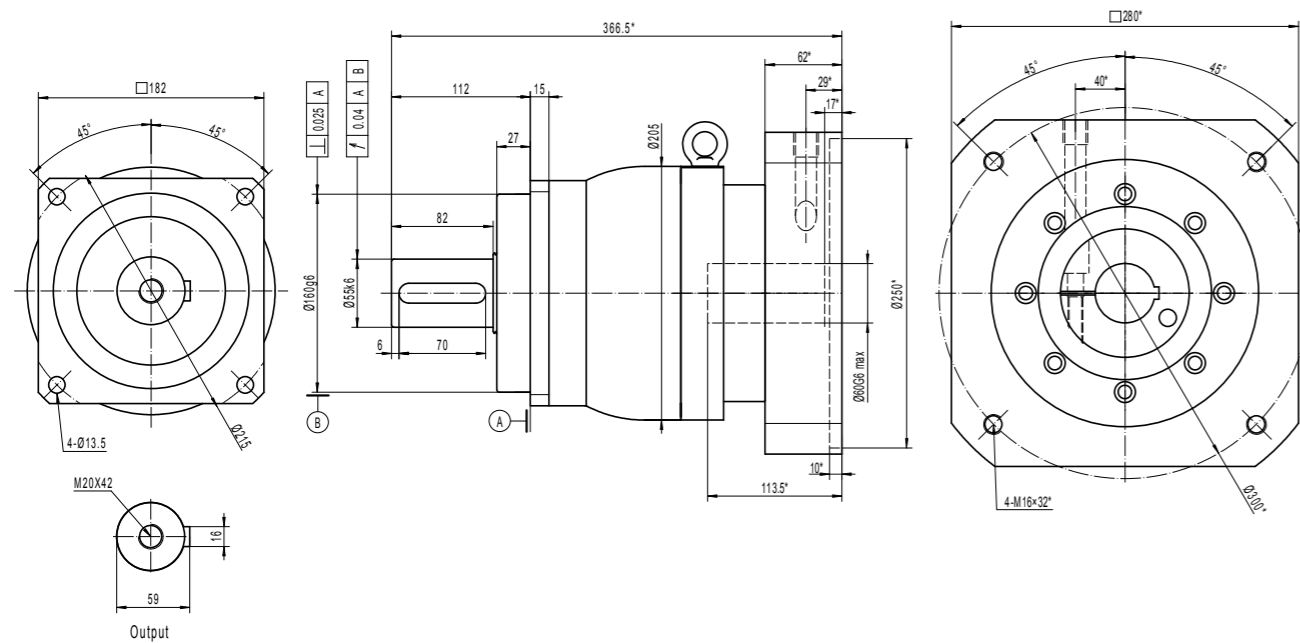
X-TREME-SQ-ST-180- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



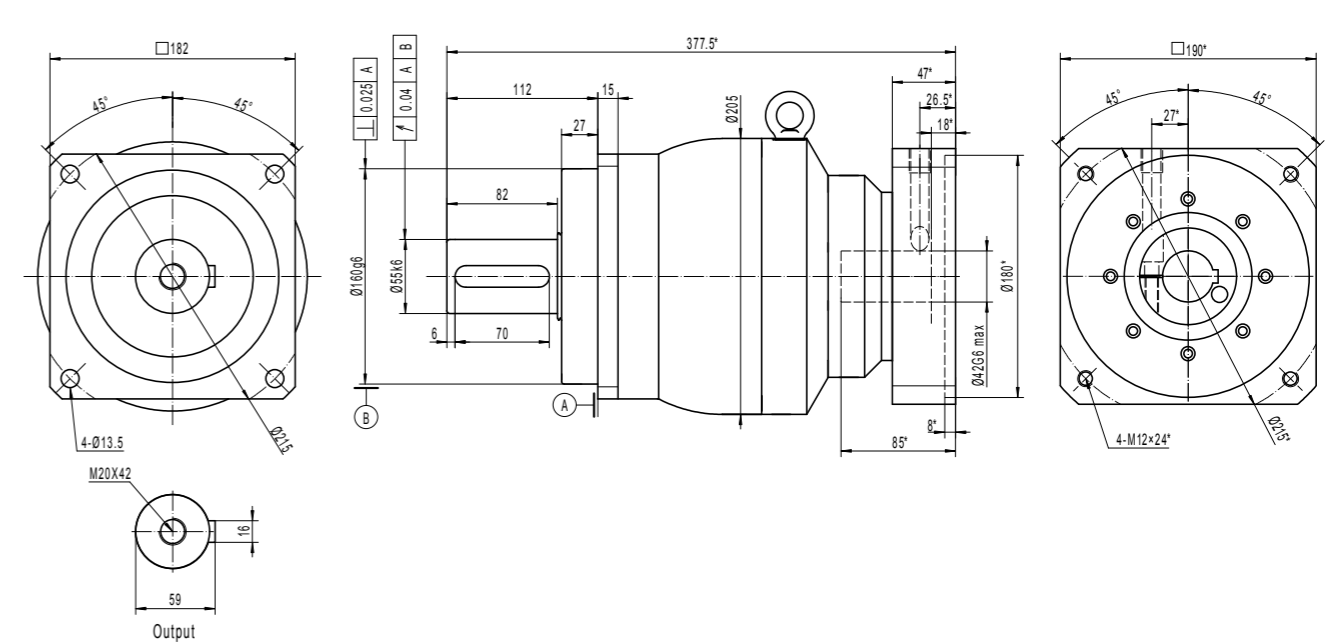
X-TREME-SQ-ST-180- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 28$



X-TREME-SQ-ST-180- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 60$



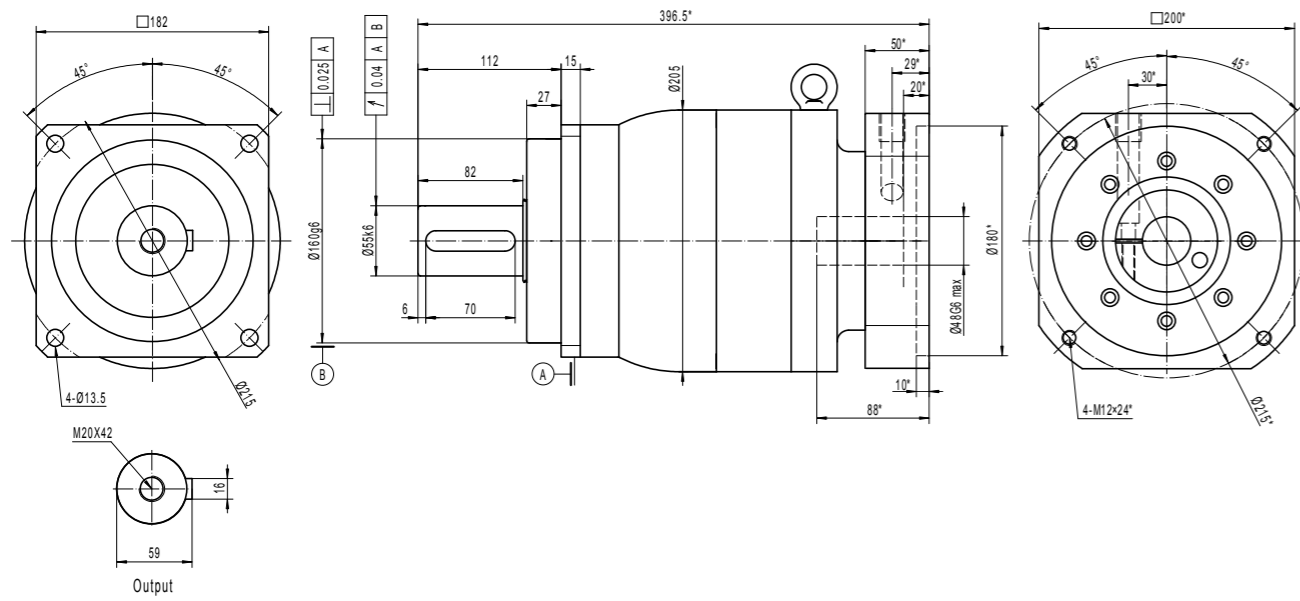
X-TREME-SQ-ST-180- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



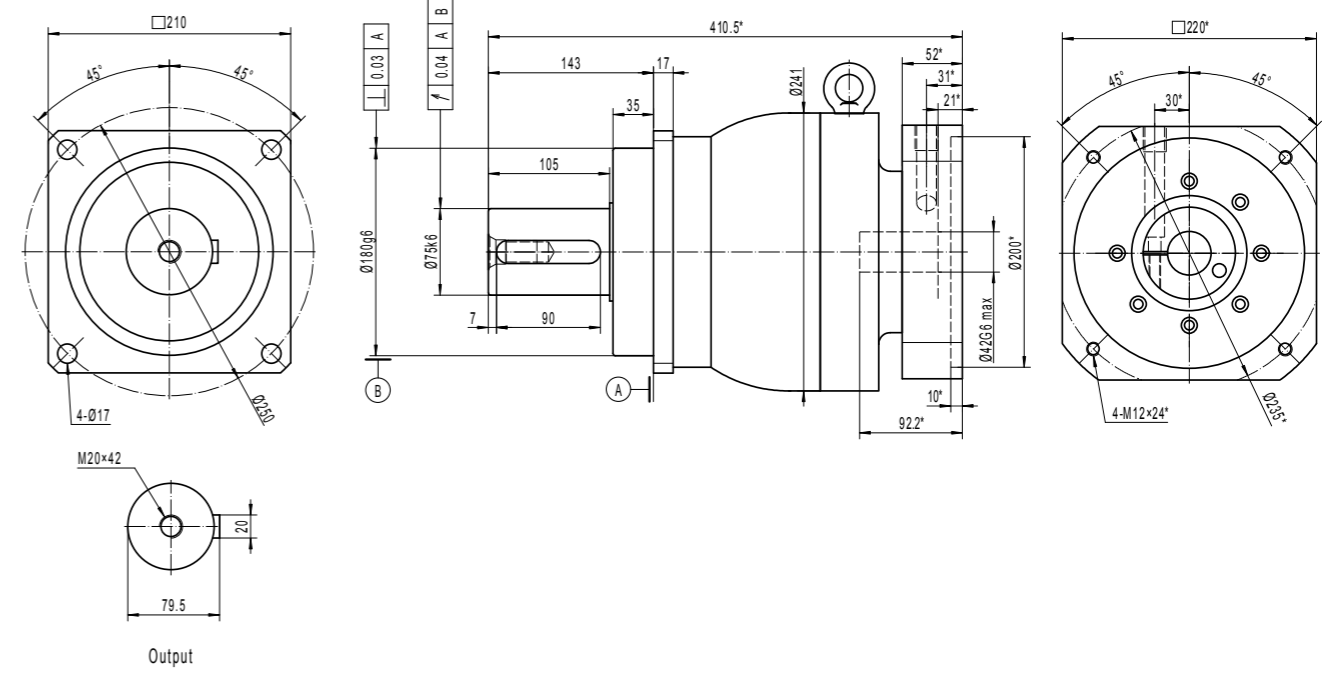
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

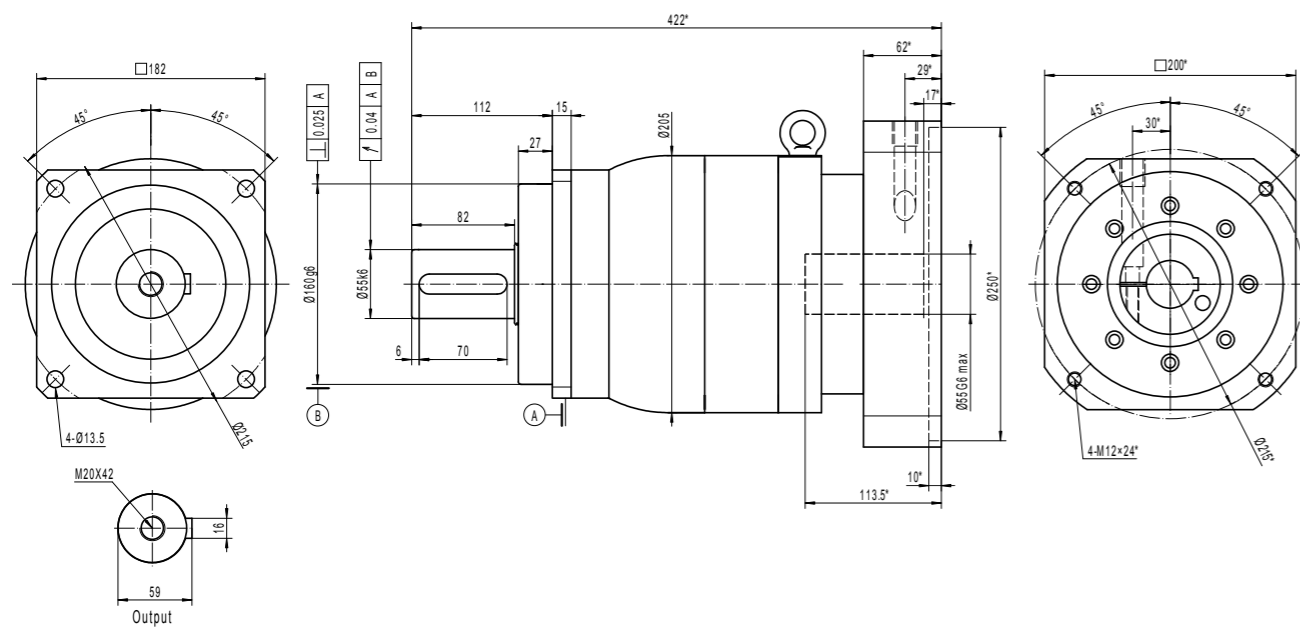
X-TREME-SQ-ST-180- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 48$



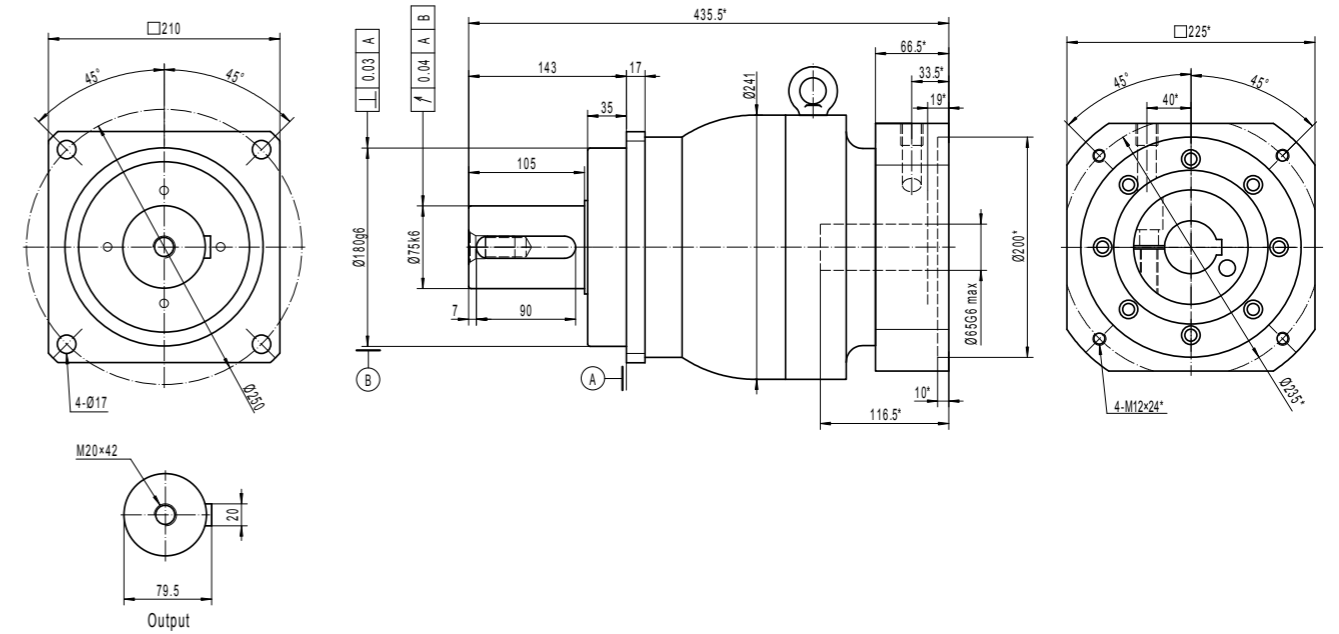
X-TREME-SQ-ST-210- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



X-TREME-SQ-ST-180- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 55$



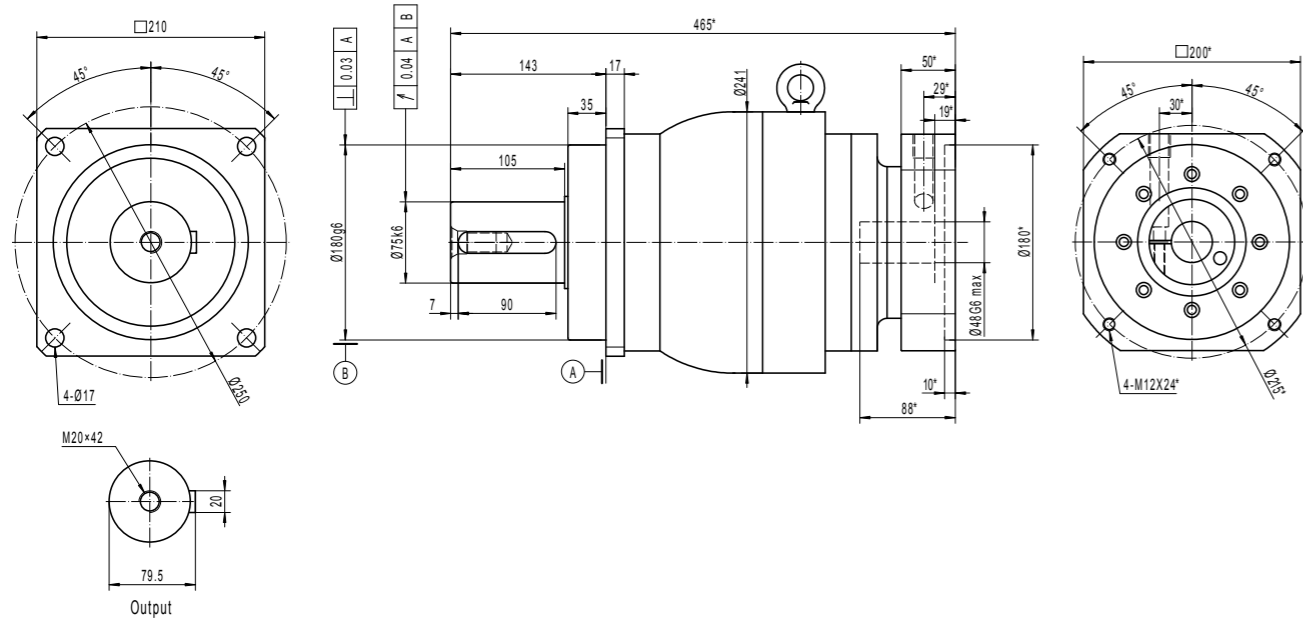
X-TREME-SQ-ST-210- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 65$



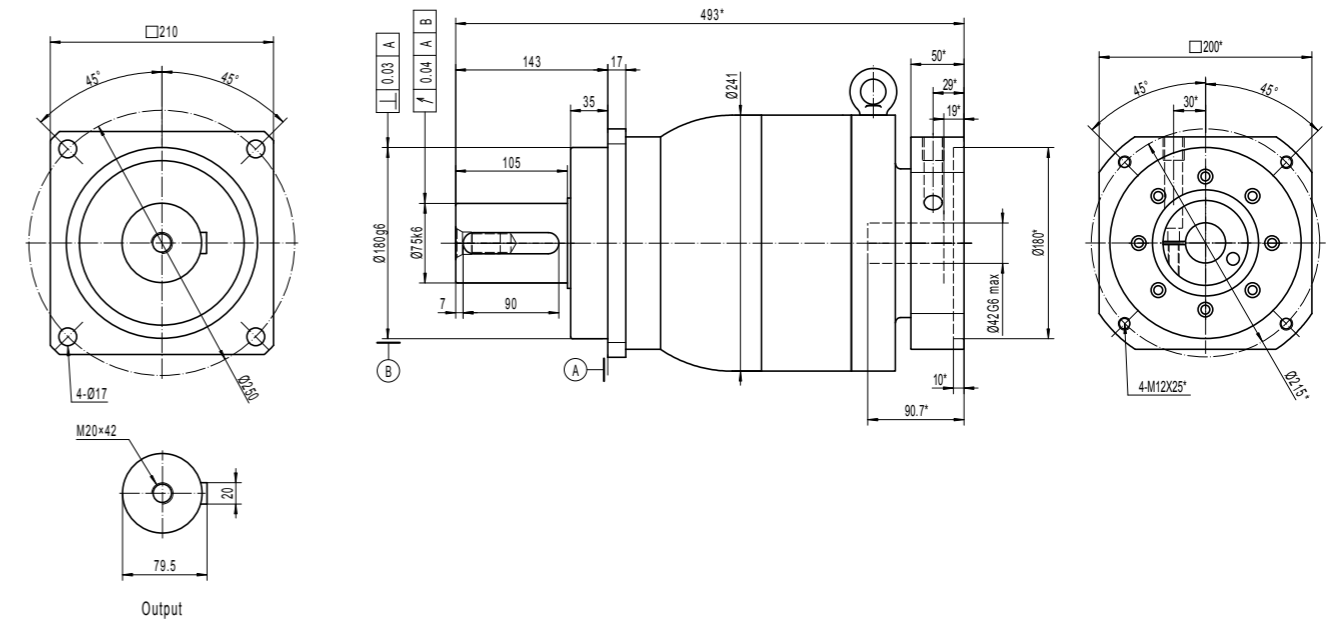
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

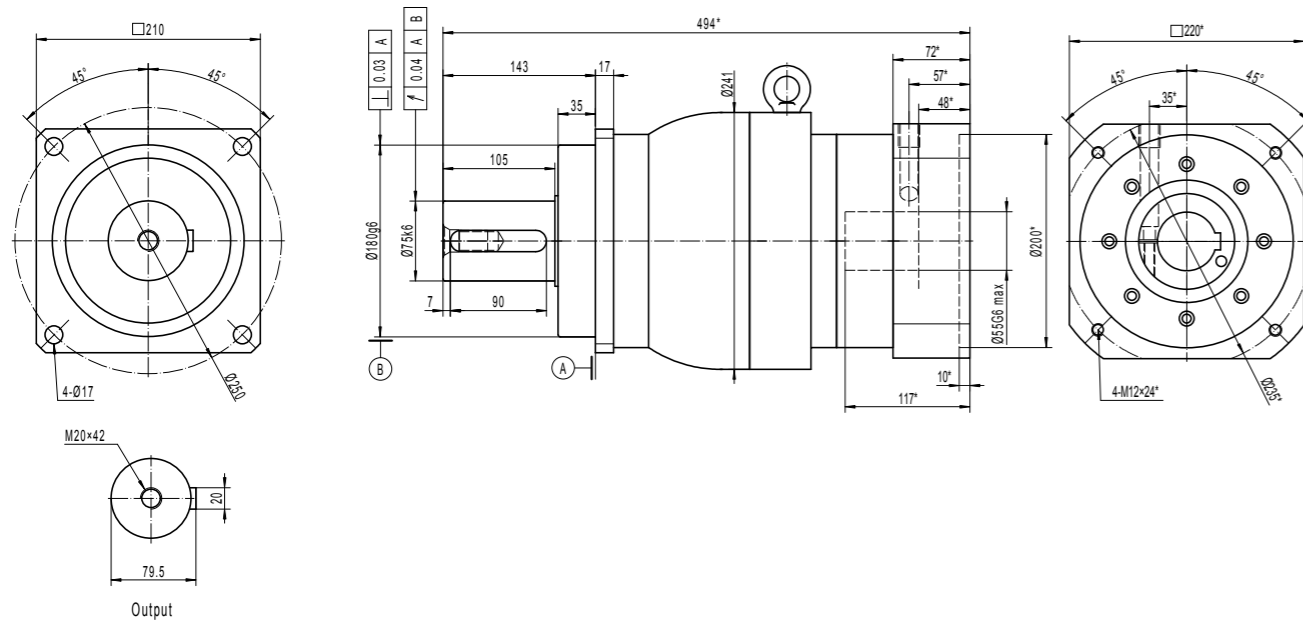
X-TREME-SQ-ST-210- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø48



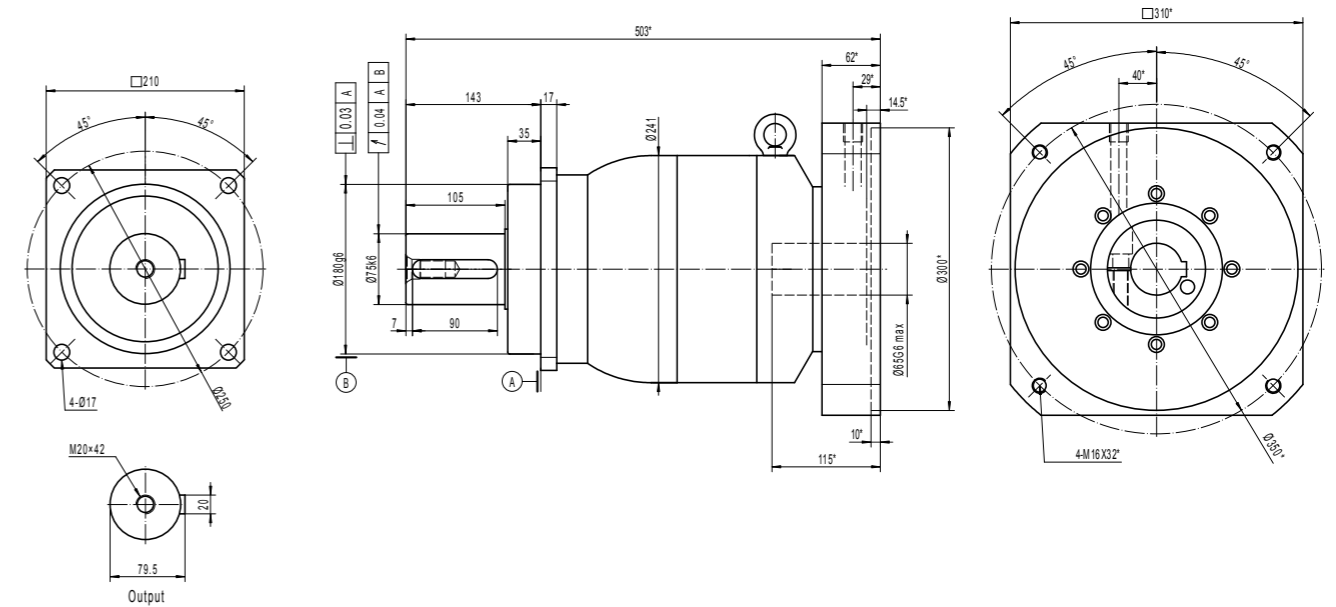
X-TREME-SQ-ST-210- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø42



X-TREME-SQ-ST-210- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø55



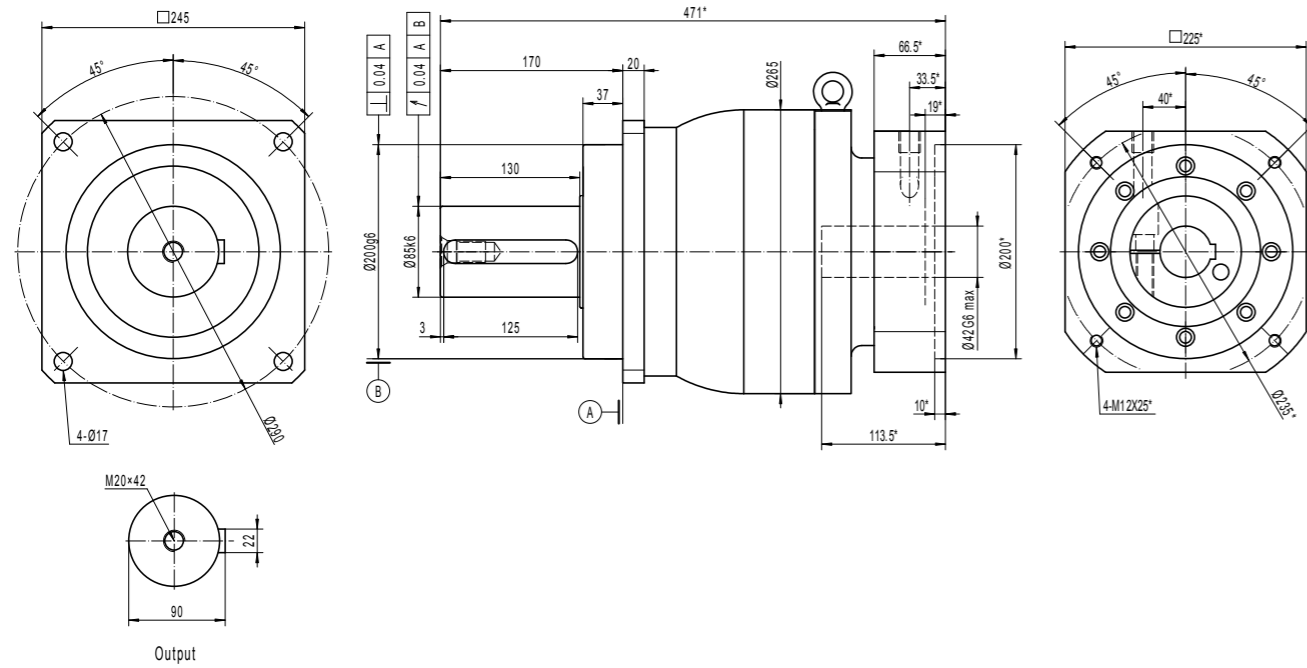
X-TREME-SQ-ST-210- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø65



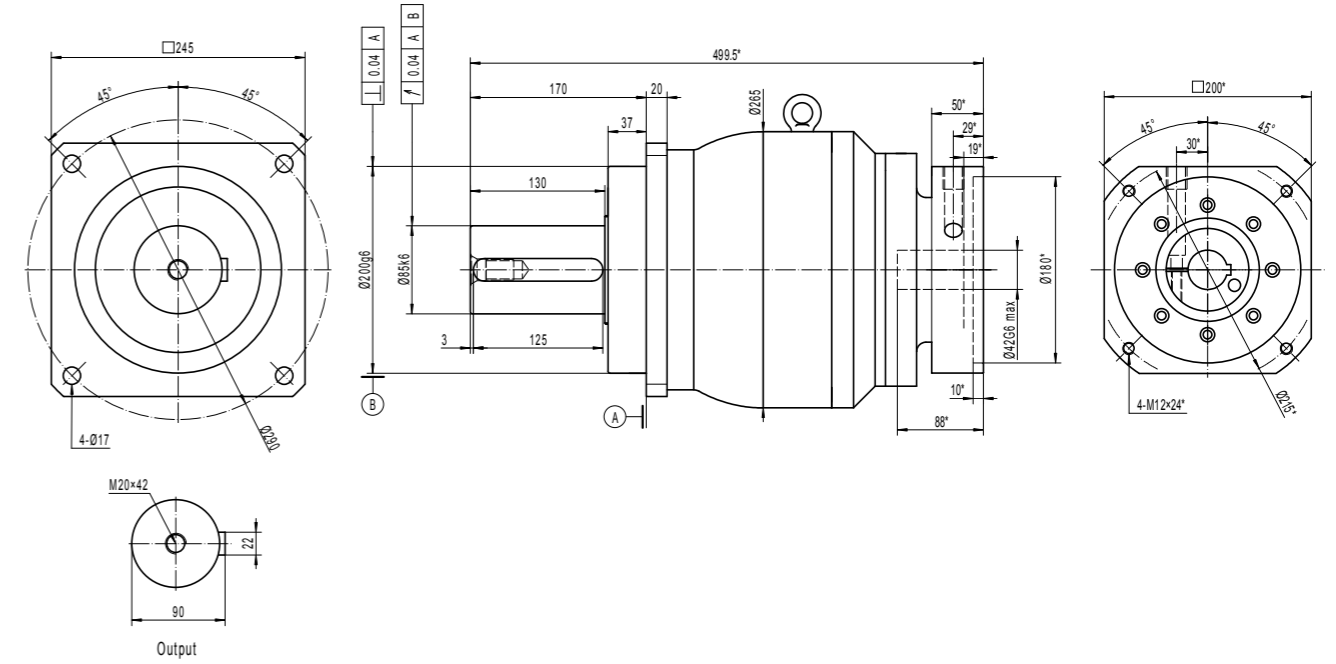
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

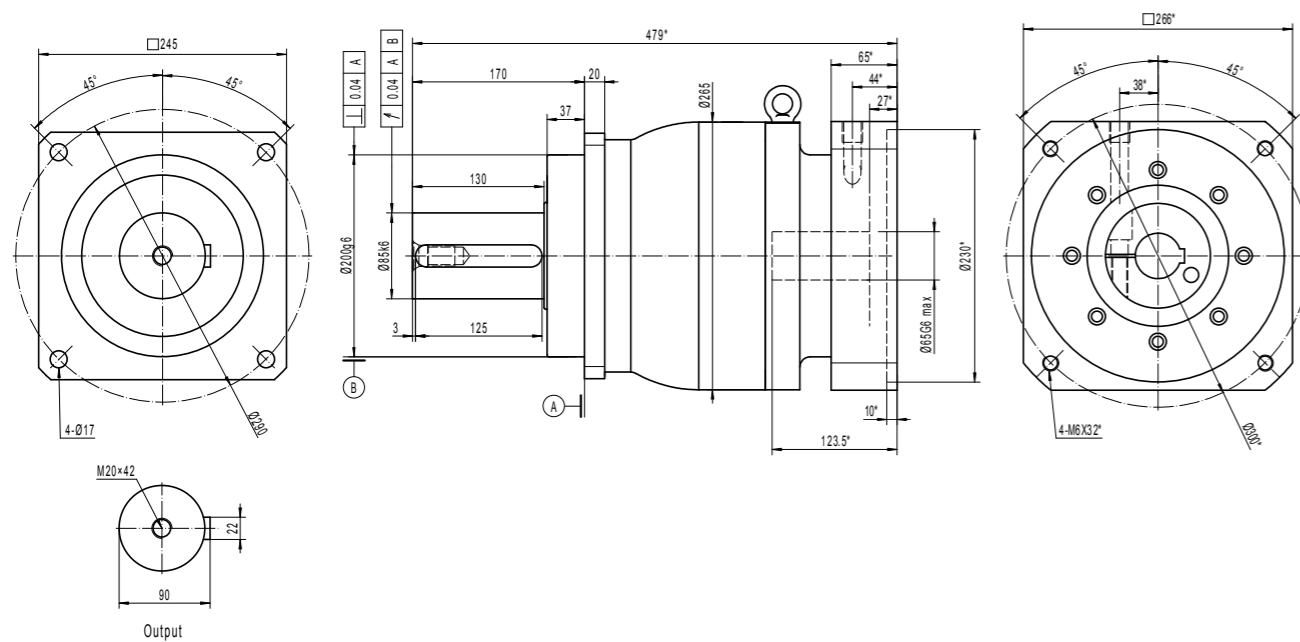
X-TREME-SQ-ST-240- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



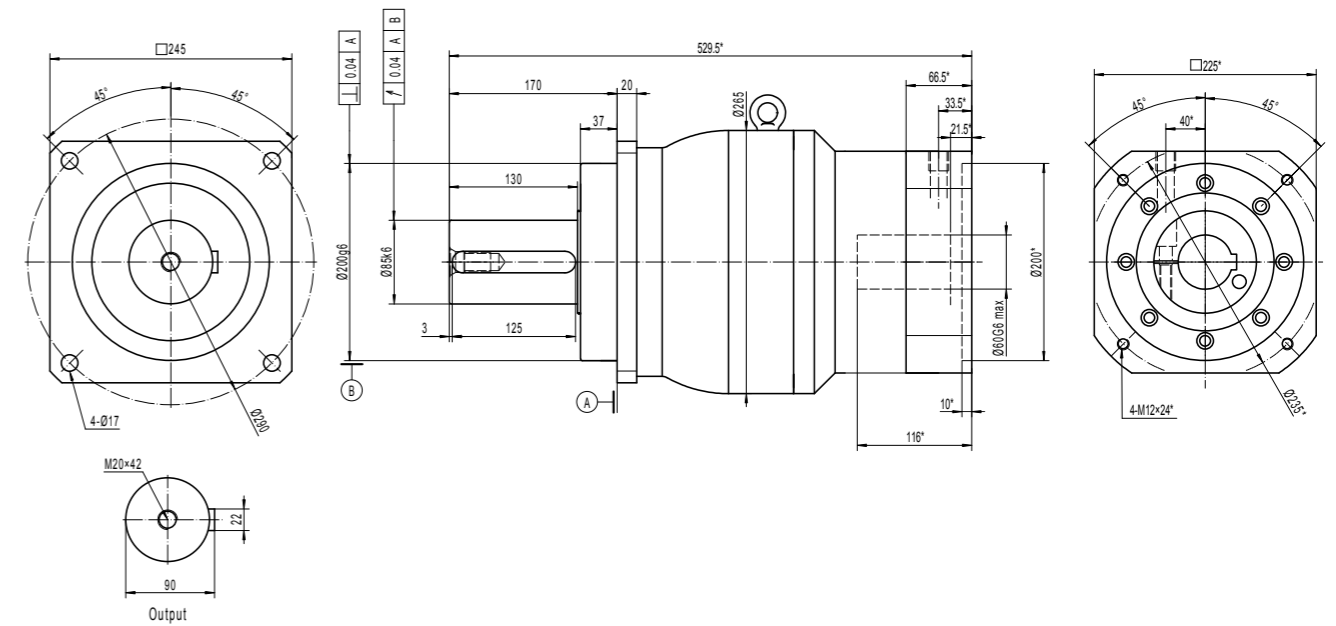
X-TREME-SQ-ST-240- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



X-TREME-SQ-ST-240- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 65$



X-TREME-SQ-ST-240- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 60$



*VARIES WITH YOUR MOTOR DIMENSIONS

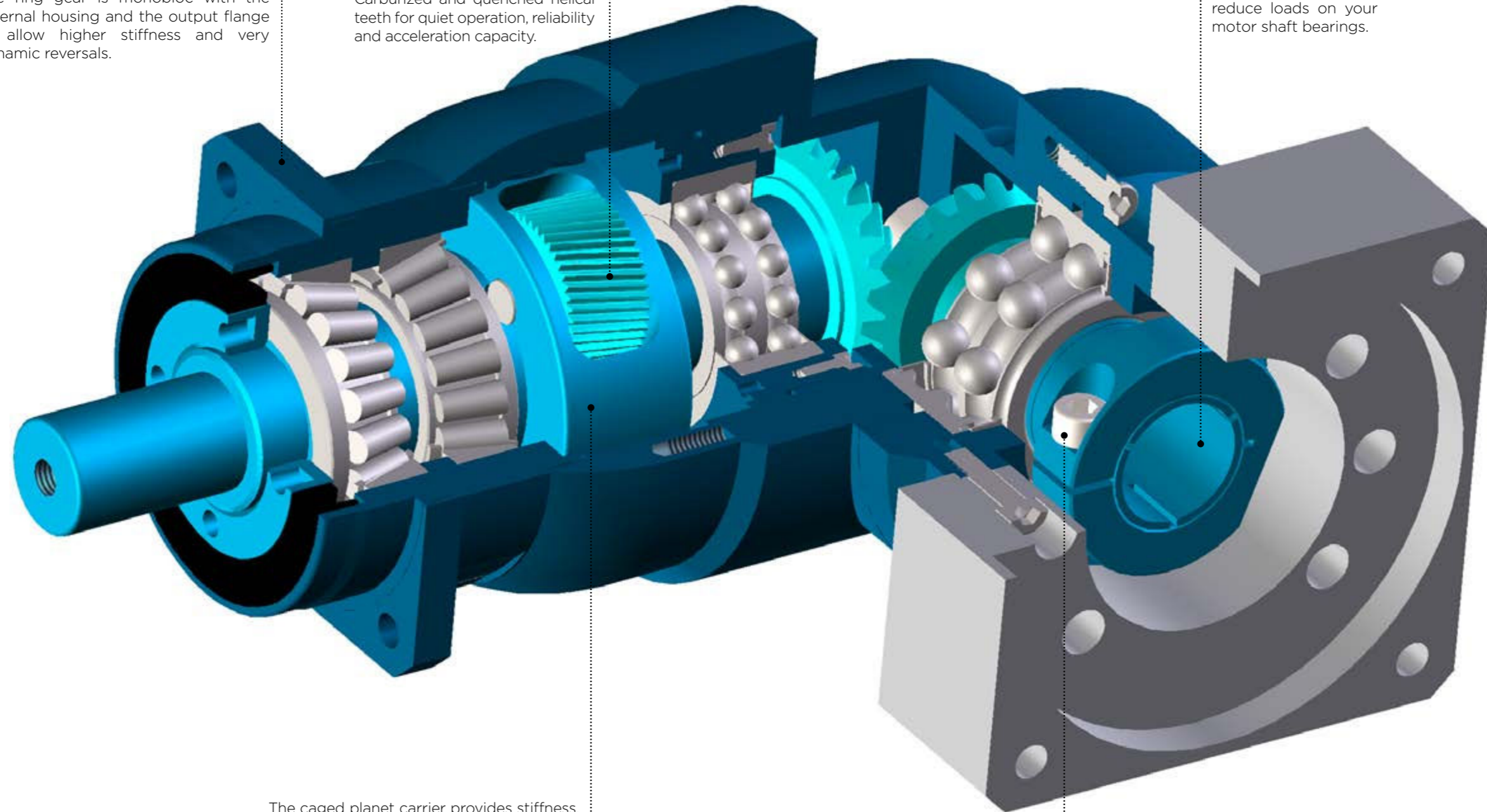
*VARIES WITH YOUR MOTOR DIMENSIONS

X-TREME-SQ-RA_ Internal construction

The ring gear is monobloc with the external housing and the output flange to allow higher stiffness and very dynamic reversals.

Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.

The balanced coupling limits vibration and reduce loads on your motor shaft bearings.



The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

The caged planet carrier prevents the planets from tilting.

