

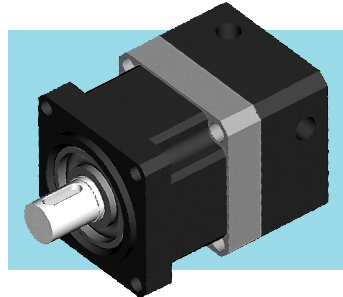
■ SINGLE & DOUBLE STAGE

FEATURES:

- True planetary system
- Gears heat-treated to HRC 50
- High torsional stiffness
- Readily mounts to most motors

SPECIFICATIONS:

Max. Input Speed: 4000 rpm
Shaft Loading: Radial: 375 N
 Axial: 1798 N @ 250 rpm output
Efficiency: Single Stage: 90%
 Double Stage: 85%
Max. Backlash: Single Stage: 8 arc min.
 Double Stage: 9 arc min.
Torsional Stiffness: 0.8 N • m/arc min.
Operating Temperature: -34°C to +121°C
Weight: Single Stage: 1 kg
 Double Stage: 1.2 kg



CATALOG NUMBER DESIGNATION:

S 9 1 6 0 T M

Ratio Code Sleeve Code
 A, B, C, D, E, F, G, H or I

Mounting Bracket Code
 1, 2 or 3

MATERIAL:

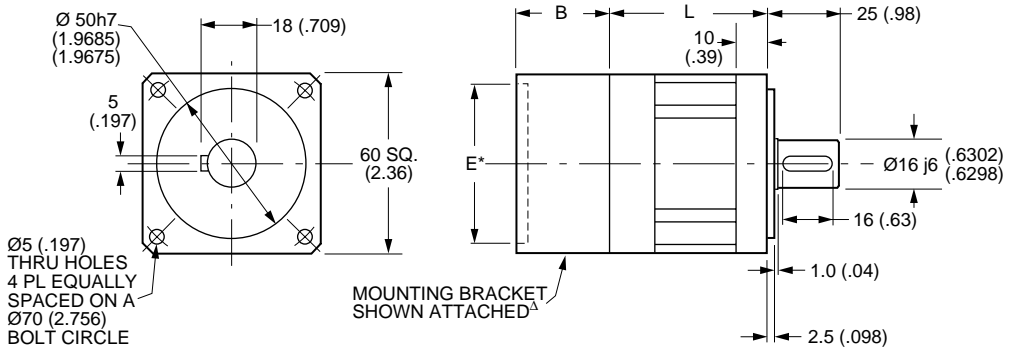
Housing: Anodized Aluminum
Gears: Steel, Heat-Treated
Bearings: Ball, Sealed

Gear Ratio	Ratio Code	L mm (in.)	Maximum Rated Continuous Torque at 1000 rpm N • m (lb. in.)	Maximum Rated Continuous Torque at 4000 rpm N • m (lb. in.)	Maximum Momentary Torque N • m (lb. in.)	Inertia Reflected Back to Motor Shaft kg-cm ² (lb. in. sec x 10 ⁻⁴)
3:1	003	53 (2.09)	12 (106)	8 (71)	52 (460)	0.52 (4.6)
5:1	005	Single	14 (124)	9 (80)	46 (407)	0.46 (4.1)
10:1	010	Stage	14 (124)	10 (89)	45 (398)	0.44 (3.9)
15:1	015	70 (2.76)	20 (177)	13 (115)	52 (460)	0.46 (4.1)
25:1	025		22 (195)	15 (133)		
30:1	030	Double	25 (221)	16 (142)	52 (460)	0.44 (3.9)
50:1	050	Stage	25 (221)	18 (159)	52 (460)	
100:1	100		19 (168)	16 (142)	51 (451)	

Continued on the next page

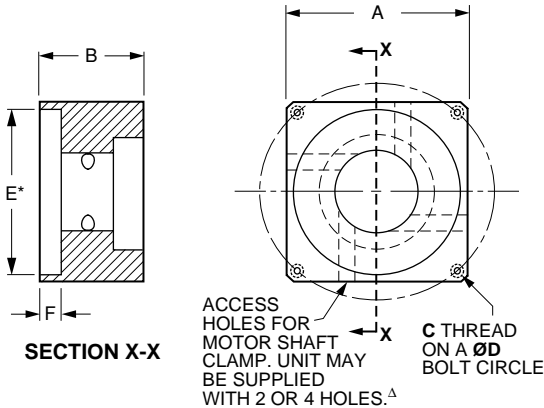
Dimensions in parentheses are in inches.

