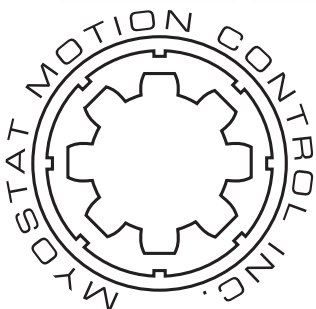
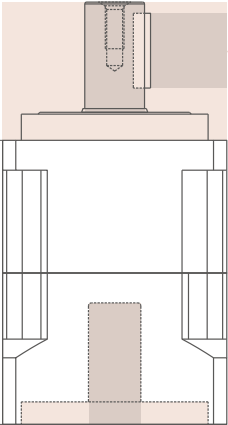


Planetary Helical and Right Angle Gear boxes



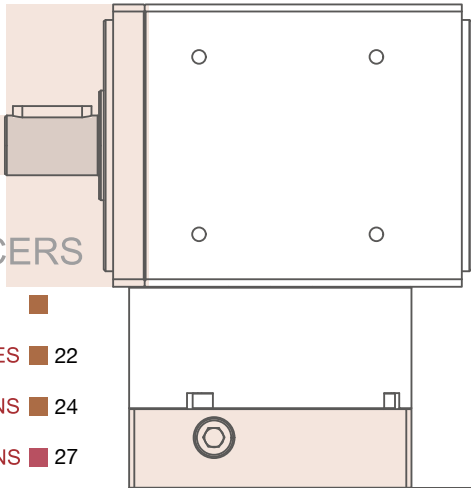
MYOSTAT.ca
MOTION CONTROL FOR ROBOTICS



CONTENTS

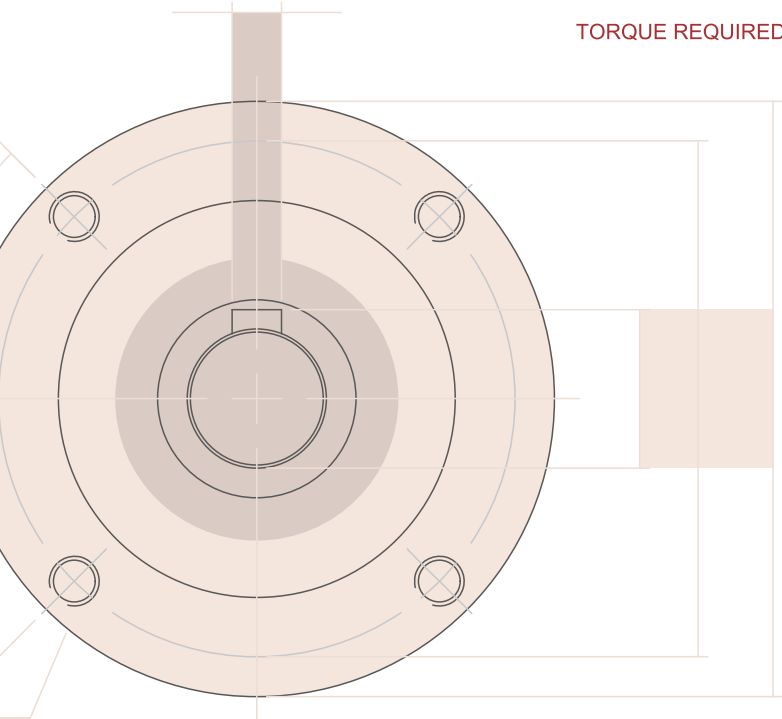
PRECISION PLANETARY GEAR REDUCERS

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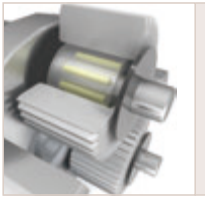
PRECISION RIGHT ANGLE GEAR REDUCERS

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FEATURES

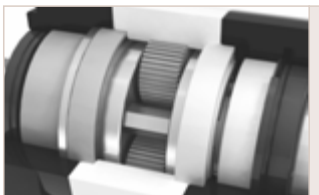
- NEMA mounting standards available for quick installation.
- Integral gear ratio available from 3:1 through 512:1 for wide range selection.
- Two types of GEAR REDUCERS with round and square output flange.
- High performance and high reduction ratio for transferring high torques in limited space.
- Precision gears to raise transmission efficiency above 96%.
- Hardened high strength steel components for reliability under severe environmental conditions.
- All grease-filled, the gear head can be used in any orientation without oil leaks.
- Available for wide range applications of automation and motion control in industries such as aerospace, medical, pharmaceutical, factory automation, printing, robotics, auto control system, automotive, textile equipment, semiconductor, manufacturing equipment, X-Y positioning systems, coordinate measuring, optical positioning equipment, telecommunications, packaging, material handling, assembly line, CCTV system, machine tools and special machinery etc.



Needle bearings for high output torque.



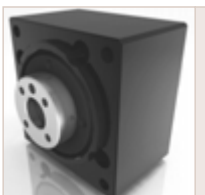
Closed planet cage provides extremely high rigidity.



All grease filled and double seal design to eliminate leakage in any orientation.



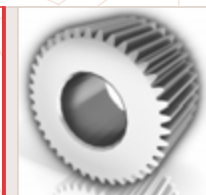
Planet gear train provides compact size yet high transmission efficiency.



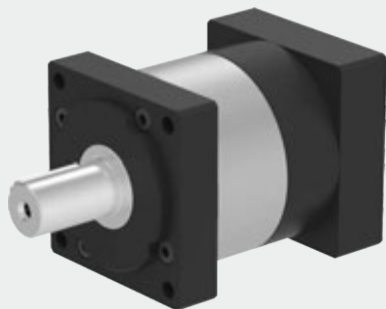
Versatile output design.



Larger bearings for increased loading.

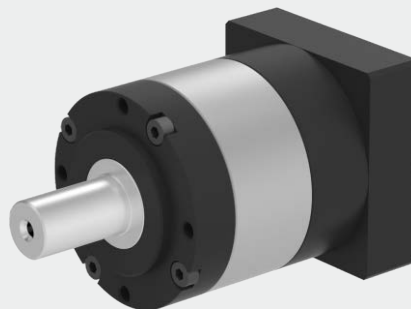


Alloy steel made gears with carburized heat treatment for superior wear resistance and strength.



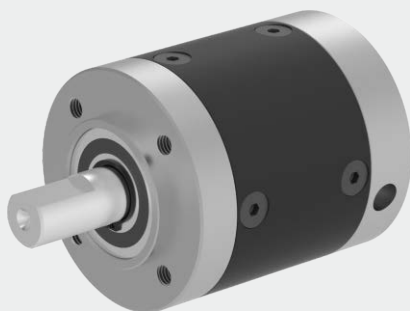
LX FEATURES

Precision performance square flange gearbox with two piece adaptor flange for flexible mounting options and optimized stock management. The semi-closed planet carrier design provides maximum radial load capacity and increase gear train reliability and stiffness. Four frame sizes are available with gear ratios from 1:3 to 1:100.



PN FEATURES

Precision performance round flange gearbox with two piece adaptor flange for flexible mounting options and optimized stock management. The semi-closed planet carrier design provides maximum radial load capacity and increased gear train reliability and stiffness. Four frame sizes are available with gear ratios from 1:3 to 1:100.



EL FEATURES

Why pay the cost for a heavy-duty gearbox for a light-duty application when our highly customizable economy line can give you what you need at the price that meets your target.

The economy line gear reducer with built for purpose engineering ensures that you don't over pay for features that are not required. Frame sizes are available from 22mm, 30mm, 32mm, 36mm, 42mm, 52mm, 60mm, 80mm and 90mm in various of ratio combinations.

Other frame sizes and dimensions can be customized according to the actual requirement.

LX/PN

TECHNICAL DATA

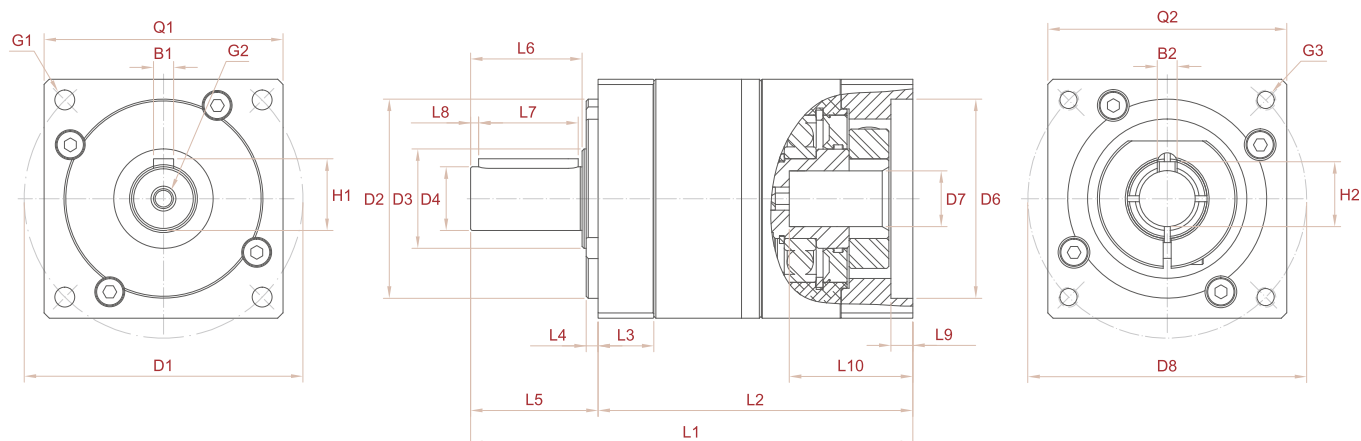
Model / Size		Stages	42 (NEMA 17)	60 (NEMA 23)	90 (NEMA 34)
Full load efficiency	%	1	96		
		2	92		
Backlash	arcmin	1	Standard		
			<12	<12	<12
			Precision		
		2	<6	<6	<6
			Standard		
			<12	<12	<12
Noise	dB(A)	1	<8	<8	<8
		2	<8	<8	<8
Lifetime	hr		58	62	64
Max radial load	N		25000		
Max axial load	N		300	1200	2450
Max input speed	min-1		110	1050	2200
Torsional stiffness	Nm/arcmin		12000	10000	8000
Weight	kg	1	0.9	2.2	8
		2	0.5	1.2	3.2
Operating temp.	°C		0.9	1.6	4.5
Degree of protection			-25 ~ 90		
Lubrication			IP 64		
Mounting direction			Life lubrication		
			Any		

- Low noise
- Compact size and optimized weight
- Economic value with quality
- Optimized inertia moment
- Stable temperature rise
- High efficiency transmission
- Optimized design with special lubricant for long service life
- Flexible mounting dimensions

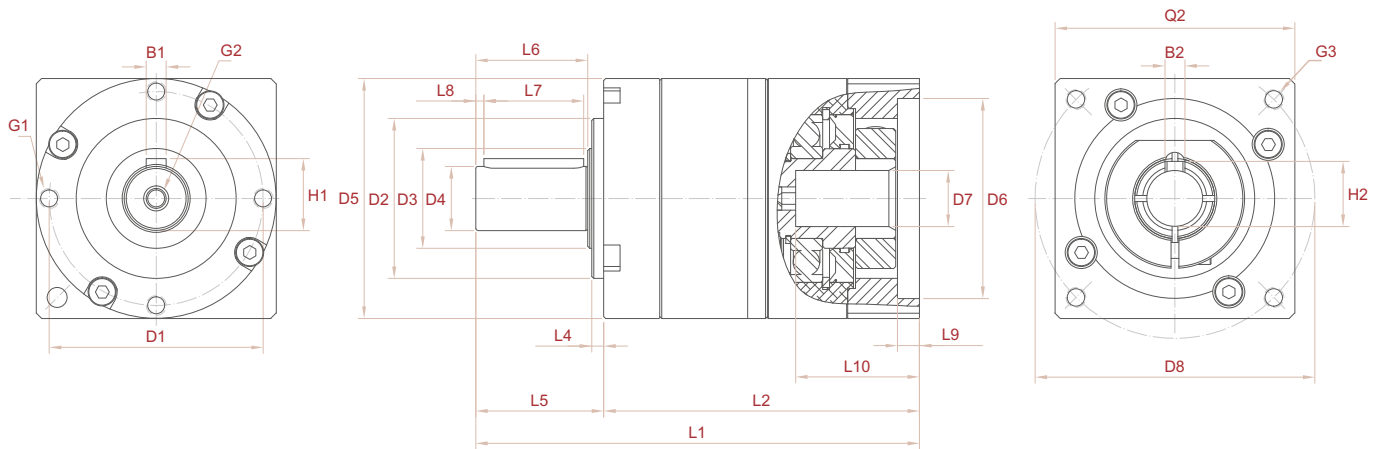
Model / Size		Stages	Ratio	42	60	90
Nominal output torque	Nm	1	3	13	34	108
			4	18	46	144
			5	17	48	138
			7	10	30	84
			9	7	22	66
			10	6	18	52
		2	12	24	53	150
			15	22	53	138
			16	24	53	150
			20	24	53	150
			25	22	48	138
			30	24	53	102
			40	22	48	132
			50	24	53	150
			70	10	34	96
			100	6	18	70
MAX Output torque			3 times of Nominal output torque			

