Cone Drive
BY TIMKEN

ACCUDRIVE

SERIES LE & P

Precision. Motion Control. Technology.

Cone Drive
BY TIMKEN

Cone Drive is a world leader in precision motion control technology. We work with our customers every step of the way – from design specs to the final solution – to create highly precise, highly specific products that keep our customers' technology at the forefront of their industry. Cone Drive offers engineering support, unique solutions, and innovative technology across a breadth of markets and products to drive your company forward.

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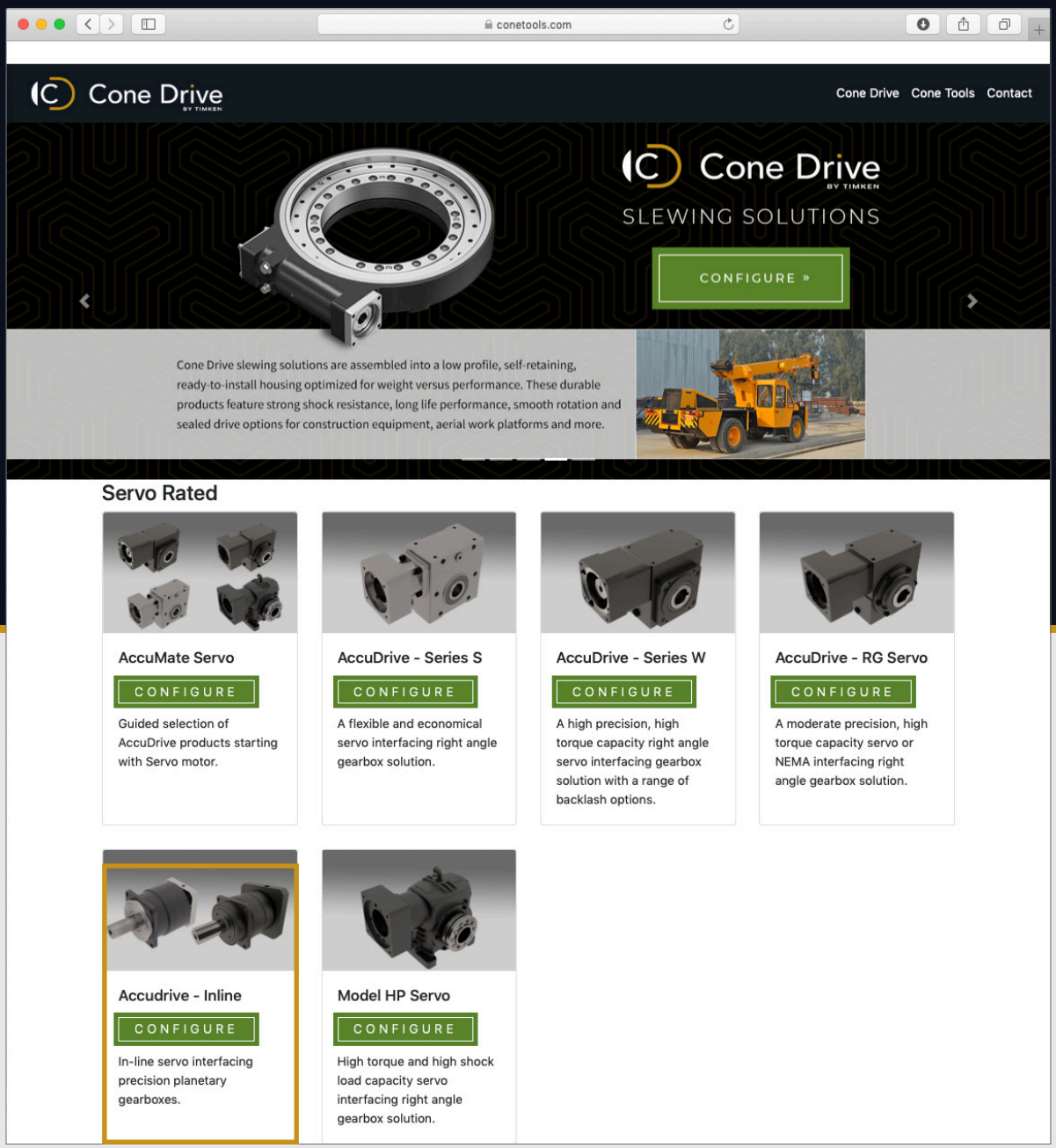
ACCUDRIVE SERIES LE & P

Configure Your Accudrive Online

www.ConeTools.com



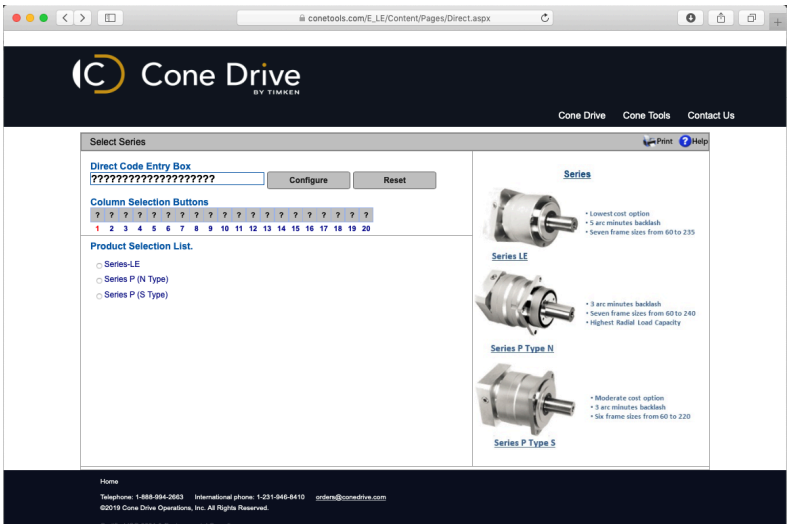
1

Visit ConeTools.com and Click "Accudrive - Inline"

AccuMate®

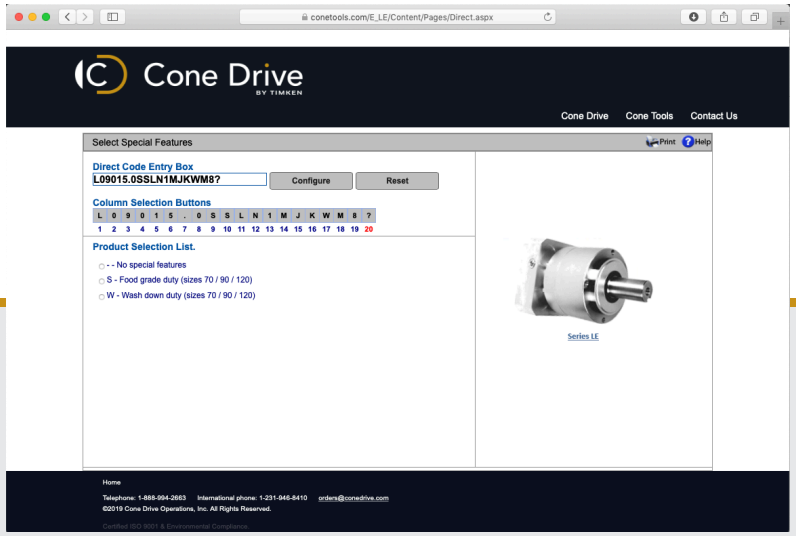
SERVO GEARHEAD SELECTION PROGRAM

Our AccuMate® program helps you select the right servo gearbox for your application.



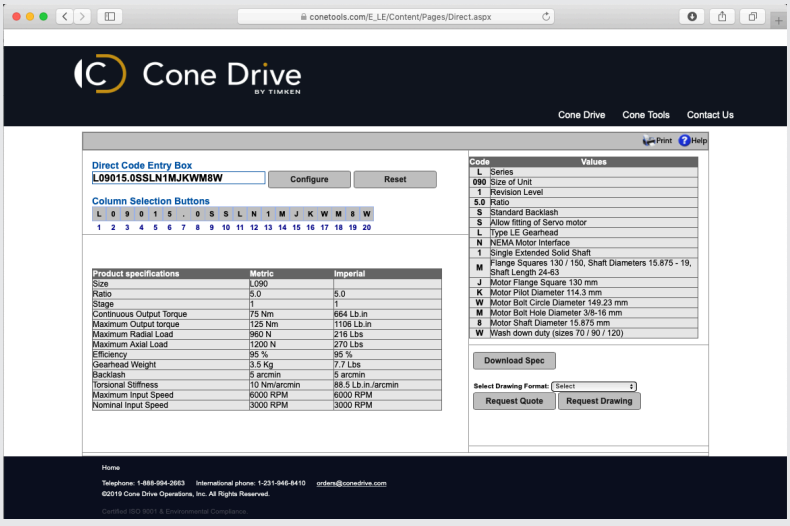
2

Select a product or enter in the Direct Code and click Configure



3

Select Motor Information and proceed to additional selections

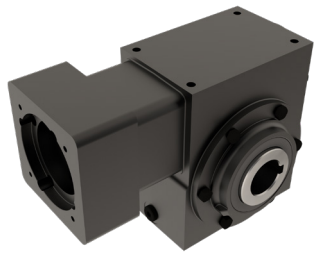


4

On final screen download the specifications or request a quote and drawing

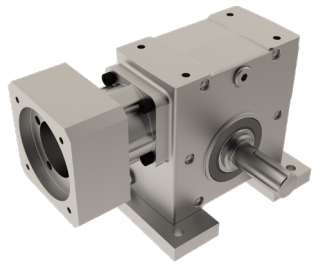
Design flexibility and lasting performance with our complete family of Accudrive Precision Products.

SERIES RG RIGHT ANGLE GEARBOX



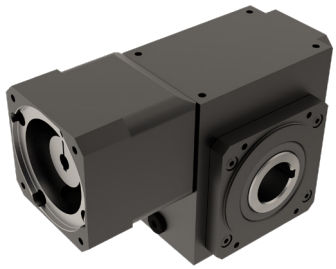
- Output torque capacity up to 8,500 lb.in.
- Motor sizes (standard), adapters to fit servo motors, NEMA and IEC
- Center distance 1.5 to 3.5 inches
- Input power ratings up to 27 H.P, speed range up to 4,000 RPM
- Sizes available 15, 20, 25, 30 and 35
- Universal Mounting with shaft mount and flange mount standard in single reduction type
- Gear ratios from 5:1 to 60:1

SERIES S SERVO GEARBOX



- Economical Servo Solution
- Output torque up to 7,540 lb.In.
- Motor adapters to fit servo motors
- Center distance from 1.33 inch up to 3.54 inch
- Speed range up to 4,000 RPM
- Flexible mounting (hollow output standard with plug in solid shaft)
- Ratios from 5:1 to 60:1

SERIES W PRECISION RIGHT ANGLE GEARBOX



- Precision right angle reducers for low to medium power range requirements
- Motor adapters to fit most servo motors
- Features power capabilities of up to 25 HP
- Output torque capacity of up to 10,000 lb.in.
- Sizes (Center distance-mm): 38, 51, 64, 76, 89
- Speed range up to 6,000 RPM
- Ratios from 5:1 to 60:1 or custom ratios
- Input Options: Solid shaft, NEMA + Servo motor interfaces
- Output Shaft Options: Solid, hollow shaft, shrink disc; end mount
- Backlash Options: Standard, low or zero backlash
- Mounting Options: Universal mounting

ABSOLUTE ZERO BACKLASH ACCUDRIVE GEARING

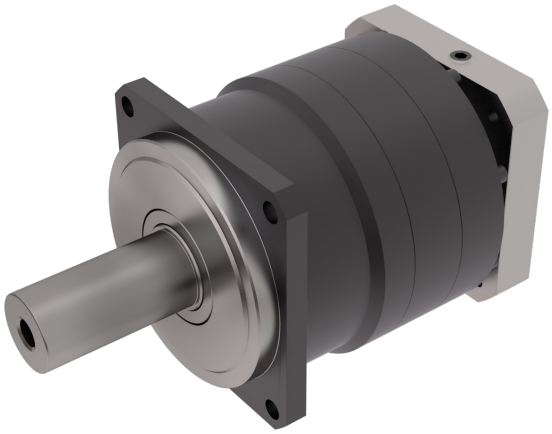
- Unique design captures both sides of the gear tooth to completely eliminate backlash. Automatically compensates for wear-guaranteed zero backlash for the life of the gear. Available for single, double and triple reduction types, gear sets, special designs and the Series W.

Design flexibility and lasting performance with our complete family of Accudrive Precision Products.

SERIES LE IN-LINE PLANETARY SERVO GEARBOX

- Output torque capacity up to 7,080 lb.in.
- Speed range up to 6,000 RPM input
- Sizes 50, 70, 90, 120, 155, 205, 235
- Gear ratios from 3:1 to 100:1
- Universal Mounting with shaft mount and flange mount standard
- Backlash as low as 5 arc-minutes

SERIES P IN-LINE PLANETARY SERVO GEARBOX



- Output torque capacity up to 21,240 lb.in. (2,400 Nm)
- Speed range up to 6,000 RPM input
- Sizes available 60, 90, 115, 140, 180, 220 (S-Type)
- Sizes available 60, 75, 100, 140, 180, 210, 240 (N-Type)
- Gear ratios from 3:1 to 100:1 available from stock (S-Type & N-Type)
- Universal Mounting with shaft mount and flange mount standard
- 3 arc-minutes backlash or better

Product Range

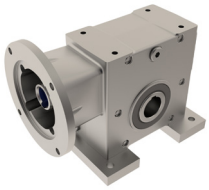
Serving an entire spectrum of mechanical drive applications from food, energy, mining and metal; to automotive, aerospace and marine propulsion, we are your source for drive solutions.

INDUSTRIAL SOLUTIONS

SERIES HP
Worm gearbox with double-enveloping worm gearing. Available in single, double and triple reductions

SERIES HP-A
Universal metric housing featuring double-enveloping gearing & drywell feature

SERIES B
Industrial duty worm gearbox featuring Conex gearing



DUO DRIVE
Dual gears on parallel output shafts

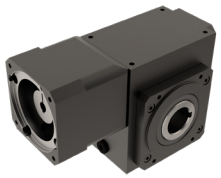
SLEW SOLUTIONS
Versatile slew bearings and slew drives featuring external, internal and without teeth options in a low profile, ready-to-install package

STAINLESS
Right angle, IP-69K rated for the food processing market

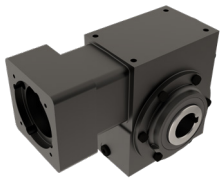
DOUBLE-ENVELOPING WORM GEAR SET
Available in standard sizes, ratios and backlash options along with custom worm gear sets.

