



## AccuDrive Family of Products



Series W



Series S



Model RG



Series E



# Cone Drive™

# 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.



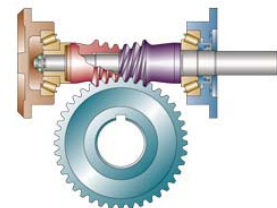
## Model RG Right Angle Gearhead

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.



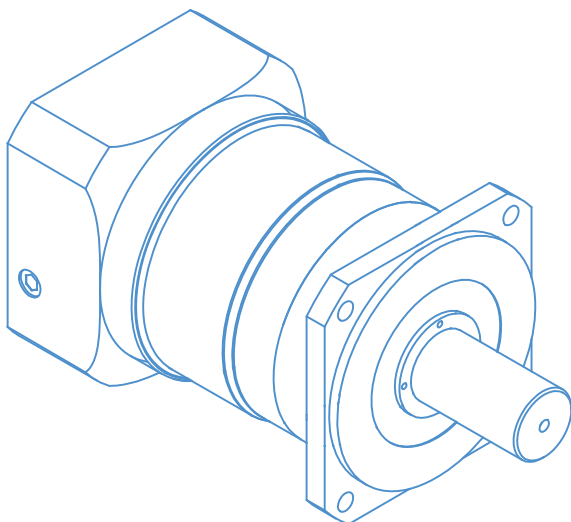
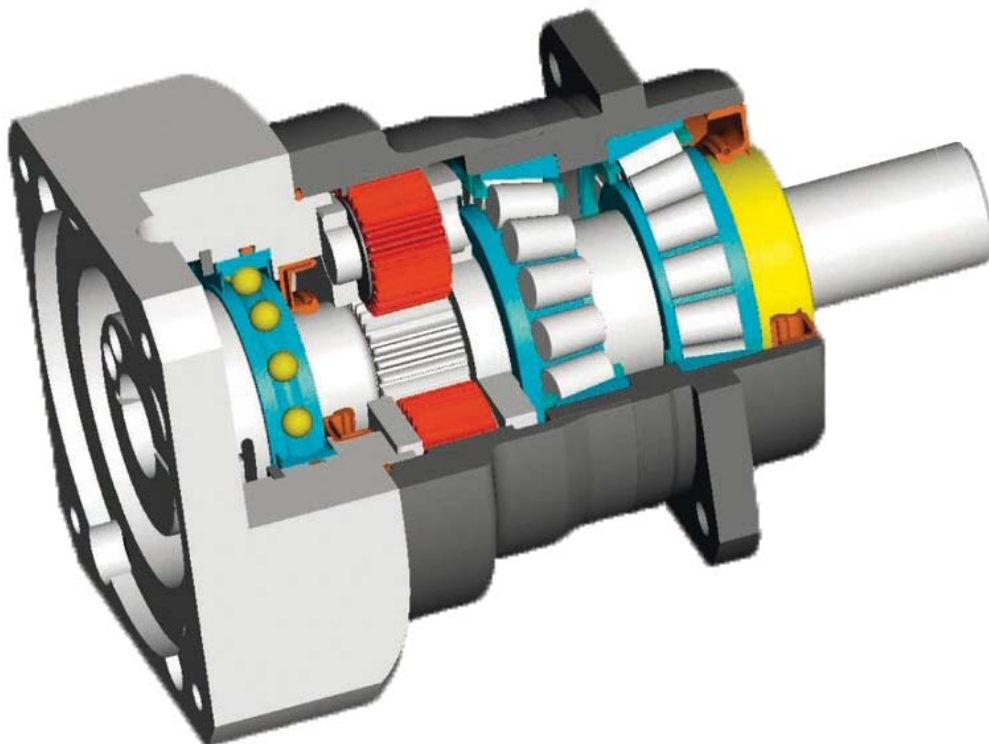
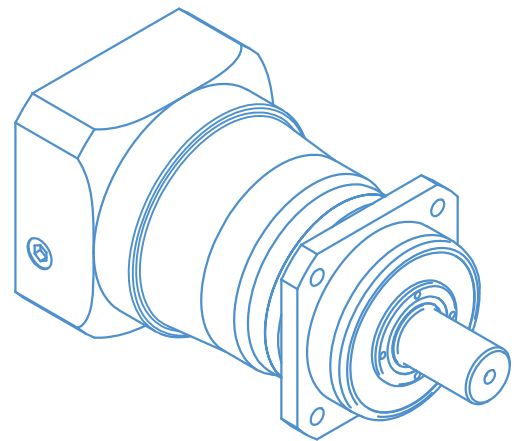
## ABSOLUTE ZERO Backlash AccuDrive Gearing

