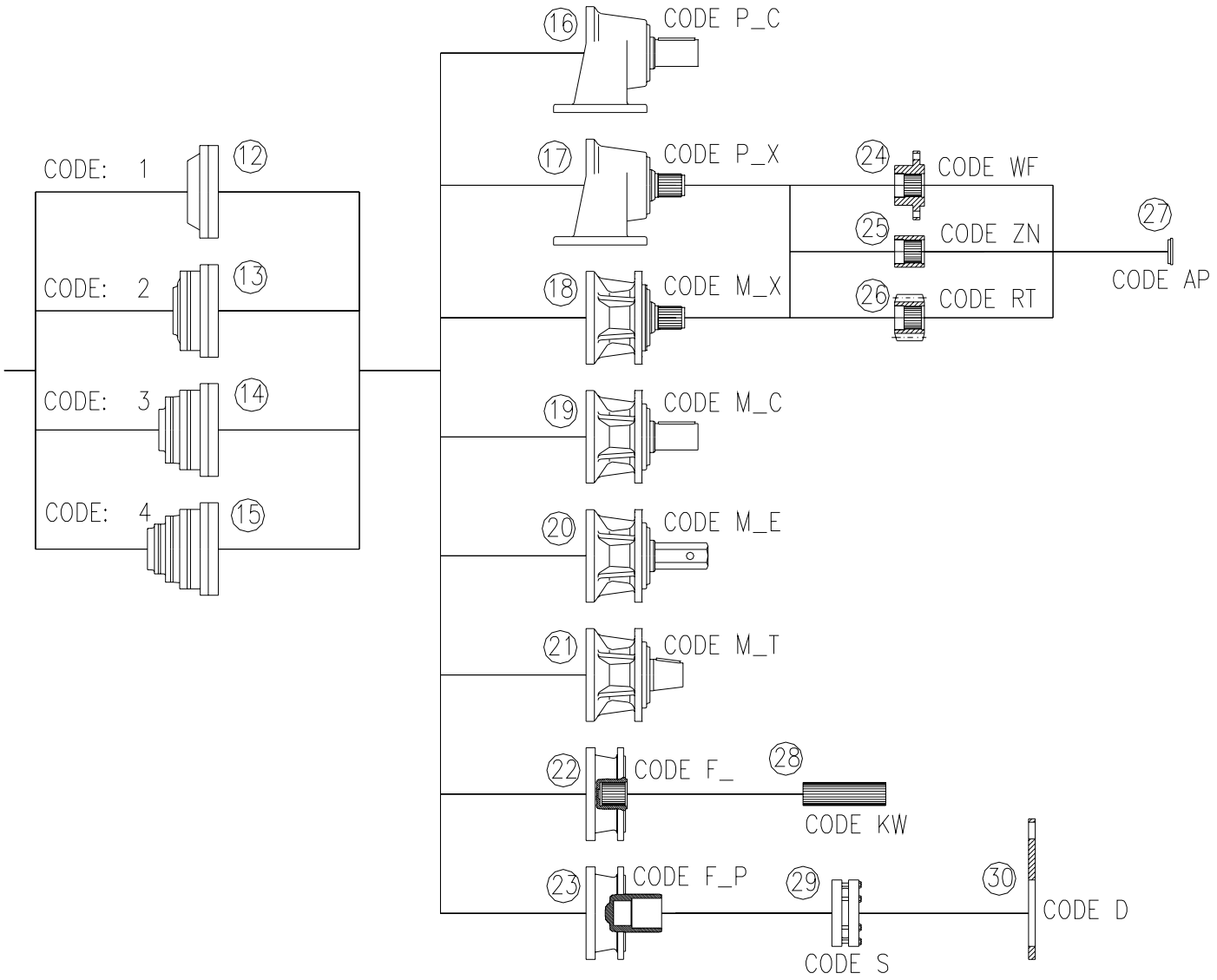


ORDERING CODE

RES	800	M	3	R	A	X	I	227	N*	FS*	WF

RES — Planetary Gear Unit

800 — Nominal Torque 100-15000

M — Housing-Shaft Version:
F Flange-Internal Shaft
M Flange-Ext. Shaft
P Foot-Ext. Shaft

3 — Number of Stages

R — R Reinforced Housing; - Standard Housing

A — A Right Angle; - In Line

X — Output Shaft Version:
- Internal Splined
C Cylindrical
E Hexagonal
X External Splined
K Tapered