LX

PROFILE DIMENSIONS



Product type				LX-042		LX-060		LX-090	
Overall length	1	L1	90		111		144		
	2		113.5		138		178.5		
	3		137		165		213		
Body length	1	L2	64		79		103		
	2		87.5		106		137.5		
	3		111		133		172		
Output flange			Q1	□42	□60		□90		
Input flange			Q2	□42	□60		□90		
Output									
Flange thickness			L3	9.5		14		20	
Pilot length			L4	2.5		3		3	
Output shaft length			L5	26		32		41	
Shaft shoulder to the shaft end			L6	22.5		28		37	
Key length			L7	18		25		30	
Key length to the shaft end			L8	2		2		2.5	
Mounting hole circle			D1	Ø50		Ø70		Ø100	
Pilot diameter			D2	Ø35 G6		Ø50 G6		Ø80 G6	
Shaft shoulder diameter			D3	Ø15		Ø17		Ø35	
Output shaft diameter			D4	Ø13 H7		Ø16 H7		Ø22 H7	
Key width			B1	5		5		6	
Key Height			H1	15		18		24.5	
Mounting hole			G1	Ø4.2		Ø5.2		Ø6.8	
Center screw hole x depth			G2	M4 x 10		M5 x 12		M6 x 16	
Input									
Pilot depth			L9	3		5.5		5.5	
Motor shaft length			L10	25		30		40	
Pilot diameter			D6	Ø30 G7	Ø22 G7	Ø50 G7	Ø38.1 G7		Ø70 G7
Input shaft diameter			D7	Ø8	Ø5	Ø14	Ø6.35		Ø19
Mounting hole circle			D8	Ø46	Ø43.84(□31)	Ø70	Ø66.67(□47.14)		Ø90
Mounting thread x depth			G3	M4 x 10	Ø3.3	M5 x 12	M4 x 10		M6 x 12
Key width			B2	3	—	5	—		6
Key Height			H2	9.4	—	16.3	—		21.8



Product type			PN42		PN60		PN90	
Overall length	1	L1	90		111		144	
	2		113.5		138		178.5	
	3		137		165		213	
Body length	1	L2	64		79		103	
	2		87.5		106		137.5	
	3		111		133		172	
Output flange		D5	Ø42		Ø60		Ø90	
Input flange		Q2	□42		□60		□90	
Output								
Pilot length		L4	2.5		3		3	
Output shaft length		L5	26		32		41	
Shaft shoulder to the shaft end		L6	22.5		28		37	
Key length		L7	18		25		30	
Key length to the shaft end		L8	2		2		2.5	
Mounting hole circle		D1	Ø37		Ø53.5		Ø80	
Pilot diameter		D2	Ø26 G6		Ø40 G6		Ø60 G6	
Shaft shoulder diameter		D3	Ø15		Ø20		Ø35	
Output shaft diameter		D4	Ø13 H7		Ø16 H7		Ø22 H7	
Key width		B1	5		5		6	
Key Height		H1	15		18		24.5	
Mounting hole		G1	M4 x 10		M5 x 11		M6 x 15	
Center screw hole x depth		G2	M4 x 10		M5 x 12		M6 x 16	
Input								
Pilot depth		L9	3		5.5		5.5	
Motor shaft length		L10	25		30		40	
Pilot diameter		D6	Ø30 G7	Ø22 G7	Ø50 G7	Ø38.1 G7	Ø70 G7	
Input shaft diameter		D7	Ø8	Ø5	Ø14	Ø6.35	Ø19	
Mounting hole circle		D8	Ø46	Ø43.84(□31)	Ø70	Ø66.67(□47.14)	Ø90	
Mounting thread x depth		G3	M4 x 10	Ø3.3	M5 x 12	M4 x 10	M6 x 12	
Key width		B2	3	—	5	—	6	
Key Height		H2	9.4	—	16.3	—	21.8	



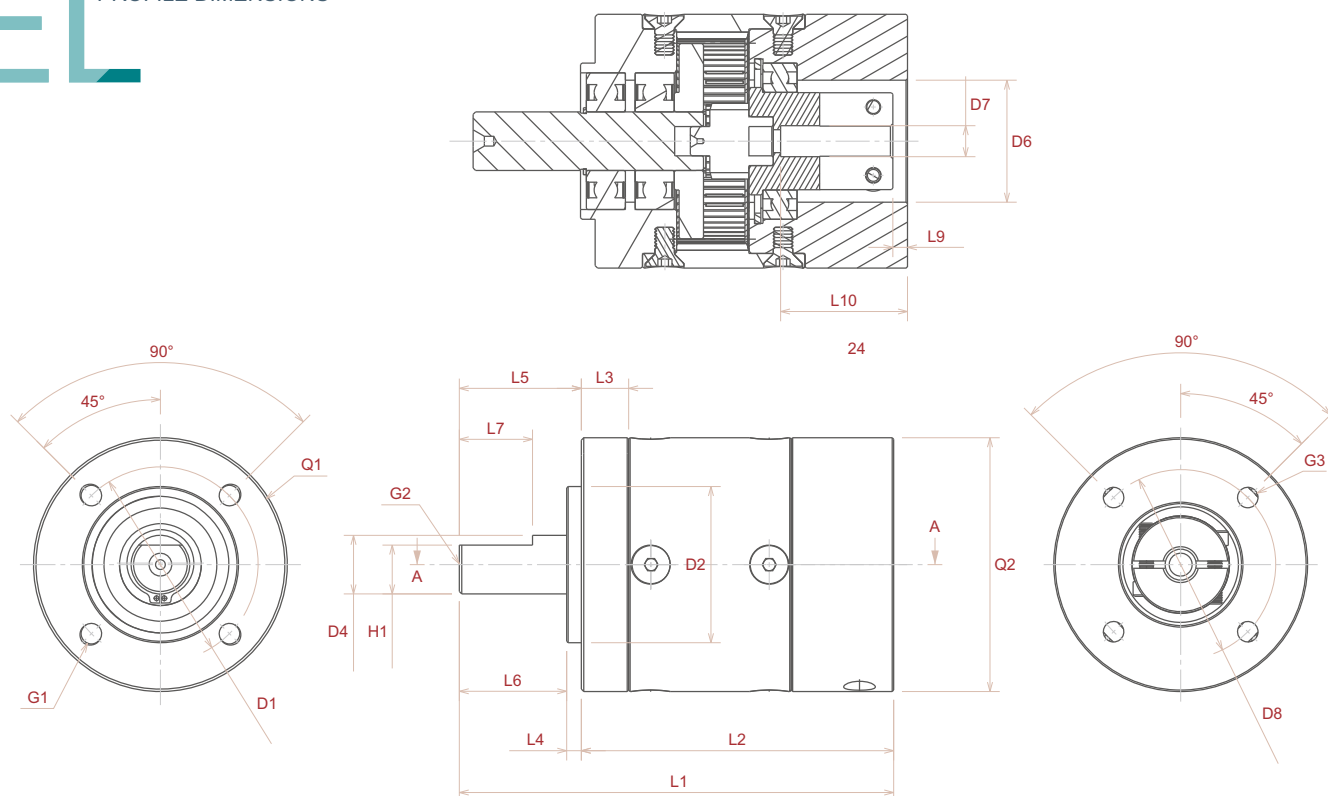
Model / Size		Stages	22	32	42	52	60	80	90
Full load efficiency	%	1	95						
		2	90						
Noise	dB(A)		52	54	58	60	60	62	65
Lifetime	hr		20000						
Max radial load	N		50	100	300	450	520	1000	1500
Max axial load	N		15	30	110	30	150	200	300
Max input speed	min-1		16000	14000	12000	8000	8000	7000	7000
Weight	kg	1	0.019	0.153	0.42	0.652	1.115	1.484	2.164
		2	0.026	0.18	0.47	0.75	1.22	1.78	3.2
Operating temp.	°C		-30 ~ 120						
Degree of protection			IP 54						
Lubrication			Life lubrication						
Mounting direction			Any						

- Low cost
- Compact size
- Customizable
- Stable temperature rise
- Efficient transmission
- Optimized design with special lubricant for long service life
- Flexible mounting dimensions

Model / Size		Stages	Ratio	22	32	42	52	60	80	90
Nominal output torque	Nm	1	3	1.0	2.5	11	25	28	81	90
			4			15	34	38	108	120
			5			16	36	40	110	125
			7			8.5	23	25	63	70
			9			6	16	18	50	55
			10			5	14	15	39	43
		2	12	1.2	5.0	20	40	44	113	125
			15			18	40	44	104	115
			16			20	40	44	113	125
			20			20	40	44	113	125
			25			18	36	40	104	115
			30			20	40	44	77	85
			40			18	36	40	99	110
			50			20	40	44	113	125
			70			8	25	28	72	80
			100			5	14	15	52	58
MAX Output torque		2.5 times of Nominal output torque								

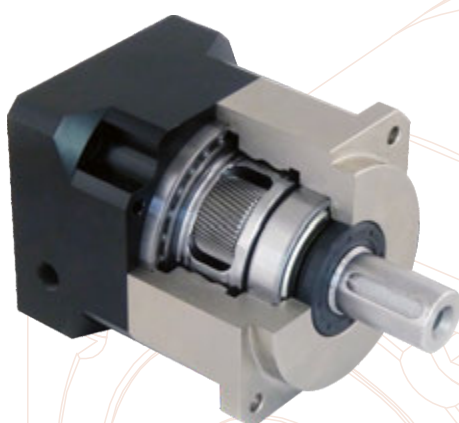
EL

PROFILE DIMENSIONS



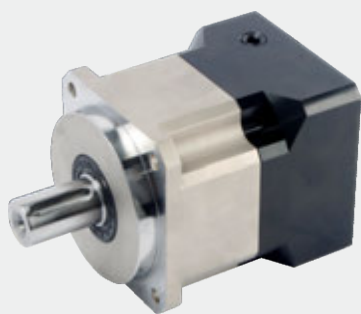
Product type			EL32	EL42	EL52	EL60	EL90
Overall length	1	L1	54.9	82	89	106	122.3
	2		65.4	97.5	103.5	123.4	144
	3		75.9	113	118	141	166
Body length	1	L2	35.6	60	64	71	77.3
	2		46.1	75.5	78.5	88.4	99
	3		56.6	91	93	106	121
Output flange		Q1	Ø32	Ø42	Ø52	Ø60	Ø90
Input flange		Q2	Ø32	Ø42	Ø52	Ø60	Ø90
Output							
flange thickness	L3		5.5	5	9.7	10.5	8.5
Pilot length	L4		3	2	3	3	5
Output shaft length	L5		19.3	22	25	35	45
shaft shoulder to the shaft end	L6		16.3	20	22	32	40
Flat end length	L7		12	12	15	20	35
Mounting hole circle	D1		32	35	40	52	90
Pilot diameter	D2		20	25	32	40	55
shaft shoulder diameter	D3		—	—	—	—	—
Output shaft diameter	D4		6	8	12	14	19
Flat end height	H1		5.5	7	10	12	15
mounting thread	G1		M3	M4	M5	M5	M6
center screw hole	G2		—	—	—	—	—
Input							
Pilot depth	L9		2	3	3	3.6	3.5
Motor shaft length	L10		15.6	22	24	31	41
Pilot diameter	D6		12.7	22	25	50	50
Input shaft diameter	D7		4	5	8	9	14
Mounting hole circle	D8		32	42	52	63	65
Mounting thread	G3		3.2	3.2	4.2	5.2	6.2

FEATURES



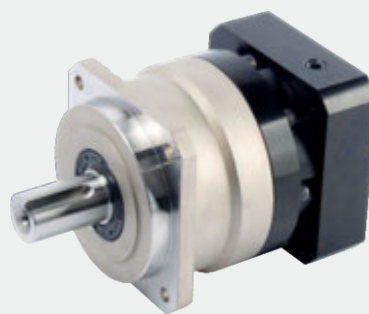
FEATURES





ZA FEATURES

High output torque solid one piece square housing that provides performance and efficiency with torque and sturdiness. The helical toothed and one piece carrier design provides maximum radial load capacity as well as system reliability and stiffness. Four frame sizes are available with gear ratios from 1:3 to 1:100.



ZB FEATURES

High output torque solid one piece round housing that provides performance and efficiency with torque and sturdiness. The helical toothed and one piece carrier design provides maximum radial load capacity as well as system reliability and stiffness. Four frame sizes are available with gear ratios from 1:3 to 1:100.



ZE FEATURES

Offers low-cost precision one piece housing gear reducer combined many of the features and benefits that's upgraded from our PS / PN series with the ability to serve as an easy drop-in replacement from spur to helical toothed gear reducers. The ZE Series provides a cost-effective solution for many applications. Four frame sizes are available with gear ratios from 1:3 to 1:100.



ZF FEATURES

Flexible mounting diameter and high output torque solid round housing that provides performance and efficiency with torque and sturdiness. The helical toothed and one piece carrier design provides maximum radial load capacity as well as system reliability and stiffness. The flange type output shaft is targeted for application in Robotics, Automation and Offshore. Four frame sizes are available with gear ratios from 1:4 to 1:100.

