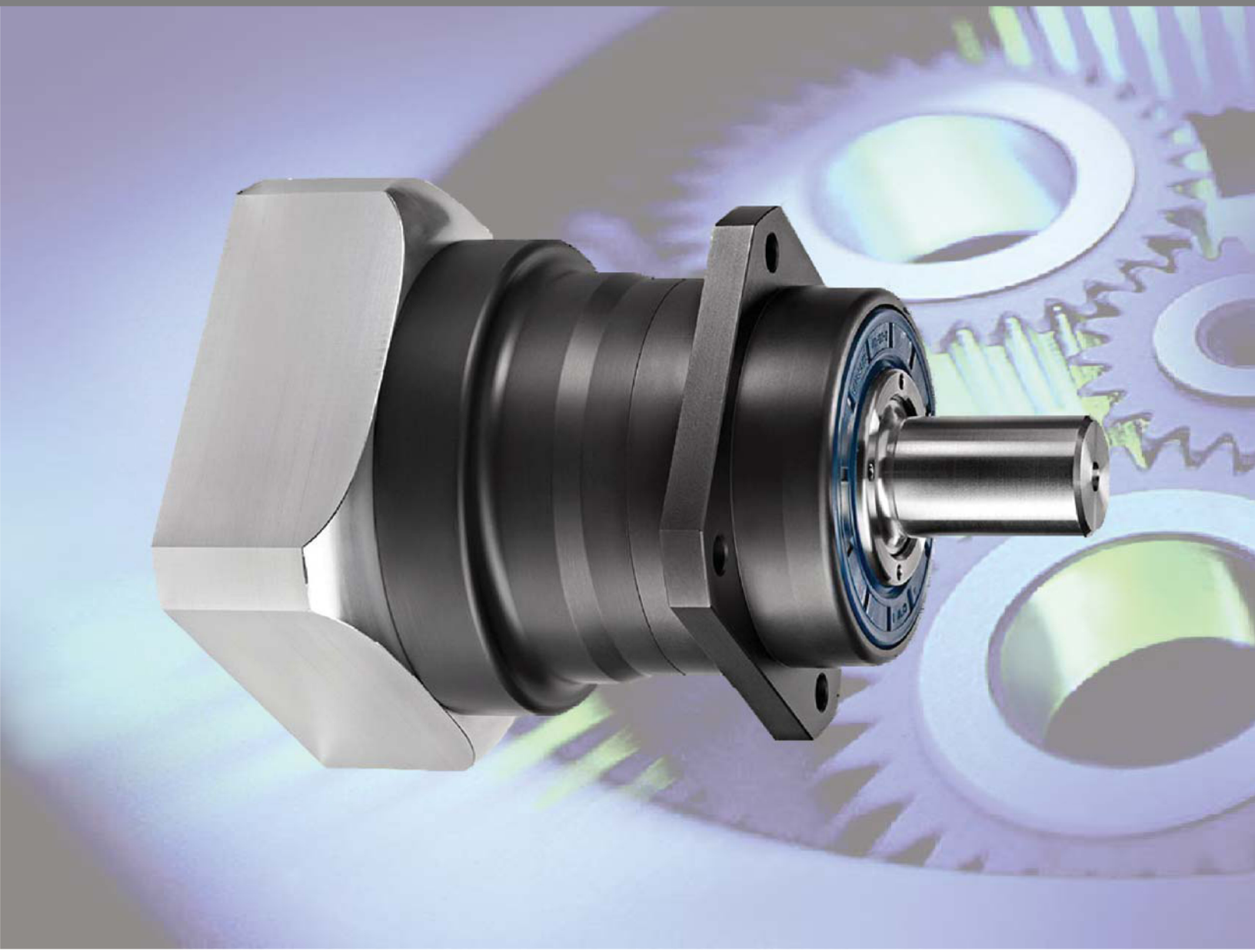
Series P

AccuDrive

P.0306.11



AccuDrive Family of Products

Series W

Series S

Model RG

Series E

CONEDRIVE
GEARING SOLUTIONS

ACCUDRIVE PRECISION PRODUCTS

Now you can get design flexibility and lasting performance from our complete family of AccuDrive Precision Products.

Series W Precision Servo Gearhead

Output torque up to 8,500 lb.in.
Motor adapters to fit servo motors.
Center distance from 38 to 89 mm.
Speed range up to 6,000 RPM input.
Sizes available 38, 51, 64, 76 and 89.
Universal Mounting with shaft mount and flange mount standard.
Gear ratios from 5:1 to 60:1, special ratios available.
Standard backlash, low backlash and ZERO backlash available.

Series S Servo Gearhead

Economical Servo Solution
Output torque up to 7,540 Lb.In.
Motor adapters to fit servo motors
Center distance from 1.54 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

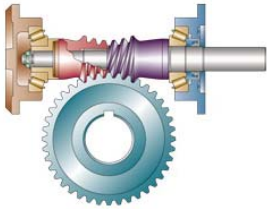
Series E In-line Planetary Servo Gearhead

Output torque capacity up to 7,080 lb.in.
Motor adapters to fit servo motors.
Speed range up to 10,000 RPM input.
Sizes available 40, 60, 90, 115 and 160 mm.
Gear ratios from 3:1 to 512:1 available from stock.
Universal Mounting with shaft mount and flange mount standard.
Backlash as low as eight arcminutes.

Model RG Right Angle Gearhead

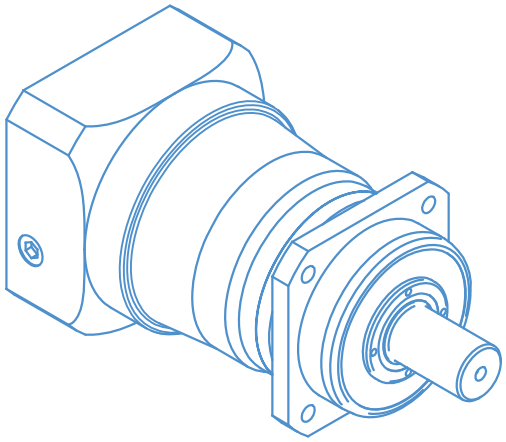
Output torque capacity up to 8,500 lb.in.
Motor sizes (standard), adapters to fit servo motors, NEMA and IEC.
Center distance from 1.5 to 3.5 inches.
Input power ratings up to 27 H.P, speed range up to 4,000 RPM.
Sizes available 15, 20, 25, 30 and 35.
Universal Mounting with shaft mount and flange mount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

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 gearest. Available for single, double and triple reduction types, gear sets, special designs and the Series W.

