

ASSEMBLIES

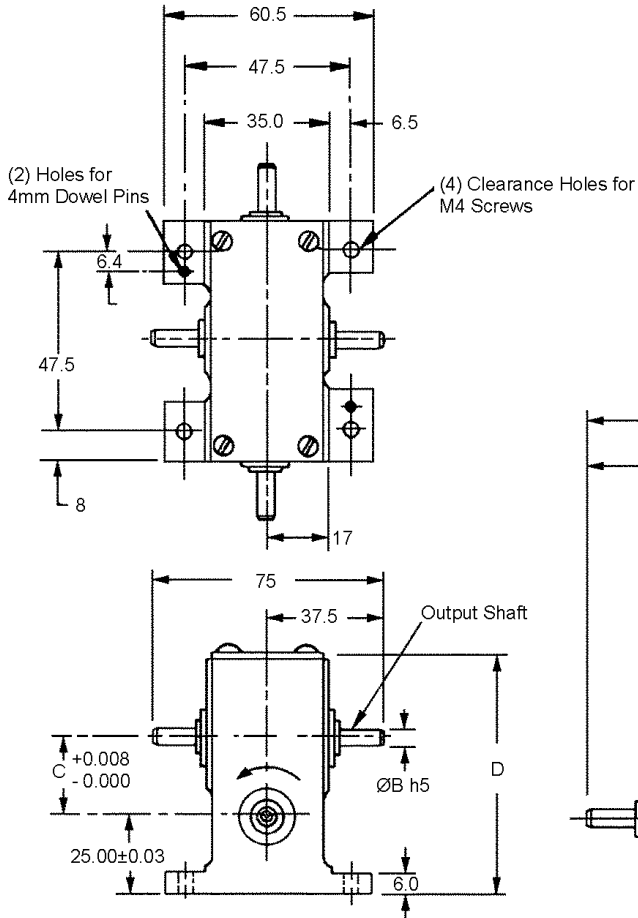
Table of Contents

| | | |
|-------------------------------------------------|------------------------|--|
| GEARBOXES - WORM WHEEL AND HELICAL GEARS | | |
| TECHNICAL DATA - SPEED REDUCERS | MC 2 | |
| WORM & WORM WHEEL GEAR BOXES | | |
| SHAFT SIZE - 3MM,4MM AND 6MM | MC3 - MC 4 | |
| HELICAL GEAR BOXES | MC 5 | |
| MINIATURE MITER GEARBOX | MC 6, MC 8, MC9 | |
| BEVEL GEARBOX | MC 7, MC10 | |
| SERVO GEARBOX | | |
| SHAFT SIZE -3MM | MC 11 | |
| SHAFT SIZE - 4MM | MC 12 | |
| SHAFT SIZE - 6MM" | MC 13 | |
| SPEED REDUCER | | |
| SHAFT SIZE - 3MM | MC 14 | |
| SHAFT SIZE - 6MM | MC 15 | |
| PRECISION PLANETARY GEAR HEADS | | |
| SHAFT SIZE -16MM, 20MM AND 24MM | MC 16 | |
| INTERMITTENT MOTION ASSEMBLY | | |
| SHAFT SIZE - 6MM | MC 17 | |
| GENEVA MECHANISM | | |
| SHAFT SIZE - 6MM AND 7MM | MC 18 | |
| CAM FOLLOWERS | MC 19 | |
| ROLLER BEARING CAM FOLLOWER | MC 20 | |
| RATCHETS AND PAWLS | MC 21 | |

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GEARBOXES - WORM WHEEL AND HELICAL GEARS

TECHNICAL INFORMATION PRECISION SPEED REDUCERS 3mm, 4mm and 6mm Shafts



Materials

| | |
|-----------------------|--------------------------|
| Housing | Cast Aluminum (Anodized) |
| Worm Wheel | Bronze |
| Worm | Stainless Steel |
| Helical Gear | Aluminum |
| Helical Pinion | Stainless Steel |

| | |
|------------------------|---------------------------|
| Bearings | Stainless Steel or Bronze |
| Shafts | Stainless Steel |
| Lubrication | Grease |
| Housing Cover | Aluminum |
| All other parts | Stainless Steel |

Backlash @ Output Shaft

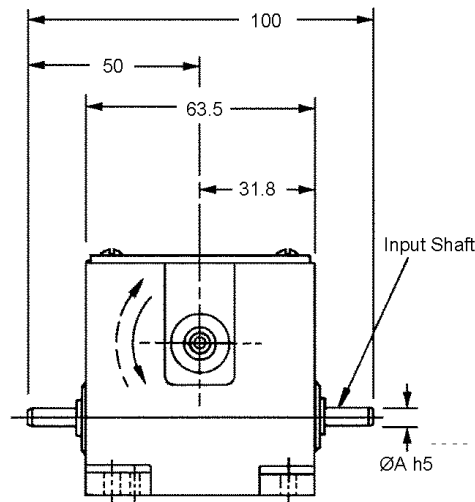
| | |
|----------------------------|-----------------|
| Ball Bearing Unit | 20 Minutes Max. |
| Bronze Bearing Unit | 30 Minutes Max. |

Maximum Output

| | |
|------------------|-----------|
| 3mm Shaft Series | - 177N•cm |
| 4mm Shaft Series | - 247N•cm |
| 6mm Shaft Series | - 353N•cm |

Maximum Input Speed

2000 RPM



Worm and Wheel units can only be driven from input shaft and will only operate as a Speed Reducer.
Helical Gear units can be driven from input shaft as a Speed Reducer or from output shaft as a Speed Increaser.
Other ratios available on request.
Anti-Backlash unit available on request.



WORM & WHEEL GEAR BOXES

| SHAFT SIZE | TYPE |
|---------------------------|-------------------------------------------|
| ØA= 3MM ØB= 3MM | BALL BEARING OR BRONZE BEARING |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|--------------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| WX64B2-1M | WX64P2-1M | WORM & WHEEL | 3.00 | 3.00 | 15:1 | 18.263 | 59 | 79 |
| WX64B2-2M | WX64P2-2M | | | | 20:1 | 22.233 | 66 | 112 |
| WX64B2-3M | WX64P2-3M | | | | 25:1 | 26.200 | 75 | 135 |
| WX64B2-4M | WX64P2-4M | | | | 30:1 | 30.170 | 82 | 169 |
| WX64B2-5M | WX64P2-5M | | | | 30:1 | 18.263 | 59 | 101 |
| WX64B2-6M | WX64P2-6M | | | | 40:1 | 22.233 | 66 | 135 |
| WX64B2-7M | WX64P2-7M | | | | 50:1 | 26.200 | 75 | 169 |
| WX64B2-8M | WX64P2-8M | | | | 60:1 | 30.170 | 72 | 203 |
| WX64B2-9M | WX64P2-9M | | | | 60:1 | 18.263 | 59 | 101 |
| WX64B2-10M | WX64P2-10M | | | | 80:1 | 22.233 | 66 | 135 |
| WX64B2-11M | WX64P2-11M | | | | 100:1 | 26.200 | 75 | 169 |
| WX64B2-12M | WX64P2-12M | | | | 120:1 | 30.170 | 82 | 203 |

C

| SHAFT SIZE | TYPE |
|---------------------------|-------------------------------------------|
| ØA= 4MM ØB= 4MM | BALL BEARING OR BRONZE BEARING |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|--------------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| WX64B3-1M | WX64P3-1M | WORM & WHEEL | 4.00 | 4.00 | 15:1 | 18.263 | 59 | 79 |
| WX64B3-2M | WX64P3-2M | | | | 20:1 | 22.233 | 66 | 112 |
| WX64B3-3M | WX64P3-3M | | | | 25:1 | 26.200 | 75 | 135 |
| WX64B3-4M | WX64P3-4M | | | | 30:1 | 30.170 | 82 | 169 |
| WX64B3-5M | WX64P3-5M | | | | 30:1 | 18.263 | 59 | 101 |
| WX64B3-6M | WX64P3-6M | | | | 40:1 | 22.233 | 66 | 135 |
| WX64B3-7M | WX64P3-7M | | | | 50:1 | 26.200 | 75 | 169 |
| WX64B3-8M | WX64P3-8M | | | | 60:1 | 30.170 | 72 | 203 |
| WX64B3-9M | WX64P3-9M | | | | 60:1 | 18.263 | 59 | 101 |
| WX64B3-10M | WX64P3-10M | | | | 80:1 | 22.233 | 66 | 135 |
| WX64B3-11M | WX64P3-11M | | | | 100:1 | 26.200 | 75 | 169 |
| WX64B3-12M | WX64P3-12M | | | | 120:1 | 30.170 | 82 | 203 |

| SHAFT SIZE | TYPE |
|---------------------------|-------------------------------------------|
| ØA= 6MM ØB= 6MM | BALL BEARING OR BRONZE BEARING |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|--------------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| WX64B4-1M | WX64P4-1M | WORM & WHEEL | 6.00 | 6.00 | 15:1 | 18.263 | 59 | 79 |
| WX64B4-2M | WX64P4-2M | | | | 20:1 | 22.233 | 66 | 112 |
| WX64B4-3M | WX64P4-3M | | | | 25:1 | 26.200 | 75 | 135 |
| WX64B4-4M | WX64P4-4M | | | | 30:1 | 30.170 | 82 | 169 |
| WX64B4-5M | WX64P4-5M | | | | 30:1 | 18.263 | 59 | 101 |
| WX64B4-6M | WX64P4-6M | | | | 40:1 | 22.233 | 66 | 135 |
| WX64B4-7M | WX64P4-7M | | | | 50:1 | 26.200 | 75 | 169 |
| WX64B4-8M | WX64P4-8M | | | | 60:1 | 30.170 | 72 | 203 |
| WX64B4-9M | WX64P4-9M | | | | 60:1 | 18.263 | 59 | 101 |
| WX64B4-10M | WX64P4-10M | | | | 80:1 | 22.233 | 66 | 135 |
| WX64B4-11M | WX64P4-11M | | | | 100:1 | 26.200 | 75 | 169 |
| WX64B4-12M | WX64P4-12M | | | | 120:1 | 30.170 | 82 | 203 |