PRECISION MOTION SOLUTIONS

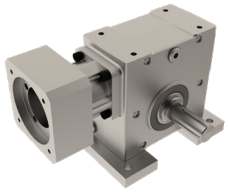
SERIES W
Precision right angle servo gearbox



SERIES RG
Moderate precision right angle servo gearbox



SERIES S
Value engineered right angle servo gearbox



SERIES LE / P
In-line helical geared motors & reducers and precision planetary servo gearbox

HARMONIC
Cone Drive Harmonic Solutions® offer the ultimate in precision motion control technology

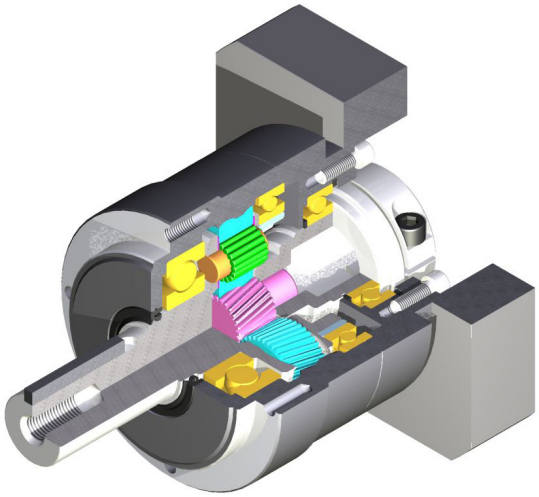
STAINLESS SERVO
Smooth, contoured stainless steel housing (316), IP69K rated right angle gearbox

HP SERVO
This double-enveloping worm gearing, high torque gearbox meets the most demanding needs as servo motor capacities increase

We can create custom engineered transmission solutions of any size and configuration.

ACCUDRIVE

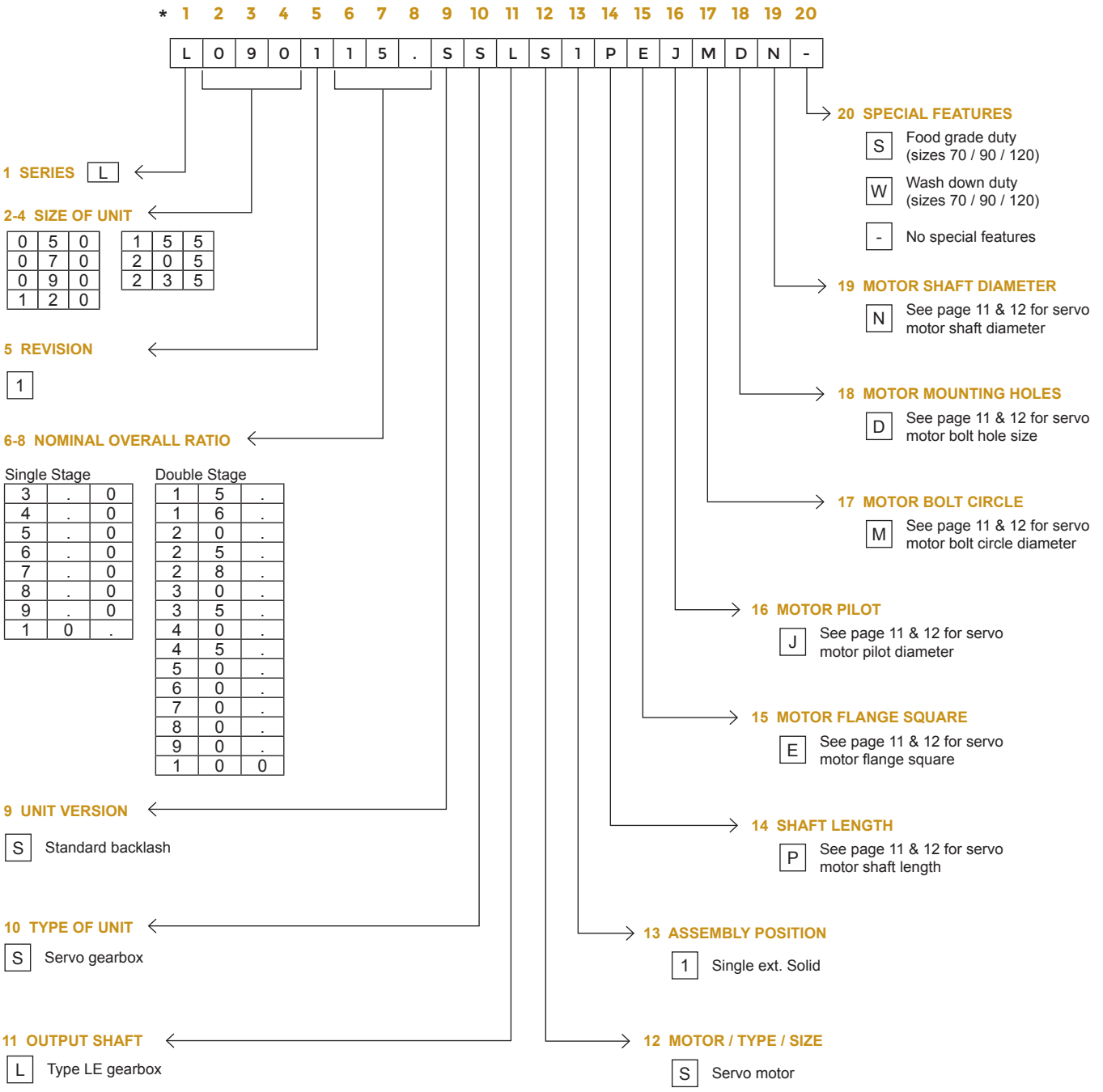
SERIES LE



The Series LE has expanded range of sizes now from size 50 up to the size 235.

- Precision clamping system to eliminate motor shaft slipping.
- Integral output shaft and planet carrier.
- Grease lubricated for life.
- Improved lower backlash.
- Helical cut gears for reduced noise.

Series LE Unit Designation



We reserve the right to improve or change product design and specifications without notice.

Wash down duty includes:
IP65 Ratings / Stainless output shaft and fasteners / Sealed bearing at the input / 2-part epoxy sealant

Food grade duty includes:
IP65 Ratings / Stainless output shaft and fasteners / Sealed bearing at the input / 2-part epoxy sealant / White epoxy paint

Wash down and food grade are standard options for sizes 70 / 90 / 120 and as a special for sizes 50 / 155 / 205 / 235.

LE50 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER				
	MOTOR FLANGE SQ.	42 / 60		65	
	MOTOR SHAFT Ø	≤ Ø 8 mm		≤ Ø 14 mm	
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX
		18	35	20	43
	COLUMN 14 ENTRY	A		B	

COLUMN 15 ENTRY	FLANGE SQUARE		
	42	60	65
	F	P	L

COLUMN 16 ENTRY	PILOT DIAMETER											
	22	30	36	38.1	40	50	54	60	70	73.025	80	95	115
	N	T	P	A	B	C	Q	D	E	F	G	H	V

COLUMN 17 ENTRY	BOLT CIRCLE												
	43.82	46	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100
	B	V	A	C	D	S	E	F	G	H	J	T	K

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE								
	3.4 - 4.4	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	#6 - 32	#8 - 32	M3	M6
	J	A	B	C	D	K	L	P	Q

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER												
	Single Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14
		Y	Z	A	7	B	C	D	E	F	G	H	J
	Double Reduction	5	6	6.35	7	8							
		Y	Z	A	7	B							

LE70 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER									
	MOTOR FLANGE SQ.	52 / 60 / 70		65 / 80 / 90		70		100 / 115		80 / 90 / 100
	MOTOR SHAFT Ø	≤ Ø 8 mm		≤ Ø 14 mm						≤ Ø 19 mm
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
		18	35	20	43	20	38	20	33	24	58
	COLUMN 14 ENTRY	C		B		E		F		G	

COLUMN 15 ENTRY	FLANGE SQUARE							
	52	60	65	70	80	90	100	115
	G	P	L	A	B	C	D	E

COLUMN 16 ENTRY	PILOT DIAMETER															
	22	30	36	38.1	40	50	54	55.563	60	70	73.025	80	95	100	110	114.3	115
	N	T	P	A	B	C	Q	R	D	E	F	G	H	U	J	K	V

COLUMN 17 ENTRY	BOLT CIRCLE																
	43.82	46	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	165
	B	V	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	P

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE										
	3.4 - 4.4	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	#6 - 32	#8- 32	3/8 - 16	M3	M6	M8
	J	A	B	C	D	E	K	L	M	P	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER															
	Single Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19
		Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L
	Double Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19
		Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L

LE90 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER															
	MOTOR FLANGE SQ.	52 / 60 / 70		65 / 70 / 80 / 90 / 100		115 / 150		80 / 90 / 100 / 115		130 / 150		100 / 115		130		150	
	MOTOR SHAFT Ø	≤ Ø 8 mm		≤ Ø 14 mm				≤ Ø 19 mm				≤ Ø 28 mm					
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
		18	35	20	43	20	48	24	58	24	63	27	65	27	80	32	85
	COLUMN 14 ENTRY	C		H		J		L		M		P		R		S	

COLUMN 15 ENTRY	FLANGE SQUARE									
	52	60	65	70	80	90	100	115	130	150
	G	P	L	A	B	C	D	E	J	K

COLUMN 16 ENTRY	PILOT DIAMETER																			
	22	30	36	38.1	40	50	54	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200
	N	T	P	A	B	C	Q	R	D	S	E	F	G	H	U	J	K	V	L	M	W

COLUMN 17 ENTRY	BOLT CIRCLE																			
	43.82	46	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	149.23	165	200	215
	B	V	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	W	P	Q	R

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE												
	3.4 - 4.4	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	#6 - 32	#8 - 32	3/8 - 16	M3	M6	M8
	J	A	B	C	D	E	F	K	L	M	P	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER																							
	Single Reduction	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28						
		C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P						
	Double Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28	
		Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P	

LE120 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																			
	MOTOR FLANGE SQ.	65 / 70 / 80 / 90 / 100		115 / 150		80 / 90 / 100 / 115		130 / 150		100 / 115		130		150		180		130 / 150		180	
	MOTOR SHAFT Ø	≤ Ø 14 mm				≤ Ø 19 mm				≤ Ø 28 mm								≤ Ø 38 mm			
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
		20	43	20	48	24	58	24	63	27	65	27	80	32	85	32	75	37	80	42	115
	COLUMN 14 ENTRY	H		J		L		M		P		R		S		T		U		W	

COLUMN 15 ENTRY	FLANGE SQUARE								
	65	70	80	90	100	115	130	150	180
	L	A	B	C	D	E	J	K	H

COLUMN 16 ENTRY	PILOT DIAMETER																			
	36	38.1	40	50	54	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200	215.9	230
	P	A	B	C	Q	R	D	S	E	F	G	H	U	J	K	V	L	M	W	X	Y

COLUMN 17 ENTRY	BOLT CIRCLE																				
	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	149.23	165	200	215	235	250	265
	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	W	P	Q	R	Z	7	8

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE									
	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	3/8 - 16	1/2 - 13	M6	M8
	A	B	C	D	E	F	M	N	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER																							
	Single Reduction	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38									
		8	K	9	L	2	M	3	N	4	P	5	Q	R	S									
	Double Reduction	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38		
		C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P	5	Q	R	S		

Series LE Motor Mounting Codes

LE155 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																						
	MOTOR FLANGE SQ.	80 / 90 / 100 / 115		130 / 150		100 / 115		130		150		180 / 200 / 220		130 / 150		180		200		220		180 / 200 / 220	
	MOTOR SHAFT Ø	≤ Ø 19 mm				≤ Ø 28 mm								≤ Ø 38 mm								≤ Ø 48 mm	
	MOTOR SHAFT	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	LENGTH RANGE	24	58	24	63	27	65	27	80	32	85	32	75	37	80	42	115	42	90	42	95	40	116
	COLUMN 14 ENTRY	L		M		P		R		S		T		U		W		X		Y		Z	

COLUMN 15 ENTRY	FLANGE SQUARE								
	80	90	100	115	130	150	180	200	220
	B	C	D	E	J	K	H	M	N

COLUMN 16 ENTRY	PILOT DIAMETER															
	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200	215.9	230	250
	R	D	S	E	F	G	H	U	J	K	V	L	M	W	X	Y	Z

COLUMN 17 ENTRY	BOLT CIRCLE															
	90	98.43	100	115	125.73	130	145	149.23	165	184.15	200	215	220	235	250	265	300
	G	J	K	L	U	M	N	W	P	X	Q	R	Y	Z	7	8	9

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE							
	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	3/8 - 16	1/2 - 13	M8
	B	C	D	E	F	G	M	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER																
	Single Reduction	19.05	22	22.225	24	26	28	28.575	32	35	38	42	48				
		2	M	3	N	4	P	5	Q	R	S	T	V				
	Double Reduction	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38	42	48
		8	K	9	L	2	M	3	N	4	P	5	Q	R	S	T	V

LE205 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																						
	MOTOR FLANGE SQ.	100 / 115		130		150		180 / 200 / 220		130 / 150		180		200		220		250		180 / 200 / 220 / 250 / 280			
	MOTOR SHAFT Ø	≤ Ø 28 mm								≤ Ø 38 mm										≤ Ø 48 mm			
	MOTOR SHAFT	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX		
	LENGTH RANGE	27	65	27	80	32	85	32	75	37	80	42	115	42	90	42	95	42	80	40	116		
	COLUMN 14 ENTRY	P		R		S		T		U		W		X		Y		2		Z			
	MOTOR FLANGE SQ.	220		250 / 280																			
	MOTOR SHAFT Ø	≤ Ø 65 mm																					
	MOTOR SHAFT	MIN	MAX	MIN	MAX																		
	LENGTH RANGE	54	120	54	150																		
	COLUMN 14 ENTRY	4		6																			

COLUMN 15 ENTRY	FLANGE SQUARE								
	100	115	130	150	180	200	220	250	280
	D	E	J	K	H	M	N	Q	R

COLUMN 16 ENTRY	PILOT DIAMETER											
	55.563	63.5	80	95	110	114.3	130	180	200	215.9	230	250	300
	R	S	G	H	J	K	L	M	W	X	Y	Z	7

COLUMN 17 ENTRY	BOLT CIRCLE														
	100	115	125.73	130	145	149.23	165	184.15	200	215	220	235	250	265	300	350
	K	L	U	M	N	W	P	X	Q	R	Y	Z	7	8	9	2

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE								
	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	21 - 24	3/8 - 16	1/2 - 13	M8
	C	D	E	F	G	H	M	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER													
	Single Reduction	28.575	32	35	38	42	45	48	55	60	65			
		5	Q	R	S	T	U	V	W	X	6			
	Double Reduction	19.05	22	22.225	24	26	28	28.575	32	35	38	42	45	48
		2	M	3	N	4	P	5	Q	R	S	T	U	V

LE235 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																						
	MOTOR FLANGE SQ.	130 / 150		180		200		220		250		180 / 200 / 220 / 250 / 280		220		250 / 280		320					
	MOTOR SHAFT Ø	≤ Ø 38 mm										≤ Ø 48 mm		≤ Ø 65 mm									
	MOTOR SHAFT	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX				
	LENGTH RANGE	37	80	42	115	42	90	42	95	42	80	40	116	54	120	54	150	74	140				
	COLUMN 14 ENTRY	U		W		X		Y		2		Z		4		6		8					