■ **SINGLE & DOUBLE STAGE**



$\varnothing 5$ (.197)
THRU HOLES
4 PL EQUALLY
SPACED ON A
 $\varnothing 70$ (2.756)
BOLT CIRCLE

MOUNTING BRACKET
SHOWN ATTACHED^A



SECTION Y-Y

BORE

Mounting Bracket							Motor Shaft Length (max-min)
Code	A	B	C	D	E*	F	
1	61 (2.4)	31 (1.22)	M4	67 (2.625)	50.4 (1.984)	3.8 (.15)	32.5 - 16.5 (1.28 - 0.65)
2	61 (2.4)	31 (1.22)	M4	70 (2.756)	50.4 (1.984)	3.8 (.15)	32.5 - 16.5 (1.28 - 0.65)
3	89.9 (3.54)	37.3 (1.47)	M6	100 (3.937)	80.4 (3.165)	3.8 (.15)	38.9 - 22.9 (1.53 - 0.9)

Motor Shaft Sleeve Code	
Code	Bore
A	.250"
B	.3125"
C	.375"
D	.500"
E	8
F	9
G	10
H	11
I	14

*Pilot diameter is a clearance diameter and should not be used to center the gearhead.

The projections shown are per ISO convention.

Dimensions in parentheses are in inches.

^ASEE TECHNICAL PAGE 1-4 FOR ASSEMBLY DIRECTIONS.

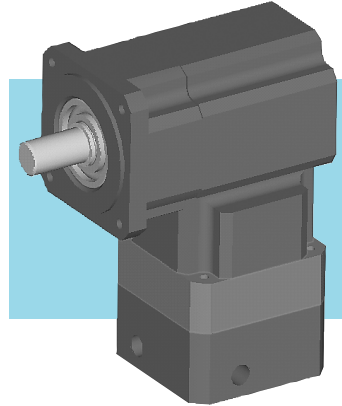
■ **SINGLE & DOUBLE STAGE**

FEATURES:

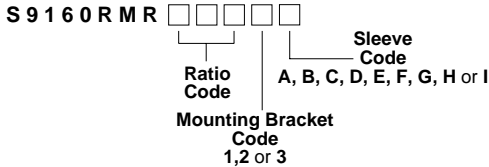
- True planetary system
- Gears heat-treated to HRC 50
- High torsional stiffness
- Readily mounts to most motors

SPECIFICATIONS:

Max. Input Speed: 5000 rpm
Shaft Loading: Radial: 375 N
 Axial: 1798 N @ 250 rpm output
Efficiency: Single Stage: 90%
 Double Stage: 85%
Max. Backlash: Single Stage: 9 arc min.
 Double Stage: 9 arc min.
Operating Temperature: -34°C to +121°C
Weight: Single Stage: 2.5 kg
 Double Stage: 2.7 kg



CATALOG NUMBER DESIGNATION:



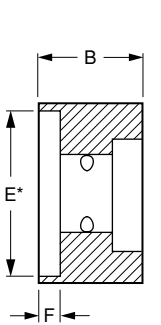
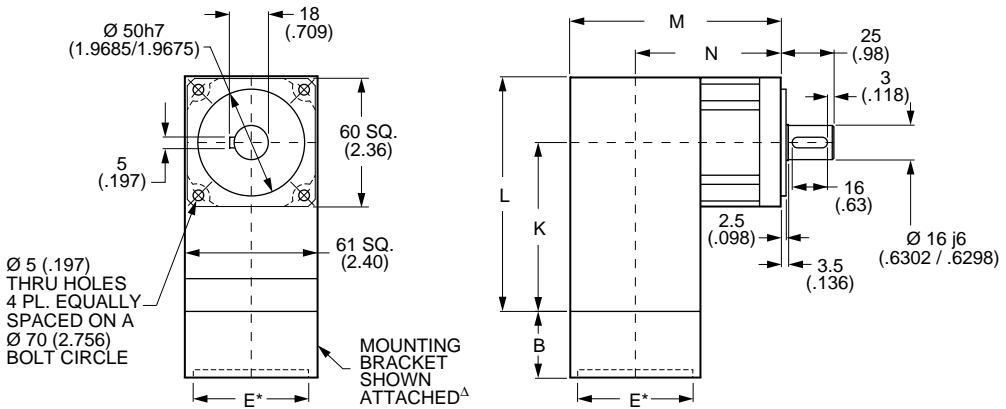
MATERIAL:

Housing: Anodized Aluminum
Gears: Steel, Heat-Treated
Bearings: Tapered Roller

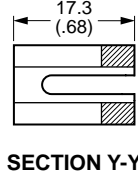
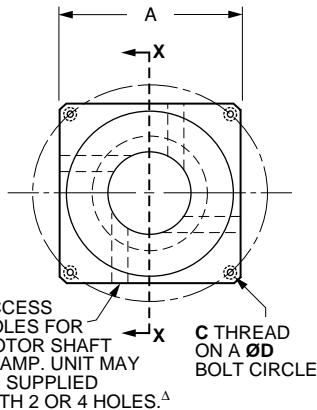
Gear Ratio	Ratio Code	L	K	M	N	Max. Rated Cont. Torque at 1000 rpm N • m (lb. in.)	Max. Rated Cont. Torque at 5000 rpm N • m (lb. in.)	Max. Momentary Torque N • m (lb. in.)	Inertia Reflected Back to Motor Shaft kg • cm ² (lb. in. sec. ² x 10 ⁻⁴)	Torsional Stiffness N • m / arc min. (lb. in. / arc min.)		
3:1	003	109.5 (4.31) <i>Single Stage</i>	79 (3.11) <i>Single Stage</i>	73	42.4	10	8	34	0.35	3.0		
				(2.87)	(1.67)	(88.5)	(70.8)	(300.9)	(3.10)	(26.55)		
5:1	005							14	9	0.42	2.3	
								(123.9)	(79.7)	(460.2)	(3.72)	(20.36)
10:1	010							17	10	0.41	2.3	
								(150.5)	(88.5)	(433.7)	(3.63)	(20.36)
15:1	015							19	12	0.32	2.3	
								(168.2)	(106.2)	(442.5)	(2.83)	(20.36)
25:1	025			98.5	68	22	14	51	0.32	2.3		
				(3.88)	(2.68)	(194.7)	(123.9)	(452.4)	(2.83)	(20.36)		
30:1	030					16	13	49	0.35	1.7		
						(141.6)	(115.1)	(433.7)	(3.10)	(15.05)		
50:1	050					17	14	49	0.32	1.7		
						(150.5)	(123.9)	(433.7)	(2.83)	(15.05)		
100:1	100	127 (5.00) <i>Double Stage</i>	96 (3.78) <i>Double Stage</i>			22	13	49	0.41	2.2		
						(194.7)	(115.1)	(433.7)	(3.63)	(19.47)		

Continued on the next page

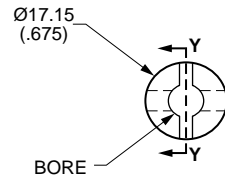
■ SINGLE & DOUBLE STAGE



SECTION X-X



SECTION Y-Y



BORE

Mounting Bracket							
Code	A	B	C	D	E*	F	Motor Shaft Length (max-min)
1	61 (2.4)	31 (1.22)	M4	67 (2.625)	50.4 (1.984)	3.8 (.15)	32.5 - 16.5 (1.28 - 0.65)
2	61 (2.4)	31 (1.22)	M4	70 (2.756)	50.4 (1.984)	3.8 (.15)	32.5 - 16.5 (1.28 - 0.65)
3	89.9 (3.54)	37.3 (1.47)	M6	100 (3.937)	80.4 (3.165)	3.8 (.15)	38.9 - 22.9 (1.53 - 0.9)

Motor Shaft Sleeve Code	
Code	Bore
A	.250"
B	.3125"
C	.375"
D	.500"
E	8
F	9
G	10
H	11
I	14

*Pilot diameter is a clearance diameter and should not be used to center the gearhead.

The projections shown are per ISO convention.

Dimensions in parentheses are in inches.

^ASEE TECHNICAL PAGE 1-4 FOR ASSEMBLY DIRECTIONS.

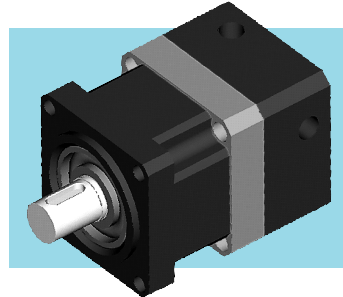
■ SINGLE & DOUBLE STAGE

FEATURES:

- True planetary system
- Gears heat-treated to HRC 50
- High torsional stiffness
- Readily mounts to most motors

SPECIFICATIONS:

Max. Input Speed: 4000 rpm
 Shaft Loading: Radial: 480 N
 Axial: 2635 N @ 250 rpm output
 Efficiency: Single Stage: 90%
 Double Stage: 85%
 Max. Backlash: Single Stage: 8 arc min.
 Double Stage: 9 arc min.
 Torsional Stiffness: 4 N • m/arc min.
 Operating Temperature: -34°C to +121°C
 Weight: Single Stage: 3 kg
 Double Stage: 3.7 kg



CATALOG NUMBER DESIGNATION:

S 9 1 9 0 T M □ □ □ □ □

Ratio Code: A, B, C, D, E or F

Mounting Bracket Code: 1, 2 or 3

Sleeve Code

MATERIAL:

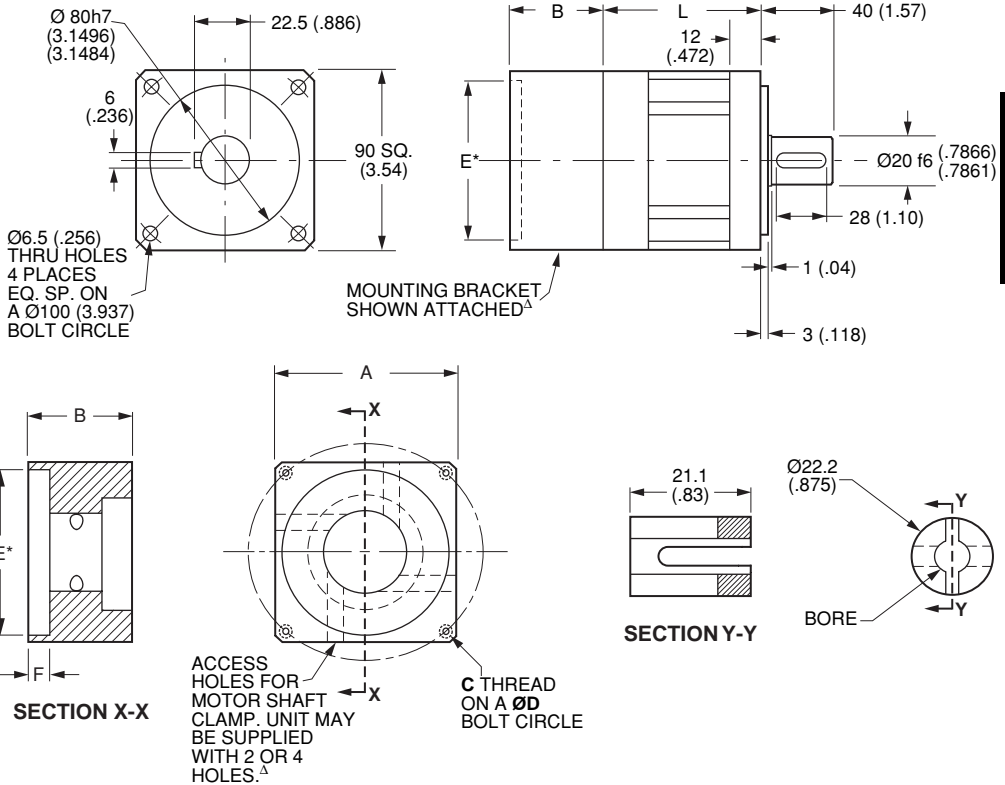
Housing: Anodized Aluminum
 Gears: Steel, Heat-Treated
 Bearings: Ball, Sealed

Gear Ratio	Ratio Code	L mm (in.)	Maximum Rated Continuous Torque at 1000 rpm N • m (lb. in.)	Maximum Rated Continuous Torque at 4000 rpm N • m (lb. in.)	Maximum Momentary Torque N • m (lb. in.)	Inertia Reflected Back to Motor Shaft kg-cm ² (lb. in. sec ² x 10 ³)
3:1	003	67 (2.64)	56 (496)	37 (327)	167 (1478)	2.22 (1.97)
5:1	005	Single Stage	62 (549)	41 (363)	157 (1390)	1.76 (1.56)
10:1	010	Single Stage	51 (451)	41 (363)	157 (1390)	1.63 (1.44)
15:1	015	90 (3.54)	86 (761)	60 (531)	167 (1478)	1.78 (1.58)
25:1	025		83 (735)	66 (584)		
30:1	030	Double Stage	95 (841)	74 (655)	167 (1478)	1.64 (1.45)
50:1	050	Double Stage	86 (761)	79 (699)		
100:1	100	Double Stage	69 (611)	58 (513)		

Continued on the next page

Dimensions in parentheses are in inches.

■ **SINGLE & DOUBLE STAGE**



Mounting Bracket							
Code	A	B	C	D	E*	F	Motor Shaft Length (max-min)
1	89.9 (3.54)	44.1 (1.735)	M5	98.3 (3.87)	80.4 (3.165)	5.1 (.2)	38.9 - 15.5 (1.53 - 0.61)
2	89.9 (3.54)	44.1 (1.735)	M6	100 (3.94)	80.4 (3.165)	5.1 (.2)	45.5 - 22.4 (1.79 - 0.88)
3	115.1 (4.53)	62.7 (2.47)	M8	145 (5.71)	110.4 (4.345)	14.7 (.58)	45.5 - 22.4 (1.79 - 0.88)

Motor Shaft Sleeve Code	
Code	Bore
A	.375"
B	.500"
C	.625"
D	14
E	16
F	19

*Pilot diameter is a clearance diameter and should not be used to center the gearhead.

The projections shown are per ISO convention

Dimensions in parentheses are in inches.

^ΔSEE TECHNICAL PAGE 1-4 FOR ASSEMBLY DIRECTIONS.

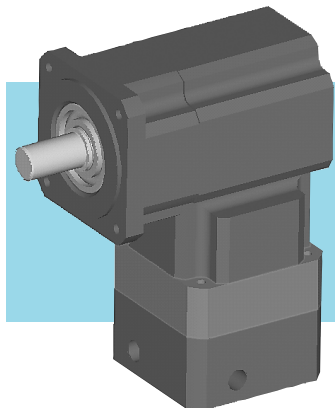
■ **SINGLE & DOUBLE STAGE**

FEATURES:

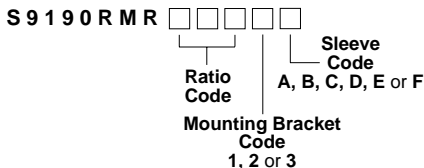
- True planetary system
- Gears heat-treated to HRC 50
- High torsional stiffness
- Readily mounts to most motors

SPECIFICATIONS:

Max. Input Speed: 5000 rpm
Shaft Loading: Radial: 480 N
 Axial: 2635 N @ 250 rpm output
Efficiency: Single Stage: 90%
 Double Stage: 85%
Max. Backlash: Single Stage: 9 arc min.
 Double Stage: 9 arc min.
Operating Temperature: -34°C to +121°C
Weight: Single Stage: 4.8 kg
 Double Stage: 5.5 kg



CATALOG NUMBER DESIGNATION:



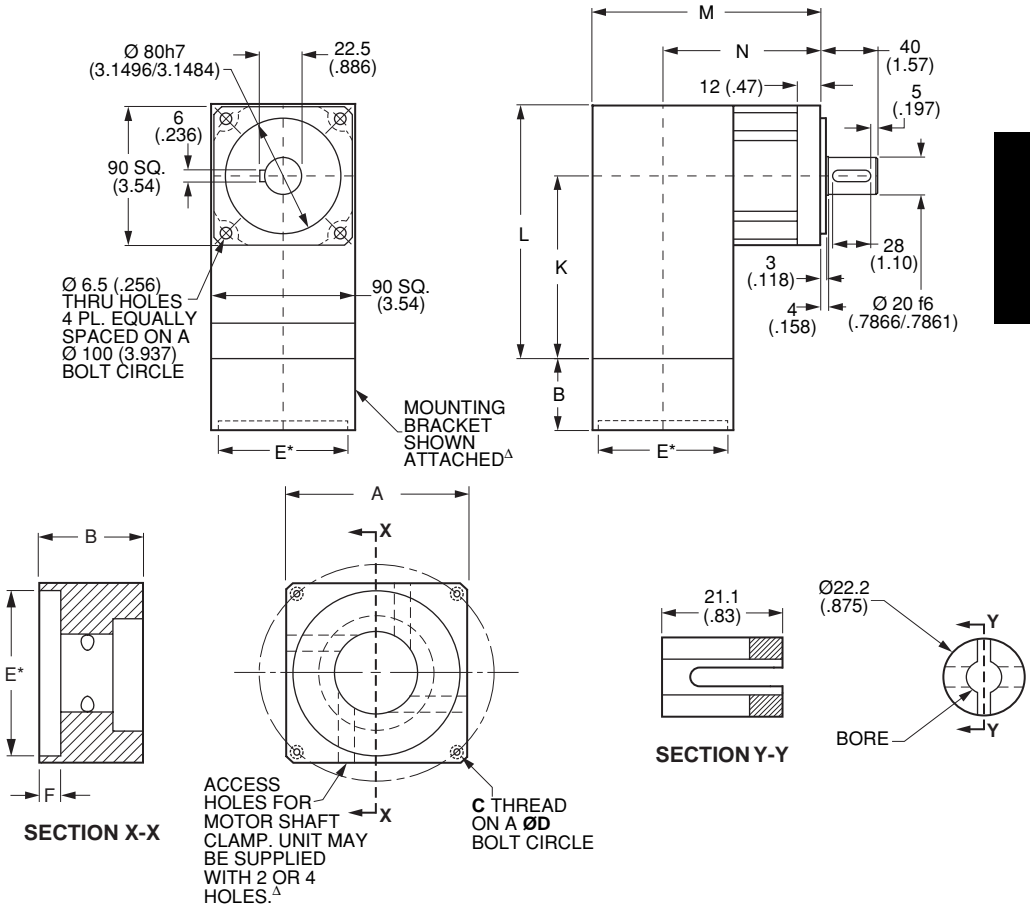
MATERIAL:

Housing: Anodized Aluminum
Gears: Steel, Heat-Treated
Bearings: Tapered Roller

Gear Ratio	Ratio Code	L	K	M	N	Max. Rated Cont. Torque at 1000 rpm N • m (lb. in.)	Max. Rated Cont. Torque at 5000 rpm N • m (lb. in.)	Max. Momentary Torque N • m (lb. in.)	Inertia Reflected Back to Motor Shaft kg • cm ² (lb. in. sec. ² x 10 ⁴)	Torsional Stiffness N • m / arc min. (lb. in. / arc min.)		
3:1	003	146 (5.75) <i>Single Stage</i>	101 (3.98) <i>Single Stage</i>	108 (4.24)	63 (2.47)	29 (256.6)	24 (212.4)	114 (1008.9)	1.37 (12.1)	7.3 (64.6)		
5:1	005			138 (5.44)	93 (3.67)	66 (584.1)	41 (362.9)	167 (1478)	1.64 (14.5)	7.8 (69.0)		
10:1	010					76 (672.6)	47 (416.0)		1.62 (14.3)	5.5 (48.7)		
15:1	015					80 (708.0)	53 (469.1)		1.26 (11.2)	5.5 (48.7)		
25:1	025					71 (628.4)	62 (548.7)		1.26 (11.2)	5.5 (48.7)		
30:1	030					59 (522.2)	47 (416.0)		1.38 (12.2)	4 (35.4)		
50:1	050					63 (557.6)	51 (451.4)		1.25 (11.1)	4 (35.4)		
100:1	100					169 (6.65) <i>Double Stage</i>	124 (4.88) <i>Double Stage</i>		100 (885.1)	61 (540.0)	1.62 (14.3)	5.4 (47.8)