WORM & WHEEL GEAR BOXES

| SHAFT SIZE | TYPE |
|---------------------------|-------------------------------------------|
| ØA= 3MM ØB= 3MM | BALL BEARING OR BRONZE BEARING |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|--------------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| WX48B2-1M | WX48P2-1M | WORM & WHEEL | 3.00 | 3.00 | 12.5:1 | 17.470 | 59 | 101 |
| WX48B2-2M | WX48P2-2M | | | | 15:1 | 20.117 | 64 | 124 |
| WX48B2-3M | WX48P2-3M | | | | 20:1 | 25.408 | 75 | 164 |
| WX48B2-4M | WX48P2-4M | | | | 22.5:1 | 28.054 | 80 | 192 |
| WX48B2-5M | WX48P2-5M | | | | 25:1 | 17.470 | 59 | 124 |
| WX48B2-6M | WX48P2-6M | | | | 30:1 | 20.117 | 64 | 146 |
| WX48B2-7M | WX48P2-7M | | | | 40:1 | 25.408 | 75 | 203 |
| WX48B2-8M | WX48P2-8M | | | | 45:1 | 28.054 | 80 | 225 |
| WX48B2-9M | WX48P2-9M | | | | 50:1 | 17.470 | 59 | 124 |
| WX48B2-10M | WX48P2-10M | | | | 60:1 | 20.117 | 64 | 146 |
| WX48B2-11M | WX48P2-11M | | | | 80:1 | 25.408 | 75 | 203 |
| WX48B2-12M | WX48P2-12M | | | | 90:1 | 28.054 | 80 | 225 |

| SHAFT SIZE | TYPE |
|---------------------------|-------------------------------------------|
| ØA= 4MM ØB= 4MM | BALL BEARING OR BRONZE BEARING |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|--------------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| WX48B3-1M | WX48P3-1M | WORM & WHEEL | 4.00 | 4.00 | 12.5:1 | 17.470 | 59 | 101 |
| WX48B3-2M | WX48P3-2M | | | | 15:1 | 20.117 | 64 | 124 |
| WX48B3-3M | WX48P3-3M | | | | 20:1 | 25.408 | 75 | 164 |
| WX48B3-4M | WX48P3-4M | | | | 22.5:1 | 28.054 | 80 | 192 |
| WX48B3-5M | WX48P3-5M | | | | 25:1 | 17.470 | 59 | 124 |
| WX48B3-6M | WX48P3-6M | | | | 30:1 | 20.117 | 64 | 146 |
| WX48B3-7M | WX48P3-7M | | | | 40:1 | 25.408 | 75 | 203 |
| WX48B3-8M | WX48P3-8M | | | | 45:1 | 28.054 | 80 | 225 |
| WX48B3-9M | WX48P3-9M | | | | 50:1 | 17.470 | 59 | 124 |
| WX48B3-10M | WX48P3-10M | | | | 60:1 | 20.117 | 64 | 146 |
| WX48B3-11M | WX48P3-11M | | | | 80:1 | 25.408 | 75 | 203 |
| WX48B3-12M | WX48P3-12M | | | | 90:1 | 28.054 | 80 | 225 |

| SHAFT SIZE | TYPE |
|---------------------------|-------------------------------------------|
| ØA= 6MM ØB= 6MM | BALL BEARING OR BRONZE BEARING |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|--------------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| WX48B4-1M | WX48P4-1M | WORM & WHEEL | 6.00 | 6.00 | 12.5:1 | 17.470 | 59 | 101 |
| WX48B4-2M | WX48P4-2M | | | | 15:1 | 20.117 | 64 | 124 |
| WX48B4-3M | WX48P4-3M | | | | 20:1 | 25.408 | 75 | 164 |
| WX48B4-4M | WX48P4-4M | | | | 22.5:1 | 28.054 | 80 | 192 |
| WX48B4-5M | WX48P4-5M | | | | 25:1 | 17.470 | 59 | 124 |
| WX48B4-6M | WX48P4-6M | | | | 30:1 | 20.117 | 64 | 146 |
| WX48B4-7M | WX48P4-7M | | | | 40:1 | 25.408 | 75 | 203 |
| WX48B4-8M | WX48P4-8M | | | | 45:1 | 28.054 | 80 | 225 |
| WX48B4-9M | WX48P4-9M | | | | 50:1 | 17.470 | 59 | 124 |
| WX48B4-10M | WX48P4-10M | | | | 60:1 | 20.117 | 64 | 146 |
| WX48B4-11M | WX48P4-11M | | | | 80:1 | 25.408 | 75 | 203 |
| WX48B4-12M | WX48P4-12M | | | | 90:1 | 28.054 | 80 | 225 |

HELICAL GEAR BOXES

| SHAFT SIZE | | | | TYPE | | | |
|----------------|--|----------------|--|---------------------------------------|--|--|--|
| ØA= 3MM | | ØB= 3MM | | BALL BEARING OR BRONZE BEARING | | | |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm) |
|----------------------------------|------------------------------------|-----------|------------|------|---------------|----------|----------|------------------------------|
| | | | ØA | ØB | | | | |
| HX64B2-1M | HX64P2-1M | HELICAL | 3.00 | 3.00 | 1:1 | 11.232 | 45 | 34 |
| HX64B2-2M | HX64P2-2M | | | | 2:1 | 16.845 | 56 | |
| HX64B2-3M | HX64P2-3M | | | | 3:1 | 22.456 | 68 | |
| HX64B2-4M | HX64P2-4M | | | | 4:1 | 28.070 | 79 | |

| SHAFT SIZE | | | | TYPE | | | |
|----------------|--|----------------|--|---------------------------------------|--|--|--|
| ØA= 4MM | | ØB= 4MM | | BALL BEARING OR BRONZE BEARING | | | |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm) |
|----------------------------------|------------------------------------|-----------|------------|------|---------------|----------|----------|------------------------------|
| | | | ØA | ØB | | | | |
| HX64B3-1M | HX64P3-1M | HELICAL | 4.00 | 4.00 | 1:1 | 11.232 | 45 | 51 |
| HX64B3-2M | HX64P3-2M | | | | 2:1 | 16.845 | 56 | |
| HX64B3-3M | HX64P3-3M | | | | 3:1 | 22.456 | 68 | |
| HX64B3-4M | HX64P3-4M | | | | 4:1 | 28.070 | 79 | |

| SHAFT SIZE | | | | UNITS | | | |
|----------------|--|----------------|--|---------------------------------------|--|--|--|
| ØA= 4MM | | ØB= 4MM | | BALL BEARING OR BRONZE BEARING | | | |

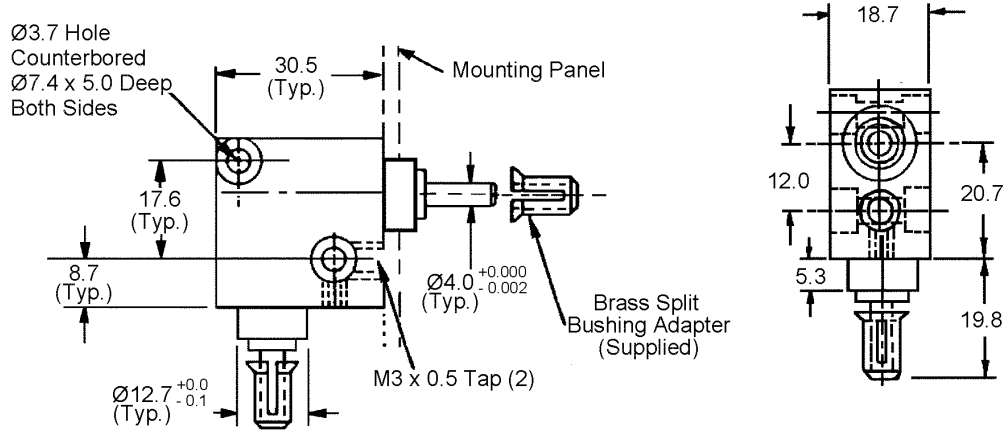
| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|-----------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| HX48B3-1M | HX48P3-1M | HELICAL | 4.00 | 4.00 | 1:1 | 14.973 | 51 | 51 |
| HX48B3-2M | HX48P3-2M | | | | 2:1 | 22.456 | 65 | |
| HX48B3-3M | HX48P3-3M | | | | 3:1 | 29.939 | 55 | |

| SHAFT SIZE | | | | UNITS | | | |
|----------------|--|----------------|--|---------------------------------------|--|--|--|
| ØA= 6MM | | ØB= 6MM | | BALL BEARING OR BRONZE BEARING | | | |

| BALL BEARINGS UNITS STOCK NO. | BRONZE BEARINGS UNITS STOCK NO. | UNIT TYPE | SHAFT SIZE | | NOMINAL RATIO | C CENTER | D HEIGHT | MAXIMUM OUTPUT TORQUE (N•cm.) |
|----------------------------------|------------------------------------|-----------|------------|------|---------------|----------|----------|-------------------------------|
| | | | ØA | ØB | | | | |
| HX48B4-1M | HX48P4-1M | HELICAL | 6.00 | 6.00 | 1:1 | 14.973 | 51 | 91 |
| HX48B4-2M | HX48P4-2M | | | | 2:1 | 22.456 | 65 | |
| HX48B4-3M | HX48P4-3M | | | | 3:1 | 29.939 | 55 | |

MINIATURE MITER GEARBOX

| SHAFT SIZE | TYPE |
|------------|----------------|
| 4MM | BRONZE BEARING |

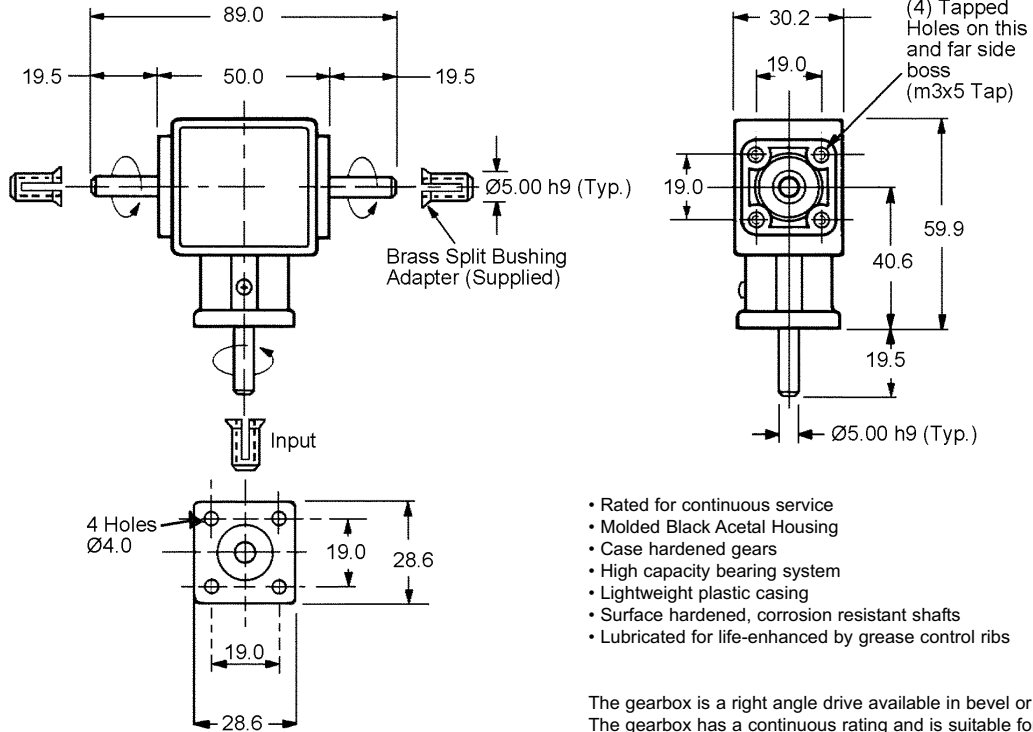


| STOCK NO. | GEAR MATERIAL | OPERATING TORQUE |
|-----------|----------------|------------------|
| MX-14M | HARDENED STEEL | 140N•cm |

