



**STANDARD FEATURES:**

- Ball bearings
- High starting torque
- Precision die cast end bells
- Class B rated
- Reversible
- Stainless steel output shafts
- All metal housing

**OPTIONAL FEATURES:**

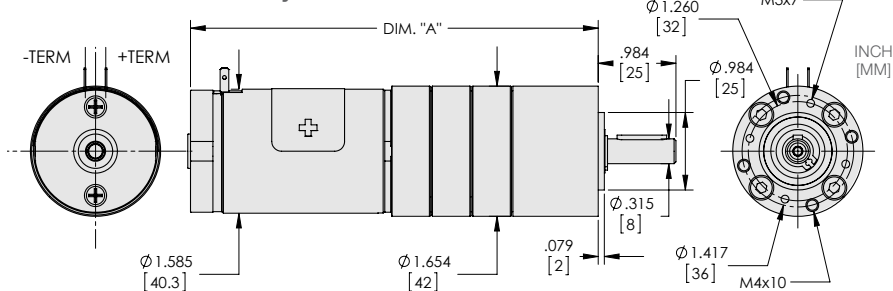
- Encoders up to 2048 CPR
- Voltage ranges to 48VDC
- EMI noise suppression
- Customized shafts
- Customized lead harnesses
- Custom mounting
- Rear shaft extensions
- Integral lead wires
- Gearboxes
  - Planetary  
Ratios up to 2653:1  
(See Series 116-8; 116-9)
  - Spur  
12:1; 48:1; 192:1; 768:1  
(See Series 116-4)
- Housing available in plastic  
(See Series 116-9)

**TYPICAL APPLICATIONS:**

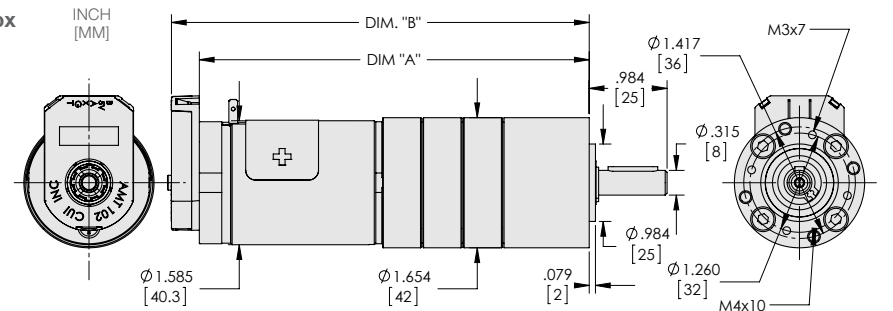
- Printers
- Plotters
- Pumps
- Fans
- Cutting Tools
- Medical Devices
- Robotics
- Beverage Dispensing
- Gaming/Recreational Machines



**Series 116-8 with Planetary Gearbox**



**Series 116-8 with Planetary Gearbox & Encoder**



**Series 116  
Part Numbering  
& Example**



**ENCODER OPTION C, D, OR M**

Counts Per Revolution (CPR) (C =100, D = 500 Or M = 1000)  
(Others Are Available - See Factory) \*\*\*Otherwise Leave Blank\*\*\*

**Gear Ratio**

Motor Type 4 & 5 (12, 48, 192, or 768)  
Motor Type 6 & 8 (5, 27, 130, or 642)  
Motor Type 7 & 9 (5, 27, 130)

**Motor Speed**

(16, 32, or 48) (e.g. 32 = 3200 RPM)

**Rated Voltage**

(12 or 24)

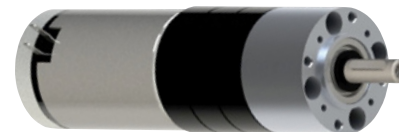
**Motor Type:**

- 4 = Motor, Terminals, 2" Spur Gearbox, Encoder Optional
- 5 = Motor, Integral Leads, 2" Spur Gearbox, Encoder Optional
- 6 = Motor, Integral Leads, Metal Planetary Gearbox, Encoder Optional
- 7 = Motor, Integral Leads, Plastic Planetary Gearbox, Encoder Optional
- 8 = Motor, Terminals, Metal Planetary Gearbox, Encoder Optional**
- 9 = Motor, Terminals, Plastic Planetary Gearbox, Encoder Optional