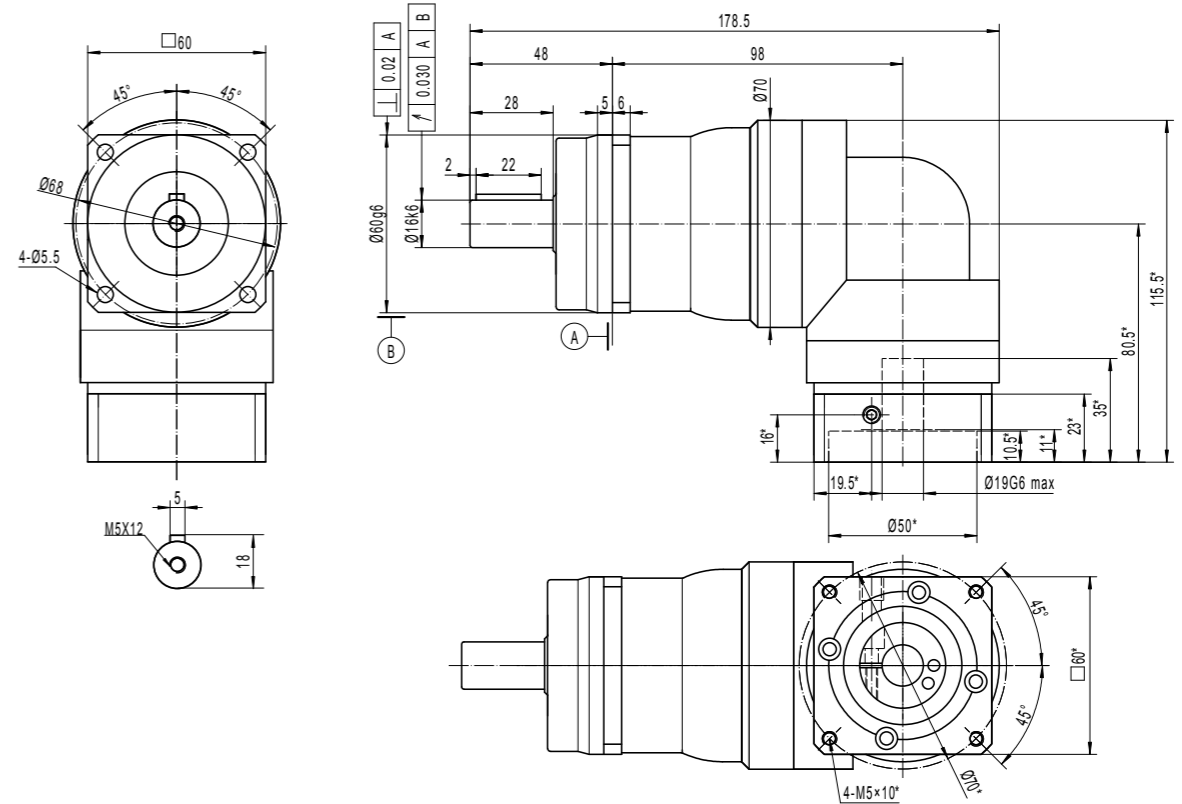
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	X-TREME-SQ-RA							
		060-P*	075-R*	075-P*	100-R*	100-P*	140-R*	140-P*	180-R*
Nominal torque ¹ T _{2N} (Nm)	3	29	102		231		384		1,370
	4	42	154		244		407		1,888
	5	33	120		190		438		1,475
	5,5	44	164		260		590		2,005
	6	27	81		179		440		1,480
	7	30	108		203		465		1,570
	8	18	55		164		408		1,468
	9	16	47		137		353		1,280
	10	18	66		147		308		1,140
	12	29	65	102	203	231	283	384	573
	15	29	68	102	210	231	295	384	822
	16	42	86	154	244	244	377	407	764
	20	42	90	154	244	244	393	407	1,096
	21	29	51	102	137	231	269	384	720
	22	44	118	164	260	260	518	590	1,051
	25	33	113	120	190	190	438	438	1,370
	27,5	44	124	164	260	260	540	590	1,507
	28	42	68	154	183	244	359	407	960
	30	27	81	81	179	179	440	440	1,480
	35	33	85	120	190	190	438	438	1,200
38,5	44	94	164	252	260	494	590	1,320	
40	39	40	113	113	218	218	407	577	
42	27	81	81	179	179	440	440	1,440	
49	30	108	108	203	203	465	465	1,570	
50	33	49	120	141	190	273	438	721	
55	44	54	164	156	260	300	590	794	
60	27	59	81	170	179	327	440	866	
70	30	69	108	198	203	382	465	1,010	
80	18	55	55	164	164	408	408	1,154	
90	16	47	47	137	137	353	353	1,280	
100	18	66	66	147	147	308	308	1,140	
Peak torque ² T _{max} (Nm)	3	64	200		378		628		2,635
	4	77	190		488		810		3,515
	5	55	170		380		870		2,945
	5,5	73	235		500		1,100		3,630
	6	38	114		327		815		2,700
	7	54	161		379		804		2,695
	8	37	111		322		765		2,550
	9	36	104		305		728		2,450
	10	50	157		353		715		2,445
	12	64	92	200	242	378	502	628	1,143
	15	64	86	200	206	378	477	628	1,343
	16	77	122	190	322	488	669	810	1,524
	20	77	115	190	275	488	636	810	1,791
	21	64	85	200	212	378	457	628	1,238
	22	73	168	235	443	500	920	1,100	2,095
	25	55	144	170	344	380	795	870	2,238
	27,5	73	158	235	378	500	875	1,100	2,462
	28	77	113	190	282	488	609	810	1,651
	30	38	114	114	327	327	815	815	2,686
	35	55	141	170	353	380	762	870	2,064
38,5	73	155	235	388	500	838	1,100	2,270	
40	77	109	190	259	488	560	810	1,480	
42	38	114	114	327	327	815	815	2,476	
49	54	161	161	379	379	804	804	2,695	
50	55	136	170	324	380	700	870	1,850	
55	73	150	235	356	500	770	1,100	2,035	
60	38	114	114	327	327	815	815	2,220	
70	54	161	161	379	379	804	804	2,590	
80	37	111	111	322	322	765	765	2,550	
90	36	104	104	305	305	728	728	2,450	
100	50	157	157	353	353	715	715	2,445	
Emergency stop torque ³ (Nm)		1,5 x T _{max}							
Max angular backlash (minutes)	1 stage	Standard : ≤8		Standard : ≤8 ; Option : ≤4					
	2 stages	Option : ≤6		Standard : ≤8 ; Option : ≤6					
Nominal input speed (rpm) ⁴		4,000	3,100	2,800	2,600	2,000			
Max input speed (rpm) ⁵		7,500	6,000	5,500	5,000	4,500			
Max radial load (N) ⁶		2,800	4,150	6,600	9,900	15,400			
Max axial load (N) ⁶		2,400	3,350	5,650	9,870	15,570			
Efficiency (%) ⁷	1 stage	≥94							
	2 stages	≥92							
Torsional stiffness (Nm/min)		4	13	34	54	210			
Life (h) ⁸		20,000							
Min / max ambient temperature ⁹		-15 / +45							
Max temperature of the body (°C)		90							
Protection class		IP 65							
Noise level (dB) ¹⁰		≤70	≤70	≤74	≤78	≤82			
Lubrication		Lifetime lubrication (grease)							
Coating color		Capri blue (RAL 5019)							
Input flange		Anodized aluminum							

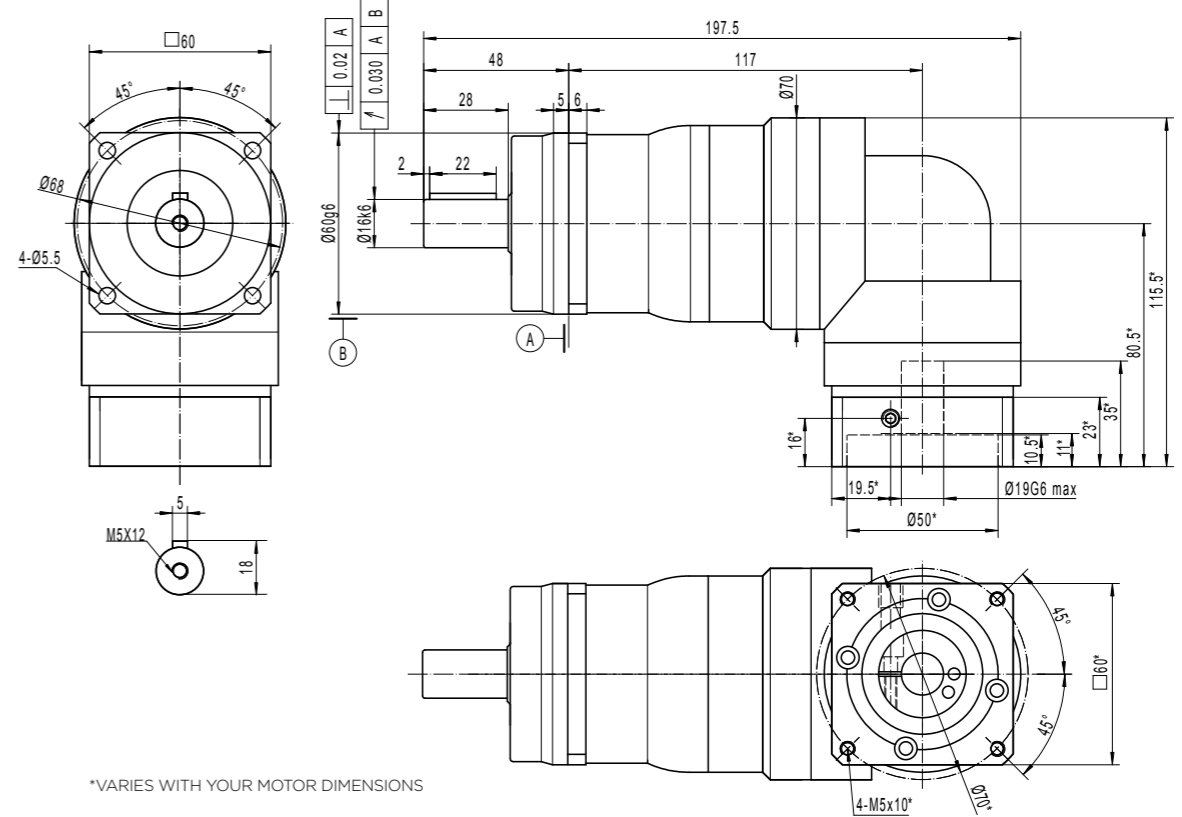
* For 2 stages gearboxes, we can propose a compact input stage (R) or a powerful input stage (P) as paying option
** Others ratios are available upon request.

- 1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
- 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
- 3: 1 000 occurrences maximum.
- 4: Speed at which the nominal torque is applicable 20,000 hours.
- 5: Peak speed only.
- 6: Applied at the middle of the output shaft at 100 rpm.
- 7: Measured at full load and at 25°C
- 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
- 9: Room temperature. Refer to temperature factors in dedicated section.
- 10: Ratio 10 at nominal speed, measured at 1m.

X-TREME-SQ-RA-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø19

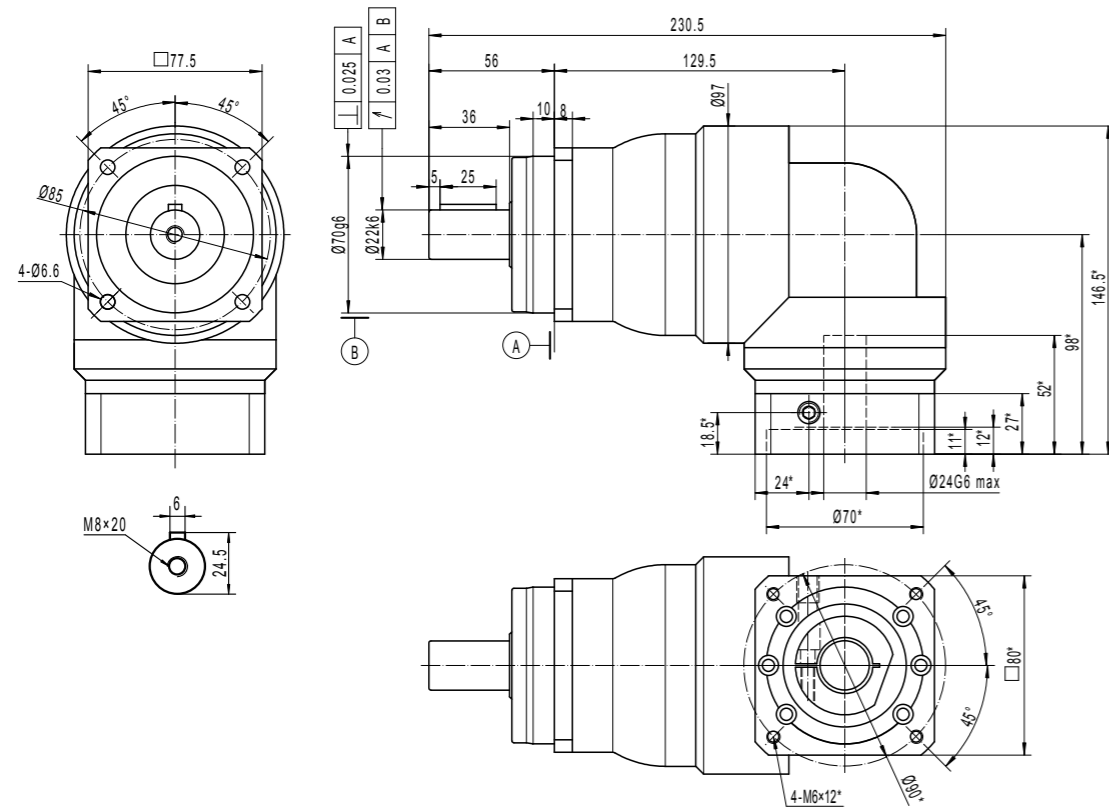


X-TREME-SQ-RA-060- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø19

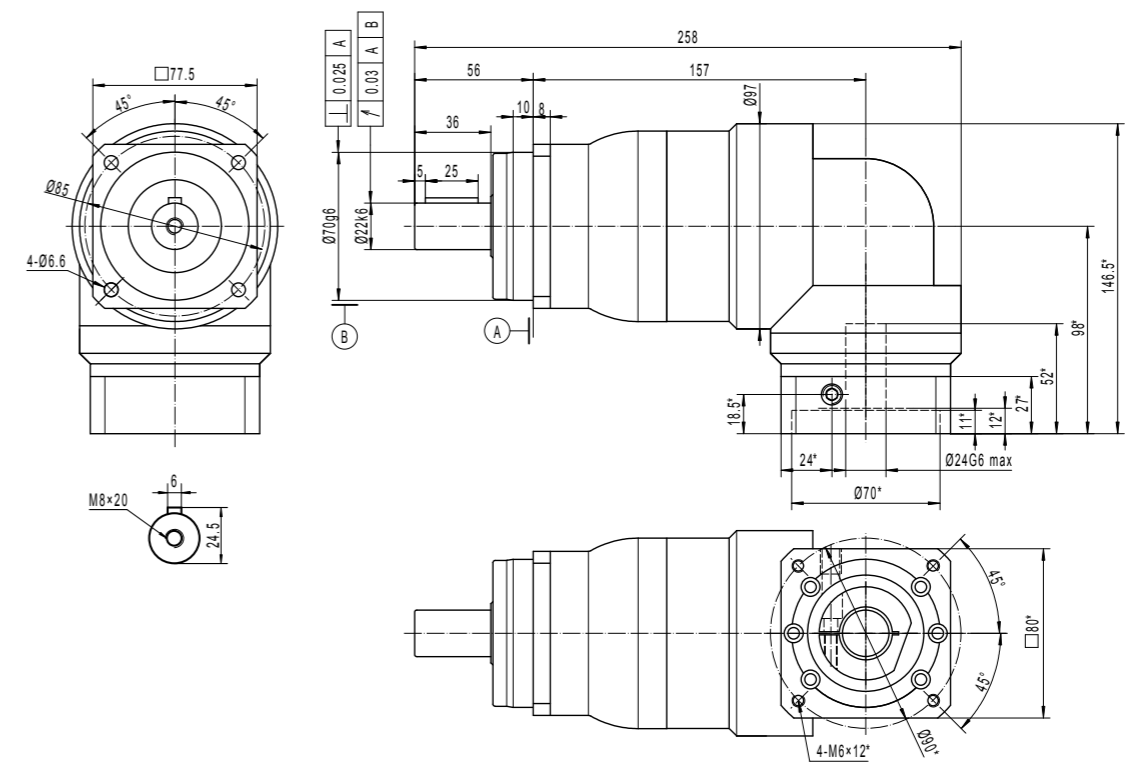


*VARIES WITH YOUR MOTOR DIMENSIONS

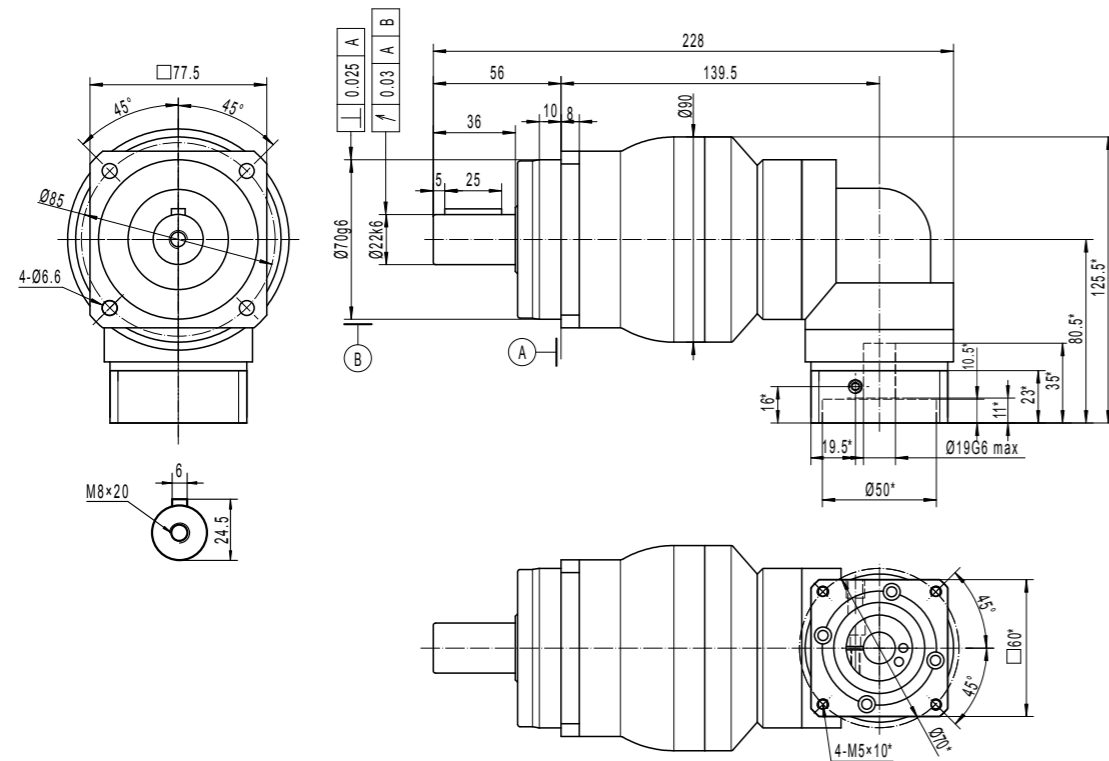
X-TREME-SQ-RA-075- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



X-TREME-SQ-RA-075- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



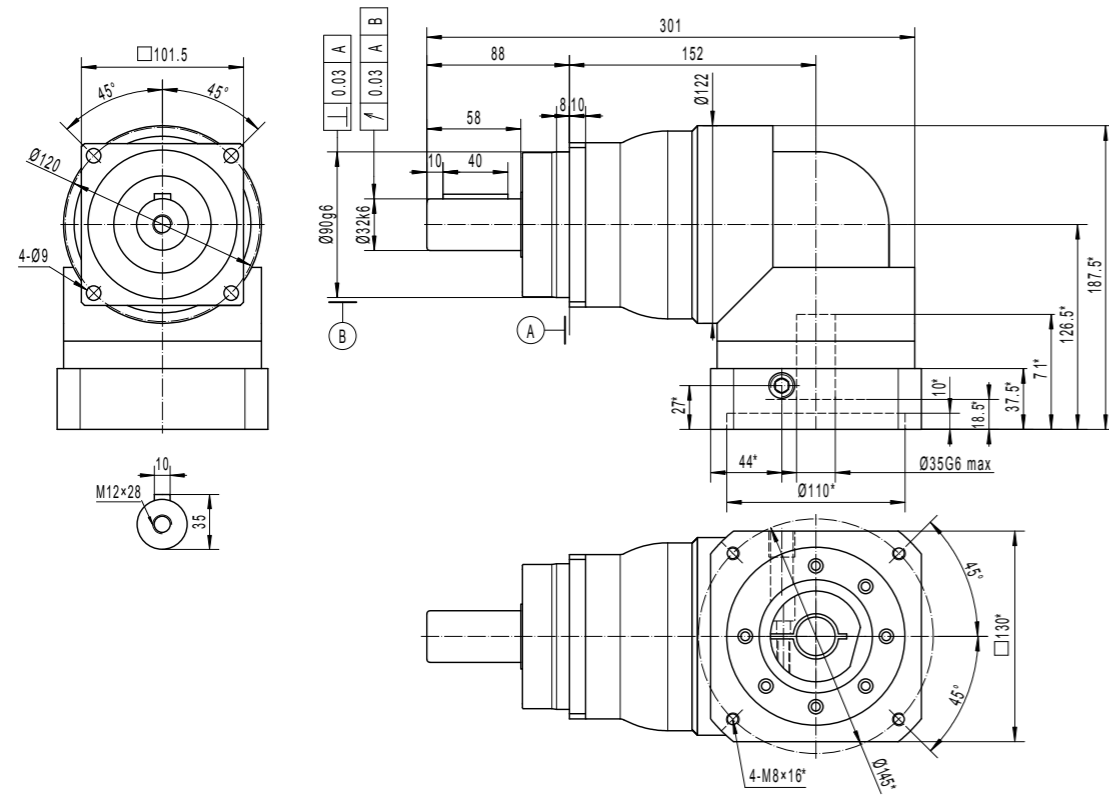
X-TREME-SQ-RA-075- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



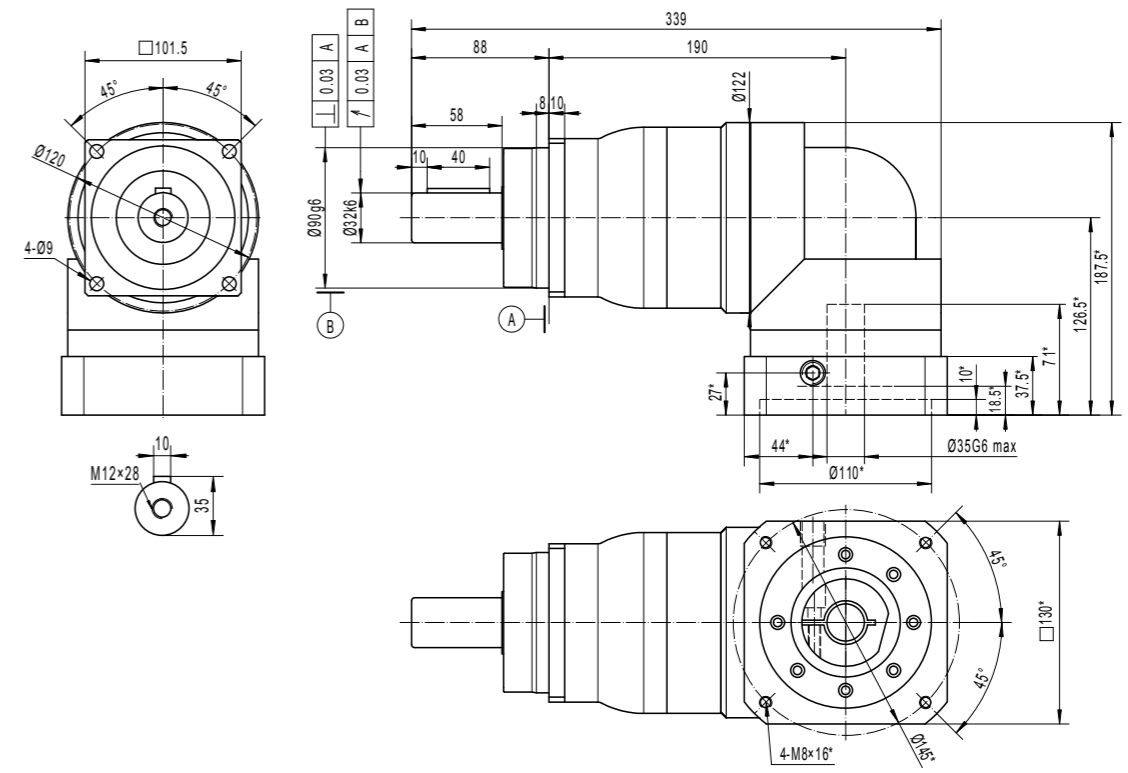
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

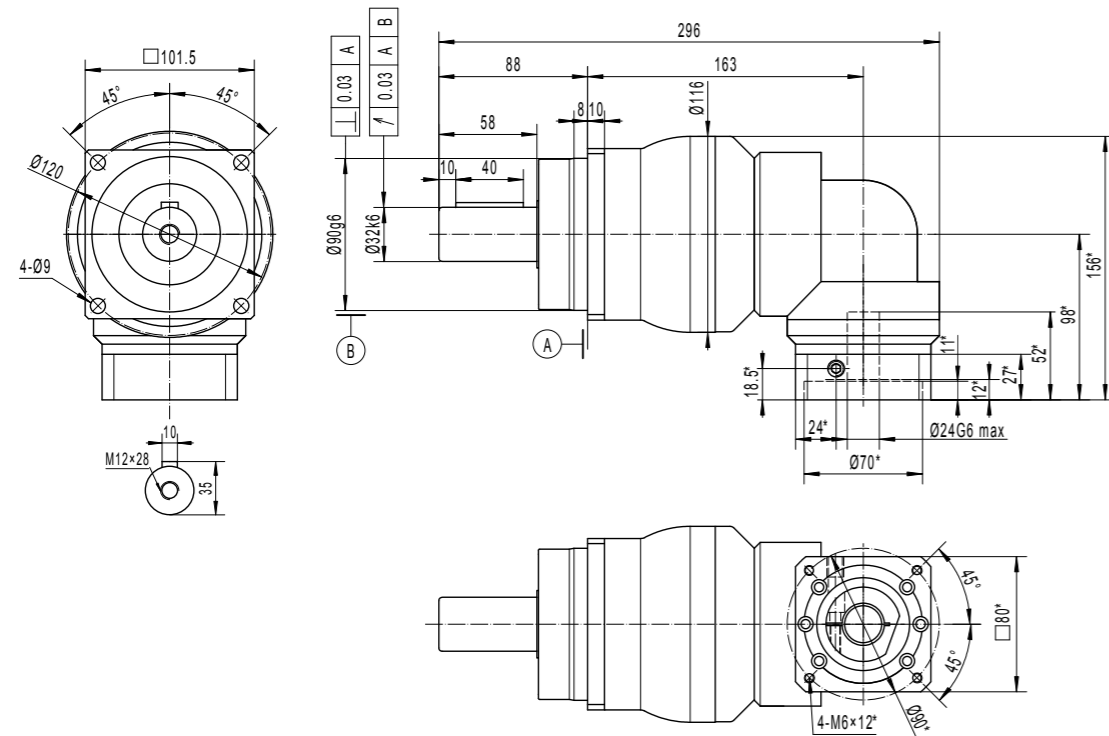
X-TREME-SQ-RA-100- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



X-TREME-SQ-RA-100- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



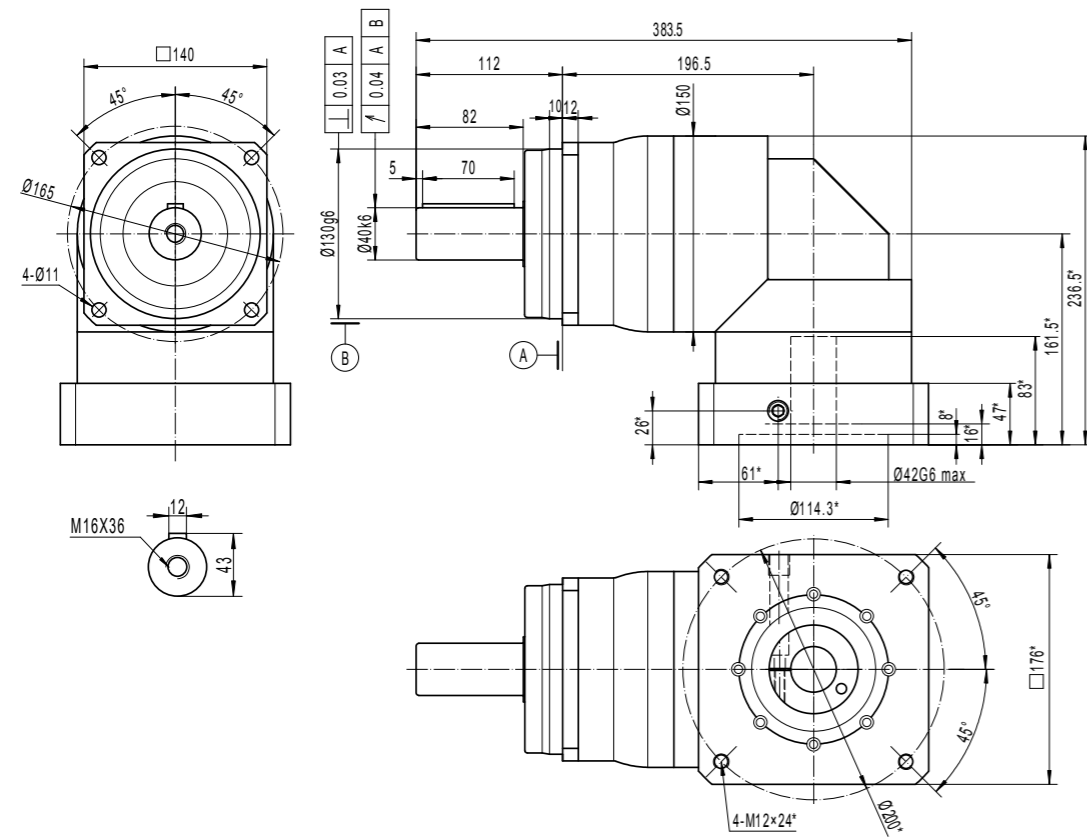
X-TREME-SQ-RA-100- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



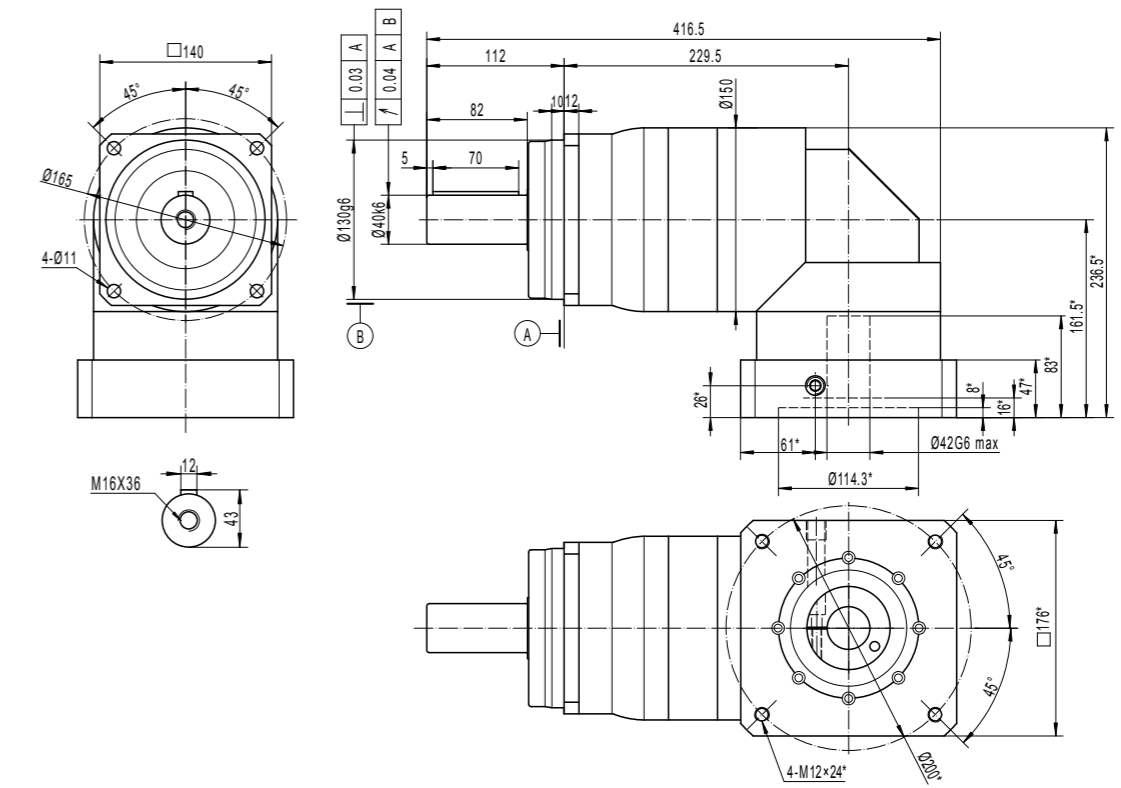
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

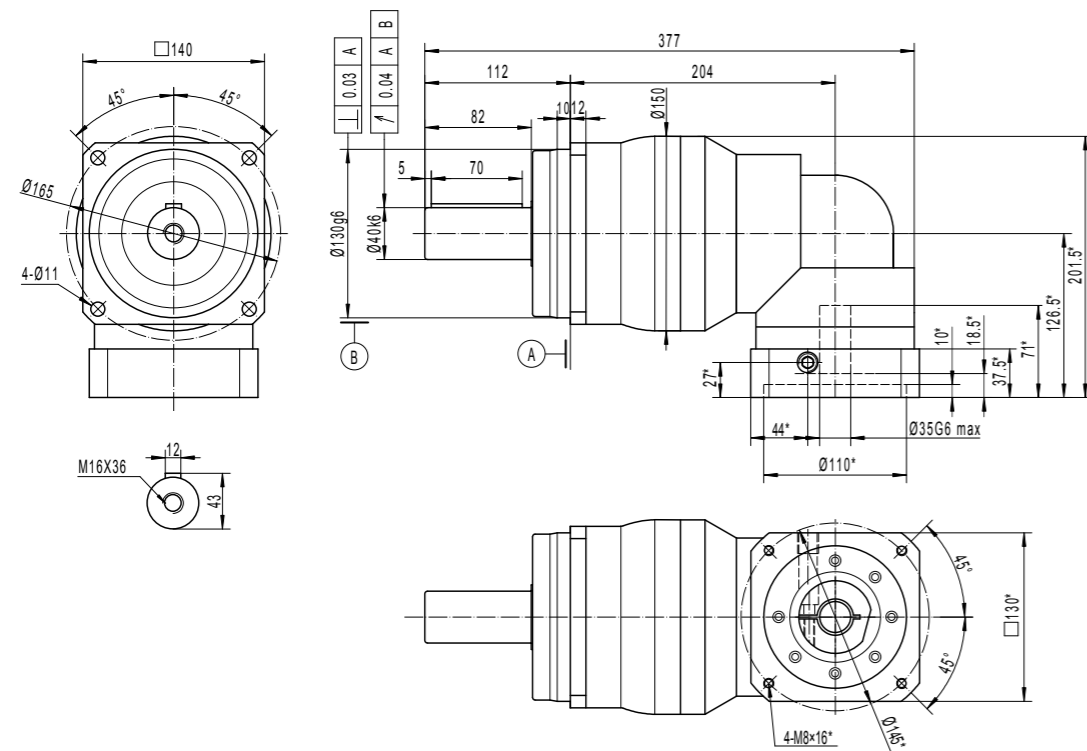
X-TREME-SQ-RA-140- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



X-TREME-SQ-RA-140- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



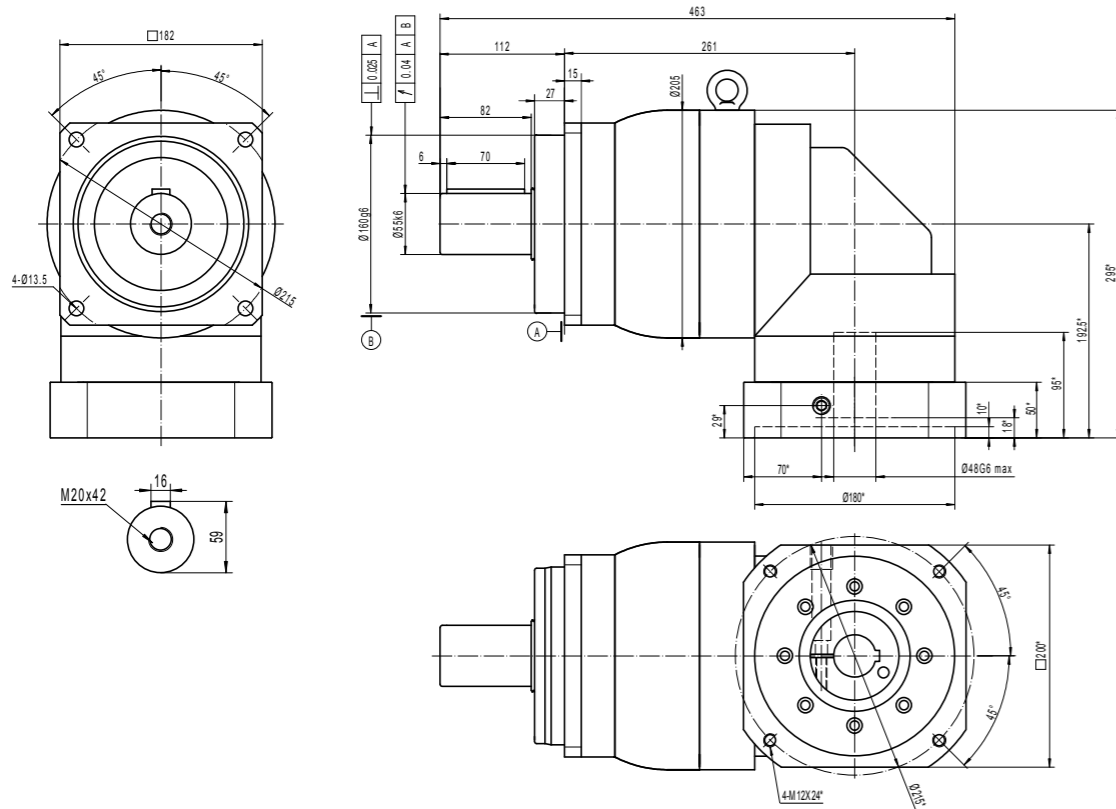
X-TREME-SQ-RA-140- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



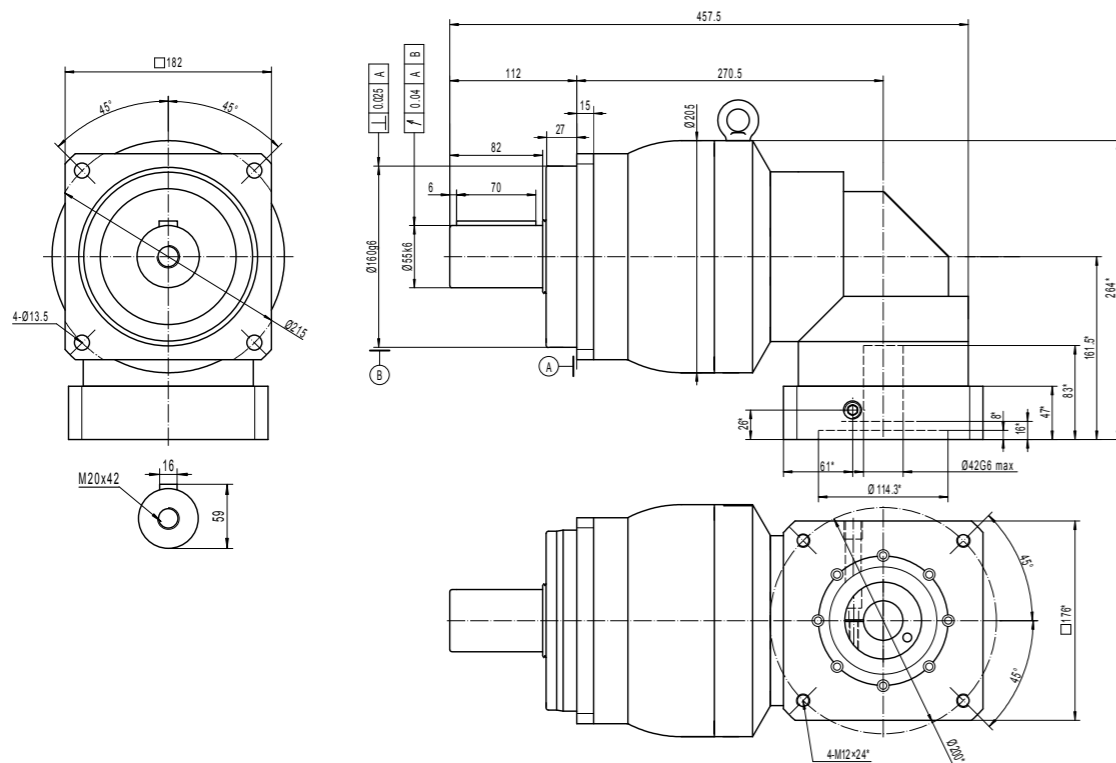
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

X-TREME-SQ-RA-180- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 48$



X-TREME-SQ-RA-180- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



*VARIES WITH YOUR MOTOR DIMENSIONS

BOOSTER-SQ



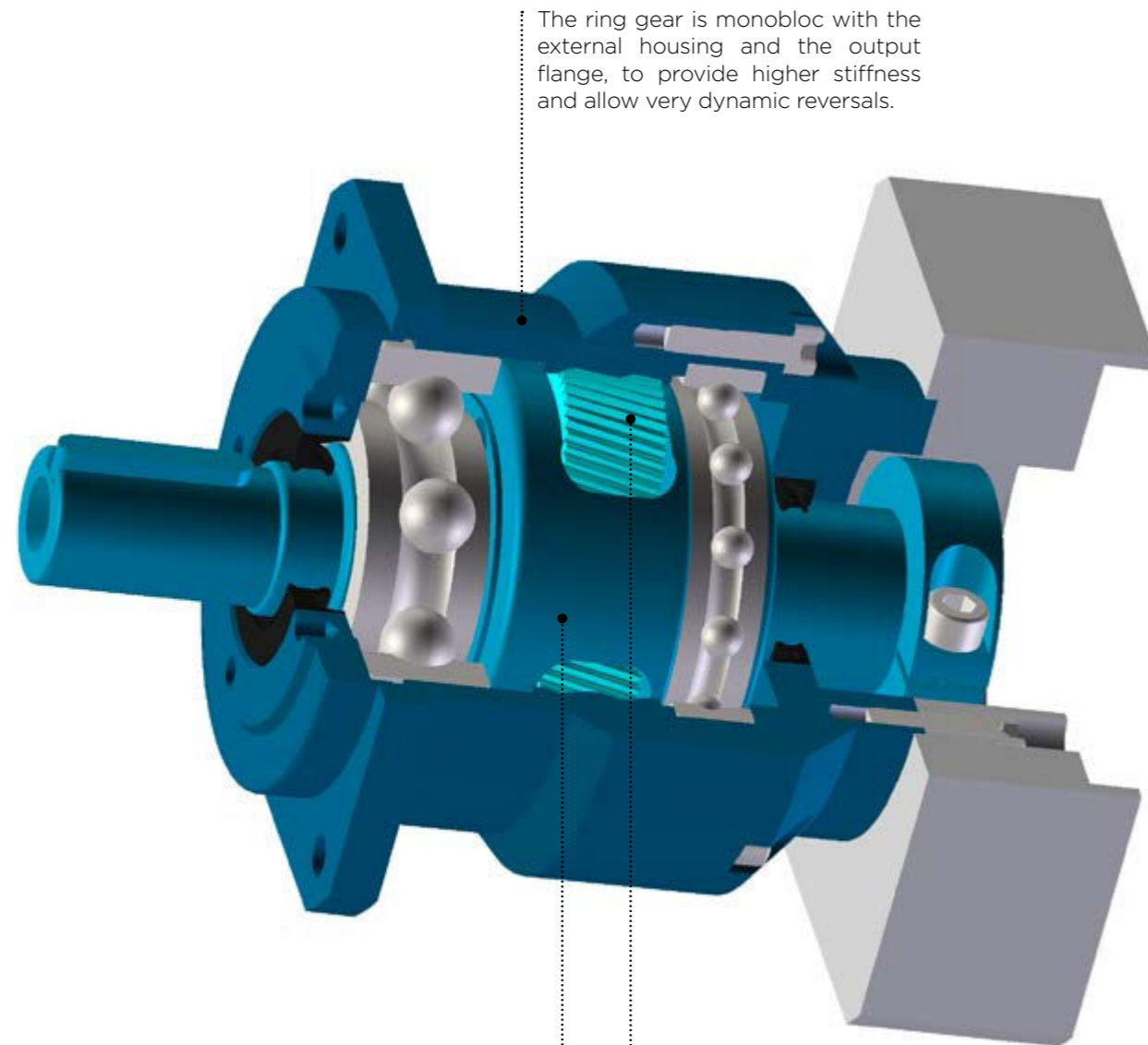
Acceleration capacity	++++
Fast reversals	++++
Radial efforts	+++
Axial efforts	++
Stiffness	++++
Precision	++++
Economy	++++

BOOSTER-SQ-ST _ Internal construction

BOOSTER is a high-performance, high precision planetary gearbox. It delivers high acceleration and fast reversals to heavy duty servo-applications.