COLUMN 15 ENTRY	FLANGE SQUARE							
	130	150	180	200	220	250	280	320
	J	K	H	M	N	Q	R	T

COLUMN 16 ENTRY	PILOT DIAMETER									
	95	110	114.3	130	180	200	215.9	230	250	300
	H	J	K	L	M	W	X	Y	Z	7

COLUMN 17 ENTRY	BOLT CIRCLE										
	130	145	165	184.15	200	215	235	250	265	300	350
	M	N	P	X	Q	R	Z	7	8	9	2

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE						
	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	21 - 24	1/2 - 13	M8
	D	E	F	G	H	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER							
	Single Reduction	42	45	48	55	60	65	
		T	U	V	W	X	6	
	Double Reduction	28.575	32	35	38	42	45	48
		5	Q	R	S	T	U	V

OUTPUT TORQUE BY GEARBOX SIZE															
RATIOS	UNITS	LE 50		LE 70		LE 90		LE 120		LE 155		LE 205		LE 235	
		T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}
3	Nm	6	12	18	35	50	80	120	225	240	470	500	970	1000	1600
4		9	18	27	50	75	125	120	330	240	700	750	1400	1500	2300
5		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
6		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
7		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
8		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2200
9		6	12	18	35	50	80	120	225	240	470	500	970	1000	1900
10		6	12	18	35	50	80	120	225	240	470	500	970	1000	1600
15		6	12	18	35	50	80	120	225	240	470	500	970	1000	1600
16		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
20		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
25		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
28		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
30		9	12	18	35	50	80	120	225	240	470	500	970	1000	1600
35		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
40		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
45		6	12	18	35	50	80	120	225	240	470	500	970	1000	1300
50		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
60		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
70		9	18	27	50	75	125	180	330	360	700	750	1400	1500	2300
80		9	18	27	50	75	125	180	330	360	700	750	1400	1500	1800
90		6	12	18	35	50	80	120	225	240	470	500	970	1000	1300
100		6	12	18	35	50	80	120	225	240	470	500	970	1000	1200

T_{2N} - At nominal input speed, service life is 20,000 hours

T_{2ACC} - The maximum torque during acceleration and deceleration

Series LE General Specifications

ATTRIBUTE	UNITS	GEAR STAGES	SIZE						
			LE 50	LE 70	LE 90	LE 120	LE 155	LE 205	LE 235
Emergency Stop Torque[1]	Nm	1 & 2	$2 \times T_{2ACC}$						
Degree of Protection[2]	—		IP54 (IP65 OPTIONAL)						
Nominal Input Speed[3]	rpm		4000	3000	3000	3000	2000	1500	1000
Maximum Input Speed[4]	rpm		8000	6000	6000	6000	4000	3000	2000
Permitted Housing Temperature	°C	—	90						
Efficiency[5]	%	1	95	95	95	95	95	95	97
		2	90	90	90	90	90	90	92
Weight[6]	kg	1	0.7	1.5	3.5	7.8	16	39	55
		2	0.8	1.7	4	8.7	18	40	57
Maximum Torsional Backlash	arc-min	1	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
		2	≤ 7	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Torsional Rigidity[7]	Nm/ arc-min	1	2	3	10	31	60	175	400
		2	2	3	10	31	60	175	400
Noise Level[8]	dB	1	≤ 61	≤ 66	≤ 67	≤ 71	≤ 67	≤ 67	≤ 61
		2	≤ 61	≤ 66	≤ 67	≤ 71	≤ 67	≤ 67	≤ 61
No Load Running Torque[9]	Nm	1	0.03	0.08	0.35	1.3	1.63	2.68	2.92
		2	0.01	0.04	0.06	0.42	0.56	1.39	1.14

1 The maximum torque allowed under a stress situation (Permitted 1,000 times during service life)

2 IP65 (wash-down) is available as an option. Contact Cone Drive for more details

3 The average input speed

4 The maximum intermittent input speed

5 The efficiency at the nominal output torque rating

6 The weight may vary slightly between models

7 This does not include backlash

8 Contact Cone Drive for the testing conditions and environment

9 Torque at no load applied to the input shaft at nominal input speed

PERMITTED RADIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Permitted Radial Load[1]						
			LE 50	LE 70	LE 90	LE 120	LE 155	LE 205	LE 235
3		1	240	430	810	1300	3200	5600	5800
4			270	470	890	1500	3500	6200	6400
5			290	510	960	1600	3800	6700	6900
6			310	540	1000	1700	4000	7100	7300
7			320	570	1100	1800	4200	7400	7700
8			340	600	1100	1900	4400	7800	8000
9			350	620	1200	1900	4600	8100	8400
10			360	640	1200	2000	4700	8400	8700
15		2	410	740	1400	2300	5400	9600	9900
16			420	750	1400	2300	5500	9800	10000
20			460	810	1500	2500	6000	11000	11000
25	N		490	870	1600	2700	6400	11000	12000
28			510	910	1700	2800	6700	12000	12000
30			520	930	1700	2900	6800	12000	13000
35			550	980	1800	3000	7200	13000	13000
40			570	1000	1900	3200	7500	13000	14000
45			600	1100	2000	3300	7800	14000	14000
50			620	1100	2100	3400	8100	14000	15000
60			660	1200	2200	3600	8600	15000	15000
70			690	1200	2300	3800	9100	15000	15000
80			710	1200	2400	4000	9100	15000	15000
90			710	1200	2400	4200	9100	15000	15000
100			710	1200	2400	4300	9100	15000	15000

1 At this load and nominal input speed, service life will be 20,000 hours. (The radial load applied to the output side shaft center)

PERMITTED AXIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Permitted Axial Load[2]						
			LE 50	LE 70	LE 90	LE 120	LE 155	LE 205	LE 235
3		1	270	310	930	1500	2400	4300	6400
4			300	360	1100	1700	2700	4900	7200
5			330	390	1200	1900	3000	5400	7900
6			360	430	1300	2000	3300	5800	8600
7			380	460	1300	2100	3500	6300	9200
8			410	480	1400	2300	3700	6600	9700
9			430	510	1500	2400	3900	7000	10000
10			450	530	1600	2500	4100	7300	11000
15		2	540	630	1900	3000	4900	8700	13000
16			550	650	1900	3100	5000	8900	13000
20			610	720	2100	3400	5500	9900	14000
25	N		640	790	2200	3700	6100	11000	14000
28			640	830	2200	3900	6400	11000	14000
30			640	860	2200	3900	6600	12000	14000
35			640	920	2200	3900	7000	13000	14000
40			640	970	2200	3900	7500	13000	14000
45			640	1000	2200	3900	7900	14000	14000
50			640	1100	2200	3900	8200	14000	14000
60			640	1100	2200	3900	8200	14000	14000
70			640	1100	2200	3900	8200	14000	14000
80			640	1100	2200	3900	8200	14000	14000
90			640	1100	2200	3900	8200	14000	14000
100			640	1100	2200	3900	8200	14000	14000

2 At this load and nominal input speed, service life will be 20,000 hours. (The axial load applied to the output side bearing)

MAXIMUM RADIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Maximum Radial Load[1]						
			LE 50	LE 70	LE 90	LE 120	LE 155	LE 205	LE 235
3		1	3000	4300	7000	10000	19000	24000	30000
4			3000	4300	7000	10000	19000	24000	30000
5			3000	4300	7000	10000	19000	24000	30000
6			3000	4300	7000	10000	19000	24000	30000
7			3000	4300	7000	10000	19000	24000	30000
8			3000	4300	7000	10000	19000	24000	30000
9			3000	4300	7000	10000	19000	24000	30000
10			3000	4300	7000	10000	19000	24000	30000
15		2	3000	4300	7000	10000	19000	24000	30000
16			3000	4300	7000	10000	19000	24000	30000
20			3000	4300	7000	10000	19000	24000	30000
25	N		3000	4300	7000	10000	19000	24000	30000
28			3000	4300	7000	10000	19000	24000	30000
30			3000	4300	7000	10000	19000	24000	30000
35			3000	4300	7000	10000	19000	24000	30000
40			3000	4300	7000	10000	19000	24000	30000
45			3000	4300	7000	10000	19000	24000	30000
50			3000	4300	7000	10000	19000	24000	30000
60			3000	4300	7000	10000	19000	24000	30000
70			3000	4300	7000	10000	19000	24000	30000
80			3000	4300	7000	10000	19000	24000	30000
90			3000	4300	7000	10000	19000	24000	30000
100			3000	4300	7000	10000	19000	24000	30000

1 The maximum radial load that the gearbox can accept at the center of the output shaft

MAXIMUM AXIAL LOADS

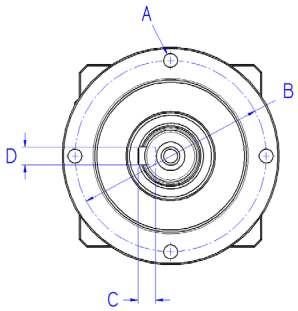
RATIO	UNITS	GEAR STAGES	SIZE						
			Maximum Axial Load[2]						
			LE 50	LE 70	LE 90	LE 120	LE 155	LE 205	LE 235
3		1	640	1100	2200	3900	8200	14000	14000
4			640	1100	2200	3900	8200	14000	14000
5			640	1100	2200	3900	8200	14000	14000
6			640	1100	2200	3900	8200	14000	14000
7			640	1100	2200	3900	8200	14000	14000
8			640	1100	2200	3900	8200	14000	14000
9			640	1100	2200	3900	8200	14000	14000
10			640	1100	2200	3900	8200	14000	14000
15		2	640	1100	2200	3900	8200	14000	14000
16			640	1100	2200	3900	8200	14000	14000
20			640	1100	2200	3900	8200	14000	14000
25	N		640	1100	2200	3900	8200	14000	14000
28			640	1100	2200	3900	8200	14000	14000
30			640	1100	2200	3900	8200	14000	14000
35			640	1100	2200	3900	8200	14000	14000
40			640	1100	2200	3900	8200	14000	14000
45			640	1100	2200	3900	8200	14000	14000
50			640	1100	2200	3900	8200	14000	14000
60			640	1100	2200	3900	8200	14000	14000
70			640	1100	2200	3900	8200	14000	14000
80			640	1100	2200	3900	8200	14000	14000
90			640	1100	2200	3900	8200	14000	14000
100			640	1100	2200	3900	8200	14000	14000

2 The maximum axial load that the gearbox can accept

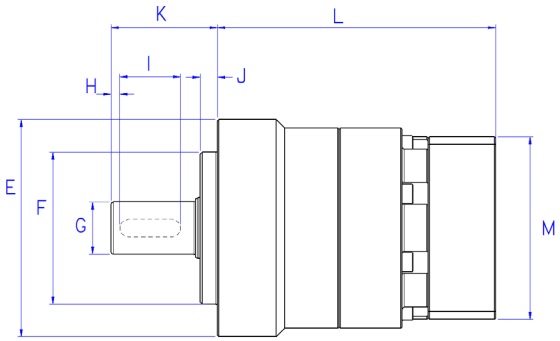
Series LE Inertia Values

RATIO	UNITS	SIZE													
		LE 50		LE 70			LE 90				LE 120				
Motor Shaft Diameter		≤ Ø 8mm	≤ Ø 14mm	≤ Ø 8mm	≤ Ø 14mm	≤ Ø 19mm	≤ Ø 8mm	≤ Ø 14mm	≤ Ø 19mm	≤ Ø 28mm	≤Ø 8	≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 38
3		0.053	0.17	0.14	0.25	0.53	-	0.72	1.1	2.9	-	-	3.2	5.1	12
4		0.041	0.16	0.095	0.21	0.48	-	0.5	0.9	2.7	-	-	2	3.7	10
5		0.036	0.15	0.077	0.19	0.46	-	0.41	0.8	2.6	-	-	1.4	3.1	9.5
6		0.034	0.15	0.068	0.18	0.46	-	0.36	0.75	2.5	-	-	1.2	2.9	9.3
7		0.032	0.15	0.062	0.17	0.45	-	0.33	0.73	2.5	-	-	1	2.8	9.1
8		0.031	0.15	0.059	0.17	0.45	-	0.31	0.71	2.5	-	-	0.92	2.7	9
9		0.031	0.15	0.057	0.17	0.44	-	0.3	0.7	2.5	-	-	0.86	2.6	8.9
10		0.030	0.15	0.056	0.17	0.44	-	0.3	0.7	2.5	-	-	0.83	2.6	8.9
15		0.035	-	0.064	0.18	0.45	0.2	0.36	0.75	2.5	-	0.77	1.2	2.9	9.2
16		0.038	-	0.07	0.18	0.46	0.25	0.41	0.79	2.5	-	0.98	1.4	3.1	9.4
20		0.034	-	0.062	0.17	0.45	0.19	0.35	0.74	2.5	-	0.72	1.1	2.8	9.1
25	$kgcm^2$	0.034	-	0.061	0.17	0.45	0.19	0.35	0.74	2.5	-	0.7	1.1	2.8	9.1
28		0.038	-	0.068	0.18	0.46	0.24	0.4	0.78	2.5	-	0.92	1.3	3	9.3
30		0.030	-	0.051	0.16	0.44	0.12	0.28	0.67	2.4	-	0.38	0.78	2.5	8.8
35		0.034	-	0.061	0.17	0.45	0.18	0.35	0.73	2.5	-	0.68	1.1	2.8	9.1
40		0.030	-	0.051	0.16	0.44	0.11	0.28	0.67	2.4	-	0.37	0.77	2.5	8.8
45		0.034	-	0.061	0.17	0.45	0.18	0.34	0.73	2.5	-	0.68	1.1	2.8	9.1
50		0.030	-	0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
60		0.030	-	0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
70		0.030	-	0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
80		0.030	-	0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
90		0.030	-	0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
100		0.030	-	0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8

RATIO	UNITS	SIZE													
		LE 155					LE 205					LE 235			
Motor Shaft Diameter		≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 19	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 65	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 65
3		-	-	12	18	35	-	-	43	57	110	-	-	110	160
4		-	-	7.3	14	29	-	-	26	41	85	-	-	54	98
5		-	-	5.3	12	27	-	-	19	34	78	-	-	42	85
6		-	-	4.3	11	26	-	-	15	31	75	-	-	35	79
7		-	-	3.9	10	25	-	-	14	29	73	-	-	33	76
8		-	-	3.5	9.9	25	-	-	13	28	72	-	-	30	74
9		-	-	3.3	9.7	25	-	-	12	27	71	-	-	29	73
10		-	-	3.2	9.6	25	-	-	12	27	71	-	-	28	72
15		-	2.6	4.4	11	26	-	8.8	15	30	-	-	20	34	-
16		-	3.5	5.3	12	27	-	11	18	33	-	-	24	39	-
20		-	2.4	4.2	10	25	-	8.1	14	29	-	-	19	33	-
25	$kgcm^2$	-	2.4	4.1	10	25	-	7.9	14	29	-	-	18	33	-
28		-	3.3	5.1	11	26	-	11	17	32	-	-	23	37	-
30		-	1.1	2.9	9.2	24	-	4	10	25	-	-	12	26	-
35		-	2.3	4.1	10	25	-	7.6	14	29	-	-	18	32	-
40		-	1.1	2.8	9.1	24	-	3.9	10	25	-	-	12	26	-
45		-	2.3	4	10	25	-	7.6	14	29	-	-	18	32	-
50		0.65	1.1	2.8	9.1	24	1.9	3.8	10	25	-	4.7	12	26	-
60		0.64	1.1	2.8	9.1	24	1.9	3.8	10	25	-	4.7	11	26	-
70		0.64	1.1	2.8	9.1	24	1.8	3.8	10	25	-	4.6	11	26	-
80		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	-	4.6	11	26	-
90		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	-	4.6	11	26	-
100		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	-	4.6	11	26	-



