

APEX Motors

IN THIS APPENDIX

- Inspect the shipment
 - Recommended replacements
 - Configure DIP Switches
 - Mount the motor
 - Connect resolver and motor cables
 - Motor Specifications
-

INSPECT THE SHIPMENT

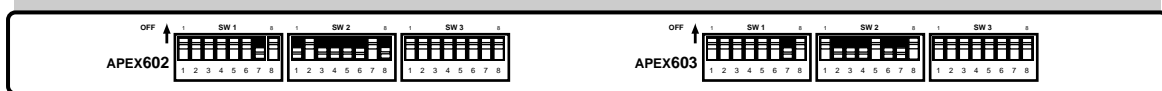
| Options/Accessories | | Part Number |
|---|--|--|
| APEX Series Motor (motor with resolver) | | APEX602-MO, APEX603-MO APEX604-MO, APEX605-MO APEX606-MO, APEX610-MO APEX620-MO, APEX630-MO APEX635-MO, APEX640-MO |
| Motor Cable: | (For APEX602, 603, 604, 605, 606) (For APEX610, 620, 630) (For APEX635, 640) | 71-013863-xx 71-013864-xx 71-013865-xx |
| Resolver Cable: | (For all APEX Series Motors) (For APEX Series Motor with brake) | 71-013862-xx 71-014082-xx |
| | | xx can be 10, 25, 50, 100 feet |

RECOMMENDED REPLACEMENTS FOR APEX MOTORS

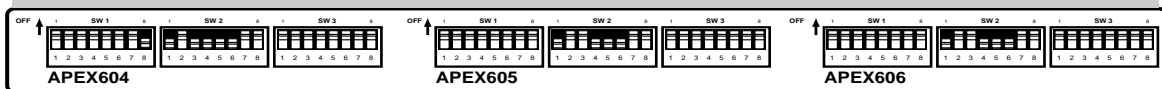
| Apex Motor | Replacement |
|---------------|--------------|
| APEX602-MO-NC | N0703GR-KMSN |
| APEX603-MO-NC | N0704GR-KMSN |
| APEX604-MO-NC | N0922GR-KMSN |
| APEX605-MO-NC | N0922JR-KMSN |
| APEX606-MO-NC | N0923HR-KMSN |
| APEX610-MO-NC | N0924KR-KMSN |

CONFIGURE THE APEX DRIVE'S DIP SWITCHES

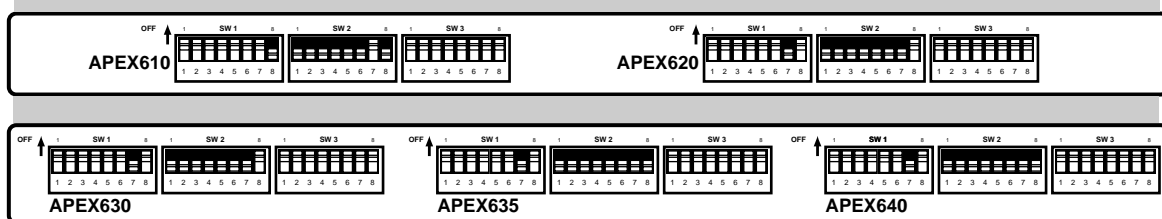
These setting are valid for APEX10 units with serial numbers greater than: 97052700070.



These setting are valid for APEX20 units with serial numbers greater than: 97073000109.



These setting are valid for APEX40 units with serial numbers greater than: 97073000109.



Call Compumotor's Applications Department for settings prior to these serial numbers

MOUNT THE MOTOR

MOTOR HEATSINKING

| | |
|--------------------------------|------------------------------------|
| <u>APEX (602 - 630 Motors)</u> | <u>APEX (635 & 640 Motors)</u> |
| 8" x 12" x 0.25" | 11.5" x 12" x 0.75" |
| (203 x 304 x 6.3 mm) | (292 x 304 x 19 mm) |

To get rated performance in your application, you must mount the motor to a heatsink of at least the same thermal capability as those listed above. Mounting the motor to a smaller heatsink may result in decreased performance and a shorter service life. Conversely, mounting the motor to a larger heatsink can result in enhanced performance.