# Series 116-8

## 1.6" DC Planetary Gear Motor (Metal)

Continued



### PERFORMANCE

PART NUMBER	RATIO	VOLTS NOM	NO LOAD SPEED	NO LOAD CURRENT	LOAD SPEED	LOAD TORQUE	LOAD CURRENT	MAX. THEORETICAL TORQUE (* INDICATES GEARBOX LIMIT)			DIM "A" MAX INCH [mm]	DIM "B" MAX INCH [mm]			
			WNL	INL	W	TL	IL								
			R.P.M.	AMPS	R.P.M.	IN-OZ	AMPS	IN-OZ	R.P.M.	AMPS					
			NOM.	MAX.	NOM.	NOM.	MAX.	REF.	REF.	REF.					
116-81216-5	5:1	12	485	0.2	295	24	1.4	61	STALL	4.0	4.2 [107]	4.6 [117]			
116-81232-5			715	0.7	570	21	1.8	108	STALL	7.0					
116-81248-5			990	0.8	870	18	2.1	147	STALL	12.0					
116-81216-27	27:1		12	90	0.3	60	122	1.2	407	STALL	4.0	4.7 [120]	5.1 [130]		
116-81232-27				130	1.0	105	107	2.2	574	STALL	8.0				
116-81248-27				185	1.0	160	92	2.4	613	STALL	11.0				
116-81216-130	130:1			12	20	0.3	15	546	1.2	1700	STALL	4.0	5.2 [132]	5.6 [142]	
116-81232-130					30	0.7	25	478	1.8	2124*	5.0	6.0			
116-81248-130					40	0.8	35	410	2.2	2124*	10.0	8.0			
116-81216-642	642:1				12	3.8	0.3	2.8	1593	0.7	2124*	2.4	1.0	5.7 [145]	6.1 [155]
116-81232-642						6	0.5	4.8	1593	0.8	2124*	4.5	1.0		
116-81248-642						8	0.8	6.2	1593	0.9	2124*	5.6	1.0		
116-82416-5	5:1	24				500	0.2	365	24	0.5	91	STALL	2.0	4.2 [107]	4.6 [117]
116-82432-5						695	0.3	590	21	1.0	142	STALL	5.0		
116-82448-5						1030	0.9	930	18	1.0	184	STALL	7.0		
116-82416-27	27:1		24			90	0.2	70	122	0.6	481	STALL	2.0	4.7 [120]	5.1 [130]
116-82432-27						130	1.0	105	107	0.8	574	STALL	8.0		
116-82448-27						200	1.0	175	92	1.0	868	STALL	7.0		
116-82416-130	130:1			24		20	0.2	15	546	0.6	2124*	STALL	2.0	5.2 [132]	5.6 [142]
116-82432-130						30	0.4	25	478	0.9	2124*	10.0	3.0		
116-82448-130						40	0.4	35	410	1.1	2124*	20.0	4.0		
116-82416-642	642:1				24	3.9	0.2	3.1	1593	0.4	2124*	2.9	0.5	5.7 [145]	6.1 [155]
116-82432-642						5.8	0.3	5.7	1593	0.4	2124*	5.6	0.5		
116-82448-642						8	0.4	6.2	1593	0.8	2124*	5.6	1.0		

For Integral Leads, Replace 116-8 with 116-6.

For Encoder, Add C, D, or M to end of part number. (C=100 CPR, D=500 & M=1000)



# Series 116-8

## 1.6" DC Planetary Gear Motor (Metal)

Continued

116-8

1.6" DC Planetary Gear Motor (Metal)

CHARACTERISTICS				
Stages	1 Stage	2 Stages	3 Stages	4 Stages
Max Torque	35.4 inlb	106.2 inlb	221 inlb	221 inlb
GB Eff	80%	75%	70%	65%
Max Backlash	0.70 Deg	0.75 Deg	0.80 Deg	0.85 Deg
Max Radial Load	45 lbf	72 lbf	101 lbf	112 lbf
Max Axial Load	13.5 lbf	22.5 lbf	33.7 lbf	45 lbf
GB Weight	0.88 lb	2 lb	2.43 lb	2.87 lb