ZA/ZB/ZE

TECHNICAL DATA

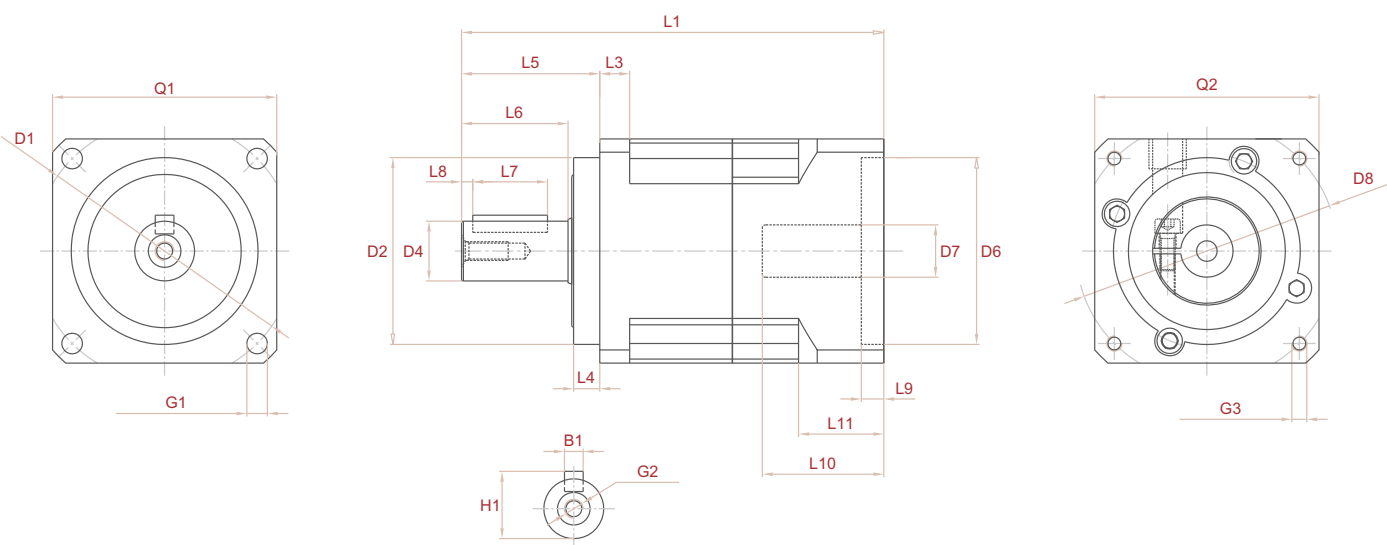
ULTRA PRECISION PLANETARY GEAR REDUCERS
ZA/ZB/ZE TECHNICAL DATA

Model / Size		Stages	60	90	120	140
Full load efficiency	%	1			97	
		2			94	
Backlash	arcmin	1	<3	<3	<3	<3
		2	<5	<5	<5	<5
Noise	dB(A)		<65	<67	<70	<72
Lifetime	hr				30000	
Max radial load	N		1200	2450	4400	9000
Max axial load	N		1050	2200	4000	8200
Max input speed	min-1		10000	8000	8000	6000
Torsional stiffness	Nm/arcmin		7	14	25	50
Weight	kg	1	1.35	4.25	9.15	14.6
		2	1.7	7	13	19.2
Operating temp.	°C				-25 ~ 90	
Degree of protection					IP 65	
Lubrication					Life lubrication	
Mounting direction					Any	

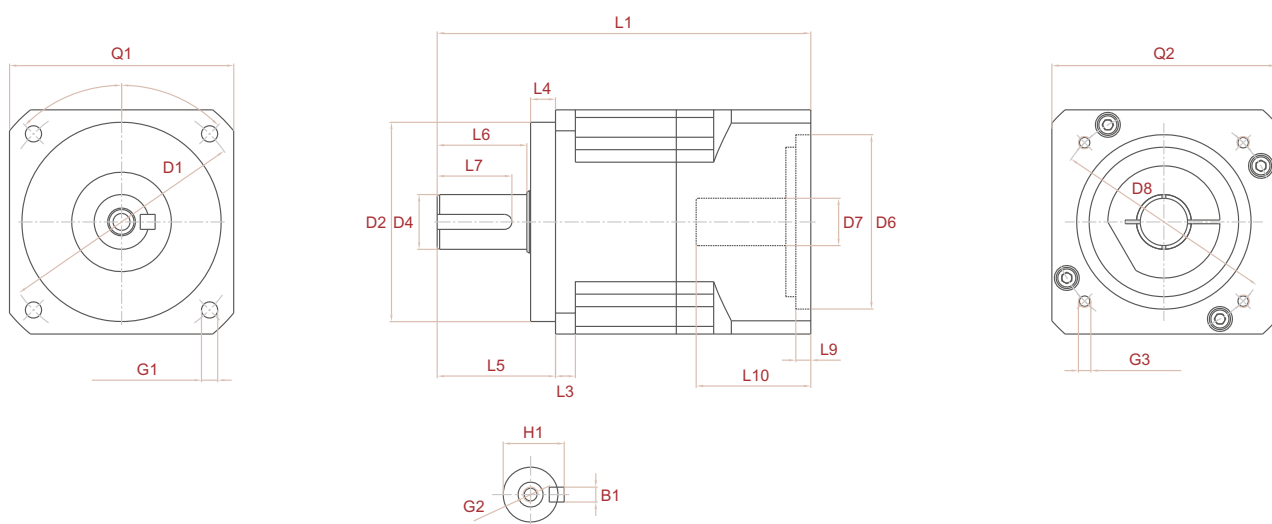
- Low noise
- Compact size and optimized weight
- Precision gearing
- Optimized inertia moment
- Stable temperature rise
- High efficiency transmission
- Optimized design with special lubricant for long service life
- Flexible mounting dimensions

Model / Size		Stages	Ratio	60	90	120	140
Nominal output torque	Nm	1	3	34	80	220	460
			4	50	120	300	650
			5	50	125	350	700
			7	50	125	350	700
			10	35	80	220	460
		2	15	34	80	220	460
			20	50	120	300	650
			25	50	125	350	700
			30	34	80	220	460
			35	50	125	350	700
			40	50	120	300	650
			50	50	125	350	700
			70	50	125	350	700
			100	35	80	220	460
MAX Output torque		3 times of Nominal output torque					