OUTPUT VIEW



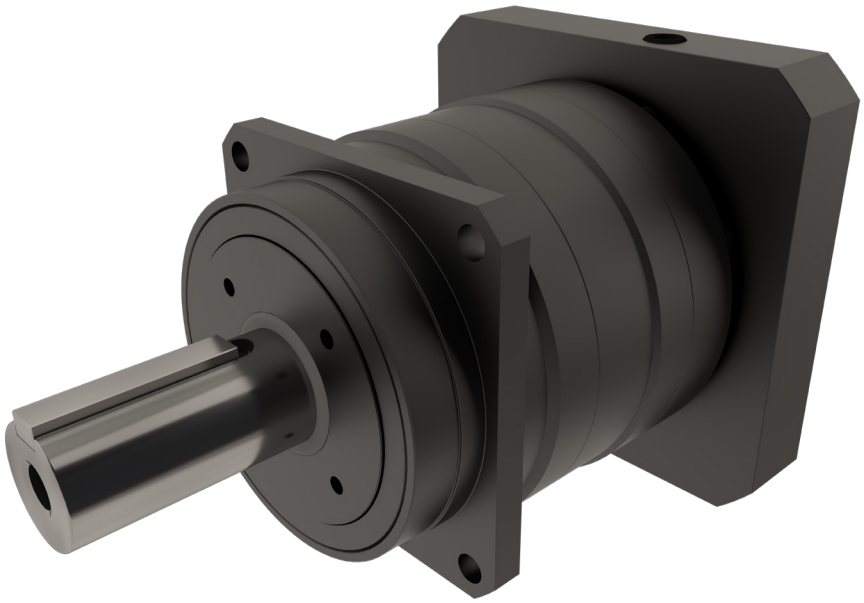
SIDE VIEW

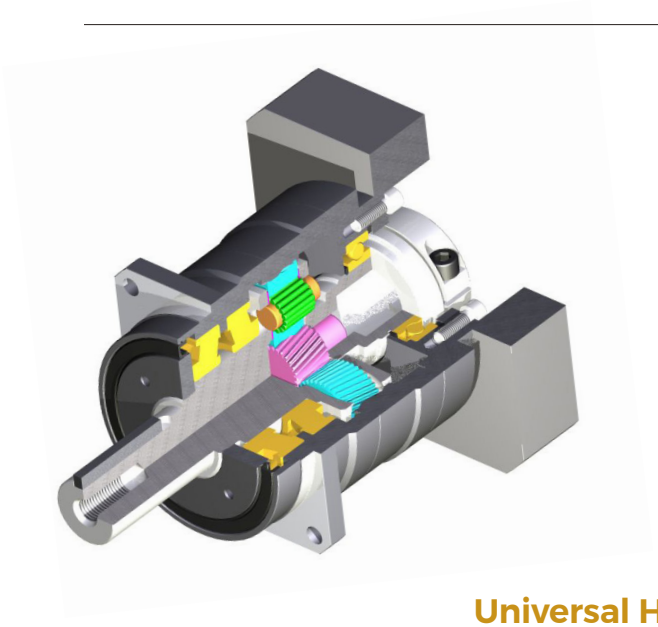
MODEL	UNITS	GEAR STAGES	INPUT BORE SIZE	L BODY LENGTH[1]	M INPUT FLANGE SQUARE	A MOUNTING HOLE	B BOLT CIRCLE	C KEY HEIGHT	D KEY WIDTH	E HOUSING DIAMETER	F (g6) PILOT DIAMETER	G (g6) SHAFT DIAMETER	H DISTANCE TO KEY	I KEY LENGTH	J PILOT DEPTH	K OUTPUT SHAFT LENGTH FROM FLANGE
LE 50	mm	1	≤ Ø 8	64	42	M4 X 8	44	4	4	50	35	12	2	14	4	24.5
			≤ Ø 14	67	65											
		2	≤ Ø 8	80.5	42											
LE 70		1	≤ Ø 8	76	52	M5 X 10	62	5	5	70	52	16	0	22	5	36
			≤ Ø 14	79	65											
			≤ Ø 19	94	80											
		2	≤ Ø 8	95	52											
			≤ Ø 14	100	65											
			≤ Ø 19	115	80											
LE 90		1	≤ Ø 14	97	65	M6 X 12	80	6	6	90	68	22	0	28	7	46
			≤ Ø 19	107	80											
			≤ Ø 28	124	130											
		2	≤ Ø 8	114	52											
			≤ Ø 14	119	65											
			≤ Ø 19	129	80											
LE 120		1	≤ Ø 19	117	80	M8 X 16	108	8	10	120	90	32	0	45	9	70
			≤ Ø 28	134	130											
			≤ Ø 38	155	180											
		2	≤ Ø 14	134.5	65											
			≤ Ø 19	144.5	80											
			≤ Ø 28	161.5	130											
LE 155		1	≤ Ø 28	152	130	M10 X 20	140	8	12	155	120	40	0	65	12	97
			≤ Ø 38	167	180											
			≤ Ø 48	208	180											
		2	≤ Ø 19	169.5	80											
			≤ Ø 28	186.5	130											
			≤ Ø 38	201.5	180											
LE 205		1	≤ Ø 38	186.5	180	M12 X 22	184	10	16	205	160	55	0	65	15	100
			≤ Ø 48	222.5	180											
			≤ Ø 65	234	250											
		2	≤ Ø 28	216	130											
			≤ Ø 38	231	180											
			≤ Ø 48	267	180											
LE 235		1	≤ Ø 48	241.5	180	M16 X 28	210	12	20	235	180	75	0	85	18	126
			≤ Ø 65	245.5	250											
		2	≤ Ø 38	240.5	180											
			≤ Ø 48	276.5	180											

1 Length will vary depending on motor

ACCUDRIVE

SERIES P - N TYPE





Design Features

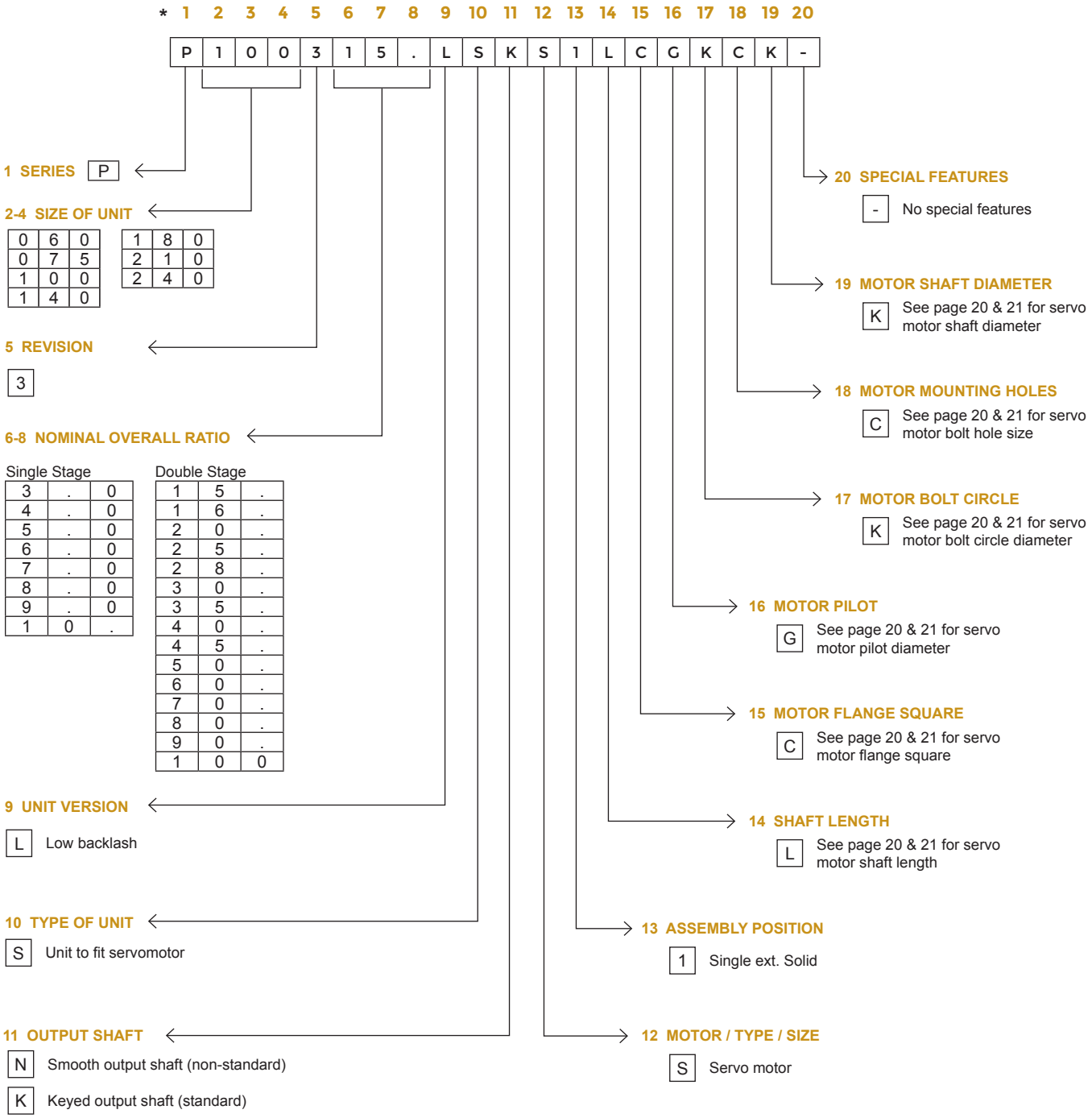
- Case hardened and ground gearing for consistent very low backlash, high load capacity offering the highest levels of precision and lowest noise levels.
- Case hardened steel ring gear integral with housing for highest quality and load capacity.
- Output shaft supported by large tapered roller bearings for higher radial load capacity.

Universal Housing

- Mount in any position
- Filled with synthetic grease
- IP 54 rated (IP65 optional)

Performance

- Lifetime up to 20,000 hours
- Backlash ≤ 3 arcminutes
- 5 Year Warranty



We reserve the right to improve or change product design and specifications without notice.

Series P – N Type Motor Mounting Codes

P060 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER									
MOTOR FLANGE SQ.	52 / 60 / 70		65 / 80 / 90		70		100 / 115		80 / 90 / 100	
MOTOR SHAFT Ø	≤ Ø 8 mm		≤ Ø 14 mm						≤ Ø 19 mm	
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	18	35	20	43	20	38	20	33	24	58
COLUMN 14 ENTRY	C		B		E		F		G	

COLUMN 15 ENTRY	FLANGE SQUARE							
	52	60	65	70	80	90	100	115
	G	P	L	A	B	C	D	E

COLUMN 16 ENTRY	PILOT DIAMETER															
	22	30	36	38.1	40	50	54	55.563	60	70	73.025	80	95	100	110	114.3	115
	N	T	P	A	B	C	Q	R	D	E	F	G	H	U	J	K	V

COLUMN 17 ENTRY	BOLT CIRCLE																	
	43.82	46	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	165
	B	V	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	P

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE											
	3.4 - 4.4	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	#6 - 32	#8 - 32	3/8 - 16	M3	M6	M8
	J	A	B	C	D	E	K	L	M	P	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER															
Single Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19
	Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L
Double Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19
	Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L

P075 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER															
MOTOR FLANGE SQ.	52 / 60 / 70		65 / 70 / 80 / 90 / 100		115 / 150		80 / 90 / 100 / 115		130 / 150		100 / 115		130		150	
MOTOR SHAFT Ø	≤ Ø 8 mm		≤ Ø 14 mm				≤ Ø 19 mm				≤ Ø 28 mm					
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	18	35	20	43	20	48	24	58	24	63	27	65	27	80	32	85
COLUMN 14 ENTRY	C		H		J		L		M		P		R		S	

COLUMN 15 ENTRY	FLANGE SQUARE									
	52	60	65	70	80	90	100	115	130	150
	G	P	L	A	B	C	D	E	J	K

COLUMN 16 ENTRY	PILOT DIAMETER																			
	22	30	36	38.1	40	50	54	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200
	N	T	P	A	B	C	Q	R	D	S	E	F	G	H	U	J	K	V	L	M	W

COLUMN 17 ENTRY	BOLT CIRCLE																			
	43.82	46	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	149.23	165	200	215
	B	V	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	W	P	Q	R

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE											
	3.4 - 4.4	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	#6 - 32	#8 - 32	3/8 - 16	M3	M6	M8
	J	A	B	C	D	E	F	K	L	M	P	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER																								
Single Reduction	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28								
	C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P								
Double Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28			
	Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P			

P100 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																			
MOTOR FLANGE SQ.	65 / 70 / 80 / 90 / 100		115 / 150		80 / 90 / 100 / 115		130 / 150		100 / 115		130		150		180		130 / 150		180	
MOTOR SHAFT Ø	≤ Ø 14 mm				≤ Ø 19 mm				≤ Ø 28 mm								≤ Ø 38 mm			
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	20	43	20	48	24	58	24	63	27	65	27	80	32	85	32	75	37	80	42	115
COLUMN 14 ENTRY	H		J		L		M		P		R		S		T		U		W	

COLUMN 15 ENTRY	FLANGE SQUARE								
	65	70	80	90	100	115	130	150	180
	L	A	B	C	D	E	J	K	H

COLUMN 16 ENTRY	PILOT DIAMETER																			
	36	38.1	40	50	54	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200	215.9	230
	P	A	B	C	Q	R	D	S	E	F	G	H	U	J	K	V	L	M	W	X	Y

COLUMN 17 ENTRY	BOLT CIRCLE																				
	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	149.23	165	200	215	235	250	265
	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	W	P	Q	R	Z	7	8

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE									
	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	3/8 - 16	1/2 - 13	M6	M8
	A	B	C	D	E	F	M	N	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER																								
Single Reduction	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38											
	8	K	9	L	2	M	3	N	4	P	5	Q	R	S											
Double Reduction	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38				
	C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P	5	Q	R	S				

P140 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																					
MOTOR FLANGE SQ.	80 / 90 / 100 / 115		130 / 150		100 / 115		130		150		180 / 200 / 220		130 / 150		180		200		220		180 / 200 / 220	
MOTOR SHAFT Ø	≤ Ø 19 mm				≤ Ø 28 mm								≤ Ø 38 mm								≤ Ø 48 mm	
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	24	58	24	63	27	65	27	80	32	85	32	75	37	80	42	115	42	90	42	95	40	116
COLUMN 14 ENTRY	L		M		P		R		S		T		U		W		X		Y		Z	