Continued on the next page

■ **SINGLE & DOUBLE STAGE**



Mounting Bracket							Motor Shaft Length (max-min)
Code	A	B	C	D	E*	F	
1	89.9 (3.54)	44.1 (1.735)	M5	98.3 (3.87)	80.4 (3.165)	5.1 (.2)	38.9 - 15.5 (1.53 - 0.61)
2	89.9 (3.54)	44.1 (1.735)	M6	100 (3.94)	80.4 (3.165)	5.1 (.2)	45.5 - 22.4 (1.79 - 0.88)
3	115.1 (4.53)	62.7 (2.47)	M8	145 (5.71)	110.4 (4.345)	14.7 (.58)	45.5 - 22.4 (1.79 - 0.88)

Motor Shaft Sleeve Code	
Code	Bore
A	.375"
B	.500"
C	.625"
D	14
E	16
F	19

*Pilot diameter is a clearance diameter and should not be used to center the gearhead.

The projections shown are per ISO convention

Dimensions in parentheses are in inches.

^ΔSEE TECHNICAL PAGE 1-4 FOR ASSEMBLY DIRECTIONS.

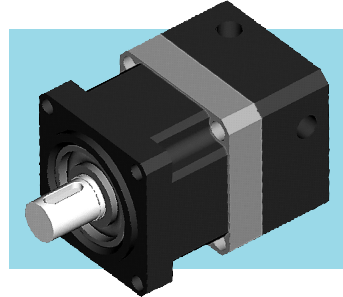
■ SINGLE & DOUBLE STAGE

FEATURES:

- True planetary system
- Gears heat-treated to HRC 50
- High torsional stiffness
- Readily mounts to most motors

SPECIFICATIONS:

Max. Input Speed: 4000 rpm
 Shaft Loading: Radial: 750 N
 Axial: 4793 N @ 250 rpm output
 Efficiency: Single Stage: 90%
 Double Stage: 85%
 Max. Backlash: Single Stage: 8 arc min.
 Double Stage: 9 arc min.
 Torsional Stiffness: 11.6 N • m/arc min.
 Operating Temperature: -34°C to +121°C
 Weight: Single Stage: 5.7 kg
 Double Stage: 7.3 kg



CATALOG NUMBER DESIGNATION:

S 9 1 B 5 T M □ □ □ □

Ratio Code Mounting Bracket Code

Sleeve Code
A, B, C, D, E, F or G

1, 2, 3 or 4

MATERIAL:

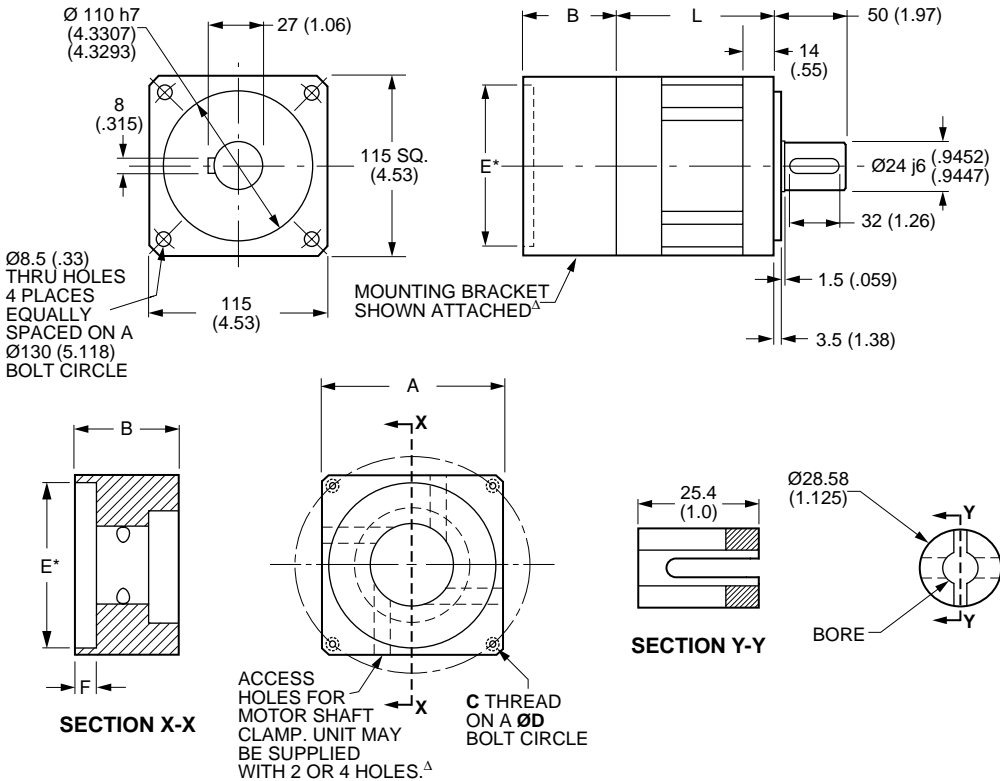
Housing: Anodized Aluminum
 Gears: Steel, Heat-Treated
 Bearings: Ball, Sealed