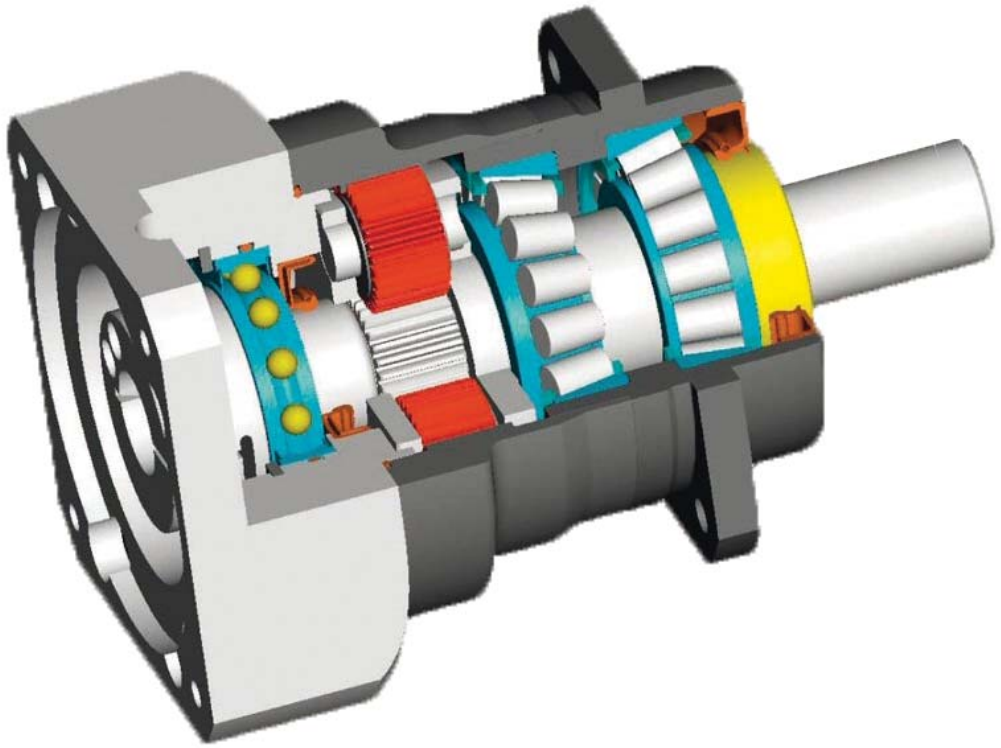
Design Features

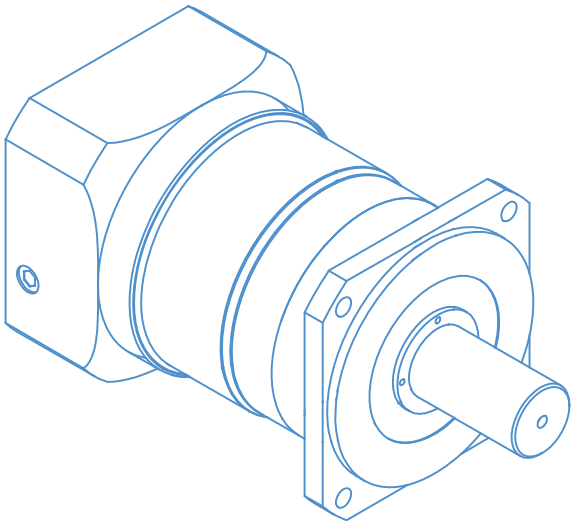


- Case hardened and honed gearing for consistent very low backlash, high load capacity offering the highest levels of precision and lowest noise levels.

- Case hardened steel ring gear integral with housing honed for highest quality and load capacity.

- Output shaft is one piece with planet carrier for higher strength.





Universal Housing

- Mount in any position
- Filled with synthetic oil
- IP65 rated

Performance

Lifetime up to 30,000 hours
Backlash < 3 arcminutes
Noise level as low as 58 dB(A)
Maximum input speed 14,000 RPM