- Ground and hardened steel shafts
- Sintered bronze bearing system
- Gearbox and bearings lubricated for life
- 1000 RPM Maximum

BEVEL GEARBOX

| SHAFT SIZE | RATIOS | TYPE |
|------------|-------------|----------------|
| 5MM | 1:1 and 1:2 | BRONZE BEARING |



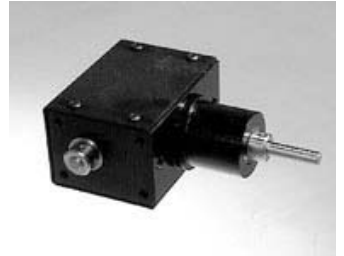
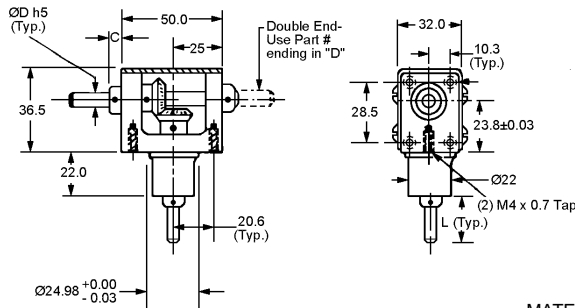
- Rated for continuous service
- Molded Black Acetal Housing
- Case hardened gears
- High capacity bearing system
- Lightweight plastic casing
- Surface hardened, corrosion resistant shafts
- Lubricated for life-enhanced by grease control ribs

The gearbox is a right angle drive available in bevel or miter gear versions. The gearbox has a continuous rating and is suitable for instrument and light duty drives. It is both economical and reliable.

| STOCK NO. | RATIO | RPM MAX. | OPERATING TORQUE | BACKLASH MAX. |
|-----------|-------|----------|------------------|---------------|
| MX-16M | 1:1 | 1500 | 30N•cm | 2° |
| MX-17M | 1:2 | 1500 | 65N•cm | 2° |

MITER GEARBOX

| SHAFT SIZE | RATIO | TYPE |
|------------|------------|---------------------------------------|
| 3MM | 1:1 | BALL BEARING OR BRONZE BEARING |

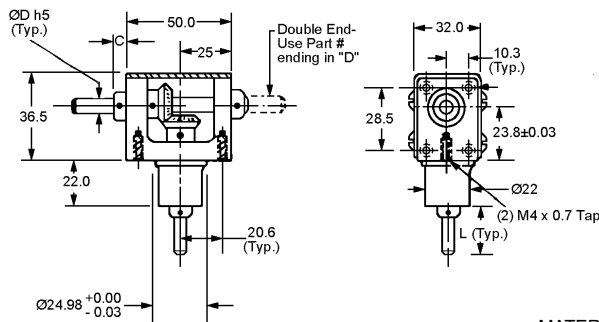


Consult Berg's Engineering Department for higher torque units.

| ABEC 7 BALL BEARING | OIL-LESS BRONZE BEARING UNIT | SHAFT ØD | C | L | SHAFT END STYLE | R.P.M. (MAX.) | TORQUE (MAX.) |
|---------------------|------------------------------|----------|------|------|-----------------|---------------|---------------|
| STOCK NO. | STOCK NO. | | | | | | |
| MX-101 | MX-101B | 2.993 | 4.76 | 18.0 | SINGLE | 1000 | 140N•cm |
| MX-101-D | MX-101B-D | | | | DOUBLE | | |

MATERIAL:
 Housing Aluminum
 Shafts and Hardware Stainless Steel
 Bearings Stainless Steel or Bronze
 Gears Stainless Steel and Aluminum
 Lubrication MIL. Spec. Oil and Grease

| SHAFT SIZE | RATIO | TYPE |
|------------|------------|---------------------------------------|
| 4MM | 1:1 | BALL BEARING OR BRONZE BEARING |

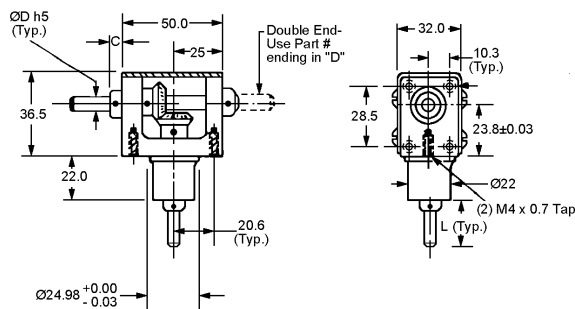


Consult Berg's Engineering Department for higher torque units.

| ABEC 7 BALL BEARING | OIL-LESS BRONZE BEARING UNIT | SHAFT ØD | C | L | SHAFT END STYLE | R.P.M. (MAX.) | TORQUE (MAX.) |
|---------------------|------------------------------|----------|------|------|-----------------|---------------|---------------|
| STOCK NO. | STOCK NO. | | | | | | |
| MX-102 | MX-102B | 3.993 | 5.59 | 22.0 | SINGLE | 2000 | 210N•cm |
| MX-102-D | MX-102B-D | | | | DOUBLE | | |

MATERIAL:
 Housing Aluminum
 Shafts and Hardware Stainless Steel
 Bearings Stainless Steel or Bronze
 Gears Stainless Steel and Aluminum
 Lubrication MIL. Spec. Oil and Grease

| SHAFT SIZE | RATIO | TYPE |
|------------|------------|---------------------------------------|
| 6MM | 1:1 | BALL BEARING OR BRONZE BEARING |



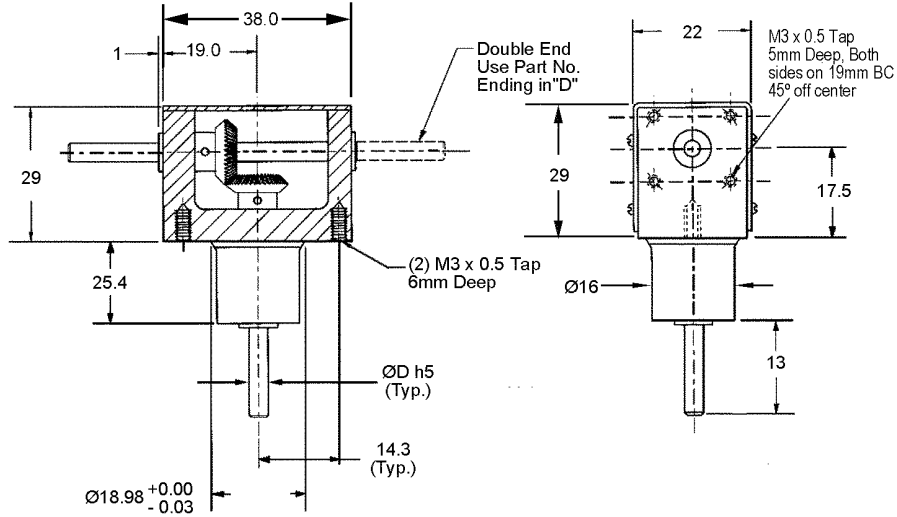
Consult Berg's Engineering Department for higher torque units.

| ABEC 7 BALL BEARING | OIL-LESS BRONZE BEARING UNIT | SHAFT ØD | C | L | SHAFT END STYLE | R.P.M. (MAX.) | TORQUE (MAX.) |
|---------------------|------------------------------|----------|------|------|-----------------|---------------|---------------|
| STOCK NO. | STOCK NO. | | | | | | |
| MX-103 | MX-103B | 5.993 | 6.35 | 26.0 | SINGLE | 2500 | 350N•cm |
| MX-103-D | MX-103B-D | | | | DOUBLE | | |

MATERIAL:
 Housing Aluminum
 Shafts and Hardware Stainless Steel
 Bearings Stainless Steel or Bronze
 Gears Stainless Steel and Aluminum
 Lubrication MIL. Spec. Oil and Grease

MINIATURE MITER GEARBOX

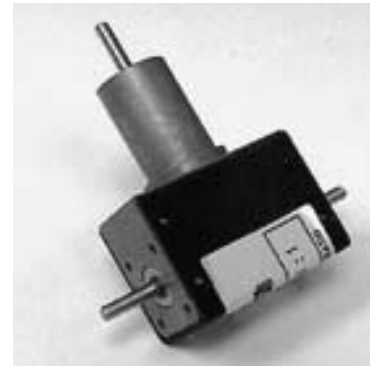
| SHAFT SIZE | RATIO | TYPE |
|------------|-------|--------------------------------|
| 3MM | 1:1 | BALL BEARING OR BRONZE BEARING |



MATERIAL:
 Housing Aluminum
 Shafts and Hardware Stainless Steel
 Bearings Stainless Steel or Bronze
 Gears Stainless Steel
 Lubrication Grease

| ABEC 7 BALL BEARING | OIL-LESS BRONZE BEARING UNIT | ØD | SHAFT END STYLE | R.P.M. (MAX.) | TORQUE (MAX.) |
|---------------------|------------------------------|------|-----------------|---------------|---------------|
| STOCK NO. | STOCK NO. | | | | |
| MX-4M | MX-4BM | 3.00 | SINGLE | 1000 | 70N•cm |
| MX-4M-D | MX-4BM-D | | DOUBLE | | |

Consult Berg's Engineering Department for higher torque units.
 Anti-Backlash units available on request.