I — Inches Key Shaft for RES 300 thru 500 Only

227 — Ratio without Decimals

N* — Accessories Input: See pgs.38-39
Hydraulic Motor Flanges: See pgs.40-41
Electric Motor Flanges: See pgs.42-43

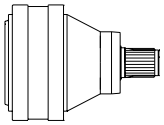
FS* — Brakes - See pgs. 32-35
FS* Brake - Without Brake

WF — Accessories Output: See pgs. 38-39

RES SERIES 1800 - 15000

IN LINE GEARBOXES EXTERNAL OUTPUT

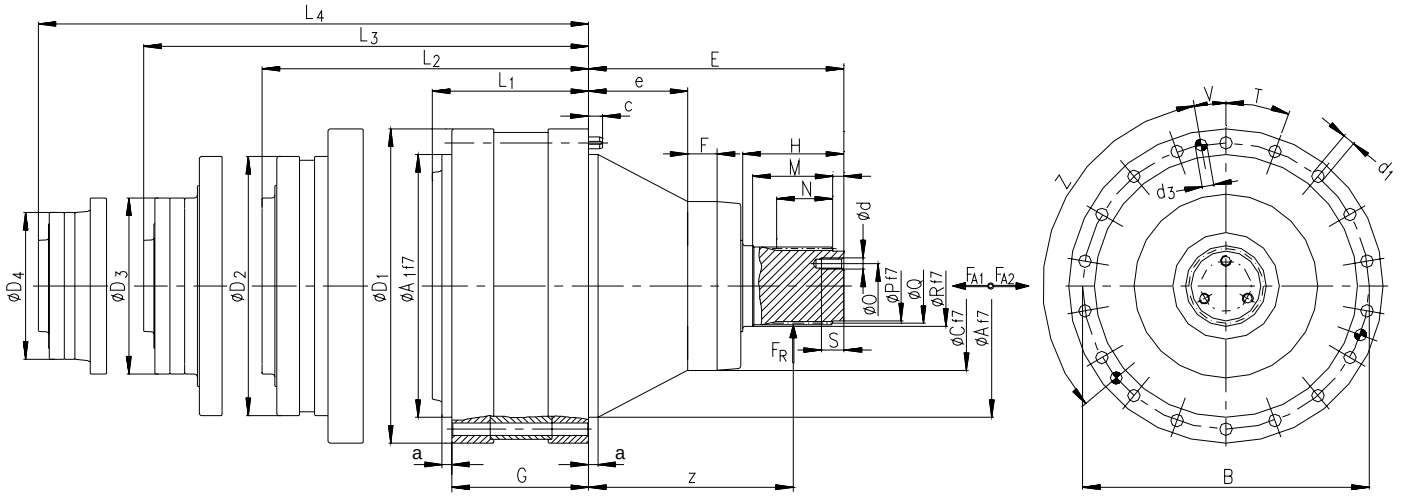
Ratios & Torque Ratings

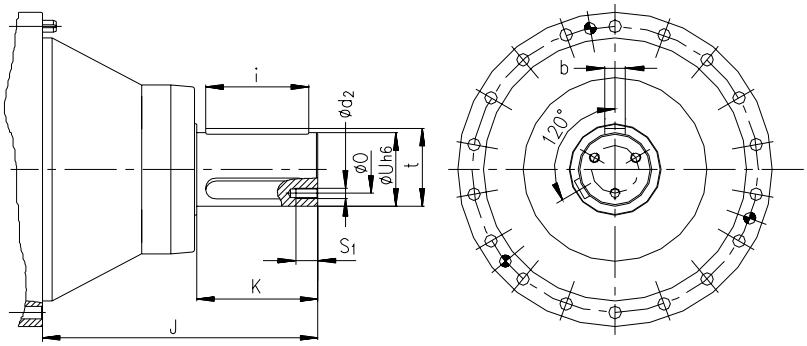


	1800		2000		3000		4000		6000		8000		10000		15000	
	Ratio	Torque LB-FT	Ratio	Torque LB-FT	Ratio	Torque LB-FT	Ratio	Torque LB-FT	Ratio	Torque LB-FT	Ratio	Torque LB-FT	Ratio	Torque LB-FT	Ratio	Torque LB-FT
M1/M1R Stage 1			3.429 4.091 5.250 6.231	B A B C	3.429 4.091 5.250 6.231	B A B C	3.429 4.091 5.250 6.231	B A B C	3.281 4.174 5.294 6.214	B A B C	3.429 4.091 5.250 6.231	B A B C	4.091 5.250	A B	4.091 5.250 6.231	A B C
Input Speed/Cont.-Max			1800/2500		1800/2500		1500/2000		1000/15000		750/1000		750/1000		500/800	
Weight lbs.			251		-		475		607		924		-		1980	
M2/M2R Stage 2	12.00 14.14 16.88 18.38 21.66 27.13 31.50 37.38 45.17	E B A B A A C D E	13.22 15.78 17.73 20.45 22.75 24.55 26.25 31.50 37.38	B A A A A A B B C	13.22 15.78 17.73 20.45 22.75 24.55 26.25 31.50 37.38	B A A A B B B B C	11.76 14.03 16.74 18.00 21.48 25.49 27.56 32.71 38.82	B A A B A A B B C	11.25 14.31 17.08 18.15 21.91 26.01 27.79 32.99 38.72	B A A B A A B B C	11.76 14.03 16.74 18.00 21.48 25.49 27.56 32.71 38.82	B A A B A A B B C	14.03 16.74 18.00 21.48 27.56 32.71	A A B A B B	13.42 17.08 21.66 25.42 27.79 32.63 38.72	A A A A B B C
Input Speed/Cont.-Max	2800/3800		2000/3000		2000/3000		2000/3000		1800/2500		1500/2000		1500/2000		1000/1500	
Weight lbs.	-		304		-		607		766		1241		-		2376	