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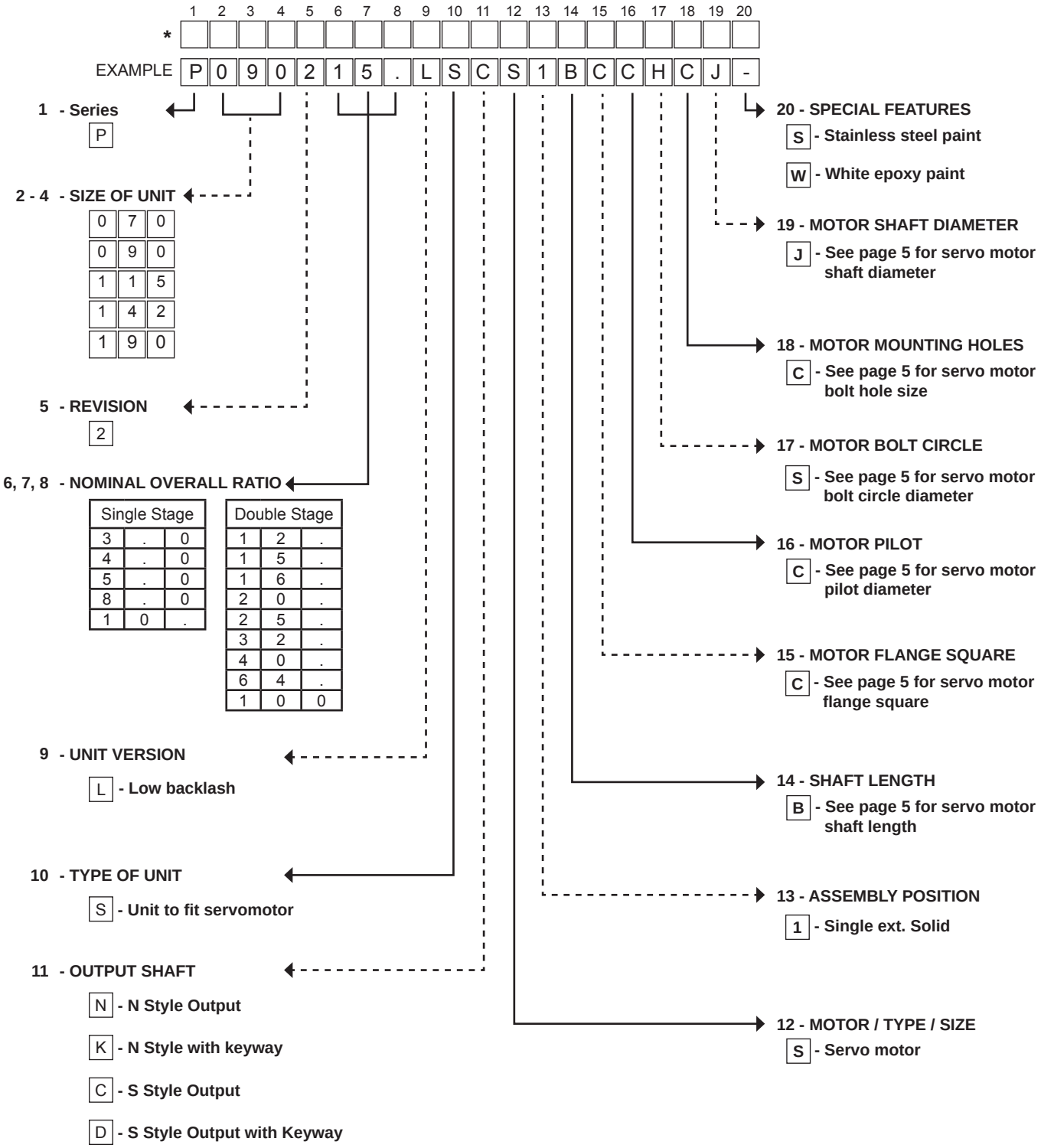

* THIS PAGE MAY BE PHOTOCOPIED ALLOWING THE CUSTOMER TO ENTER THEIR ORDER.

DBGS reserves the right to improve or change product design and specifications without notice.

Sales Phone: 888-994-2663
Sales Fax: 888-907-2663

P070

COLUMN 14	Shaft Length (mm)												
	23	30	32	40	58								
	A	B	C	D	G								
COLUMN 15	Flange Square (mm)												
	70	80	90	100	120	140							
	A	B	C	D	F	G							
COLUMN 16	Pilot Diameter (mm)												
	38.1	40	50	60	70	73.07	80	95	110				
	A	B	C	D	E	F	G	H	J				
COLUMN 17	Bolt Circle (mm)												
	63	65	66.68	70	75	80	90	95	98.43	100	115	130	145
	A	B	C	D	E	F	G	H	J	K	L	M	N
COLUMN 18	Bolt Hole Diameter in Motor Flange (mm)												
	4.5-5.2	5.3-6.3	6.4-8.3	8.4-10.3									
	A	B	C	D									
COLUMN 19	Motor Shaft Diameter (mm)												
	6.35	8	9	9.525	10	11	12	12.7	14	16	19		
	A	B	C	D	E	F	G	H	J	K	L		

P090

COLUMN 14	Shaft Length (mm)										
	30	32	40	50	58						
	B	C	D	F	G						
COLUMN 15	Flange Square (mm)										
	80	90	100	115	120	140					
	B	C	D	E	F	G					
COLUMN 16	Pilot Diameter (mm)										
	50	60	70	73.07	80	95	110				
	C	D	E	F	G	H	J				
COLUMN 17	Bolt Circle (mm)										
	70	75	80	90	95	98.43	100	115	130	145	165
	D	E	F	G	H	J	K	L	M	N	P
COLUMN 18	Bolt Hole Diameter in Motor Flange (mm)										
	4.5-5.2	5.3-6.3	6.4-8.3	8.4-10.3	10.4-12.4						
	A	B	C	D	E						
COLUMN 19	Motor Shaft Diameter (mm)										
	9.525	10	11	12	12.7	14	16	19	22	24	
	D	E	F	G	H	J	K	L	M	N	

P115

COLUMN 14	Shaft Length (mm)									
	40	45	50	58	60	80				
	D	E	F	G	H	J				
COLUMN 15	Flange Square (mm)									
	115	120	140	190	200	220				
	E	F	G	J	K	L				
COLUMN 16	Pilot Diameter (mm)									
	95	110	114.3	130						
	H	J	K	L						
COLUMN 17	Bolt Circle (mm)									
	115	130	145	165	200	215				
	L	M	N	P	Q	R				
COLUMN 18	Bolt Hole Diameter in Motor Flange (mm)									
	6.4-8.3	8.4-10.3	10.4-12.4	12.5-15						
	C	D	E	F						
COLUMN 19	Motor Shaft Diameter (mm)									
	11	12.7	14	16	19	22	24	28	32	35
	F	H	J	K	L	M	N	P	Q	R

P142

COLUMN 14	Shaft Length (mm)									
	50	58	60	80	110	116				
	F	G	H	J	K	L				
COLUMN 15	Flange Square (mm)									
	140	180	190	200	220	235				
	G	H	J	K	L	M				
COLUMN 16	Pilot Diameter (mm)									
	110	114.3	130	180	200	230				
	J	KL	L	M	P	R				
COLUMN 17	Bolt Circle (mm)									
	130	145	165	200	215	235	265			
	M	N	P	Q	R	S	T			
COLUMN 18	Bolt Hole Diameter in Motor Flange (mm)									
	8.4-10.3	10.4-12.4	12.5-15							
	D	E	F							
COLUMN 19	Motor Shaft Diameter (mm)									
	19	22	24	28	32	35	38	42		
	L	M	N	P	Q	R	S	T		