CONNECT THE RESOLVER CABLE

RESOLVER CONNECTIONS (COS, SIN, REF)

Use the color code shown in the next drawing when you connect APEX or SM resolver cables. This code is also printed on the front panel of the APEX Drive, near the resolver connector.

The **Shield** terminal is internally connected to **Gnd** (ground) terminals on the front panel of the drive. If you make your own resolver cable, use shielded cable to keep electrical noise from corrupting the resolver signal.

| Label on Drive | Function | APEX Cable Color Code |
|----------------|--------------|-----------------------|
| Shield | Shield | Uninsulated |
| Cos | Red | Red |
| | Black | Black |
| | Green | Green |
| Sin | Blue | Blue |
| | Brown | Brown |
| Ref | White | White |
| | Motor Temp+ | Yellow |
| Motor Temp - | Motor Temp - | Orange |
| Fault Ref | | |

CONNECT THE MOTOR CABLE

MOTOR CONNECTIONS

Wire the cable to the motor connector. Use the following color code for APEX motor cables.

| <u>Connector Terminal</u> | <u>APEX Cable Wire Color</u> |
|---------------------------|------------------------------|
| Phase A | Orange |
| Phase B | Blue |
| Phase C | Gray |
| Motor Ground | Green |
| Shield | Uninsulated |

MOTOR SPECIFICATIONS

MOTOR BRAKES

Optional motor brakes are available. They are mounted directly behind the motor and are pre-assembled at the factory. When ordering the brake option, specify the motor type.

| Brake Characteristics | APEX602 | APEX603 | APEX604 | APEX605 | APEX620 | APEX640 |
|-------------------------------|---------|---------|---------|---------|---------|---------|
| | | | | APEX606 | APEX630 | |
| Supply voltage (VDC) | 24 | 24 | 24 | 24 | 24 | 24 |
| Supply current (amps) | 0.57 | 1.27 | 0.57 | 1.27 | 0.93 | 1.27 |
| Static braking torque (oz-in) | 326 | 850 | 326 | 850 | 1130 | 6800 |
| (Nm) | 2.3 | 6.0 | 2.3 | 6.0 | 8.0 | 48 |

SELECTING DRIVE/MOTOR COMBINATIONS

We recommend selecting motors for use with APEX Drives as follows:

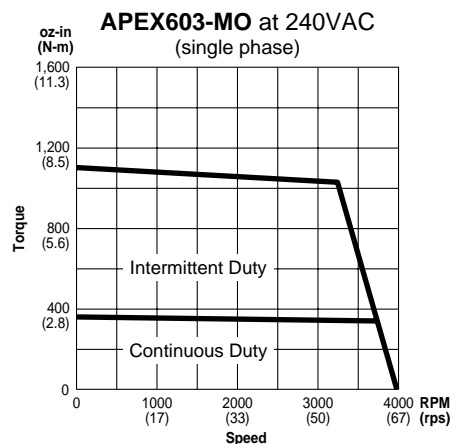
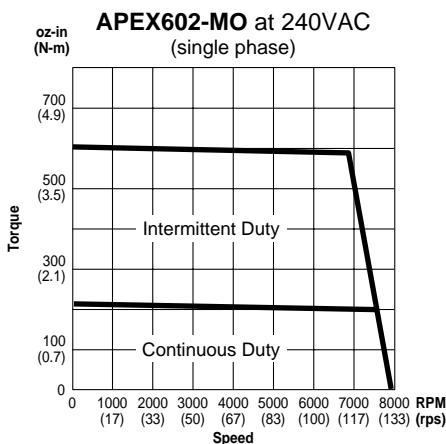
- APEX10 Drive:** APEX602, APEX603
- APEX20 Drive:** APEX604, APEX605, APEX606
- APEX40 Drive:** APEX610, APEX620, APEX630, APEX635, APEX640,
- Resolution Resolver:** 4096 counts/REV