M3/M3R Stage 3	50.1 59.1 69.6 75.8 89.3 94.9 101.3 111.9 122.3 129.9 140.1 157.0 196.7 228.4 271.0 319.2 385.7	E A A A A A A A A A A A A C D D E	46.3 55.2 62.0 65.1 73.1 81.5 91.6 106.4 122.7 128.5 135.6 147.3 157.5 178.0 228.4 271.0	B A A A A A A A A A B A B A B C	46.3 55.2 62.0 65.1 73.1 81.5 91.6 106.4 122.7 128.5 135.6 147.3 157.5 178.0 228.4 271.0	B A A A A A A A A A B A B A B C	41.1 49.1 58.6 69.0 72.5 86.5 100.4 111.0 128.9 142.4 152.9 165.4 184.8 196.3 237.2 281.5	B A A A A A A A A A B A B B B C	43.4 55.2 65.9 74.0 85.4 94.9 102.5 109.6 120.4 131.5 138.9 156.1 166.8 197.9 232.3	B A A A A A A A B A B A B B C	40.3 48.1 57.4 61.7 68.5 73.6 87.9 94.5 104.3 112.8 133.8 144.7 158.8 171.7 203.8 241.9	B A A B A A A B A A A B A B B C	48.1 57.4 61.7 68.5 73.6 87.9 94.5 104.3 112.8 133.8 144.7 171.7 203.8	A A B A A A B A A A B B B	46.0 54.9 58.5 69.9 74.3 83.6 89.6 104.0 113.7 134.9 145.9 158.4 173.2 203.3 241.3	A A A A A A A A A A B A B B C
Input Speed/Cont.-Max	3000/4000		2800/3800		2800/3800		2800/3800		2000/3000		2000/3000		2000/3000		1800/2500	
Weight lbs.	-		330		-		647		819		1373		-		2535	
M4/M4R Stage 4	265 313 368 418 523 608 734 887 1138 1341 1679 1950 2296 2356 2775 3293	A A A A A A A A A A A C D E D E	193 217 256 302 321 372 439 473 550 638 771 932 1075 1266 1519 1656 1950 2314	A A A A A A A A A A A A A A A B B C	193 217 256 302 321 372 439 473 550 638 771 932 1075 1266 1519 1656 1950 2314	A A A A A A A A A A A A A A A B B C	205 242 285 303 351 414 447 500 603 728 805 934 1129 1340 1578 1719 2025 2403	A A A A A A A A A A A A A A A B B C	193 230 259 305 340 382 444 512 566 615 657 743 953 1131 1435 1684	A A A A A A A A A A A A A A B C	201 240 297 354 411 454 527 583 626 677 756 803 970 1152 1478 1754	A A A A A A A A A A A A A A B C	201 240 297 354 411 454 527 583 626 677 756 803 970 1152 1478	A A A A A A A A A A A A A B B	178 226 269 303 349 419 493 569 638 675 810 950 1016 1220 1448	A A A A A A A A A A A A B B C
Input Speed/Cont.-Max	3000/4000		3000/4000		3000/4000		3000/4000		2800/3800		2800/3800		2800/3800		2000/3000	
Weight lbs.	-		360		-		682		864		1421		-		-	
MAXIMUM TORQUE RATINGS LB-FT	15200 = A 14100 = B 13020 = C 12300 = D 10850 = E		20980 = A 15190 = B 13020 = C		28210 = A 22430 = B 18090 = C		39060 = A 31100 = B 24600 = C		50630 = A 39060 = B 32550 = C		94030 = A 70160 = B 56420 = C		112840 = A 83900 = B		155510 = A 122300 = B 101260 = C	