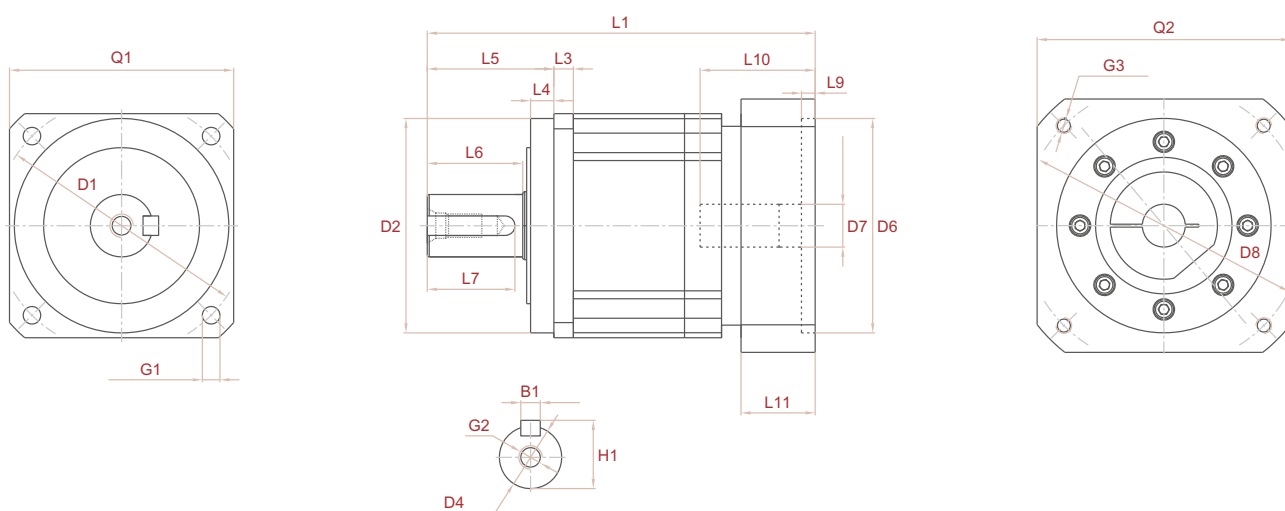
ZA60



ZA90



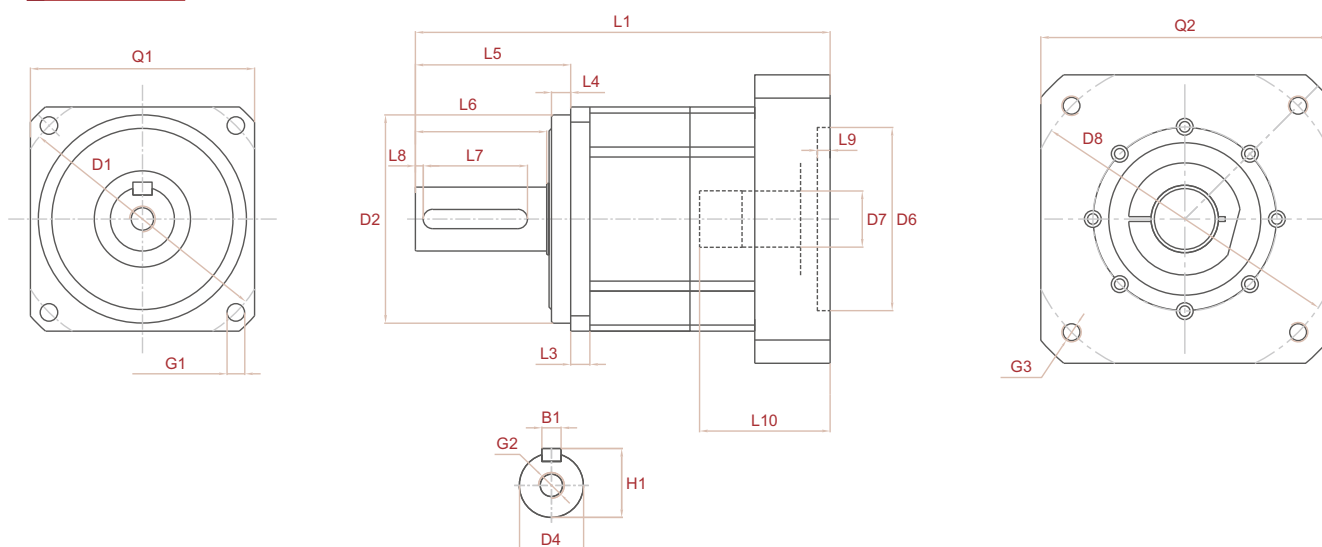
ZA120





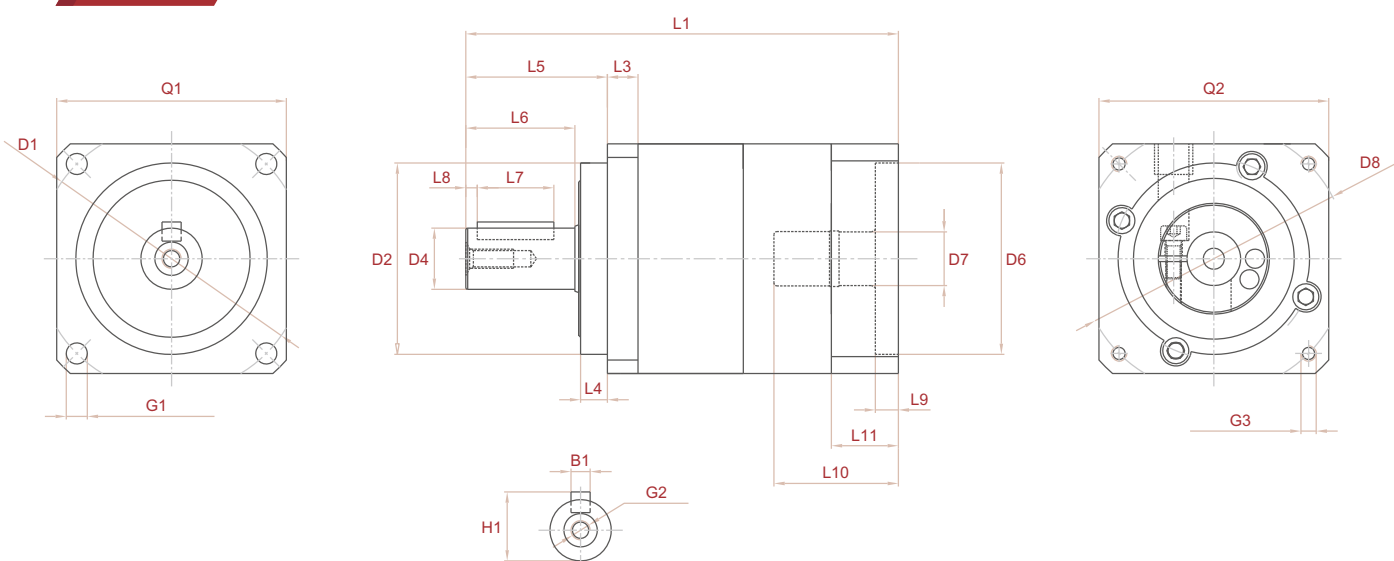
PROFILE DIMENSIONS

ZA140

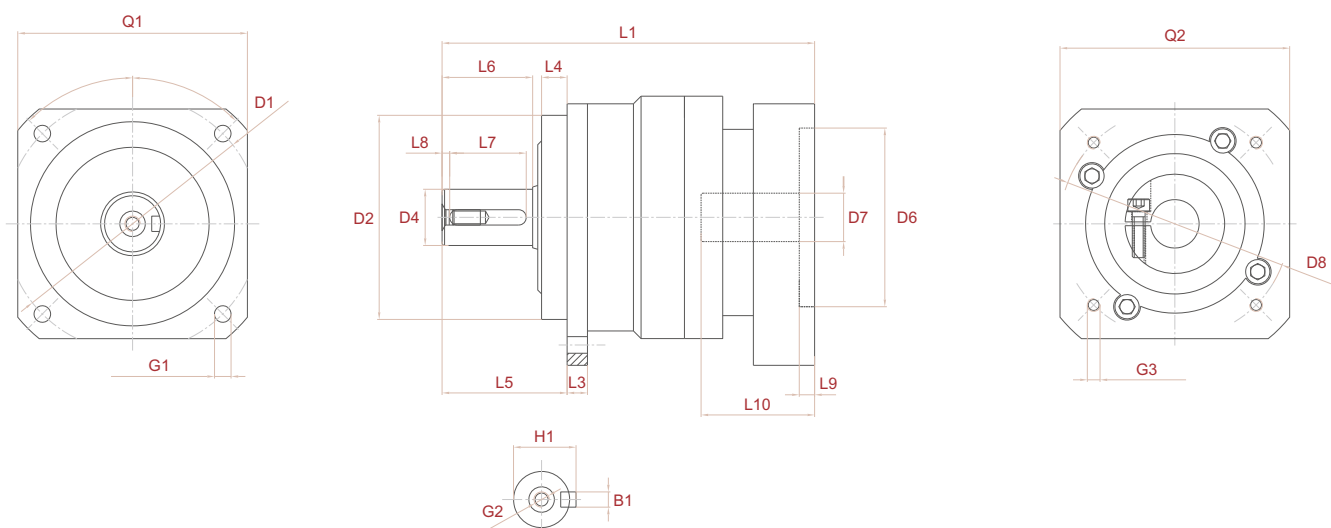


Product type			ZA60	ZA90	ZA120	ZA140
Overall length	1	L1	113	150	199	259
	2		133	183	236	312.5
Output flange		Q1	□60	□90	□115	□140
Input flange		Q2	□60	□90	□130	□180
Output						
Length from flange		L3	8	8	10	12
Pilot length		L4	7	10	12	12
Output shaft length		L5	37	47.5	65	97
shaft shoulder to the shaft end		L6	28.5	36	49	82
Flat end length / Key length		L7	20	30	45	65
Key length to the shaft end		L8	3	—	—	5
Mounting hole circle		D1	Ø70	Ø100	Ø130	Ø165
Pilot diameter		D2	Ø50 G6	Ø80 G6	Ø110 H6	Ø130 H6
Output shaft diameter		D4	Ø16 G6	Ø22 G6	Ø32 G6	Ø40 H6
Key width		B1	5	6	10	12
Flat end height / Key Height		H1	18	24.5	35	43
mounting thread x depth		G1	4-Ø5.5	4-Ø6.5	4-Ø9	4-Ø11
center screw hole x depth		G2	M5x12	M6	M12	M16
Input						
Pilot depth		L9	6	6	7	8
motor shaft length		L10	32.5	46	59	81.5
Offset length		L11	22.8	—	38	—
Pilot diameter		D6	Ø50 G6	Ø70 G6	Ø110 H7	Ø114.3 G6
Input shaft diameter		D7	Ø14 G6	Ø19 G6	Ø22 G6	Ø35 G6
Mounting hole circle		D8	Ø70	Ø90	Ø145	Ø200
mounting thread x depth		G3	4-M4	4-M5	4-M8	4-M12

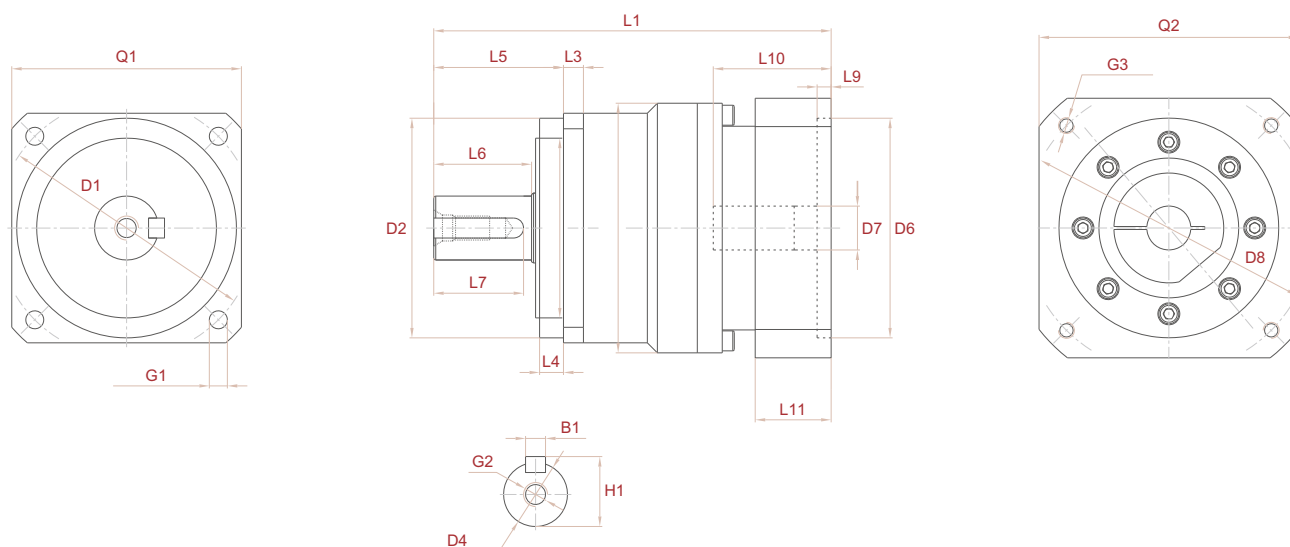
ZB60



ZB90



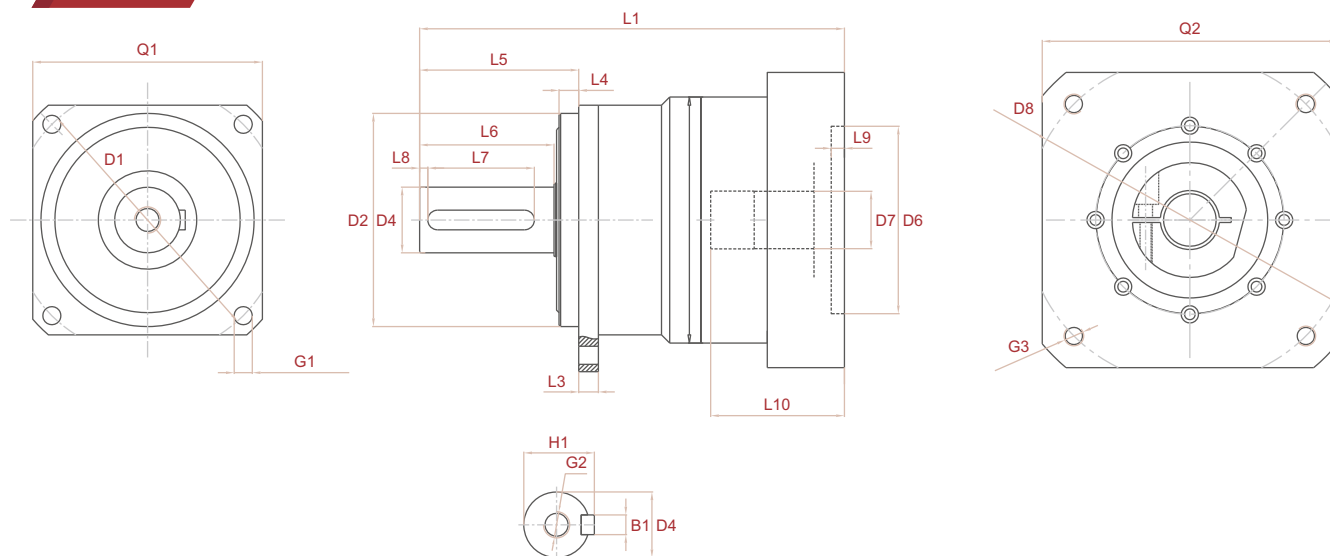
ZB120





PROFILE DIMENSIONS

ZB140

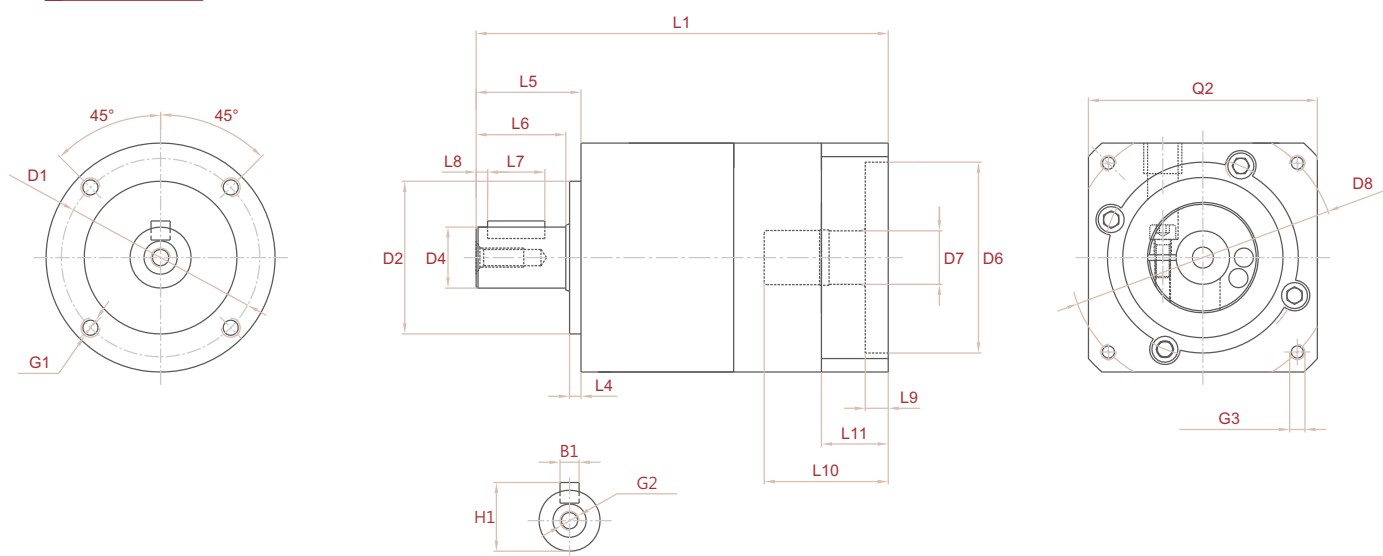


Product type			ZB60	ZB90	ZB120	ZB140
Overall length	1	L1	113	146	199	259
	2		133	179	236	312.5
Output flange		Q1	□60	□90	□115	□140
Input flange		Q2	□60	□90	□130	□180
Output						
Length from flange		L3	8	10	10	12
Pilot length		L4	7	10	12	12
Output shaft length		L5	37	49	65	97
shaft shoulder to the shaft end		L6	28.5	35.5	49	82
Flat end length / Key length		L7	20	30	45	65
Key length to the shaft end		L8	3	3	—	5
Mounting hole circle		D1	Ø70	Ø100	Ø130	Ø165
Pilot diameter		D2	Ø50 G6	Ø80 G6	Ø110 H6	Ø130 H6
Output shaft diameter		D4	Ø16 G6	Ø22 G6	Ø32 G6	Ø40 H6
Key width		B1	5	6	10	12
Flat end height / Key Height		H1	18	24.5	35	43
mounting thread x depth		G1	4-Ø5.5	4-Ø6.5	4-Ø9	4-Ø11
center screw hole x depth		G2	M5x12	M6	M12	M16
Input						
Pilot depth		L9	6	6	7	8
motor shaft length		L10	32.5	47	59	81.5
Offset length		L11	17.5	—	38	—
Pilot diameter		D6	Ø50 G6	Ø70 G6	Ø110 H7	Ø114.3 G6
Input shaft diameter		D7	Ø14 G6	Ø19 G6	Ø22 G6	Ø35 G6
Mounting hole circle		D8	Ø70	Ø90	Ø145	Ø200
mounting thread x depth		G3	4-M4	4-M5	4-M8	4-M12