P190

COLUMN 14	Shaft Length (mm)									
	50	58	60	80	110	116				
	F	G	H	J	K	L				
COLUMN 15	Flange Square (mm)									
	190	200	220	235	265					
	J	K	L	M	N					
COLUMN 16	Pilot Diameter (mm)									
	110	114.3	130	180	230	250				
	J	K	L	M	R	S				
COLUMN 17	Bolt Circle (mm)									
	130	145	165	200	215	235	265	300		
	M	N	P	Q	R	S	T	V		
COLUMN 18	Bolt Hole Diameter in Motor Flange (mm)									
	8.4-10.3	10.4-12.4	12.5-15	15.1-19						
	D	E	F	G						
COLUMN 19	Motor Shaft Diameter (mm)									
	24	28	32	35	38	42	48			
	N	P	Q	R	S	T	U			

1. Use the tables on this page to determine Columns 14-19 of your 20 digit order code (page 4).

2. First, choose the appropriate table for the Series P unit size you have selected: P070, P090, P115, P142, or P190.
   Detailed specifications for each unit are given on pages 6-8 of this catalog.

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 cus tomer service at 888-994-2663.

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		Ratios	Gear Stage	Size				
				P70	P90	P115	P142	P190
Nominal Output Torque(1) T_{2N}	lb.in.	3	1	398	885	2036	3983	8850
	(Nm)			45	100	230	450	1000
	lb.in.	4	1	531	1239	2655	5310	11505
	(Nm)			60	140	300	600	1300
	lb.in.	5	1	575	1239	2301	6638	14160
	(Nm)			65	140	260	750	1600
	lb.in.	8	1	354	708	1328	3983	8850
	(Nm)			40	80	150	450	1000
	lb.in.	10	1	239	531	1106	2699	5576
	(Nm)			27	60	125	305	630
	lb.in.	12	2	602	1062	2213	6903	13275
	(Nm)			68	120	250	780	1500
	lb.in.	15	2	602	1062	2213	6903	13275
	(Nm)			68	120	250	780	1500
	lb.in.	16	2	681	1328	2655	8850	15930
	(Nm)			77	150	300	1000	1800
	lb.in.	20	2	681	1328	2655	8850	15930
	(Nm)			77	150	300	1000	1800
	lb.in.	25	2	575	1239	2301	7965	15930
	(Nm)			65	140	260	900	1800
	lb.in.	32	2	681	1328	2655	8850	15930
	(Nm)			77	150	300	1000	1800
	lb.in.	40	2	575	1239	2301	7965	15930
	(Nm)			65	140	260	900	1800
	lb.in.	64	2	354	708	1328	3983	8850
	(Nm)			40	80	150	450	1000
	lb.in.	100	2	239	531	1106	2699	5576
	(Nm)			27	60	125	305	630

Key

(1) Ratings are based on minimum life of 20,000 hours at 100 RPM output speed. Continuous duty and max. reducer temperature of 195°F

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Series P Planetary Servo Gearhead Technical Data

			Size				
			P70	P90	P115	P142	P190
Emergency Stop (permitted 1000x)					2 x T_{2N}		
Max. Radial Load (1) (2)	lbs.		720	1235	1350	2810	4720
	(N)		3200	5500	6000	12500	21000
Max. Axial Load (1)	lbs.		990	1440	1800	3370	4720
	(N)		4400	6400	8000	15000	21000
Average Lifetime	h				20,000		
Lifetime at T_{2N} x 0.88	h				30,000		
Backlash (3)	arcmin.	1-stage	<3	<3	<3	<3	<3
	arcmin.	2-stage	<5	<5	<5	<5	<5
Torsional Stiffness (per arcminute)	lb.in/min	1-stage	53	80	177	390	1150
	(Nm/min.)	1-stage	6	9	20	44	130
	lb.in/min	2-stage	62	88	195	408	1240
	(Nm/min.)	2-stage	7	10	22	46	140
Running Noise (4)	dB(A)		58	60	65	68	70.0
Max. Mechanical Input Speed (5)	min.-1		14000	10000	8500	6500	6000
Continuous Input Speed	min.-1		See Rating Chart for Individual Sizes				
Gearhead Weight	lbs.	1-stage	7	9	20	34	74
	kg	1-stage	3.0	4.3	9.0	15.4	33.5
	lbs.	2-stage	8	13	26	41	99
	kg	2-stage	3.8	5.7	11.6	18.5	45.0
Motor Weight	lbs.		22.5	33	75	110	165
Recommended maximum unsupported weight of the motor.	kg		10	15	94	50	75
Operating Temperature	°F				-13 to +212		
	°C				-25 to +100		
Degree of Protection					I P 6 5		
Lubrication					Lifetime oil lubrication		
Mounting Position					any		

(1) Ratings are based on minimum life of 20,000 hours at 100 RPM output speed.

(2) At the mid-point of the standard output shaft and L10/Fr = 0/20,000 hr.

(3) Maximum rotational backlash measured at the output in arc minutes (1 arc min = angular min)
Average backlash is approximately 30% smaller than the listed worst case value.

(4) Sound pressure level; distance 1m; measured on idle running with an input speed of 3000 RPM.

(5) This value is a mechanical boundary speed allowed operating temp. must be met.