COLUMN 15 ENTRY	FLANGE SQUARE								
	80	90	100	115	130	150	180	200	220
	B	C	D	E	J	K	H	M	N

COLUMN 16 ENTRY	PILOT DIAMETER																
	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200	215.9	230	250
	R	D	S	E	F	G	H	U	J	K	V	L	M	W	X	Y	Z

COLUMN 17 ENTRY	BOLT CIRCLE																
	90	98.43	100	115	125.73	130	145	149.23	165	184.15	200	215	220	235	250	265	300
	G	J	K	L	U	M	N	W	P	X	Q	R	Y	Z	7	8	9

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE							
	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	3/8 - 16	1/2 - 13	M8
	B	C	D	E	F	G	M	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER												
Single Reduction	19.05	22	22.225	24	26	28	28.575	32	35	38	42	48	
	2	M	3	N	4	P	5	Q	R	S	T	V	
Double Reduction	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38	42	48
	8	K	9	L	2	M	3	N	4	P	5	Q	R	S	T	V

P180 SELECTIONS

COLUMN 14 ENTRY																					
SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																					
MOTOR FLANGE SQ.	100 / 115		130		150		180 / 200 / 220		130 / 150		180		200		220		250		180 / 200 / 220 /250 /280	
MOTOR SHAFT Ø	≤ Ø 28 mm								≤ Ø 38 mm										≤ Ø 48 mm	
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	27	65	27	80	32	85	32	75	37	80	42	115	42	90	42	95	42	80	40	116
COLUMN 14 ENTRY	P		R		S		T		U		W		X		Y		2		Z	
MOTOR FLANGE SQ.	220		250 / 280																	
MOTOR SHAFT Ø	≤ Ø 65 mm																			
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX																
	54	120	54	150																
COLUMN 14 ENTRY	4		6																	

COLUMN 15 ENTRY	FLANGE SQUARE								
	100	115	130	150	180	200	220	250	280
	D	E	J	K	H	M	N	Q	R

COLUMN 16 ENTRY	PILOT DIAMETER												
	55.563	63.5	80	95	110	114.3	130	180	200	215.9	230	250	300
	R	S	G	H	J	K	L	M	W	X	Y	Z	7

COLUMN 17 ENTRY	BOLT CIRCLE															
	100	115	125.73	130	145	149.23	165	184.15	200	215	220	235	250	265	300	350
	K	L	U	M	N	W	P	X	Q	R	Y	Z	7	8	9	2

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE								
	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	21 - 24	3/8 - 16	1/2 - 13	M8
	C	D	E	F	G	H	M	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER												
Single Reduction	28.575	32	35	38	42	45	48	55	60	65			
	5	Q	R	S	T	U	V	W	X	6			
Double Reduction	19.05	22	22.225	24	26	28	28.575	32	35	38	42	45	48
	2	M	3	N	4	P	5	Q	R	S	T	U	V

P210 SELECTIONS

COLUMN 14 ENTRY																		
SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																		
MOTOR FLANGE SQ.	130 / 150		180		200		220		250		180 / 200 / 220 / 250 / 280		220		250 / 280		320	
MOTOR SHAFT Ø	≤ Ø 38 mm										≤ Ø 48 mm		≤ Ø 65 mm					
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	37	80	42	115	42	90	42	95	42	80	40	116	54	120	54	150	74	140
COLUMN 14 ENTRY	U		W		X		Y		2		Z		4		6		8	

COLUMN 15 ENTRY	FLANGE SQUARE							
	130	150	180	200	220	250	280	320
	J	K	H	M	N	Q	R	T

COLUMN 16 ENTRY	PILOT DIAMETER									
	95	110	114.3	130	180	200	215.9	230	250	300
	H	J	K	L	M	W	X	Y	Z	7

COLUMN 17 ENTRY	BOLT CIRCLE										
	130	145	165	184.15	200	215	235	250	265	300	350
	M	N	P	X	Q	R	Z	7	8	9	2

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE						
	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	21 - 24	1/2 - 13	M8
	D	E	F	G	H	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER						
Single Reduction	42	45	48	55	60	65	
	T	U	V	W	X	6	
Double Reduction	28.575	32	35	38	42	45	48
	5	Q	R	S	T	U	V

P240 SELECTIONS

COLUMN 14 ENTRY								
SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER								
MOTOR FLANGE SQ.	180 / 200 / 220 / 250 / 280		220		250 / 280		320	
MOTOR SHAFT Ø	≤ Ø 48 mm				≤ Ø 65 mm			
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	40	116	54	120	54	150	74	140
COLUMN 14 ENTRY	Z		4		6		8	

COLUMN 15 ENTRY	FLANGE SQUARE					
	180	200	220	250	280	320
	H	M	N	Q	R	T

COLUMN 16 ENTRY	PILOT DIAMETER								
	110	114.3	130	180	200	215.9	230	250	300
	J	K	L	M	W	X	Y	Z	7

COLUMN 17 ENTRY	BOLT CIRCLE										
	130	145	165	184.15	200	215	235	250	265	300	350
	M	N	P	X	Q	R	Z	7	8	9	2

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE						
	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	21 - 24	1/2 - 13	M8
	D	E	F	G	H	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER			
Single Reduction	55	60	65	
	W	X	6	
Double Reduction	42	45	48	
	T	U	V	

Series P – N Type Output Torque Ratings

OUTPUT TORQUE BY GEARBOX SIZE															
RATIOS	UNITS	P-N 060		P-N 075		P-N 100		P-N 140		P-N 180		P-N 210		P-N 240	
		T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}
3		18	35	50	80	120	225	240	470	500	970	1000	1600	1600	2500
4		27	50	75	125	120	330	240	700	750	1400	1500	2300	2400	3700
5		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
6		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
7		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
8		27	50	75	125	180	330	360	700	750	1400	1500	2200	2400	3600
9		18	35	50	80	120	225	240	470	500	970	1000	1900	1600	3000
10		18	35	50	80	120	225	240	470	500	970	1000	1600	1600	2600
15		18	35	50	80	120	225	240	470	500	970	1000	1600	1600	2500
16		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
20		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
25	Nm	27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
28		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
30		18	35	50	80	120	225	240	470	500	970	1000	1600	1600	2500
35		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
40		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
45		18	35	50	80	120	225	240	470	500	970	1000	1300	1600	2100
50		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
60		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
70		27	50	75	125	180	330	360	700	750	1400	1500	2300	2400	3700
80		27	50	75	125	180	330	360	700	750	1400	1500	1800	2400	2700
90		18	35	50	80	120	225	240	470	500	970	1000	1300	1600	2100
100		18	35	50	80	120	225	240	470	500	970	1000	1200	1600	1800

T_{2N} - At nominal input speed, service life is 20,000 hours

T_{2ACC} - The maximum torque during acceleration and deceleration

ATTRIBUTE	UNITS	GEAR STAGES	SIZE						
			P-N 060	P-N 075	P-N 100	P-N 140	P-N 180	P-N 210	P-N 240
Emergency Stop Torque[1]	Nm	1 & 2	$2 \times T_{2ACC}$						
Degree of Protection[2]	—		IP54 (IP65 OPTIONAL)						
Nominal Input Speed[3]	rpm		3000	3000	3000	2000	1500	1000	1000
Maximum Input Speed[4]	rpm		6000	6000	6000	4000	3000	2000	2000
Permitted Housing Temperature	°C	—	90						
Efficiency[5]	%	1	95	95	95	95	95	97	97
		2	90	90	90	90	90	92	92
Weight[6]	kg	1	1.6	3.4	8.1	17	39	59	85
		2	1.8	3.8	8.8	19	39	60	89
Maximum Torsional Backlash	arc-min	1	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
		2	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
Torsional Rigidity[7]	Nm/ arc-min	1	3	10	31	60	175	400	550
		2	3	10	31	60	175	400	550
Noise Level[8]	dB	1	≤ 66	≤ 67	≤ 71	≤ 67	≤ 67	≤ 61	≤ 62
		2	≤ 66	≤ 67	≤ 71	≤ 67	≤ 67	≤ 61	≤ 62
No Load Running Torque[9]	Nm	1	0.15	0.35	1.3	1.63	2.68	2.92	5.96
		2	0.04	0.06	0.42	0.56	1.39	1.14	1.28

1 The maximum torque allowed under a stress situation (Permitted 1,000 times during service life)
2 IP65 (wash-down) is available as an option. Contact Cone Drive for more details
3 The average input speed
4 The maximum intermittent input speed
5 The efficiency at the nominal output torque rating
6 The weight may vary slightly between models
7 This does not include backlash
8 Contact Cone Drive for the testing conditions and environment
9 Torque at no load applied to the input shaft at nominal input speed

Series P – N Type Radial & Axial Shaft Load Ratings

PERMITTED RADIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Permitted Radial Load[1]						
			P-N 060	P-N 075	P-N 100	P-N 140	P-N 180	P-N 210	P-N 240
3	N	1	1700	2300	3400	6700	12000	17000	21000
4			1900	2500	3700	7400	13000	18000	22000
5			2000	2700	4000	7900	14000	20000	24000
6			2100	2800	4200	8300	15000	21000	25000
7			2200	3000	4400	8700	16000	22000	26000
8			2300	3100	4600	9100	17000	23000	28000
9			2400	3200	4800	9400	17000	24000	29000
10			2400	3300	4900	9700	18000	24000	29000
15		2	2800	3700	5600	10000	19000	24000	30000
16			2800	3800	5700	10000	19000	24000	30000
20			3000	4000	6100	10000	19000	24000	30000
25			3000	4300	6500	10000	19000	24000	30000
28			3000	4300	6700	10000	19000	24000	30000
30			3000	4300	6900	10000	19000	24000	30000
35			3000	4300	7000	10000	19000	24000	30000
40			3000	4300	7000	10000	19000	24000	30000
45			3000	4300	7000	10000	19000	24000	30000
50			3000	4300	7000	10000	19000	24000	30000
60			3000	4300	7000	10000	19000	24000	30000
70			3000	4300	7000	10000	19000	24000	30000
80			3000	4300	7000	10000	19000	24000	30000
90			3000	4300	7000	10000	19000	24000	30000
100			3000	4300	7000	10000	19000	24000	30000

1 At this load and nominal input speed, service life will be 20,000 hours.
(The radial load applied to the output side shaft center)

PERMITTED AXIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Permitted Axial Load[2]						
			P-N 060	P-N 075	P-N 100	P-N 140	P-N 180	P-N 210	P-N 240
3	N	1	2300	3400	4800	9000	16000	22000	27000
4			2500	3700	5200	9000	17000	22000	27000
5			2700	3900	5600	9000	17000	22000	27000
6			2700	3900	5900	9000	17000	22000	27000
7			2700	3900	6100	9000	17000	22000	27000
8			2700	3900	6300	9000	17000	22000	27000
9			2700	3900	6300	9000	17000	22000	27000
10			2700	3900	6300	9000	17000	22000	27000
15		2	2700	3900	6300	9000	17000	22000	27000
16			2700	3900	6300	9000	17000	22000	27000
20			2700	3900	6300	9000	17000	22000	27000
25			2700	3900	6300	9000	17000	22000	27000
28			2700	3900	6300	9000	17000	22000	27000
30			2700	3900	6300	9000	17000	22000	27000
35			2700	3900	6300	9000	17000	22000	27000
40			2700	3900	6300	9000	17000	22000	27000
45			2700	3900	6300	9000	17000	22000	27000
50			2700	3900	6300	9000	17000	22000	27000
60			2700	3900	6300	9000	17000	22000	27000
70			2700	3900	6300	9000	17000	22000	27000
80			2700	3900	6300	9000	17000	22000	27000
90			2700	3900	6300	9000	17000	22000	27000
100			2700	3900	6300	9000	17000	22000	27000

2 At this load and nominal input speed, service life will be 20,000 hours.
(The axial load applied to the output side bearing)

MAXIMUM RADIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Maximum Radial Load[1]						
			P-N 060	P-N 075	P-N 100	P-N 140	P-N 180	P-N 210	P-N 240
3	N	1	3000	4300	7000	10000	19000	24000	30000
4			3000	4300	7000	10000	19000	24000	30000
5			3000	4300	7000	10000	19000	24000	30000
6			3000	4300	7000	10000	19000	24000	30000
7			3000	4300	7000	10000	19000	24000	30000
8			3000	4300	7000	10000	19000	24000	30000
9			3000	4300	7000	10000	19000	24000	30000
10			3000	4300	7000	10000	19000	24000	30000
15		2	3000	4300	7000	10000	19000	24000	30000
16			3000	4300	7000	10000	19000	24000	30000
20			3000	4300	7000	10000	19000	24000	30000
25			3000	4300	7000	10000	19000	24000	30000
28			3000	4300	7000	10000	19000	24000	30000
30			3000	4300	7000	10000	19000	24000	30000
35			3000	4300	7000	10000	19000	24000	30000
40			3000	4300	7000	10000	19000	24000	30000
45			3000	4300	7000	10000	19000	24000	30000
50			3000	4300	7000	10000	19000	24000	30000
60			3000	4300	7000	10000	19000	24000	30000
70			3000	4300	7000	10000	19000	24000	30000
80			3000	4300	7000	10000	19000	24000	30000
90			3000	4300	7000	10000	19000	24000	30000
100			3000	4300	7000	10000	19000	24000	30000

1 The maximum radial load that the gearbox can accept at the center of the output shaft

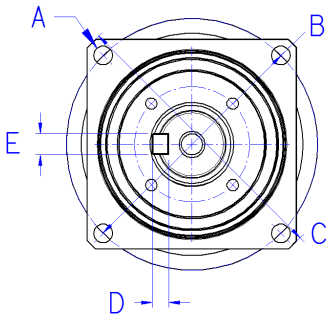
MAXIMUM AXIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Maximum Axial Load[2]						
			P-N 060	P-N 075	P-N 100	P-N 140	P-N 180	P-N 210	P-N 240
3	N	1	2700	3900	6300	9000	17000	22000	27000
4			2700	3900	6300	9000	17000	22000	27000
5			2700	3900	6300	9000	17000	22000	27000
6			2700	3900	6300	9000	17000	22000	27000
7			2700	3900	6300	9000	17000	22000	27000
8			2700	3900	6300	9000	17000	22000	27000
9			2700	3900	6300	9000	17000	22000	27000
10			2700	3900	6300	9000	17000	22000	27000
15		2	2700	3900	6300	9000	17000	22000	27000
16			2700	3900	6300	9000	17000	22000	27000
20			2700	3900	6300	9000	17000	22000	27000
25			2700	3900	6300	9000	17000	22000	27000
28			2700	3900	6300	9000	17000	22000	27000
30			2700	3900	6300	9000	17000	22000	27000
35			2700	3900	6300	9000	17000	22000	27000
40			2700	3900	6300	9000	17000	22000	27000
45			2700	3900	6300	9000	17000	22000	27000
50			2700	3900	6300	9000	17000	22000	27000
60			2700	3900	6300	9000	17000	22000	27000
70			2700	3900	6300	9000	17000	22000	27000
80			2700	3900	6300	9000	17000	22000	27000
90			2700	3900	6300	9000	17000	22000	27000
100			2700	3900	6300	9000	17000	22000	27000