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 gearset. 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

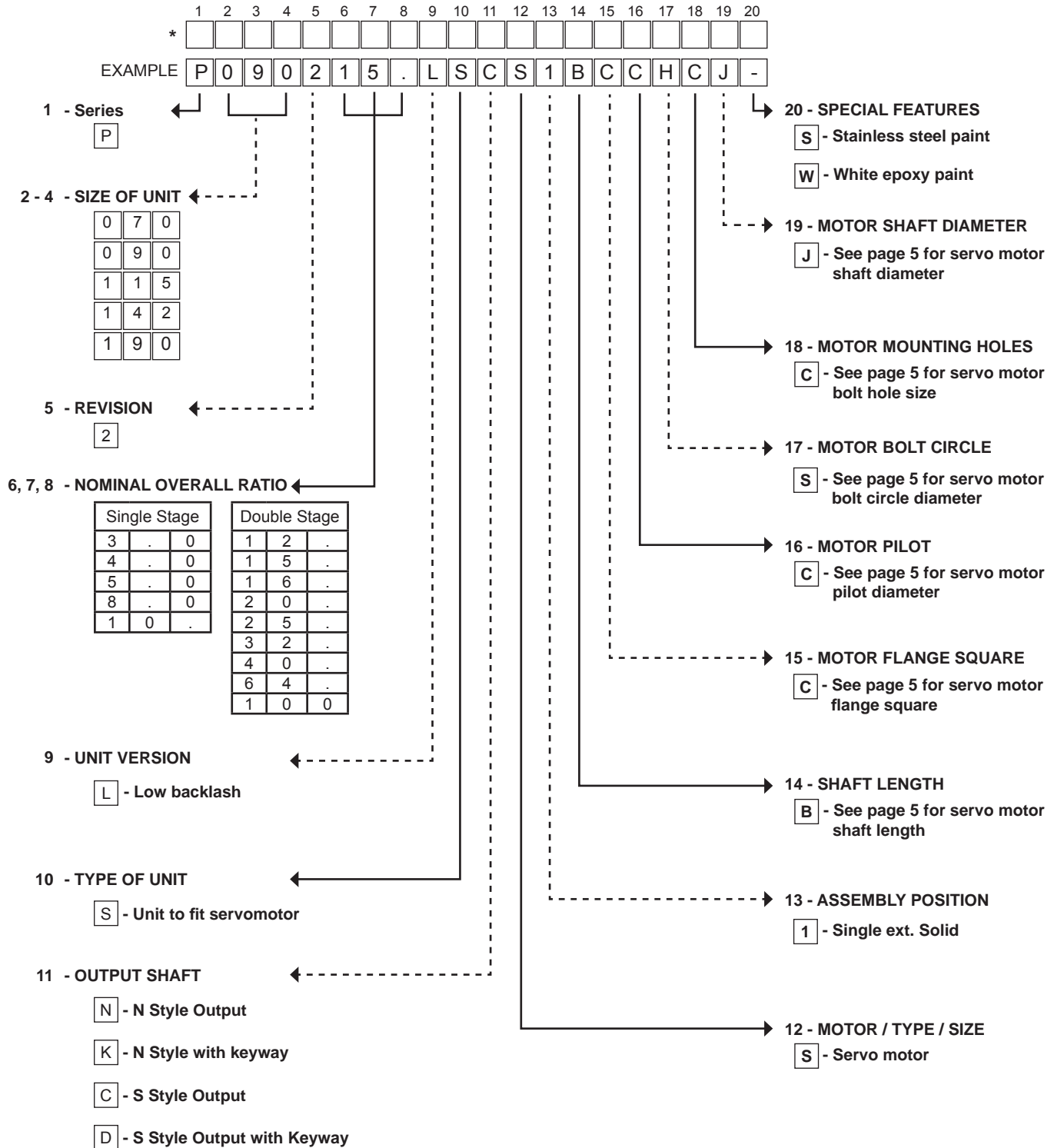
- Mount in any position
- Filled with synthetic oil
- IP65 rated

## Performance

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

# AccuDrive Series P

## Series P Unit Designations



\* 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

# AccuDrive Series P

## Series P Motor Mounting Codes

<b>P070</b>	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			

<b>P090</b>	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				

<b>P115</b>	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				

<b>P142</b>	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						

<b>P190</b>	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 customer service at 888-994-2663.