Conversation Table :

Metric	Inch
1 mm	0.0394 in.
1 N	0.225 lb.
1 kg	2.205 lb.
1 Nm	8.85 lb.in
1 kgcm2	8.85 x 10-4 lb.in s2

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		Ratios	Size				
			P70	P90	P115	P142	P190
Moment of Inertia (1)	lb.in. s^2 10^{-4}	3	3.54	8.94	27.79	148.41	479.67
	$kgcm^2$		0.40	1.01	3.14	16.77	54.20
	lb.in. s^2 10^{-4}	4	2.83	6.90	21.24	107.62	349.04
	$kgcm^2$		0.32	0.78	2.40	12.16	39.44
	lb.in. s^2 10^{-4}	5	2.48	6.02	19.12	91.24	295.41
	$kgcm^2$		0.28	0.68	2.16	10.31	33.38
	lb.in. s^2 10^{-4}	8	2.21	5.22	17.08	77.26	243.29
	$kgcm^2$		0.25	0.59	1.93	8.73	27.49
	lb.in. s^2 10^{-4}	10	2.21	5.04	16.82	73.90	229.83
	$kgcm^2$		0.25	0.57	1.90	8.35	25.97
	lb.in. s^2 10^{-4}	12	3.54	9.03	27.61	147.97	480.56
	$kgcm^2$		0.40	1.02	3.12	16.72	54.30
	lb.in. s^2 10^{-4}	15	3.36	8.41	26.11	134.43	464.63
	$kgcm^2$		0.38	0.95	2.95	15.19	52.50
	lb.in. s^2 10^{-4}	16	3.10	7.88	24.25	128.50	441.62
	$kgcm^2$		0.35	0.89	2.74	14.52	49.90
	lb.in. s^2 10^{-4}	20	2.92	7.26	22.74	115.49	398.52
	$kgcm^2$		0.33	0.82	2.57	13.05	45.03
	lb.in. s^2 10^{-4}	25	2.66	6.73	21.06	105.23	356.83
	$kgcm^2$		0.30	0.76	2.38	11.89	40.32
	lb.in. s^2 10^{-4}	32	2.83	6.81	21.33	105.67	357.19
	$kgcm^2$		0.32	0.77	2.41	11.94	40.36
	lb.in. s^2 10^{-4}	40	2.57	6.20	19.74	95.49	315.77
	$kgcm^2$		0.29	0.70	2.23	10.79	35.68
	lb.in. s^2 10^{-4}	64	2.30	5.58	17.97	83.10	268.69
	$kgcm^2$		0.26	0.63	2.03	9.39	30.36
	lb.in. s^2 10^{-4}	100	2.21	5.22	17.43	77.53	245.50
	$kgcm^2$		0.25	0.59	1.97	8.76	27.74

Key

(1) The moment of Inertia refers to input shaft.

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SIZE P70

		1 - Stage					2 - Stage								
Ratio		**3**	**4**	**5**	**8**	**10**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
Output Torque T_{2N} (1)	lb.in.	398	531	575	354	239	602	602	681	681	575	681	575	354	239
	(Nm)	45	60	65	40	27	68	68	77	77	65	77	65	40	27
Output Torque T_{2max} for 30,000 revs @ output	lb.in.	637	850	920	566	382	963	963	1090	1090	920	1090	920	566	382
	(Nm)	72	96	104	64	43	109	109	123	123	104	123	104	64	43
Input Torque T_{2N} (1)	lb.in.	135	135	117	46	25	53	42	45	36	24	22	15	7	4
	(Nm)	15	15	13	5	3	6	5	5	4	3	3	1.7	0.8	0.5
Efficiency (at T_{2N})	%	98	98	98	96	94	95	95	95	95	95	95	95	80	60
Thermal Boundary Speed (2)	min-1	3000	3300	3600	5450	6000	4850	4950	5500	6000	6000	6000	6000	6000	6000
Thermal Boundary Speed (3)	min-1	2300	2400	2700	4550	5500	3750	4200	3750	4250	5100	5450	6000	6000	6000

SIZE P90

		1 - Stage					2 - Stage								
Ratio		**3**	**4**	**5**	**8**	**10**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
Output Torque T_{2N} (1)	lb.in.	885	1239	1239	708	531	974	974	1328	1328	1239	1328	1239	708	531
	(Nm)	100	140	140	80	60	110	110	150	150	140	150	140	80	60
Output Torque T_{2max} for 30,000 revs @ output	lb.in.	1416	1982	1982	1133	850	1558	1558	2124	2124	1982	2124	1982	1133	850
	(Nm)	160	224	224	128	96	176	176	240	240	224	240	224	128	96
Input Torque T_{2N} (1)	lb.in.	301	316	253	91	55	85	68	87	70	52	44	33	12	7
	(Nm)	34	36	29	10	6	10	8	10	8	6	5	4	1.4	0.8
Efficiency (at T_{2N})	%	98	98	98	97	96	95	95	95	95	95	95	95	90	80
Thermal Boundary Speed (2)	min-1	2800	2900	3400	5700	6000	4900	5650	4900	5650	6000	6000	6000	6000	6000
Thermal Boundary Speed (3)	min-1	2000	1900	2300	4400	5650	3650	4250	3550	4150	4800	5650	6000	6000	6000

SIZE P115

		1 - Stage					2 - Stage								
Ratio		**3**	**4**	**5**	**8**	**10**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
Output Torque T_{2N} (1)	lb.in.	2036	2655	2301	1328	1106	2213	2213	2655	2655	2301	2655	2301	1328	1106
	(Nm)	230	300	260	150	125	250	250	300	300	260	300	260	150	125
Output Torque T_{2max} for 30,000 revs @ output	lb.in.	3053	3983	3452	1991	1664	3319	3319	3983	3983	3452	3983	3452	1991	1664
	(Nm)	345	450	390	225	188	375	375	450	450	390	450	390	225	188
Input Torque T_{2N} (1)	lb.in.	692	677	470	171	115	194	155	175	140	97	87	61	23	13
	(Nm)	78	77	53	19	13	22	18	20	16	11	10	7	2.6	1.5
Efficiency (at T_{2N})	%	98	98	98	97	96	95	95	95	95	95	95	95	90	82
Thermal Boundary Speed (2)	min-1	2100	2100	2650	4600	5500	3700	3700	3700	4250	4900	5500	5500	5500	5500
Thermal Boundary Speed (3)	min-1	1400	1350	1700	3450	4350	2600	2600	2550	3000	3700	4150	4950	5500	5500