AVAILABLE RATIOS															
1 Stage		2 Stages				3 Stages				4 Stages					
Spur		Helical		Spur		Helical		Spur		Helical		Spur		Helical	
3:1	(3.70)	4:1	(3.65)	14:1	(13.73)	14:1	(13.53)	51:1	(50.89)	50:1	(50.16)	189:1	(188.61)	186:1	(185.88)
4:1	(4.28)	5:1	(4.59)	16:1	(15.88)	16:1	(15.65)	59:1	(58.85)	58:1	(58.01)	218:1	(218.12)	215:1	(214.96)
5:1	(5.18)	5:1	(5.36)	18:1	(18.36)	18:1	(17.01)	68:1	(68.06)	67:1	(67.08)	252:1	(252.24)	249:1	(248.59)
7:1	(6.75)	7:1	(6.55)	19:1	(19.20)	19:1	(18.92)	71:1	(71.16)	70:1	(70.13)	264:1	(263.72)	260:1	(259.91)
		9:1	(8.63)	22:1	(22.20)	22:1	(22.96)	79:1	(78.71)	81:1	(81.11)	292:1	(291.71)	287:1	(287.49)
				25:1	(25.01)	25:1	(24.65)	93:1	(92.70)	91:1	(91.36)	305:1	(304.99)	301:1	(300.57)
				27:1	(26.85)	27:1	(27.76)	95:1	(95.17)	98:1	(98.07)	337:1	(337.35)	339:1	(338.56)
				29:1	(28.93)	29:1	(28.05)	100:1	(99.50)	101:1	(101.89)	344:1	(343.54)	348:1	(347.60)
				35:1	(34.97)	35:1	(33.92)	107:1	(107.20)	106:1	(105.65)	353:1	(352.71)	361:1	(361.17)
				46:1	(45.56)	46:1	(44.69)	115:1	(115.07)	115:1	(114.77)	369:1	(368.76)	365:1	(364.66)
						58:1	(58.22)	124:1	(123.97)	123:1	(123.20)	397:1	(397.29)	392:1	(391.53)
								130:1	(129.62)	128:1	(127.74)	408:1	(407.89)	420:1	(420.28)
								139:1	(139.13)	137:1	(136.99)	426:1	(426.46)	425:1	(425.34)
								150:1	(149.90)	145:1	(145.36)	459:1	(459.45)	457:1	(456.56)
								169:1	(168.84)	166:1	(166.40)	480:1	(480.36)	473:1	(473.40)
								181:1	(181.24)	176:1	(175.75)	493:1	(493.18)	492:1	(491.89)
								195:1	(195.26)	192:1	(191.54)	516:1	(515.62)	515:1	(515.24)
								236:1	(236.09)	232:1	(231.59)	531:1	(531.34)	533:1	(533.08)
								308:1	(307.54)	302:1	(301.68)	556:1	(555.52)	547:1	(547.47)
										393:1	(392.98)	596:1	(596.30)	595:1	(594.73)
												626:1	(625.73)	623:1	(622.97)
												642:1	(642.42)	638:1	(638.40)
												672:1	(671.67)	679:1	(678.94)
												721:1	(720.98)	713:1	(713.15)
												724:1	(723.63)	745:1	(745.38)
												777:1	(776.76)	775:1	(774.72)
												837:1	(836.86)	832:1	(831.60)
												875:1	(874.94)	862:1	(862.27)
												939:1	(939.18)	925:1	(924.65)
												1012:1	(1011.84)	1046:1	(1046.08)
												1140:1	(1139.73)	1123:1	(1123.21)
												1223:1	(1223.41)	1200:1	(1200.07)
												1318:1	(1318.05)	1393:1	(1292.91)
												1594:1	(1593.65)	1563:1	(1563.24)
												2076:1	(2075.94)	2036:1	(2036.33)
														2653:1	(2652.59)

Note: Ratios in ( ) denote actual values.