# AccuDrive Series P

## Series P Planetary Servo Gearhead Technical Data

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

# AccuDrive Series P

## Series P Planetary Servo Gearhead Technical Data

			Size				
			P70	P90	P115	P142	P190
Emergency Stop (permitted 1000x)			2 x T <sub>2N</sub>				
Max. Radial Load <sup>(1)(2)</sup>	lbs.		720	1235	1350	2810	4720
	(N)		3200	5500	6000	12500	21000
Max. Axial Load <sup>(1)</sup>	lbs.		990	1440	1800	3370	4720
	(N)		4400	6400	8000	15000	21000
Average Lifetime	h		20,000				
Lifetime at T <sub>2N</sub> x 0.88	h		30,000				
Backlash <sup>(3)</sup>	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 <sup>(4)</sup>	dB(A)		58	60	65	68	70.0
Max. Mechanical Input Speed <sup>(5)</sup>	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			IP 65				
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.

### Conversion 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 <sup>-4</sup> lb.in s2

# AccuDrive Series P

## Series P Planetary Servo Gearhead Technical Data

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

### Key

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

### SIZE P70

		1 - Stage				
Ratio		3	4	5	8	10
Output Torque $T_{2N}$ (1)	lb.in.	398	531	575	354	239
	(Nm)	45	60	65	40	27
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	637	850	920	566	382
	(Nm)	72	96	104	64	43
Input Torque $T_{2N}$ (1)	lb.in.	135	135	117	46	25
	(Nm)	15	15	13	5	3
Efficiency (at $T_{2N}$ )	%	98	98	98	96	94
Thermal Boundary Speed (2)	min-1	3000	3300	3600	5450	6000
Thermal Boundary Speed (3)	min-1	2300	2400	2700	4550	5500

		2 - Stage								
Ratio		12	15	16	20	25	32	40	64	100
Output Torque $T_{2N}$ (1)	lb.in.	602	602	681	681	575	681	575	354	239
	(Nm)	68	68	77	77	65	77	65	40	27
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	963	963	1090	1090	920	1090	920	566	382
	(Nm)	109	109	123	123	104	123	104	64	43
Input Torque $T_{2N}$ (1)	lb.in.	53	42	45	36	24	22	15	7	4
	(Nm)	6	5	5	4	3	3	1.7	0.8	0.5
Efficiency (at $T_{2N}$ )	%	95	95	95	95	95	95	95	80	60
Thermal Boundary Speed (2)	min-1	4850	4950	5500	6000	6000	6000	6000	6000	6000
Thermal Boundary Speed (3)	min-1	3750	4200	3750	4250	5100	5450	6000	6000	6000

### SIZE P90

		1 - Stage				
Ratio		3	4	5	8	10
Output Torque $T_{2N}$ (1)	lb.in.	885	1239	1239	708	531
	(Nm)	100	140	140	80	60
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	1416	1982	1982	1133	850
	(Nm)	160	224	224	128	96
Input Torque $T_{2N}$ (1)	lb.in.	301	316	253	91	55
	(Nm)	34	36	29	10	6
Efficiency (at $T_{2N}$ )	%	98	98	98	97	96
Thermal Boundary Speed (2)	min-1	2800	2900	3400	5700	6000
Thermal Boundary Speed (3)	min-1	2000	1900	2300	4400	5650