C

BEVEL GEARBOX

| SHAFT SIZE | RATIO | TYPE |
|------------|------------------------|---------------------------------------|
| 3MM | FROM 1:1 TO 1:3 | BALL BEARING OR BRONZE BEARING |

| ABEC 7 BALL BEARING | OIL-LESS BRONZE BEARING UNIT | NOMINAL RATIO | ØD | B | C | E | F | G | H | A | RPM (MAX.) | STATIC TORQUE (MAX.) |
|-------------------------|------------------------------|-------------------|------|----|----|----|----|----|----------------|----|------------|----------------------|
| STOCK NO. | STOCK NO. | | | | | | | | | | | |
| MX-5M MX-6M MX-7M | MX-5BM MX-6BM MX-7BM | 1:1 1:2 1:3 | 3.00 | 70 | 48 | 41 | 48 | 21 | 37 43 49 | 25 | 1000 | 42N•cm |

- Maximum backlash 10 minutes
- Units can be driven in either direction from any shaft

MATERIAL:
 Housing Aluminum
Shafts and Hardware Stainless Steel
Bearings Stainless Steel or Bronze
Gears Stainless Steel and Aluminum
Lubrication Grease

| SHAFT SIZE | RATIO | TYPE |
|------------|------------------------|---------------------------------------|
| 4MM | FROM 1:1 TO 1:3 | BALL BEARING OR BRONZE BEARING |

| ABEC 7 BALL BEARING | OIL-LESS BRONZE BEARING UNIT | NOMINAL RATIO | ØD | B | C | E | F | G | H | A | RPM (MAX.) | STATIC TORQUE (MAX.) |
|--------------------------|------------------------------|-------------------|------|----|----|----|----|----|----------------|----|------------|----------------------|
| STOCK NO. | STOCK NO. | | | | | | | | | | | |
| MX-8M MX-9M MX-10M | MX-8BM MX-9BM MX-10BM | 1:1 1:2 1:3 | 4.00 | 70 | 48 | 41 | 48 | 21 | 37 43 49 | 25 | 2000 | 57N•cm |

- Maximum backlash 10 minutes
- Units can be driven in either direction from any shaft

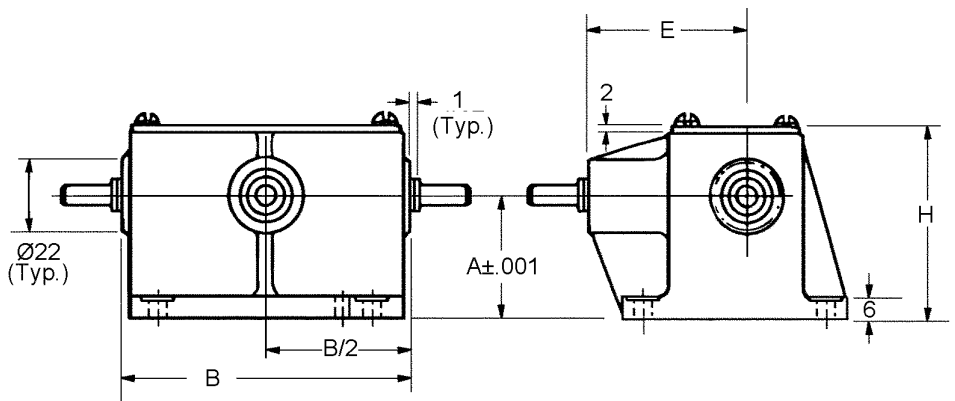
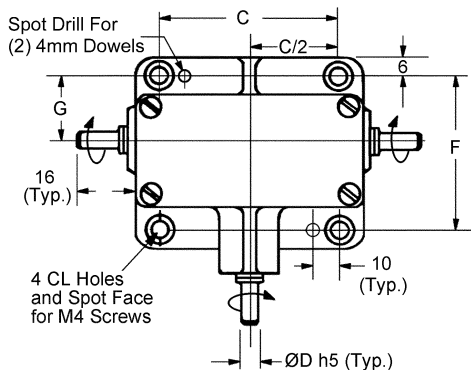
MATERIAL:
 Housing Aluminum
Shafts and Hardware Stainless Steel
Bearings Stainless Steel or Bronze
Gears Stainless Steel and Aluminum
Lubrication Grease

| SHAFT SIZE | RATIO | TYPE |
|------------|------------------------|---------------------------------------|
| 6MM | FROM 1:1 TO 1:3 | BALL BEARING OR BRONZE BEARING |

| ABEC 7 BALL BEARING | OIL-LESS BRONZE BEARING UNIT | NOMINAL RATIO | ØD | B | C | E | F | G | H | A | RPM (MAX.) | STATIC TORQUE (MAX.) |
|----------------------------|-------------------------------|-------------------|------|----|----|----|----|----|----------------|----|------------|----------------------|
| STOCK NO. | STOCK NO. | | | | | | | | | | | |
| MX-11M MX-12M MX-13M | MX-11BM MX-12BM MX-13BM | 1:1 1:2 1:3 | 6.00 | 89 | 67 | 51 | 57 | 24 | 51 59 65 | 38 | 2500 | 71N•cm |

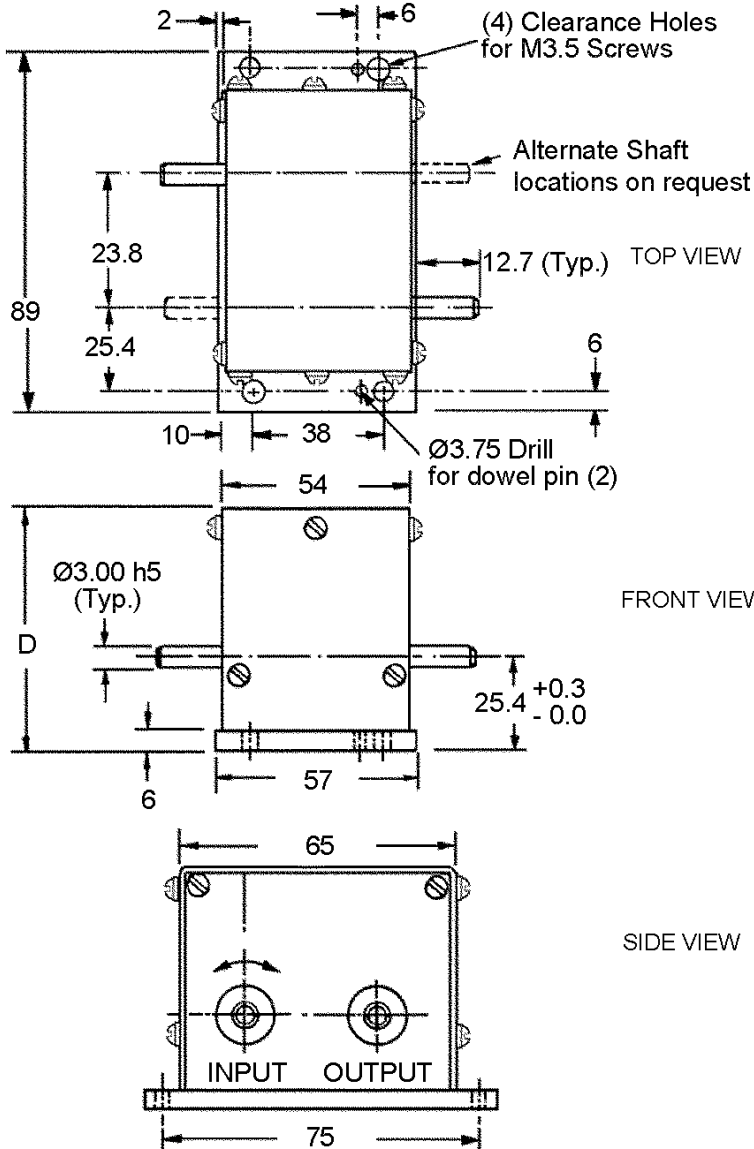
- Maximum backlash 10 minutes
- Units can be driven in either direction from any shaft

MATERIAL:
 Housing Aluminum
Shafts and Hardware Stainless Steel
Bearings Stainless Steel or Bronze
Gears Stainless Steel and Aluminum
Lubrication Grease



SERVO GEARBOX - PRECISION SPEED REDUCER

| SHAFT SIZE | TYPE |
|------------|--------------------------------|
| 3MM | BALL BEARING OR BRONZE BEARING |



Special units available on request.
 Anti-Backlash gear - Output End
 Slip Clutch included - Input End
 Contact Berg's Engineering Department for recommendations for use as a Speed Increaser.

• See instructions below to order alternate shaft locations.

| ABEC 7 BALL BEARINGS UNITS | BRONZE BEARINGS UNITS | NOMINAL RATIO | D HEIGHT | DIRECTION ROTATION |
|----------------------------|-----------------------|---------------|----------|--------------------|
| SX-B2-1M | SX-P2-1M | 2:1 | 63.5 | SAME |
| SX-B2-2M | SX-P2-2M | 3:1 | | |
| SX-B2-3M | SX-P2-3M | 4:1 | | |
| SX-B2-4M | SX-P2-4M | 5:1 | | |
| SX-B2-5M | SX-P2-5M | 6:1 | | |
| SX-B2-6M | SX-P2-6M | 7:1 | | |
| SX-B2-7M | SX-P2-7M | 8:1 | | |
| SX-B2-8M | SX-P2-8M | 9:1 | | |
| SX-B2-9M | SX-P2-9M | 10:1 | | |
| SX-B2-10M | SX-P2-10M | 12:1 | | |
| SX-B2-11M | SX-P2-11M | 15:1 | | |
| SX-B2-12M | SX-P2-12M | 16:1 | | |
| SX-B2-13M | SX-P2-13M | 20:1 | | |
| SX-B2-14M | SX-P2-14M | 25:1 | | |
| SX-B2-15M | SX-P2-15M | 30:1 | 67.0 | OPPOSITE |
| SX-B2-16M | SX-P2-16M | 32:1 | | |
| SX-B2-17M | SX-P2-17M | 36:1 | | |
| SX-B2-18M | SX-P2-18M | 40:1 | | |
| SX-B2-19M | SX-P2-19M | 45:1 | | |
| SX-B2-20M | SX-P2-20M | 48:1 | | |
| SX-B2-21M | SX-P2-21M | 50:1 | | |
| SX-B2-22M | SX-P2-22M | 60:1 | | |
| SX-B2-23M | SX-P2-23M | 64:1 | | |
| SX-B2-24M | SX-P2-24M | 75:1 | | |
| SX-B2-25M | SX-P2-25M | 80:1 | | |
| SX-B2-26M | SX-P2-26M | 100:1 | | |
| SX-B2-27M | SX-P2-27M | 125:1 | | |
| SX-B2-28M | SX-P2-28M | 72:1 | 84.0 | SAME |
| SX-B2-29M | SX-P2-29M | 90:1 | | |
| SX-B2-30M | SX-P2-30M | 96:1 | | |
| SX-B2-31M | SX-P2-31M | 128:1 | | |
| SX-B2-32M | SX-P2-32M | 150:1 | | |
| SX-B2-33M | SX-P2-33M | 180:1 | | |
| SX-B2-34M | SX-P2-34M | 200:1 | | |
| SX-B2-35M | SX-P2-35M | 250:1 | | |
| SX-B2-36M | SX-P2-36M | 256:1 | | |
| SX-B2-37M | SX-P2-37M | 300:1 | | |
| SX-B2-38M | SX-P2-38M | 375:1 | | |
| SX-B2-39M | SX-P2-39M | 400:1 | | |
| SX-B2-40M | SX-P2-40M | 500:1 | | |
| SX-B2-41M | SX-P2-41M | 625:1 | | |

Alternate Shaft Locations

Add Style Letter to complete stock number, if different from that shown.