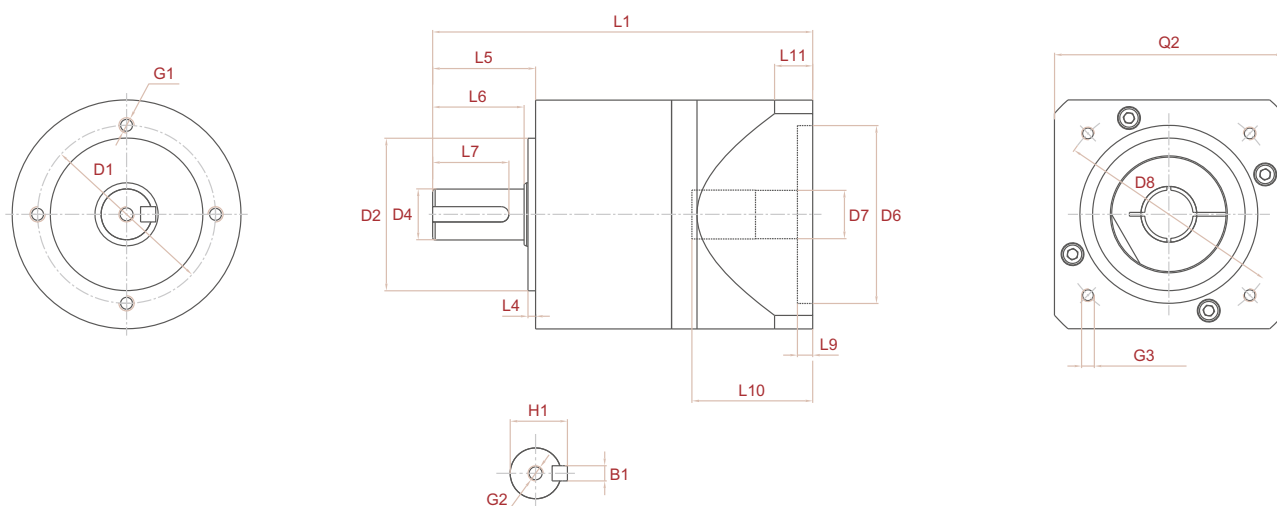


PROFILE DIMENSIONS

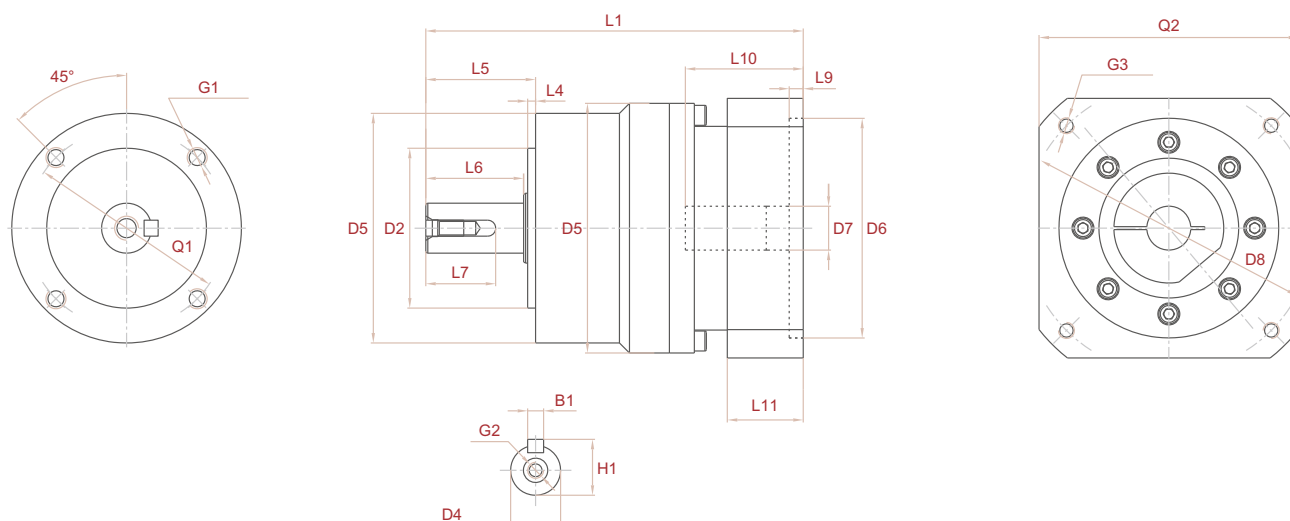
ZE60



ZE90



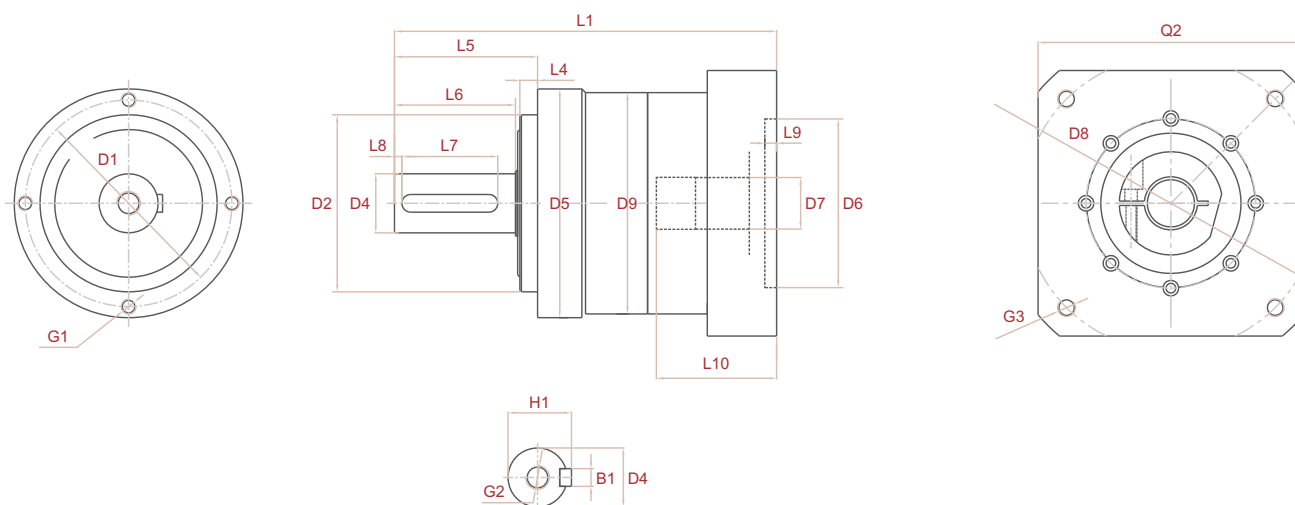
ZE120





PROFILE DIMENSIONS

ZE140



Product type			ZE60	ZE90	ZE120	ZE140
Overall length	1	L1	108	149.5	189	259
	2		128	175.5	226	312.5
Output flange		Q1	—	—	—	—
Input flange		Q2	□60	□90	□130	□180
Output						
Pilot length		L4	3	3	4	12
Output shaft length		L5	27.5	40.5	55	97
shaft shoulder to the shaft end		L6	23.5	36	49	82
Flat end length / Key length		L7	15	30	35	65
Key length to the shaft end		L8	3	—	—	5
Mounting hole circle		D1	Ø52	Ø70	Ø100	Ø140
Pilot diameter		D2	Ø40 G6	Ø60 G6	Ø80 G6	Ø120 H6
Output shaft diameter		D4	Ø16 G6	Ø20 H6	—	Ø40 H6
Flange Section		D5	—	—	Ø115	Ø155
Centering		D9	Ø60	Ø90	Ø120	Ø150
Key width		B1	5	6	8	12
Flat end height / Key Height		H1	18	22.5	28	43
mounting thread x depth		G1	4-M5	4-M6	4-M10	4-M10
center screw hole x depth		G2	M5x12	M6	M8	M16
Input						
Pilot depth		L9	6	6	7	8
motor shaft length		L10	32.5	47.5	59	81.5
Offset length		L11	17.5	15	38	—
Pilot diameter		D6	Ø50 G6	Ø70 G6	Ø110 H7	Ø114.3 G6
Input shaft diameter		D7	Ø14 G6	Ø19 G6	Ø22 G6	Ø35 G6
Mounting hole circle		D8	Ø70	Ø90	Ø145	Ø200
mounting thread x depth		G3	4-M4	4-M5	4-M8	4-M12



TECHNICAL DATA

Model / Size		Stages	60	90	120	140
Full load efficiency	%	1		98		
		2		95		
Backlash	arcmin	1	<3	<3	<3	<3
		2	<5	<5	<5	<5
Noise	dB(A)		<60	<63	<65	<66
Lifetime	hr			30000		
Max radial load	N		1300	3100	7800	12000
Max axial load	N		680	1650	4000	8100
Max input speed	min-1		6000	6000	6000	5000
Torsional stiffness	Nm/arcmin		13	31	82	151
Weight	kg	1	0.5	1.2	3.2	6
		2	0.9	1.6	4.5	8.6
Operating temp.	°C			-25 ~ 90		
Degree of protection				IP 65		
Lubrication				Life lubrication		
Mounting direction				Any		

- Low noise
- Compact size and optimized weight
- Precision gearing
- Optimized inertia moment
- Stable temperature rise
- Durable performance with high strength
- High efficiency transmission
- Optimized design with special lubricant for long service life
- Flexible mounting dimension

Model / Size		Stages	Ratio	60	90	120	140
Nominal output torque	Nm	1	4	50	120	300	650
			5	50	125	350	700
			7	50	125	350	700
			10	35	80	220	460
		2	20	50	120	300	650
			25	50	125	350	700
			35	50	125	350	700
			40	50	120	300	650
			50	50	125	350	700
			70	50	125	350	700
			100	35	80	220	460