		2 - Stage								
Ratio		12	15	16	20	25	32	40	64	100
Output Torque $T_{2N}$ (1)	lb.in.	974	974	1328	1328	1239	1328	1239	708	531
	(Nm)	110	110	150	150	140	150	140	80	60
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	1558	1558	2124	2124	1982	2124	1982	1133	850
	(Nm)	176	176	240	240	224	240	224	128	96
Input Torque $T_{2N}$ (1)	lb.in.	85	68	87	70	52	44	33	12	7
	(Nm)	10	8	10	8	6	5	4	1.4	0.8
Efficiency (at $T_{2N}$ )	%	95	95	95	95	95	95	95	90	80
Thermal Boundary Speed (2)	min-1	4900	5650	4900	5650	6000	6000	6000	6000	6000
Thermal Boundary Speed (3)	min-1	3650	4250	3550	4150	4800	5650	6000	6000	6000

### SIZE P115

		1 - Stage				
Ratio		3	4	5	8	10
Output Torque $T_{2N}$ (1)	lb.in.	2036	2655	2301	1328	1106
	(Nm)	230	300	260	150	125
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	3053	3983	3452	1991	1664
	(Nm)	345	450	390	225	188
Input Torque $T_{2N}$ (1)	lb.in.	692	677	470	171	115
	(Nm)	78	77	53	19	13
Efficiency (at $T_{2N}$ )	%	98	98	98	97	96
Thermal Boundary Speed (2)	min-1	2100	2100	2650	4600	5500
Thermal Boundary Speed (3)	min-1	1400	1350	1700	3450	4350

		2 - Stage								
Ratio		12	15	16	20	25	32	40	64	100
Output Torque $T_{2N}$ (1)	lb.in.	2213	2213	2655	2655	2301	2655	2301	1328	1106
	(Nm)	250	250	300	300	260	300	260	150	125
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	3319	3319	3983	3983	3452	3983	3452	1991	1664
	(Nm)	375	375	450	450	390	450	390	225	188
Input Torque $T_{2N}$ (1)	lb.in.	194	155	175	140	97	87	61	23	13
	(Nm)	22	18	20	16	11	10	7	2.6	1.5
Efficiency (at $T_{2N}$ )	%	95	95	95	95	95	95	95	90	82
Thermal Boundary Speed (2)	min-1	3700	3700	3700	4250	4900	5500	5500	5500	5500
Thermal Boundary Speed (3)	min-1	2600	2600	2550	3000	3700	4150	4950	5500	5500

### SIZE P142

		1 - Stage				
Ratio		3	4	5	8	10
Output Torque $T_{2N}$ (1)	lb.in.	3983	5310	6638	3983	2699
	(Nm)	450	600	750	450	305
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	6372	8496	10620	6372	4319
	(Nm)	720	960	1200	720	488
Input Torque $T_{2N}$ (1)	lb.in.	1355	1355	1355	513	281
	(Nm)	153	153	153	58	32
Efficiency (at $T_{2N}$ )	%	98	98	98	97	96
Thermal Boundary Speed (2)	min-1	1300	1350	1400	2500	3250
Thermal Boundary Speed (3)	min-1	900	850	900	1750	2500

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

### SIZE P190

		1 - Stage				
Ratio		3	4	5	8	10
Output Torque $T_{2N}$ (1)	lb.in.	8850	11505	14160	8850	5576
	(Nm)	1000	1300	1600	1000	630
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	14160	18408	22656	14160	8921
	(Nm)	1600	2080	2560	1600	1008
Input Torque $T_{2N}$ (1)	lb.in.	3010	2935	2890	1140	581
	(Nm)	340	332	327	129	66
Efficiency (at $T_{2N}$ )	%	98	98	98	97	96
Thermal Boundary Speed (2)	min-1	1050	1050	1100	2050	2800
Thermal Boundary Speed (3)	min-1	650	650	650	1400	2100

		2 - Stage								
Ratio		12	15	16	20	25	32	40	64	100
Output Torque $T_{2N}$ (1)	lb.in.	13275	13275	15930	15930	15930	15930	15930	8850	5576
	(Nm)	1500	1500	1800	1800	1800	1800	1800	1000	630
Output Torque $T_{2max}$ for 30,000 revs @ output	lb.in.	21240	21240	25488	25488	25488	25488	25488	14160	8921
	(Nm)	2400	2400	2880	2880	2880	2880	2880	1600	1008
Input Torque $T_{2N}$ (1)	lb.in.	1164	932	1048	838	671	524	419	150	66
	(Nm)	132	105	118	95	76	59	47	17	7
Efficiency (at $T_{2N}$ )	%	95	95	95	95	95	95	95	92	85
Thermal Boundary Speed (2)	min-1	1600	1900	1550	1850	2050	2550	2800	3500	3500
Thermal Boundary Speed (3)	min-1	1050	1250	1000	1150	1350	1750	1950	3250	3500