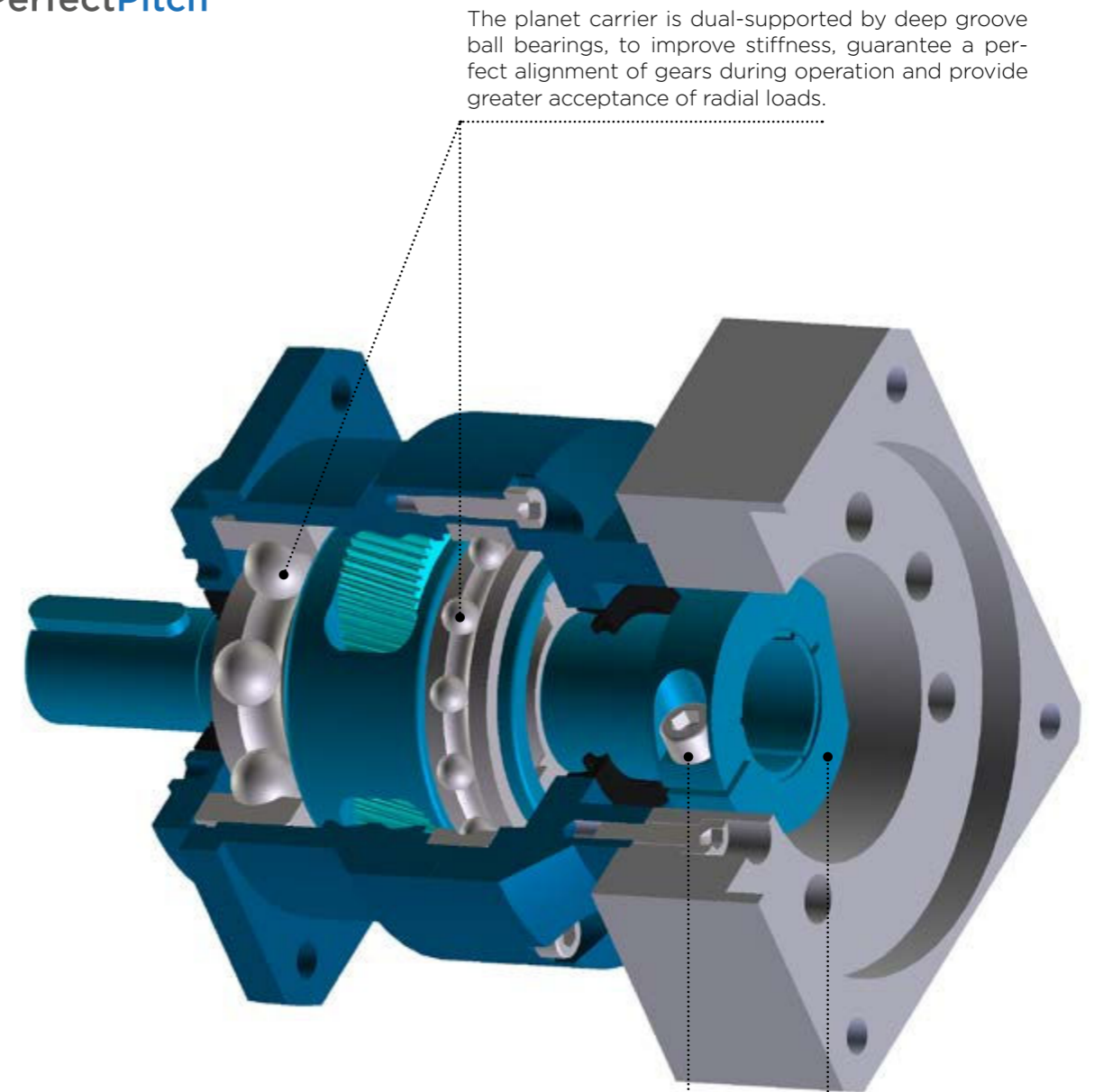
PerfectPitch™



The ring gear is monobloc with the external housing and the output flange, to provide higher stiffness and allow very dynamic reversals.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

Carburized and quenched helical teeth provide quiet operation, reliability and acceleration capacity.



The planet carrier is dual-supported by deep groove ball bearings, to improve stiffness, guarantee a perfect alignment of gears during operation and provide greater acceptance of radial loads.

Easy and safe, 1-screw installation to your motor shaft.

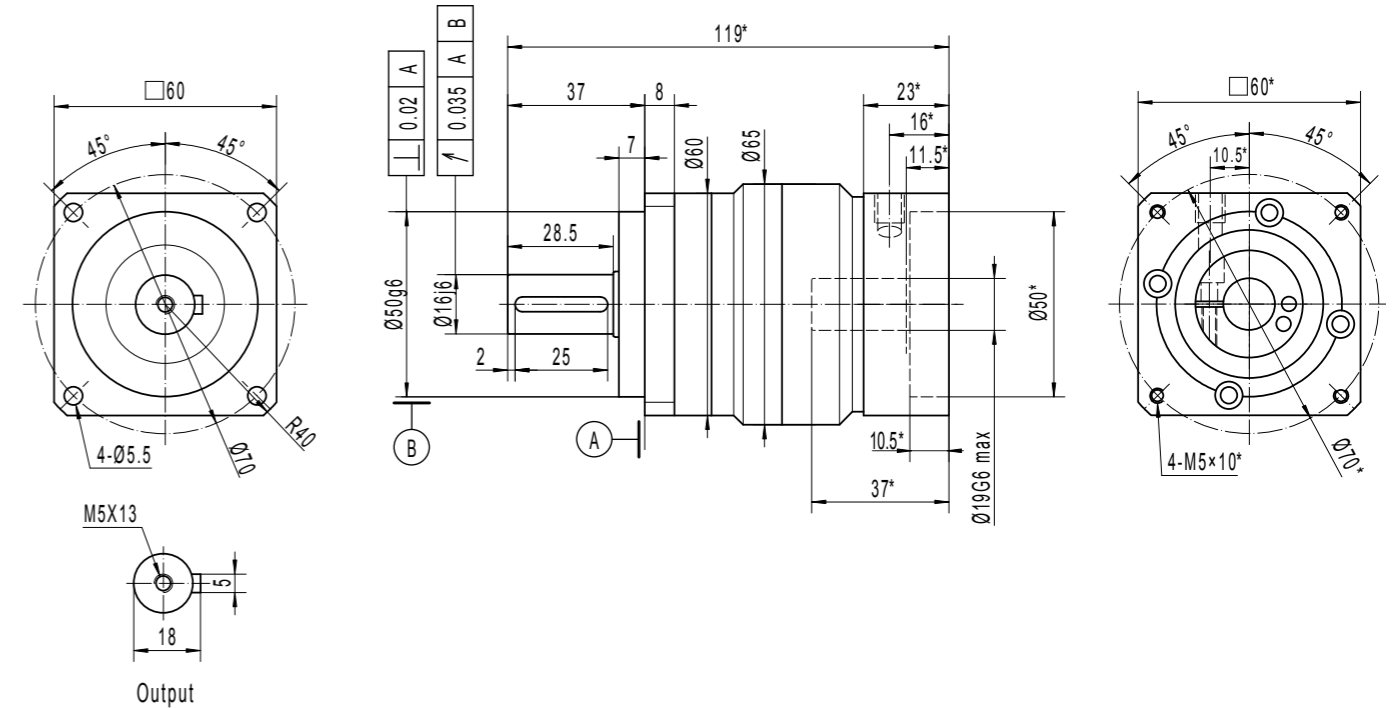
The balanced coupling limits vibration and reduces the loads on your motor shaft bearings

	Ratio**	BOOSTER-SQ-ST				
		060-P*	090-R*	090-P*	120-R*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	29	102	231		
	4	42	154	244		
	5	33	120	190		
	5,5	44	164	260		
	6	27	81	179		
	7	30	108	203		
	8	18	55	164		
	9	16	47	137		
	10	18	66	147		
	12	29	65	102	203	231
	15	29	68	102	210	231
	16	42	86	154	244	244
	20	42	90	154	244	244
	21	29	51	102	137	231
	22	44	118	164	260	260
	25	33	113	120	190	190
	27,5	44	124	164	260	260
	28	42	68	154	183	244
	30	27	81	81	179	179
	35	33	85	120	190	190
	38,5	44	94	164	252	260
40	39	40	113	113	218	
42	27	81	81	179	179	
49	30	108	108	203	203	
50	33	49	120	141	190	
55	44	54	164	156	260	
60	27	59	81	170	179	
70	30	69	108	198	203	
80	18	55	55	164	164	
90	16	47	47	137	137	
100	18	66	66	147	147	
Peak torque ² T _{max} (Nm)	3	64	200	378		
	4	77	190	488		
	5	55	170	380		
	5,5	73	235	500		
	6	38	114	327		
	7	54	161	379		
	8	37	111	322		
	9	36	104	305		
	10	50	157	353		
	12	64	92	200	242	378
	15	64	86	200	206	378
	16	77	122	190	322	488
	20	77	115	190	275	488
	21	64	85	200	212	378
	22	73	168	235	443	500
	25	55	144	170	344	380
	27,5	73	158	235	378	500
	28	77	113	190	282	488
	30	38	114	114	327	327
	35	55	141	170	353	380
	38,5	73	155	235	388	500
40	77	109	190	259	488	
42	38	114	114	327	327	
49	54	161	161	379	379	
50	55	136	170	324	380	
55	73	150	235	356	500	
60	38	114	114	327	327	
70	54	161	161	379	379	
80	37	111	111	322	322	
90	36	104	104	305	305	
100	50	157	157	353	353	
Emergency stop torque (Nm) ³		1,5 x T _{max}				
Max angular backlash (minutes)	1 stage	Standard : ≤5	Standard : ≤3 ; Option : ≤1			
	2 stages	Option : ≤3	Standard : ≤5 ; Option : ≤3			
Nominal input speed (rpm) ⁴		4,000	3,100	2,800		
Max input speed (rpm) ⁵		7,500	6,000	5,000		
Max radial load (N) ⁶		1,530	3,300	6,700		
Max axial load (N) ⁶		765	1,800	3,350		
Efficiency (%) ⁷	1 stage	≥97				
	2 stages	≥94				
Torsional stiffness (Nm/min)		8	15	27		
Life (h) ⁸		20,000				
Min / max ambient temperature ⁹		-15 / +45				
Max temperature of the body (°C)		90				
Protection class		IP 65				
Noise level (dB) ¹⁰		≤60	≤62	≤63		
Lubrication		Lifetime lubrication (grease)				
Coating color		Capri blue (RAL 5019)				
Input flange		Anodized aluminum				

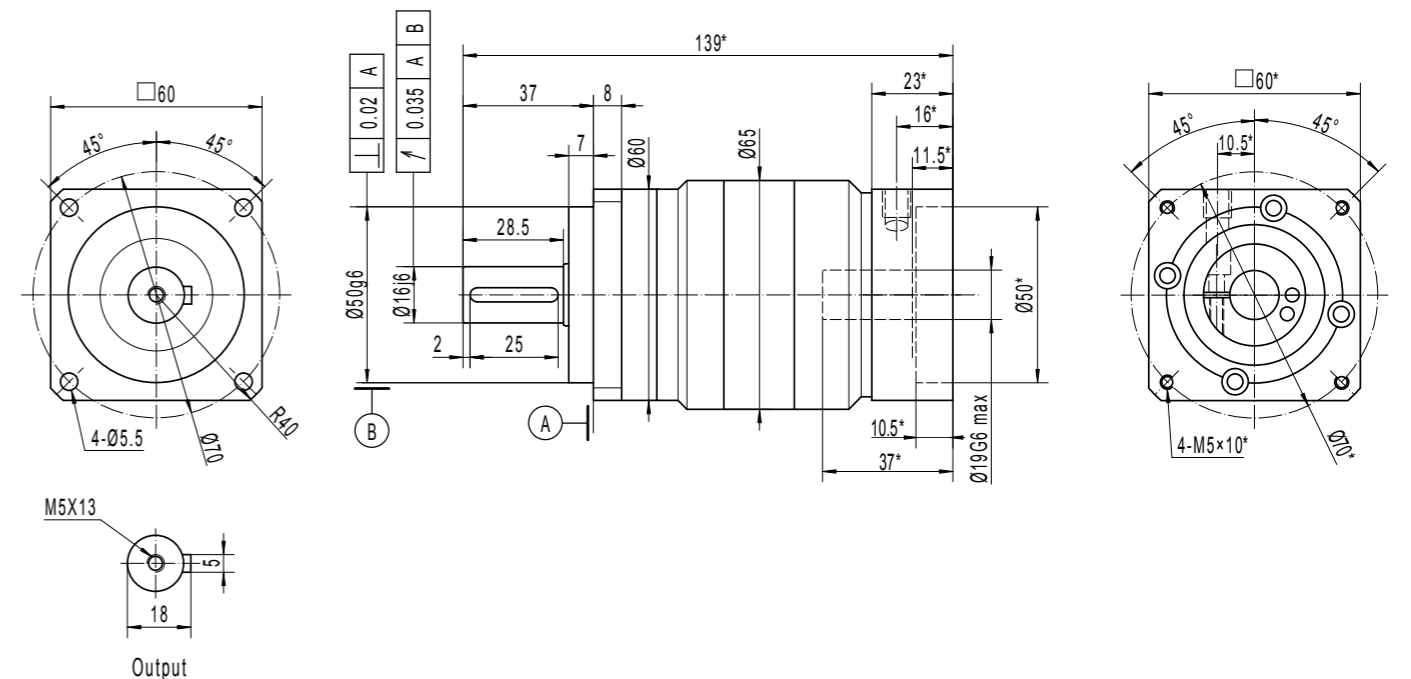
*For 2 stages gearboxes, we can propose a compact input stage (R) or a powerful input stage (P) as paying option
** Others ratios are available upon request.

- 1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
- 2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
- 3: 1 000 occurrences maximum.
- 4: Speed at which the nominal torque is applicable 20,000 hours.
- 5: Peak speed only.
- 6: Applied at the middle of the output shaft at 100 rpm.
- 7: Measured at full load and at 25°C
- 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
- 9: Room temperature. Refer to temperature factors in dedicated section.
- 10: Ratio 10 at nominal speed, measured at 1m.

BOOSTER-SQ-ST-060- 1 STAGE - RATIOS 3 TO 10 FOR MOTOR SHAFT ≤ Ø19

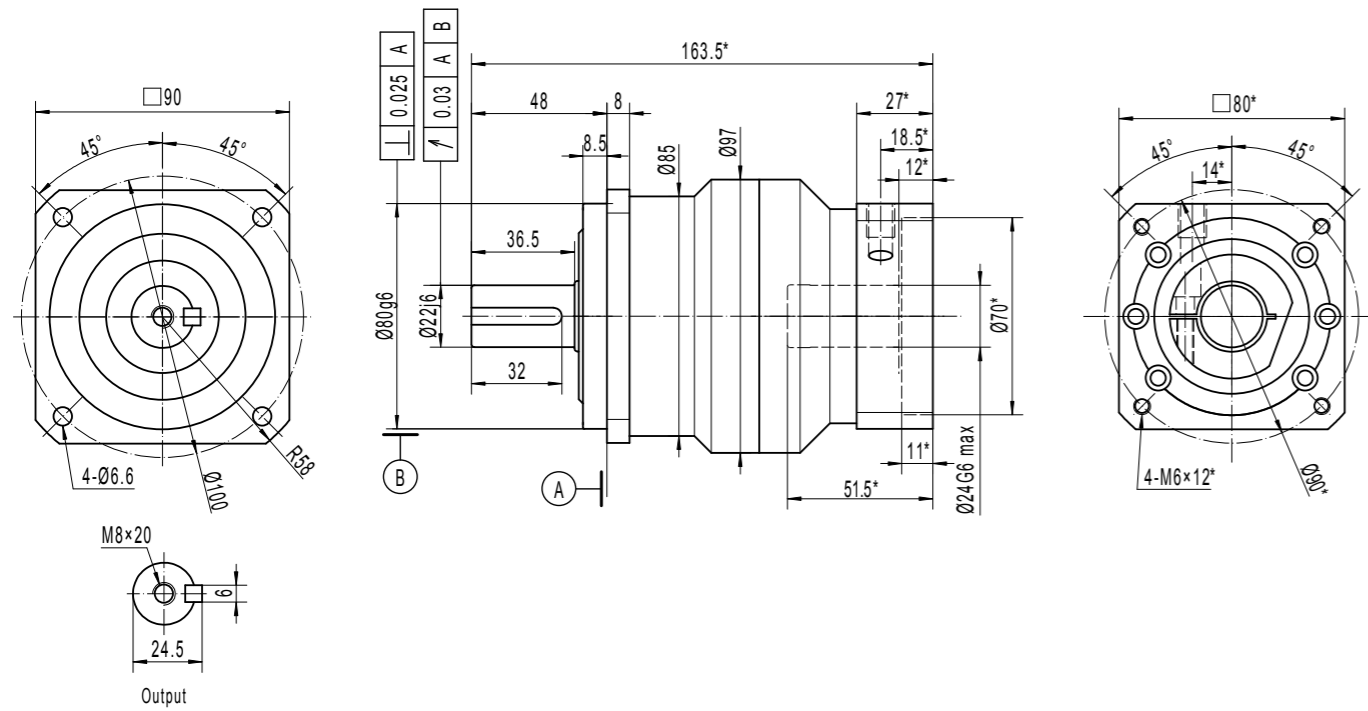


BOOSTER-SQ-ST-060- 2 STAGES-P -RATIOS 12 TO 100 FOR MOTOR SHAFT ≤ Ø19

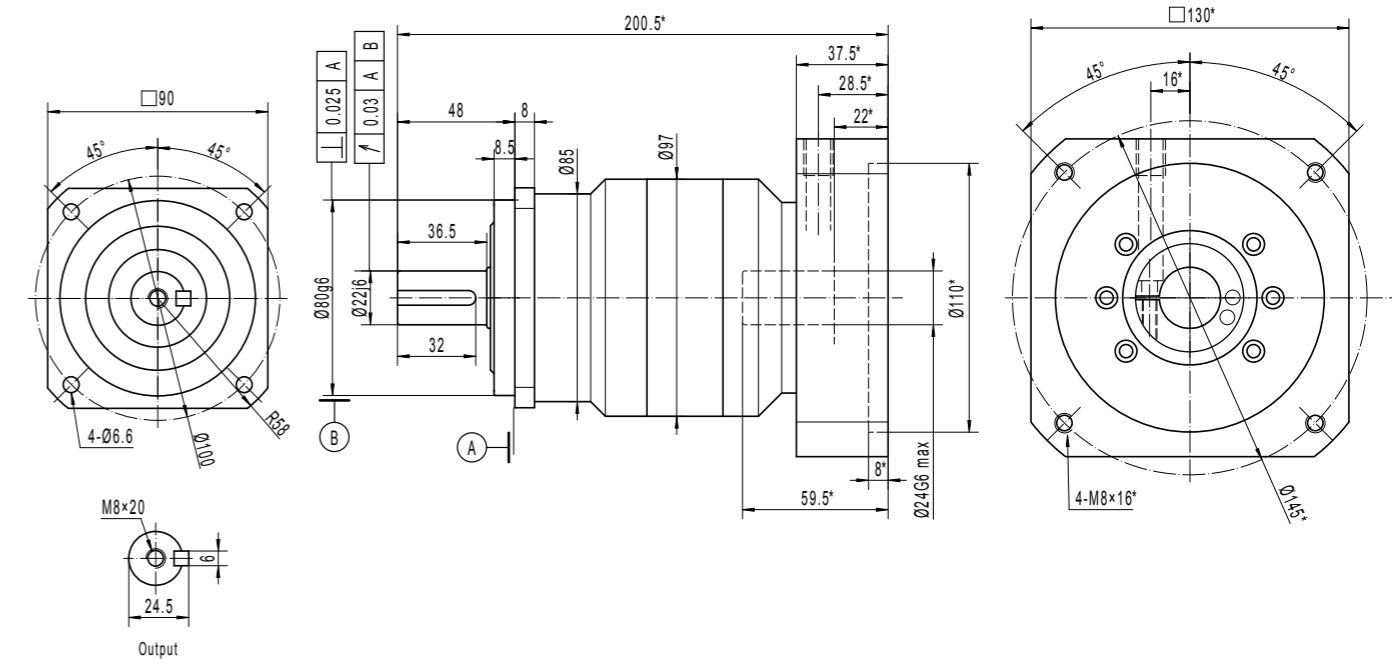


*VARIES WITH YOUR MOTOR DIMENSIONS

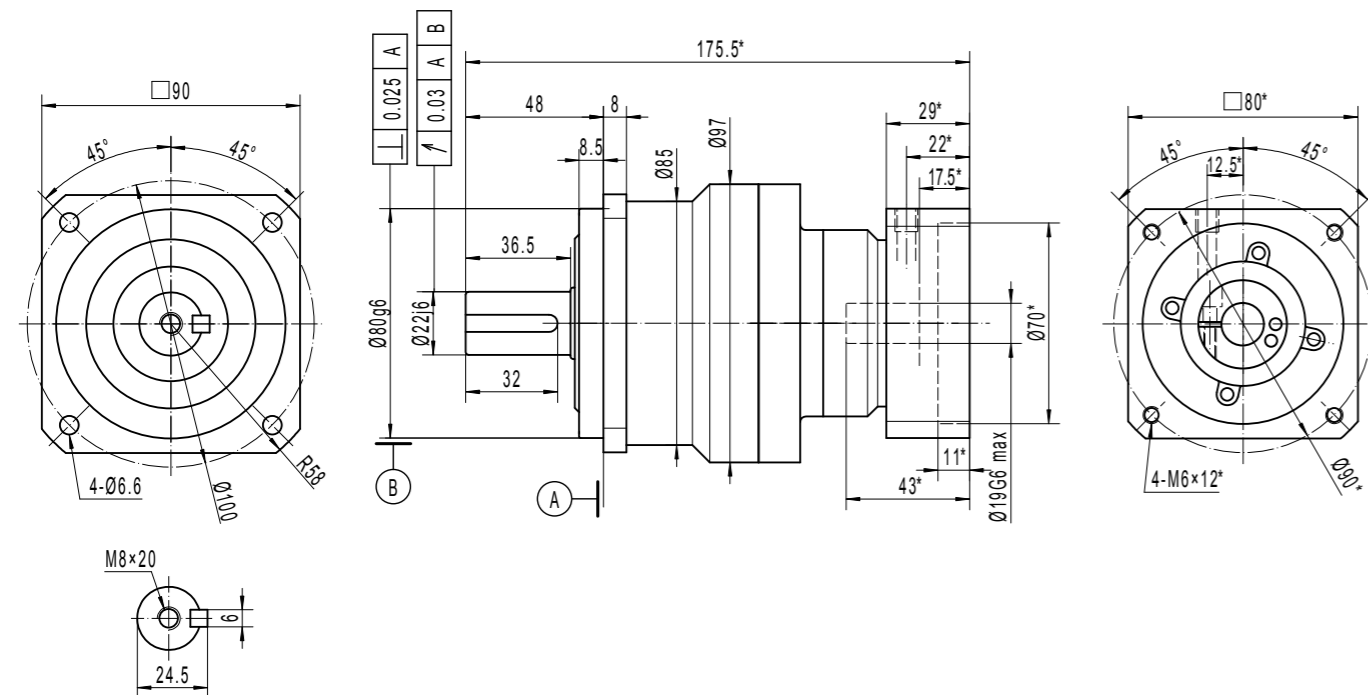
BOOSTER-SQ-ST-090-1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



BOOSTER-SQ-ST-090-2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



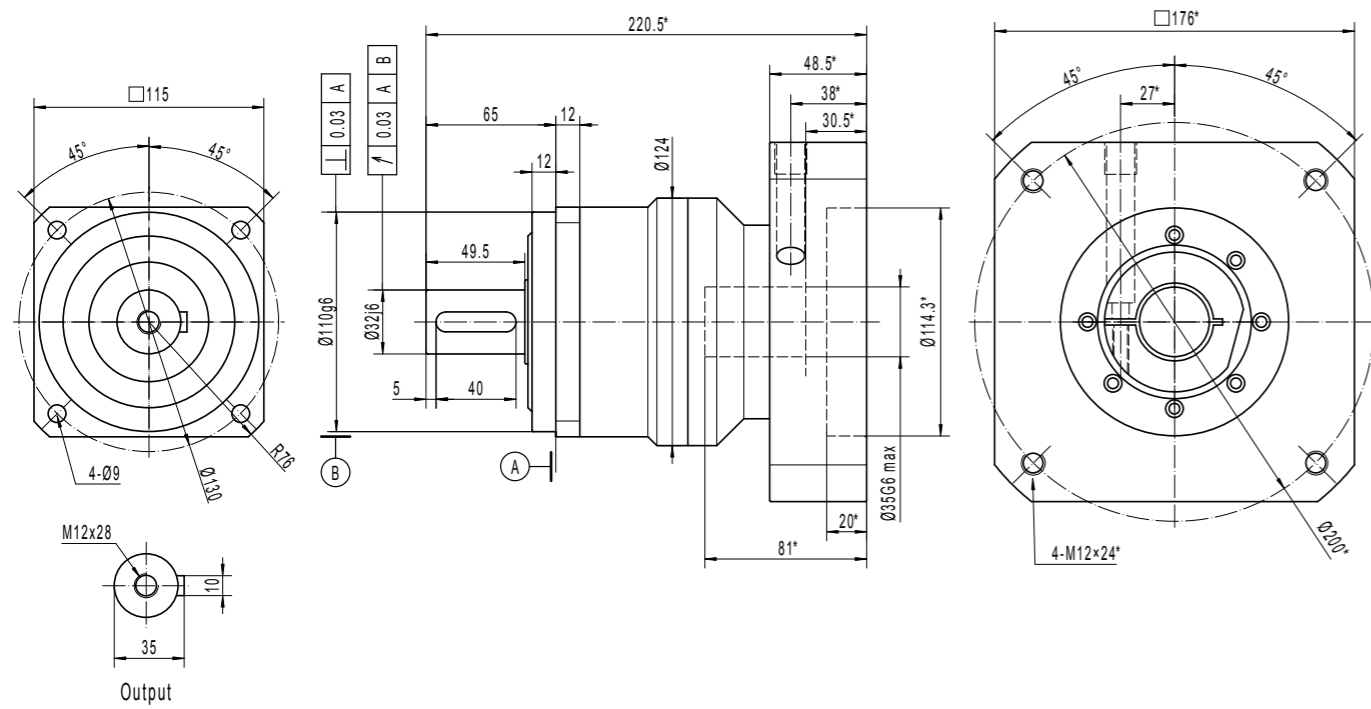
BOOSTER-SQ-ST-090-2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



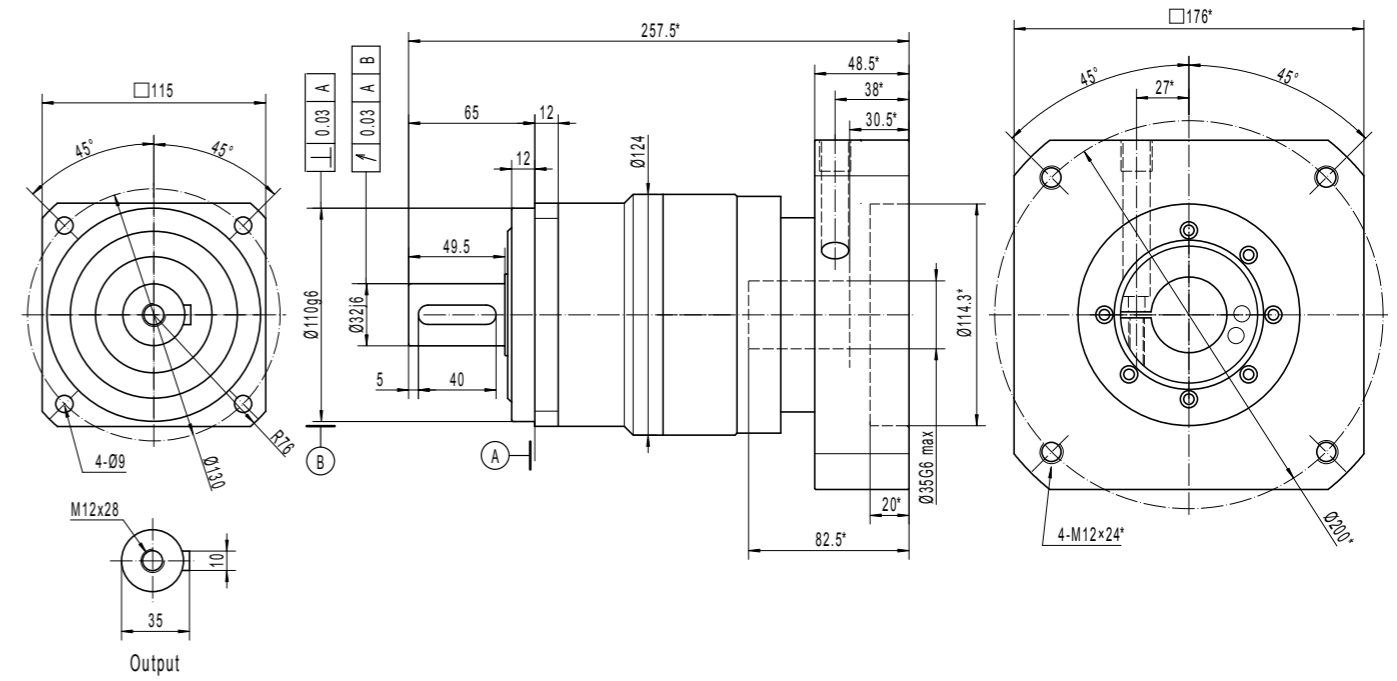
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

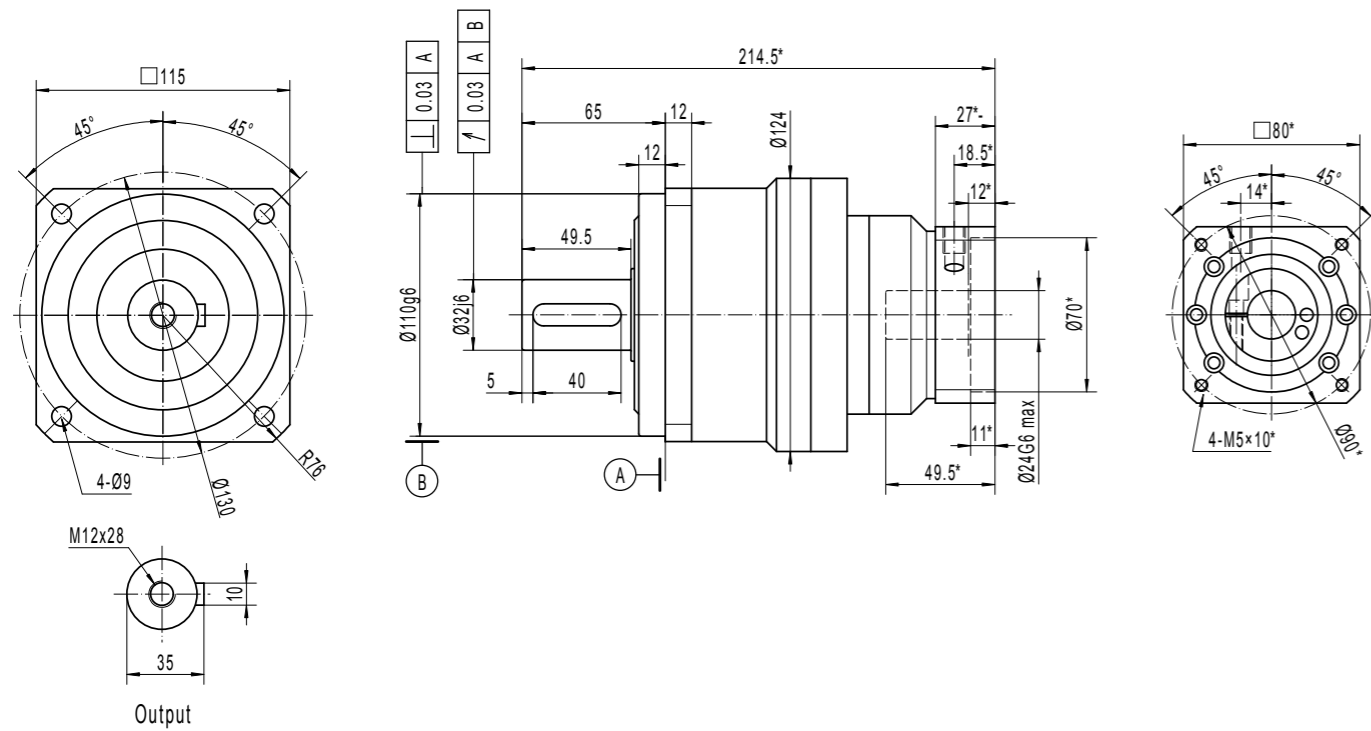
BOOSTER-SQ-ST-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



BOOSTER-SQ-ST-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



BOOSTER-SQ-ST-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

BOOSTER-SQ-RA _ Internal construction

BOOSTER is a high-performance, high precision planetary gearbox.
It delivers high acceleration and fast reversals to heavy duty servo-applications.

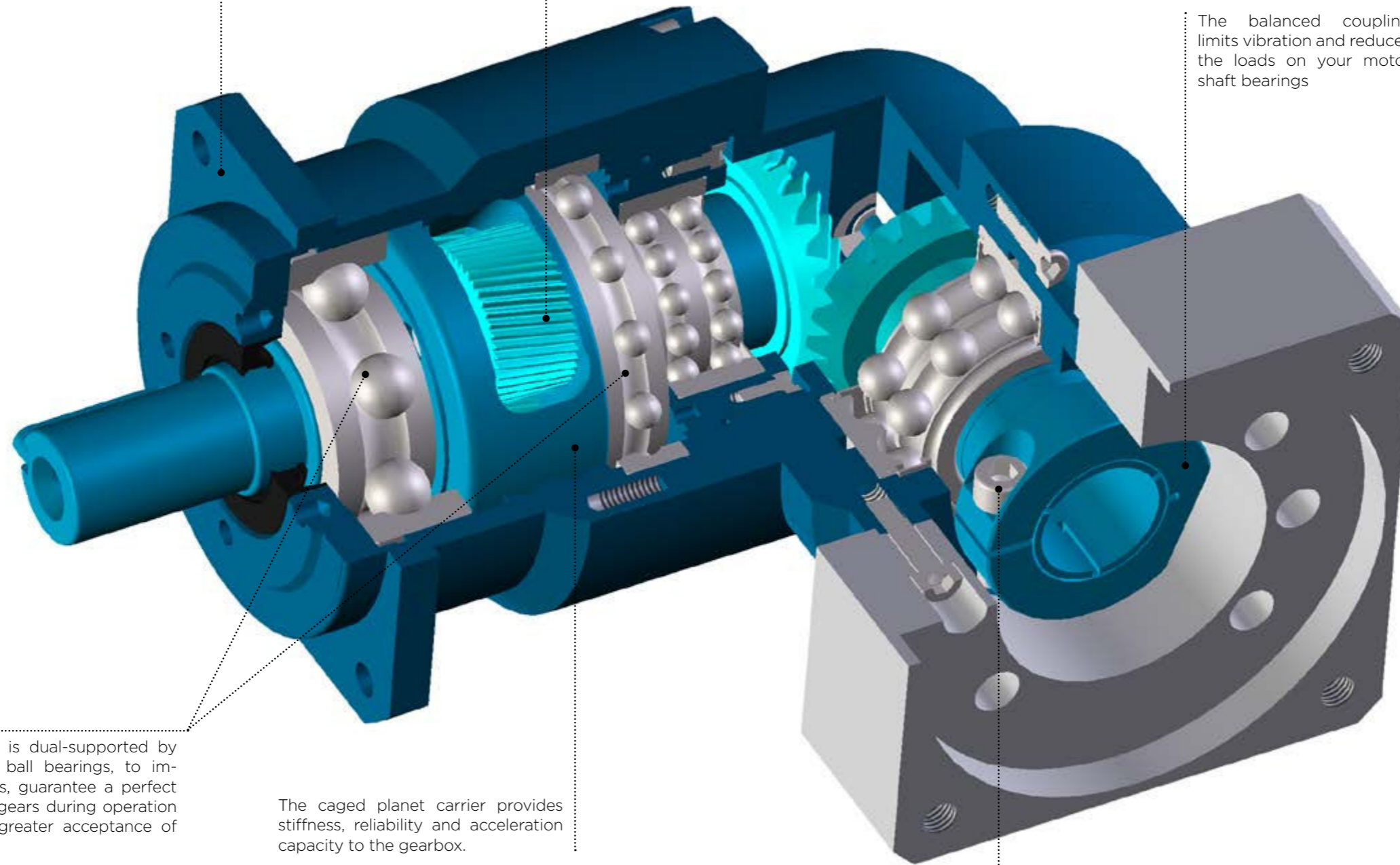


PerfectPitch™

The ring gear is monobloc with the external housing and the output flange, to provide higher stiffness and allow very dynamic reversals.

Carburized and quenched helical teeth provide quiet operation, reliability and acceleration capacity.

The balanced coupling limits vibration and reduces the loads on your motor shaft bearings



Planet carrier is dual-supported by deep groove ball bearings, to improve stiffness, guarantee a perfect alignment of gears during operation and provide greater acceptance of radial loads.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

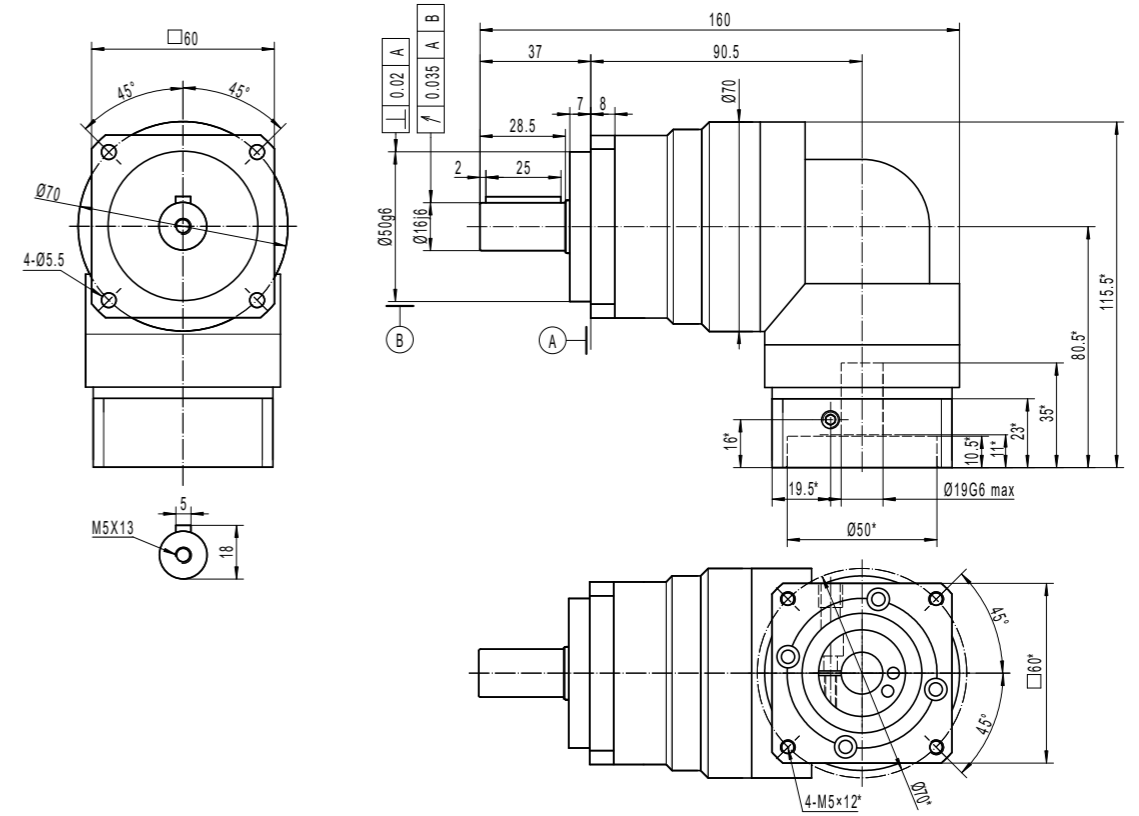
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	BOOSTER-SQ-RA				
		060-P*	090-	090-P*	120-R*	120-P*
Nominal torque ¹ T _{2N} (Nm)	3	29	102	231		
	4	42	154	244		
	5	33	120	190		
	5.5	44	164	260		
	6	27	81	179		
	7	30	108	203		
	8	18	55	164		
	9	16	47	137		
	10	18	66	147		
	12	29	65	102	203	231
	15	29	68	102	210	231
	16	42	86	154	244	244
	20	42	90	154	244	244
	21	29	51	102	137	231
	22	44	118	164	260	260
	25	33	113	120	190	190
	27.5	44	124	164	260	260
	28	42	68	154	183	244
	30	27	81	81	179	179
	35	33	85	120	190	190
38.5	44	94	164	252	260	
40	39	40	113	113	218	
42	27	81	81	179	179	
49	30	108	108	203	203	
50	33	49	120	141	190	
55	44	54	164	156	260	
60	27	59	81	170	179	
70	30	69	108	198	203	
80	18	55	55	164	164	
90	16	47	47	137	137	
100	18	66	66	147	147	
Peak torque ² T _{max} (Nm)	3	64	200	378		
	4	77	190	488		
	5	55	170	380		
	5.5	73	235	500		
	6	38	114	327		
	7	54	161	379		
	8	37	111	322		
	9	36	104	305		
	10	50	157	353		
	12	64	92	200	242	378
	15	64	86	200	206	378
	16	77	122	190	322	488
	20	77	115	190	275	488
	21	64	85	200	212	378
	22	73	168	235	443	500
	25	55	144	170	344	380
	27.5	73	158	235	378	500
	28	77	113	190	282	488
	30	38	114	114	327	327
	35	55	141	170	353	380
38.5	73	155	235	388	500	
40	77	109	190	259	488	
42	38	114	114	327	327	
49	54	161	161	379	379	
50	55	136	170	324	380	
55	73	150	235	356	500	
60	38	114	114	327	327	
70	54	161	161	379	379	
80	37	111	111	322	322	
90	36	104	104	305	305	
100	50	157	157	353	353	
Emergency stop torque (Nm) ³		1,5 x T _{max}				
Max angular backlash (minutes)	1 stage	Standard : ≤8		Standard : ≤8 ; Option : ≤4		
	2 stages	Option : ≤6		Standard : ≤8 ; Option : ≤6		
Nominal input speed (rpm) ⁴		4,000	3,100	2,100		
Max input speed (rpm) ⁵		7,500	6,000	5,000		
Max radial load (N) ⁶		1,530	3,300	6,700		
Max axial load (N) ⁶		765	1,800	3,350		
Efficiency (%) ⁷	1 stage	≥94				
	2 stages	≥92				
Torsional stiffness (Nm/min)		8	15	27		
Life (h) ⁸		20,000				
Min / max ambient temperature ⁹		-15 / +45				
Max temperature of the body (°C)		90				
Protection class		IP 65				
Noise level (dB) ¹⁰		≤70	≤70	≤74		
Lubrication		Lifetime lubrication (grease)				
Coating color		Capri blue (RAL 5019)				
Input flange		Anodized aluminum				

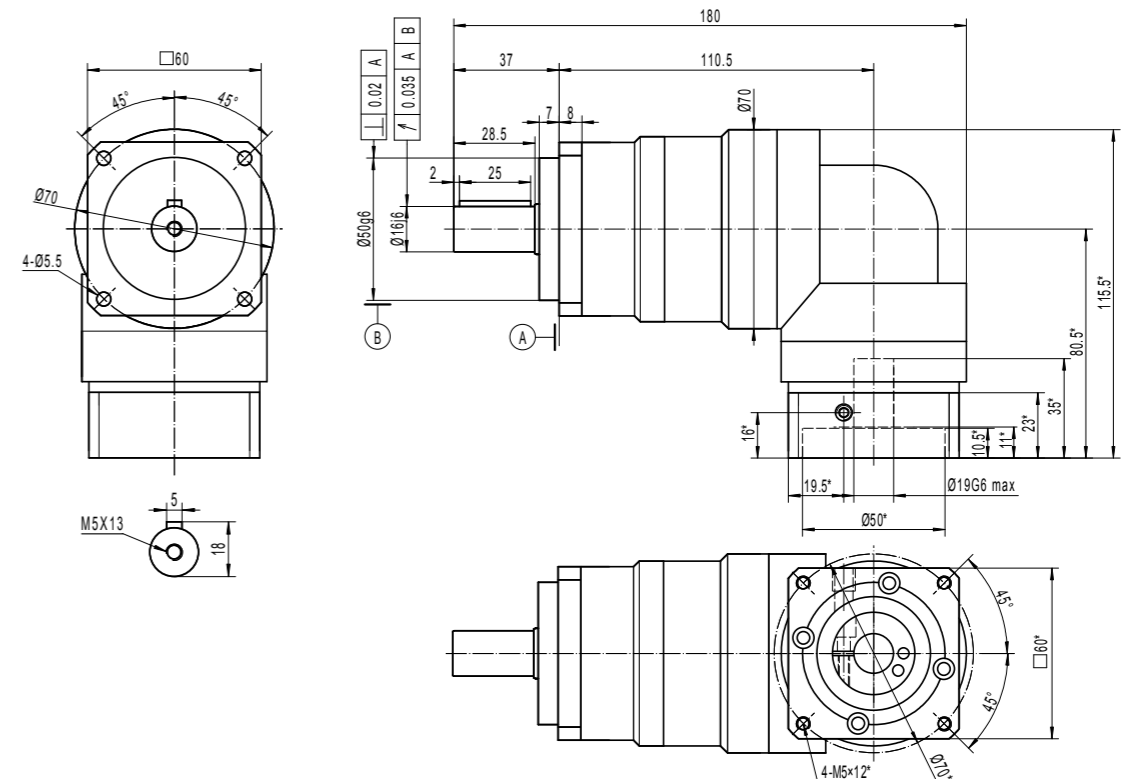
* For 2 stages gearboxes, we can propose a compact input stage (R) or a powerful input stage (P) as paying option
** Others ratios are available upon request.

- 1: Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25). Using max 10% of the max radial load. Torque capacity decreases when the radial load increases. Please refer to the website for more information
2: Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4). This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application. Using a torque higher than the rated torque may affect the gearbox precision.
3: 1 000 occurrences maximum.
4: Speed at which the nominal torque is applicable 20,000 hours.
5: Peak speed only.
6: Applied at the middle of the output shaft at 100 rpm.
7: Measured at full load and at 25°C
8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
9: Room temperature. Refer to temperature factors in dedicated section.
10: Ratio 10 at nominal speed, measured at 1m.