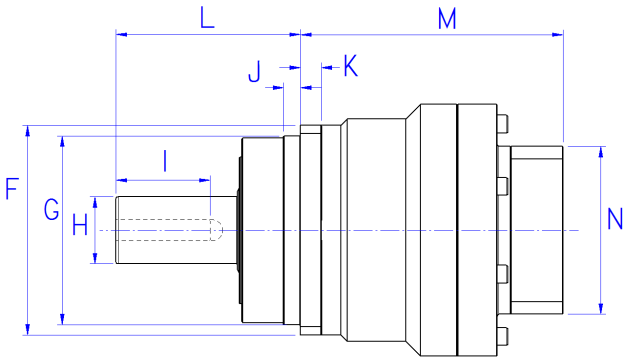
2 The maximum axial load that the gearbox can accept

RATIO	UNITS	SIZE											
		P-N 060			P-N 075				P-N 100				
Motor Shaft Diameter		≤Ø 8	≤Ø 14	≤Ø 19	≤Ø 8	≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 8	≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 38
3		0.15	0.26	0.54	-	0.68	1.1	2.9	-	-	3.1	5	12
4		0.1	0.21	0.49	-	0.48	0.87	2.6	-	-	1.9	3.7	10
5		0.08	0.19	0.47	-	0.39	0.79	2.6	-	-	1.4	3.1	9.5
6		0.07	0.18	0.46	-	0.34	0.74	2.5	-	-	1.1	2.8	9.2
7		0.064	0.18	0.45	-	0.32	0.72	2.5	-	-	1	2.7	9.1
8		0.06	0.17	0.45	-	0.31	0.71	2.5	-	-	0.91	2.6	8.9
9		0.058	0.17	0.45	-	0.3	0.7	2.5	-	-	0.85	2.6	8.9
10		0.056	0.17	0.44	-	0.29	0.69	2.4	-	-	0.82	2.5	8.8
15		0.064	0.18	0.45	0.2	0.36	0.75	2.5	-	0.76	1.1	2.9	9.2
16		0.07	0.18	0.46	0.25	0.41	0.79	2.5	-	0.97	1.4	3.1	9.4
20		0.062	0.17	0.45	0.19	0.35	0.74	2.5	-	0.72	1.1	2.8	9.1
25	$kgcm^2$	0.062	0.17	0.45	0.19	0.35	0.73	2.5	-	0.7	1.1	2.8	9.1
28		0.068	0.18	0.46	0.24	0.4	0.78	2.5	-	0.92	1.3	3	9.3
30		0.052	0.16	0.44	0.12	0.28	0.67	2.4	-	0.38	0.78	2.5	8.8
35		0.061	0.17	0.45	0.18	0.34	0.73	2.5	-	0.68	1.1	2.8	9.1
40		0.051	0.16	0.44	0.11	0.27	0.67	2.4	-	0.37	0.77	2.5	8.8
45		0.061	0.17	0.45	0.18	0.34	0.73	2.5	-	0.68	1.1	2.8	9.1
50		0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
60		0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
70		0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
80		0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
90		0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8
100		0.051	0.16	0.44	0.11	0.27	0.67	2.4	0.19	0.36	0.76	2.5	8.8

RATIO	UNITS	SIZE																
		P-N 140					P-N 180					P-N 210				P-N 240		
Motor Shaft Diameter		≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 19	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 65	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 65	≤Ø 38	≤Ø 48	≤Ø 65
3		-	-	12	18	35	-	-	41	55	110	-	-	110	160	-	-	230
4		-	-	7.2	14	29	-	-	25	40	84	-	-	55	99	-	-	130
5		-	-	5.2	12	27	-	-	18	33	78	-	-	42	86	-	-	110
6		-	-	4.3	11	26	-	-	15	30	74	-	-	36	80	-	-	92
7		-	-	3.8	10	25	-	-	13	29	73	-	-	33	77	-	-	86
8		-	-	3.5	9.9	25	-	-	12	27	71	-	-	31	74	-	-	81
9		-	-	3.3	9.7	25	-	-	12	27	71	-	-	29	73	-	-	78
10		-	-	3.2	9.6	25	-	-	11	26	70	-	-	28	72	-	-	77
15		-	2.6	4.4	11	26	-	8.7	15	30	34	-	20	34	-	-	47	-
16		-	3.5	5.3	12	27	-	11	18	32	39	-	24	39	-	-	55	-
20		-	2.4	4.2	10	25	-	8.1	14	29	33	-	19	33	-	-	45	-
25	$kgcm^2$	-	2.4	4.1	10	25	-	7.8	14	29	33	-	18	33	-	-	44	-
28		-	3.3	5.1	11	26	-	11	17	32	38	-	23	38	-	-	52	-
30		-	1.1	2.9	9.2	24	-	4	10	25	26	-	12	26	-	-	32	-
35		-	2.3	4.1	10	25	-	7.6	14	29	32	-	18	32	-	-	43	-
40		-	1.1	2.8	9.1	24	-	3.9	10	25	26	-	12	26	-	-	31	-
45		-	2.3	4	10	25	-	7.6	14	29	32	-	18	32	-	-	43	-
50		0.65	1.1	2.8	9.1	24	1.9	3.8	10	25	26	4.7	12	26	-	14	31	-
60		0.64	1.1	2.8	9.1	24	1.9	3.8	10	25	26	4.7	11	26	-	13	31	-
70		0.64	1.1	2.8	9.1	24	1.8	3.8	10	25	26	4.6	11	26	-	13	31	-
80		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	26	4.6	11	26	-	13	31	-
90		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	26	4.6	11	26	-	13	31	-
100		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	26	4.6	11	26	-	13	31	-



OUTPUT VIEW



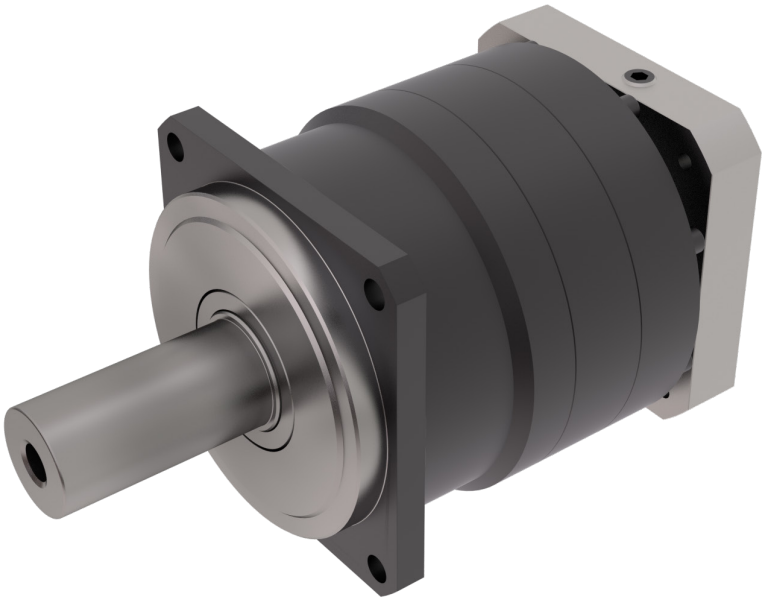
SIDE VIEW

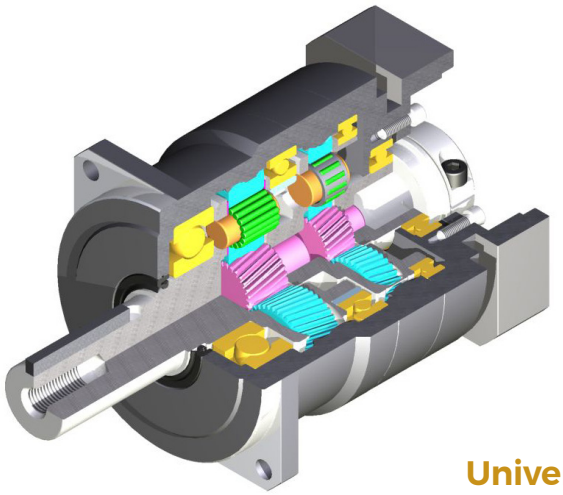
MODEL	UNITS	GEAR STAGES	INPUT BORE SIZE	M BODY LENGTH[1]	N INPUT FLANGE SQUARE	A MOUNTING HOLE	B BOLT CIRCLE	C FLANGE DIA-METER	D KEY HEIGHT	E KEY WIDTH	F (g6) OUTPUT FLANGE SQUARE	G (g6) PILOT DIAMETER	H SHAFT DIAMETER	I KEY LENGTH	J PILOT DEPTH	K FLANGE THICK-NESS	L OUTPUT SHAFT LENGTH FROM FLANGE
P-N060	mm	1	≤ Ø 8	84	52	5.5	68	80	5	5	60	60	16	22	5	6	48
			≤ Ø 14	87	65												
			≤ Ø19	102	80												
		2	≤ Ø 8	103	52												
			≤ Ø 14	108	65												
			≤ Ø 19	123	80												
P-N075		1	≤ Ø 14	108.5	65	6.6	85	98	6	6	75	70	22	28	6	7	56
			≤ Ø 19	118.5	80												
			≤ Ø 28	135.5	130												
		2	≤ Ø 8	125.5	52												
			≤ Ø 14	130.5	65												
			≤ Ø 19	140.5	80												
P-N100		1	≤ Ø 19	125.5	80	9	120	136	8	10	100	90	32	45	8	10	88
			≤ Ø 28	142.5	130												
			≤ Ø 38	163.5	180												
		2	≤ Ø 14	143	65												
			≤ Ø 19	153	80												
			≤ Ø 28	170	130												
P-N 140		1	≤ Ø 28	162	130	11	165	185	8	12	140	130	40	65	10	12	112
			≤ Ø 38	177	180												
			≤ Ø 48	218	180												
		2	≤ Ø 19	179.5	80												
			≤ Ø 28	196.5	130												
			≤ Ø 38	211.5	180												
P-N180		1	≤ Ø 38	203.5	180	13.5	215	240	10	16	180	160	55	65	12	15	112
			≤ Ø 48	239.5	180												
			≤ Ø 65	251	250												
		2	≤ Ø 28	233	130												
			≤ Ø 38	248	180												
			≤ Ø 48	284	180												
P-N 210		1	≤ Ø 48	271	180	17	250	290	12	20	210	180	75	85	15	17	143
			≤ Ø 65	275	250												
		2	≤ Ø 38	270	180												
			≤ Ø 48	306	180												
P-N240		1	≤ Ø 65	295.5	250	17	290	325	14	22	240	200	85	105	20	20	170
		2	≤ Ø 48	346	180												

1 Length will vary depending on motor

ACCUDRIVE

SERIES P - S TYPE





Design Features

- Case hardened and ground gearing for consistent very low backlash, high load capacity offering the highest levels of precision and lowest noise levels.
- Case hardened steel ring gear integral with housing for highest quality and load capacity.
- Output shaft bearing support spread on both sides of the planet gears for higher radial load capacity.

Universal Housing

- Mount in any position
- Filled with synthetic grease
- IP55 rated *(IP65 option available)*

Performance

- Lifetime up to 20,000 hours
- Backlash ≤ 3 arcminutes
- 5 Year Warranty

Series P – S Type Unit Designation

*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	P	0	9	0	3	1	5	.	L	S	D	S	1	P	E	J	M	D	N	-

1 SERIES [P]

2-4 SIZE OF UNIT

0	6	0
0	9	0
1	1	5
1	4	0
1	8	0
2	2	0

5 REVISION

[3]

6-8 NOMINAL OVERALL RATIO

Single Stage

3	.	0
4	.	0
5	.	0
6	.	0
7	.	0
8	.	0
9	.	0
1	0	.

Double Stage

1	5	.
1	6	.
2	0	.
2	5	.
2	8	.
3	0	.
3	5	.
4	0	.
4	5	.
5	0	.
6	0	.
7	0	.
8	0	.
9	0	.
1	0	0

9 UNIT VERSION

[L] Low backlash

10 TYPE OF UNIT

[S] Unit to fit servomotor

11 OUTPUT SHAFT

[C] Smooth output shaft (non-standard)

[D] Keyed output shaft (standard)

12 MOTOR / TYPE / SIZE

[S] Servo motor

13 ASSEMBLY POSITION

[1] Single ext. Solid

14 SHAFT LENGTH

[P] See page 29 & 30 for servo motor shaft length

15 MOTOR FLANGE SQUARE

[E] See page 29 & 30 for servo motor flange square

16 MOTOR PILOT

[J] See page 29 & 30 for servo motor pilot diameter

17 MOTOR BOLT CIRCLE

[M] See page 29 & 30 for servo motor pilot diameter

18 MOTOR MOUNTING HOLES

[D] See page 29 & 30 for servo motor pilot diameter

19 MOTOR SHAFT DIAMETER

[N] See page 29 & 30 for servo motor pilot diameter

20 SPECIAL FEATURES

[S] Food grade duty (sizes 60 / 90 / 115)

[W] Wash down duty (sizes 60 / 90 / 115)

[-] No special features

Wash down duty includes:
IP65 Ratings / Stainless output shaft and fasteners / Sealed bearing at the input / 2-part epoxy sealant

Food grade duty includes:
IP65 Ratings / Stainless output shaft and fasteners / Sealed bearing at the input / 2-part epoxy sealant / White epoxy paint

Wash down and food grade are standard options for sizes 60 / 90 / 115 and as a special for sizes 140 / 180 / 220.

We reserve the right to improve or change product design and specifications without notice.