SIZE P142

		1 - Stage					2 - Stage								
Ratio		**3**	**4**	**5**	**8**	**10**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
Output Torque T_{2N} (1)	lb.in.	3983	5310	6638	3983	2699	6903	6903	8850	8850	7965	8850	7965	3983	2699
	(Nm)	450	600	750	450	305	780	780	1000	1000	900	1000	900	450	305
Output Torque T_{2max} for 30,000 revs @ output	lb.in.	6372	8496	10620	6372	4319	11045	11045	14160	14160	12744	14160	12744	6372	4319
	(Nm)	720	960	1200	720	488	1248	1248	1600	1600	1440	1600	1440	720	488
Input Torque T_{2N} (1)	lb.in.	1355	1355	1355	513	281	606	484	582	466	335	291	210	69	33
	(Nm)	153	153	153	58	32	68	55	66	53	38	33	24	8	4
Efficiency (at T_{2N})	%	98	98	98	97	96	95	95	95	95	95	95	95	90	83
Thermal Boundary Speed (2)	min-1	1300	1350	1400	2500	3250	2000	2300	1850	2150	2550	2900	3350	4500	4500
Thermal Boundary Speed (3)	min-1	900	850	900	1750	2500	1300	1550	1150	1400	1750	1950	2400	3950	4500

SIZE P190

		1 - Stage					2 - Stage								
Ratio		**3**	**4**	**5**	**8**	**10**	**12**	**15**	**16**	**20**	**25**	**32**	**40**	**64**	**100**
Output Torque T_{2N} (1)	lb.in.	8850	11505	14160	8850	5576	13275	13275	15930	15930	15930	15930	15930	8850	5576
	(Nm)	1000	1300	1600	1000	630	1500	1500	1800	1800	1800	1800	1800	1000	630
Output Torque T_{2max} for 30,000 revs @ output	lb.in.	14160	18408	22656	14160	8921	21240	21240	25488	25488	25488	25488	25488	14160	8921
	(Nm)	1600	2080	2560	1600	1008	2400	2400	2880	2880	2880	2880	2880	1600	1008
Input Torque T_{2N} (1)	lb.in.	3010	2935	2890	1140	581	1164	932	1048	838	671	524	419	150	66
	(Nm)	340	332	327	129	66	132	105	118	95	76	59	47	17	7
Efficiency (at T_{2N})	%	98	98	98	97	96	95	95	95	95	95	95	95	92	85
Thermal Boundary Speed (2)	min-1	1050	1050	1100	2050	2800	1600	1900	1550	1850	2050	2550	2800	3500	3500
Thermal Boundary Speed (3)	min-1	650	650	650	1400	2100	1050	1250	1000	1150	1350	1750	1950	3250	3500

Key

(1) Ratings are based on minimum life of 20,000 hours at 100 RPM output speed. Continuous duty and max. reducer temperature of 195°F

(2) At 50% of T2N and S1. Allowed operating temperature must be kept.

(3) At 100% of T2N and S1. Allowed operating temperature must be kept.

S1 - Continuous Duty Operation S5 - Intermitent Duty Operation

Duty Cycle: ≥60% or ≥20 min. Duty Cycle: <60% or <20 min.

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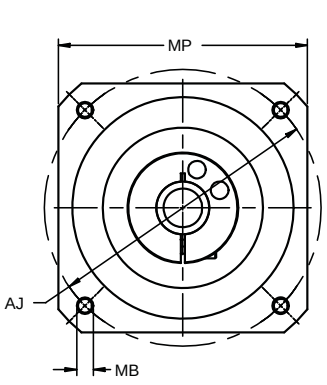
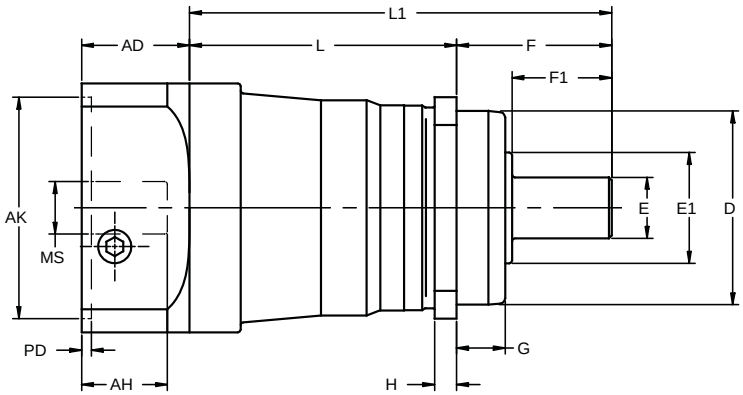
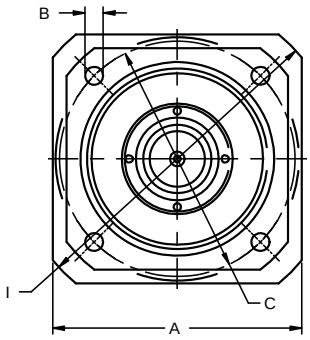
Series P Planetary Servo Gearhead Technical Data of N Type



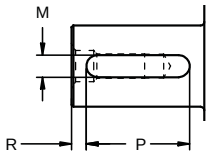
Motor Input View



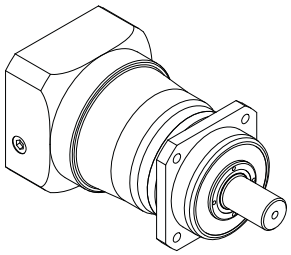
Side View



Output View



Optional Keyway



Series P - N Type

Unit Size	A		B		C		D		E		E1		F		F1	
	Flange Square		Bolt Hole		Bolt Circle Dia.		Pilot Dia. h7		Shaft Dia. k6		Shoulder Dia.		Output Shaft Flange from Housing		Length from Shoulder	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
P70	2.756	70	0.217	5.5	2.68-2.95	68-75	2.362	60	0.630	16	1.378	35	1.890	48	1.102	28
P90	3.150	80	0.256	6.5	3.346	85	2.756	70	0.866	22	1.575	40	2.205	56	1.417	36
P115	4.331	110	0.335	8.5	4.724	120	3.543	90	1.260	32	1.772	45	3.465	88	2.283	58
P142	5.591	142	0.433	11.0	6.496	165	5.118	130	1.575	40	2.756	70	4.331	110	3.150	80
P190	7.480	190	0.531	13.5	8.465	215	6.299	160	2.165	55	3.150	80	4.409	112	3.228	82