Style:

- = Opposite of as shown
- R = In and Out on R.H. side only
- L = In and Out on L.H. side only
- A = In and Out on all sides

Send drawing if other than listed above.

Materials

Housing and Cover Aluminum Anodized

Gears Stainless Steel and Aluminum

Shafts and Hardware Stainless Steel

Bearings Stainless Steel or Bronze

Lubrication Grease

Maximum Speed

5000 RPM

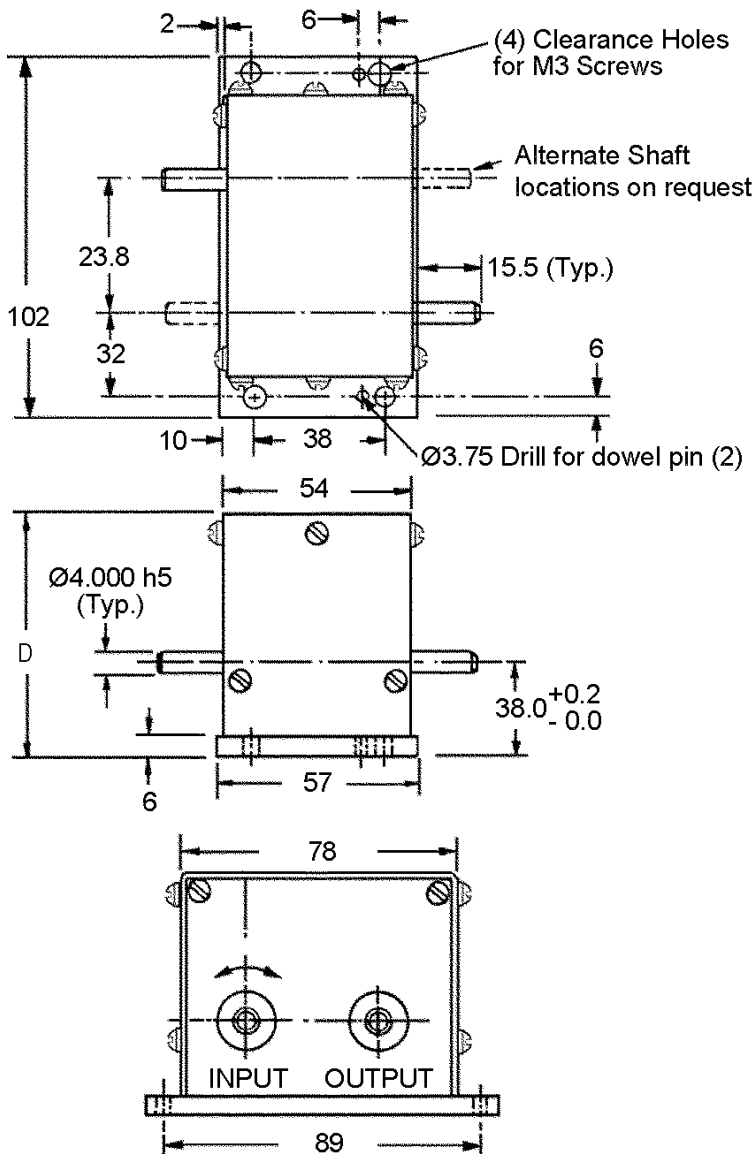
Maximum Output Torque

212N·cm



SERVO GEARBOXES

| SHAFT SIZE | TYPE |
|------------|--------------------------------|
| 4MM | BALL BEARING OR BRONZE BEARING |



Special units available on request.

Anti-Backlash gear - Output End

Slip Clutch included - Input End

Contact Berg's Engineering Department for recommendations for use as a Speed Increaser.

• See instructions below to order alternate shaft locations.

| ABEC 7 BALL BEARINGS UNITS | BRONZE BEARINGS UNITS | NOMINAL RATIO | D HEIGHT | DIRECTION ROTATION |
|----------------------------|-----------------------|---------------|----------|--------------------|
| STOCK NO. | STOCK NO. | | | |
| SX-B3-1M | SX-P3-1 | 2:1 | 86.0 | SAME |
| SX-B3-2M | SX-P3-2 | 3:1 | | |
| SX-B3-3M | SX-P3-3 | 4:1 | | |
| SX-B3-4M | SX-P3-4 | 5:1 | | |
| SX-B3-5M | SX-P3-5 | 6:1 | | |
| SX-B3-6M | SX-P3-6 | 7:1 | | |
| SX-B3-7M | SX-P3-7 | 8:1 | | |
| SX-B3-8M | SX-P3-8 | 9:1 | | |
| SX-B3-9M | SX-P3-9 | 10:1 | | |
| SX-B3-10M | SX-P3-10 | 12:1 | | |
| SX-B3-11M | SX-P3-11 | 15:1 | | |
| SX-B3-12M | SX-P3-12 | 16:1 | | |
| SX-B3-13M | SX-P3-13 | 20:1 | | |
| SX-B3-14M | SX-P3-14 | 25:1 | | |
| SX-B3-15M | SX-P3-15 | 30:1 | 86.0 | OPPOSITE |
| SX-B3-16M | SX-P3-16 | 32:1 | | |
| SX-B3-17M | SX-P3-17 | 36:1 | | |
| SX-B3-18M | SX-P3-18 | 40:1 | | |
| SX-B3-19M | SX-P3-19 | 45:1 | | |
| SX-B3-20M | SX-P3-20 | 48:1 | | |
| SX-B3-21M | SX-P3-21 | 50:1 | | |
| SX-B3-22M | SX-P3-22 | 60:1 | | |
| SX-B3-23M | SX-P3-23 | 64:1 | | |
| SX-B3-24M | SX-P3-24 | 75:1 | | |
| SX-B3-25M | SX-P3-25 | 80:1 | | |
| SX-B3-26M | SX-P3-26 | 100:1 | | |
| SX-B3-27M | SX-P3-27 | 125:1 | | |
| SX-B3-28M | SX-P3-28 | 72:1 | 109.0 | SAME |
| SX-B3-29M | SX-P3-29 | 90:1 | | |
| SX-B3-30M | SX-P3-30 | 96:1 | | |
| SX-B3-31M | SX-P3-31 | 128:1 | | |
| SX-B3-32M | SX-P3-32 | 150:1 | | |
| SX-B3-33M | SX-P3-33 | 180:1 | | |
| SX-B3-34M | SX-P3-34 | 200:1 | | |
| SX-B3-35M | SX-P3-35 | 250:1 | | |
| SX-B3-36M | SX-P3-36 | 256:1 | | |
| SX-B3-37M | SX-P3-37 | 300:1 | | |
| SX-B3-38M | SX-P3-38 | 375:1 | | |
| SX-B3-39M | SX-P3-39 | 400:1 | | |
| SX-B3-40M | SX-P3-40 | 500:1 | | |
| SX-B3-41M | SX-P3-41 | 625:1 | | |

Alternate Shaft Locations

Add **Style Letter** to complete stock number, if different from that shown.

Style:

- O** = Opposite of as shown
- R** = In and Out on R.H. side only
- L** = In and Out on L.H. side only
- A** = In and Out on all sides

Send drawing if other than listed above.

Backlash

At Output Shaft

Ball Bearing - 15 Minutes Max.

Bronze Bearing - 30 Minutes Max.

Materials

Housing and Cover Aluminum Anodized

Gears Stainless Steel and Aluminum

Shafts and Hardware Stainless Steel

Bearings Stainless Steel or Bronze

Lubrication Grease

Maximum Speed

5000 RPM

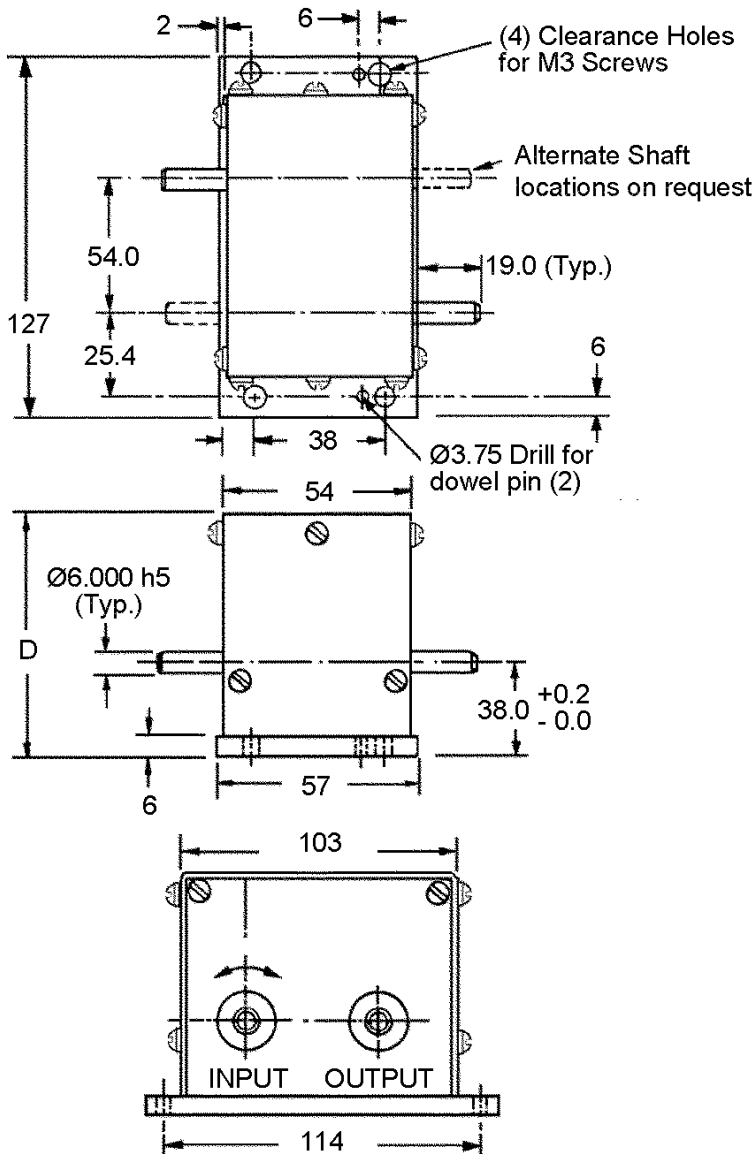
Maximum Output Torque

280N•cm



SERVO GEARBOXES

| SHAFT SIZE | TYPE |
|------------|--------------------------------|
| 6MM | BALL BEARING OR BRONZE BEARING |



Special units available on request.