P060 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER											
	MOTOR FLANGE SQ.	52 / 60 / 70		65 / 80 / 90		70		100 / 115		80 / 90 / 100	
	MOTOR SHAFT Ø	≤ Ø 8 mm		≤ Ø 14 mm						≤ Ø 19 mm	
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
		18	35	20	43	20	38	20	33	24	58
	COLUMN 14 ENTRY	C		B		E		F		G	

COLUMN 15 ENTRY	FLANGE SQUARE							
	52	60	65	70	80	90	100	115
	G	P	L	A	B	C	D	E

COLUMN 16 ENTRY	PILOT DIAMETER																
	22	30	36	38.1	40	50	54	55.563	60	70	73.025	80	95	100	110	114.3	115
	N	T	P	A	B	C	Q	R	D	E	F	G	H	U	J	K	V

COLUMN 17 ENTRY	BOLT CIRCLE																
	43.82	46	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	165
	B	V	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	P

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE										
	3.4 - 4.4	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	#6 - 32	#8 - 32	3/8 - 16	M3	M6	M8
	J	A	B	C	D	E	K	L	M	P	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER															
	Single Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19
		Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L
	Double Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19
		Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L

P090 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER															
	MOTOR FLANGE SQ.	52 / 60 / 70		65 / 70 / 80 / 90 / 100		115 / 150		80 / 90 / 100 / 115		130 / 150		100 / 115		130		150	
	MOTOR SHAFT Ø	≤ Ø 8 mm		≤ Ø 14 mm				≤ Ø 19 mm				≤ Ø 28 mm					
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
		18	35	20	43	20	48	24	58	24	63	27	65	27	80	32	85
	COLUMN 14 ENTRY	C		H		J		L		M		P		R		S	

COLUMN 15 ENTRY	FLANGE SQUARE									
	52	60	65	70	80	90	100	115	130	150
	G	P	L	A	B	C	D	E	J	K

COLUMN 16 ENTRY	PILOT DIAMETER																			
	22	30	36	38.1	40	50	54	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200
	N	T	P	A	B	C	Q	R	D	S	E	F	G	H	U	J	K	V	L	M	W

COLUMN 17 ENTRY	BOLT CIRCLE																			
	43.82	46	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	149.23	165	200	215
	B	V	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	W	P	Q	R

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE											
	3.4 - 4.4	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	#6 - 32	#8 - 32	3/8 - 16	M3	M6	M8
	J	A	B	C	D	E	F	K	L	M	P	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER																							
	Single Reduction	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28						
		C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P						
	Double Reduction	5	6	6.35	7	8	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28	
		Y	Z	A	7	B	C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P	

P115 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																				
	MOTOR FLANGE SQ.	65 / 70 / 80 / 90 / 100		115 / 150		80 / 90 / 100 / 115		130 / 150		100 / 115		130		150		180		130 / 150		180	
	MOTOR SHAFT Ø	≤ Ø 14 mm				≤ Ø 19 mm				≤ Ø 28 mm								≤ Ø 38 mm			
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
		20	43	20	48	24	58	24	63	27	65	27	80	32	85	32	75	37	80	42	115
	COLUMN 14 ENTRY	H		J		L		M		P		R		S		T		U		W	

COLUMN 15 ENTRY	FLANGE SQUARE								
	65	70	80	90	100	115	130	150	180
	L	A	B	C	D	E	J	K	H

COLUMN 16 ENTRY	PILOT DIAMETER																			
	36	38.1	40	50	54	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200	215.9	230
	P	A	B	C	Q	R	D	S	E	F	G	H	U	J	K	V	L	M	W	X	Y

COLUMN 17 ENTRY	BOLT CIRCLE																				
	63	66.68	70	70.71	75	80	90	95	98.43	98.995	100	115	125.73	130	145	149.23	165	200	215	235	250	265
	A	C	D	S	E	F	G	H	J	T	K	L	U	M	N	W	P	Q	R	Z	7	8

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE									
	4.5 - 5.2	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	3/8 - 16	1/2 - 13	M6	M8
	A	B	C	D	E	F	M	N	Q	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER																							
	Single Reduction	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38									
		8	K	9	L	2	M	3	N	4	P	5	Q	R	S									
	Double Reduction	9	9.525	10	11	12	12.7	14	15.875	16	17	19	19.05	22	22.225	24	26	28	28	28.575	32	35	38	
		C	D	E	F	G	H	J	8	K	9	L	2	M	3	N	4	P	P	5	Q	R	S	

P140 SELECTIONS

COLUMN 14 ENTRY	SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																							
	MOTOR FLANGE SQ.	80 / 90 / 100 / 115		130 / 150		100 / 115		130		150		180 / 200 / 220		130 / 150		180		200		220		180 / 200 / 220		
	MOTOR SHAFT Ø	≤ Ø 19 mm				≤ Ø 28 mm								≤ Ø 38 mm								≤ Ø 48 mm		
	MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
		24	58	24	63	27	65	27	80	32	85	32	75	37	80	42	115	42	90	42	95	40	116	
	COLUMN 14 ENTRY	L		M		P		R		S		T		U		W		X		Y		Z		

COLUMN 15 ENTRY	FLANGE SQUARE								
	80	90	100	115	130	150	180	200	220
	B	C	D	E	J	K	H	M	N

COLUMN 16 ENTRY	PILOT DIAMETER															
	55.563	60	63.5	70	73.025	80	95	100	110	114.3	115	130	180	200	215.9	230	250
	R	D	S	E	F	G	H	U	J	K	V	L	M	W	X	Y	Z

COLUMN 17 ENTRY	BOLT CIRCLE																
	90	98.43	100	115	125.73	130	145	149.23	165	184.15	200	215	220	235	250	265	300
	G	J	K	L	U	M	N	W	P	X	Q	R	Y	Z	7	8	9

COLUMN 18 ENTRY	BOLT HOLE DIAMETER IN MOTOR FLANGE								
	5.3 - 6.3	6.4 - 8.3	8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	3/8 - 16	1/2 - 13	M8
	B	C	D	E	F	G	M	N	R

COLUMN 19 ENTRY	MOTOR SHAFT DIAMETER												
	Single Reduction	19.05	22	22.225	24	26	28	28.575	32	35	38	42	48
		2	M	3	N	4	P	5	Q	R	S	T	V
	Double Reduction	15.875	16	17	19	19.05	22	22.225	24	26	28	28.575	32	35	38	42	48
		8	K	9	L	2	M	3	N	4	P	5	Q	R	S	T	V

Series P - S Type Motor Mounting Codes

P180 SELECTIONS

COLUMN 14 ENTRY

SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																				
MOTOR FLANGE SQ.	100 / 115		130		150		180 / 200 / 220		130 / 150		180		200		220		250		180 / 200 / 220 /250 /280	
MOTOR SHAFT Ø	≤ Ø 28 mm								≤ Ø 38 mm										≤ Ø 48 mm	
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	27	65	27	80	32	85	32	75	37	80	42	115	42	90	42	95	42	80	40	116
COLUMN 14 ENTRY	P		R		S		T		U		W		X		Y		2		Z	

MOTOR FLANGE SQ.	220		250 / 280	
MOTOR SHAFT Ø	≤ Ø 65 mm			
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX
	54	120	54	150
COLUMN 14 ENTRY	4		6	

COLUMN 15 ENTRY

FLANGE SQUARE								
100	115	130	150	180	200	220	250	280
D	E	J	K	H	M	N	Q	R

COLUMN 16 ENTRY

PILOT DIAMETER												
55.563	63.5	80	95	110	114.3	130	180	200	215.9	230	250	300
R	S	G	H	J	K	L	M	W	X	Y	Z	7

COLUMN 17 ENTRY

BOLT CIRCLE														
100	115	125.73	130	145	149.23	165	184.15	200	215	220	235	250	265	300	350
K	L	U	M	N	W	P	X	Q	R	Y	Z	7	8	9	2

COLUMN 19 ENTRY

MOTOR SHAFT DIAMETER													
Single Reduction	28.575	32	35	38	42	45	48	55	60	65			
	5	Q	R	S	T	U	V	W	X	6			
Double Reduction	19.05	22	22.225	24	26	28	28.575	32	35	38	42	45	48
	2	M	3	N	4	P	5	Q	R	S	T	U	V

P220 SELECTIONS

COLUMN 14 ENTRY

SHAFT LENGTH RANGE BASED ON MOTOR SHAFT DIAMETER																		
MOTOR FLANGE SQ.	130 / 150		180		200		220		250		180 / 200 / 220 / 250 / 280		220		250 / 280		320	
MOTOR SHAFT Ø	≤ Ø 38 mm										≤ Ø 48 mm		≤ Ø 65 mm					
MOTOR SHAFT LENGTH RANGE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	37	80	42	115	42	90	42	95	42	80	40	116	54	120	54	150	74	140
COLUMN 14 ENTRY	U		W		X		Y		2		Z		4		6		8	

COLUMN 15 ENTRY

FLANGE SQUARE								
130	150	180	200	220	250	280	320	
J	K	H	M	N	Q	R	T	

COLUMN 16 ENTRY

PILOT DIAMETER									
95	110	114.3	130	180	200	215.9	230	250	300
H	J	K	L	M	W	X	Y	Z	7

COLUMN 17 ENTRY

BOLT CIRCLE										
130	145	165	184.15	200	215	235	250	265	300	350
M	N	P	X	Q	R	Z	7	8	9	2

COLUMN 18 ENTRY

BOLT HOLE DIAMETER IN MOTOR FLANGE						
8.4 - 10.3	10.4 - 12.4	12.5 - 15	17 - 20	21 - 24	1/2 - 13	M8
D	E	F	G	H	N	R

COLUMN 19 ENTRY

MOTOR SHAFT DIAMETER							
Single Reduction	42	45	48	55	60	65	
	T	U	V	W	X	6	
Double Reduction	28.575	32	35	38	42	45	48
	5	Q	R	S	T	U	V

1. Use the tables on this page to determine Columns 14-19 of your 20 digit order code.
2. First, choose the appropriate table for the Series P unit size you have selected: P060, P090, P115, P140, P180 and P220.
3. Then select the appropriate codes for Columns 14-19 by matching the dimensions on your servo motor flange to the codes listed in the respective table.
4. If you need assistance, please contact Cone Drive customer service at 888-994-2663.

OUTPUT TORQUE BY GEARBOX SIZE												
RATIOS	UNITS	P-S 060		P-S 090		P-S 115		P-S 140		P-S 180		P-S 220	
		T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}	T_{2N}	T_{2ACC}
3	Nm	18	35	50	80	120	225	240	470	500	970	1000	1600
4		27	50	75	125	120	330	240	700	750	1400	1500	2300
5		27	50	75	125	180	330	360	700	750	1400	1500	2300
6		27	50	75	125	180	330	360	700	750	1400	1500	2300
7		27	50	75	125	180	330	360	700	750	1400	1500	2300
8		27	50	75	125	180	330	360	700	750	1400	1500	2200
9		18	35	50	80	120	225	240	470	500	970	1000	1900
10		18	35	50	80	120	225	240	470	500	970	1000	1600
15		18	35	50	80	120	225	240	470	500	970	1000	1600
16		27	50	75	125	180	330	360	700	750	1400	1500	2300
20		27	50	75	125	180	330	360	700	750	1400	1500	2300
25		27	50	75	125	180	330	360	700	750	1400	1500	2300
28		27	50	75	125	180	330	360	700	750	1400	1500	2300
30		18	35	50	80	120	225	240	470	500	970	1000	1600
35		27	50	75	125	180	330	360	700	750	1400	1500	2300
40		27	50	75	125	180	330	360	700	750	1400	1500	2300
45		18	35	50	80	120	225	240	470	500	970	1000	1300
50		27	50	75	125	180	330	360	700	750	1400	1500	2300
60		27	50	75	125	180	330	360	700	750	1400	1500	2300
70		27	50	75	125	180	330	360	700	750	1400	1500	2300
80		27	50	75	125	180	330	360	700	750	1400	1500	1800
90		18	35	50	80	120	225	240	470	500	970	1000	1300
100		18	35	50	80	120	225	240	470	500	970	1000	1200

T_{2N} - At nominal input speed, service life is 20,000 hours

T_{2ACC} - The maximum torque during acceleration and deceleration

Series P - S Type General Specifications

ATTRIBUTE	UNITS	GEAR STAGES	SIZE					
			P-S 060	P-S 090	P-S 115	P-S 140	P-S 180	P-S 220
Emergency Stop Torque[1]	Nm	1 & 2	$2 \times T_{2ACC}$					
Degree of Protection[2]	—		IP54 (IP65 OPTIONAL)					
Nominal Input Speed[3]	rpm		3000	3000	3000	2000	1500	1000
Maximum Input Speed[4]	rpm		6000	6000	6000	4000	3000	2000
Permitted Housing Temperature	°C	—	90					
Efficiency[5]	%	1	95	95	95	95	95	97
		2	90	90	90	90	90	92
Weight[6]	kg	1	1.4	3.7	8	16	36	53
		2	1.6	4.2	8.9	17	37	54
Maximum Torsional Backlash	arc-min	1	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
		2	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
Torsional Rigidity[7]	Nm/ arc-min	1	3	10	31	60	175	400
		2	3	10	31	60	175	400
Noise Level[8]	dB	1	≤ 66	≤ 67	≤ 71	≤ 67	≤ 67	≤ 61
		2	≤ 66	≤ 67	≤ 71	≤ 67	≤ 67	≤ 61
No Load Running Torque[9]	Nm	1	0.15	0.35	1.3	1.63	2.68	2.92
		2	0.04	0.06	0.42	0.56	1.39	1.14

1 The maximum torque allowed under a stress situation (Permitted 1,000 times during service life)
2 IP65 (wash-down) is available as an option. Contact Cone Drive for more details
3 The average input speed
4 The maximum intermittent input speed
5 The efficiency at the nominal output torque rating
6 The weight may vary slightly between models
7 This does not include backlash
8 Contact Cone Drive for the testing conditions and environment
9 Torque at no load applied to the input shaft at nominal input speed

PERMITTED RADIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE					
			Permitted Radial Load[1]					
			P-S 060	P-S 090	P-S 115	P-S 140	P-S 180	P-S 220
3	N	1	430	810	1300	3200	5600	5800
4			470	890	1500	3500	6200	6400
5			510	960	1600	3800	6700	6900
6			540	1000	1700	4000	7100	7300
7			570	1100	1800	4200	7400	7700
8			600	1100	1900	4400	7800	8000
9			620	1200	1900	4600	8100	8400
10			640	1200	2000	4700	8400	8700
15		2	740	1400	2300	5400	9600	9900
16			750	1400	2300	5500	9800	10000
20			810	1500	2500	6000	11000	11000
25			870	1600	2700	6400	11000	12000
28			910	1700	2800	6700	12000	12000
30			930	1700	2900	6800	12000	13000
35			980	1800	3000	7200	13000	13000
40			1000	1900	3200	7500	13000	14000
45			1100	2000	3300	7800	14000	14000
50			1100	2100	3400	8100	14000	15000
60			1200	2200	3600	8600	15000	15000
70			1200	2300	3800	9100	15000	15000
80			1200	2400	4000	9100	15000	15000
90			1200	2400	4200	9100	15000	15000
100			1200	2400	4300	9100	15000	15000

1 At this load and nominal input speed, service life will be 20,000 hours. (The radial load applied to the output side shaft center)

PERMITTED AXIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE						
			Permitted Axial Load[2]						
			P-S 042	P-S 060	P-S 090	P-S 115	P-S 140	P-S 180	P-S 220
3	N	1	270	310	930	1500	2400	4300	6400
4			300	360	1100	1700	2700	4900	7200
5			330	390	1200	1900	3000	5400	7900
6			360	430	1300	2000	3300	5800	8600
7			380	460	1300	2100	3500	6300	9200
8			410	480	1400	2300	3700	6600	9700
9			430	510	1500	2400	3900	7000	10000
10			450	530	1600	2500	4100	7300	11000
15		2	540	630	1900	3000	4900	8700	13000
16			550	650	1900	3100	5000	8900	13000
20			610	720	2100	3400	5500	9900	14000
25			640	790	2200	3700	6100	11000	14000
28			640	830	2200	3900	6400	11000	14000
30			640	860	2200	3900	6600	12000	14000
35			640	920	2200	3900	7000	13000	14000
40			640	970	2200	3900	7500	13000	14000
45			640	1000	2200	3900	7900	14000	14000
50			640	1100	2200	3900	8200	14000	14000
60			640	1100	2200	3900	8200	14000	14000
70			640	1100	2200	3900	8200	14000	14000
80			640	1100	2200	3900	8200	14000	14000
90			640	1100	2200	3900	8200	14000	14000
100			640	1100	2200	3900	8200	14000	14000