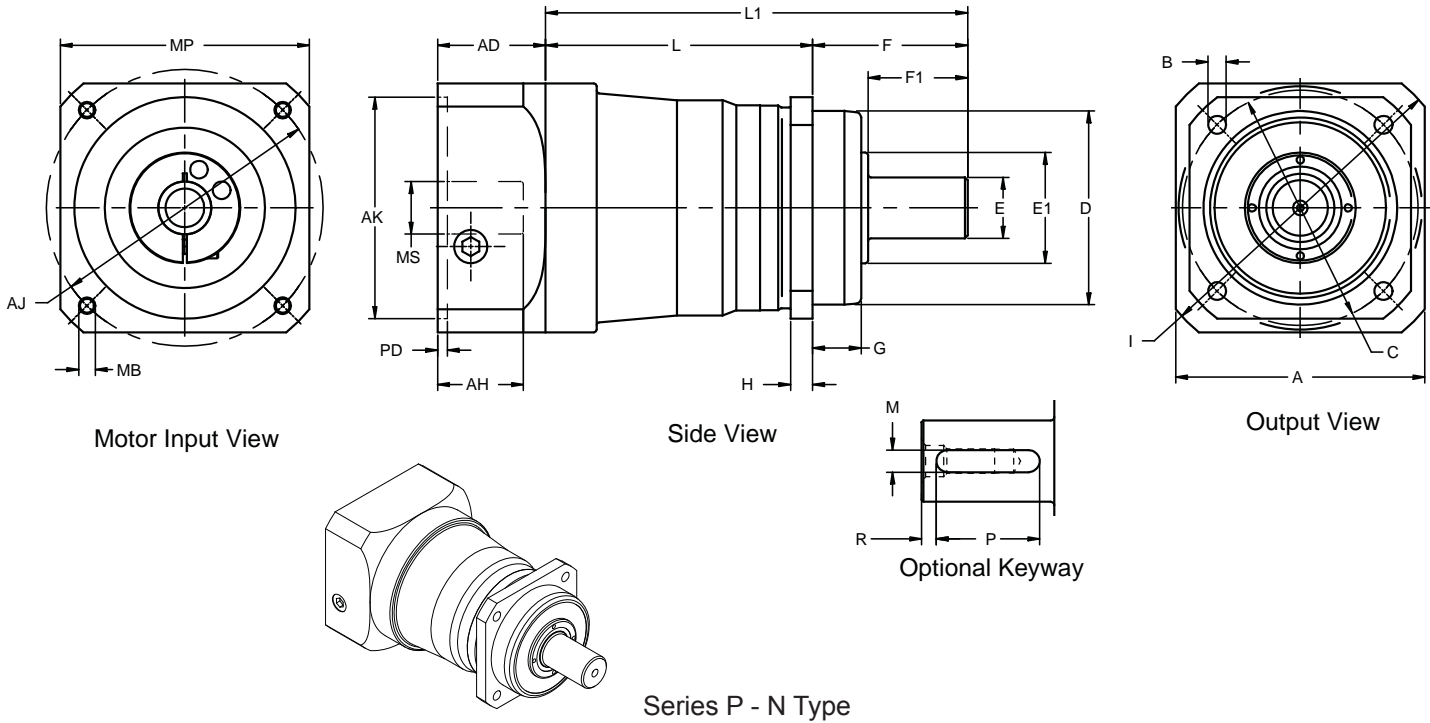
#### Key

- Ratings are based on minimum life of 20,000 hours at 100 RPM output speed. Continuous duty and max. reducer temperature of 195°F
- At 50% of  $T_{2N}$  and S1. Allowed operating temperature must be kept.
- At 100% of  $T_{2N}$  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.