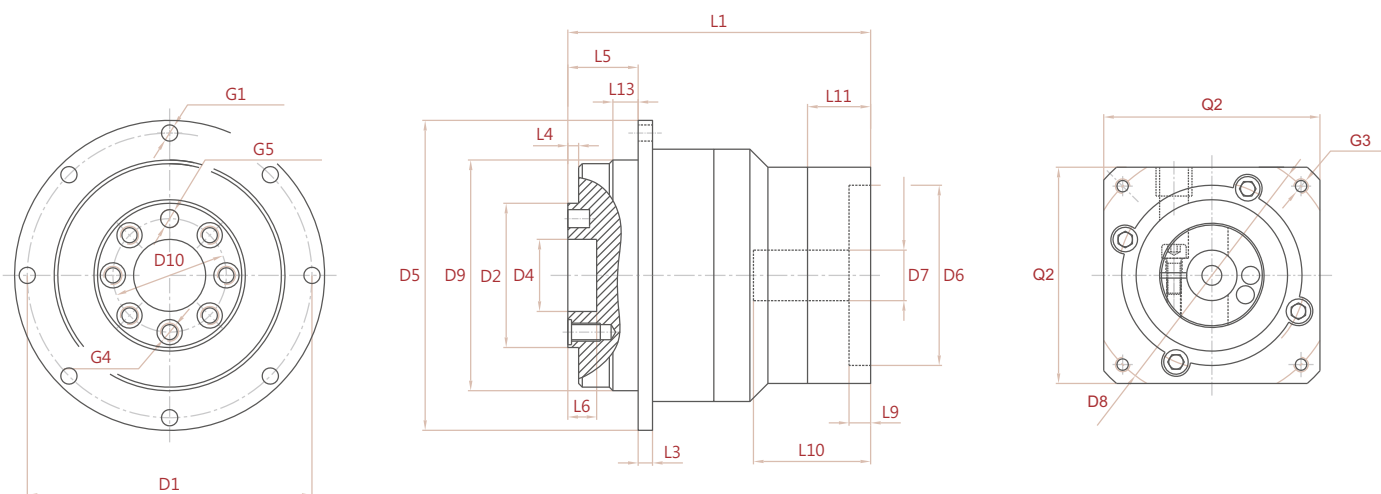
MAX Output torque

3 times of Nominal output torque

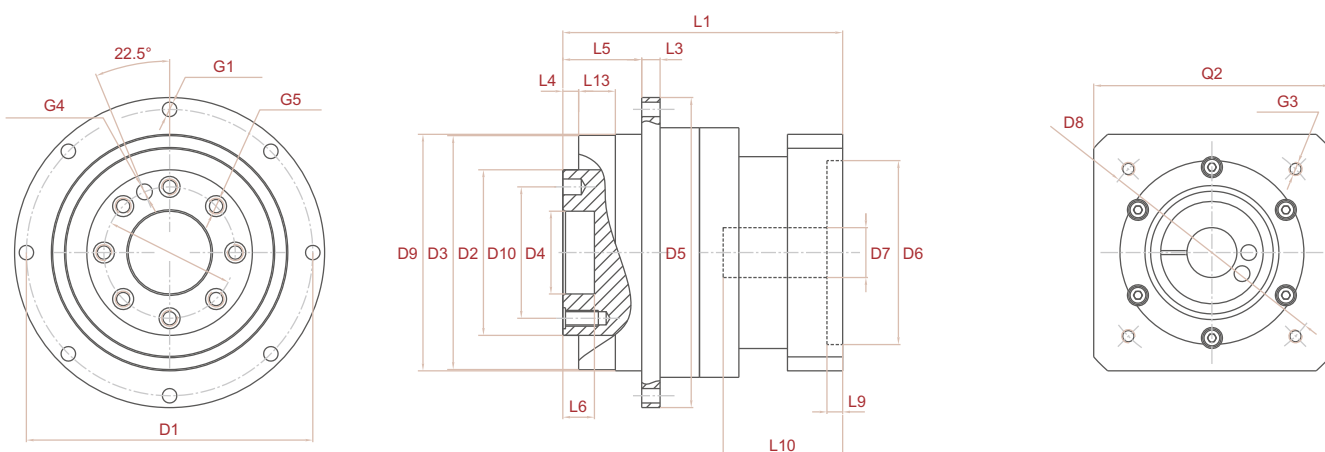


PROFILE DIMENSIONS

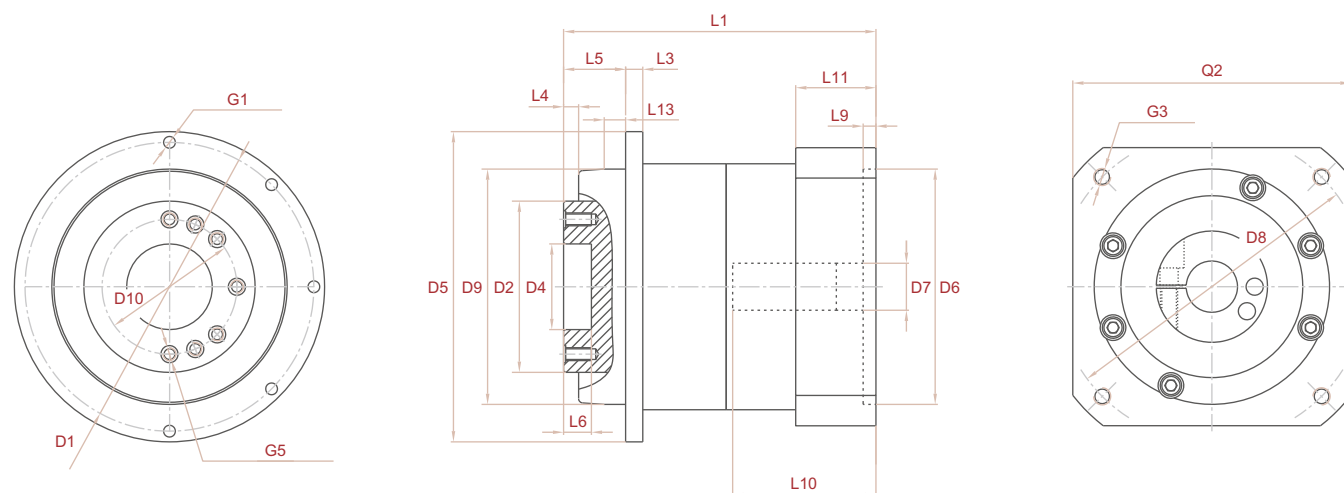
ZF60



ZF90



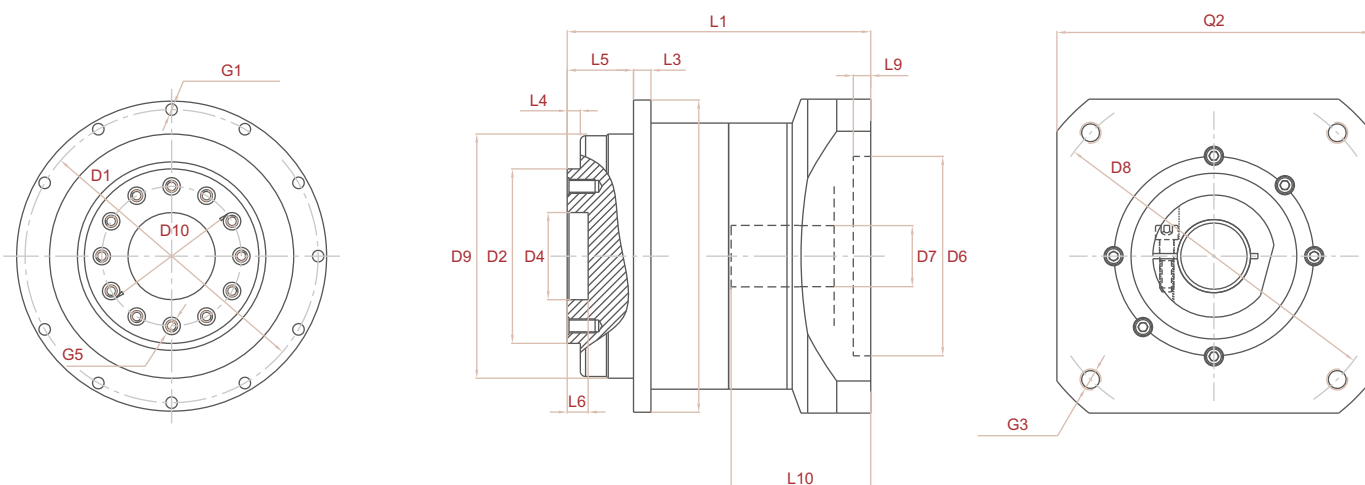
ZF120





PROFILE DIMENSIONS

ZF140

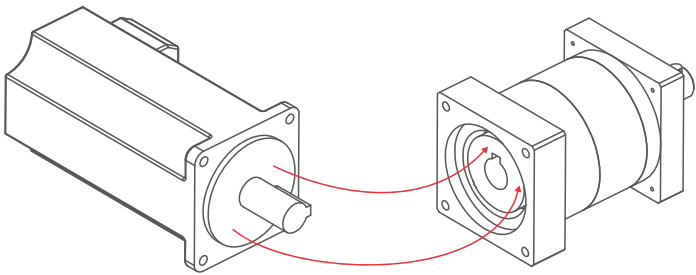


Product type			ZF60	ZF90	ZF120	ZF140
Overall length	1	L1	84	106.5	146	174
	2		104	134.5	177	211.5
Output flange		Q1	—	—	—	—
Input flange		Q2	□60	□90	□130	□180
Output						
Length from flange		L3	7	7	8	10
Pilot length		L4	3	6	7	7.5
Output shaft length		L5	19.5	30	29	38
shaft shoulder to the shaft end		L6	8	12	13	12
Spigot depth		L13	7	14	10	—
Hole circle diameter		D1	Ø79	Ø109	Ø135	Ø168
Mounting hole circle		D2	Ø40 H6	Ø63 H7	Ø80 H6	Ø100 H7
Pilot diameter		D3	—	Ø89.2	—	—
Centering		D4	Ø20 H7	Ø31.5 H7	Ø40 H7	Ø50 H7
Output shaft diameter		D5	Ø86	Ø118	Ø145	Ø179
Centering		D9	Ø64 H6	Ø90 H7	Ø110 H6	Ø140 H6
Hole circle diameter		D10	Ø31.5	Ø50	Ø63	Ø80
Pinion bore		G1	8-Ø4.5	8-Ø5.5	8-Ø5.5	12-Ø6.6
mounting thread x depth		G4	Ø5 6H7	Ø6 7H7	—	—
		G5	7-M5	8-M6	12-M6	12-M8
Input						
Pilot depth		L9	6	6	6	10
motor shaft length		L10	32.5	45.5	67	80
Offset length		L11	17.5	—	37.5	—
Pilot diameter		D6	Ø50 G6	Ø70 G6	Ø110 G7	Ø114.3 G6
Input shaft diameter		D7	Ø14 G6	Ø19 H7	Ø22 G6	Ø35 G6
Mounting hole circle		D8	Ø70	Ø90	Ø145	Ø200
mounting thread x depth		G3	4-M4	4-M5	4-M8	4-M12

GEAR REDUCER MOUNTING INSTRUCTION / TORQUE REQUIRED TO SECURE BOLT

GEAR REDUCER MOUNTING INSTRUCTION

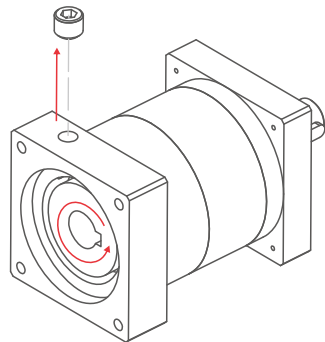
STEP 1



- A. Verify fit before assembly
- B. Clean both surfaces thoroughly

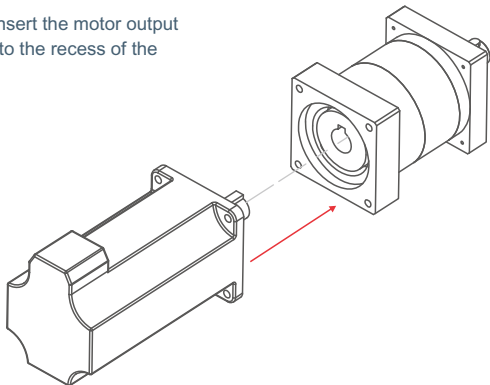
STEP 2

- A. Loosen the plug screw on the side of gearbox input flange.
- B. Rotate the gearbox inlet bushing until the head of the lock bolt is aligned with access hole.
- C. Loosen the lock bolt on the gearbox inlet bushing.

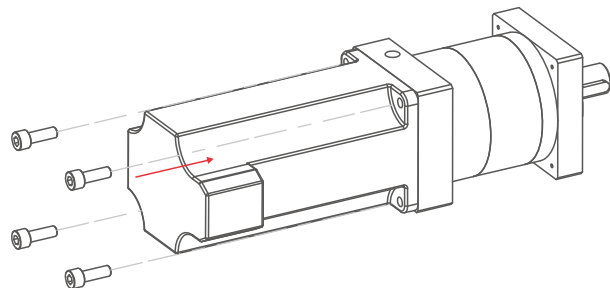


STEP 3

Position and then insert the motor output shaft and flange into the recess of the gearbox.

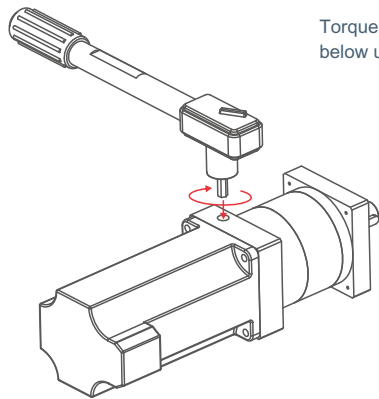


STEP 4



Secure motor to gearbox using specified hardware.

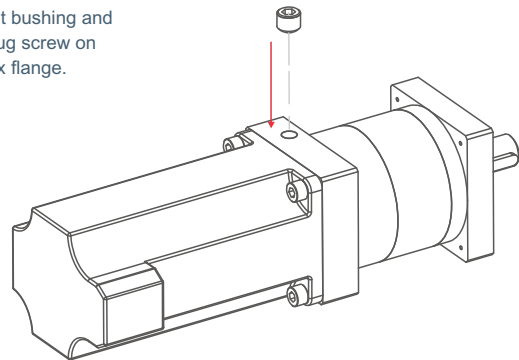
STEP 5



Torque motor coupling according to table below using calibrated torque wrench.

STEP 6

Tighten the lock bolt on the side of the gearbox inlet bushing and then tighten the plug screw on the side of gearbox flange.



Tightening Torque Recommended For Motor Mounting Bolt & Motor Lock Sleeve Bolt

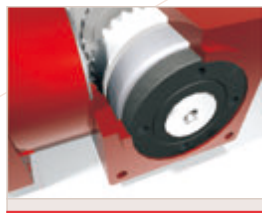
Bolt Size		M3	M4	M5	M6	M8	M10	M12	M14
Width Across Flats	mm	2.5	3	4	5	6	8	10	14
	Nm	2.1	4.9	9.8	17	41	80	139	343
Strength 12.9 Tightening Torque	In-lbs	19	44	87	151	364	709	1232	3038

Note:

Torques shown above are minimum tightening values. Bolts can be safely tightened up to 25% higher for increasing holding torques. Optionally, Loctite can be applied to the threads of the Lock Bolt. (Use Loctite 242 for screw sizes above M5 and Loctite 222MS for screws sizes M5 and below)

FEATURES

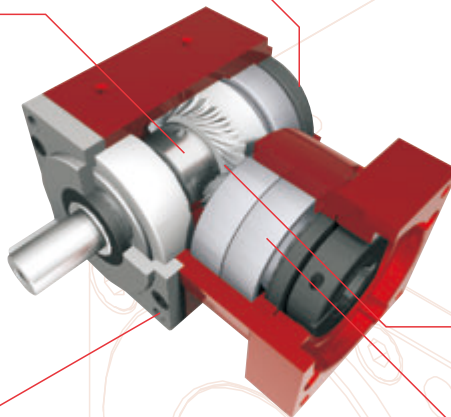
- Precision spiral bevel gears raise efficiency above 95%.
- Reduction ratios for transferring high torques in limited space.
- Hardened high strength steel components for reliability under severe conditions.
- All grease-filled, the gear head can be used in any orientation without oil leaks.
- Under 5 arc-min as low backlash design and 7 arc-min as standard backlash.
- Two types ; RS-short housing and RL-long housing, are available in applications of automation and motion control in industries such as aerospace, medical, pharmaceutical, factory automation, printing, robotics, auto control system, automotive, textile equipment, semiconductor manufacturing equipment, X-Y positioning systems, coordinate measuring, optical positioning equipment, telecommunications, packaging, material handling, assembly line, CCTV system, machine tools and special machinery, etc.



Axail compression mechanism to increase concentricity and engagement between shaft and bearing.



Patented design provides unique backlash adjustment.



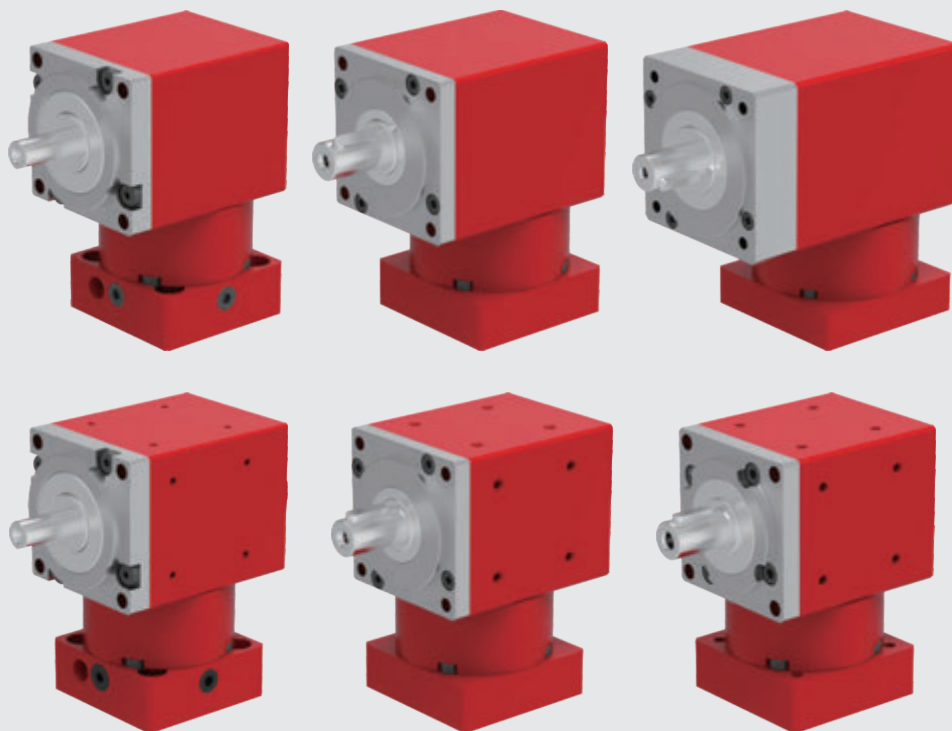
Unique wear resistant treatment for spiral bevel reliability.



Patented output mount design for versatility.



Double ball bearing for stable operation at high speed.



RX/RL FEATURES

The compact and rigid right angle design ensures the highest performance while being space and weight efficient. Ground spiral bevel gear set provides the highest efficiency and lower meshing noise with long service life. Available with solid or hollow shafts on the output end. For output with a hollow shaft, the shaft is extended so a shrink disc can be fitted.

Lubricated for life, the gear reducers are virtually maintenance-free (When used under normal conditions).