Anti-Backlash gear - Output End

Slip Clutch included - Input End

Contact Berg's Engineering Department for recommendations for use as a Speed Increaser.

• See instructions below to order alternate shaft locations.

| ABEC 7 BALL BEARINGS UNITS | BRONZE BEARINGS UNITS | NOMINAL RATIO | D HEIGHT | DIRECTION ROTATION |
|----------------------------|-----------------------|---------------|----------|--------------------|
| SX-B4-1M | SX-P4-1M | 2:1 | 83.5 | SAME |
| SX-B4-2M | SX-P4-2M | 3:1 | | |
| SX-B4-3M | SX-P4-3M | 4:1 | | |
| SX-B4-4M | SX-P4-4M | 5:1 | | |
| SX-B4-5M | SX-P4-5M | 6:1 | | |
| SX-B4-6M | SX-P4-6M | 7:1 | | |
| SX-B4-7M | SX-P4-7M | 8:1 | | |
| SX-B4-8M | SX-P4-8M | 9:1 | | |
| SX-B4-9M | SX-P4-9M | 10:1 | | |
| SX-B4-10M | SX-P4-10M | 12:1 | | |
| SX-B4-11M | SX-P4-11M | 15:1 | | |
| SX-B4-12M | SX-P4-12M | 16:1 | | |
| SX-B4-13M | SX-P4-13M | 20:1 | | |
| SX-B4-14M | SX-P4-14M | 25:1 | | |
| SX-B4-15M | SX-P4-15M | 30:1 | 97.0 | OPPOSITE |
| SX-B4-16M | SX-P4-16M | 32:1 | | |
| SX-B4-17M | SX-P4-17M | 36:1 | | |
| SX-B4-18M | SX-P4-18M | 40:1 | | |
| SX-B4-19M | SX-P4-19M | 45:1 | | |
| SX-B4-20M | SX-P4-20M | 48:1 | | |
| SX-B4-21M | SX-P4-21M | 50:1 | | |
| SX-B4-22M | SX-P4-22M | 60:1 | | |
| SX-B4-23M | SX-P4-23M | 64:1 | | |
| SX-B4-24M | SX-P4-24M | 75:1 | | |
| SX-B4-25M | SX-P4-25M | 80:1 | | |
| SX-B4-26M | SX-P4-26M | 100:1 | | |
| SX-B4-27M | SX-P4-27M | 125:1 | | |
| SX-B4-28M | SX-P4-28M | 72:1 | 122.5 | SAME |
| SX-B4-29M | SX-P4-29M | 90:1 | | |
| SX-B4-30M | SX-P4-30M | 96:1 | | |
| SX-B4-31M | SX-P4-31M | 128:1 | | |
| SX-B4-32M | SX-P4-32M | 150:1 | | |
| SX-B4-33M | SX-P4-33M | 180:1 | | |
| SX-B4-34M | SX-P4-34M | 200:1 | | |
| SX-B4-35M | SX-P4-35M | 250:1 | | |
| SX-B4-36M | SX-P4-36M | 256:1 | | |
| SX-B4-37M | SX-P4-37M | 300:1 | | |
| SX-B4-38M | SX-P4-38M | 375:1 | | |
| SX-B4-39M | SX-P4-39M | 400:1 | | |
| SX-B4-40M | SX-P4-40M | 500:1 | | |
| SX-B4-41M | SX-P4-41M | 625:1 | | |

Alternate Shaft Locations

Add **Style Letter** to complete stock number, if different from that shown.

Style:

- O** = Opposite of as shown
- R** = In and Out on R.H. side only
- L** = In and Out on L.H. side only
- A** = In and Out on all sides

Send drawing if other than listed above.

Backlash

At Output Shaft

Ball Bearing - 15 Minutes Max.

Bronze Bearing - 30 Minutes Max.

Materials

Housing and Cover Aluminum Anodized

Gears Stainless Steel and Aluminum

Shafts and Hardware Stainless Steel

Bearings Stainless Steel or Bronze

Lubrication Grease

Maximum Speed

5000 RPM

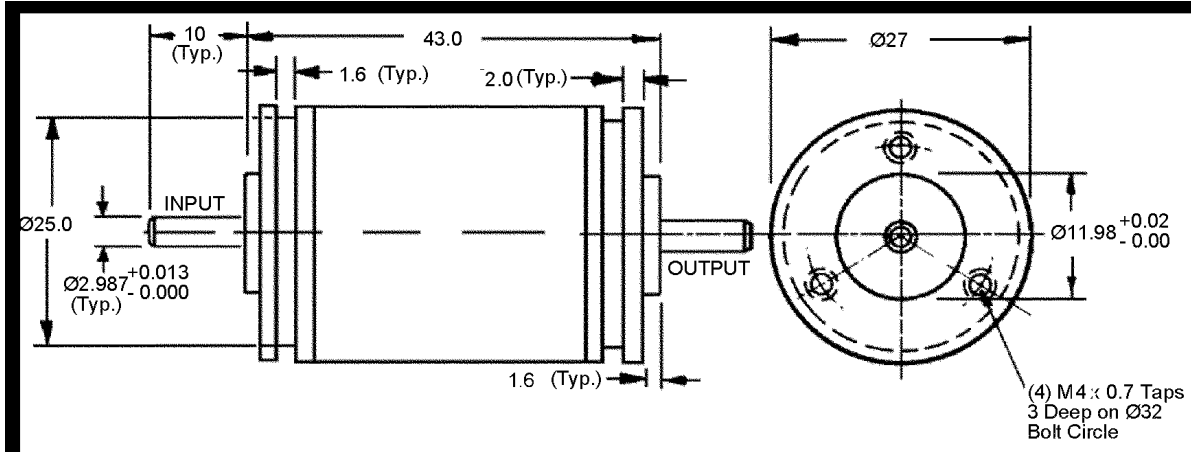
Maximum Output Torque

423N*cm



SPEED REDUCER

| SHAFT | DIAMETER | BEARINGS | RATIOS |
|-------|----------|----------|---------------|
| 3MM | Ø27 | ABEC -5 | 9:1 to 3600:1 |



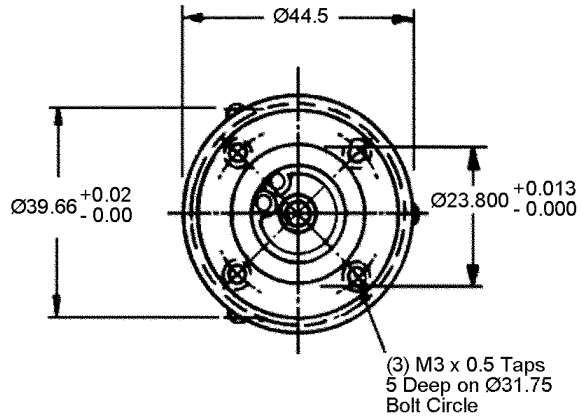
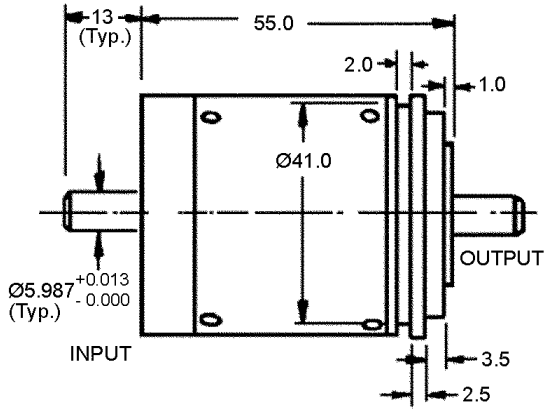
- Starting Torque (Max.) .004N·cm
- Rated Output Torque 46N·cm
- Maximum Backlash 0° 30'
- Moment of Inertia at Input Shaft 0.10mm
- Approximate Weight 220 gr.
- Ball Bearings On All Cluster Shafts



| STOCK NO. | NOMINAL RATIO | NO. OF SHAFT ROTATION | GEAR CLUSTERS |
|-----------|---------------|-----------------------|---------------|
| RX11-1M | 9:1 | SAME | 1 |
| RX11-2M | 10:1 | | |
| RX11-3M | 12:1 | | |
| RX11-4M | 15:1 | | |
| RX11-5M | 20:1 | | |
| RX11-6M | 25:1 | | |
| RX11-7M | 30:1 | OPPOSITE | 2 |
| RX11-8M | 40:1 | SAME | 3 |
| RX11-9M | 50:1 | | |
| RX11-10M | 60:1 | | |
| RX11-11M | 80:1 | OPPOSITE | 4 |
| RX11-12M | 90:1 | | |
| RX11-13M | 100:1 | | |
| RX11-14M | 180:1 | | |
| RX11-15M | 200:1 | SAME | 5 |
| RX11-16M | 300:1 | | |
| RX11-17M | 360:1 | | |
| RX11-18M | 400:1 | | |
| RX11-19M | 500:1 | OPPOSITE | 6 |
| RX11-20M | 600:1 | | |
| RX11-21M | 800:1 | | |
| RX11-22M | 1000:1 | SAME | 5 |
| RX11-23M | 2000:1 | | |
| RX11-24M | 3000:1 | | |
| RX11-25M | 3600:1 | SAME | 5 |

SPEED REDUCER

| SHAFT | DIAMETER | BEARINGS | RATIOS |
|-------|----------|----------|------------------|
| 6MM | 44.5MM | ABEC -5 | 4.96:1 to 3000:1 |