# AccuDrive Series P

## Series P Planetary Servo Gearhead Technical Data of 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

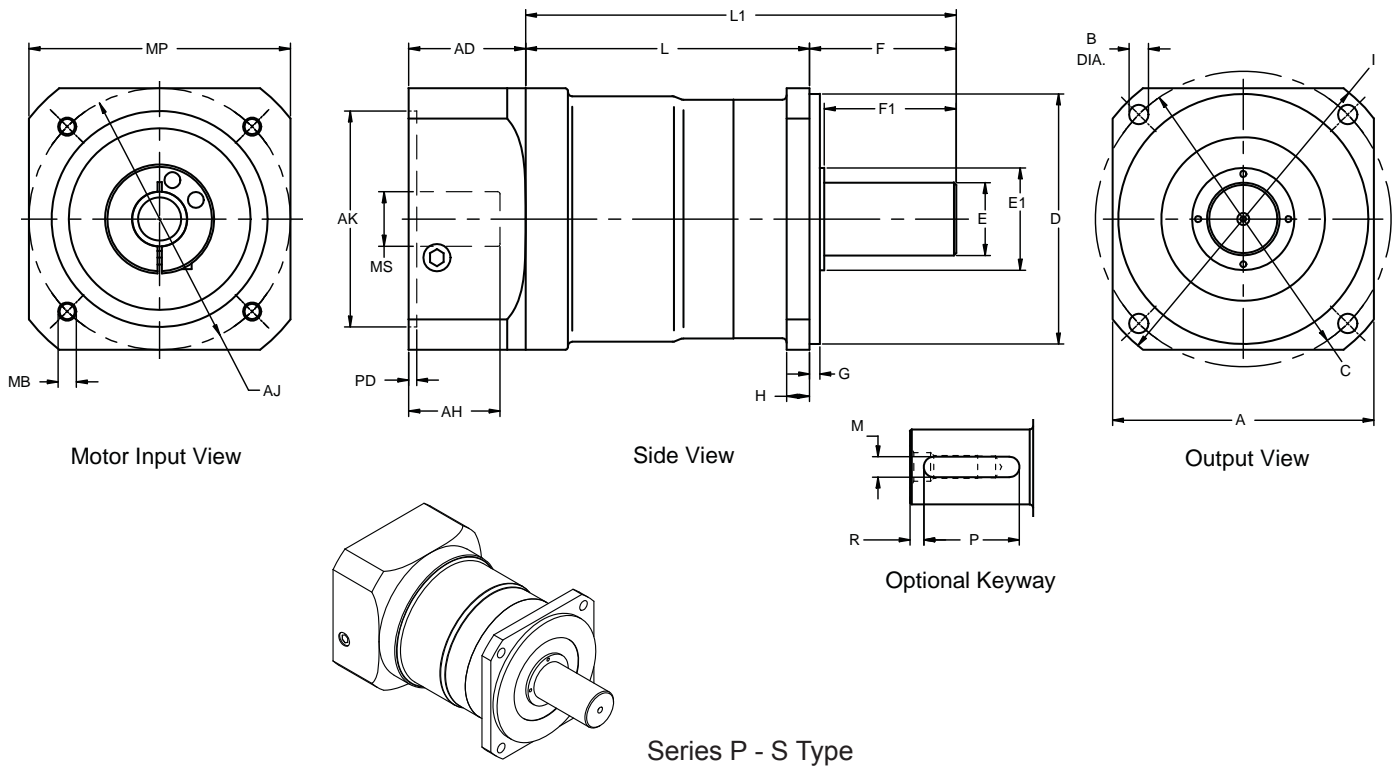
Unit Size	G		H		I		L		L		L1		L1	
	Pilot Depth		Flange Thickness		Flange Diameter		Body Length Ratio ≤ 10		Body Length Ratio > 10		Overall Length Ratio ≤ 10		Overall Length Ratio > 10	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
P70	0.748	19	0.276	7	3.622	92	2.323	59	3.465	88	4.213	107	5.354	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							Unit Size	Min. mm	Max. mm	Width Height Length			
	Length mm	Motor Pilot Dia	Pilot Depth	Bolt Circle Dia	Motor Square	Bolt Hole	Shaft Diameter				M mm	N mm	P mm	R mm
P70								P70	8	19	5	5	25	2
P90								P90	9.525	24	6	6	28	4
P115								P115	11	35	10	8	50	4
P142								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.