Three frame sizes are available with gear ratios 1:1

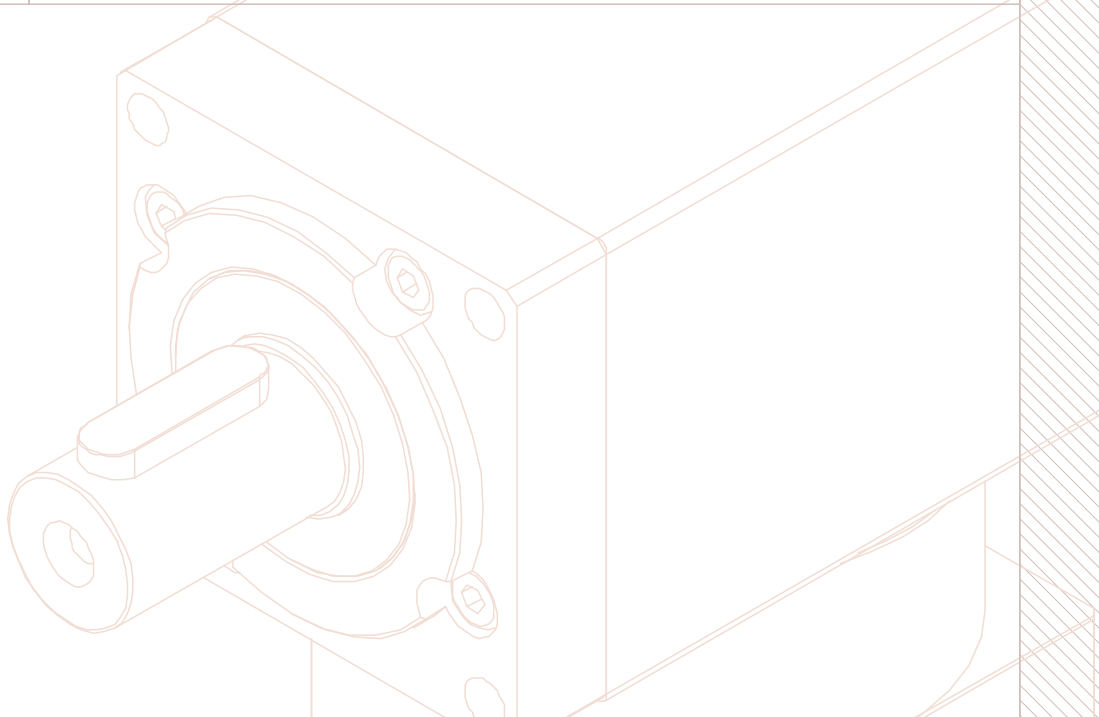
RX/RL

TECHNICAL DATA

Model / Size		42	60	90
Full load efficiency	%		96	
Backlash	arcmin	<7	<6	<6
Noise	dB(A)	60	65	67
Lifetime	hr		20000	
Max radial load	N	600	800	1700
Max axial load	N	700	900	1500
Max input speed	min-1	12000	8000	7000
Torsional stiffness	Nm/arcmin	1.5	2.4	6.6
Weight	kg	0.6	1.7	5.4
Operating temp.	°C		-25 ~ 90	
Degree of protection			IP 65	
Lubrication			Life lubrication	
Mounting direction			Any	

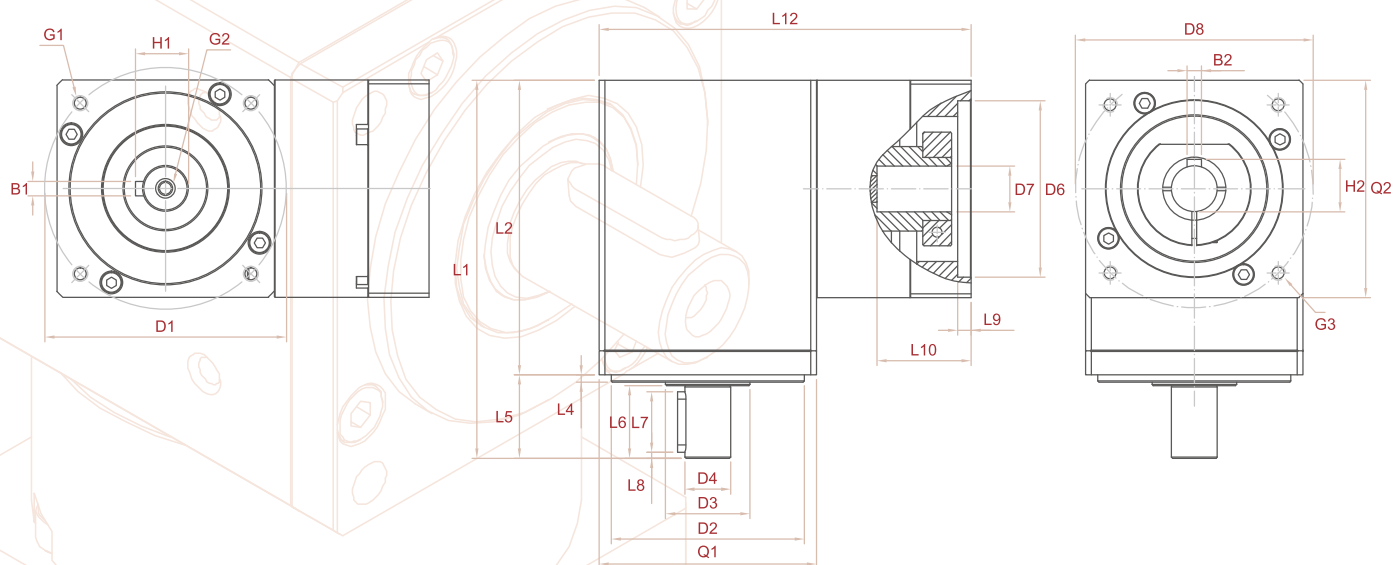
- Low noise
- Compact size and optimized weight
- Precision spiral gearing
- Optimized inertia moment
- Stable temperature rise
- High efficiency transmission
- Optimized design with special lubricant for long service life
- Flexible mounting dimensions

Model / Size		Ratio	42	60	90
Nominal output torque	Nm	1	10	56	157
		2	9	52	130
		3	7	48	108
		4	6	45	75
		5	5	42	72
MAX Output torque		2 times of Nominal output torque			

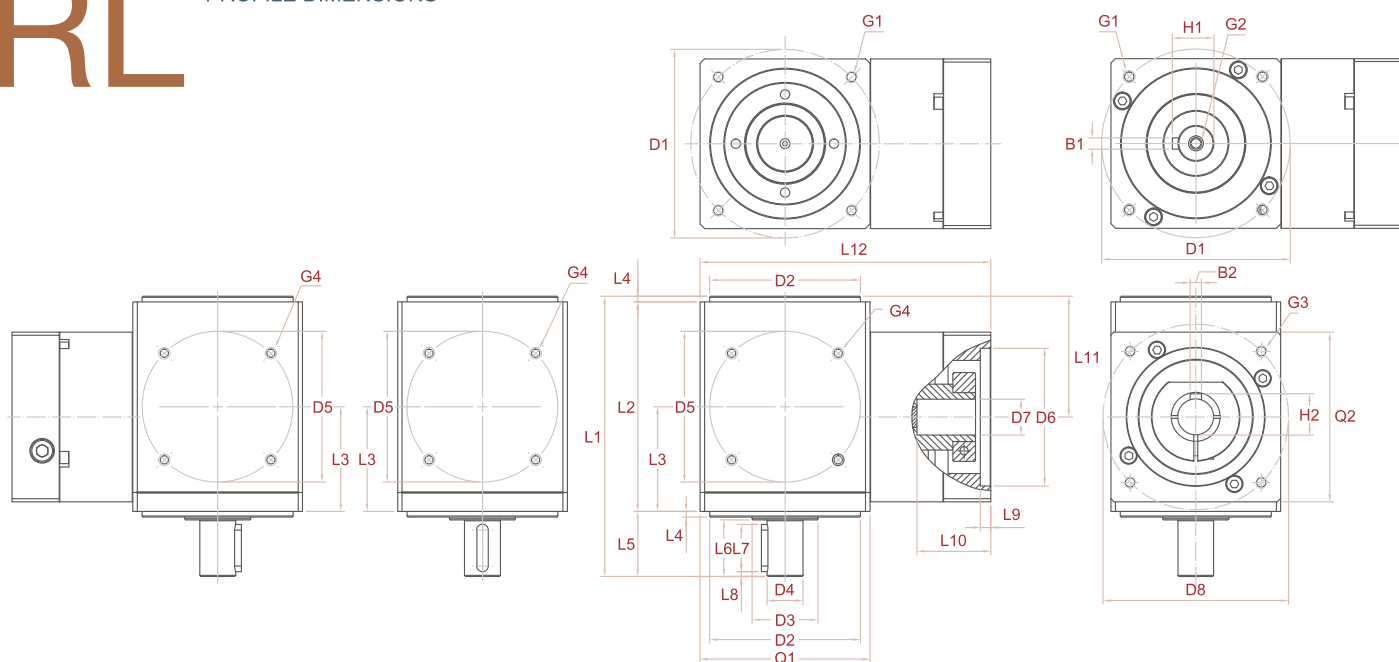


RX

PROFILE DIMENSIONS



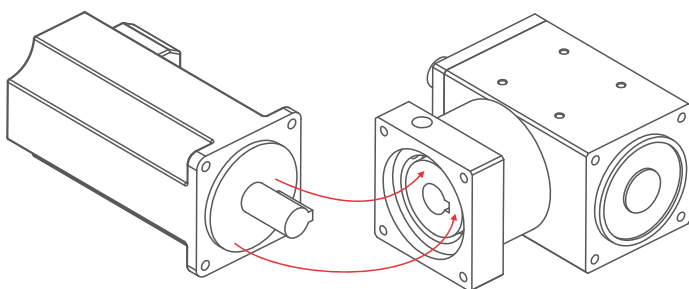
Product type		RX-032	RX-042		RX-060		RX-090
Output flange	Q1	□32	□42		□60		□90
Input flange	Q2	□32	□42		□60		□90
Output							
Overall length	L1	56.5	85		107		157
Body length	L2	41	65		79		122
Pilot length	L4	2.5	2.5		3		3
Output shaft length	L5	15.5	20		28		35
shaft shoulder to the shaft end	L6	12.5	17		24		31
Flat end length / Key length	L7	12.5	12		18		25
Key length to the shaft end	L8	—	2		2		2.5
Mounting hole circle	D1	Ø38	Ø50		Ø70		Ø100
Pilot diameter	D2	Ø28 G6	Ø35 G6		Ø50 G6		Ø80 G6
shaft shoulder diameter	D3	Ø12	Ø15		Ø20		Ø35
Output shaft diameter	D4	Ø6 h7	Ø10 H7		Ø14 H7		Ø19 H7
Key width	B1	—	3		5		6
Flat end height / Key Height	H1	5.5	11.2		16		21.5
mounting thread x depth	G1	M3x8	M4x8		M5x12		M6x15
center screw hole x depth	G2	—	M4x8		M5x12		M6x15
Input							
Pilot depth	L9	3	3		5.5		5.5
motor shaft length	L10	20	25		30		40
Overall length	L12	59	75		105.3		154
Pilot diameter	D6	22	Ø30 G7	Ø22 G7	Ø50 G7	Ø38.1 G7	Ø70 G7
Input shaft diameter	D7	5	Ø8	Ø5	Ø14	Ø6.35	Ø19
Mounting hole circle	D8	Ø32.53(□23)	Ø46	Ø43.84(□31)	Ø70	Ø66.67(□47.14)	Ø90
mounting thread x depth	G3	Ø2.7	M4 x 10	Ø3.3	M5 x 12	M4 x 10	M6 x 12
Key width	B2	—	3	—	5	—	6
Key Height	H2	—	9.4	—	9.4	—	21.8



RIGHT ANGLE GEAR REDUCER MOUNTING INSTRUCTION / TORQUE REQUIRED TO SECURE BOLT

RIGHT ANGLE GEARBOX MOUNTING INSTRUCTION

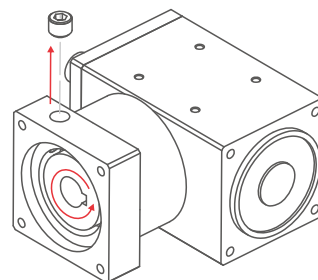
STEP 1



- A. Verify fit before assembly
- B. Clean both surfaces thoroughly

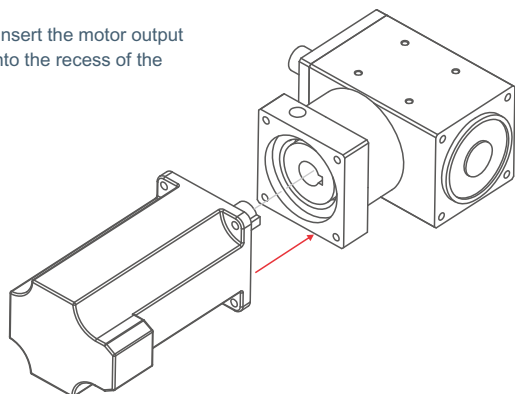
STEP 2

- A. Loosen the plug screw on the side of gearbox input flange.
- B. Rotate the gearbox inlet bushing until the head of the lock bolt is aligned with the access hole.
- C. Loosen the lock bolt on the gearbox inlet bushing.

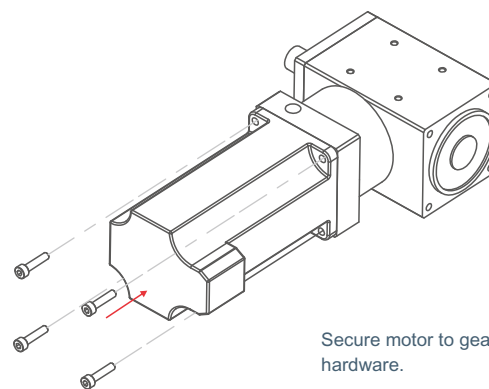


STEP 3

Position and then insert the motor output shaft and flange into the recess of the gearbox.

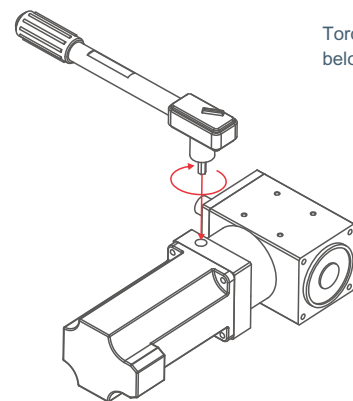


STEP 4



Secure motor to gearbox using specified hardware.