2 At this load and nominal input speed, service life will be 20,000 hours. (The axial load applied to the output side bearing)

MAXIMUM RADIAL LOADS

RATIO	UNITS	GEAR STAGES	SIZE					
			Maximum Radial Load[1]					
			P-S 060	P-S 090	P-S 115	P-S 140	P-S 180	P-S 220
3	N	1	1200	2400	4300	9100	15000	15000
4			1200	2400	4300	9100	15000	15000
5			1200	2400	4300	9100	15000	15000
6			1200	2400	4300	9100	15000	15000
7			1200	2400	4300	9100	15000	15000
8			1200	2400	4300	9100	15000	15000
9			1200	2400	4300	9100	15000	15000
10			1200	2400	4300	9100	15000	15000
15		2	1200	2400	4300	9100	15000	15000
16			1200	2400	4300	9100	15000	15000
20			1200	2400	4300	9100	15000	15000
25			1200	2400	4300	9100	15000	15000
28			1200	2400	4300	9100	15000	15000
30			1200	2400	4300	9100	15000	15000
35			1200	2400	4300	9100	15000	15000
40			1200	2400	4300	9100	15000	15000
45			1200	2400	4300	9100	15000	15000
50			1200	2400	4300	9100	15000	15000
60			1200	2400	4300	9100	15000	15000
70			1200	2400	4300	9100	15000	15000
80			1200	2400	4300	9100	15000	15000
90			1200	2400	4300	9100	15000	15000
100			1200	2400	4300	9100	15000	15000

1 The maximum radial load that the gearbox can accept at the center of the output shaft

MAXIMUM AXIAL LOADS

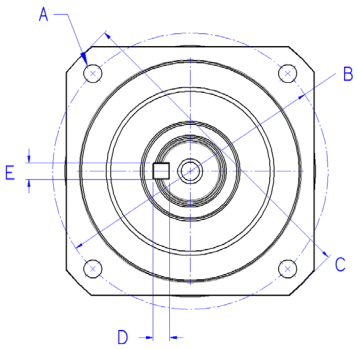
RATIO	UNITS	GEAR STAGES	SIZE						
			Maximum Axial Load[2]						
			P-S 042	P-S 060	P-S 090	P-S 115	P-S 140	P-S 180	P-S 220
3	N	1	640	1100	2200	3900	8200	14000	14000
4			640	1100	2200	3900	8200	14000	14000
5			640	1100	2200	3900	8200	14000	14000
6			640	1100	2200	3900	8200	14000	14000
7			640	1100	2200	3900	8200	14000	14000
8			640	1100	2200	3900	8200	14000	14000
9			640	1100	2200	3900	8200	14000	14000
10			640	1100	2200	3900	8200	14000	14000
15		2	640	1100	2200	3900	8200	14000	14000
16			640	1100	2200	3900	8200	14000	14000
20			640	1100	2200	3900	8200	14000	14000
25			640	1100	2200	3900	8200	14000	14000
28			640	1100	2200	3900	8200	14000	14000
30			640	1100	2200	3900	8200	14000	14000
35			640	1100	2200	3900	8200	14000	14000
40			640	1100	2200	3900	8200	14000	14000
45			640	1100	2200	3900	8200	14000	14000
50			640	1100	2200	3900	8200	14000	14000
60			640	1100	2200	3900	8200	14000	14000
70			640	1100	2200	3900	8200	14000	14000
80			640	1100	2200	3900	8200	14000	14000
90			640	1100	2200	3900	8200	14000	14000
100			640	1100	2200	3900	8200	14000	14000

2 The maximum axial load that the gearbox can accept

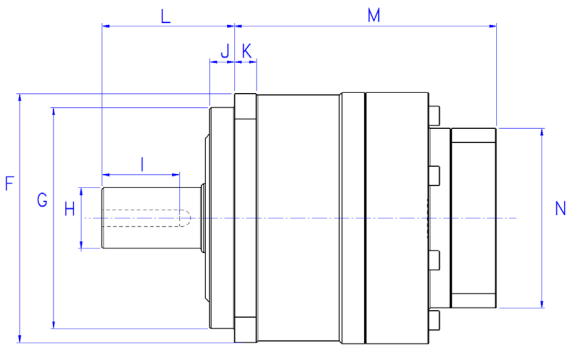
Series P - S Type Inertia Values

RATIO	UNITS	SIZE											
		P-S 060			P-S 090				P-S 115				
Motor Shaft Diameter		≤Ø 8	≤Ø 14	≤Ø 19	≤Ø 8	≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 8	≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 38
3		0.140	0.25	0.53	-	0.72	1.10	2.90	-	-	3.20	5.10	12.00
4		0.095	0.21	0.48	-	0.50	0.90	2.70	-	-	2.00	3.70	10.00
5		0.077	0.19	0.46	-	0.41	0.80	2.60	-	-	1.40	3.10	9.50
6		0.068	0.18	0.46	-	0.36	0.75	2.50	-	-	1.20	2.90	9.30
7		0.062	0.17	0.45	-	0.33	0.73	2.50	-	-	1.00	2.80	9.10
8		0.059	0.17	0.45	-	0.31	0.71	2.50	-	-	0.92	2.70	9.00
9		0.057	0.17	0.44	-	0.30	0.70	2.50	-	-	0.86	2.60	8.90
10		0.056	0.17	0.44	-	0.30	0.70	2.50	-	-	0.83	2.60	8.90
15		0.064	0.18	0.45	0.20	0.36	0.75	2.50	-	0.77	1.20	2.90	9.20
16		0.070	0.18	0.46	0.25	0.41	0.79	2.50	-	0.98	1.40	3.10	9.40
20		0.062	0.17	0.45	0.19	0.35	0.74	2.50	-	0.72	1.10	2.80	9.10
25	$kgcm^2$	0.061	0.17	0.45	0.19	0.35	0.74	2.50	-	0.70	1.10	2.80	9.10
28		0.068	0.18	0.46	0.24	0.40	0.78	2.50	-	0.92	1.30	3.00	9.30
30		0.051	0.16	0.44	0.12	0.28	0.67	2.40	-	0.38	0.78	2.50	8.80
35		0.061	0.17	0.45	0.18	0.35	0.73	2.50	-	0.68	1.10	2.80	9.10
40		0.051	0.16	0.44	0.11	0.28	0.67	2.40	-	0.37	0.77	2.50	8.80
45		0.061	0.17	0.45	0.18	0.34	0.73	2.50	-	0.68	1.10	2.80	9.10
50		0.051	0.16	0.44	0.11	0.27	0.67	2.40	0.19	0.36	0.76	2.50	8.80
60		0.051	0.16	0.44	0.11	0.27	0.67	2.40	0.19	0.36	0.76	2.50	8.80
70		0.051	0.16	0.44	0.11	0.27	0.67	2.40	0.19	0.36	0.76	2.50	8.80
80		0.051	0.16	0.44	0.11	0.27	0.67	2.40	0.19	0.36	0.76	2.50	8.80
90		0.051	0.16	0.44	0.11	0.27	0.67	2.40	0.19	0.36	0.76	2.50	8.80
100		0.051	0.16	0.44	0.11	0.27	0.67	2.40	0.19	0.36	0.76	2.50	8.80

RATIO	UNITS	SIZE													
		P-S 140					P-S 180					P-S 220			
Motor Shaft Diameter		≤Ø 14	≤Ø 19	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 19	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 65	≤Ø 28	≤Ø 38	≤Ø 48	≤Ø 65
3		-	-	12	18	35	-	-	43	57	110	-	-	110	160
4		-	-	7.3	14	29	-	-	26	41	85	-	-	54	98
5		-	-	5.3	12	27	-	-	19	34	78	-	-	42	85
6		-	-	4.3	11	26	-	-	15	31	75	-	-	35	79
7		-	-	3.9	10	25	-	-	14	29	73	-	-	33	76
8		-	-	3.5	9.9	25	-	-	13	28	72	-	-	30	74
9		-	-	3.3	9.7	25	-	-	12	27	71	-	-	29	73
10		-	-	3.2	9.6	25	-	-	12	27	71	-	-	28	72
15		-	2.6	4.4	11	26	-	8.8	15	30	0	-	20	34	-
16		-	3.5	5.3	12	27	-	11	18	33	0	-	24	39	-
20		-	2.4	4.2	10	25	-	8.1	14	29	0	-	19	33	-
25	$kgcm^2$	-	2.4	4.1	10	25	-	7.9	14	29	0	-	18	33	-
28		-	3.3	5.1	11	26	-	11	17	32	0	-	23	37	-
30		-	1.1	2.9	9.2	24	-	4	10	25	0	-	12	26	-
35		-	2.3	4.1	10	25	-	7.6	14	29	0	-	18	32	-
40		-	1.1	2.8	9.1	24	-	3.9	10	25	0	-	12	26	-
45		-	2.3	4	10	25	-	7.6	14	29	0	-	18	32	-
50		0.65	1.1	2.8	9.1	24	1.9	3.8	10	25	0	4.7	12	26	-
60		0.64	1.1	2.8	9.1	24	1.9	3.8	10	25	0	4.7	11	26	-
70		0.64	1.1	2.8	9.1	24	1.8	3.8	10	25	0	4.6	11	26	-
80		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	0	4.6	11	26	-
90		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	0	4.6	11	26	-
100		0.63	1.1	2.8	9.1	24	1.8	3.7	10	25	0	4.6	11	26	-



OUTPUT VIEW



SIDE VIEW

MODEL				M	N	A	B	C	D	E	F (g6)	G (g6)	H	I	J	K	L
	UNITS	GEAR STAGES	INPUT BORE SIZE	BODY LENGTH[1]	INPUT FLANGE SQUARE	MOUNTING HOLE	BOLT CIRCLE	FLANGE DIA-METER	KEY HEIGHT	KEY WIDTH	OUTPUT FLANGE SQUARE	PILOT DIAMETER	SHAFT DIAMETER	KEY LENGTH	PILOT DEPTH	FLANGE THICK-NESS	OUTPUT SHAFT LENGTH FROM FLANGE
P-S 060	mm	1	≤ Ø 8	75	52	5.5	70	80	5	5	60	50	16	22	6	6	37
			≤ Ø 14	78	65												
			≤ Ø 19	93	80												
		2	≤ Ø 8	94	52												
			≤ Ø 14	99	65												
			≤ Ø 19	114	80												
P-S 090		1	≤ Ø 14	95	65	6.6	100	115	6	6	90	80	22	28	9	8	48
			≤ Ø 19	105	80												
			≤ Ø 28	122	130												
		2	≤ Ø 8	112	52												
			≤ Ø 14	117	65												
			≤ Ø 19	127	80												
P-S 115		1	≤ Ø 19	122	80	9	130	148	8	10	115	110	32	45	4	10	65
			≤ Ø 28	139	130												
			≤ Ø 38	160	180												
		2	≤ Ø 14	139.5	65												
			≤ Ø 19	149.5	80												
			≤ Ø 28	166.5	130												
P-S 140		1	≤ Ø 28	152	130	11	165	185	8	12	140	130	40	65	12	12	97
			≤ Ø 38	167	180												
			≤ Ø 48	208	180												
		2	≤ Ø 19	169.5	80												
			≤ Ø 28	186.5	130												
			≤ Ø 38	201.5	180												
P-S 180		1	≤ Ø 38	181.5	180	13.5	215	240	10	16	180	160	55	65	20	15	105
			≤ Ø 48	217.5	180												
			≤ Ø 65	229	250												
		2	≤ Ø 28	211	130												
			≤ Ø 38	226	180												
			≤ Ø 48	262	180												
P-S 220		1	≤ Ø 48	229.5	180	17	250	290	12	20	220	180	75	85	30	20	138
			≤ Ø 65	233.5	250												
		2	≤ Ø 38	228.5	180												
			≤ Ø 48	264.5	180												

1 Length will vary depending on motor

Inspection and Preparation

A. Upon delivery of the gearbox, confirm that you received the exact model specified on your purchase order.

B. Inspect for shipping damage.

C. Remove the protective covering from the output shaft.

D. Clean and degrease the motor mounting surface and shaft, as well as the gearbox mounting surface, input hub bore, and shaft bushing (if included). This cleaning is very important for the shaft and bushing, to prevent slip during motion.

Motor Mounting

A. Remove the access hole plug, allowing access to the motor shaft clamp.

B. Carefully align the input bore shaft bushing (if included) so that the gap in the bushing aligns with the gap in the input hub. It is also recommended that the motor shaft keyway (if present) aligns with the gap in the input hub clamp.

C. Rotate the gearbox input hub so that the clamp bolt is aligned with the access hole. Loosen the clamp bolt.

D. Remove the motor key (if supplied), as it is not required for proper installation and operation.

E. Carefully slide the motor shaft into the gearbox input hub with motor shaft keyway (if present) aligned with gearbox input shaft clamp gap. Install the four motor flange bolts in a cross-wise pattern, to ensure proper alignment of motor to gearbox, tightening appropriately.

F. Tighten the gearbox input shaft clamp bolt to the proper torque using a torque wrench (see table).

G. Re-install the access hole plug into the motor adapter plate. Assembly is complete.

CLAMP BOLT SIZE	TORQUE TIGHTENING	
	(Nm)	(in lbs)
M3	1.9	16.8
M4	4.3	38.1
M5	8.7	77
M6	15	133
M8	36	318
M10	71	628
M12	125	1106

Safety Precautions

A. Avoid use in wet or corrosive areas, unless the gearbox is specified for these environments.

B. Ambient temperature in the area of the gearbox must be in the range of 0˚ to -40˚C.

C. The gearbox has been lubricated for its lifetime with appropriate grease and can be operated immediately. No re-lubrication is required.

D. The gearbox must be firmly attached to a vibration-free frame or fixture.

E. Items mounted to the output shaft must be installed carefully to avoid damage to the shaft, bearings, and seal.

F. Ensure that the motor speed does not exceed the maximum RPM specified for the gearbox. Avoid excessive loads.

G. Make sure driven machine is clear of all obstructions and all safety guards and covers are in place. At initial operation, check the direction of shaft rotation, then apply the load gradually

H. The gearbox is not designed to be disassembled

IP 65 Versions

For IP65 version of the gearbox, be sure to seal between the gearbox and motor interface with a sealant to ensure an IP65 rating of the gearbox / motor assembly. Also apply sealant to the shaft clamp access hole plug.

GLOBAL LOCATIONS

NORTH AMERICA | EUROPE | ASIA

+1 888 994 2663 | orders@conedrive.com | conedrive.com | conetools.com

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