# AccuDrive Series P

## Series P Planetary Servo Gearhead Technical Data of S Type



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							Unit Size	Min. mm	Max. mm	Width Height Length			
	Length mm	Motor Pilot Dia	Pilot Depth	Bolt Circle Dia	Motor Square	Bolt Hole	Shaft Diameter				M mm	N mm	P mm	R mm
P70								P70	8	19	6	6	20	2
P90								P90	9.525	24	6	6	28	4
P115								P115	11	35	10	8	50	4
P142								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	<b>Ratio</b>

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

### Calculated Data

Load torque reflected to Input:  
 $T_{input} = T_{load} / (\text{Ratio} \times \text{eff.})$

Load inertia referred to input shaft:  
 $J_{ref} = J_{load} / \text{Ratio}^2$

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

data example:

$T_{cont} = 10.9 \text{ Nm}$        $T_{peak} = 45.7 \text{ Nm}$        $J_{mot} = 1.0$   
 $J_{load} = 10$                $T_{load} = 15 \text{ Nm}$               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:

$T_{output}$

$$T_{output} = ((T_{peak} - T_{input}) \times (1 - J_{par}) + T_{input}) \times \text{Ratio} \times \text{Eff.}$$

$$T_{input} = 15 / (3 \times .98) = 5.1$$

$$T_{output} = ((45.7 - 5.1) \times (1 - .474) + 5.1) \times 3 \times .98 = 77.8 \text{ Nm}$$

#### 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.

$$P115 T_{2N} = 150 \text{ Nm}$$

$$Sf = 150 / 77.8 = 1.93$$

### for Continuous Applications Using Motor Continuous Torque

formula & applied calculation example:

Calculate service factor: **Sf**

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

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.

$$P90 T_{2N} = 75 \text{ Nm}$$

$$Sf = 75 / (10.9 \times 3 \times .98) = 2.34$$

Sales Phone: 888-994-2663

Sales Fax: 888-907-2663

### 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:

Unit Size	Torque Tightening				
	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.

# Notes

# Contact Details

## AUSTRALIA

David Brown Gear  
Industries Ltd  
13-19 Franklin Avenue  
Bulli, NSW 2516  
Australia  
Tel: +61 2 4283 0300  
Fax: +61 2 4283 0333

## AUSTRIA

Benzler Antriebstechnik  
Ges mbH  
Urnenhainweg 7  
AT-4050 Traun  
Austria  
Tel: +43 7 229 618 91  
Fax: +43 7 229 618 84

## BELGIUM

SA David Brown Sadi  
Benzlers NV  
Contact the Northern European  
Service Centre (Netherlands)  
Tel: +32 13 66 10 58  
Fax: +32 13 66 23 37

## CANADA

Cone Drive  
240 East 12th Street  
Traverse City  
MI 49684  
USA  
Tel: +01 231 946 8410  
Fax: +01 231 933 8600

## DENMARK

Benzler Transmission A/S  
Hammerholmen 39  
DK-2650 Hvidovre  
Denmark  
Tel: +45 36 34 03 00  
Fax: +45 36 77 02 42

## FINLAND

Oy Benzler AB  
PB 3  
FI 02211 Espoo  
Finland  
Tel: +358 9 8870 630  
Fax: +358 9 8870 631

## FRANCE

Benzler France  
Contact the Northern European  
Service Centre (Netherlands)  
Tel: +33 130 32 79 00  
Fax: +33 130 32 80 40

David Brown Transmissions  
France SA  
42 Avenue du Progrès, BP 149  
69686 Chassieu Cedex  
France  
Tel: +33 4 72 47 61 50  
Fax: +33 4 72 47 61 69

## DSN

9 rue de la Verrerie, BP 135  
ZI Le Fontanil Cedex  
38521 El Fontanil  
France  
Tel: +33 4 76 75 66 83  
Fax: +33 4 76 75 57 99

## WECO

33 Rue Henri-Lebert, BP 48  
68801 Thann Cedex  
France  
Tel: +33 3 89 37 01 13  
Fax: +33 3 89 37 39 36

## GERMANY

Benzler Germany  
Contact the Northern European  
Service Centre (Netherlands)  
Tel: 0800 350 40 00  
Fax: 0800 350 40 01