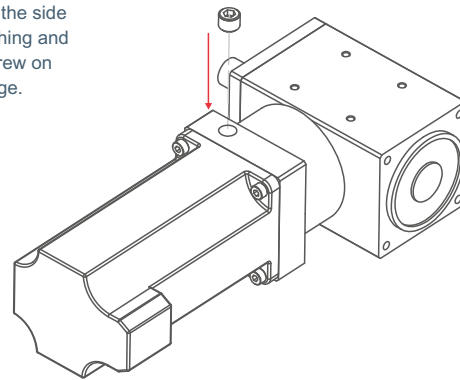
STEP 5



Torque motor coupling according to table below using a calibrated torque wrench.

STEP 6

Tighten the lock bolt on the side of the gearbox inlet bushing and then tighten the plug screw on the side of gearbox flange.



Tightening Torque Recommended For Motor Mounting Bolt & Motor Lock Sleeve Bolt

Bolt Size		M3	M4	M5	M6	M8	M10	M12	M14
Width Across Flats	mm	2.5	3	4	5	6	8	10	14
	Nm	2.1	4.9	9.8	17	41	80	139	343
Strength 12.9 Tightening Torque	In-lbs	19	44	87	151	364	709	1232	3038

Note:

Torques shown above are minimum tightening values. Bolts can be safely tightened up to 25% higher for increasing holding torques. Optionally, Loctite can be applied to the threads of the Lock Bolt. (Use Loctite 242 for screw sizes above M5 and Loctite 222MS for screws sizes M5 and below)

STEP ONE

Determine the Gear Reducer Ordering

Precision Planetary Gear Reducer Type

LX = Precision Planetary Gearbox With Square Output Flange
PN = Precision Planetary Gearbox With Round Output Flange
RS = Precision Right Angle Gearbox

Backlash Type

S = Standard Backlash
L = Low Backlash

LX — 060 — 050 — S

Frame Size

042 = 42mm
060 = 60mm
080 = 80mm
090 = 90mm

Gear Ratio

Single Stage	Two Stages	
3	12	35
4	15	40
5	20	50
7	25	70
10	30	100

Economy Gear Reducer Type

EL = Economy Gearbox

Output Flange Style

S = Square Flange
R = Round Flange

EL — 060 — 050 — S — S

Frame Size

022 = 22mm
032 = 32mm
042 = 42mm
060 = 60mm
080 = 80mm
090 = 90mm

Gear Ratio

Single Stage	Two Stages	
3	12	
4	15	
5	20	
7	25	
10	40	
	50	
	70	
	100	

Input Flange Style

S = Square Flange
R = Round Flange

ORDERING INSTRUCTION

STEP TWO

Please fill in the blanks with the Gearbox ordering No. and the motor or Gearbox type No. to be collocated.

Gearbox Ordering Number

Motor or Gearbox Model Number

STEP THREE

1. Please fill all relevant dimensions of the motor or Gearbox output end in the chart below for collocating with the Gearbox you selected.
2. Dimension F7 in the chart below to be specified clearly with relevant depth and quantity.

Motor or Gear Reducer Output Dimension (See following page)

☐ mm ☐ in

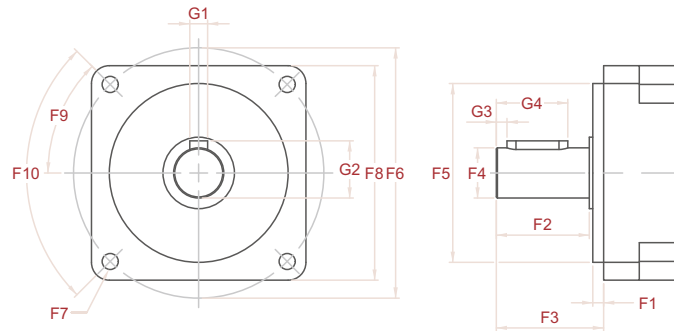
Type of output	AA	AB	AC	AD
Dimension				
F1				
F2				
F3				
F4				
F5				
F6				
F7				
F8				
F9				
F10				
G1				
G2				
G3				
G4				

MOTOR OR GEAR REDUCER OUTPUT TYPE / UNIT CONVERSION TABLE

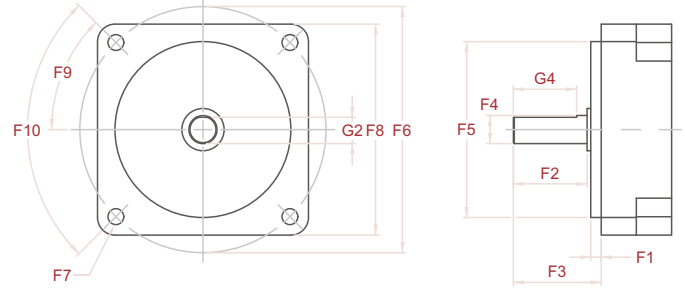
MOTOR OR GEAR REDUCER OUTPUT TYPE

Please fill in the blanks on the previous page with the motor or Gearbox output dimension according to the type or output provided in the chart below.

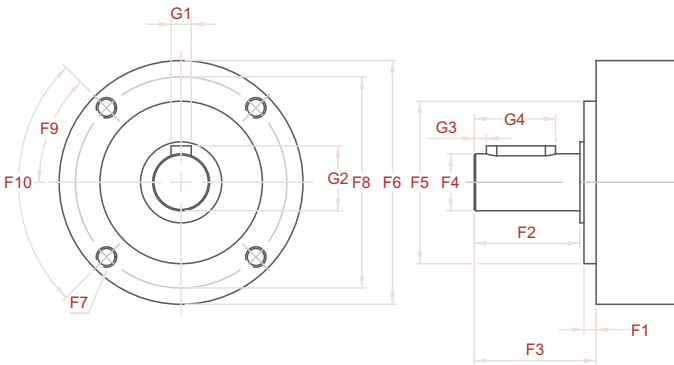
AA (Square flange , keyed shaft)



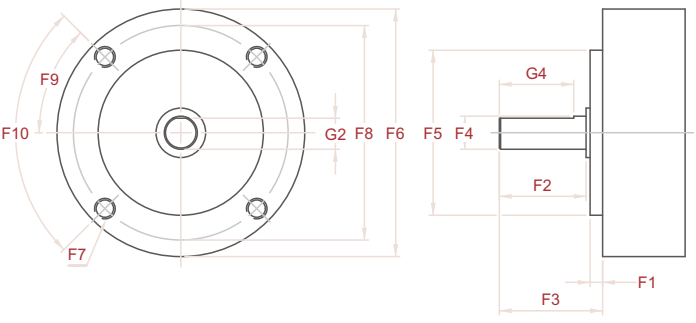
AB (Square flange , round shaft)



AC (Round flange , keyed shaft)



AD (Round flange , round shaft)



UNIT CONVERSION TABLE

TORQUE

N.m	kg.m	kg.cm	ft-lb	in-lb	oz-in
1	0.102	10.2	0.738	8.851	141.6
9.807	1	100	7.233	86.77	1389
0.098	0.01	1	0.072	0.868	13.89
1.356	0.138	13.83	1	12	192
0.113	0.0115	1.152	0.083	1	16
0.007	0.0007	0.072	0.005	0.0625	1

MOMENT INERTIA

lb-in ²	g-cm ²	oz-in ²
0.00034	1	0.00547
0.0625	182.9	1
1	2926.4	16

LENGTH

mm	cm	m	in	ft
1	0.1	0.001	0.0394	0.0033
10	1	0.01	0.3937	0.0328
1000	100	1	39.37	3.28
25.4	2.54	0.0254	1	0.0833
304.8	30.48	0.3048	12	1

WEIGHT

g	kg	lb	oz
1	0.001	0.002	0.035
1000	1	2.2	35.27
454	0.454	1	16
28.35	0.028	0.06	1

SELECTION OF YOUR OPTIMUM GEARBOX

STEP 1

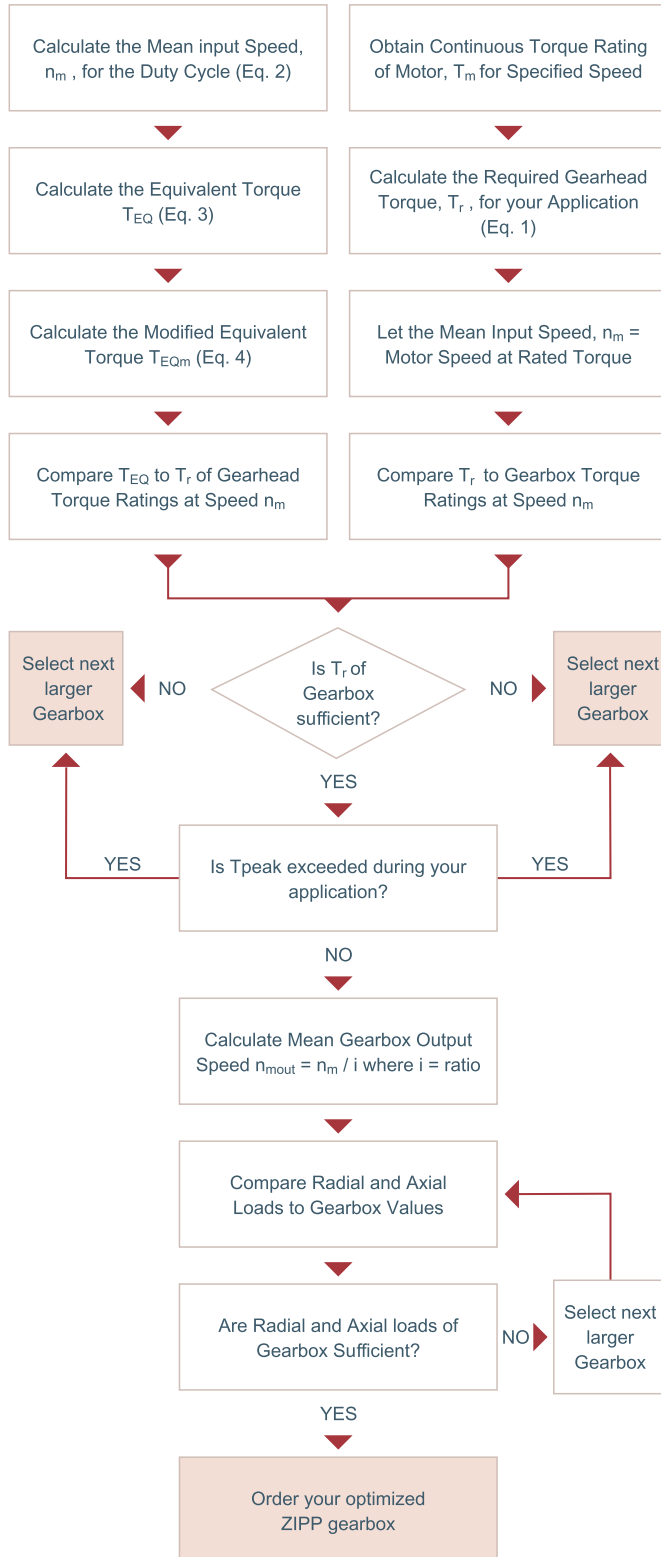
Select the required precision class and gearbox configuration (in-line or right angle).

STEP 2

Select the proper gearbox using exact or general method.

Exact Method

General Method



General Method:

Required Gearbox Torque(T_r)

$$(1) T_r = T_{M*} \times i \times e$$

Where:

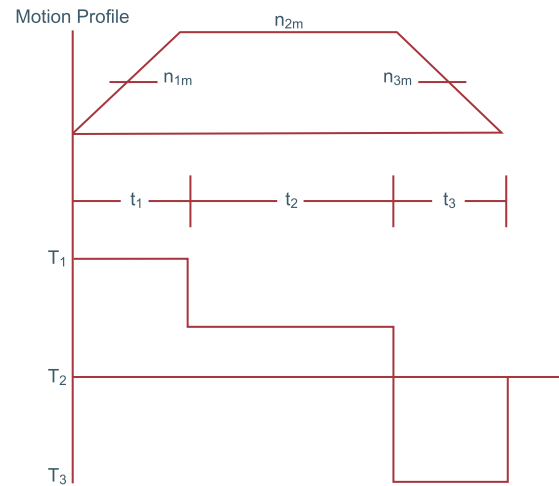
T_{M*} = Continuous torque of motor

i = Gearbox ratio

e = Efficiency of Gearbox

*Since many motors are capable of exceeding their continuous torque rating for extended lengths of time, the value for T_M will only provide a starting point for Gearbox selection. Only use the general method if the continuous motor rating is not exceeded in the application.

Exact Method:



t_n = time period n

n_{nm} = mean speed during time period

t_n T_n = torque during time period t_n

Mean input speed (n_m)

$$(2) n_m = \frac{n_{1m}t_1 + n_{2m}t_2 + n_{3m}t_3 + \dots + n_{nm}t_n}{t_t}$$

where t_t = t₁ + t₂ + t₃ + + t_n

Equivalent torque (T_{EC})

$$(3) T_{EC} = 8.7 T_1 \frac{n_{1m}^{8.7} t_1}{n_m^{8.7} t_t} + T_2 \frac{n_{2m}^{8.7} t_2}{n_m^{8.7} t_t} + T_3 \frac{n_{3m}^{8.7} t_3}{n_m^{8.7} t_t} + \dots + T_n \frac{n_{nm}^{8.7} t_n}{n_m^{8.7} t_t}$$

Modified equivalent torque (T_{ECm})

$$(4) T_{ECm} = (T_{EC})/C$$

where C is:

C	Numer of cycles/hr
1.0	>0
0.9	>1000
0.7	>2500
0.5	>5000

For applications > 10,000 cycles/hour or for continuous duty operation, please contact our engineer consultant.



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