BOOSTER-SQ-RA-060- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT ≤ Ø19



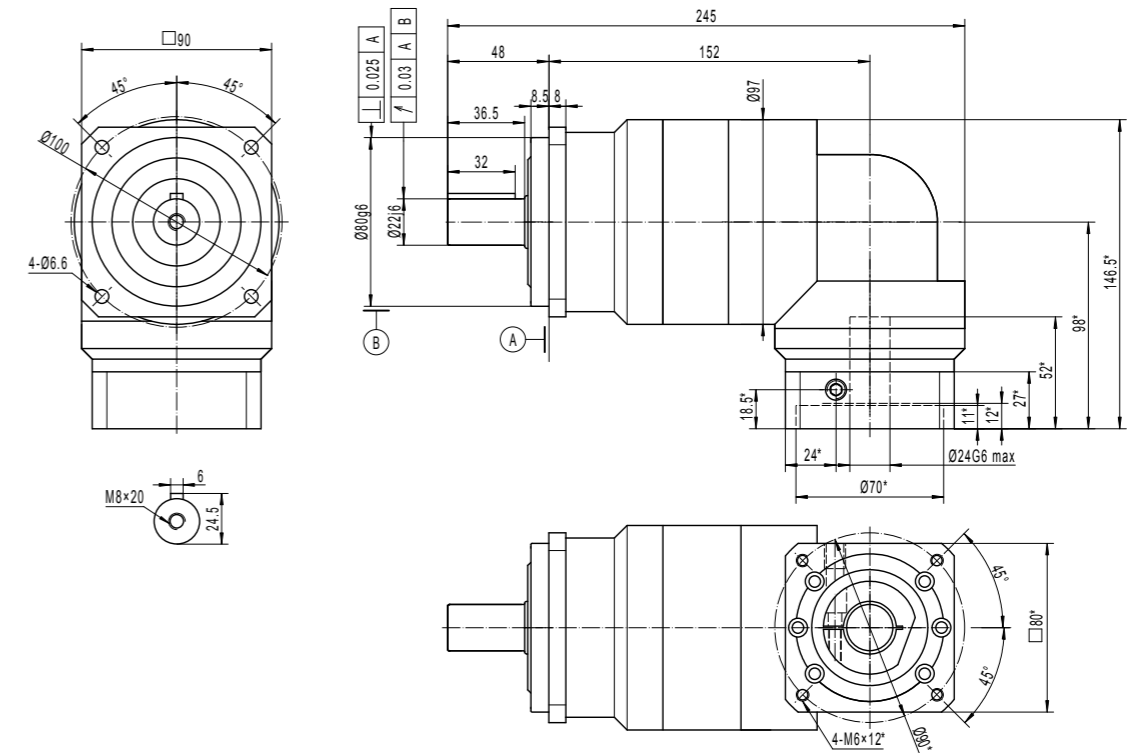
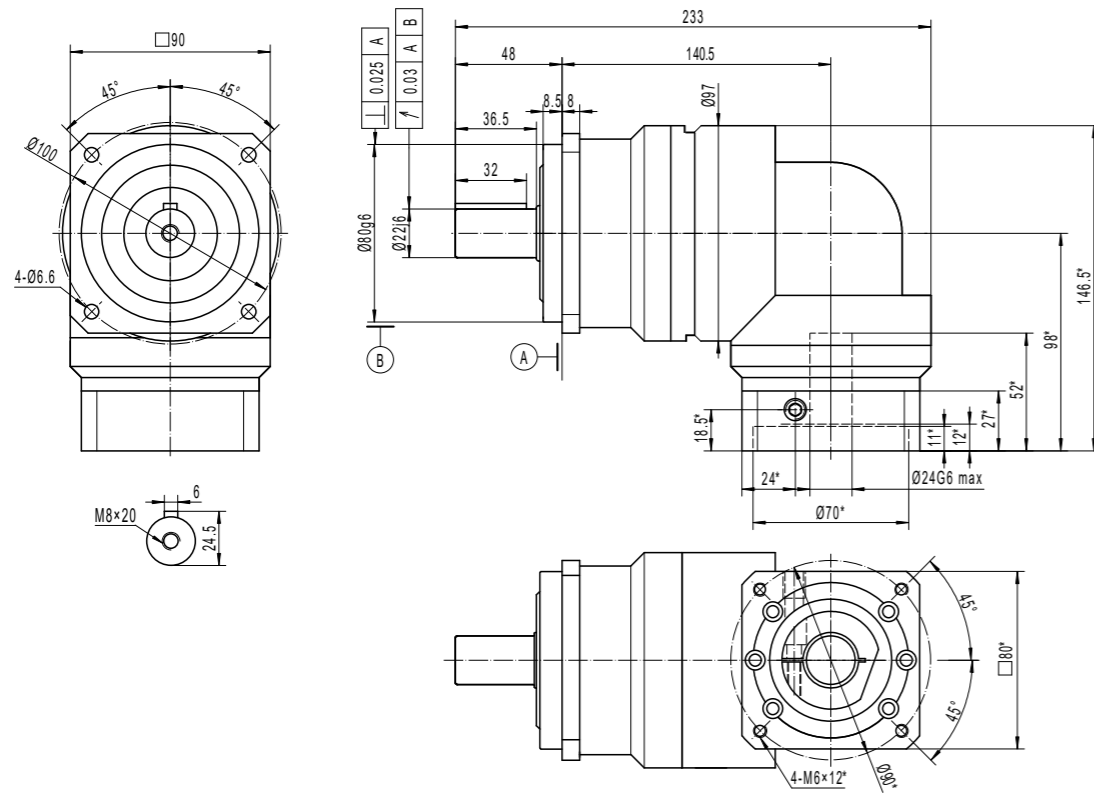
BOOSTER-SQ-RA-060- 2 STAGES-P -RATIOS 12 TO 100
FOR MOTOR SHAFT ≤ Ø19



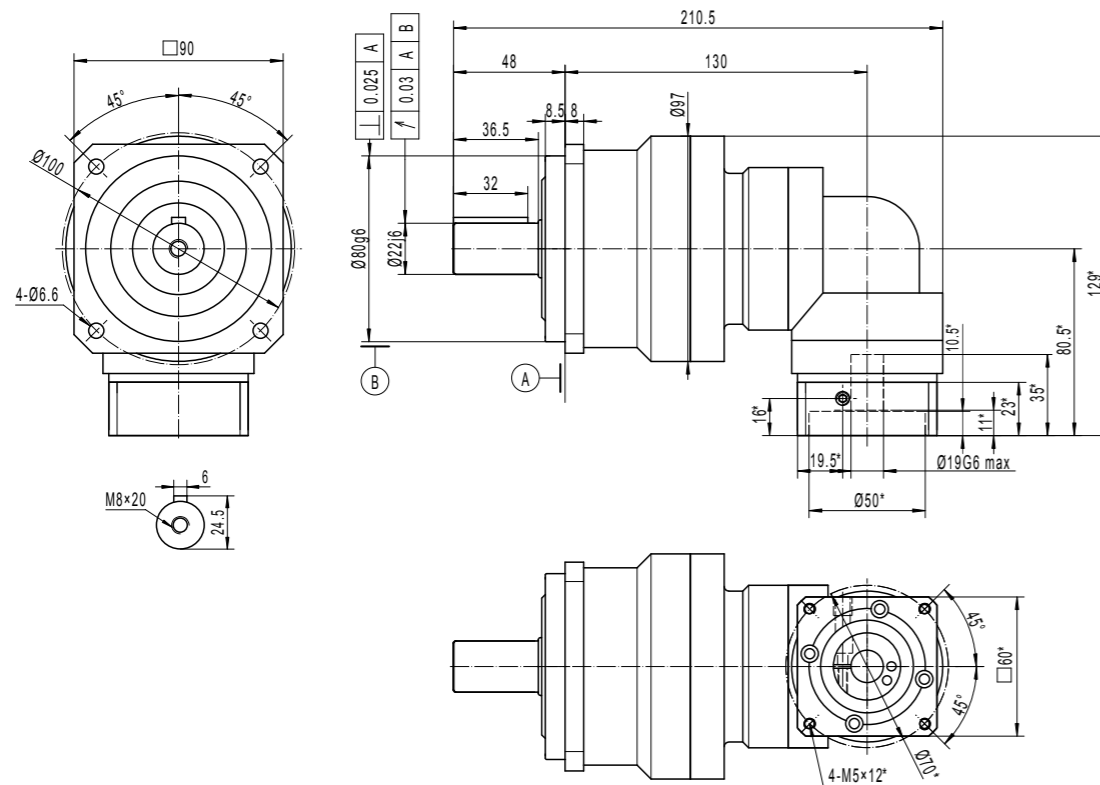
*VARIES WITH YOUR MOTOR DIMENSIONS

BOOSTER-SQ-RA-090- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$

BOOSTER-SQ-RA-090- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



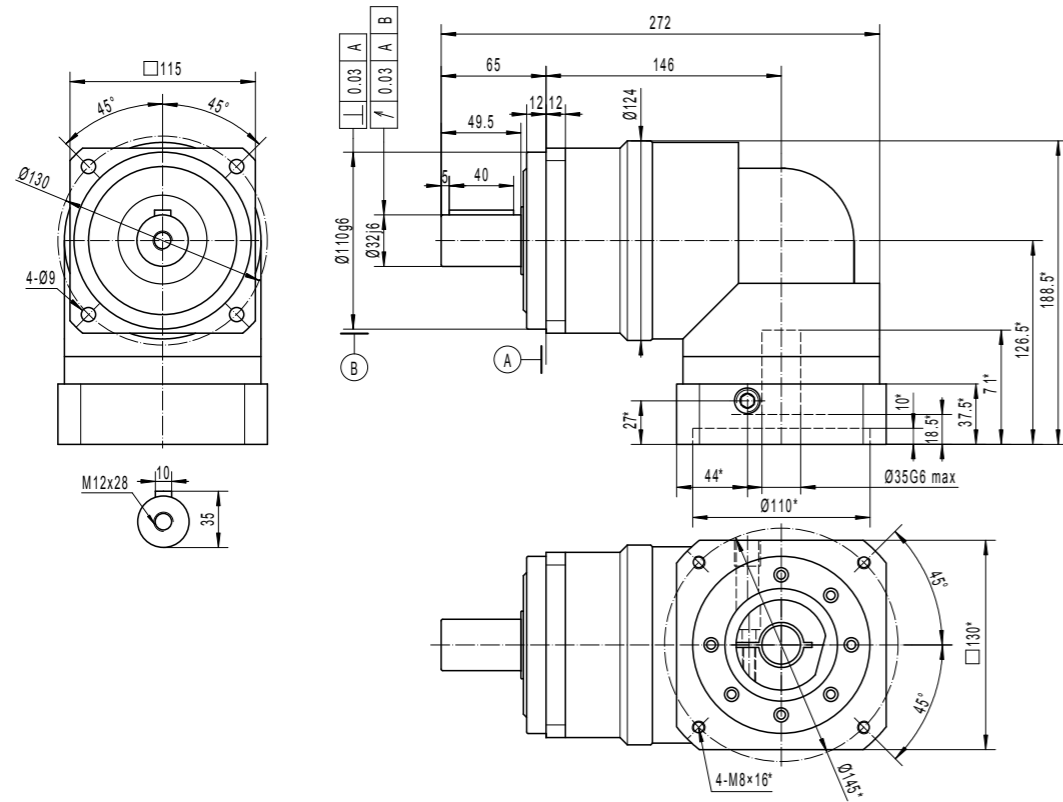
BOOSTER-SQ-RA-090- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



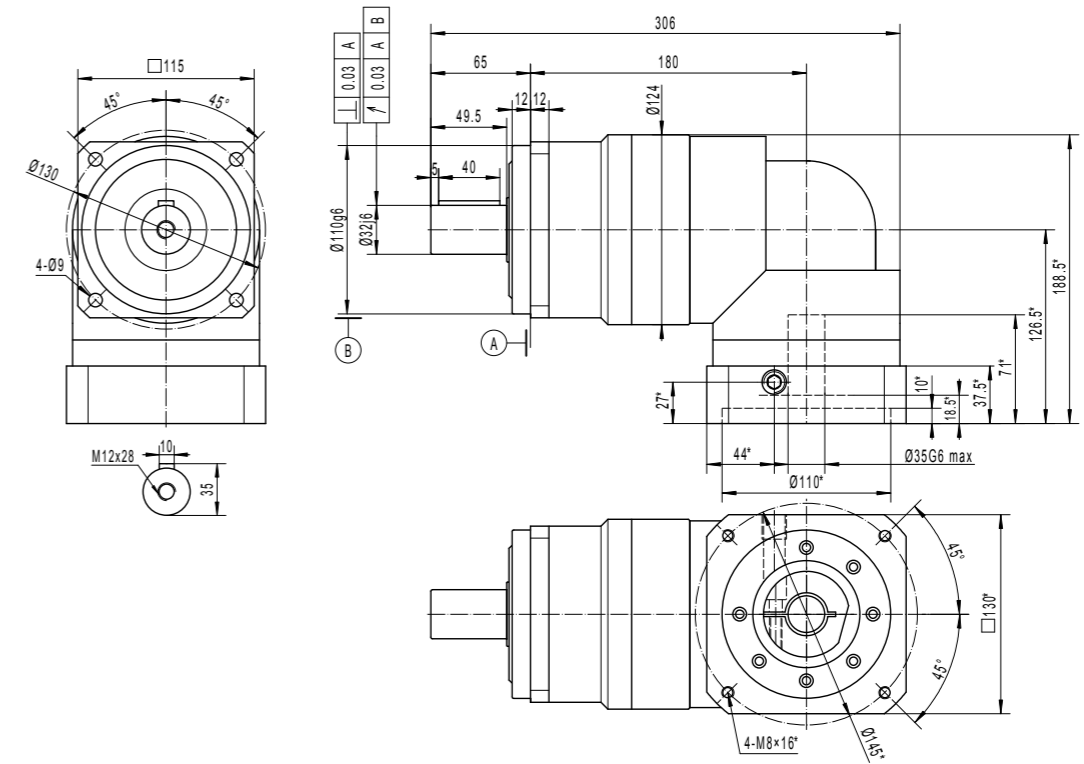
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

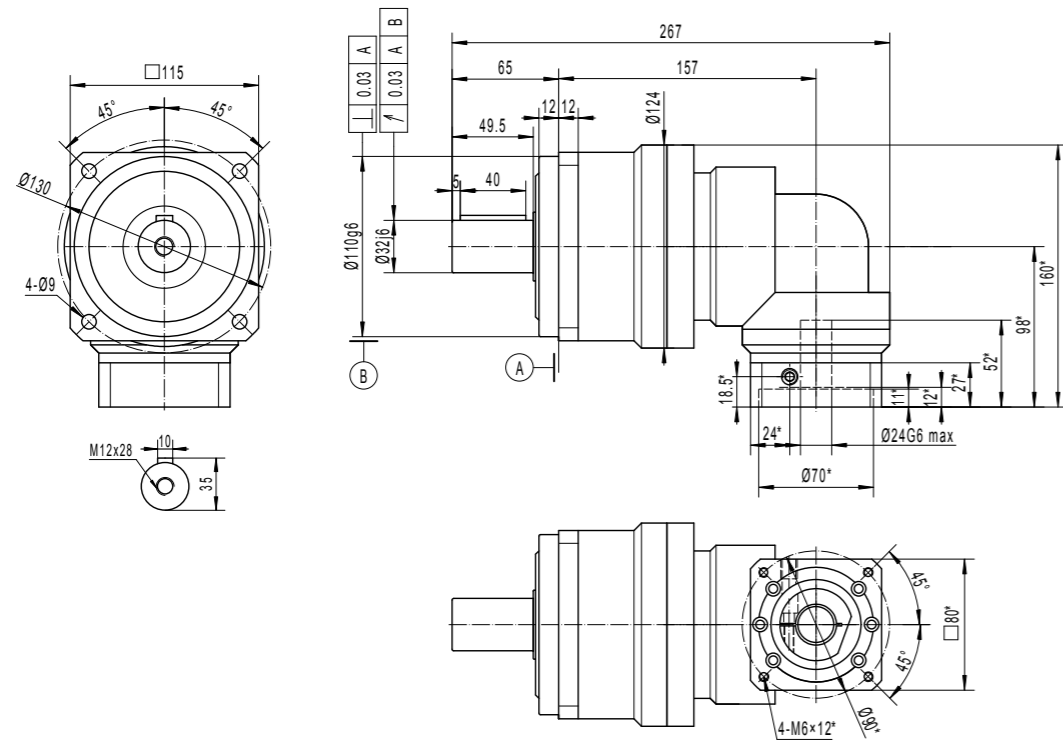
BOOSTER-SQ-RA-120- 1 STAGE - RATIOS 3 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



BOOSTER-SQ-RA-120- 2 STAGES-P - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



BOOSTER-SQ-RA-120- 2 STAGES-R - RATIOS 12 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



*VARIES WITH YOUR MOTOR DIMENSIONS

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ULTIMATE-CI



Acceleration capacity	+++++
Fast reversals	+++++
Radial load rating	++++
Axial load rating	+++++
Stiffness	+++++
Precision	+++++
Economy	+++

ULTIMATE-CI-ST _ Internal construction

Ultimate is a low-backlash, heavy-duty planetary gearbox.

It provides amazing acceleration capacity to severe applications including new-generation laser-cutting machines, delta robots or punching machines, where high precision is needed, together with torsional stiffness.

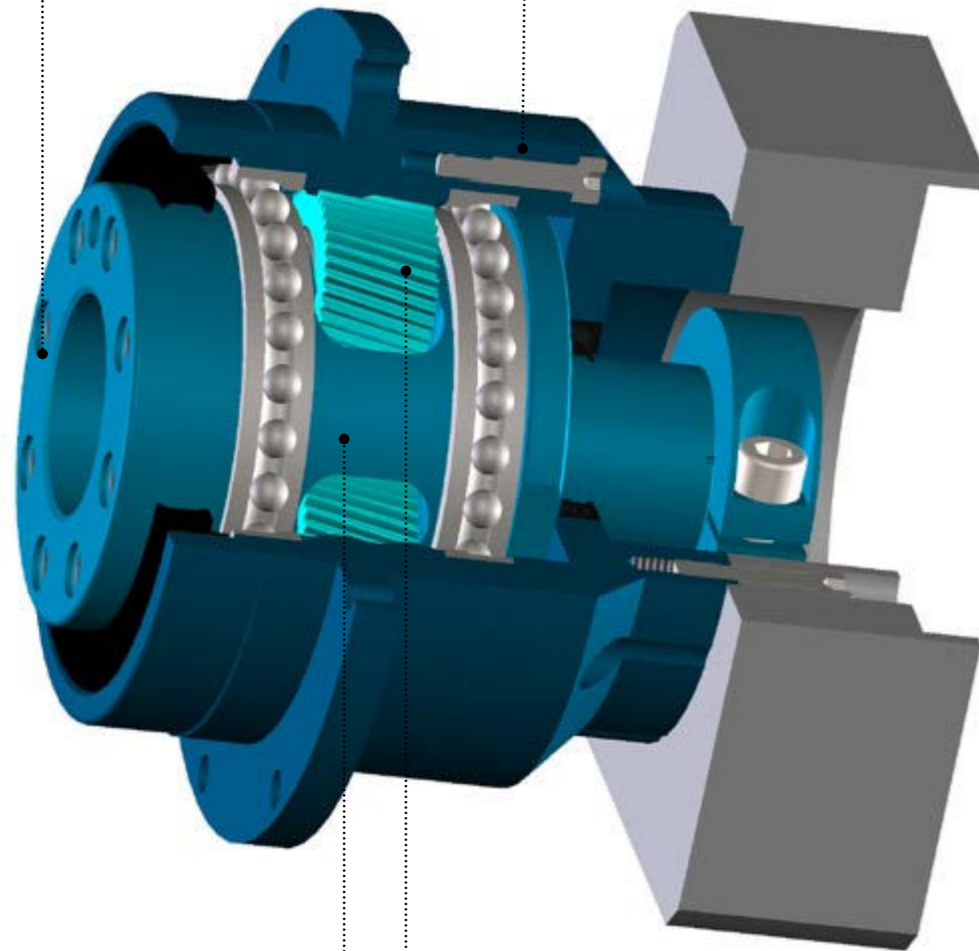


PerfectPitch™

The planet carrier is dual-supported by angular-contact ball bearings (small sizes) or tapered roller bearings (sizes above 140), to improve stiffness, guarantee a perfect alignment of gears during operation and provide greater acceptance to radial loads.

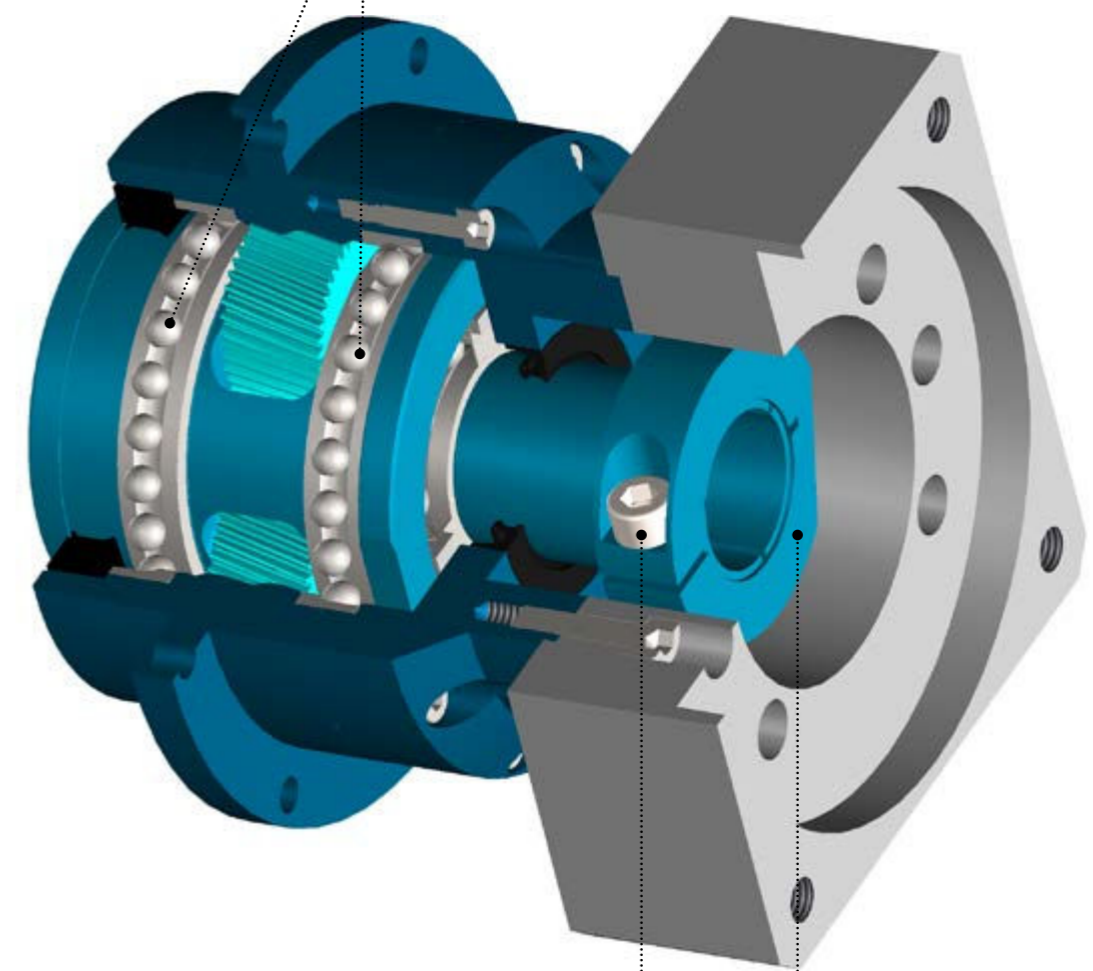
The output flange is ideal for fast reversals, strong acceleration requiring stiffness in heavy-duty applications.

Ring gear is monobloc with the external housing and the output flange, to provide higher stiffness and allow more dynamic reversals.



The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.



Easy and safe, 1-screw installation to your motor shaft.

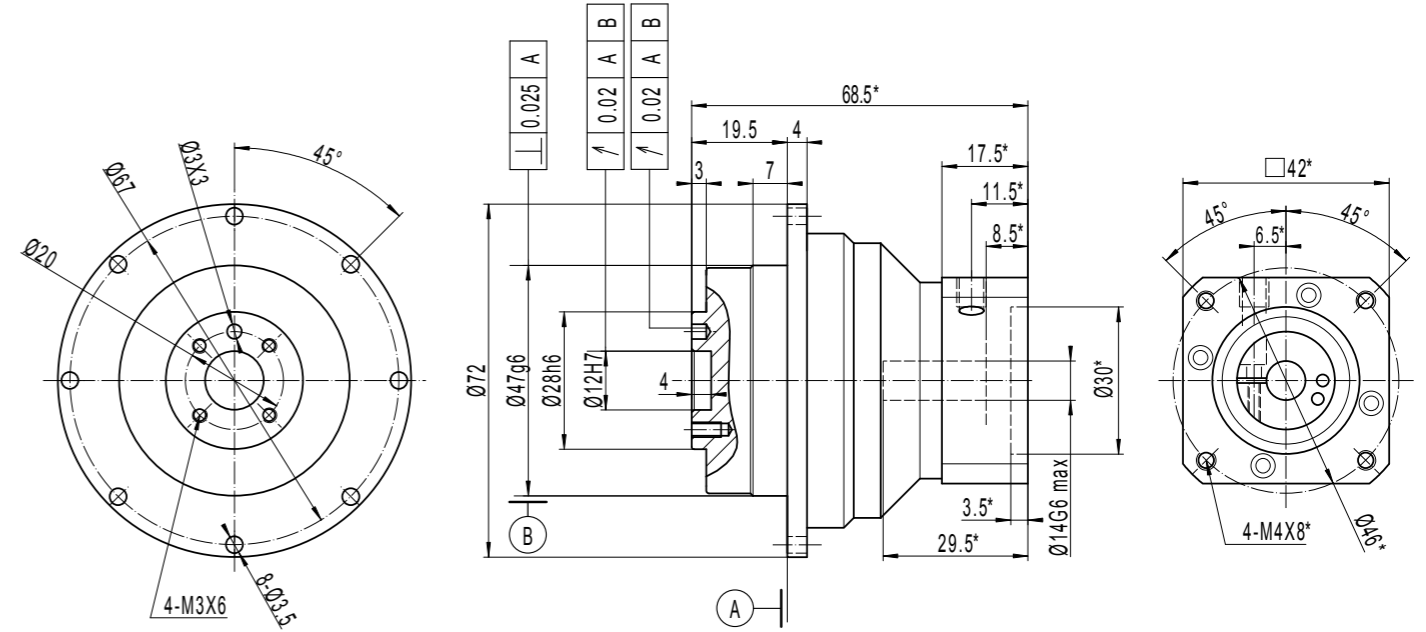
The balanced coupling limits vibration and reduces the loads on your motor shaft bearings.

	Ratio**	ULTIMATE-CI-ST													
		047-P*	064-P*	090-R*	090-P*	110-R*	110-P*	140-R*	140-P*	200-R*	200-P*	225-R*	255-P*	285-R*	285-P*
Nominal torque ¹ T _{2N} (Nm)	4	8	42	154	244	244	377	407	764	1,180	2,244	3,075	4,252	4,252	
	5	11	33	120	190	190	288	318	600	900	1,660	2,390	3,300	3,663	
	5.5	-	44	164	260	260	393	423	800	1,200	2,225	3,075	4,252	4,500	
	6	-	27	81	126	126	189	207	396	594	1,110	1,530	2,115	2,250	
	7	8	30	108	162	162	243	261	486	729	1,350	1,890	2,625	2,835	
	8	-	18	55	84	84	126	138	252	378	702	972	1,350	1,500	
	9	-	16	47	71	71	107	116	216	324	612	846	1,170	1,280	
	10	5	18	66	100	100	150	162	306	459	864	1,206	1,674	1,845	
	16	8	42	86	129	129	194	211	396	594	1,110	1,530	2,115	2,250	
	20	8	42	90	135	135	203	220	405	608	1,140	1,560	2,160	2,310	
	22	-	44	118	177	177	266	288	532	798	1,484	2,056	2,835	3,060	
	25	11	33	113	170	170	255	277	510	765	1,425	1,965	2,715	2,925	
	27.5	-	44	124	186	186	279	303	564	846	1,566	2,154	2,925	3,150	
	28	8	42	68	102	102	153	166	306	459	864	1,206	1,674	1,845	
	30	-	27	81	122	122	183	200	378	567	1,080	1,470	2,025	2,175	
	35	11	33	85	128	128	192	209	396	594	1,110	1,530	2,115	2,250	
	38.5	-	44	94	141	141	212	229	423	634	1,197	1,647	2,265	2,430	
	40	8	39	40	113	113	170	187	342	513	966	1,332	1,818	1,980	
	42	-	27	81	118	118	177	194	366	549	1,026	1,404	1,926	2,070	
	49	8	30	108	108	203	203	305	458	687	1,300	1,800	2,500	2,700	
	50	11	33	49	120	141	190	213	396	594	1,110	1,530	2,115	2,250	
55	-	44	54	164	156	260	300	590	794	1,660	2,290	3,150	3,450		
60	-	27	59	81	170	170	327	440	866	1,225	2,096	2,835	3,060		
70	8	30	69	108	198	203	382	465	1,010	1,300	2,445	2,560	3,000	3,900	
80	-	18	55	55	164	164	408	408	1,154	1,185	2,450	2,450	3,800	3,800	
90	-	16	47	47	137	137	353	353	1,035	1,035	2,150	2,150	3,330	3,330	
100	5	18	66	66	147	147	308	308	922	922	1,925	1,925	2,980	2,980	
Peak torque ² T _{max} (Nm)	4	14	77	190	322	322	488	810	1,524	1,786	4,240	5,950	8,474	8,474	
	5	14	55	170	275	275	407	670	1,260	1,480	3,600	5,000	7,300	7,300	
	5.5	-	73	235	443	443	665	1,100	2,095	2,900	5,630	7,700	11,000	11,000	
	6	-	38	114	212	212	318	510	966	1,332	2,835	3,900	5,625	5,625	
	7	14	54	161	327	327	488	810	1,524	1,786	4,240	5,950	8,474	8,474	
	8	-	37	111	212	212	318	510	966	1,332	2,835	3,900	5,625	5,625	
	9	-	36	104	203	203	305	500	930	1,470	3,950	5,400	7,500	7,500	
	10	13	50	157	314	314	471	770	1,470	2,470	5,950	8,100	11,250	11,250	
	16	14	77	122	244	244	366	609	1,100	1,786	4,240	5,950	8,474	8,474	
	20	14	77	115	230	230	345	575	1,100	1,786	4,240	5,950	8,474	8,474	
	22	-	73	168	336	336	504	840	1,500	2,095	5,340	7,300	10,300	10,300	
	25	14	55	144	288	288	432	720	1,300	2,238	5,340	7,300	10,300	10,300	
	27.5	-	73	158	316	316	474	790	1,400	2,462	5,950	8,100	11,250	11,250	
	28	14	77	113	226	226	339	565	1,000	1,651	4,170	5,700	8,000	8,000	
	30	-	38	114	228	228	342	567	1,000	1,786	4,240	5,950	8,474	8,474	
	35	14	55	141	282	282	423	705	1,300	2,064	5,340	7,300	10,300	10,300	
	38.5	-	73	155	310	310	465	775	1,400	2,270	5,950	8,100	11,250	11,250	
	40	14	77	109	218	218	327	546	1,000	1,850	4,170	5,700	8,000	8,000	
	42	-	38	114	228	228	342	567	1,000	2,250	5,950	8,100	11,250	11,250	
	49	14	54	161	322	322	483	804	1,500	2,170	5,340	7,300	10,300	10,300	
	50	14	55	136	272	272	408	680	1,300	2,380	5,950	8,100	11,250	11,250	
55	-	73	150	300	300	450	750	1,300	2,035	5,340	7,300	10,300	10,300		
60	-	38	114	228	228	342	567	1,000	2,250	5,950	8,100	11,250	11,250		
70	14	54	161	322	322	483	804	1,500	2,170	5,340	7,300	10,300	10,300		
80	-	37	111	222	222	333	555	1,000	2,050	5,340	7,300	10,300	10,300		
90	-	36	104	208	208	312	520	1,000	1,970	5,340	7,300	10,300	10,300		
100	13	50	157	314	314	471	770	1,470	2,470	5,950	8,100	11,250	11,250		
Emergency stop torque (Nm) ³	1,5 x T _{max}														
Max angular backlash (minutes)	1 stage	Standard : ≤5 ; Option : ≤3													
2 stages	Standard : ≤3 ; Option : ≤1														
Nominal input speed (rpm) ⁴	4,000	4,000	3,100	2,800	2,600	2,000	1,700	1,500							
Max input speed (rpm) ⁵	8,000	7,500	6,000	5,500	5,000	4,500	3,000	3,000							
Max radial load (N) ⁶	320	465	1,440	3,960	11,680	22,500	36,500	42,750							
Max axial load (N) ⁶	420	565	2,050	5,700	16,900	17,400	32,600	37,500							
Tilting moment (Nm) ⁶	11	23	95	335	1,130	2,280	4,600	5,950							
Efficiency (%) ⁷	1 stage	≥97													
2 stages	≥94														
Torsional stiffness (Nm/min)	6	13	32	82	150	600	1000	1400							
Life (h) ⁸	20,000														
Min / max ambient temperature ⁹	-15 / +45														
Max temperature of the body (°C)	90														
Protection class	IP 65														
Noise level (dB) ¹⁰	≤58	≤60	≤62	≤63	≤66	≤71	≤75	≤77							
Lubrication	Lifetime lubrication (grease)														
Coating color	Capri blue (RAL 5019)														
Input flange	Anodized aluminum														

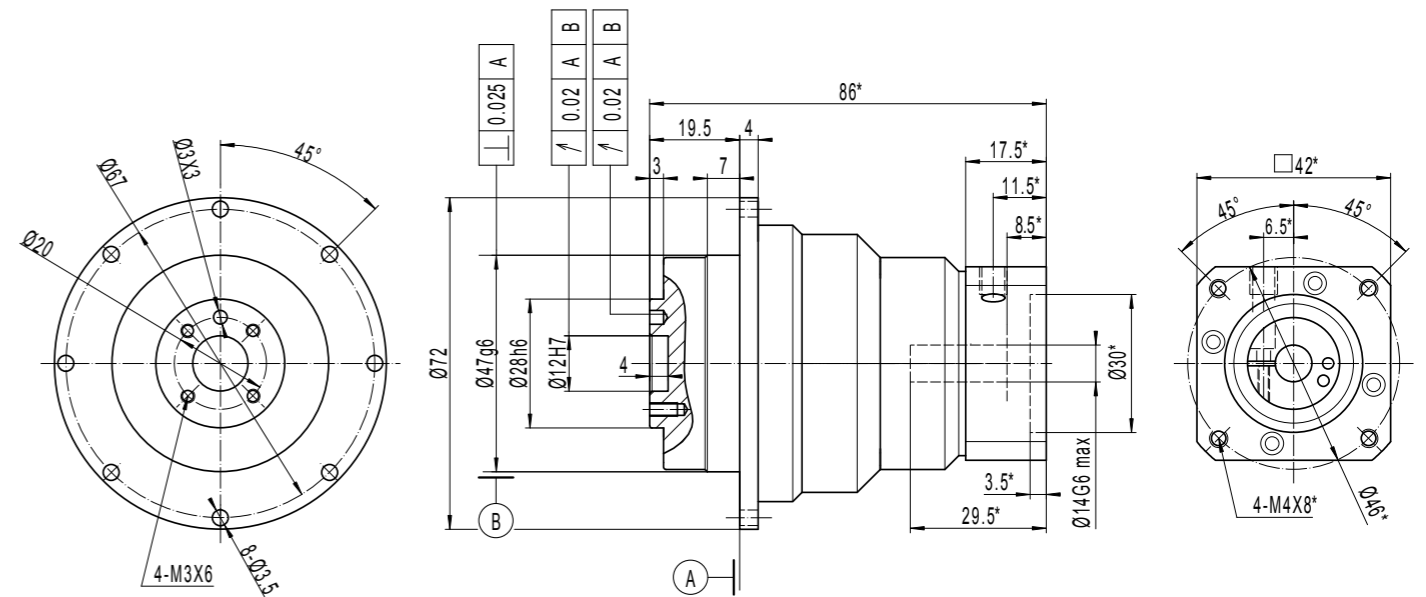
* For 2 stages gearboxes, we can propose a compact input stage (R) or a powerful input stage (P) as paying option
 ** Others ratios are available upon request.

1 : Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25).
 Using max 10% of the max tilting moment. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2 : Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4).
 This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application.
 Using a torque higher than the rated torque may affect the gearbox precision.
 3 : 1 000 occurrences maximum.
 4 : Speed at which the nominal torque is applicable 20,000 hours.
 5 : Peak speed only.
 6 : Applied on the front face of the output shaft at 100 rpm
 7 : Measured at full load and at 25°C
 8 : Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9 : Room temperature. Refer to temperature factors in dedicated section.
 10 : Ratio 10 at nominal speed, measured at 1m.

ULTIMATE-CI-ST-047- 1 STAGE - RATIOS 4 TO 10
 FOR MOTOR SHAFT ≤ Ø14

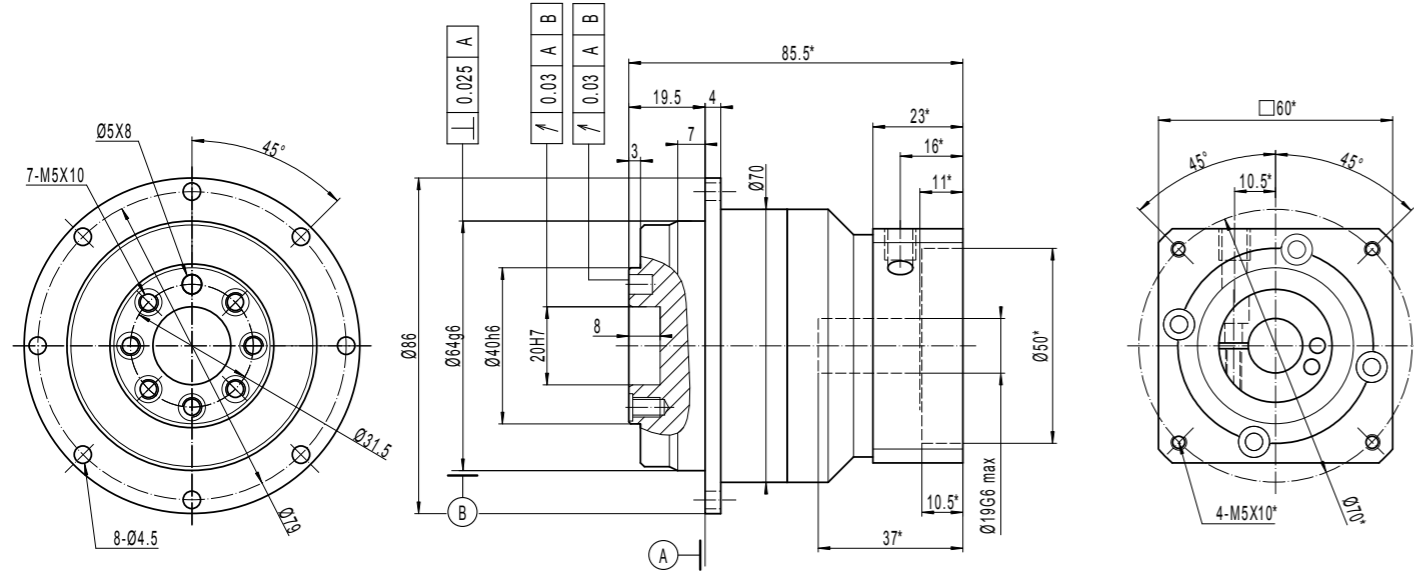


ULTIMATE-CI-ST-047- 2 STAGES-P - RATIOS 16 TO 100
 FOR MOTOR SHAFT ≤ Ø14

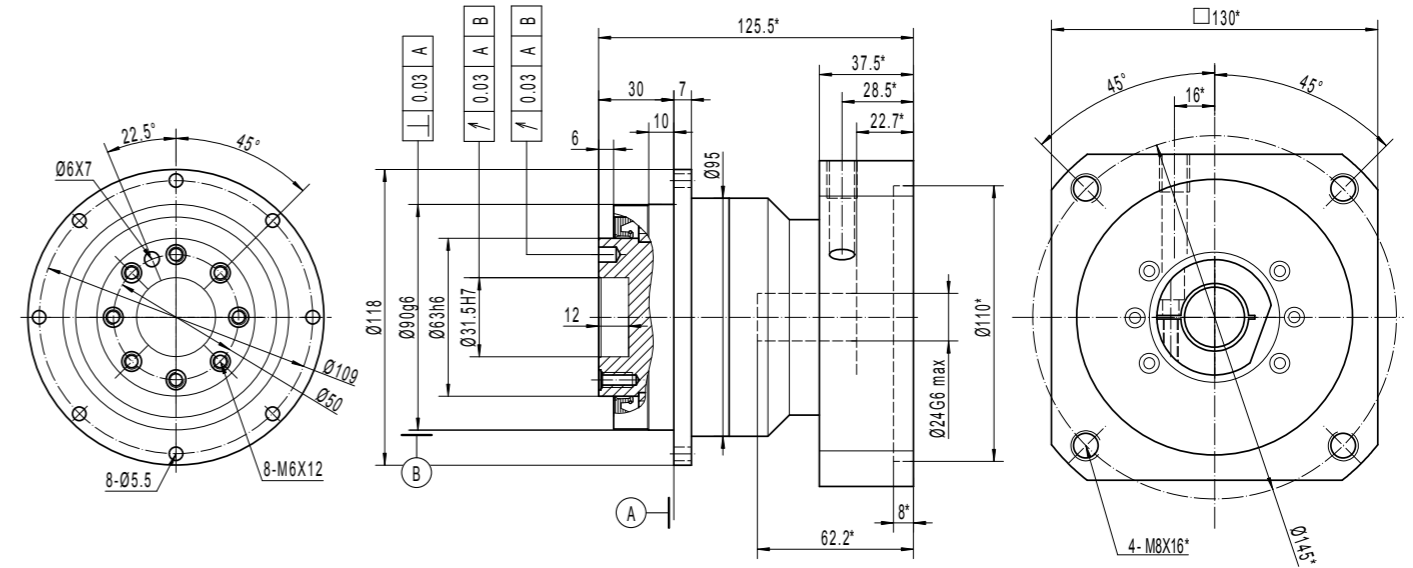


*VARIES WITH YOUR MOTOR DIMENSIONS

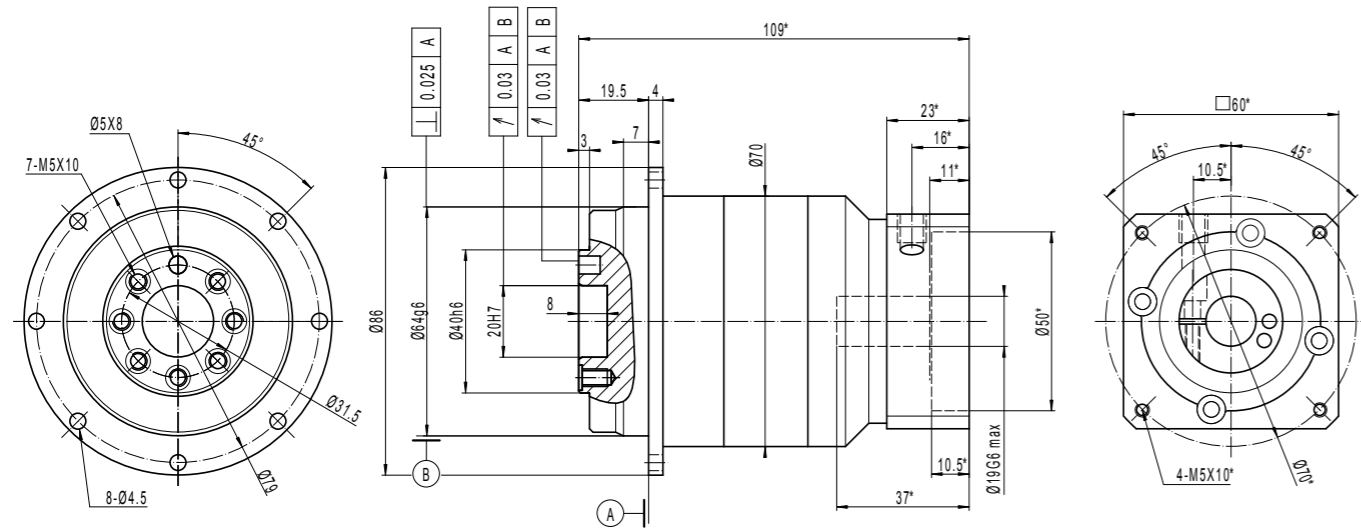
ULTIMATE-CI-ST-064- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