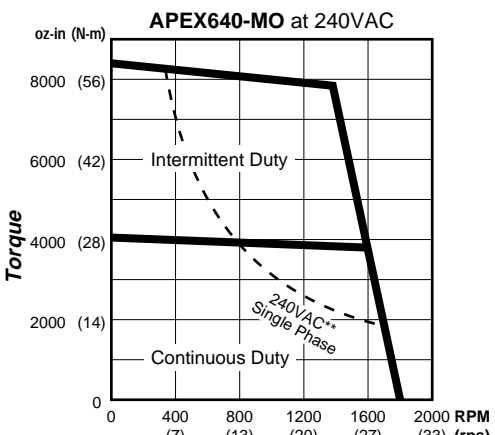
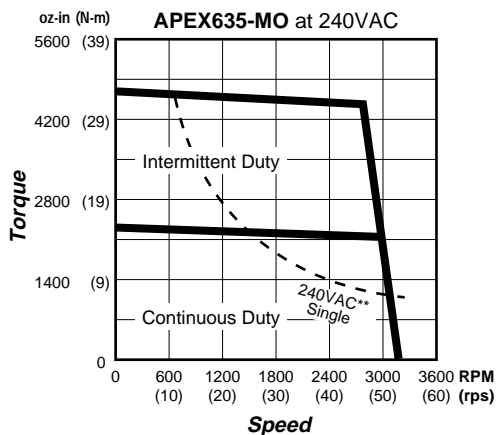
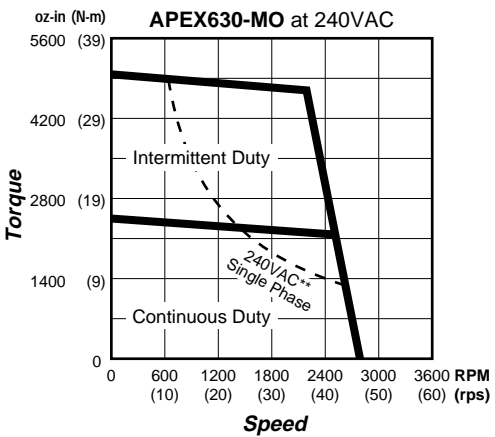
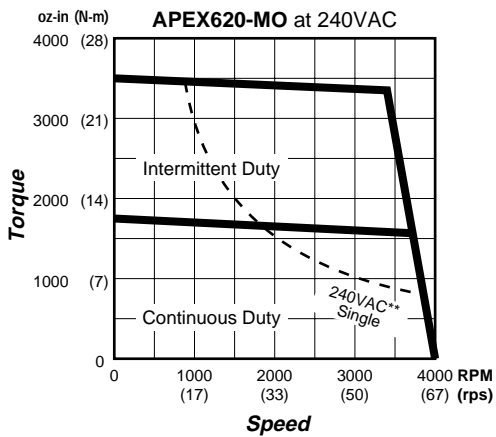
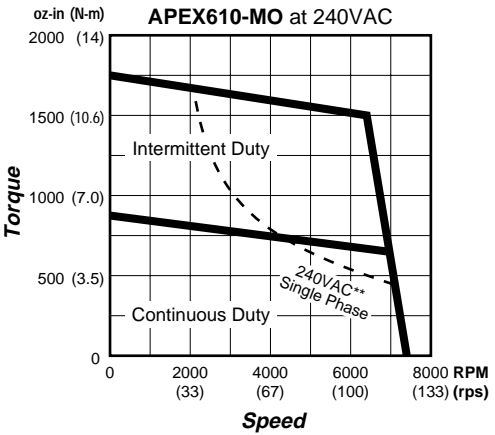
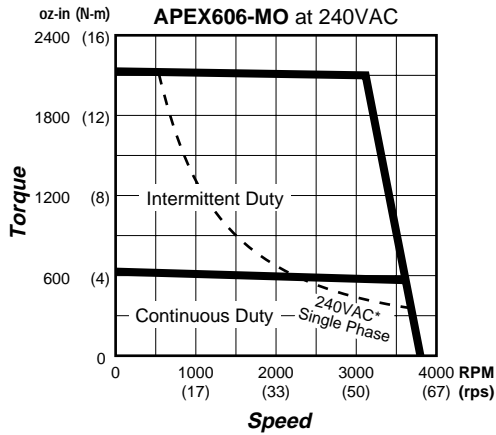
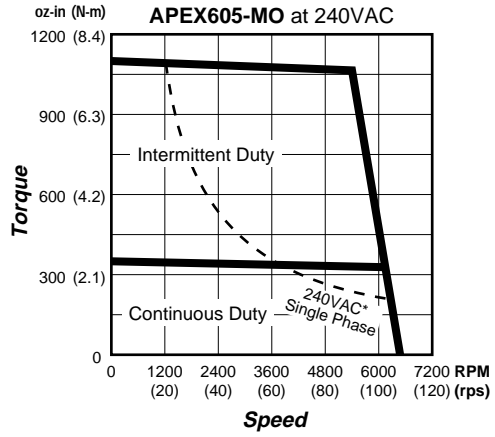
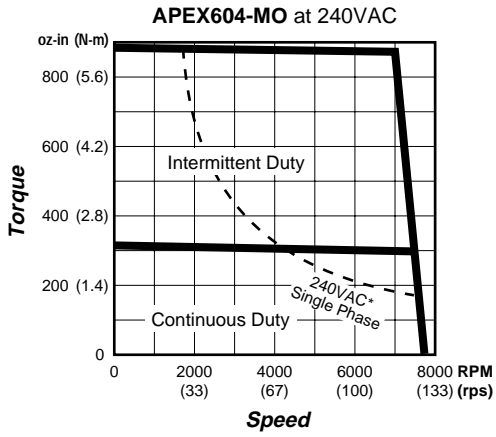
SPEED/TORQUE CURVES