Unit Size	G		H		I		L		L		L1		L1	
	Pilot Depth		Flange Thickness		Flange Diameter		Body Length Ratio ≤ 10		Body Length Ratio > 10		Overall Length Ratio ≤ 10		Overall Length Ratio > 10	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
P70	0.748	19	0.276	7	3.622	92	2.323	59	3.465	88	4.213	107	5.354	136
P90	0.689	17.5	0.315	8	4.567	116	2.539	64.5	3.799	96.5	4.744	121	6.004	153
P115	1.102	28	0.394	10	5.709	145	2.421	61.5	3.996	101.5	5.886	150	7.461	190
P142	1.102	28	0.472	12	7.283	185	3.602	91.5	5.925	150.5	7.933	202	10.256	261
P190	1.102	28	0.591	15	9.449	240	4.567	116	7.402	188	8.976	228	11.811	300

Unit Size	AD	AK	PD	AJ	MP	MB	MS	Permissible Motor Shaft Dia.			Optional Keyed Output Shaft			
	Adapter										Width	Height	Length	
	Length	Motor Pilot Dia	Pilot Depth	Bolt Circle Dia	Motor Square	Bolt Hole	Shaft Diameter	Unit Size	Min.	Max.	M	N	P	R
	mm								mm	mm	mm	mm	mm	mm
P70								P70	8	19	5	5	25	2
P90	*Motor Plate Dimensions are made to fit your servo motor.							P90	9.525	24	6	6	28	4
P115								P115	11	35	10	8	50	4
P142	Refer to Page 5 for available dimensions.							P142	19	42	12	8	65	8
P190								P190	24	48	16	10	70	6

Cone Drive reserves the right to improve or change product design and specifications without notice.

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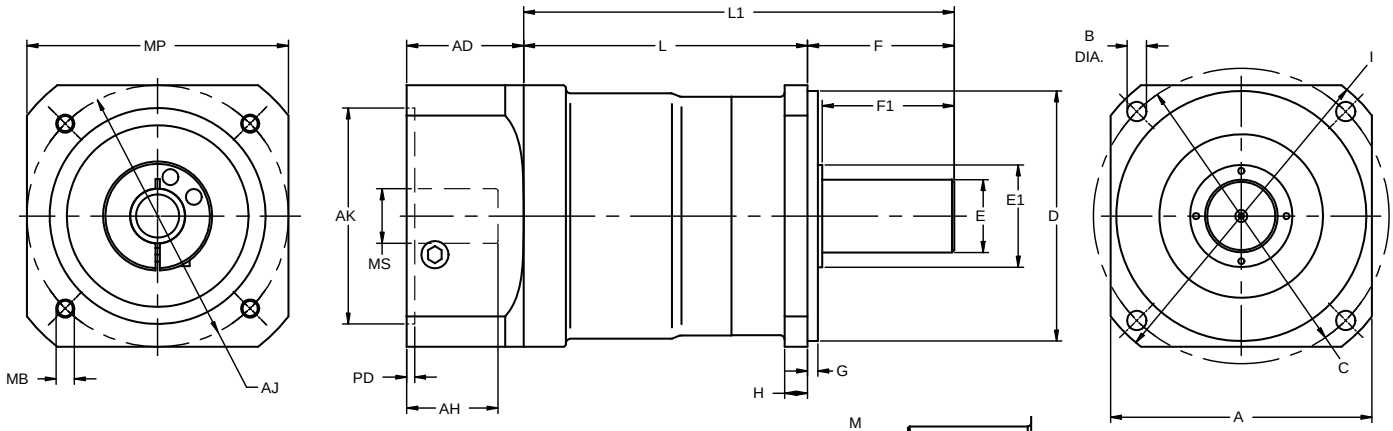
Series P Planetary Servo Gearhead Technical Data of S Type

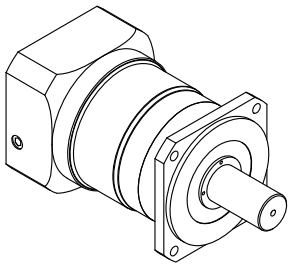


Motor Input View

Side View

Optional Keyway

Output View



Series P - S Type

Unit Size	A		B		C		D		E		E1		F		F1	
	Flange Square		Bolt Hole		Bolt Circle Dia.		Pilot Dia. h7		Shaft Dia. k6		Shoulder Dia.		Output Shaft Flange from Housing		Length from Shoulder	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
P70	2.756	70	0.217	5.5	2.953	75	2.362	60	0.748	19	1.378	35	1.260	32.0	1.102	28
P90	3.546	90	0.256	6.5	3.937	100	3.150	80	0.866	22	1.575	40	1.634	41.5	1.417	36
P115	4.531	115	0.335	8.5	5.118	130	4.331	110	1.260	32	1.772	45	2.539	64.5	2.283	58
P142	5.594	142	0.433	11.0	6.496	165	5.118	130	1.575	40	2.756	70	3.425	87.0	3.150	80
P190	7.486	190	0.531	13.5	8.465	215	6.299	160	2.165	55	3.150	80	3.543	90.0	3.228	82

Unit Size	G		H		I		L		L		L1		L1	
	Pilot Depth		Flange Thickness		Flange Diameter		Body Length Ratio ≤ 10		Body Length Ratio > 10		Overall Length Ratio ≤ 10		Overall Length Ratio > 10	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
P70	0.118	3	0.276	7	3.622	92	2.953	75	4.094	104	4.213	107	5.354	136
P90	0.118	3	0.315	8	4.567	116	3.110	79	4.370	111	4.744	120.5	6.004	152.5
P115	0.177	4.5	0.394	10	5.709	145	3.346	85	4.921	125	5.886	149.5	7.461	189.5
P142	0.197	5	0.787	20	7.283	185	4.508	114.5	6.831	173.5	7.933	201.5	10.256	260.5
P190	0.236	6	0.787	20	9.449	240	5.433	138	8.268	210	8.976	228	11.811	300