- Starting Torque (Max.) .02N.cm
- Rated Output Torque 88N.cm
- Maximum Backlash 0° 30'
- Shaft End Play (Max.) 2.5mm or .1mm
- Approximate Weight 85 gr.
- Ball Bearings On All Cluster Shafts



| STOCK NO. | NOMINAL RATIO | NO. OF SHAFT ROTATION | GEAR CLUSTERS |
|-----------|---------------|-----------------------|---------------|
| RX18-1M | 4.96:1 | SAME | 1 |
| RX18-2M | 6:1 | | |
| RX18-3M | 9.93:1 | OPPOSITE | 2 |
| RX18-4M | 15.27:1 | | |
| RX18-5M | 20:1 | SAME | 1 |
| RX18-6M | 30:1 | OPPOSITE | 2 |
| RX18-7M | 40:1 | | |
| RX18-8M | 50.9:1 | | |
| RX18-9M | 80:1 | | |
| RX18-10M | 100:1 | SAME | 3 |
| RX18-11M | 124.8:1 | | |
| RX18-12M | 150:1 | | |
| RX18-13M | 200:1 | | |
| RX18-14M | 248.16:1 | | |
| RX18-15M | 300.3:1 | | |
| RX18-16M | 400:1 | | |
| RX18-17M | 500:1 | OPPOSITE | 4 |
| RX18-18M | 600:1 | | |
| RX18-19M | 1000:1 | | |
| RX18-20M | 1600:1 | OPPOSITE | 6 |
| RX18-21M | 1800:1 | | |
| RX18-22M | 2000:1 | | |
| RX18-23M | 2300:1 | | |
| RX18-24M | 2500:1 | | |
| RX18-25M | 3000:1 | SAME | 5 |

PRECISION PLANETARY GEAR HEADS

| SHAFT SIZES | | | RATIOS | | |
|-------------|----|----|--------------|--|--|
| 16 | 20 | 24 | 3:1 TO 100:1 | | |

NEMA PLANETARY GEARHEADS

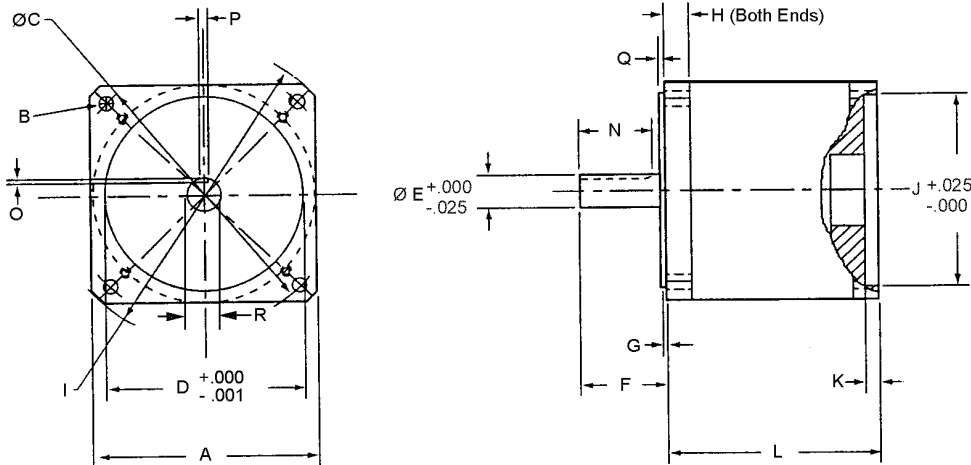
| STOCK NO. | RATIO | A | B | C | D | ØE | F | G | H | I | J | K | L | M | N | O | P | Q | R |
|-------------|-------|-----|-----|-----|-----|----|----|-----|----|-----|---|----|-------|---|----|------|---|-----|----|
| GHPG60-3 | 3:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-5 | 5:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-8 | 8:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-10 | 10:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-15 | 15:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-20 | 20:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-30 | 30:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-50 | 50:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG60-100 | 100:1 | 60 | 5.0 | 70 | 50 | 16 | 25 | 2.5 | 13 | 80 | 5 | 26 | 78.2 | 3 | 16 | 18.0 | 5 | 1.0 | 22 |
| GHPG90-3 | 3:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-5 | 5:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-8 | 8:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-10 | 10:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-15 | 15:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-20 | 20:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-30 | 30:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-50 | 50:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG90-100 | 100:1 | 90 | 6.5 | 100 | 80 | 20 | 40 | 2.5 | 12 | 116 | 7 | 34 | 95.3 | 5 | 28 | 22.5 | 6 | 1.0 | 36 |
| GHPG115-3 | 3:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-5 | 5:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-8 | 8:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-10 | 10:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-15 | 15:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-20 | 20:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-30 | 30:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-50 | 50:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |
| GHPG115-100 | 100:1 | 115 | 8.5 | 130 | 110 | 24 | 50 | 3.0 | 14 | 145 | 8 | 40 | 117.5 | 7 | 32 | 27.0 | 8 | 1.5 | 40 |

PLANETARY GEAR HEADS PERFORMANCE SPECIFICATIONS

| STOCK NO. | RATED OUTPUT TOR. Nm | PEAK OUTPUT TOR. Nm | RATED INPUT SP. RPM | *BACK LASH MIN. | AVE. EFF. % | MOM. OF IN. kg-m ² | TOR. STIFF. Nm/min | MAX. WEIGHT kg | RAD LOAD ⁽¹⁾ N | AXIAL LOAD N |
|------------|----------------------|---------------------|---------------------|-----------------|-------------|-------------------------------|--------------------|----------------|---------------------------|--------------|
| 60 Series | 33.9 | 56.3 | 5000 | 10 | 90 | 4x10 ⁻⁶ | 5.7 | 1.4 | 1779.4 | 1079.4 |
| 90 Series | 90.4 | 150.1 | 5000 | 10 | 90 | 2x10 ⁻⁵ | 9.0 | 3.2 | 2669.0 | 2669.0 |
| 115 Series | 180.2 | 300.1 | 5000 | 10 | 90 | 5x10 ⁻⁵ | 15.0 | 7.3 | 4893.2 | 4893.2 |

* 5 minute backlash available on request

⁽¹⁾ Radial loads are at 25.4mm from the face of the gear head.

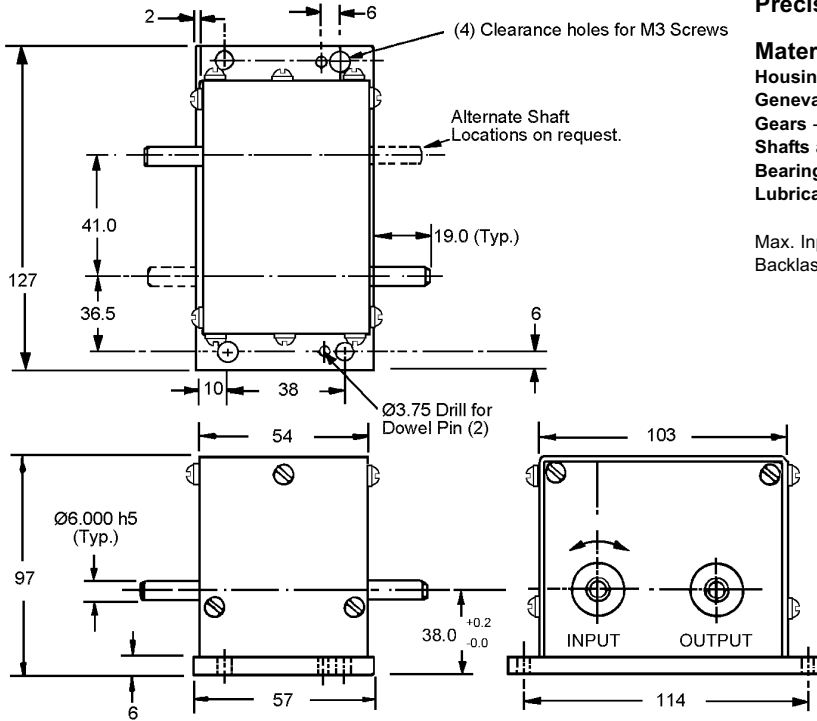


Materials:

- Housing - Anodized Aluminum
- Gears - Stainless Steel Q12 / DIN 7 Quality Class
- Shafts - Stainless Steel
- Bearings - Stainless Steel or Bronze
- Lubrication - Sny. Grease

INTERMITTENT MOTION ASSEMBLY

| SHAFT | TYPE |
|-------|--------------|
| 6MM | BALL BEARING |



Precision Geneva Mechanism

Materials:

Housing and Cover - Anodized Aluminum

Geneva - Stainless Steel

Gears - Stainless Steel and Aluminum

Shafts and Hardware - Stainless Steel

Bearings - Stainless Steel - ABEC 7

Lubrication - Grease

Max. Input Speed - 300 RPM

Backlash at Output Shaft - 30 Minutes Max.

C

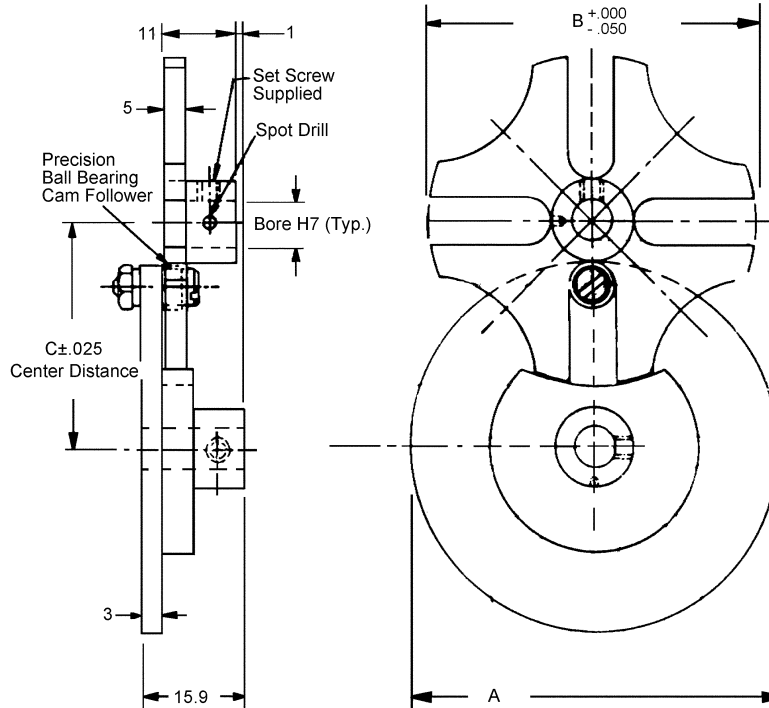
| PRECISION BALL BEARING UNIT | ROTATION OF OUTPUT SHAFT PER EACH 360° REV. OF INPUT |
|-----------------------------|------------------------------------------------------|
| STOCK NUMBER | |
| GX-1M | 90 DEGREES |
| GX-2M | 60 DEGREES |
| GX-3M | 45 DEGREES |
| GX-4M | 30 DEGREES |
| GX-5M | 22.5 DEGREES |
| GX-6M | 10 DEGREES |

| PRECISION BALL BEARING UNIT | ROTATION OF OUTPUT SHAFT PER EACH 180° REV. OF INPUT |
|-----------------------------|------------------------------------------------------|
| STOCK NUMBER | |
| GX-7M | 180 DEGREES |
| GX-8M | 120 DEGREES |
| GX-9M | 90 DEGREES |
| GX-10M | 60 DEGREES |
| GX-11M | 45 DEGREES |
| GX-12M | 20 DEGREES |