Speed/torque curves on these pages represent the available shaft torque at different operating speeds, under the following conditions:

- APEX Motors:**
- 40°C (104°F) ambient temperature
- Nominal torque constant K_t
- Motor mounted to aluminum heatsink:
- 8" x 12" x 0.25" for APEX602 – APEX630
(203 x 304 x 6.3 mm)
- 11.5" x 12" x 0.75" for APEX635, APEX640
(292. x 304 x 19 mm)

Motor torque may vary $\pm 10\%$ due to motor manufacturing variances.





*240VAC single phase, 8A rms line current
 **240VAC single phase, 20A rms line current

APEX MOTOR RESOLVER SPECIFICATIONS

| Parameter | Value |
|---------------------------|---------------------------------|
| Input voltage @ 7000 Hz | 4.25 volts |
| Input current, max. | 55 mA |
| Input power, nominal | 0.12 watts |
| Impedance ZSO (@90°) | 58 +j145 ohms |
| Impedance ZRO | 53 +j72 ohms |
| Impedance ZRS | 42 +j55 ohms |
| Transformation ratio | 0.470 ±5% |
| Output voltage | 2.0 ±5% volts |
| D.C. rotor resistance | 23 ±10% ohms |
| D.C. stator resistance | 19 ±10% ohms |
| Sensitivity | 35 mV/Degree |
| Max. Error from EZ | ±10 minutes |
| Phase shift, open circuit | 5° leading ±3 |
| Null voltage (total) | 20 mV rms |
| Impedance ZSS | 50 +j128 ohms |
| Inertia | included in motor specification |