Gear Ratio	Ratio Code	L mm (in.)	Maximum Rated Continuous Torque at 1000 rpm N • m (lb. in.)	Maximum Rated Continuous Torque at 4000 rpm N • m (lb. in.)	Maximum Momentary Torque N • m (lb. in.)	Inertia Reflected Back to Motor Shaft kg-cm ² (lb. in. sec ² x 10 ³)
3:1	003	88 (3.46)	86 (761)	46 (407)		4.39 (3.88)
5:1	005	<i>Single</i>	94 (832)	62 (549)	284 (2514)	2.88 (2.55)
10:1	010	<i>Stage</i>	83 (735)	66 (584)		2.47 (2.19)
15:1	015	119 (4.69)	139 (1230)	91 (805)	284 (2514)	2.95 (2.61)
25:1	025		153 (1354)	101 (894)		2.9 (2.57)
30:1	030	<i>Double</i>	171 (1513)	113 (1000)		2.48 (2.20)
50:1	050	<i>Stage</i>	170 (1505)	124 (1097)	284 (2514)	2.47 (2.19)
100:1	100		114 (1009)	95 (841)		2.47 (2.19)

Continued on the next page

Dimensions in parentheses are in inches.

■ SINGLE & DOUBLE STAGE



Mounting Bracket							
Code	A	B	C	D	E*	F	Motor Shaft Length (max-min)
1	115.1 (4.53)	48.9 (1.925)	M6	126 (4.96)	80.4 (3.165)	6.4 (.25)	53.8 - 25.1 (2.12 - 0.99)
2	115.1 (4.53)	48.9 (1.925)	M6	100 (3.94)	80.4 (3.165)	6.4 (.25)	53.8 - 25.1 (2.12 - 0.99)
3	125 (4.92)	59.9 (2.36)	M8	145 (5.71)	110.4 (4.345)	14.7 (.58)	65.0 - 36.0 (2.56 - 1.42)
4	142 (5.59)	59.9 (2.36)	M10	165 (6.50)	130.4 (5.134)	14.7 (.58)	65.0 - 36.0 (2.56 - 1.42)

Motor Shaft Sleeve Code	
Code	Bore
A	.625"
B	1.000"
C	14
D	16
E	19
F	22
G	24

*Pilot diameter is a clearance diameter and should not be used to center the gearhead.

The projections shown are per ISO convention.

Dimensions in parentheses are in inches.

^ASEE TECHNICAL PAGE 1-4 FOR ASSEMBLY DIRECTIONS.

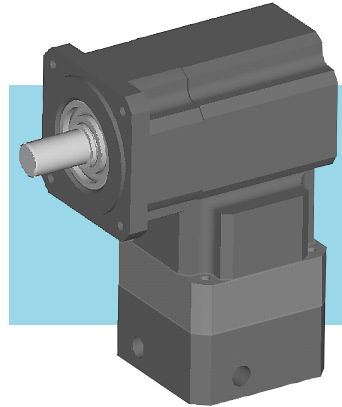
■ **SINGLE & DOUBLE STAGE**

FEATURES:

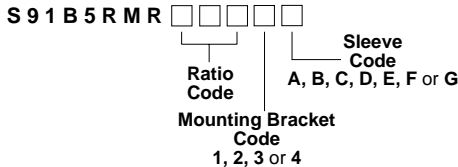
- True planetary system
- Gears heat-treated to HRC 50
- High torsional stiffness
- Readily mounts to most motors

SPECIFICATIONS:

Max. Input Speed: 5000 rpm
Shaft Loading: Radial: 750 N
 Axial: 4793 N @ 250 rpm output
Efficiency: Single Stage: 90%
 Double Stage: 85%
Max. Backlash: Single Stage: 9 arc min.
 Double Stage: 9 arc min.
Operating Temperature: -34°C to +121°C
Weight: Single Stage: 11 kg
 Double Stage: 12 kg



CATALOG NUMBER DESIGNATION:



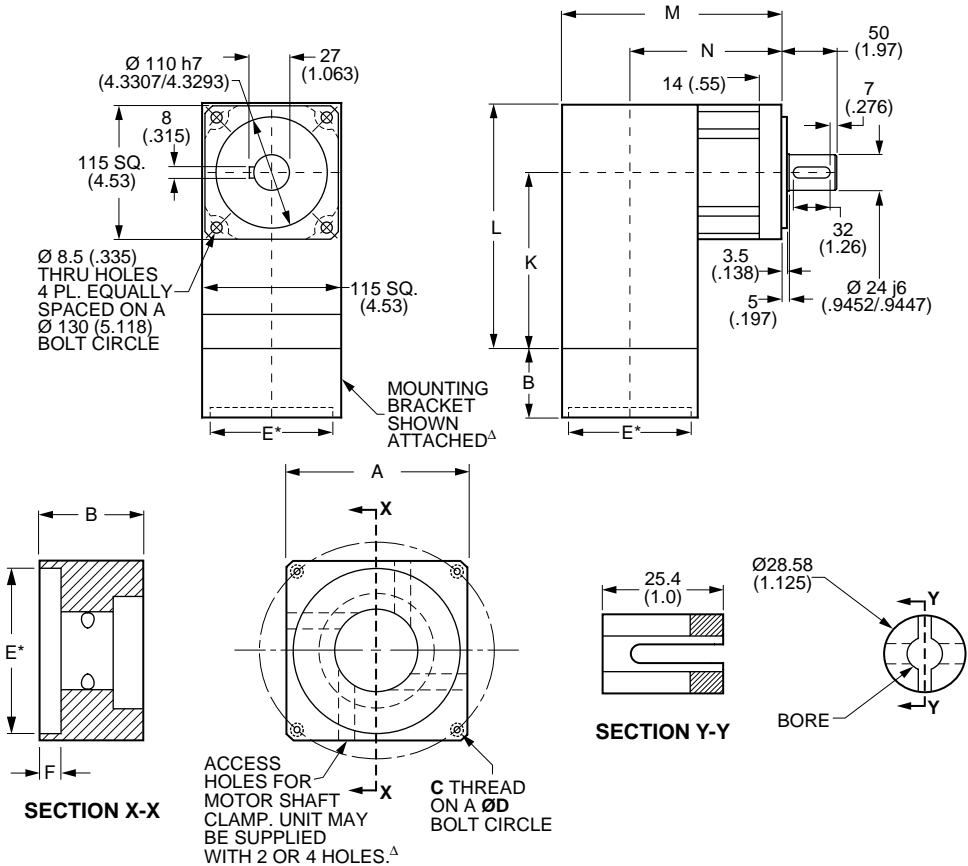
MATERIAL:

Housing: Anodized Aluminum
Gears: Steel, Heat-Treated
Bearings: Tapered Roller

Gear Ratio	Ratio Code	L	K	M	N	Max. Rated Cont. Torque at 1000 rpm N • m (lb. in.)	Max. Rated Cont. Torque at 5000 rpm N • m (lb. in.)	Max. Momentary Torque N • m (lb. in.)	Inertia Reflected Back to Motor Shaft kg • cm ² (lb. in. sec. ² x 10 ⁻⁴)	Torsional Stiffness N • m / arc min. (lb. in. / arc min.)
3:1	003	195 (7.68) <i>Single Stage</i>	137 (5.39) <i>Single Stage</i>	1.34 (5.28)	77 (3.02)	80 (708)	66 (584.1)	256 (2265.6)	2.33 (20.6)	14.2 (125.6)
5:1	005			100 (885)	61 (539.9)	284 (2513.4)	2.79 (24.7)	15.3 (135.4)		
10:1	010			116 (1026.6)	72 (637.2)		2.75 (24.3)	13.1 (115.9)		
15:1	015			131 (1159.4)	81 (716.9)	2.14 (18.9)	12.7 (112.4)			
25:1	025			153 (1354.1)	94 (831.9)	174 (6.85)	116 (4.58)	2.14 (18.9)	13.2 (116.8)	
30:1	030			97 (858.5)	77 (681.5)	2.34 (20.7)	11.5 (101.8)			
50:1	050			104 (920.4)	83 (734.6)	2.13 (18.9)	11.5 (101.8)			
100:1	100			151 (1336.4)	93 (823.1)	226 (8.9) <i>Double Stage</i>	168.4 (6.63) <i>Double Stage</i>	2.75 (24.3)	13.0 (115.1)	

Continued on the next page

■ SINGLE & DOUBLE STAGE



Mounting Bracket							
Code	A	B	C	D	E*	F	Motor Shaft Length (max-min)
1	115.1 (4.53)	48.9 (1.925)	M6	126 (4.96)	80.4 (3.165)	6.4 (.25)	53.8 - 25.1 (2.12 - 0.99)
2	115.1 (4.53)	48.9 (1.925)	M6	100 (3.94)	80.4 (3.165)	6.4 (.25)	53.8 - 25.1 (2.12 - 0.99)
3	125 (4.92)	59.9 (2.36)	M8	145 (5.71)	110.4 (4.345)	14.7 (.58)	65.0 - 36.0 (2.56 - 1.42)
4	142 (5.59)	59.9 (2.36)	M10	165 (6.50)	130.4 (5.134)	14.7 (.58)	65.0 - 36.0 (2.56 - 1.42)

Motor Shaft Sleeve Code	
Code	Bore
A	.625"
B	1.000"
C	14
D	16
E	19
F	22
G	24

*Pilot diameter is a clearance diameter and should not be used to center the gearhead.

The projections shown are per ISO convention.

Dimensions in parentheses are in inches.

^ΔSEE TECHNICAL PAGE 1-4 FOR ASSEMBLY DIRECTIONS.