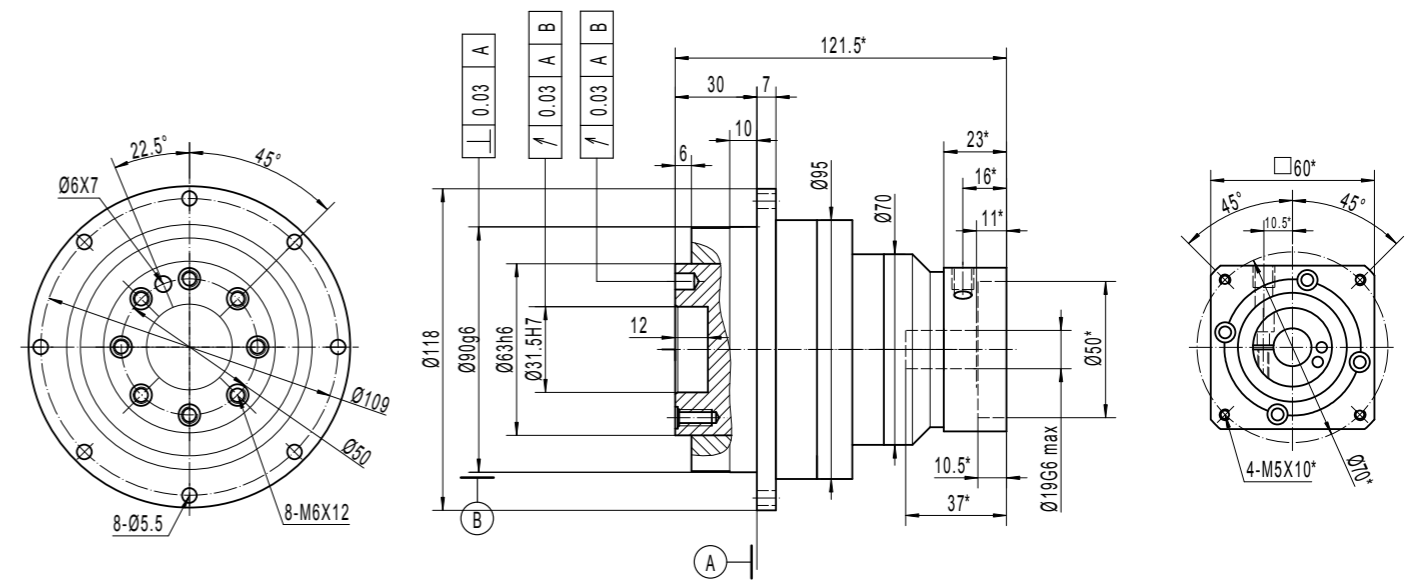
ULTIMATE-CI-ST-090- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 24$



ULTIMATE-CI-ST-064- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



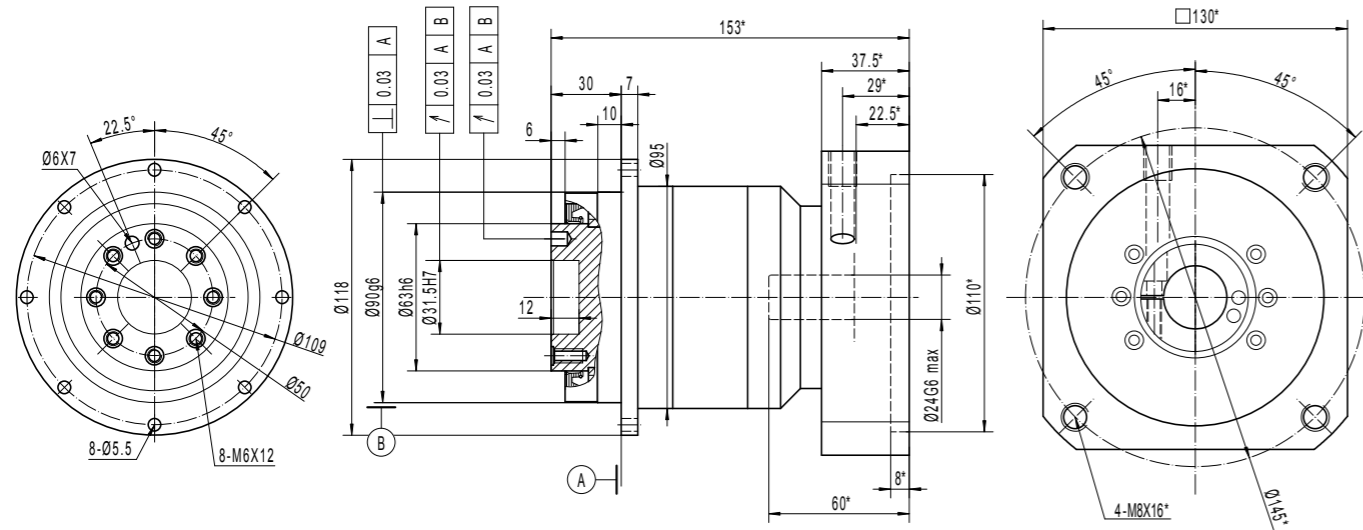
ULTIMATE-CI-ST-090- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



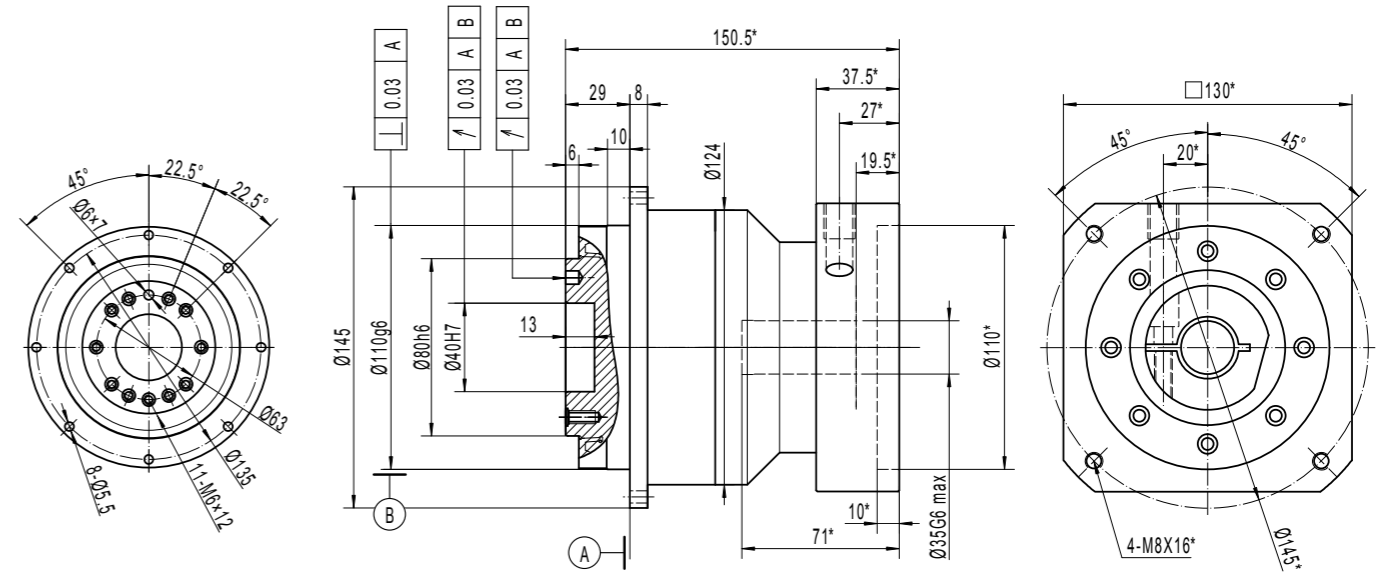
*VARIES WITH YOUR MOTOR DIMENSIONS

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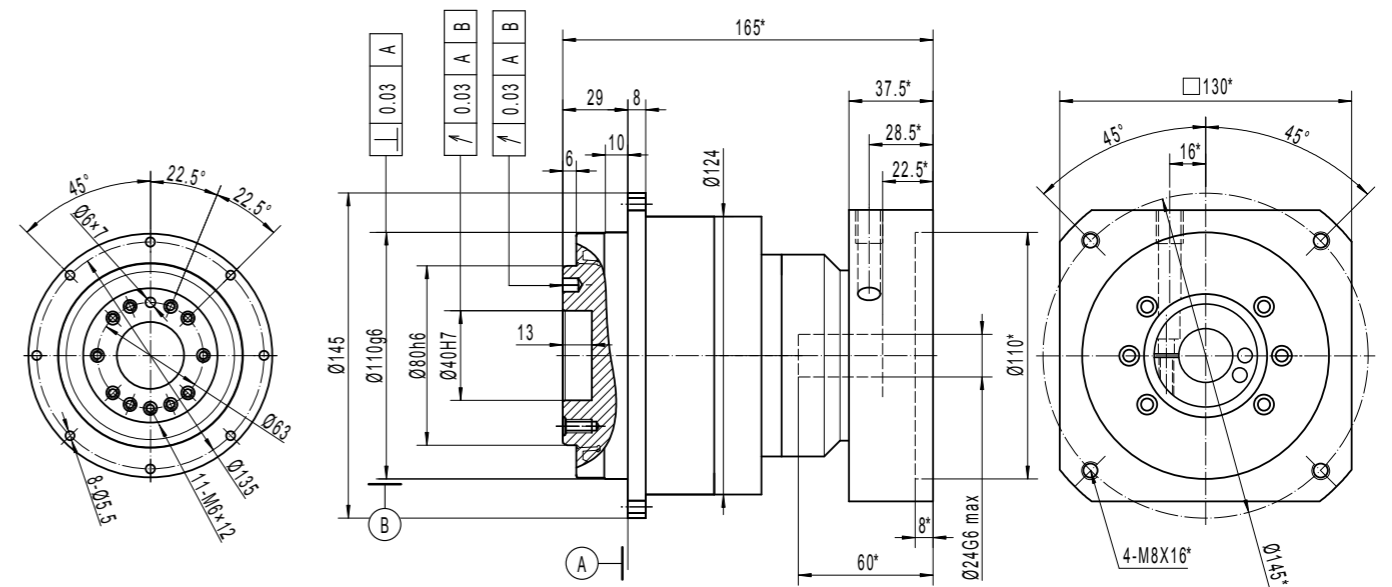
ULTIMATE-CI-ST-090- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



ULTIMATE-CI-ST-110- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



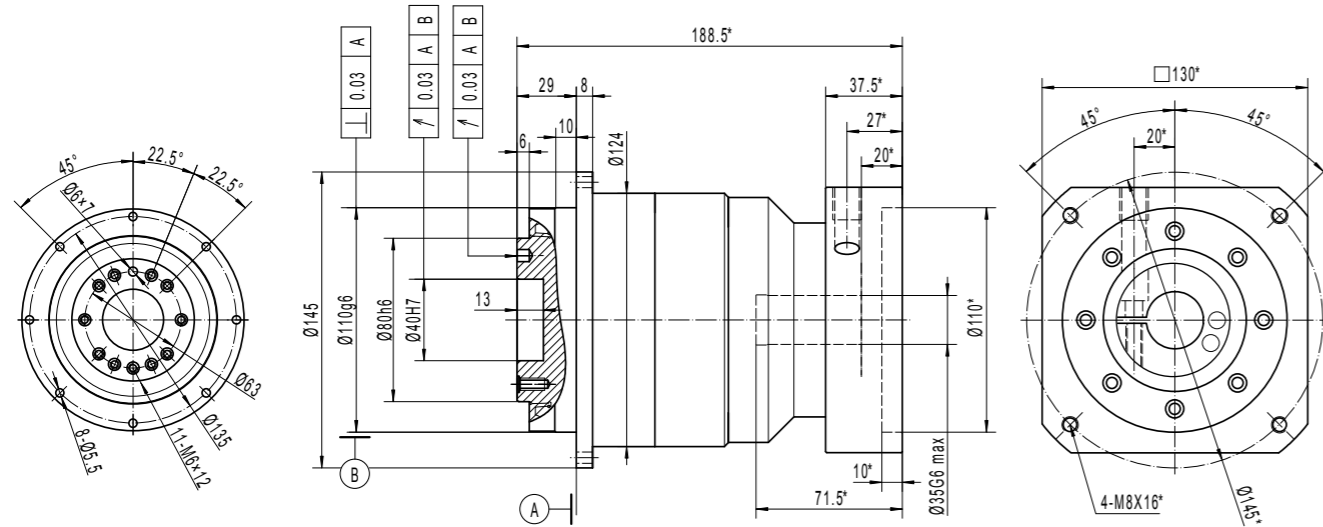
ULTIMATE-CI-ST-110- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



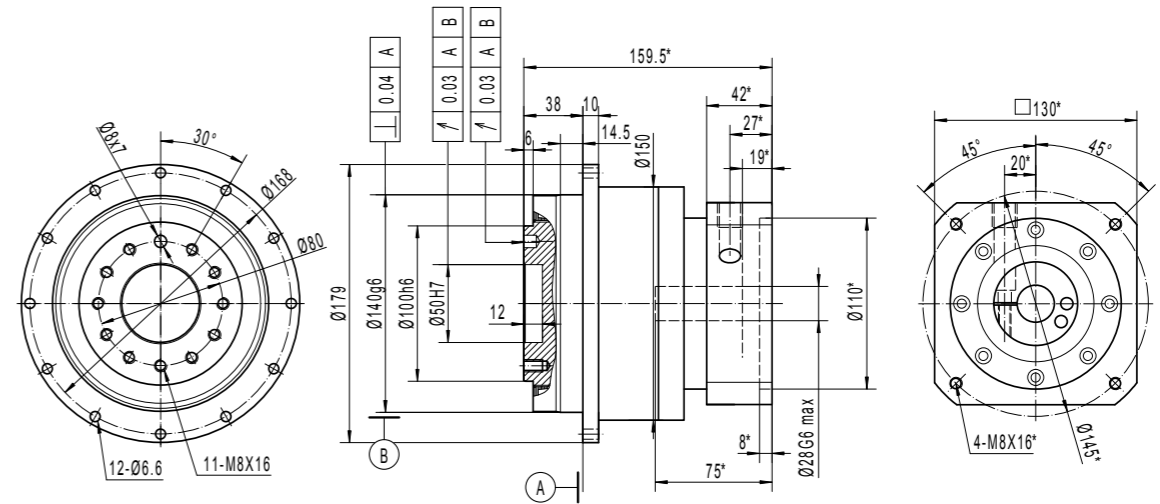
*VARIES WITH YOUR MOTOR DIMENSIONS

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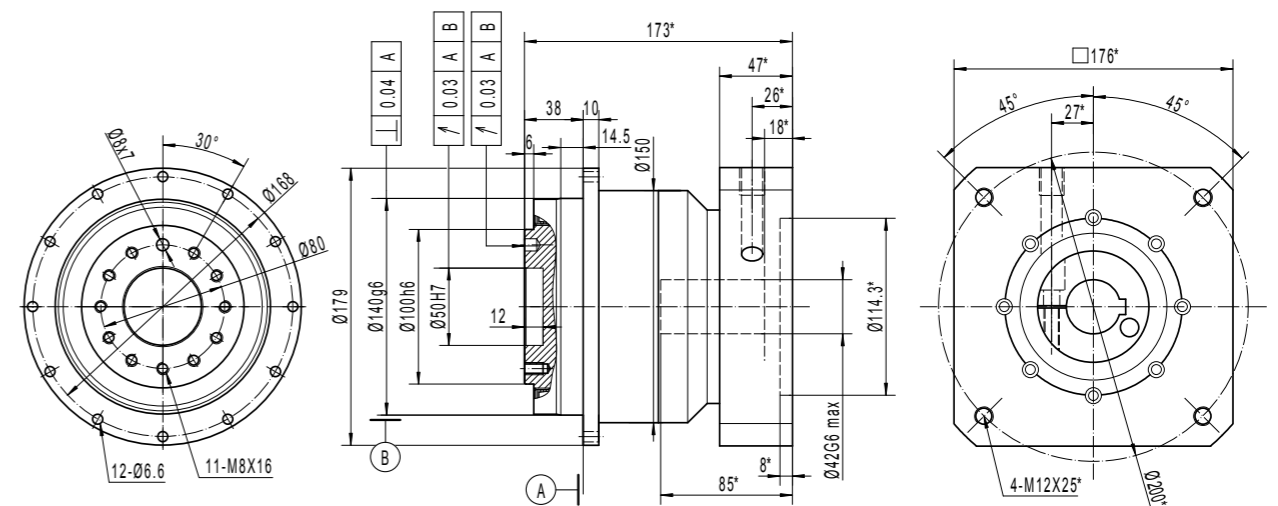
ULTIMATE-CI-ST-110- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



ULTIMATE-CI-ST-140- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 28$



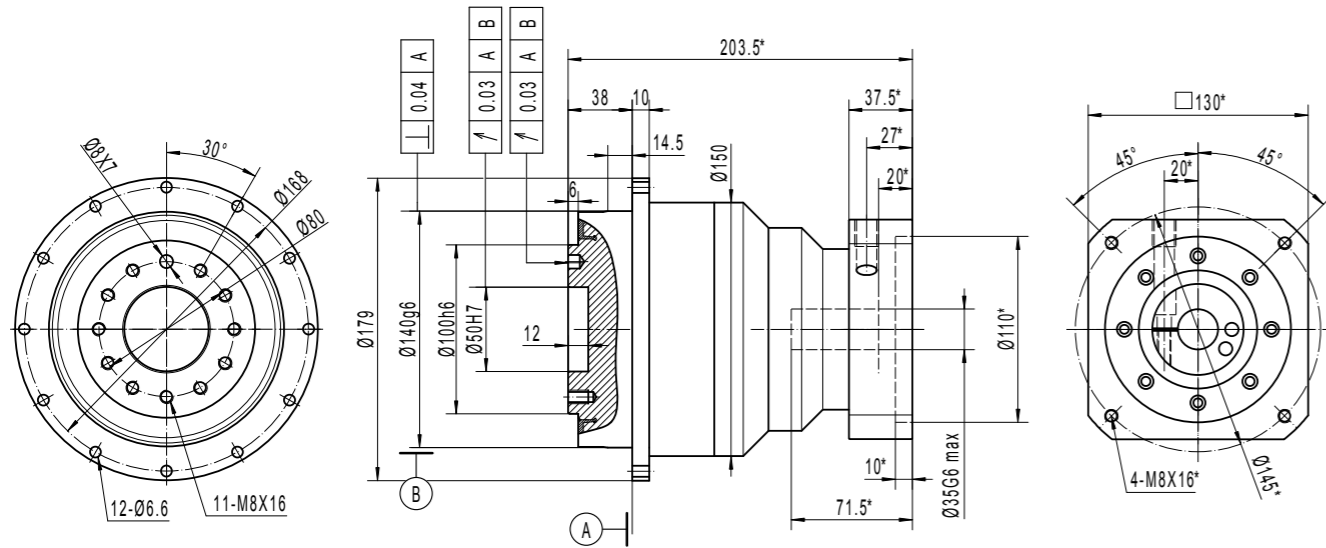
ULTIMATE-CI-ST-140- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



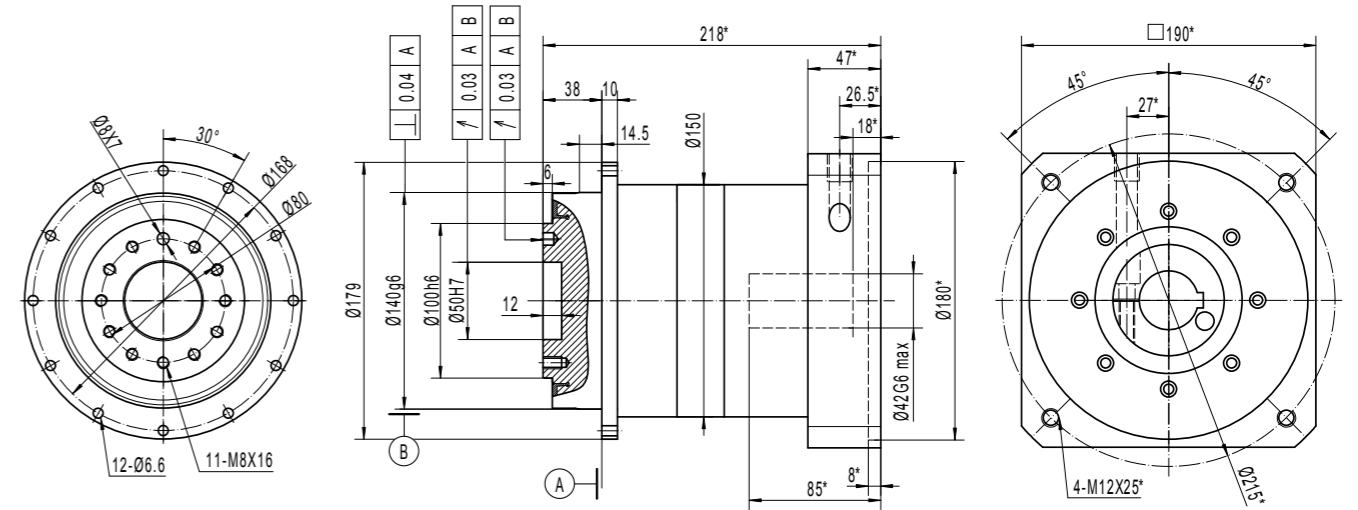
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

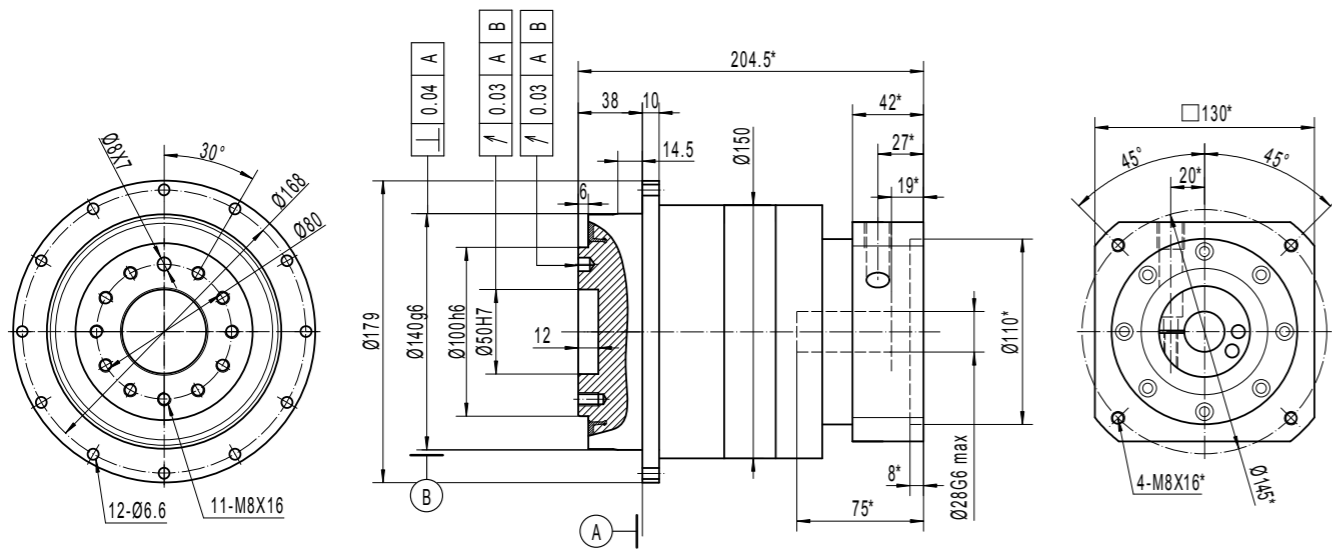
ULTIMATE-CI-ST-140- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



ULTIMATE-CI-ST-140- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



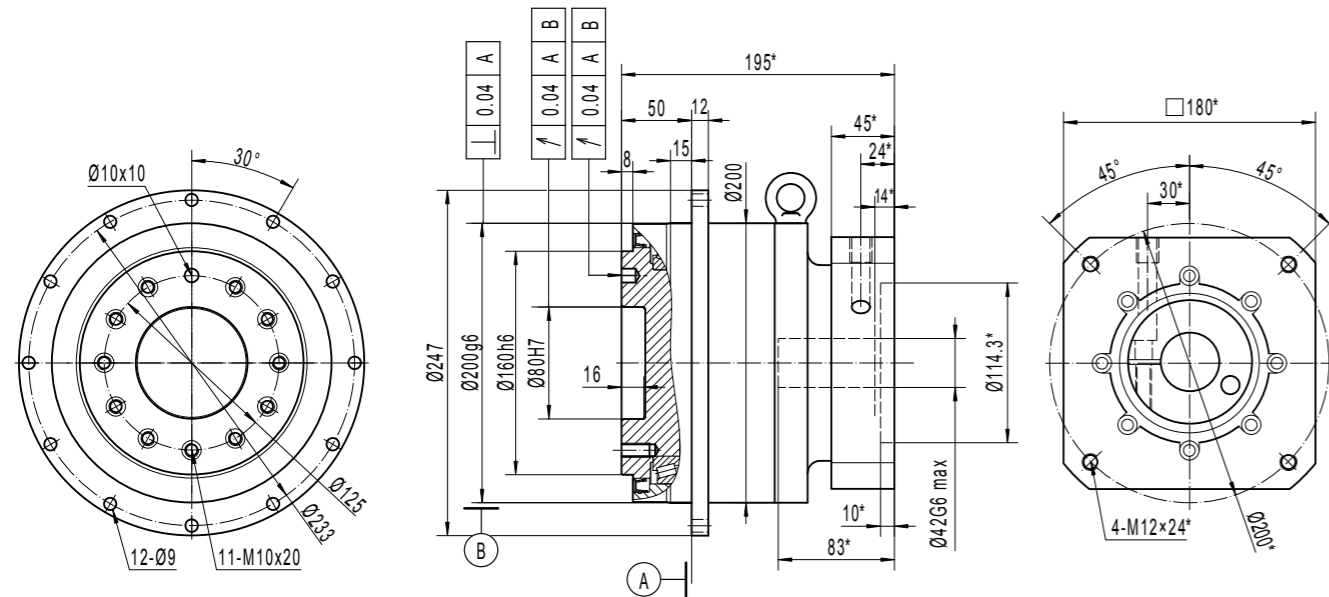
ULTIMATE-CI-ST-140- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 28$



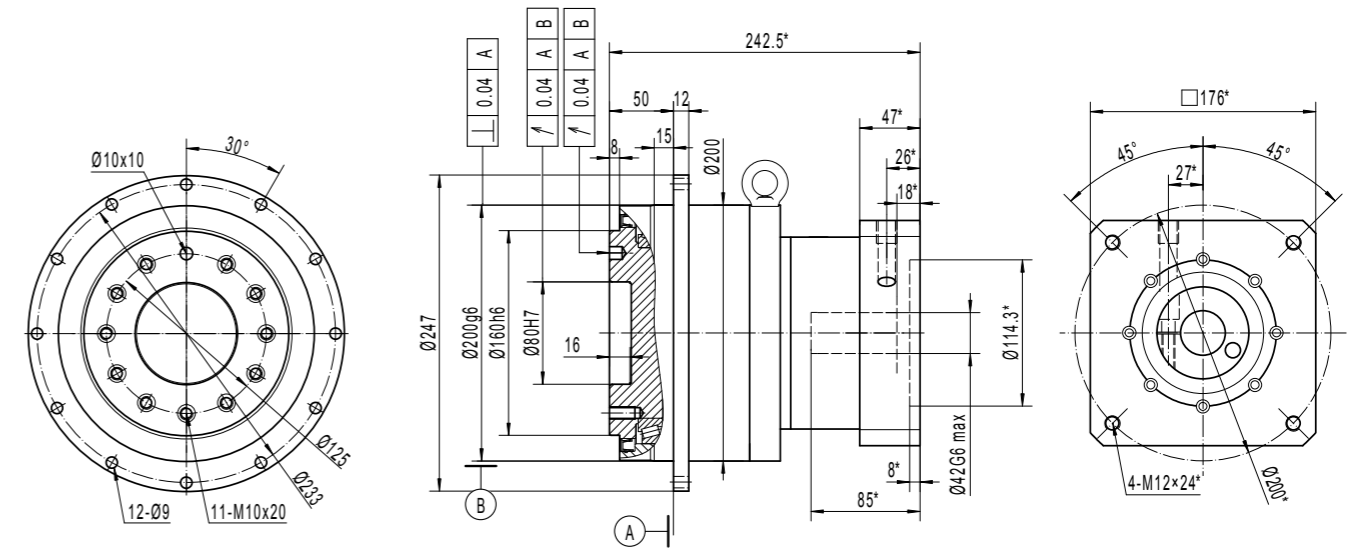
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

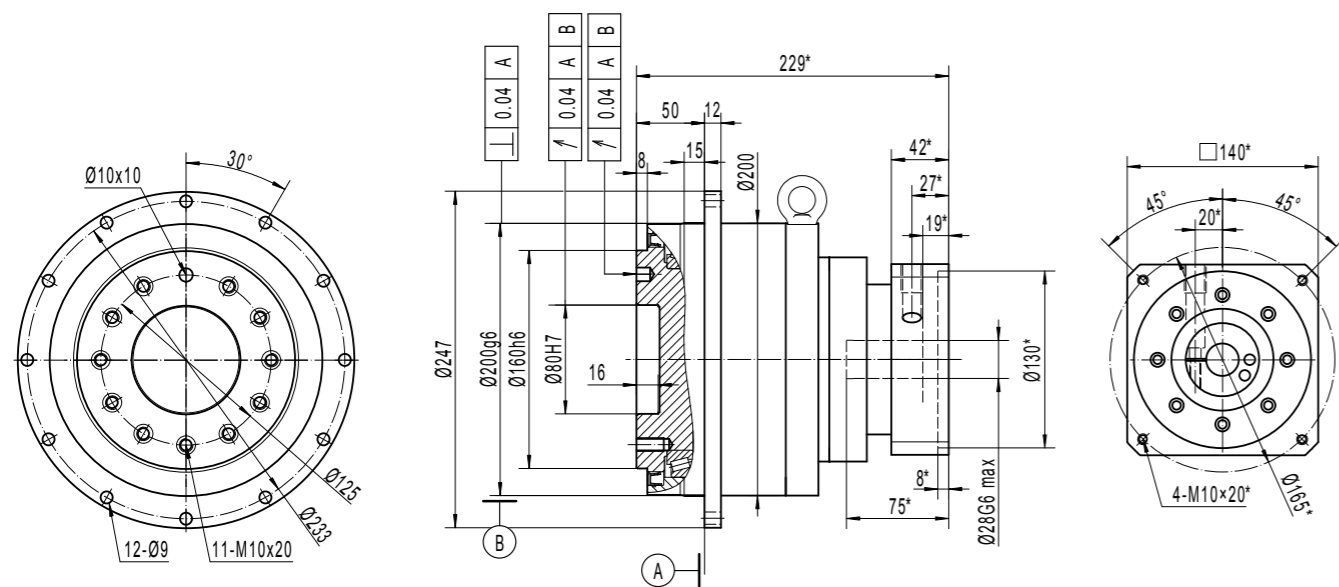
ULTIMATE-CI-ST-200- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



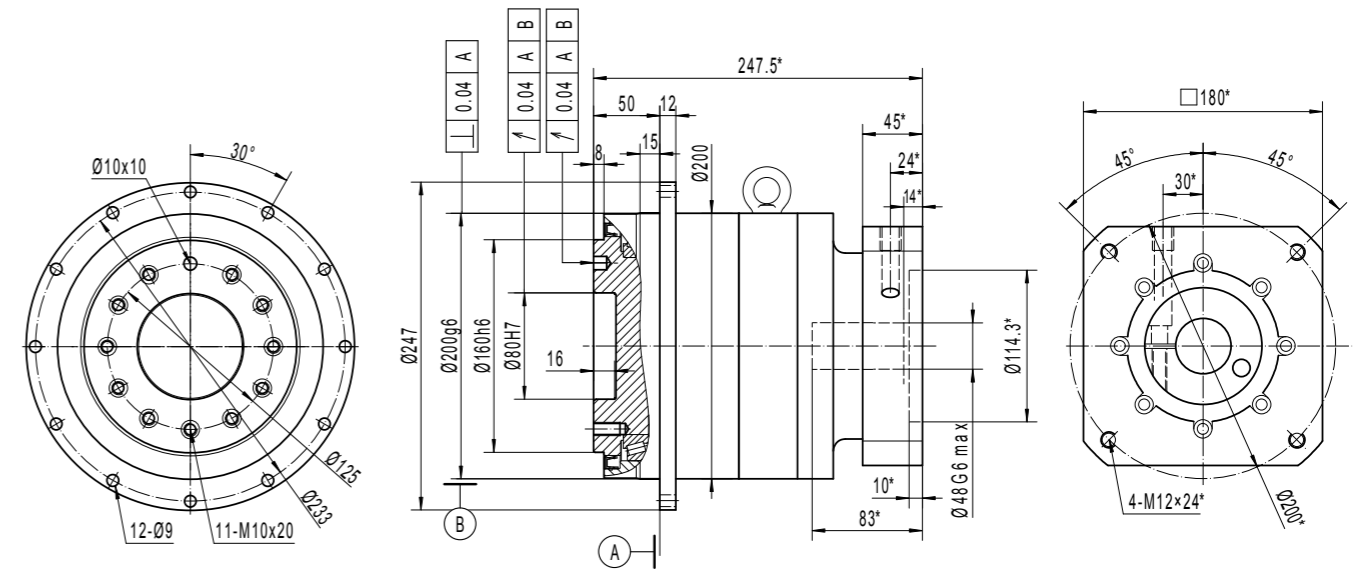
ULTIMATE-CI-ST-200- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



ULTIMATE-CI-ST-200- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 28$



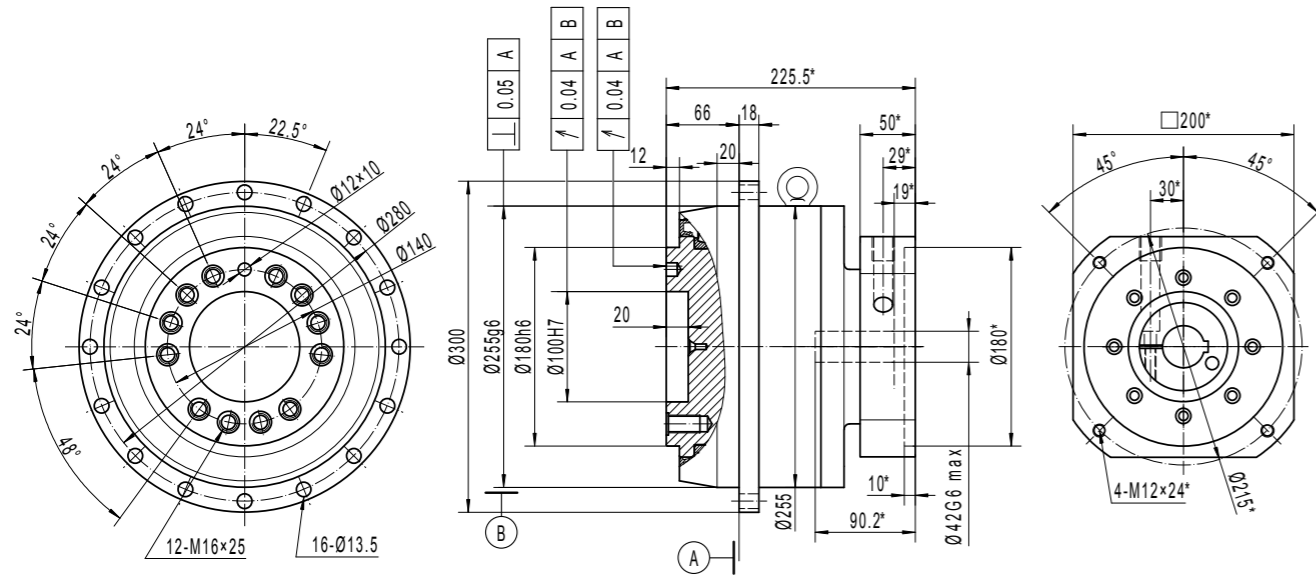
ULTIMATE-CI-ST-200- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 48$



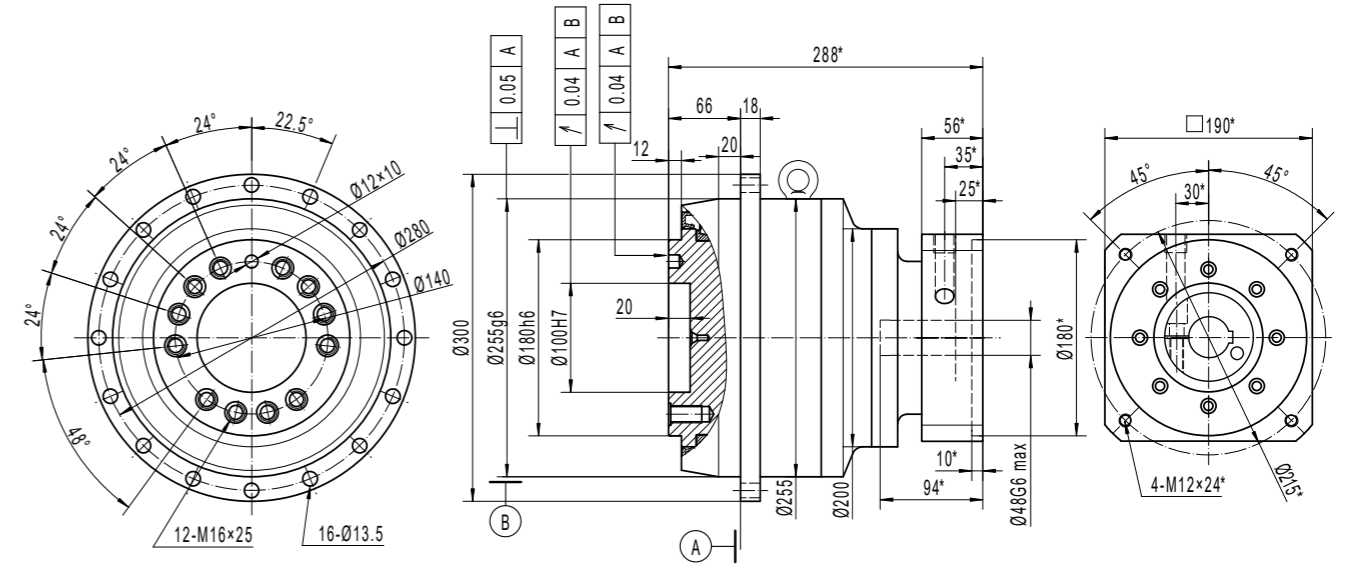
*VARIES WITH YOUR MOTOR DIMENSIONS

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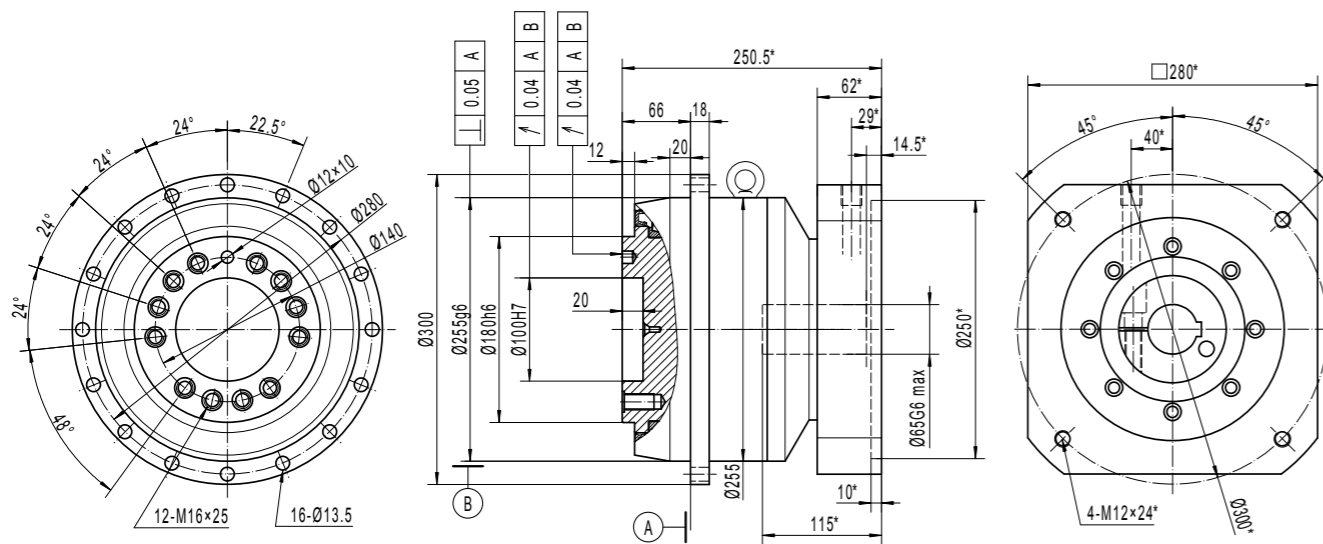
ULTIMATE-CI-ST-255- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



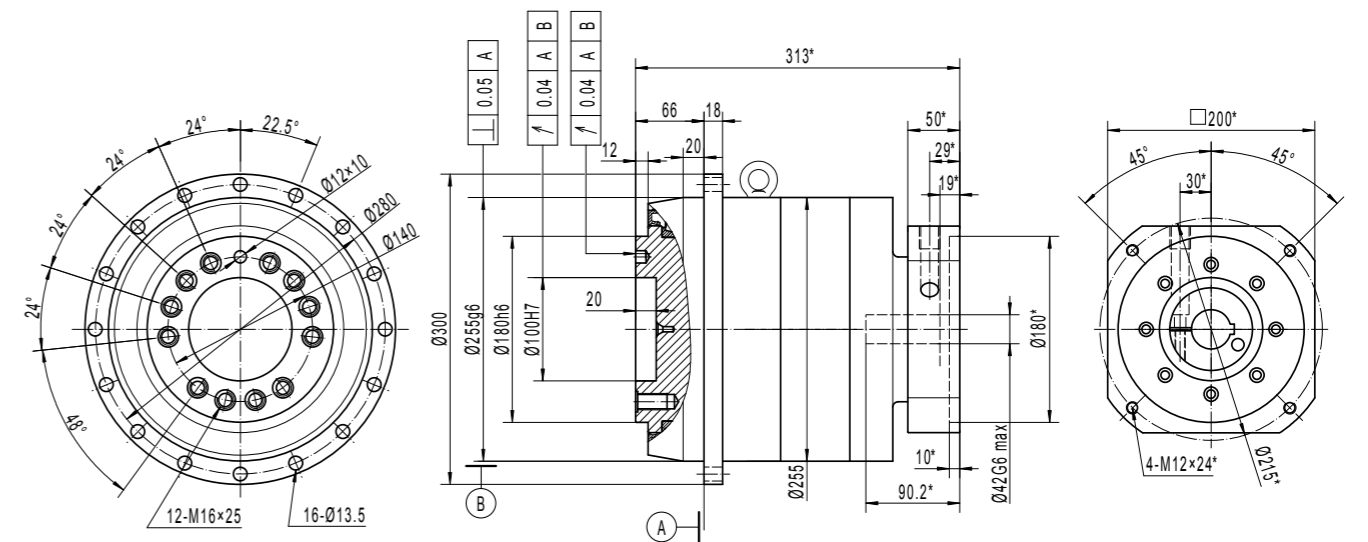
ULTIMATE-CI-ST-255- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 48$



ULTIMATE-CI-ST-255- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 65$



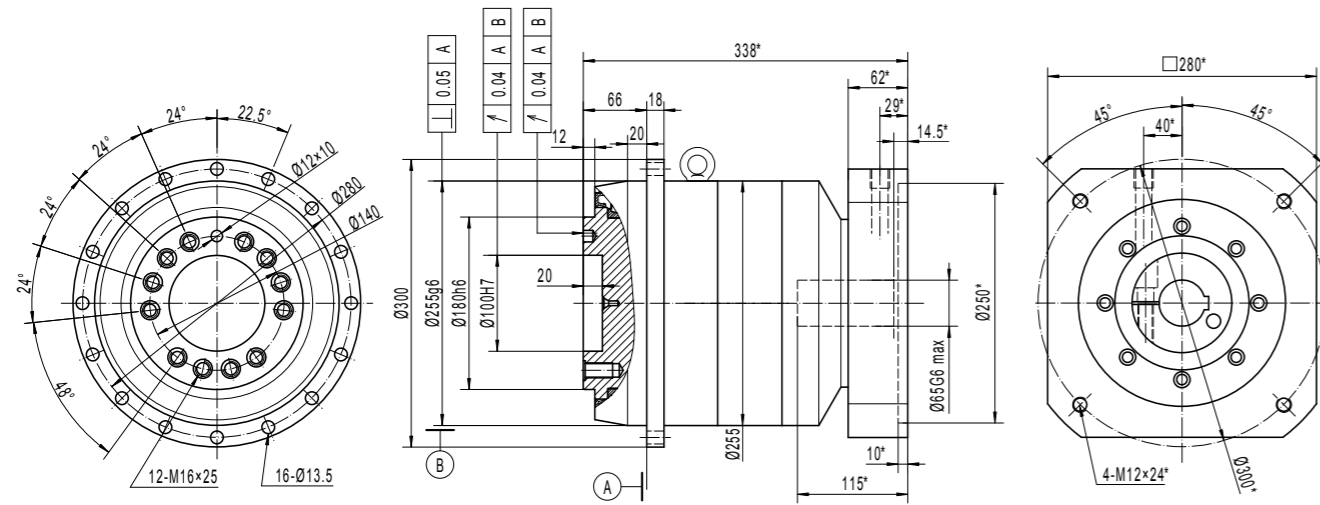
ULTIMATE-CI-ST-255- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