APEX Motor Specifications

| | Motor Size: | APEX602 | Value | Units | Tolerance | |
|-----|---|---|--|--|--|--|
| 1 | Constant (s): | Torque | 52.6 (0.37) | oz-in/A rms (Nm/A rms) | ± 10% | |
| 2 | | Voltage (Sinusoidal) | 22.5 | V rms/Krpm | ± 10% | |
| 3 | | Electrical Time | 5.3 | milliseconds | nominal | |
| 4 | | Mechanical Time | 1.40 | milliseconds | nominal | |
| 5 | | Thermal | 11.0 | minutes | nominal | |
| 6 | Torque (s): | Continuous, Stall | 236 (1.67) | oz-in (Nm) | min. [1] | |
| 7 | (NOTE: Values are with | Continuous, Stall | 223 (1.57) | oz-in (Nm) | min. [2] | |
| 8 | rated and peak current, | Continuous, Rated | 202 (1.43) | oz-in (Nm) | min. [2] | |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 630 (4.45) | oz-in (Nm) | min. [1] | |
| 10 | Drive current, and thus | Static Friction | 7.68 (0.05) | oz-in (Nm) | max. | |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 5 | percent | max. [3] | |
| 12 | Speed: | Rated | 7500 (125) | rpm (rps) | reference | |
| 13 | | Maximum | 7500 (125) | rpm (rps) | reference | |
| 14 | Frequency | Rated | 250 | Hz | max. | |
| 15 | Current: | Rated | 4.2 | A rms | max. [1] | |
| 16 | | Peak | 12.6 | A rms | nominal | |
| 17 | Voltage: | Rated | 240 | V rms | reference | |
| 18 | | Max | 250 | V rms | maximum | |
| 19 | Output Power | Rated | 1.12 (1.5) | kWatts (hp) | min. [1] | |
| 20 | Inductance | Terminal (line-line) | 14.4 | mH | ± 30% | |
| 21 | D.C. Resistance | Terminal (line-line) | 2.72 | ohms | ± 10 % [1] | |
| 22 | Acceleration at Rated Torque | | 96500 | rads/sec ² | Theoretical | |
| 23 | Rotor Inertia | | 2.52 (46.1) | oz-in ² (kgm ² * 1E-6) | nominal | |
| 24 | Damping | | 0.384 (0.0027) | oz-in/krpm (Nm/krpm) | nominal | |
| 25 | Weight | | 7.0 (3.17) | lbs. (kg) | max. | |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. | |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference | |
| 28 | Insulation Class | | H | — | reference | |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5° C | |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10° C | |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. | |
| 32 | Winding Capacitance-to-Frame | | 0.000898 | µF | max. | |
| 33 | IP Classification | | 65 [8] | rated | standard | |
| 34 | Shaft: | Radial-Play At End At Faceplate | 12E-6 (68E-9) 7.0E-6 (40E-9) | in/lb (m/N) in/lb (m/N) | reference reference | |
| 35 | | Material [5] | RC-#30 | — | reference | |
| 36 | | Magnet Type | NdFeB | — | — | |
| 37 | | Loading [6] | 1000 rpm (17 rps) 2000 rpm (33 rps) 3000 rpm (50 rps) 4000 rpm (67 rps) 5000 rpm (83 rps) | 81 (360) 65 (289) 56 (249) 51 (227) 48 (213) | lbs. (N) lbs. (N) lbs. (N) lbs. (N) lbs. (N) | max. [7] max. [7] max. [7] max. [7] max. [7] |
| 38 | Motor Vibration | | N | ISO 2373 | Standard | |
| 39 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference | |
| 40 | Bearing Grease | | SRI #2 | Manufacturer | reference | |
| 41 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. | |
| 42 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | | |
| 43 | Stator Phase Sequence | | A-C-B (viewed from front face plate) | | | |
| 44 | Vendor/Supplier | | Industrial Drives B-104-B | | | |
| 45 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | | |
| 46 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | | |
| 47 | Standard Resolver Cable Part Number | | 71-011777-xx | | | |
| 48 | Standard Motor Cable Part Number | | 71-011774-xx | | | |
| 49 | Options: | Brake—24VDC (0.57A)—326 oz-in (2.3 Nm) Holding Torque IP67 Classification Incremental Encoder Tachometer | No Keyway Shaft Modifications IP65 Shaft Seal | (requires resolver cable 71-014082-xx) | | |
| [1] | 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | |
| [2] | 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | |
| [3] | Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | |
| [4] | Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | |

APEX Motor Specifications

| | Motor Size: APEX603 | Value | Units | Tolerance | | |
|-----|---|--|---|--|-------------|----------|
| 1 | Constant (s): | Torque | 114.6 (0.81) | oz-in/A rms (Nm/A rms) | ± 10% | |
| 2 | | Voltage (Sinusoidal) | 49.0 | V rms/Krpm | ± 10% | |
| 3 | | Electrical Time | 9.7 | milliseconds | nominal | |
| 4 | | Mechanical Time | ----- | milliseconds | nominal | |
| 5 | | Thermal | 18 | minutes | nominal | |
| 6 | Torque (s): | Continuous, Stall | 367 (2.59) | oz-in (Nm) | min. [1] | |
| 7 | (NOTE: Values are with | Continuous, Stall | 346 (2.44) | oz-in (Nm) | min. [2] | |
| 8 | rated and peak current, | Continuous, Rated | 356 (2.51) | oz-in (Nm) | min. [2] | |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 1046 (7.38) | oz-in (Nm) | min. [1] | |
| 10 | Drive current, and thus | Static Friction | 12.0 (0.08) | oz-in (Nm) | max. | |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 5 | percent | max. [3] | |
| 12 | Speed: | Rated | 3800 (63) | rpm (rps) | reference | |
| 13 | | Maximum | 3800 (63) | rpm (rps) | reference | |
| 14 | Frequency | Rated | 126.7 | Hz | max. | |
| 15 | Current: | Rated | 3.0 | A rms | max. [1] | |
| 16 | | Peak | 9.6 | A rms | nominal | |
| 17 | Voltage: | Rated | 240 | V rms | reference | |
| 18 | | Max | 250 | V rms | maximum | |
| 19 | Output Power | Rated | 1.0 (1.3) | kWatts (hp) | min. [1] | |
| 20 | Inductance | Terminal (line-line) | 68 | mH | ± 30% | |
| 21 | D.C. Resistance | Terminal (line-line) | 7.0 | ohms | ± 10 % [1] | |
| 22 | Acceleration at Rated Torque | | 74150 | rads/sec ² | Theoretical | |
| 23 | Rotor Inertia | | 5.45 (99.6) | oz-in ² (kgm ² * 1E-6) | nominal | |
| 24 | Damping | | 0.960 (0.0068) | oz-in/krpm (Nm/krpm) | nominal | |
| 25 | Weight | | 9.0 (4.08) | lbs. (kg) | max. | |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. | |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference | |
| 28 | Insulation Class | | H | — | reference | |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5° C | |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10° C | |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. | |
| 32 | Winding Capacitance-to-Frame | | 0.00122 | µF | max. | |
| 33 | IP Classification | | 65 [8] | rated | standard | |
| 34 | Shaft: | Radial-Play At End | 14E-6 (80E-9) | in/lb (m/N) | reference | |
| | | At Faceplate | 8.0E-6 (45E-9) | in/lb (m/N) | reference | |
| 35 | | Material [5] | RC-#30 | — | reference | |
| 36 | | Magnet Type | NdFeB | — | — | |
| 37 | | Loading [6] | 1000 rpm (17 rps) | 85.4 (380) | lbs. (N) | max. [7] |
| | | | 2000 rpm (33 rps) | 67.8 (302) | lbs. (N) | max. [7] |
| | | | 3000 rpm (50 rps) | 59.1 (263) | lbs. (N) | max. [7] |
| | | | 4000 rpm (67 rps) | 53.8 (239) | lbs. (N) | max. [7] |
| | | | 5000 rpm (83 rps) | 50 (222) | lbs. (N) | max. [7] |
| 38 | Motor Vibration | | N | ISO 2373 | Standard | |
| 39 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference | |
| 40 | Bearing Grease | | SRI #2 | Manufacturer | reference | |
| 41 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. | |
| 42 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | | |
| 43 | Stator Phase Sequence | | A-C-B (viewed from front face plate) | | | |
| 44 | Vendor/Supplier | | Industrial Drives B-202-B | | | |
| 45 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | | |
| 46 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | | |
| 47 | Standard Resolver Cable Part Number | | 71-011777-xx | | | |
| 48 | Standard Motor Cable Part Number | | 71-011774-xx | | | |
| 49 | Options: | Brake—24VDC (0.57A)—845 oz-in (5.97 Nm) Holding Torque | | (requires resolver | | |
| | | IP67 Classification | No Keyway | cable 71-014082-xx) | | |
| | | Incremental Encoder | Shaft Modifications | | | |
| | | Tachometer | IP65 Shaft Seal | | | |
| [1] | 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | |
| [2] | 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | |
| [3] | Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the | | | |
| [4] | Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | radial and two times the axial does not exceed this figure. | | | |
| | | | [8] Motor shaft is IP30 rated. | | | |