RES SERIES 1800 - 15000

IN LINE GEARBOXES EXTERNAL OUTPUT





The dimensions L_1...L_4 refer to gearboxes with universal input. If there is any accessory mounted to the input side please consider length variation ΔL. For dimensions of the universal input see page 36.

If shaft radial load exceeds 50% of the admissible load, both mounting pilots must be used.

RES	A	A1	B	C	D1	D2	D3	D4	E	F	G	H	I	J	K	L1	L2	L3	L4	M	N
1800	10.945	-	12.36	8.858	13.90	9.45	7.87	7.87	9.10	0.98	5.43	3.54	0.39	12.24	6.69	-	9.02	11.16	13.13	2.76	1.97
1800R	11.417	-	12.36	9.843	13.90	9.45	7.87	7.87	13.50	2.82	4.61	4.33	0.47	15.67	6.50	-	8.19	10.34	12.30	3.39	2.60
2000	10.945	-	12.36	8.858	13.90	11.02	7.87	7.87	9.10	0.98	5.47	3.54	0.39	12.24	6.69	6.34	10.59	12.68	14.35	2.76	1.97
2000R	11.417	-	12.36	9.843	13.90	11.02	7.87	7.87	13.50	2.82	4.47	4.33	0.47	15.67	6.50	5.51	9.76	11.85	13.52	3.39	2.60
3000	14.095	14.095	15.35	9.055	16.85	11.02	9.45	7.87	12.60	1.58	5.51	4.33	0.47	14.76	6.50	7.68	11.00	13.09	14.76	3.39	2.60
4000	14.095	14.095	15.35	9.055	16.85	13.90	9.45	7.87	13.39	1.58	7.24	5.12	0.39	14.76	6.50	7.85	11.24	13.92	16.06	4.13	3.47
6000	15.158	15.158	16.34	10.236	17.52	13.90	11.02	9.45	14.06	1.58	6.89	5.12	0.39	15.43	6.50	8.27	12.84	17.09	19.17	4.13	3.47
8000	18.110	18.110	19.80	11.810	21.34	16.85	13.90	9.45	16.89	1.18	7.84	5.91	0.47	18.86	7.87	9.69	15.57	18.96	21.63	4.84	4.21
10000	18.110	18.110	19.80	11.810	21.34	16.85	13.90	9.45	17.68	1.18	8.62	6.69	0.47	18.86	7.87	10.47	16.36	19.74	22.42	5.43	4.72
15000	22.047	22.047	25.00	-	27.36	17.52	13.90	11.02	13.86	-	7.87	7.87	0.79	16.22	10.24	12.13	18.58	23.15	27.40	5.91	5.12