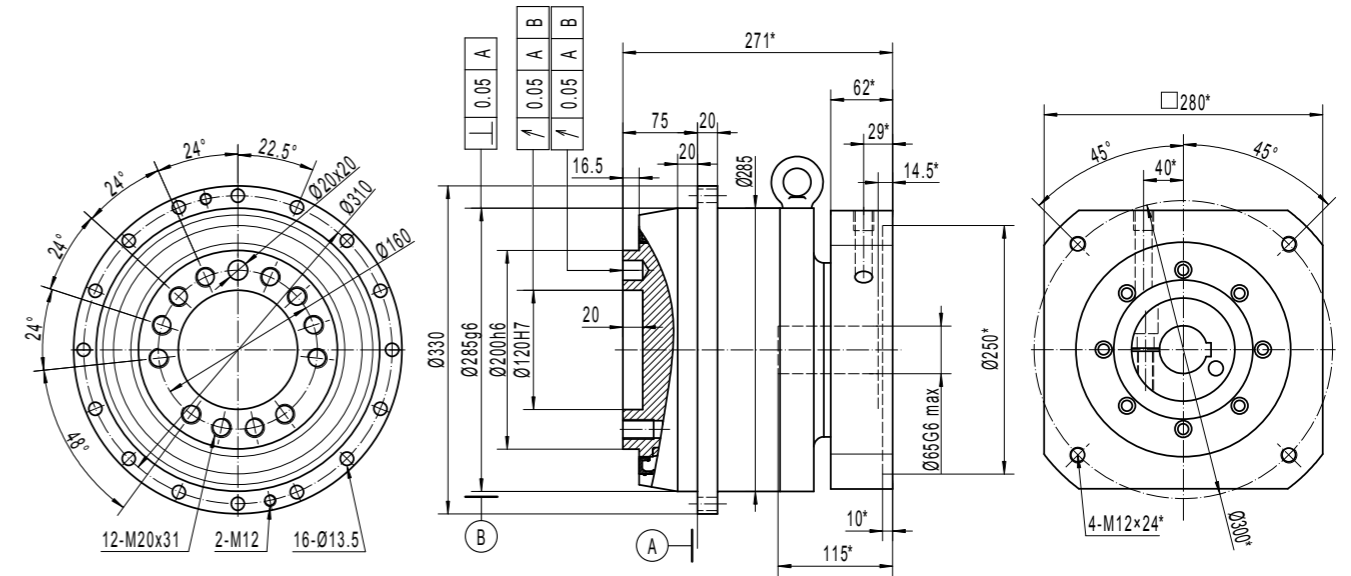
*VARIES WITH YOUR MOTOR DIMENSIONS

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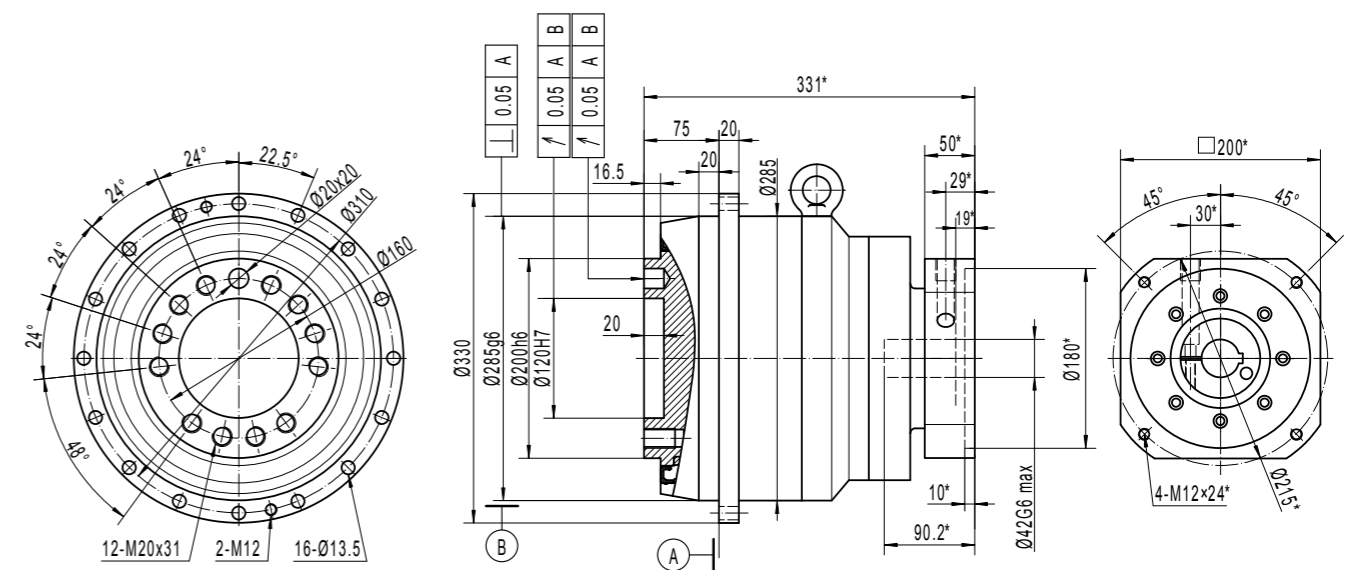
ULTIMATE-CI-ST-255- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø65



ULTIMATE-CI-ST-285- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø65



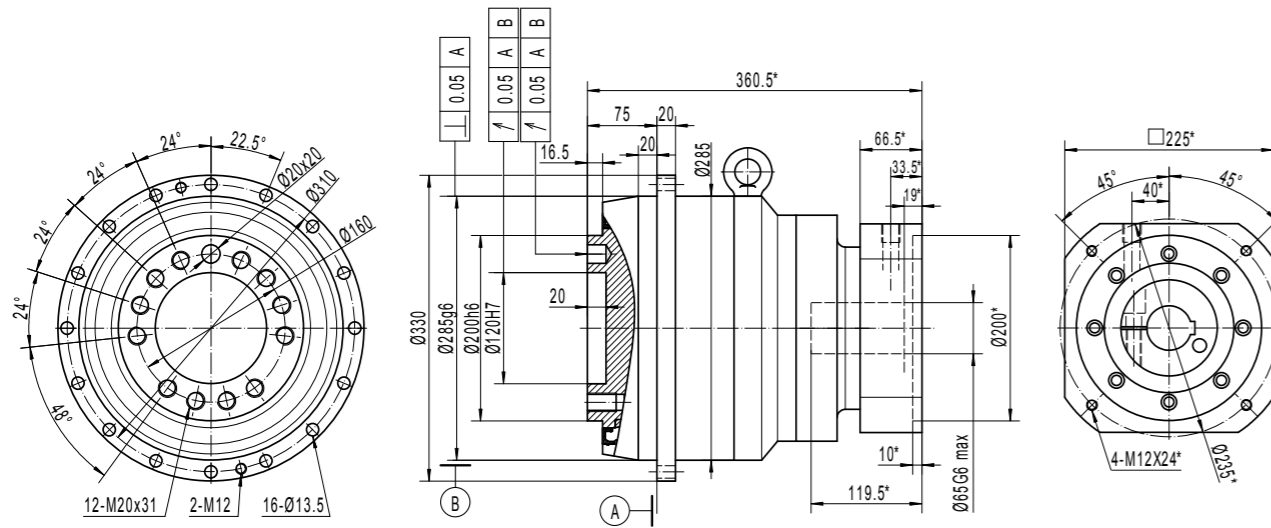
ULTIMATE-CI-ST-285- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø42



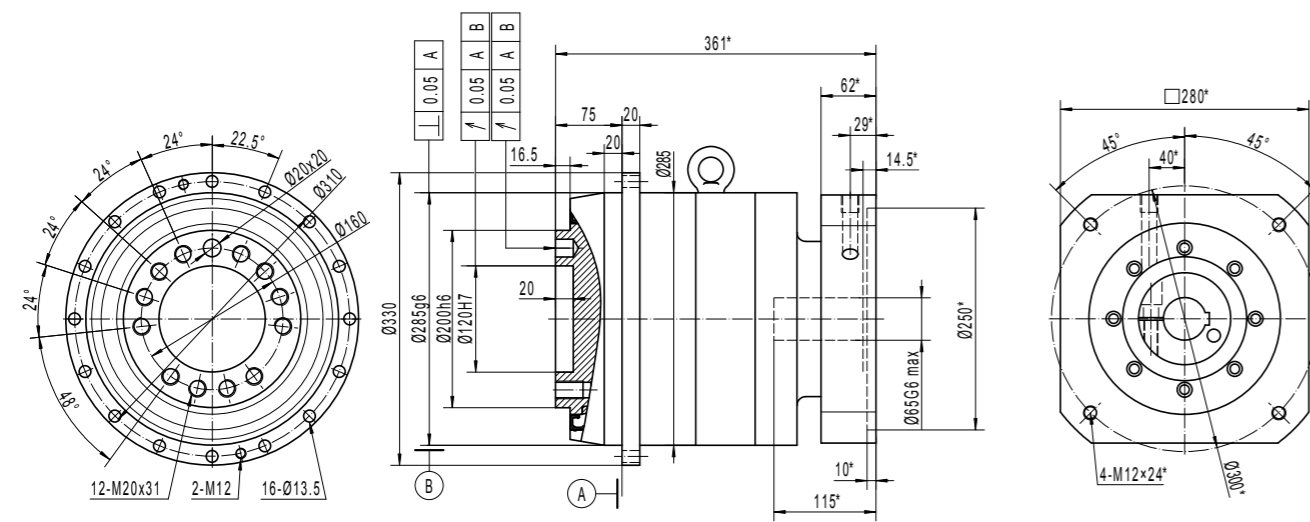
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ULTIMATE-CI-ST-285- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 65$



ULTIMATE-CI-ST-285- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 65$



*VARIES WITH YOUR MOTOR DIMENSIONS

ULTIMATE-CI-RA _ Internal construction

Ultimate is a low-backlash, heavy-duty planetary gearbox.

It provides amazing acceleration capacity to severe applications including new-generation laser-cutting machines, delta robots or punching machines, where high precision is needed, together with torsional stiffness.



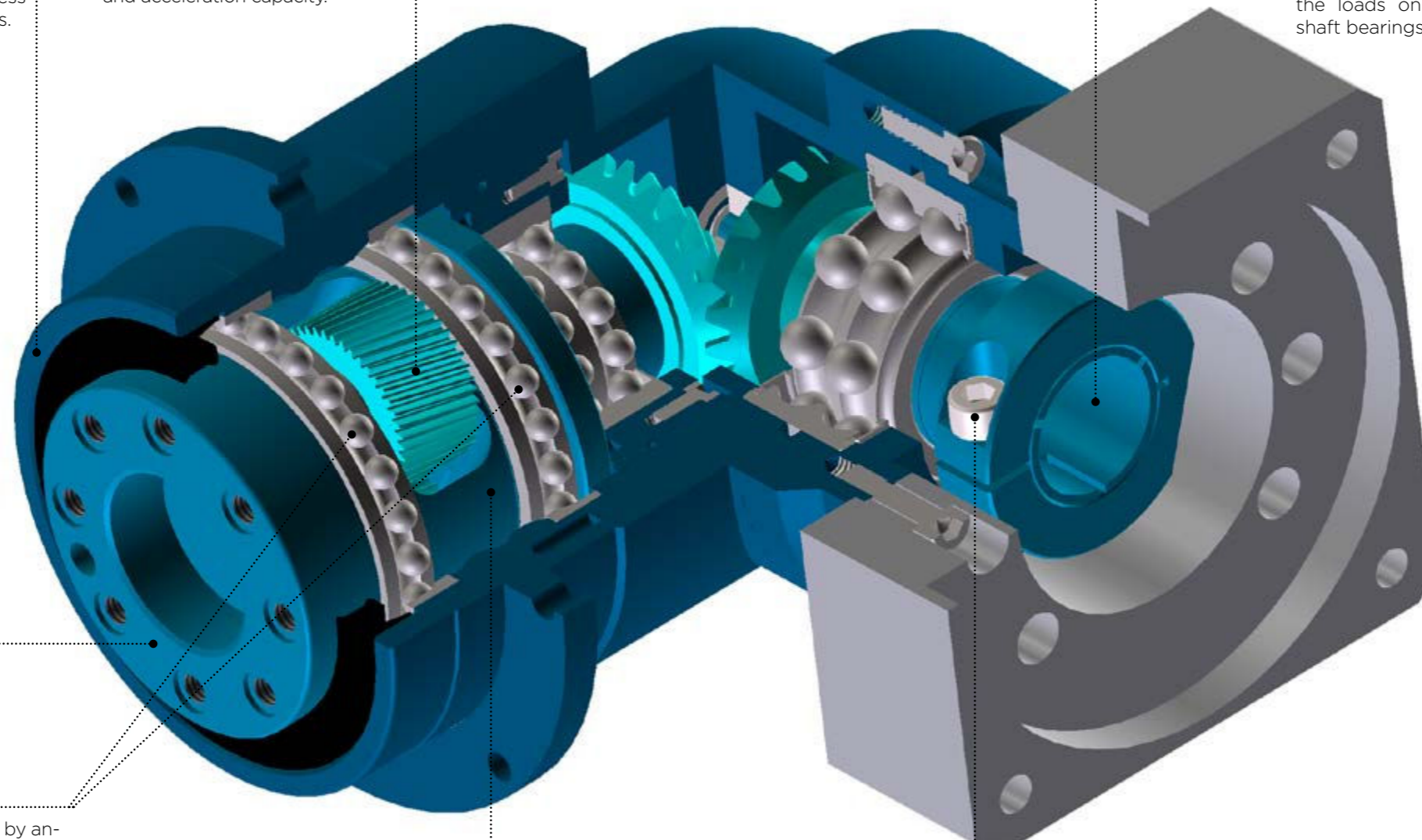
PerfectPitch™

Ring gear is monobloc with the external housing and the output flange, to provide higher stiffness and allow more dynamic reversals.

Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.

The output flange is ideal for fast reversals, strong acceleration requiring stiffness in heavy-duty applications.

The balanced coupling limits vibration and reduces the loads on your motor shaft bearings.



The planet carrier is dual-supported by angular-contact ball bearings (small sizes) or tapered roller bearings (sizes above 140), to improve stiffness, guarantee a perfect alignment of gears during operation and provide greater acceptance to radial loads.

The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

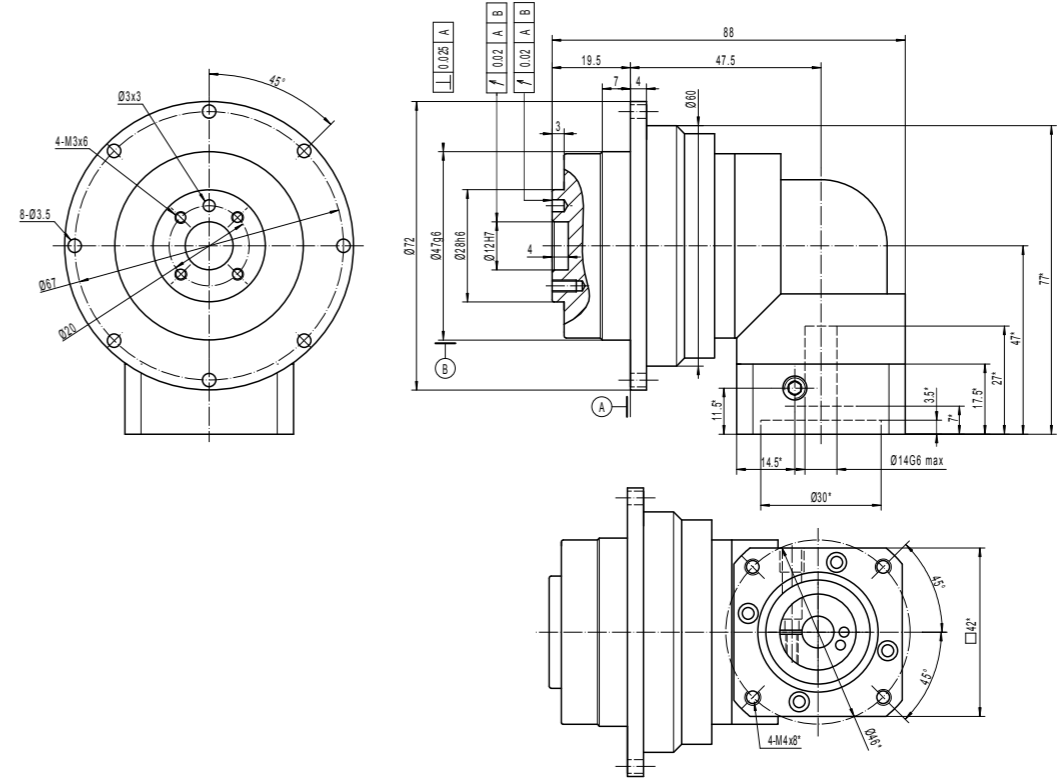
Easy and safe, 1-screw installation to your motor shaft.

	Ratio**	ULTIMATE-CI-RA								
		047-P*	064-P*	090-R*	090-P*	110-R*	110-P*	140-R*	140-P*	200-R*
Nominal torque ¹ T _{2N} (Nm)	4	8	42	154	244	407	1,180			
	5	11	33	120	190	438	1,225			
	5,5	-	44	164	260	590	1,660			
	6	-	27	81	179	440	1,225			
	7	8	30	108	203	465	1,300			
	8	-	18	55	164	408	1,185			
	9	-	16	47	137	353	1,035			
	10	5	18	66	147	308	922			
	16	8	42	86	154	244	377	407	764	
	20	8	42	90	154	244	393	407	1,096	
	22	-	44	118	164	260	260	518	590	1,051
	25	11	33	113	120	190	190	438	438	1,225
	27,5	-	44	124	164	260	260	540	590	1,507
	28	8	42	68	154	183	244	359	407	960
	30	-	27	81	81	179	179	440	440	1,225
	35	11	33	85	120	190	190	438	438	1,200
	38,5	-	44	94	164	252	260	494	590	1,320
	40	8	39	40	113	113	218	218	407	577
	42	-	27	81	81	179	179	440	440	1,225
	49	8	30	108	108	203	203	465	465	1,300
50	11	33	49	120	141	190	273	438	721	
55	-	44	54	164	156	260	300	590	794	
60	-	27	59	81	170	179	327	440	866	
70	8	30	69	108	198	203	382	465	1,010	
80	-	18	55	55	164	164	408	408	1,154	
90	-	16	47	47	137	137	353	353	1,035	
100	5	18	66	66	147	147	308	308	922	
Peak torque ² T _{max} (Nm)	4	14	77	190	488	810	1,786			
	5	14	55	170	380	870	2,380			
	5,5	-	73	235	500	1100	2,900			
	6	-	38	114	327	815	2,250			
	7	14	54	161	379	804	2,170			
	8	-	37	111	322	765	2,050			
	9	-	36	104	305	728	1,970			
	10	13	50	157	353	715	1,470			
	16	14	77	122	190	322	488	669	810	1,524
	20	14	77	115	190	275	488	636	810	1,786
	22	-	73	168	235	443	500	920	1,100	2,095
	25	14	55	144	170	344	380	795	870	2,238
	27,5	-	73	158	235	378	500	875	1,100	2,462
	28	14	77	113	190	282	488	609	810	1,651
	30	-	38	114	114	327	327	815	815	2,250
	35	14	55	141	170	353	380	762	870	2,064
	38,5	-	73	155	235	388	500	838	1,100	2,270
	40	14	77	109	190	259	488	560	810	1,480
	42	-	38	114	114	327	327	815	815	2,250
	49	14	54	161	161	379	379	804	804	2,170
50	14	55	136	170	324	380	700	870	1,850	
55	-	73	150	235	356	500	770	1,100	2,035	
60	-	38	114	114	327	327	815	815	2,220	
70	14	54	161	161	379	379	804	804	2,170	
80	-	37	111	111	322	322	765	765	2,050	
90	-	36	104	104	305	305	728	728	1,970	
100	13	50	157	157	353	353	715	715	1,470	
Emergency stop torque (Nm) ³		1,5 x T _{max}								
Max angular backlash (minutes)	1 stage	Standard : ≤8 ; Option : ≤6			Standard : ≤8 ; Option : ≤4					
	2 stages				Standard : ≤8 ; Option : ≤6					
Nominal input speed (rpm) ⁴		4 000	4 000	3,100	2,800	2,600	2,000			
Max input speed (rpm) ⁵		7 500	7 500	6,000	5,500	5,000	4,500			
Max radial load (N) ⁶		320	465	1,440	3,960	11,680	22,500			
Max axial load (N) ⁶		420	565	2,050	5,700	16,900	17,400			
Tilting moment (Nm) ⁶		11	23	95	335	1,130	2,280			
Efficiency (%) ⁷	1 stage	≥94								
	2 stages	≥92								
Torsional stiffness (Nm/min)		6	13	32	82	150	600			
Life (h) ⁸		20,000								
Min / max ambient temperature ⁹ (°C)		-15 / +45								
Max temperature of the body (°C)		90								
Protection class		IP 65								
Noise level (dB) ¹⁰		≤68	≤70	≤70	≤74	≤78	≤82			
Lubrication		Lifetime lubrication (grease)								
Coating color		Capri blue (RAL 5019)								
Input flange		Anodized aluminum								

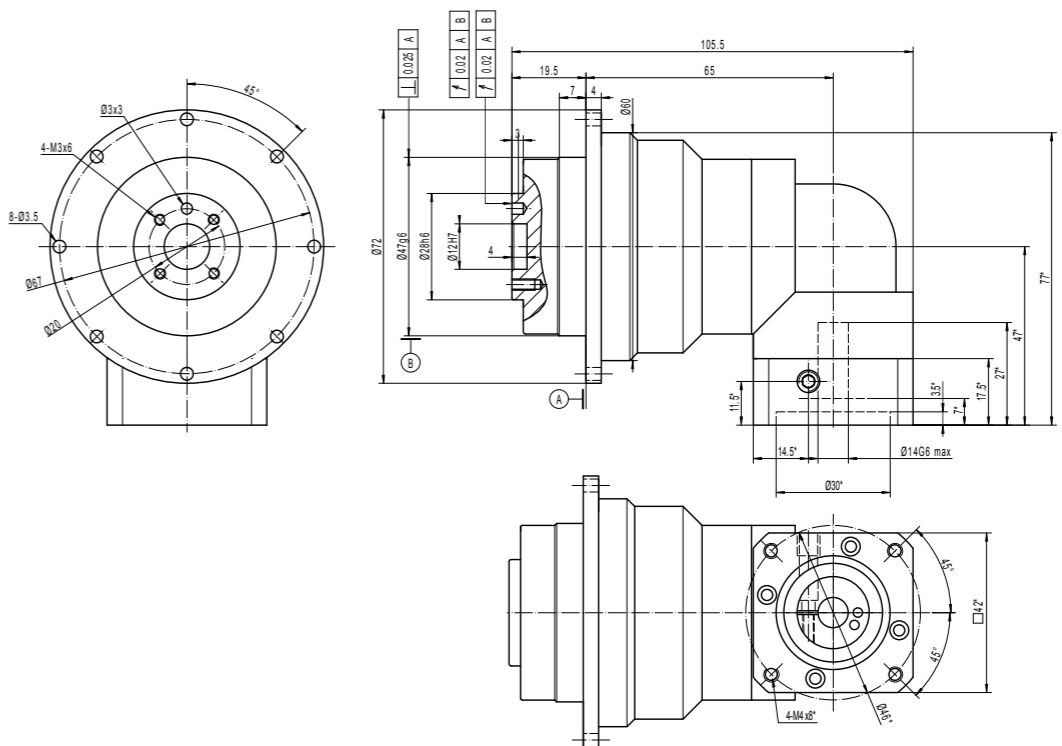
* For 2 stages gearboxes, we can propose a compact input stage (R) or a powerful input stage (P) as paying option
 ** Others ratios are available upon request.

1: Calculation based on the ISO 6336-2 standard (life = 20 000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25).
 Using max 10% of the max tilting moment. Torque capacity decreases when the radial load increases. Please refer to the website for more information
 2: Calculation based on the ISO 6336-2 standard (life = 2 000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4).
 This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application.
 Using a torque higher than the rated torque may affect the gearbox precision.
 3: 1 000 occurrences maximum.
 4: Speed at which the nominal torque is applicable 20 000 hours.
 5: Peak speed only.
 6: Applied on the front face of the output shaft at 100rpm
 7: Measured at full load and at 25°C
 8: Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
 9: Room temperature. Refer to temperature factors in dedicated section.
 10: Ratio 10 at nominal speed, measured at 1m.

ULTIMATE-CI-RA-047- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT ≤ Ø14

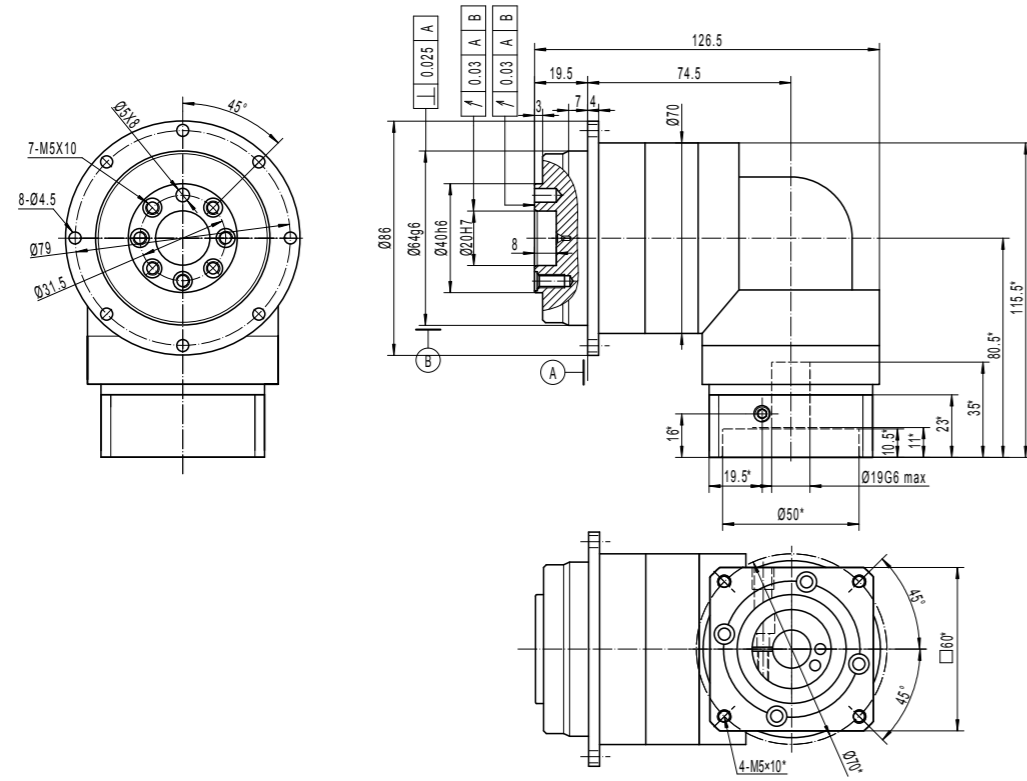


ULTIMATE-CI-RA-047- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø14

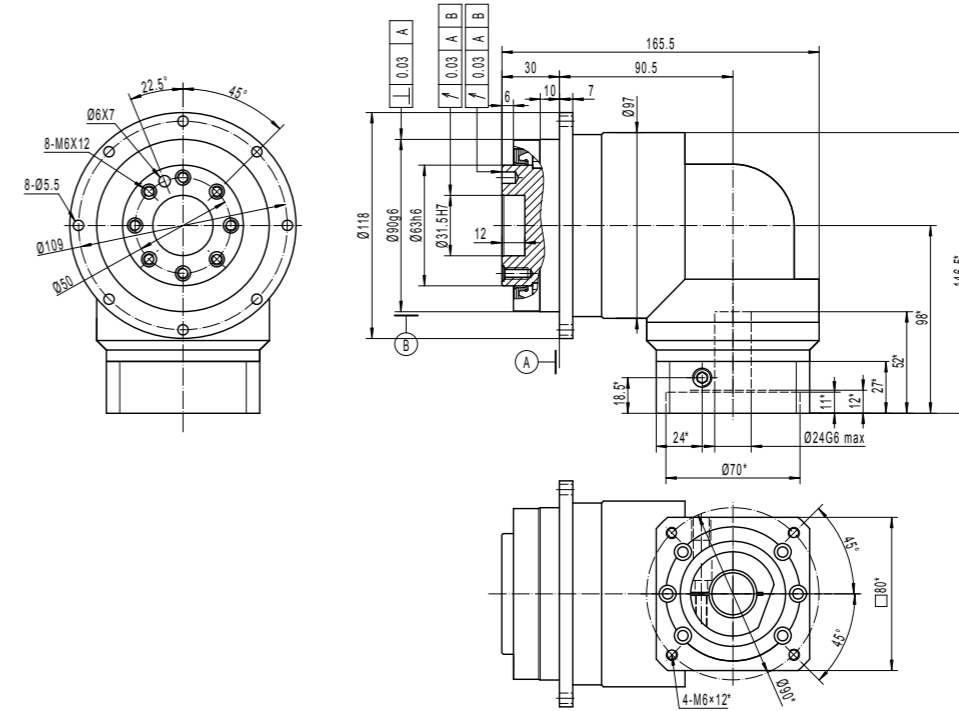


*VARIES WITH YOUR MOTOR DIMENSIONS

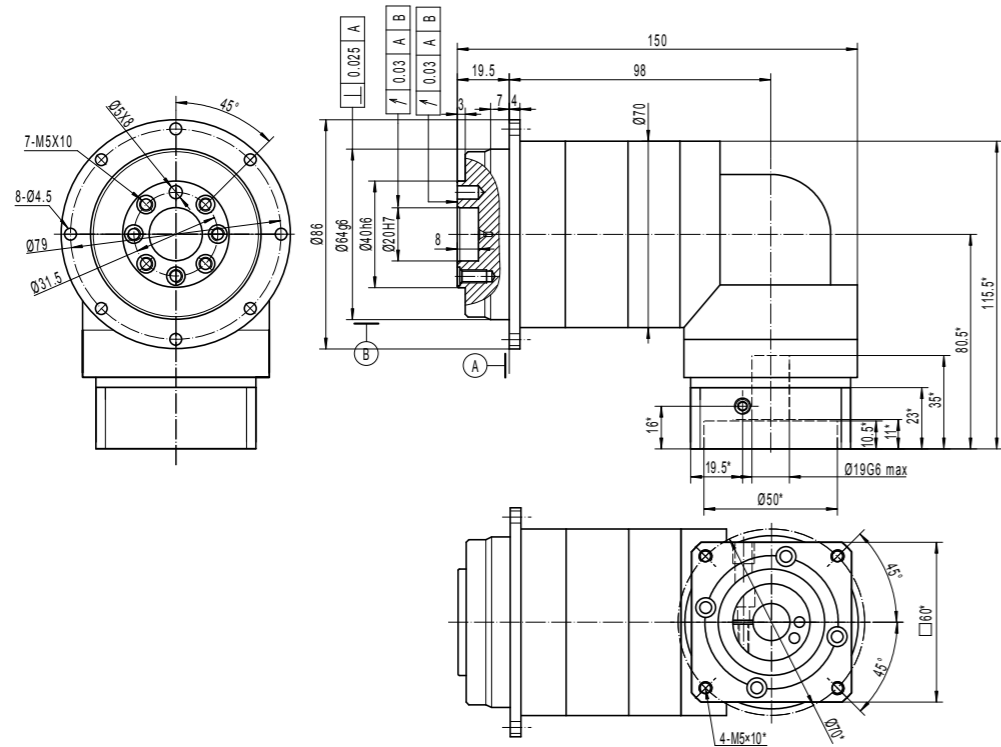
ULTIMATE-CI-RA-064- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 19$



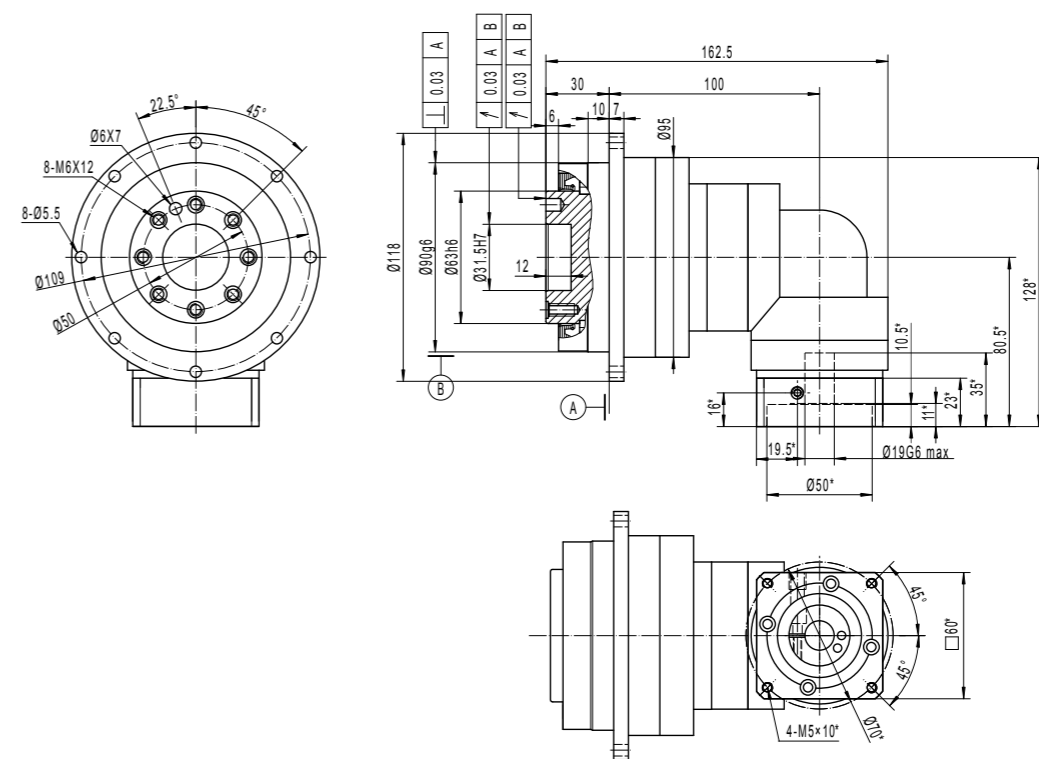
ULTIMATE-CI-RA-090- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR COUPLING $\leq \varnothing 24$



ULTIMATE-CI-RA-064- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



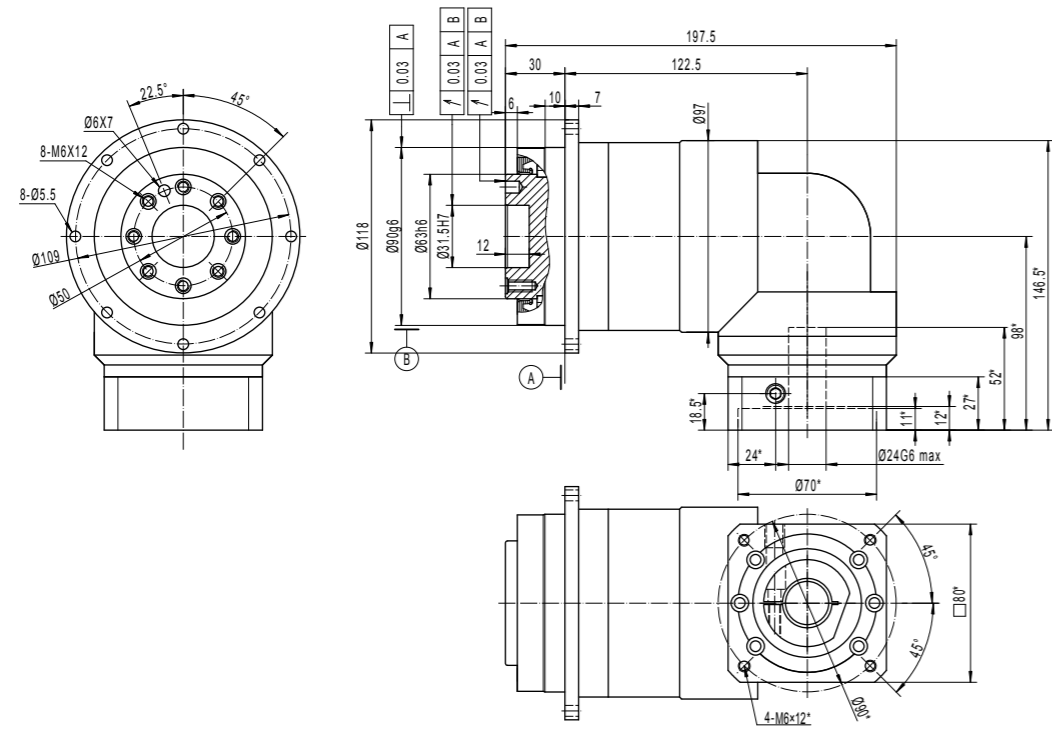
ULTIMATE-CI-RA-090- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 19$



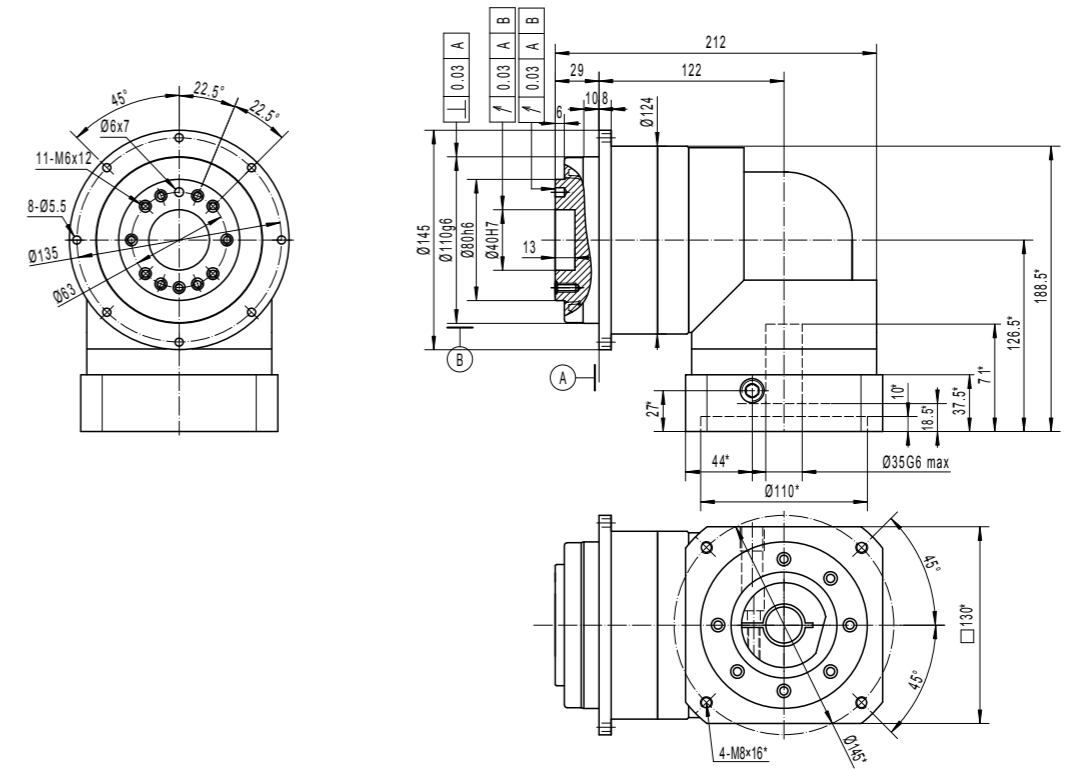
*VARIES WITH YOUR MOTOR DIMENSIONS

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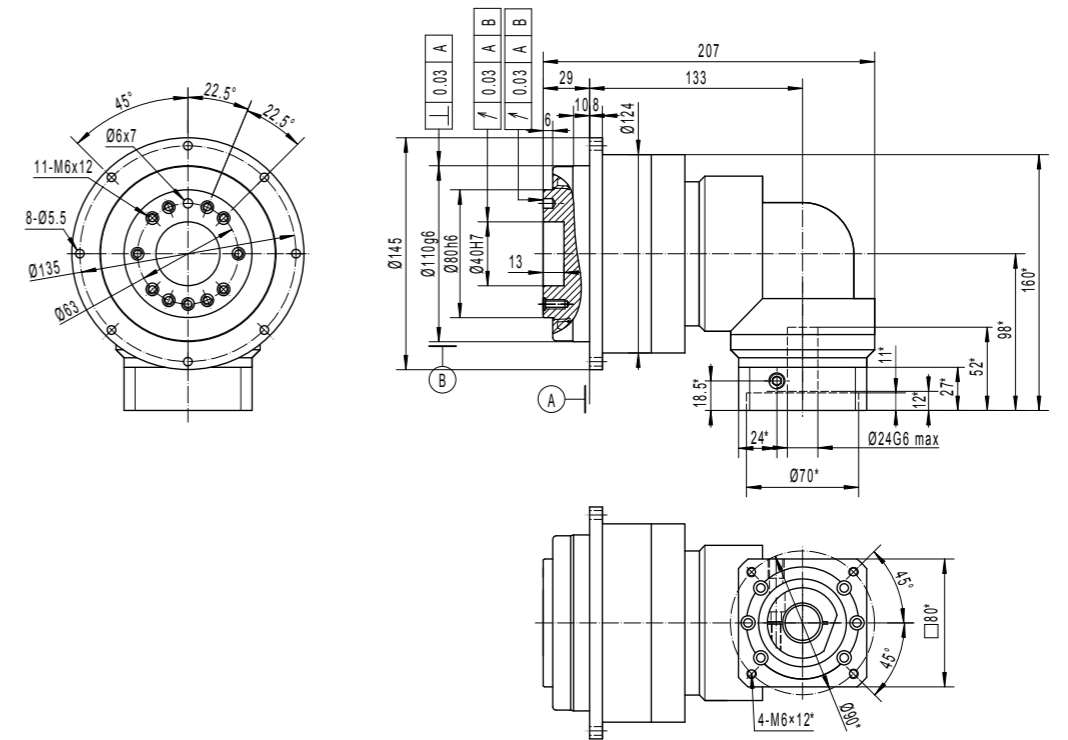
ULTIMATE-CI-RA-090- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



ULTIMATE-CI-RA-110- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 35$



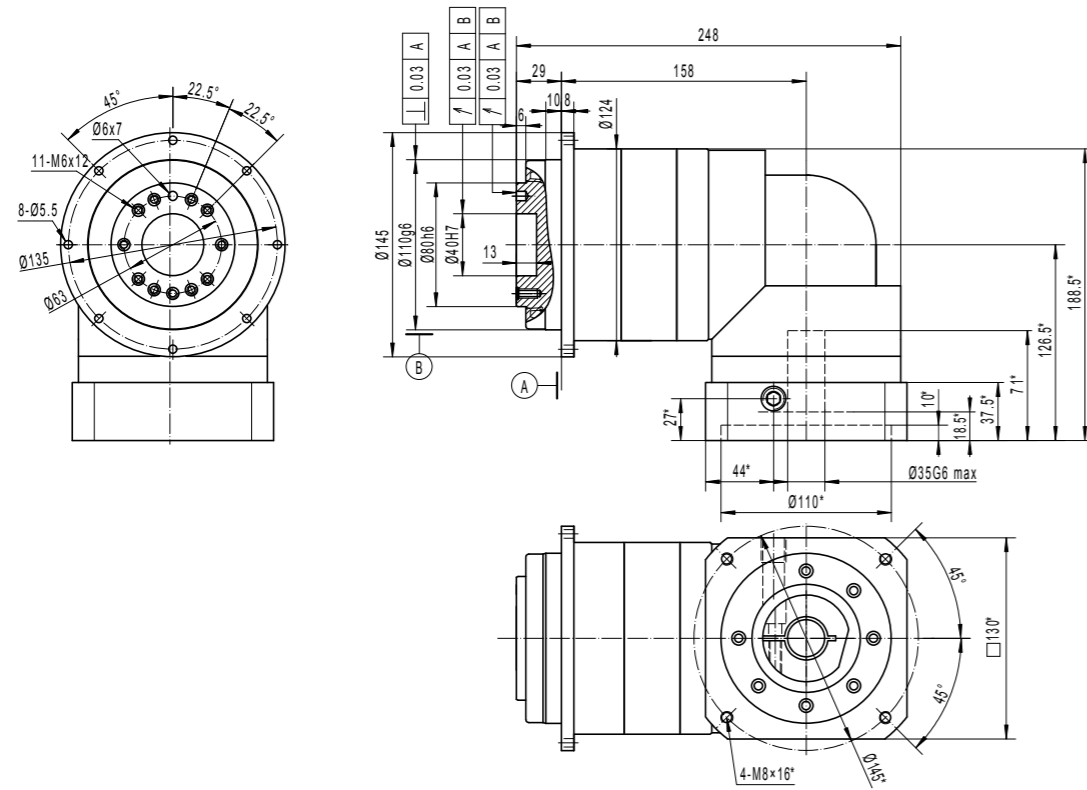
ULTIMATE-CI-RA-110- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 24$