GENEVA MECHANISM

| BORE | POINTS | MATERIAL |
|---------|---------------|-----------------|
| 6 AND 7 | 4, 5, 6 AND 8 | STAINLESS STEEL |



4 POINT DRIVE ILLUSTRATED

| STOCK NO. | NO. ROLLERS ON DRIVER | RELATIVE ROTATION DRIVER TO DRIVEN | | POINTS ON DRIVEN | MAX. TORQUE (N•cm) | MAX OPER. TORQUE (N•cm) | A | B | C | BORE |
|-----------|-----------------------|------------------------------------|-----|------------------|--------------------|-------------------------|----|-----|-------|------|
| | | 360° | | | | | | | | |
| GM-1-M | ONE | 360° | 90° | 4 | 50 | 25 | 57 | 50 | 35.11 | 7 |
| GM-1A-M | TWO | 180° | | | | | | | | |
| GM-2-M | ONE | 360° | 72° | 5 | 78 | 39 | 57 | 63 | 38.57 | 7 |
| GM-2A-M | TWO | 180° | | | | | | | | |
| GM-3-M | ONE | 360° | 60° | 6 | 124 | 62 | 64 | 88 | 50.72 | 7 |
| GM-3A-M | TWO | 180° | | | | | | | | |
| GM-4-M | ONE | 360° | 45° | 8 | 170 | 85 | 51 | 104 | 56.02 | 6 |
| GM-4A-M | TWO | 180° | | | | | | | | |

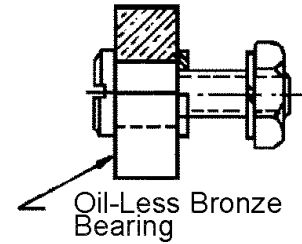
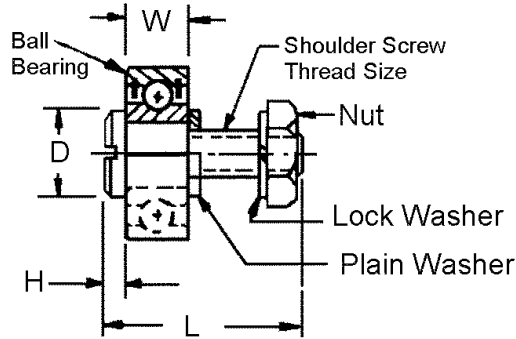
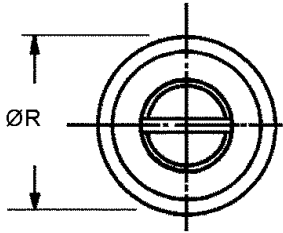
| STOCK NO. | DESCRIPTION |
|-----------|--------------------------|
| JE-1-PH | REPLACEMENT CAM FOLLOWER |

Other Bore sizes available on request.



CAM FOLLOWER

| TYPE | MATERIAL | ABEC |
|------------------------------------------------|----------------------------|----------|
| BALL BEARING OR OIL-LESS BRONZE BEARING | 303 STAINLESS STEEL | 5 |



| STOCK NO. | ØR | W | L | D | H | SCREW THREAD | BEARING |
|-----------|-------|-----|------|----|---|--------------|----------------|
| JEM-10 | 7.00 | 3.0 | 12.0 | 5 | 3 | M3.0 X 0.5 | BALL BEARING |
| JEM-11 | 9.00 | 4.0 | 11.0 | 6 | 3 | M3.0 X 0.5 | |
| JEM-12 | 11.00 | 5.0 | 13.0 | 8 | 4 | M4.0 X 0.7 | |
| JEM-13 | 13.00 | 4.0 | 14.0 | 8 | 4 | M4.0 X 0.7 | |
| JEM-14 | 16.00 | 5.0 | 13.0 | 8 | 4 | M4.0 X 0.7 | |
| JEM-15 | 19.00 | 6.0 | 17.0 | 10 | 5 | M5.0 X 0.8 | |
| JEM-B-11 | 8.00 | 4.0 | 11.0 | 6 | 3 | M3.0 X 0.5 | BRONZE BEARING |
| JEM-B-12 | 10.00 | 5.0 | 14.0 | 8 | 4 | M4.0 X 0.7 | |
| JEM-B-13 | 13.00 | 5.0 | 14.0 | 8 | 4 | M4.0 X 0.7 | |
| JEM-B-14 | 16.00 | 5.0 | 16.0 | 10 | 5 | M5.0 X 0.8 | |

MATERIALS

Bearings - Stainless Steel or Bronze

Screw - Stainless Steel DIN 1.4005

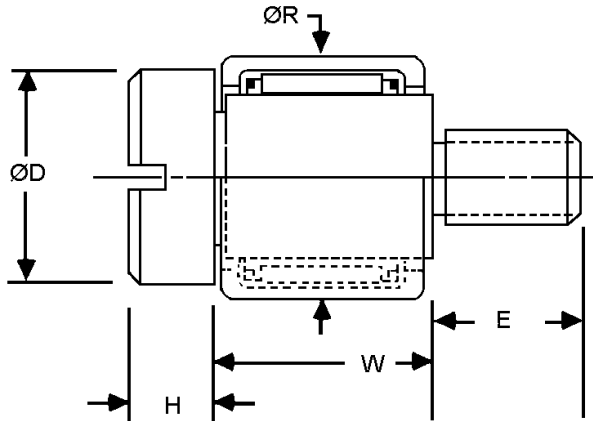
Hardware - Stainless Steel



C

ROLLER BEARING CAM FOLLOWER

| TYPE |
|-------------------|
| HEAVY DUTY |



Materials:

Screw - Stainless Steel DIN 1.4005

Roller Cup - Case Hardened Steel

Needle Bearings - Hardened Steel

Bearing Cage - Low Carbon Steel

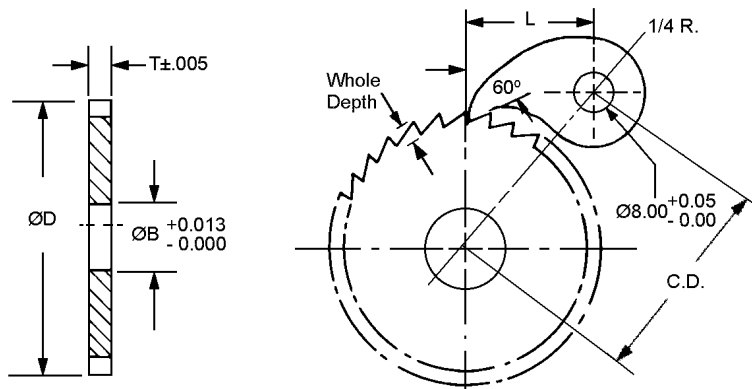
See the Bearings Section of this book for Bearings Specifications.

| STOCK NO. | $\varnothing R$ | W | $\varnothing D$ | H | E | SCREW THREAD |
|-----------|-----------------|-------|-----------------|-----|----|--------------|
| JEM-R-1 | 8.00 | 8.00 | 6.0 | 2.7 | 4 | M3 X 0.5 |
| JEM-R-3 | 9.00 | 9.00 | 8.0 | 4.0 | 5 | M4 X 0.7 |
| JEM-R-4 | 10.00 | 9.00 | 8.5 | 5.0 | 6 | M5 X 0.8 |
| JEM-R-5 | 12.00 | 10.00 | 10.5 | 5.7 | 11 | M6 X 1.0 |
| JEM-R-6 | 14.00 | 10.00 | 12.5 | 6.7 | 12 | M8 X 1.25 |
| JEM-R-8 | 16.00 | 12.00 | 14.5 | 7.7 | 16 | M10 X 1.50 |

- High Load
- Low Profile
- Low Friction

RATCHETS AND PAWLS

| PITCH | STYLE | MATERIAL |
|----------|----------------------|-----------------|
| 16 to 48 | RIGHT HAND OPERATION | STAINLESS STEEL |



| | | | |
|----------------------------------------------|----------------|-------------|-----------------------------------------------------|
| 17-4 PH STAINLESS STEEL HARDENED RC 32-38 | | | 416 STAINLESS STEEL |
| STOCK PAWLS | | | MOUNTING SHOULDER SCREW (Order Separately) |
| STOCK NO. | T THICKNESS | L LENGTH | |
| RP-2M | 6.2 | 19 | PLM-28 |
| RP-375M | 9.4 | 33 | PLM-30 |

- For Shoulder Screw Dimensions - See Index
- Ratchets Material - 303 Stainless Steel
- Last number in Stock No. indicate the total number of teeth. Special ratchets and pawls made to order, contact us.

| RATCHET STOCK NO. | PITCH | OUTSIDE DIA. | BORE | T | C.D. +.06 -.00 | WHOLE DEPTH | PAWL STOCK NO. |
|-------------------------|-------|-----------------|------|-----|----------------------|----------------|----------------------|
| R16S120-20 | 16 | 31.7 | 16 | 9.5 | 38.9 | 3.1 | RP-375M |
| R16S120-24 | | 38.1 | | | 40.6 | | |
| R16S120-32 | | 50.8 | | | 44.5 | | |
| R16S120-48 | | 76.2 | | | 53.3 | | |
| R16S120-56 | | 88.9 | | | 58.4 | | |
| R16S120-65 | 101.6 | 63.5 | | | | | |
| R24S106-24 | 24 | 25.4 | 10 | 6.4 | 28.2 | 1.8 | RP-2M |
| R24S106-30 | | 31.7 | | | 30.0 | | |
| R24S106-36 | | 38.1 | | | 32.0 | | |
| R24S106-48 | | 50.8 | | | 36.8 | | |
| R24S106-72 | | 76.2 | | | 47.2 | | |
| R32S103-24 | 32 | 19.0 | 10 | 3.0 | 26.4 | 1.5 | RP-2M |
| R32S103-32 | | 25.4 | | | 28.2 | | |
| R32S103-40 | | 31.7 | | | 30.0 | | |
| R32S103-48 | | 38.1 | | | 32.0 | | |
| R32S103-64 | | 50.8 | | | 36.8 | | |
| R32S103-96 | 76.2 | 47.2 | | | | | |
| R48S103-36 | 48 | 19.0 | 10 | 3.0 | 26.2 | 0.9 | RP-2M |
| R48S103-48 | | 25.4 | | | 28.4 | | |
| R48S103-60 | | 31.7 | | | 30.5 | | |
| R48S103-72 | | 38.1 | | | 32.5 | | |
| R48S103-96 | | 50.8 | | | 37.3 | | |
| R48S103-144 | 76.2 | 47.8 | | | | | |



C