RES	O	P	Q*	R	S	S1	T	U	V	Z	a	b	c	d*	d1*	d2	d3*	e	i	t	z	FR[lb]	FA1[lb]	FA2[lb]
1800	1.77	2.756	80x74 DIN 5482	3.346	0.98	1.97	12x30°	3.543	15°	3x120°	0.32	0.98	0.59	M12 3x120°	0.65	M20	0.47	2.87	5.91	3.74	7.32	37400	33000	33000
1800R	2.56	3.347 h6	100x94 DIN 5482	4.134 g6	1.18	1.18	12x30°	3.937	15°	3x120°	0.59	1.10	0.59	M14 3x120°	0.65	M14 3x120°	0.47	5.67	5.51	4.17	11.34	66000	46200	46200
2000	1.77	2.756	80x74 DIN 5482	3.346	0.98	1.97	12x30°	3.543	15°	3x120°	0.32	0.98	0.59	M12 3x120°	0.65	M20	0.47	2.87	5.91	3.74	7.32	37400	33000	33000
2000R	2.56	3.347 h6	100x94 DIN 5482	4.134 g6	1.18	1.18	12x30°	3.937	15°	3x120°	0.59	1.10	0.59	M14 3x120°	0.65	M14 3x120°	0.47	5.67	5.51	4.17	11.34	66000	46200	46200
3000	2.56	3.347	100x94 DIN 5482	4.134	1.18	1.18	18x20°	3.937	10°	3x120°	0.51	1.10	0.75	M14 3x120°	0.67	M14 3x120°	0.63	5.32	5.51	4.17	10.43	66000	46200	46200
4000	2.76	3.937	W120x3 DIN 5480	4.803	1.38	1.38	18x20°	4.724	10°	3x120°	0.51	1.26	0.75	M16 3x120°	0.67	M16 3x120°	0.63	5.32	5.51	5.00	10.83	66000	46200	46200
6000	2.76	3.937	W120x3 DIN 5480	4.803	1.38	1.38	18x20°	4.724	10°	3x120°	0.51	1.26	0.79	M16 3x120°	0.67	M16 3x120°	0.63	5.98	5.51	5.00	11.50	59400	48400	48400
8000	2.76	4.922	W150x5 DIN 5480	5.945	1.18	1.18	20x15°	5.906	0°	3x120°	0.51	1.42	0.98	M16 3x120°	0.83	M16 3x120°	0.79	8.82	7.09	6.22	13.94	77000	55000	55000
10000	3.54	5.709	W170x5 DIN 5480	6.732	1.18	1.18	20x15°	6.693	0°	4x90°	0.51	1.58	0.98	M16 3x120°	0.83	M16 3x120°	0.79	8.82	7.09	7.05	14.33	88000	55000	55000
15000	5.51	6.693	W200x5 DIN 5480	7.874	1.38	1.38	24x15°	7.874	22.5°	4x90°	0.79	1.77	1.38	M16 6x60°	1.26	M16 6x60°	0.98	-	9.84	8.27	9.92	169400	66000	66000

• one key on shaft * measurements in metric

SPEED

Input RPM
The admissible input speed for continuous duty.

Output RPM
The admissible output speed.

Transmission Ratio
The quotient of input speed divided by output speed. See Fig. 1.

Input RPM ÷ Output RPM = Ratio

Fig. 1

TORQUE

Nominal Torque LB-FT (Nominal)
Industry standard denomination to indicate gearbox size.

Peak Torque LB-FT (Peak)
The absolute maximum torque that can be transmitted. This value must not be exceeded. See Tab. 1.

Continuous Torque LB-FT (Continuous)
Can be continuous transmitted for a limited life. It refers to a nominal life of 15,000 RPM x Hours and a service factor of 1.0. For other operating conditions, the transmittible torque has to be determined as described in Dia. 1.

Tab. 1 Peak Torque LB-FT (Peak)

RES	100	200	300	400	500	800	1000	1300	1800	2000	3000	4000	6000	8000	10000	15000
LB-FT	1375	2170	3255	4700	5790	9405	11575	15915	18085	21700	32550	41950	61480	115730	137430	188060

POWER MECHANICAL

Mechanical Power HP
Results from calculation of torque and relative speed

Maximum Mechanical Power HP (Max)
The maximum power that can be transmitted in case of intermitten duty. Values in Tab. 2 must not be exceeded. The torque calculation from mechanical power and speed must not exceed values in Tab. 1.

Tab. 2 Maximum Mechanical Power HP (Max)

RES	100	200	300	400	500	800	1000	1300	1800	2000	3000	4000	6000	8000	10000	15000
1 Stage	33.5	40	80.5	-	121	177	-	268	-	322	375	442	509	670	804	1005
2 Stage	20	23	33.5	33.5	40	80	80	121	121	177	177	268	322	442	442	509
3 Stage	9.5	13.5	20	33.5	33.5	33.5	33.5	40	40	80	80	121	177	268	268	322
4 Stage	3	4	7	8	11	16	20	33.5	33.5	33.5	33.5	40	80	121	121	177

POWER THERMAL

Thermal Power Limit HP (Thermal)
The maximum power that can be transmitted before applying a cooling system. Factors that influence the thermal capacity are: input speed, duty, mounting position, lubricant, ambient temperature, air circulation, sun exposure, final paint color, installation. The values in Tab. 4 are valid for: constant duty, horiz. mounting pos., free air circulation, oil ISO VG 150, ambient temp. 70° F (20° C), input RPM = 1500 RPM. For operation under different conditions, the thermal limit has to be corrected by means of the correction factors for temp. and speed. These consider also the actual running time and the mounting position. For adjusted limit HP (Adjusted) see Fig. 2.

Speed Factor (See Tab. 4) x Temp. Factor (See Tab. 5) x HP (Thermal) (See Tab. 3) = HP (Adjusted)

Fig. 2