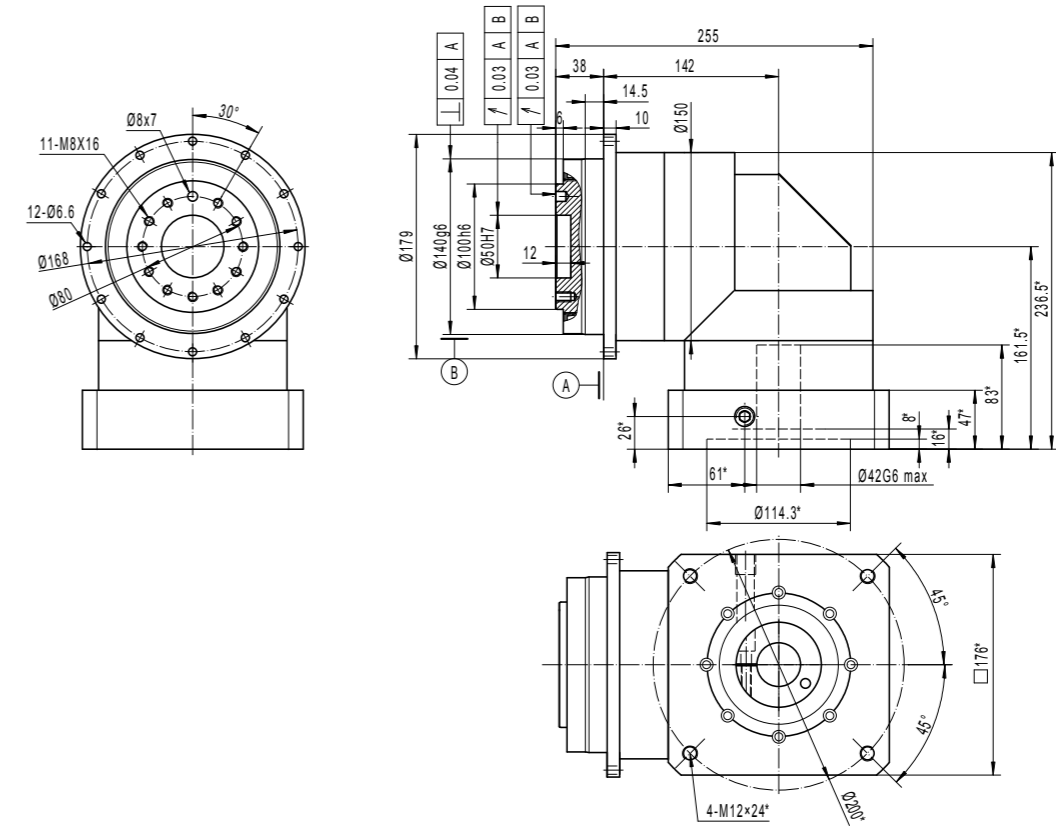
*VARIES WITH YOUR MOTOR DIMENSIONS

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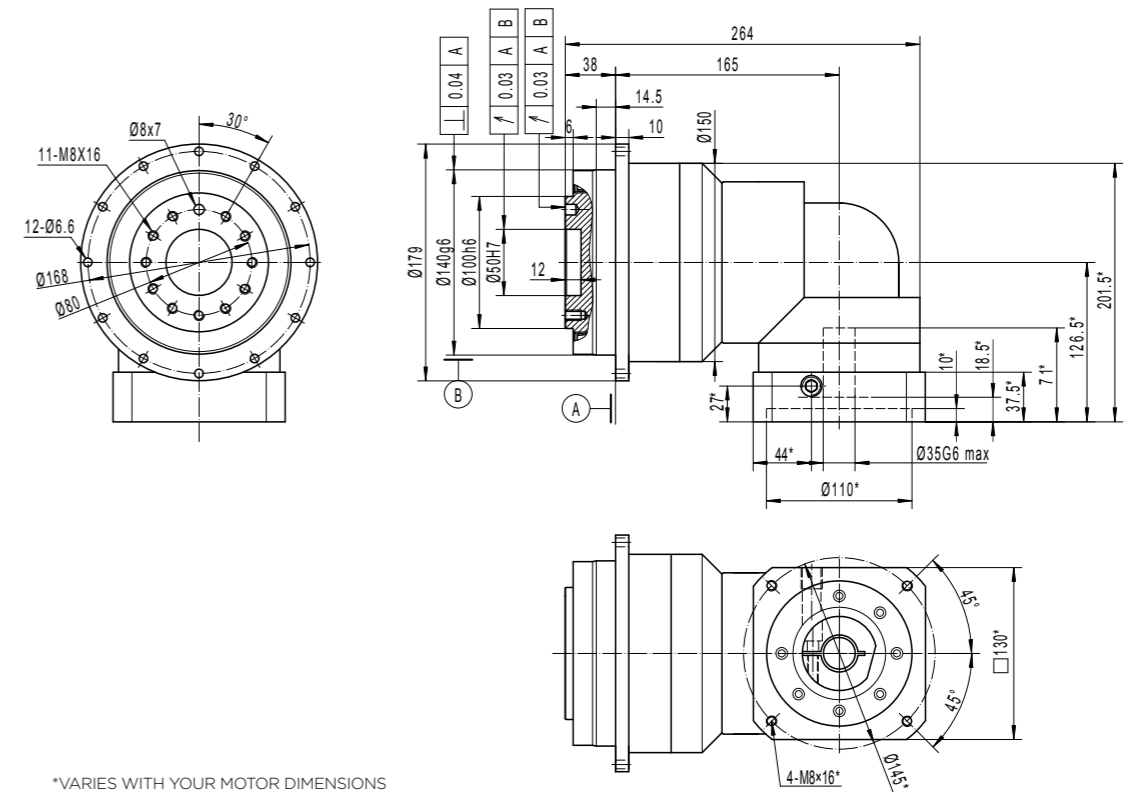
ULTIMATE-CI-RA-110- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



ULTIMATE-CI-RA-140- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 42$



ULTIMATE-CI-RA-140- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$

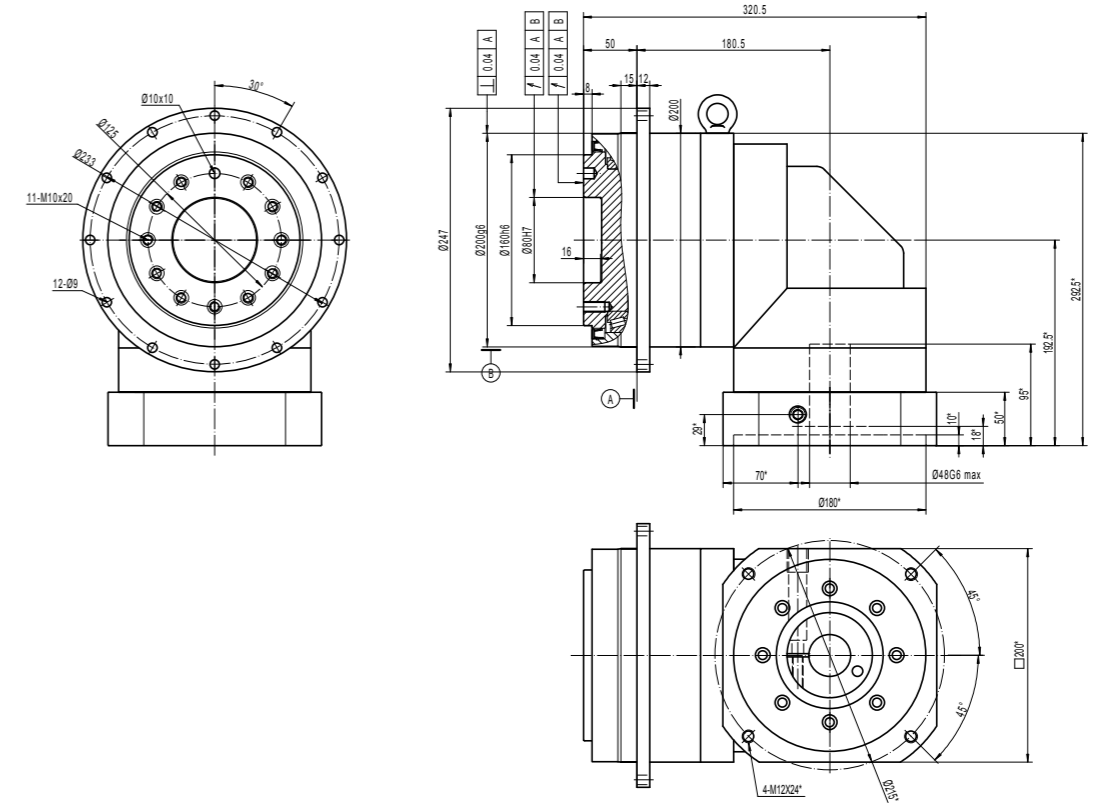
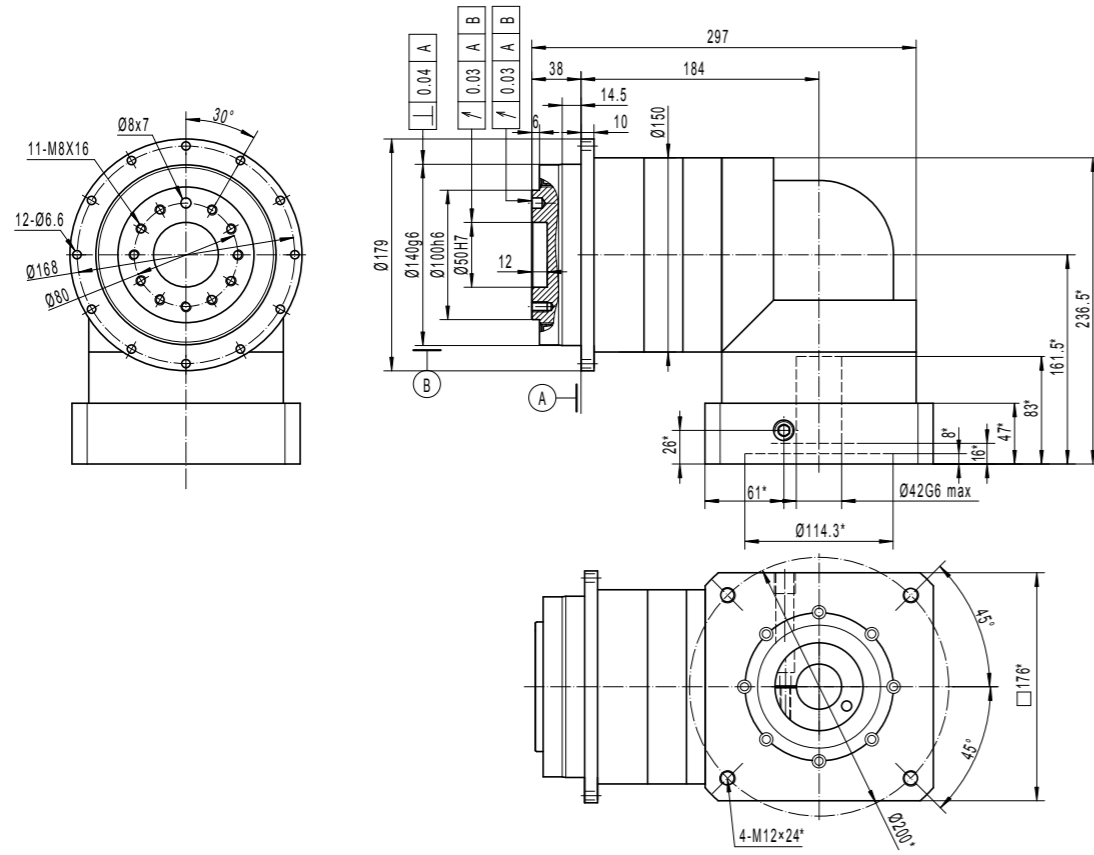


*VARIES WITH YOUR MOTOR DIMENSIONS

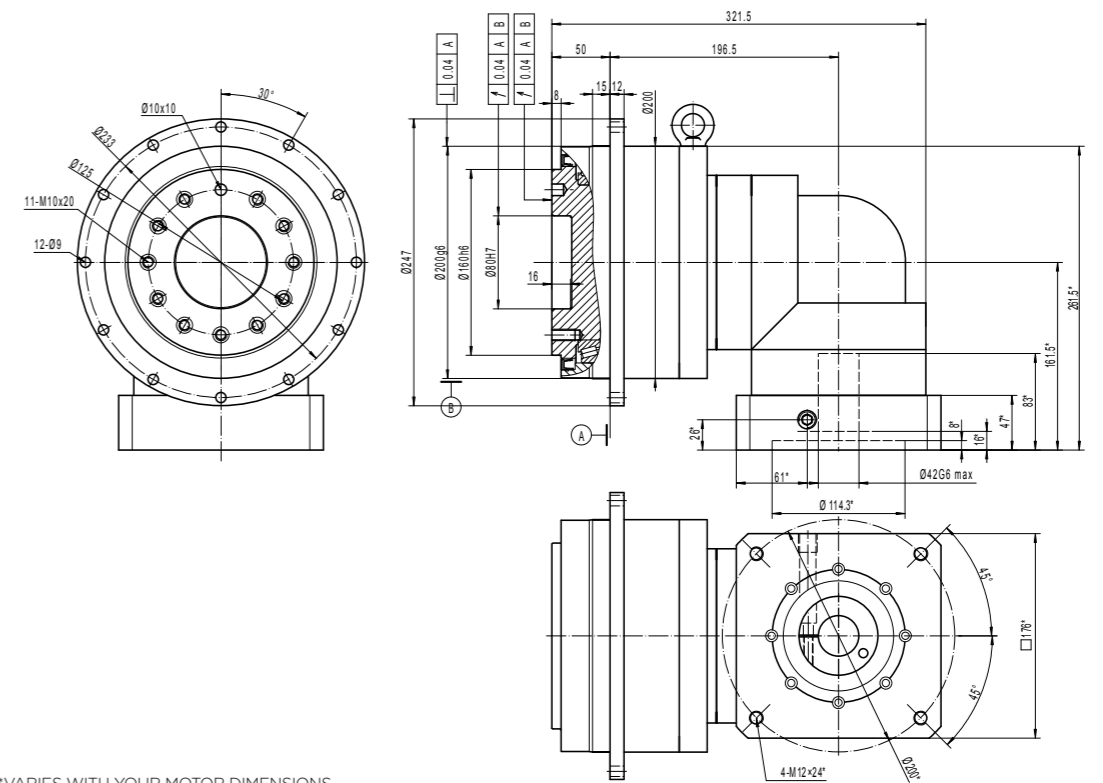
*VARIES WITH YOUR MOTOR DIMENSIONS

ULTIMATE-CI-RA-140- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$

ULTIMATE-CI-RA-200- 1 STAGE - RATIOS 4 TO 10
FOR MOTOR SHAFT $\leq \varnothing 48$



ULTIMATE-CI-RA-200- 2 STAGES-R - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ULTIMATE-HT-CI



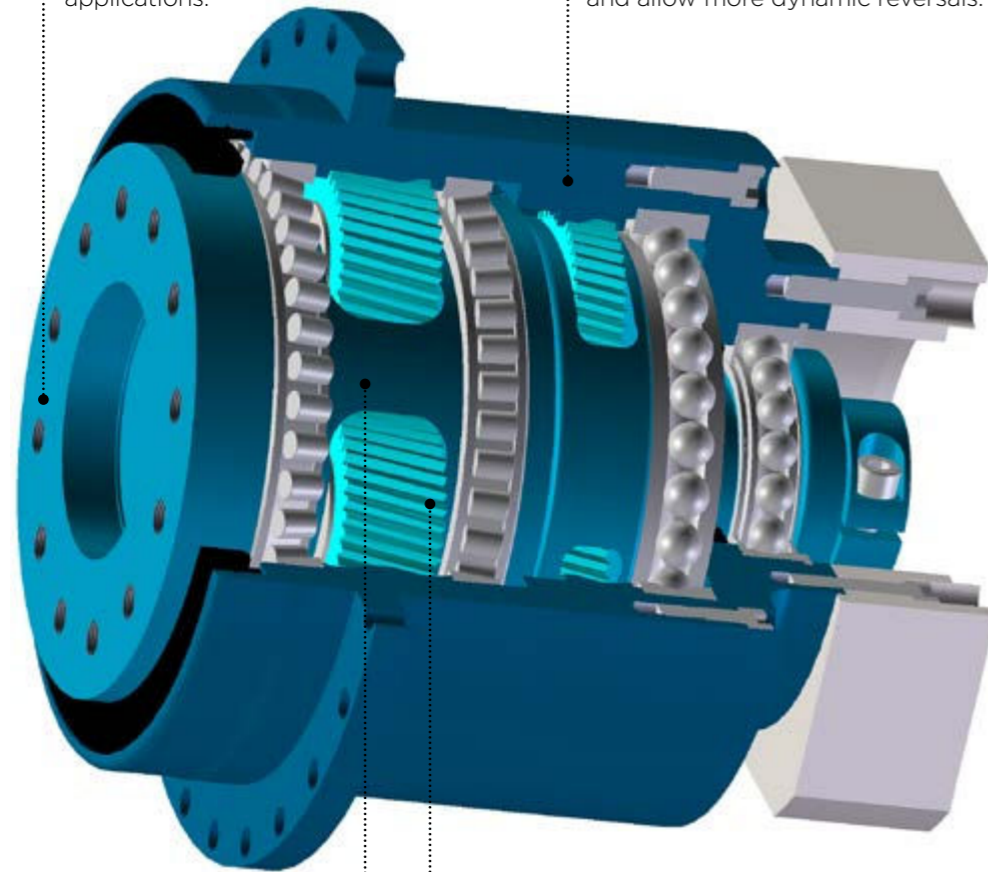
Acceleration capacity	+++++
Fast reversals	+++++
Radial load rating	++++
Axial load rating	++++
Stiffness	+++++
Precision	+++++
Economy	+++

ULTIMATE-HT-CI-ST _ Internal construction

Ultimate is a low-backlash, heavy-duty planetary gearbox. It provides amazing acceleration capacity to severe applications including new-generation laser-cutting machines, delta robots or punching machines, where high precision is needed, together with torsional stiffness.

The output flange is ideal for fast reversals, strong acceleration requiring stiffness in heavy-duty applications.

The ring gear is monobloc with the external housing and the output flange, to provide higher stiffness and allow more dynamic reversals.

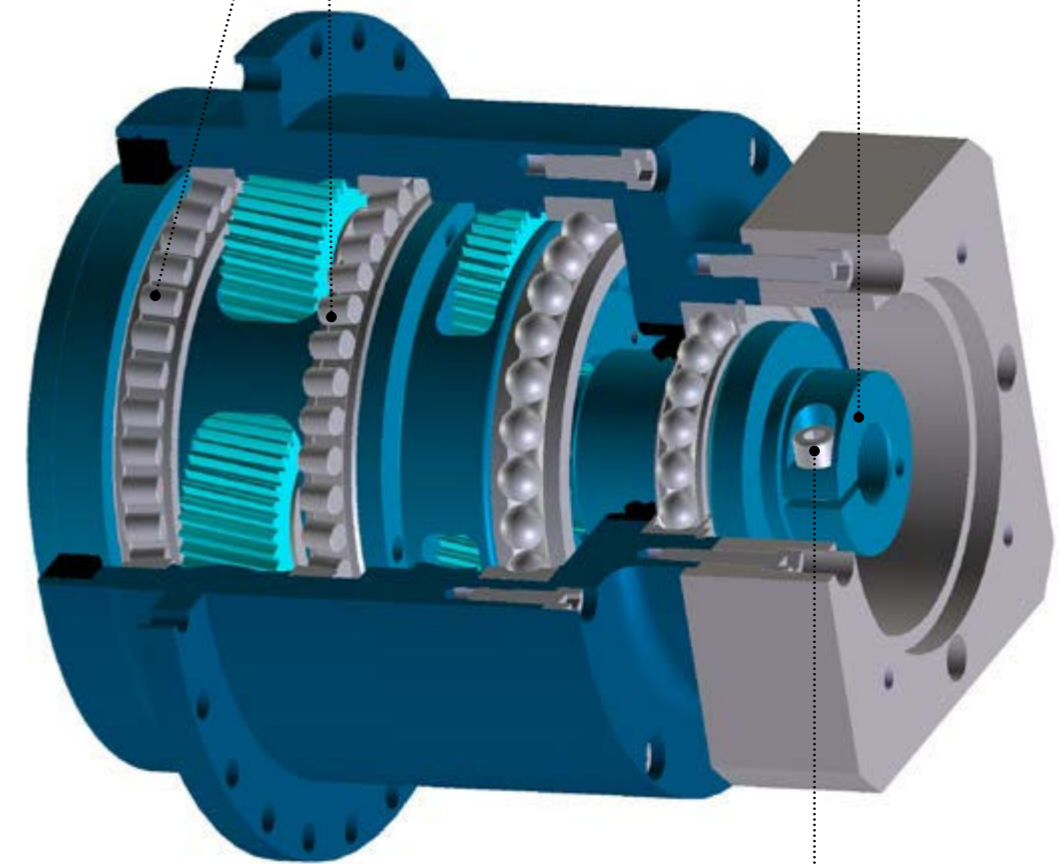


The caged planet carrier provides stiffness, reliability and acceleration capacity to the gearbox.

Carburized and quenched helical teeth for quiet operation, reliability and acceleration capacity.

The planet carrier is dual-supported by angular-contact ball bearings (small sizes) or tapered roller bearings (sizes above 140), to improve stiffness, guarantee a perfect alignment of gears during operation and provide greater acceptance to radial loads.

The balanced coupling limits vibration and reduces the efforts on your motor shaft bearings.

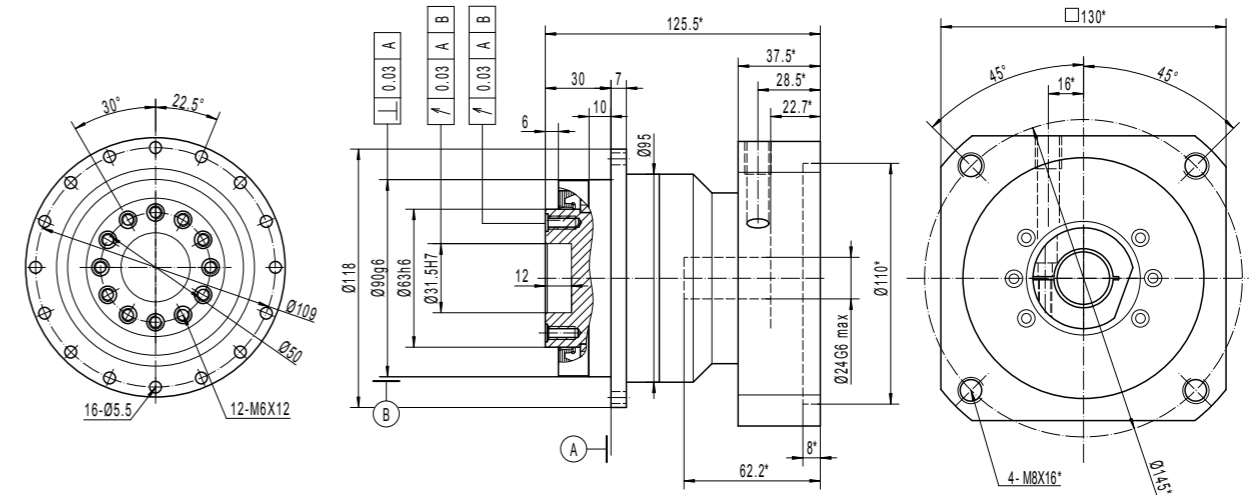


Easy and safe, 1-screw installation to your motor shaft.

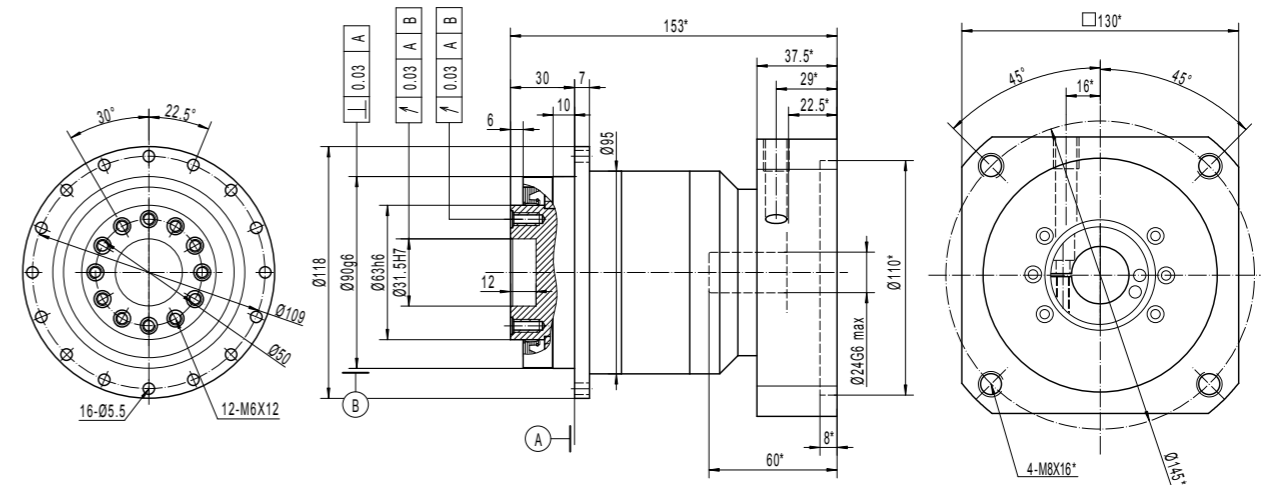
	Ratio*	ULTIMATE-HT-CI-ST					
		090-P	110-P	140-P	200-P	255-P	285-P
Nominal torque ¹ T _{2N} (Nm)	4	154	244	407	1,180	3,075	4,252
	5,5	164	260	590	1,660	3,270	4,500
	16	200	367	615	1,500	3,255	4,956
	20	200	383	627	1,500	3,490	5,128
	22	199	393	795	1,895	3,544	5,250
	27,5	202	420	795	2,020	3,975	5,614
	28	182	356	730	1,500	3,850	5,460
	38,5	206	455	795	2,150	4,095	6,216
	40	113	218	567	1,384	3,158	4,470
Peak torque ² T _{max} (Nm)	4	190	488	810	1,786	5,950	8,474
	5,5	235	500	1,100	2,900	5,630	8,636
	16	233	505	835	1,786	5,950	8,545
	20	240	505	835	1,786	5,950	8,545
	22	247	540	1,150	3,100	5,950	10,000
	27,5	251	545	1,150	3,125	6,000	10,080
	28	240	505	835	1,186	5,950	8,545
	38,5	254	552	1,150	3,160	6,050	10,180
	40	240	505	835	1,186	5,950	8,545
55	257	560	1,150	3,200	6,100	10,280	
Emergency stop torque (Nm) ³	1,5 x T _{max}						
Max angular backlash (minutes)	1 stage	Reduced : ≤2					
	2 stages	Reduced : ≤3					
Nominal input speed (rpm) ⁴		3,100	2,800	2,600	2,000	1,700	1500
Max input speed (rpm) ⁵		6,000	5,500	5,000	4,500	3,000	3,000
Max radial load (N) ⁶		1,440	3,960	11,680	22,500	36,500	42 750
Max axial load (N) ⁶		2,050	5,700	16,900	17,400	32,600	37 500
Tilting moment (Nm) ⁶		95	335	1,130	2,280	4,600	5 950
Efficiency (%) ⁷	1 stage	≥97					
	2 stages	≥94					
Torsional stiffness (Nm/min)		32	82	150	600	1000	1400
Life (h) ⁸		20,000					
Min / max ambient temperature ⁹		-15 / +45					
Max temperature of the body (°C)		90					
Protection class		IP 65					
Noise level (dB) ¹⁰		≤62	≤63	≤66	≤71	≤75	≤77
Lubrication		Lifetime lubrication (grease)					
Coating color		Capri blue (RAL 5019)					
Input flange		Anodized aluminum					

* Others ratios are available upon request.

ULTIMATE-HT-CI-ST-090- 1 STAGE - RATIOS 4 OR 5.5
FOR MOTOR SHAFT ≤ Ø24



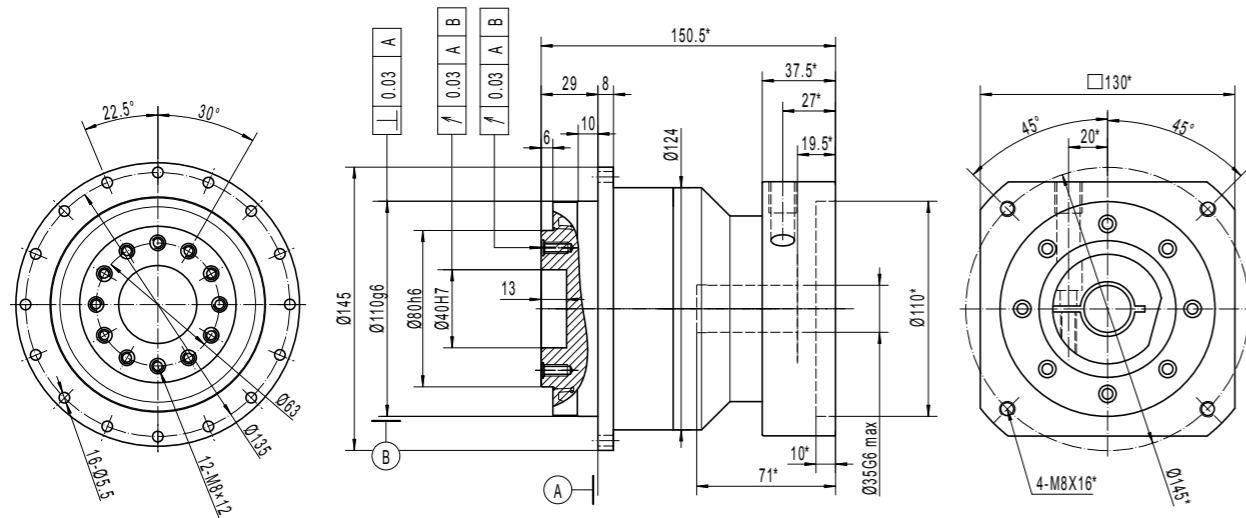
ULTIMATE-HT-CI-ST-090- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT ≤ Ø24



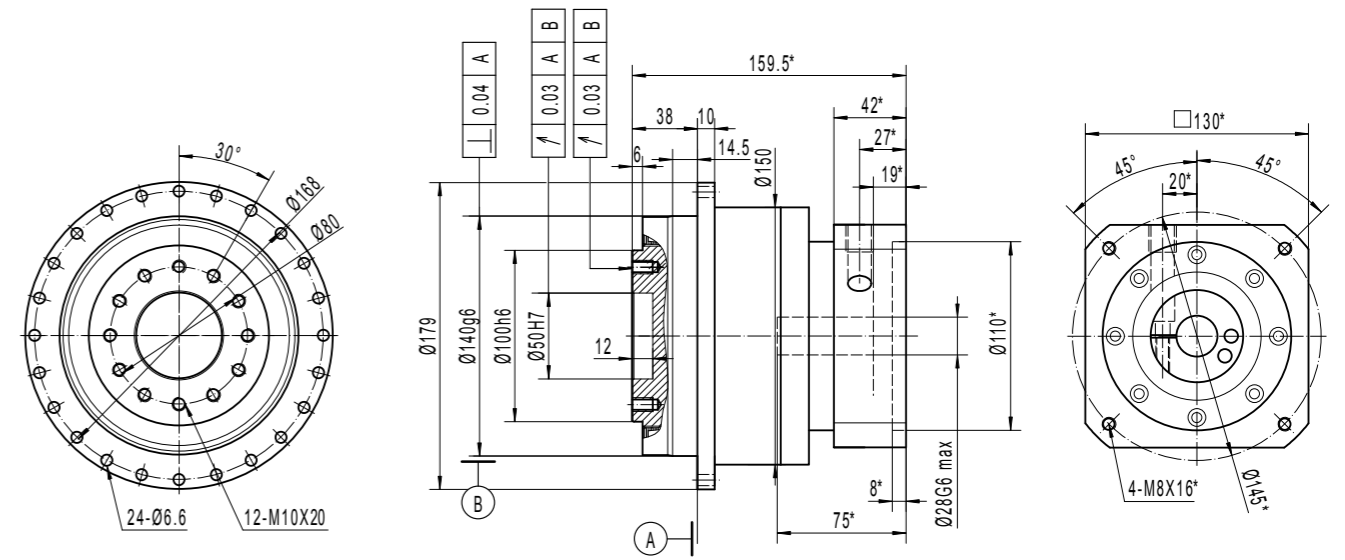
1 : Calculation based on the ISO 6336-2 standard (life = 20,000 h, speed = nominal speed, internal temperature = 60°C, Application Factor = 1,25).
Using max 10% of the max tilting moment. Torque capacity decreases when the radial load increases. Please refer to the website for more information
2 : Calculation based on the ISO 6336-2 standard (life = 2,000 h, speed = nominal speed, internal temperature = 60°C, Safety Factor = 1,4).
This rating will not provide a 2 000 hours life if used at max speed. Contact us to get an estimation of the product lifetime in your application.
Using a torque higher than the rated torque may affect the gearbox precision.
3 : 1 000 occurrences maximum.
4 : Speed at which the nominal torque is applicable 20,000 hours.
5 : Peak speed only.
6 : Applied on the front face of the output shaft at 100 rpm
7 : Measured at full load and at 25°C
8 : Lifetime at nominal torque and speed. Consult us to obtain a free estimation of lifetime in your working conditions
9 : Room temperature. Refer to temperature factors in dedicated section.
10 : Ratio 10 at nominal speed, measured at 1m.

*VARIES WITH YOUR MOTOR DIMENSIONS

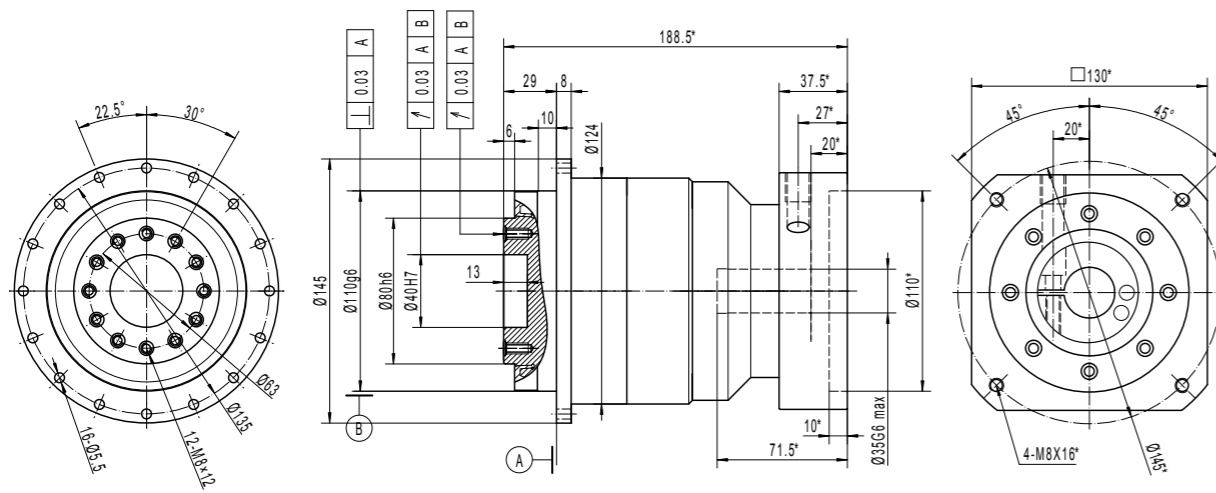
ULTIMATE-HT-CI-ST-110- 1 STAGE - RATIOS 4 OR 5.5
FOR MOTOR SHAFT $\leq \varnothing 35$



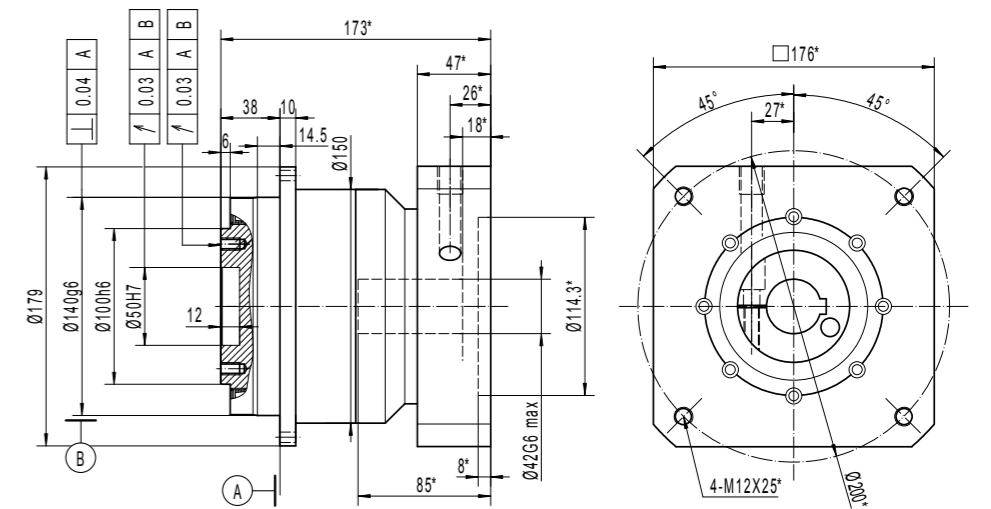
ULTIMATE-HT-CI-ST-140- 1 STAGE - RATIOS 4 OR 5.5
FOR MOTOR SHAFT $\leq \varnothing 28$



ULTIMATE-HT-CI-ST-110- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 35$



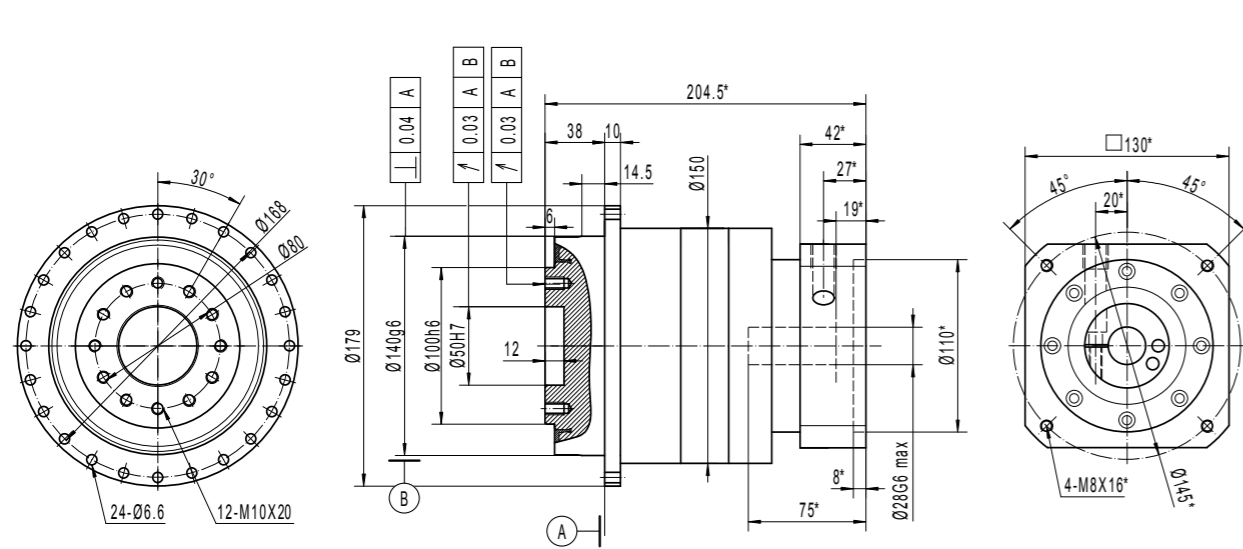
ULTIMATE-HT-CI-ST-140- 1 STAGE - RATIOS 4 OR 5.5
FOR MOTOR SHAFT $\leq \varnothing 42$



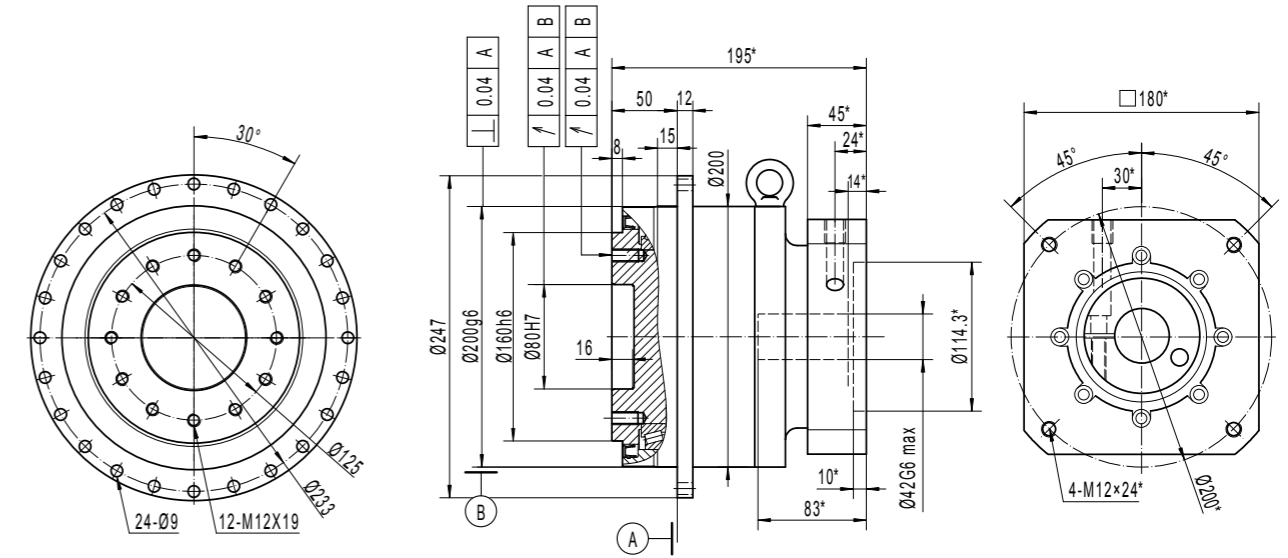
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

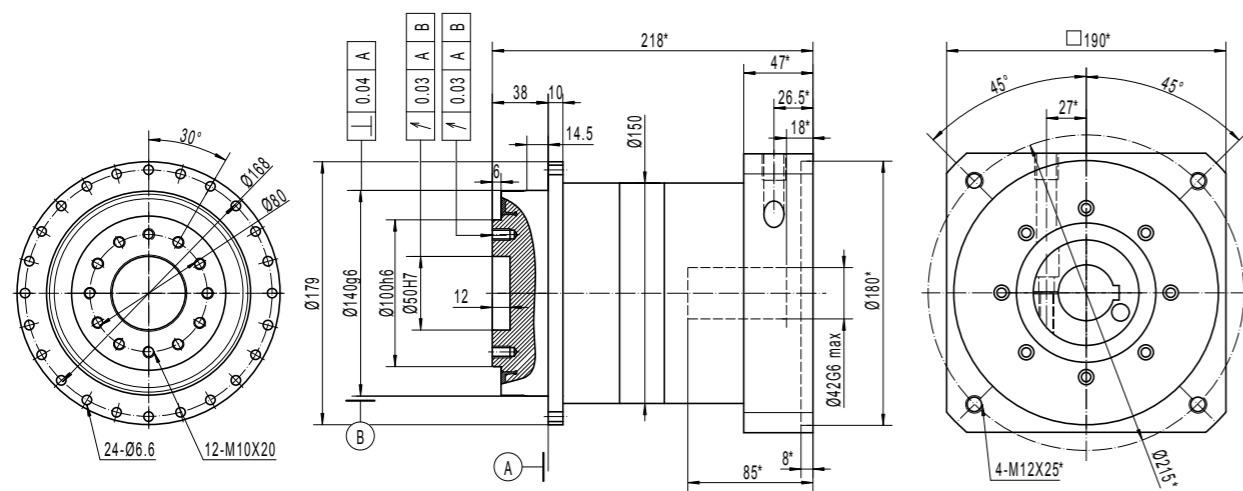
ULTIMATE-HT-CI-ST-140- 2 STAGES-P- RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 28$