Unit Size	AD	AK	PD	AJ	MP	MB	MS	Permissible Motor Shaft Dia.			Optional Keyed Output Shaft			
	Adapter										Width	Height	Length	
	Length	Motor	Pilot	Bolt	Motor	Bolt	Shaft	Unit	Min.	Max.	M	N	P	R
	mm	Pilot Dia	Depth	Circle Dia	Square	Hole	Diameter	Size	mm	mm	mm	mm	mm	mm
P70								P70	8	19	6	6	20	2
P90	*Motor Plate Dimensions are made to fit your servo motor.							P90	9.525	24	6	6	28	4
P115								P115	11	35	10	8	50	4
P142	Refer to Page 5 for available dimensions.							P142	19	42	12	8	65	8
P190								P190	24	48	16	10	70	6

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Required Application Data

Motor Continuous Torque	T_{cont}
Motor Peak Torque	T_{peak}
Motor Rotor Inertia*	J_{mot}
Load Inertia*	J_{load}
Load Torque (non-dynamic Frictional and/or Gravity Load)	T_{load}
Reduction Ratio	**Ratio**

**Any unit can be used for inertia as long as it is used consistently.*

Calculated Data

Load torque reflected to Input:

$$T_{input} = T_{load} / (Ratio \times eff.)$$

Load inertia referred to input shaft:

$$J_{ref} = J_{load} / Ratio^2$$

Eff: Ratios < 10:1 = .98
Ratios > 10:1 = .95

data example:

T_{cont} = 10.9 Nm T_{peak} = 45.7 Nm J_{mot} = 1.0
J_{load} = 10 T_{load} = 15 Nm Ratio = 3

for Cyclical Applications Using Motor Peak Torque

Step One

Calculate the inertia parameter: J_{par}

formula & applied calculation example:

$$J_{par} = J_{mot} / (J_{ref} + J_{mot})$$

$$J_{ref} = 10 / 3^2 = 1.11$$
$$J_{par} = 1 / (1.11 + 1) = .474$$

Step Two

Calculate the total gearhead required output torque: T_{output}

$$T_{output} = ((T_{peak} - T_{input}) \times (1 - J_{par}) + T_{input}) \times Ratio \times Eff.$$
$$T_{input} = 15 / (3 \times .98) = 5.1$$
$$T_{output} = ((45.7 - 5.1) \times (1 - .474) + 5.1) \times 3 \times .98 = 77.8 \text{ Nm}$$

Step Three

Calculate service factor: **Sf**

$$Sf = T_{2N} / T_{output}$$

Select reducer size and rated output torque T_{2N} from table on page 6. For most applications the calculated service factor should be greater than 1.0.

P115 T_{2N} = 150 Nm
Sf = 150 / 77.8 = 1.93

for Continuous Applications Using Motor Continuous Torque

formula & applied calculation example:

Calculate service factor: **Sf**

$$Sf = T_{2N} / (T_{cont} \times Ratio \times Eff.)$$

Select reducer size and rated output torque T_{2N} from table on page 6. For most applications the calculated service factor should be greater than 1.0.

P90 T_{2N} = 75 Nm
Sf = 75 / (10.9 x 3 x .98) = 2.34

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Lubrication

Series P Planetary Servo Gearheads are lubricated with the synthetic oil type Klubersynth GH 6-220. Under normal conditions the gearheads will require no lubrication service throughout the life of the unit. Series P gearheads are built for universal mounting, ready to mount in any position.

Installation

Motor on Gearhead:

1. Slide the motor shaft into the hollow bore input shaft until the gearhead and motor flanges are seated together.
2. Use the bolts provided to clamp the gearhead and motor flanges together. Tighten the bolts crosswise.
3. Tighten the clamping screw through the access slot in the gearhead flange to the following torque settings:

	Torque Tightening				
Unit Size	P70	P90	P115	P142	P190
Lb. In.	40	80	150	350	660
Nm	4.5	9.5	16.5	40	75.0
Hex Key Size	3	4	5	6	8

4. Push the urethane plug provided into the access slot on the gearhead motor plate.

Ancillary Components:

1. Couplings, sheaves and sprockets should be mounted on the shaft carefully. Do not pound or hammer them onto the shaft as this will damage bearings and seals.
2. Sprockets and sheaves should be mounted as close to the gearhead as possible and “V” belts and chains adjusted to the proper tension to keep bearing loading and shaft deflection to a minimum. Too much tension in belts and improper location of sheaves and sprockets will lead to excessive overhung load, bearing wear and shaft deflection. For specific information on overhung load capacity, shaft stress and bearing life, please contact us.

Start-Up

1. After the gearhead has been properly mounted and aligned, it is ready for start-up.
2. Make sure driven machine is clear of all obstructions and all safety guards and covers are in place.
If possible, turn motor shaft by hand to confirm drive system is operating freely and in correct direction of rotation.
3. Jog motor to confirm proper rotation.
4. Operate gearhead with minimum load for approximately 15 minutes (in both directions if applicable) to seat gears, bearings, and oil seals.

Maintenance

1. If a gearhead has to be repaired, contact us for detailed instruction, blueprints, parts lists, etc. If necessary, field service is available.
2. If a gearhead is to be returned, contact us for instructions and a returned material authorization (RMA) number.
3. Please have model number information and serial number from the unit name plate recorded.

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Notes

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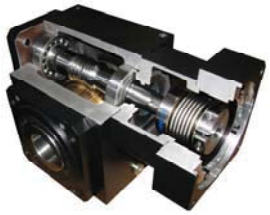
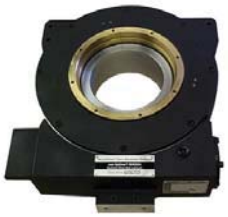
Cone Drive Family of Products

Model HP



AccuDrive

Gearsets



Specials

Cone Drive™

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