## HUNGARY

Benzler Antriebstechnik  
Ges mbH  
Urnenhainweg 7  
AT-4050 Traun  
Austria  
Tel: +43 7 229 618 91  
Fax: +43 7 229 618 84

## ITALY

Benzler Ferri SpA  
Via F.lli Rosselli 16  
IT 42019 Scandiano (RE)  
Italy  
Tel: +39 05 22 763314  
Fax: +39 05 22 981758

## MALAYSIA

Benzler (M) Sdn Bhd  
No 24 Jalan TPJ 3  
Taman Perindustrian  
Jaya Subang  
MY 47200 Selangor  
Malaysia  
Tel: +60 3 745 0668  
Fax: +60 3 746 1436

## NETHERLANDS

Northern European  
Service Centre & HQ  
Benzlers Netherland  
Postbox 3303  
NL 5902 Venlo RH  
Netherlands  
Tel: +31 773 245 900  
Fax: +31 773 245 901

## NORWAY

Incorporating Benzler A/S & David  
Brown Hydraulics Norway A/S  
PO Box 73 Leirdal  
Stromsveien 372  
NO- 1008 Oslo  
Norway  
Tel: +47 22 90 94 30  
Fax: +47 22 90 94 11

## PHILIPPINES

David Brown John Welsh  
Custom Build (Pty) Ltd  
Unit 1207 One Magnificent Mile  
San Miguel Ave, Ortigas Centre  
Pasig City, Philippines  
Tel: +63 6 32 910 0316  
Fax: +63 6 32 910 0317

## SINGAPORE

Benzler (FE) Pte Ltd  
1 Clementi Loop  
#03-08  
Singapore 129808  
Tel: +65 469 0777  
Fax: +65 469 2083

## SOUTH AFRICA

David Brown  
Gear Industries Ltd  
PO Box 540, Benoni 1500  
South Africa  
Tel: +27 11 748 0000  
Fax: +27 11 421 2963

David Brown  
Gear Industries Ltd  
PO Box 36882  
Chempet 7442  
Cape Town  
South Africa  
Tel: +27 21 551 2163  
Fax: +27 21 551 2164

David Brown  
Gear Industries Ltd  
Natal Sales Office  
39 Richmond Road  
Pinetown 3600  
Natal, South Africa  
Tel: +27 31 700 3302  
Fax: +27 31 700 1872

## SWEDEN

AB Benzlers  
PO Box 922  
SE-251 09 Helsingborg  
Sweden  
Tel: +46 42 18 6800  
Fax: +46 42 21 8803

## THAILAND

David Brown Powauto  
(Thailand) Ltd  
Level 5 Sermsrap Building  
169/98 Ratchadapisek Road  
Din Daeng, Bangkok 10320  
Thailand  
Tel: +66 2 276 9504/5/6  
Fax: +66 2 276 9503

## UNITED KINGDOM

Corporate HQ  
Park Road  
Lockwood, Huddersfield  
West Yorkshire. HD4 5DD  
Tel: +44 (0) 1484 465500  
Fax: +44 (0) 1484 465501

David Brown Engineering Ltd  
Park Road  
Lockwood, Huddersfield  
West Yorkshire. HD4 5DD  
Sales  
Tel: 0800 970 4001  
Fax: 0800 970 4002  
Service & Spare Parts  
Tel: 0800 970 4003  
Fax: 0800 970 4004

## USA

Cone Drive  
240 East 12th Street  
Traverse City  
MI 49684  
USA  
Tel: +01 231 946 8410  
Fax: +01 231 933 8600

or contact

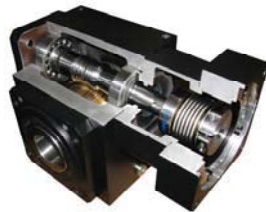


## Cone Drive Family of Products

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Model HP



AccuDrive



Gearsets



Specials

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**Cone Drive™**

Cone Drive Operations, Inc  
240 E. 12th Street,  
Traverse City, MI. 49685

Sales: 1-888-994-2663  
Sales Fax: 1-888-907-2663