

2796 Culver Ave., Dayton, Ohio 45429
 PH: 513/294-1041 FAX: 294-8336

**GEARMOTORS
 DC PERMANENT MAGNET
 HIGH QUALITY INDUSTRIAL**

**MODEL FIL
 BULLETIN 211A200/212**
 SUPERSEDES 211A100/112

ELECTRICAL SPECIFICATIONS

Voltage: 12, 27, 50, 115 and 180 VDC are standard. Other voltages available. Reverse side of sheet shows complete FIL gearmotor data.

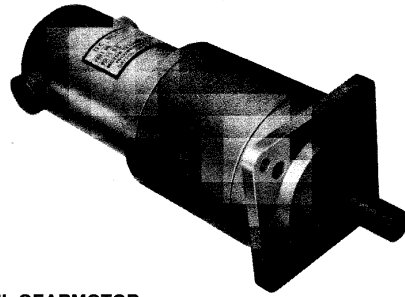
Speed: Motor input speeds up to 7700 RPM can be used to drive this precision planetary geartrain, of ratios from 3.81 to 940.

Connection Method: Two #18 AWG stranded leads, teflon insulated, 8" long are standard. Terminal type connections are available.

Rotation: Counter clockwise when viewed from shaft end, when positive lead (red) is plus and negative lead (black) is minus.

Reversibility: Unit reverses rotation when voltage is reversed.

The Motor Technology, Inc. new Model FIL planetary gearmotor is designed and built to provide high efficiency, reliable performance and durability in a small package size. Common usages include robotic drives, industrial actuators, medical machines and instruments, automatic welding equipment, valve controls, etc. Where the need for dependability is paramount, the new FIL gearmotor is an excellent choice. For pinions, splines, keyways, RFI/EMI filters, brakes or any modifications you may need, consult with M.T.I. application engineers. For additional FIL motor information see Bulletin 210A106.



MODEL FIL GEARMOTOR

MECHANICAL SPECIFICATIONS

Rating: 0.12 hp with torques to 500 lb. in.

Gears: Precision manufactured and heat treated, high nickel alloy steel.

Bearings: Output shaft supported by double shielded ball bearings, but needle bearings are readily available. All planet gears are mounted on anti-friction bearings.

Backlash: Less than 3°.

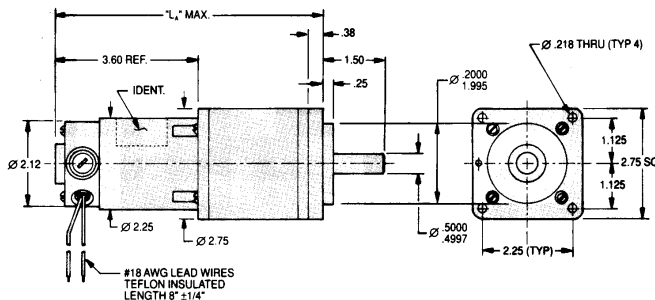
Shaft: Precision ground 8620 alloy steel per QQ-S-624, heat treated and case hardened.

Protection: Aluminum parts finished with iridite chemical film. Ring gear tin-zinc plated, chromate finish per MIL-C-81562B, class 2, type 2.

Lubrication: Motor bearings life lubricated per MIL-G-3278. Gearbox lubricated with grease per MIL-G-23827A. Special lubricants are available.

Weight: 3.48 to 6.35 pounds, depending on ratios.

DIMENSIONS



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BASIC GEARMOTOR DATA — STANDARD PART NUMBERS

SPEED REDUCTION RATIO	MAXIMUM ¹ CONT. DUTY TORQUE LB.IN.	TORQUE ² MULTIPLIER	LENGTH L ₁ DIMENSION	STANDARD FIL GEARMOTOR PART NUMBERS (Add armature dash number; see below.)
3.81	5.31	3.54	5.265	211A200-
5.54	7.73	5.15	5.265	211A201-
14.5	18.8	12.5	5.750	211A202-
21.1	27.3	18.2	5.750	211A203-
30.7	39.8	26.5	5.750	211A204-
55.3	66.8	44.5	6.235	211A205-
80.3	96.9	64.6	6.235	211A206-
117	141	94.1	6.235	211A207-
170	204	136	6.235	211A208-
306	342	228	6.720	211A209-
445	500	333	6.720	211A210-
647	500	484	6.720	211A211-
940	500	703	6.720	211A212-

¹This rating is for gearbox only. To determine output of any motor-gearbox combination, multiply motor torque by the torque multiplier for that ratio.

²Torque multiplier ratio is the gear ratio multiplied by its efficiency.

BASIC FIL ARMATURE DATA¹

INPUT VOLTAGE DC	NO-LOAD CURRENT RPM	RATED TORQUE OZ.IN.	STALL TORQUE OZ.IN.	NO-LOAD CURRENT AMPS MAX.	RATED TORQUE CURRENT AMPS	STALL CURRENT AMPS	ARMATURE DASH NUMBERS
12	4310	20	192	1.56	7.86	64.6	-1
27	7700	17	342	1.43	5.58	91.5	-2
27	6110	22	272	1.06	5.43	57.6	-3
27	4850	30	216	.80	5.59	36.3	-4
27	3850	30	171	.60	4.41	22.9	-5
27	3055	30	136	.45	3.46	14.4	-6
50	4490	35	200	.40	3.21	16.8	-7
50	3560	35	158	.30	2.53	10.6	-8
115	6500	21	289	.28	1.31	15.3	-9
115	5160	28	229	.20	1.32	9.65	-10
115	4100	28	182	.15	1.04	6.08	-11
180	5240	27	226	.14	.83	6.18	-12
180	4260	37	180	.10	.88	3.99	-13
180	3460	25	142	.08	.50	2.57	-14
180	2840	25	113	.06	.40	1.67	-15

¹For complete FIL motor data and tolerances see Bulletin 210A106.

HOW TO SELECT A UNIT

The complete part number must include a standard FIL gearmotor part number (above) plus an applicable FIL armature dash number from the basic motor data chart (left). Use the following trial and error technique to start:

1. Assume motor speed of 5,000 RPM and divide it by the required output speed to get approximate ratio.
2. From ratios charted above, select closest one.
3. Check maximum torque rating of that ratio with your actual requirement. Adjust ratio and motor speed up or down as needed.
4. Calculate output torque by multiplying motor torque by the "torque multiplier" of the ratio selected.
5. Select armature from voltage, load and speed required.

HOW TO ORDER: Order by standard part number (example: 211A206-4), making sure to include the armature dash number. Note any modifications as exceptions to the standard.