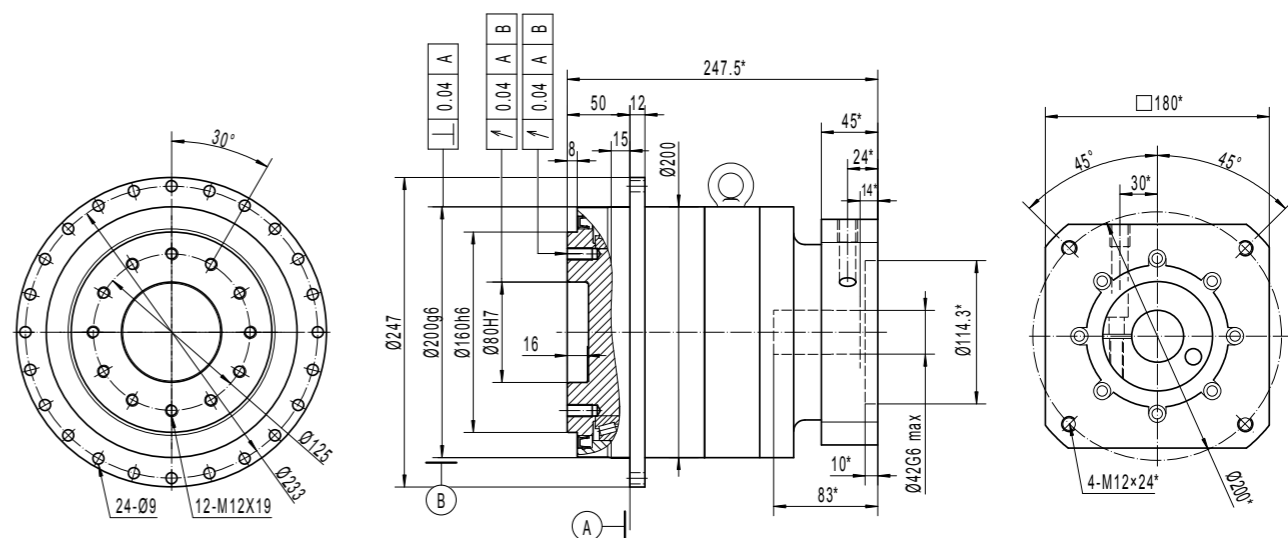
ULTIMATE-HT-CI-ST-200- 1 STAGE - RATIOS 4 OR 5.5
FOR MOTOR SHAFT $\leq \varnothing 42$



ULTIMATE-HT-CI-ST-140- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



ULTIMATE-HT-CI-ST-200- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 48$

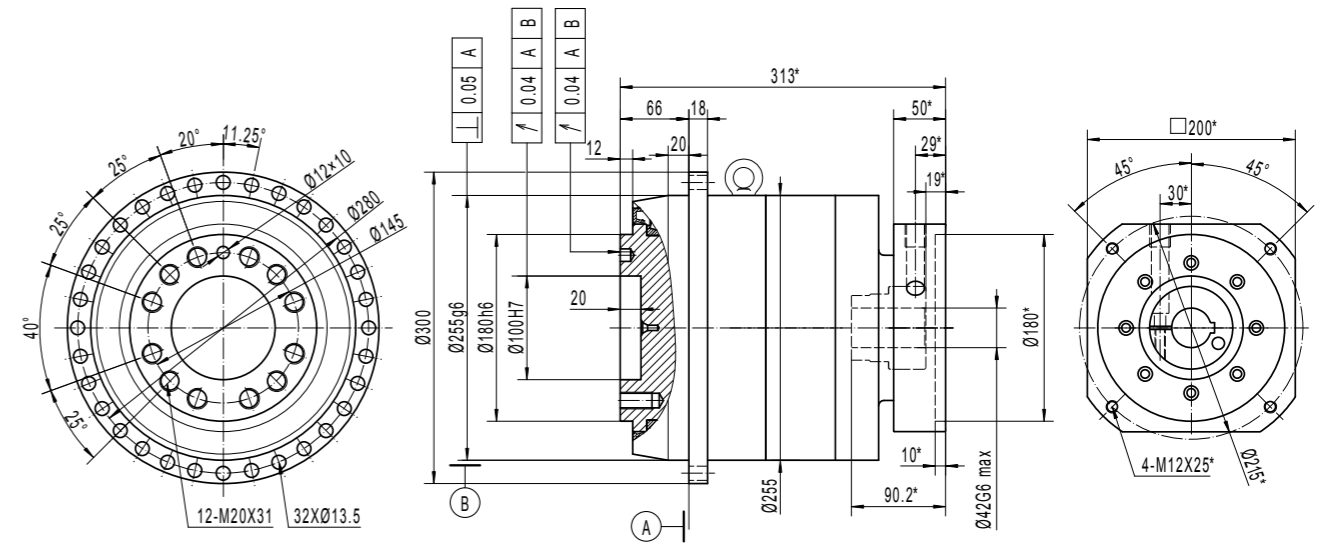
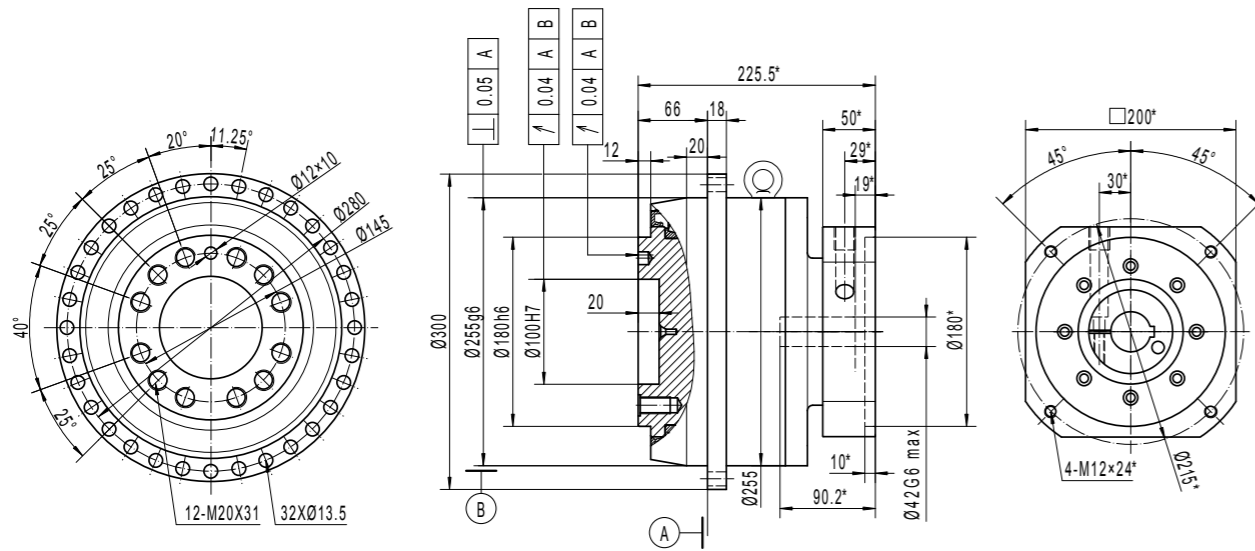


*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

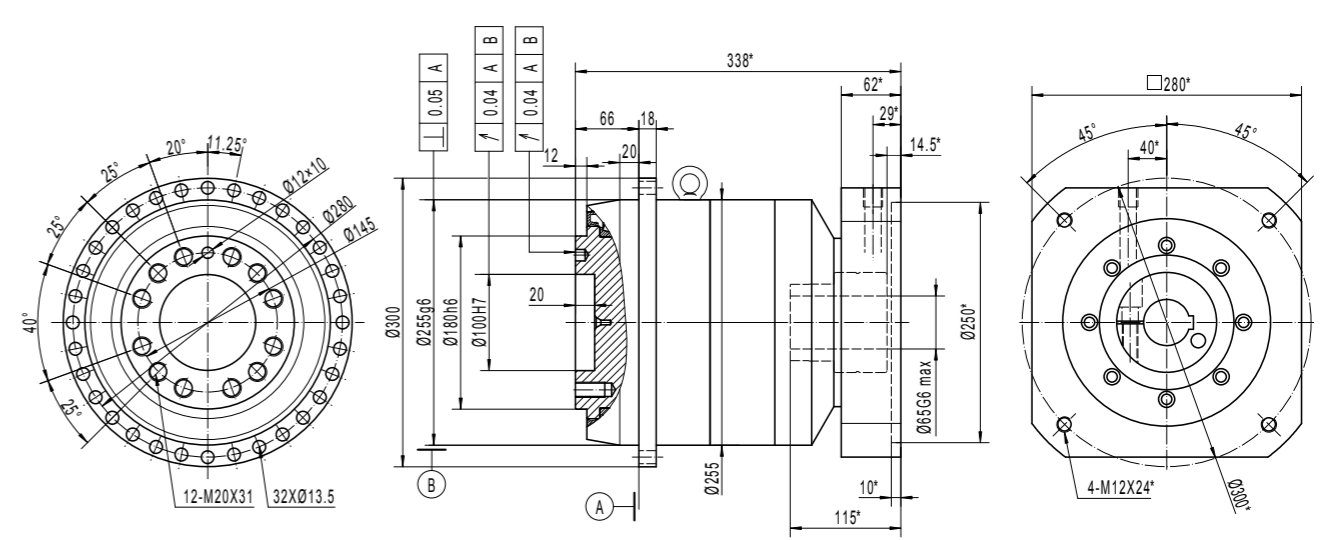
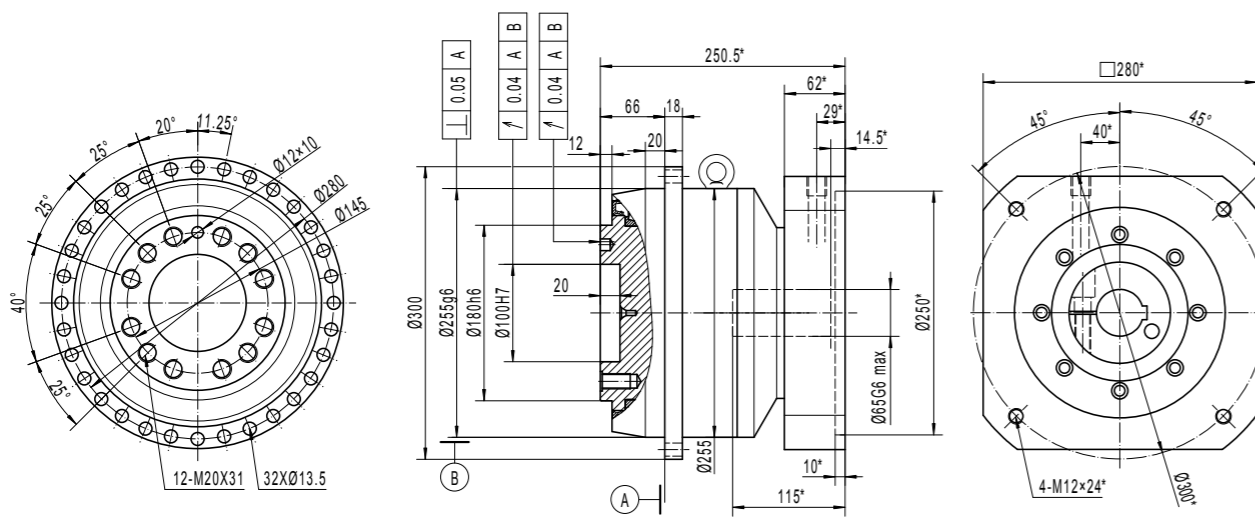
ULTIMATE-HT-CI-ST-255- 1 STAGE -RATIOS 4 OR 5.5
FOR MOTOR SHAFT $\leq \varnothing 42$

ULTIMATE-HT-CI-ST-255- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 42$



ULTIMATE-HT-CI-ST-255- 1 STAGE - RATIOS 4 OR 5.5
FOR MOTOR SHAFT $\leq \varnothing 65$

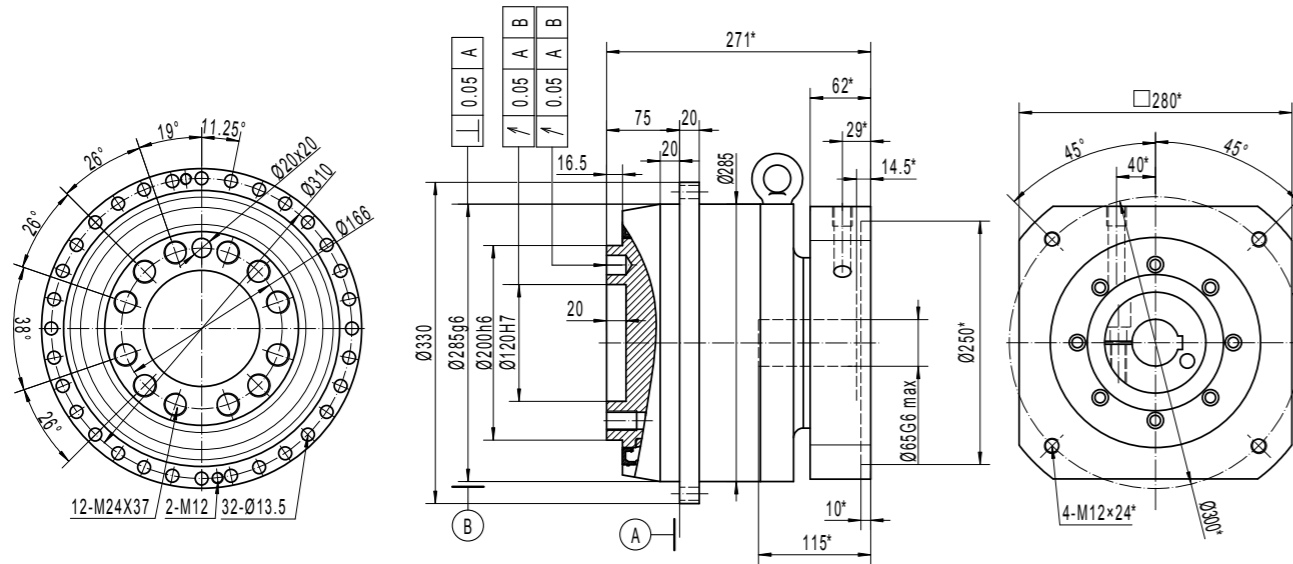
ULTIMATE-HT-CI-ST-255- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 65$



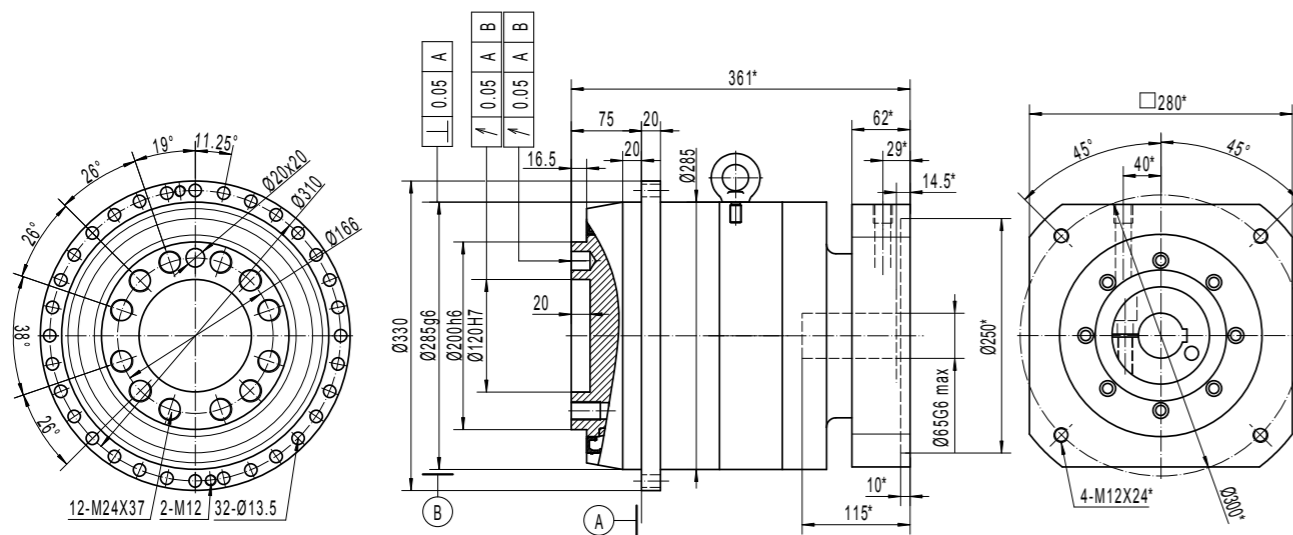
*VARIES WITH YOUR MOTOR DIMENSIONS

*VARIES WITH YOUR MOTOR DIMENSIONS

ULTIMATE-HT-CI-ST-285- 1 STAGE - RATIOS 4 OR 5.5
FOR MOTOR SHAFT $\leq \varnothing 65$



ULTIMATE-HT-CI-ST-285- 2 STAGES-P - RATIOS 16 TO 100
FOR MOTOR SHAFT $\leq \varnothing 65$



*VARIES WITH YOUR MOTOR DIMENSIONS

LIFETIME AND TORQUE RATINGS

How are lifetime and torque ratings linked in a planetary gearbox?

Face-to-face comparison with competitor's products is not easy, because there is no standardized way of presenting data. For any gearbox, many different ratings could be published, depending on choices made by the engineer calculating them, for instance the rotation speed, the use of an L10 life (allowing 10% of products to fail before nominal life), or the safety and application factors used when proceeding to the calculation. Results can vary from 1 to 3 with a similar product and very high torque ratings can be misleading.

At Reckon® we use the latest and safest norms on the market for our calculation, and we chose rotation speeds, temperature and minimal application factors corresponding to real-life needs. Even so, there is no «ready-to-use» torque data corresponding exactly to the way your application works. Lifetime of a gear will depend on the way your application will:

1. Wear the surface of the teeth, causing a loss of precision and decreasing lifetime (for example when rated torque is too high compared to nominal torque),
2. Bend them, potentially leading to fatigue breakage (when the torque used is higher than the nominal torque of the gearbox)
3. Break them instantly (when a shock occurs).

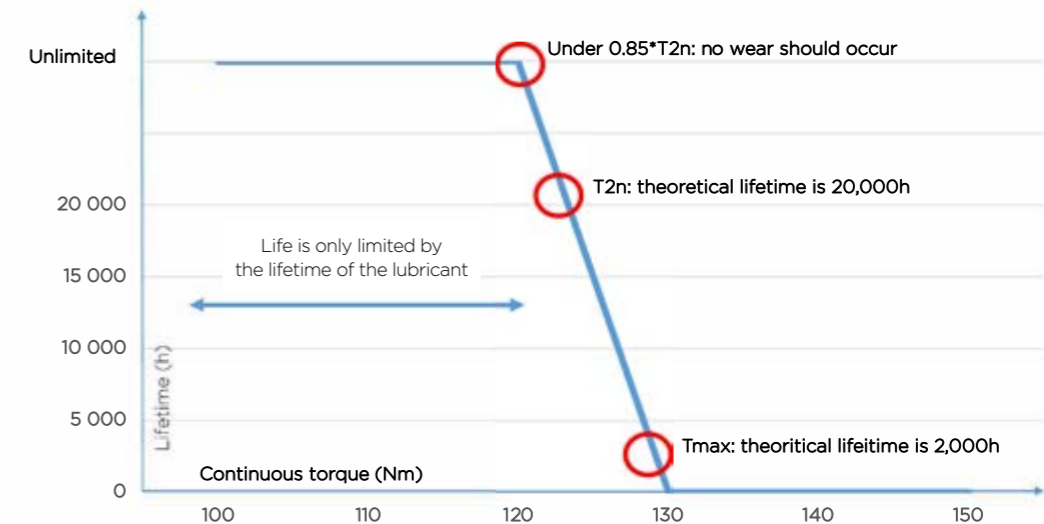
Lifetime of a gear stage is not proportional to the output torque. When a gearbox is properly dimensioned for an application, the theoretical gearing lifetime is unlimited because the film of lubricant between the gears is protecting them from working «metal-against-metal», and because fatigue breakage will not happen under such conditions.

- > Theoretical gearing lifetime is only limited to the lifetime of the lubricant if your rated torque is under T_{2n} ,
- > Theoretical gearing lifetime is 20,000h if the torque used is T_{2n} at nominal speed,
- > Acceleration torque can be used 2,000 hours if it is under T_{max} and maximum speed.

The graph below illustrates lifetime of a gear-stage vs input torque and does not take bearings or seals into consideration, and using the ISO 6336-2 calculation methodology.

You should notice how sharp the decrease of lifetime is, after nominal torque is exceeded.

Theoretical lifetime of a gear stage vs continuous torque



It should be noted that a planetary gearbox's lifetime depends as well on seals, lubricant or bearings condition, as well as it can be affected by fast variations of torque or reversals. Lifetime can consequently be impacted by heat and speed. It is important that you ask for a confirmation from our R&D department on your product selection.

Reckon's published data results from dedicated software calculation, and products were tested in real-life conditions. We chose to follow the ISO 6336-2 calculation norm, as we consider it a very safe method (it is used in the gear calculation of European space mechanisms). Our data is conservative, however it is important to note that indicated torque ratings or lifetimes can be affected by different factors:

- Temperature (calculation was based on a 60°C internal temperature), as lubricant viscosity differs with it. When the gearbox was selected properly, you should not notice more than a 60°C difference with the ambient temperature, and anyway the gearbox body (housing) should never exceed 90°C (based on grease datasheet) as the lubricant may not operate properly at such temperature, if the body temperature exceeds 90 degrees, do not hesitate to contact us as you probably need to use another gearbox model
- Speed (calculation was based on the rated speed indicated in the product datasheet charts). Exceeding this speed can increase the internal temperature and be prejudicial to the gears, bearings and seals lifetime. Make sure you do not exceed the nominal speed value, for more than a few seconds in a row,
- The Application Factor (see explanations on next pages). This is an empirical value based on experience, and you have to multiply by your average nominal torque to get your rated torque need.

As a conclusion, published data should be considered indicative because the data that corresponds exactly to your application just does not exist in a catalog. Our engineers will give you an evaluation of your gearbox's lifetime based on your application's real duty cycle and working conditions.

DEFINITIONS

- **The nominal torque T_{2n}** often referred to an «rated» torque is the torque that you can use continuously for 20,000h at nominal speed and with ambient temperature 25°C. Not exceeding this value ensures that the gearbox does not lose precision and can work for a very long time (years, normally). Using 15% less than the nominal torque value in S1 cycle theoretically provides an even longer lifetime, as calculation gives an unlimited result. Please note that torque ratings decrease when radial loads increase. The values indicated in the catalog are only true when the radial load is below 10% of the max value. In case it is higher, contact us and we can confirm your selection

- **The acceleration torque T_{max}** should only be used 10% of the gearbox lifetime (anyway less than 2,000h) because it slightly wears the gears, and because exceeding this duration would create the conditions of a fatigue breakage. It is important to note that the product will slightly lose precision over time when the acceleration torque is used frequently. Applications that need to preserve a very high precision in the long run (applications with high positioning accuracy or fast reversals where excessive backlash can lead to breakage) need to avoid using the acceleration torque too frequently. In many applications, allowing just a few seconds more to the application start can prolong the gearing lifetime significantly.

- **Using the emergency stop torque** will not wear the gears or make you lose precision because it only lasts seconds in the product life. The gearbox was designed to handle it 1,000 times. Exceeding this value can cause irreversible damage to the internal components, as it applies a high bending strength on the gears teeth and strong loads on the shafts and needle bearings.

SELECTION METHODOLOGY

Dimensioning a gearbox is easy, just follow the steps!

1. **Find the appropriate dimensioning option for your application** (next page)
2. **Refer to the synthetic torque table on page 125 and 126 to find suitable products.**
Up to 4 products will possibly correspond to your application's rated torque.
3. **Refer to the product pages. You will find all dimensions, permitted axial and radial forces, etc. allowing to choose the right line within ours.**

YOUR 2 DIMENSIONING OPTIONS

There are 2 options to choose from, depending on how frequently your application accelerates. In case of a doubt, do not hesitate to contact us.

1

IF YOUR APPLICATION REQUIRES ACCELERATION TORQUE LESS THAN 10% OF THE WORKING TIME AND NOMINAL TORQUE MORE THAN 90% OF TIME.

For instance: escalators need a high acceleration torque to reach their nominal speed, then the torque needed to keep moving is constant.

In such case, you can safely proceed to your product selection using the «nominal» and «acceleration» torques indicated in the product-lines “technical data” pages.

1. Select the appropriate reduction ratio: it should allow both the motor and the gearbox to rotate slower than their nominal speeds. Note that:

- a. Using ratio 10, 9, 8 or 7 or multiples will be more silent than using ratio 3, 4, 5 or 6 (as the fastest-rotating part will be the input pinion in high ratios, and the satellite gears in low ratios)
- b. A reduction ratio will divide motor speed by its exact number.

2. Use the tables displayed at each product line section and find the right size and product lines that can deliver the requested torque.

> Notes

- Oversizing the gearbox will not necessarily prolong your application's lifetime, but it will cost you money, space, efficiency and inertia to rotate a larger gearbox. Just select the right match.
- Always take efficiency into consideration. The motor torque will be multiplied by the reduction ratio and efficiency. Efficiency is high when the torque is high too, as some internal friction does not depend on torque (lubricant circulation, seal or bearing friction etc.). When measured at nominal torque, average gearing efficiency is 98% for 1-stage gearboxes (ratios 3 to 10) and 95% for 2-stages gearboxes (ratios 10 to 100). Note that efficiency depends on ratio, requested torque, speed, temperature etc... and varies from one product to another.

3. Select the right product-line, based on your requirements in terms of radial and axial efforts, acceleration, stiffness etc. You can find explanation on the differences between the product-lines in the tables displayed in the «in-line planetary gearboxes» or «right-angle planetary gearboxes» sections.

4. Always make sure that the gearbox acceleration torque capacity is higher than your motor's maximum torque!

2

IF YOUR APPLICATION ACCELERATES MORE THAN 10% OF TIME OR WORKS CONTINUOUSLY WITH SIGNIFICANT VARIATIONS OF TORQUE.

For instance: punching machines, when the notion of «continuous» torque is not relevant because it varies permanently.

In such case, you need to use an application factor.

1. Select the appropriate reduction ratio:

- It should allow both your motor and your gearbox to rotate slower than their nominal speed (refer to the products datasheets),
- Using ratio 10, 9, 8 or 7 will be more silent than using ratio 3, 4, 5 or 6 (as only the input pinion will turn fast in higher ratios),
- Avoid ratio 10 in dynamic applications as the gear construction is too weak to ensure a long life.

2. Find your relevant application factor and multiply your average application torque by it. (Refer to the **application factors section**). Do not hesitate to contact us for any help or advice.

3. Use the synthetic rated torques table (or the tables at the end of the page of each product line) and find the right size and the size and product lines that can deliver the requested torque.

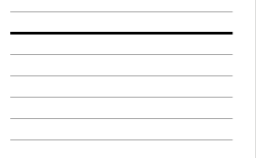
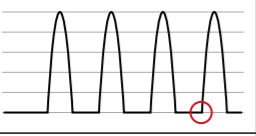
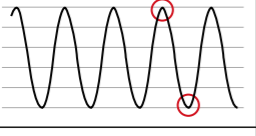

- Oversizing the gearbox will not necessarily prolong your application's lifetime, but it will cost you money, space, efficiency and inertia to rotate a larger gearbox. Just select the right match.

4. Select the right product-line, based on your requirements in terms of radial and axial efforts, acceleration, stiffness etc. You can find explanation on the differences between the product-lines in the tables displayed in the «in-line planetary gearboxes» or «right-angle planetary gearboxes» sections.

5. Always make sure that the gearbox acceleration torque capacity exceeds your motor's maximum torque!

SELECT THE APPLICATION FACTOR MOST ADAPTED TO YOUR SYSTEM

Using the right application factor is key to guarantee that your gearbox will not lose precision nor break. As many applications do not work homogeneously, the ISO and DIN institutes defined application factors. We based our application factors on them. Once you have identified what application factor corresponds to your duty cycle, you need to multiply your «continuous torque» («X» in the diagrams below) by the application factor. The application factors below are indicative, as every application is different. Selecting them is empirical. You will find more explanation in norms ISO 6336, DIN 3990 and DIN 3991.

	<p>Ka = 1: continuous, stable operation with DC motor like mixers in liquid, uniformly-loaded conveyor, escalator, metal coiler etc. Never use Ka=1 with a servomotor.</p> <p>Ka = 1.1: continuous, stable operation with a servomotor</p>	
	<p>Ka = 1.25: conveyors, extruder feeders with belts, meat grinders, cable reels, dough mixers etc</p> <p>Ka = 1.35: dryers etc.</p>	
	<p>Ka = 1.5: radars, wire winding machines</p> <p>Ka = 1.7: stone crushers, extruder screw, plastic mixers,</p>	LOW BACKLASH NEEDED
	<p>Ka = 1.8: punching machines, fast laser-welding machines</p> <p>Ka = 2.5: delta robots...</p>	VERY LOW BACKLASH NEEDED

Reminder: the data in the datasheets already include an application factor 1.25.

Note: the red circles represent reversals. Always make sure that your reversals are ramped-up or down, to avoid shocks on teeth inside the gearbox.

SHOCK FACTORS

For servomotor applications subject to shocks, DIN 3990 norm recommends multiplying your average torque by one of the following parameters:

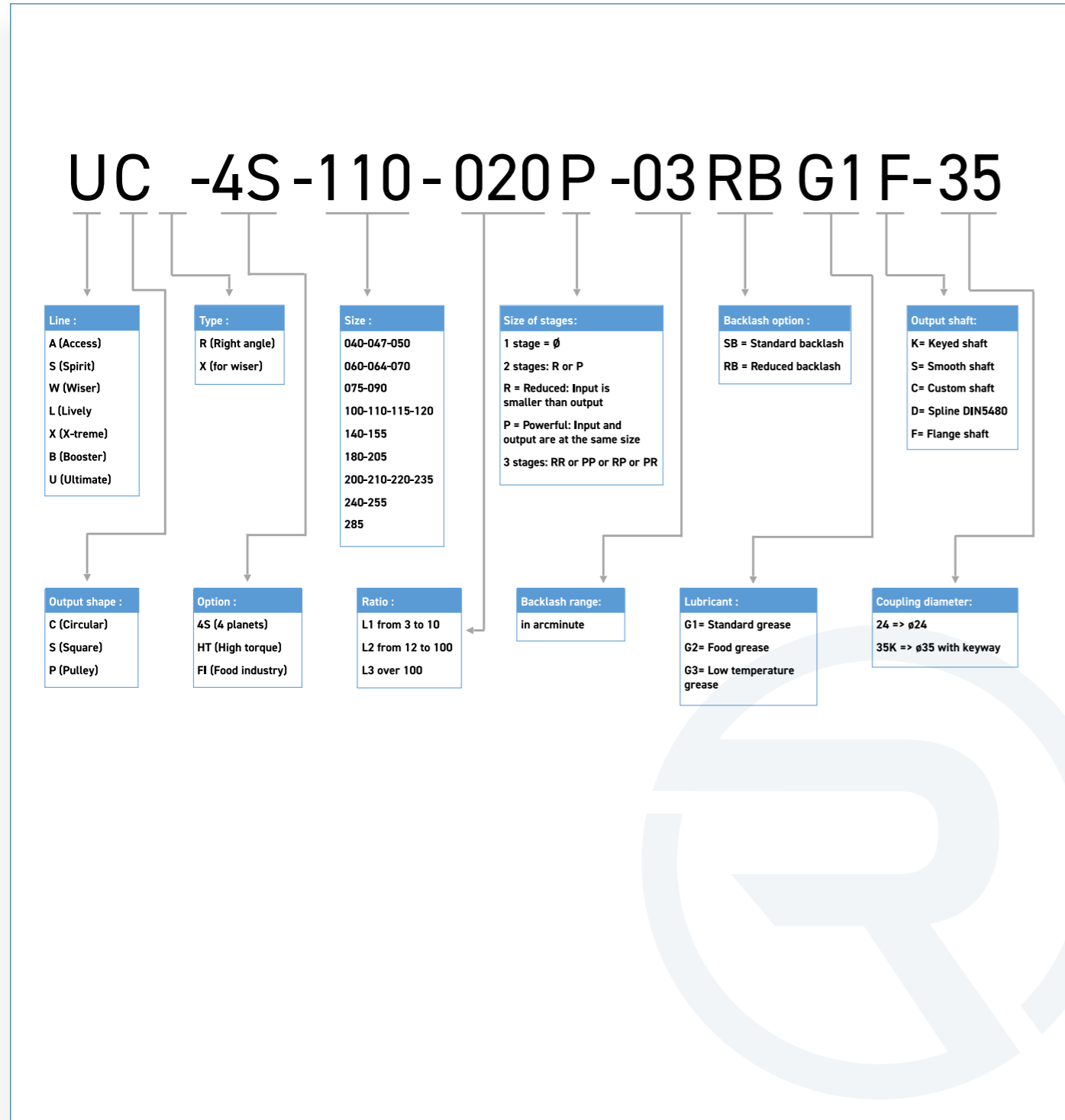
- Moderate shocks: **Ka = 1.35**
- Medium shocks: **Ka = 1.60**
- Heavy shocks: **Ka = 1.85**

AMBIENT TEMPERATURE FACTORS

- T°<25°C: **Kt = 1.00** (unventilated) or **0.9** (ventilated)
- T°<35°C: **Kt = 1.10** (unventilated) or **1** (ventilated)
- T°<45°C: **Kt = 1.25** (unventilated) or **1.15** (ventilated)



ORDERING REFERENCES



AVAILABLE INPUT COUPLINGS

	Ø8	Ø14	Ø19	Ø22	Ø24	Ø28	Ø35	Ø38	Ø42	Ø48	Ø55	Ø60	Ø65	
AC	050-L1 050-L2P	050-L1 050-L2P 070-L1 070-L2P	070-L1 070-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
ACR	050-L1 050-L2P	050-L1 050-L2P 070-L1 070-L2P	070-L1 070-L2P	090-L1 090-L2P 120-L1 120-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
AC-FI	050-L1 050-L2P	050-L1 050-L2P 070-L1 070-L2P	070-L1 070-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
AS	040-L1 040-L2P	040-L1 040-L2P 060-L1 060-L2P	060-L1 060-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
ASR	040-L1 040-L2P	040-L1 040-L2P 060-L1 060-L2P	060-L1 120-L1 120-L2P	090-L1 090-L2P 120-L1 120-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
AP		060-L1 060-L2P	060-L1 060-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
SC	047-L1 047-L2P	047-L1 047-L2P 064-L1 064-L2P	064-L1 064-L2P	090-L1 090-L2P	090-L1 090-L2P 110-L1 110-L2P	110-L1 110-L2P	110-L1 110-L2P							
SCR	047-L1 047-L2P	047-L1 047-L2P 064-L1 064-L2P	064-L1 110-L1 110-L2P	090-L1 090-L2P 110-L1 110-L2P	090-L1 090-L2P 110-L1 110-L2P	110-L1 110-L2P	110-L1 110-L2P							
WC		060-L1 060-L2P 090-L1 090-L2P	060-L1 060-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1	120-L1							
WC-X		060-L1 060-L2P 090-L1 090-L2P	060-L1 060-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1	120-L1							
WS		060-L1 060-L2P 090-L1 090-L2P	060-L1 060-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1	120-L1							
WS-X		060-L1 060-L2P 090-L1 090-L2P	060-L1 060-L2P	090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1	120-L1							
LC	040-L1 040-L2P	040-L1/040-L2P 060-L1/060-L2P 090-L1 090-L2P	060-L1 / 060-L2P 090-L1 090-L2P	090-L1 / 090-L2P 120-L1 120-L2P	090-L1 / 090-L2P 120-L1 / 120-L2P 155-L1 / 155-L2P 155-L1 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	120-L1 / 120-L2P 155-L1 / 155-L2P 155-L1 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	120-L1 / 120-L2P 155-L1 / 155-L2P 155-L1 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	155-L1 / 155-L2P 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	155-L1 / 155-L2P 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	205-L1 / 205-L2P 235-L1 / 235-L2P 235-L1	205-L1 / 205-L2P 235-L1 / 235-L2P 235-L1	235-L1 235-L2P		
LCR	040-L1 040-L2P	040-L1 / 040-L2P 060-L1 / 060-L2P 090-L1 090-L2P	060-L1 / 060-L2P 090-L1 120-L1 / 120-L2P 155-L1 155-L2P	090-L1 / 090-L2P 120-L1 120-L2P 155-L1 155-L2P 205-L1 205-L2P	090-L1 / 090-L2P 120-L1 / 120-L2P 155-L1 / 155-L2P 155-L1 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	120-L1 / 120-L2P 155-L1 / 155-L2P 155-L1 205-L1 / 205-L2P 205-L1	120-L1 / 120-L2P 155-L1 / 155-L2P 155-L1 205-L1 / 205-L2P 205-L1	155-L1 / 155-L2P 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	155-L1 / 155-L2P 205-L1 / 205-L2P 205-L1 235-L1 / 235-L2P 235-L1	205-L1 205-L2P				
LS	040-L1 040-L2P	040-L1 / 040-L2P 060-L1 / 060-L2P 090-L1 090-L2P	060-L1 / 060-L2P 090-L1 120-L1 / 120-L2P 140-L1 140-L2P	090-L1 / 090-L2P 120-L1 120-L2P 140-L1 140-L2P 180-L1 180-L2P 220-L1 / 220-L2P 220-L1	090-L1 / 090-L2P 120-L1 / 120-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P 220-L1 / 220-L2P 220-L1	120-L1 / 120-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P 220-L1 / 220-L2P 220-L1	120-L1 / 120-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P 220-L1 / 220-L2P 220-L1	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	180-L1 / 180-L2P 220-L1 / 220-L2P 220-L1	180-L1 / 180-L2P 220-L1 / 220-L2P 220-L1	220-L1 220-L2P		
LSR	040-L1 040-L2P	040-L1 / 040-L2P 060-L1 / 060-L2P 090-L1 090-L2P	060-L1 / 060-L2P 090-L1 120-L1 / 120-L2P 140-L1 140-L2P	090-L1 / 090-L2P 120-L1 120-L2P 140-L1 140-L2P 180-L1 180-L2P	090-L1 / 090-L2P 120-L1 / 120-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P 220-L1 / 220-L2P 220-L1	120-L1 / 120-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P	120-L1 / 120-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	180-L1 180-L2P				
XS		060-L1 060-L2P 075-L1 075-L2P	060-L1 060-L2P 075-L1 075-L2P	075-L1 / 075-L2P 100-L1 100-L2P	075-L1 / 075-L2P 100-L1 / 100-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P 210-L1 / 210-L2P 210-L1 240-L1 / 240-L2P 240-L1	100-L1 / 100-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P 210-L1 / 210-L2P 210-L1 240-L1 / 240-L2P 240-L1	100-L1 / 100-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P 210-L1 / 210-L2P 210-L1 240-L1 / 240-L2P 240-L1	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	180-L1 / 180-L2P 210-L1 / 210-L2P 210-L1 240-L1 / 240-L2P 240-L1	180-L1 / 180-L2P 210-L1 / 210-L2P 210-L1 240-L1 / 240-L2P 240-L1	210-L1 240-L1 / 240-L2P		
XSR		060-L1 / 060-L2P 075-L1 075-L2P	060-L1 / 060-L2P 075-L1 075-L2P 100-L1 / 100-L2P 140-L1 140-L2P	075-L1 / 075-L2P 100-L1 / 100-L2P 100-L1 100-L2P 140-L1 140-L2P 180-L1 180-L2P	075-L1 / 075-L2P 100-L1 / 100-L2P 100-L1 100-L2P 140-L1 140-L2P 180-L1 180-L2P	100-L1 / 100-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P	100-L1 / 100-L2P 140-L1 / 140-L2P 140-L1 180-L1 180-L2P	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	140-L1 / 140-L2P 180-L1 / 180-L2P 180-L1 220-L1 / 220-L2P 220-L1	180-L1 180-L2P				
BS		060-L1 060-L2P 090-L1 090-L2P	060-L1 060-L2P 090-L1 090-L2P	090-L1 090-L2P 120-L1 120-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
BSR		060-L1 060-L2P 090-L1 090-L2P	060-L1 060-L2P 090-L1 120-L1 120-L2P	090-L1 090-L2P 120-L1 120-L2P	090-L1 090-L2P 120-L1 120-L2P	120-L1 120-L2P	120-L1 120-L2P							
UC	047-L1 047-L2P	047-L1 / 047-L2P 064-L1 / 064-L2P 090-L1 090-L2P	064-L1 / 064-L2P 090-L1 090-L2P	090-L1 / 090-L2P 110-L1 110-L2P	090-L1 / 090-L2P 110-L1 / 110-L2P 140-L1 140-L2P 200-L1 / 200-L2P 200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	110-L1 / 110-L2P 140-L1 / 140-L2P 140-L1 200-L1 200-L2P 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	110-L1 / 110-L2P 140-L1 / 140-L2P 140-L1 200-L1 200-L2P 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	140-L1 / 140-L2P 200-L1 / 200-L2P 200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	140-L1 / 140-L2P 200-L1 / 200-L2P 200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	200-L1 / 200-L2P 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	255-L1 / 255-L2P 285-L1 / 285-L2P 285-L1	
UCR	047-L1 047-L2P	047-L1 / 047-L2P 064-L1 / 064-L2P 090-L1 090-L2P	064-L1 / 064-L2P 090-L1 110-L1 / 110-L2P 140-L1 140-L2P	090-L1 / 090-L2P 110-L1 / 110-L2P 140-L1 140-L2P 200-L1 200-L2P	090-L1 / 090-L2P 110-L1 / 110-L2P 140-L1 / 140-L2P 140-L1 140-L2P 200-L1 200-L2P	110-L1 / 110-L2P 140-L1 / 140-L2P 140-L1 200-L1 200-L2P	110-L1 / 110-L2P 140-L1 / 140-L2P 140-L1 200-L1 200-L2P	140-L1 / 140-L2P 200-L1 / 200-L2P 200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	140-L1 / 140-L2P 200-L1 / 200-L2P 200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	200-L1 200-L2P				
UC-HT				090-L1 090-L2P	090-L1 / 090-L2P 110-L1 / 110-L2P 140-L1 / 140-L2P 200-L1 / 200-L2P 255-L1 / 255-L2P 285-L1 / 285-L2P	110-L1 / 110-L2P 140-L1 / 140-L2P 140-L1 200-L1 200-L2P	110-L1 / 110-L2P 140-L1 / 140-L2P 140-L1 200-L1 200-L2P	140-L1 / 140-L2P 200-L1 / 200-L2P 200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	140-L1 / 140-L2P 200-L1 / 200-L2P 200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	200-L1 200-L2P	200-L1 / 200-L2P 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	200-L1 255-L1 / 255-L2P 255-L1 285-L1 / 285-L2P 285-L1	255-L1 / 255-L2P 285-L1 / 285-L2P 285-L1	

L1 => 1 stage L2P => 2 stages powerful L2R => 2 stages reduced

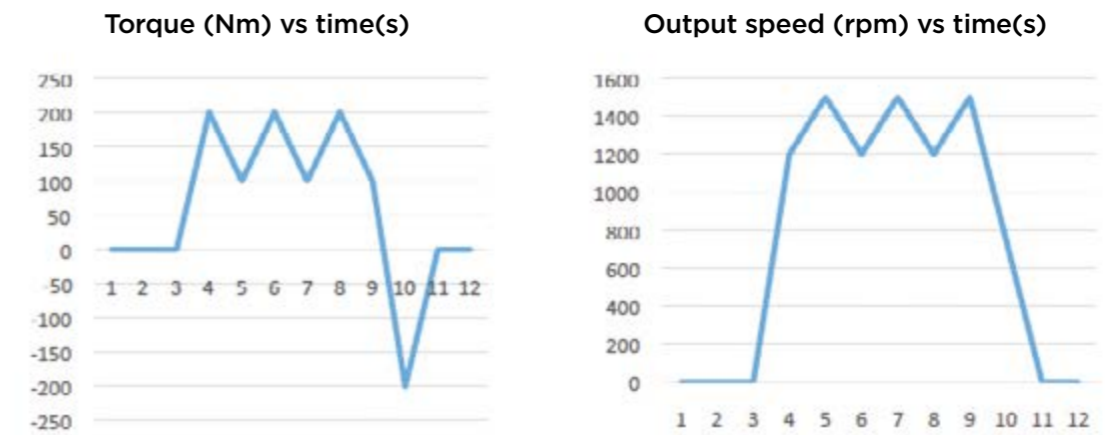
In case of a doubt, our engineers will be happy to verify your product selection.
Do not hesitate to ask us for a free estimation of your gearbox lifetime.



Need assistance in your product selection ? Contact us!

To get an estimation of your selected gearbox's lifetime, please prepare the following information for us:

- We will need a “torque vs time” and a “speed vs time” curves like the ones below. They do not have to be very precise, a hand-made sketch can just be perfect for our engineers to estimate the application factor to use.



- Explaining where the gearbox goes is precious information. As well we will need to know:
 - the motor reference,
 - how many hours per day you are planning to use the gearbox, and how many cycles the system will operate per hour,
 - what radial and axial forces are generated at the output,
 - what the ambient temperature is,
 - what is the lifetime you are targetting.

With such information we should be able to assist you in your product selection.



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