APEX Motor Specifications

| | Motor Size: | APEX604 | Value | Units | Tolerance |
|---|--|--|--|--|-------------|
| 1 | Constant (s): | Torque | 52.6 (0.37) | oz-in/A rms (Nm/A rms) | ± 10% |
| 2 | | Voltage (Sinusoidal) | 22.5 | V rms/Krpm | ± 10% |
| 3 | | Electrical Time | 58.7 | milliseconds | nominal |
| 4 | | Mechanical Time | 1.30 | milliseconds | nominal |
| 5 | | Thermal | 12 | minutes | nominal |
| 6 | Torque (s): | Continuous, Stall | 334 (2.36) | oz-in (Nm) | min. [1] |
| 7 | (NOTE: Values are with | Continuous, Stall | 315 (2.22) | oz-in (Nm) | min. [2] |
| 8 | rated and peak current, | Continuous, Rated | 269 (1.90) | oz-in (Nm) | min. [2] |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 899 (6.35) | oz-in (Nm) | min. [1] |
| 10 | Drive current, and thus | Static Friction | 9.6 (0.07) | oz-in (Nm) | max. |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 5 | percent | max. [3] |
| 12 | Speed: | Rated | 7500 (125) | rpm (rps) | reference |
| 13 | | Maximum | 7500 (125) | rpm (rps) | reference |
| 14 | Frequency | Rated | 250 | Hz | max. |
| 15 | Current: | Rated | 6.0 | A rms | max. [1] |
| 16 | | Peak | 18.8 | A rms | nominal |
| 17 | Voltage: | Rated | 240 | V rms | reference |
| 18 | | Max | 250 | V rms | maximum |
| 19 | Output Power | Rated | 1.5 (2.0) | kWatts (hp) | min. [1] |
| 20 | Inductance | Terminal (line-line) | 9.4 | mH | ± 30% |
| 21 | D.C. Resistance | Terminal (line-line) | 1.6 | ohms | ± 10 % [1] |
| 22 | Acceleration at Rated Torque | | 82980 | rads/sec ² | Theoretical |
| 23 | Rotor Inertia | | 4.18 (76.5) | oz-in ² (kgm ² * 1E-6) | nominal |
| 24 | Damping | | 0.580 (0.0041) | oz-in/krpm (Nm/krpm) | nominal |
| 25 | Weight | | 8.5 (3.86) | lbs. (kg) | max. |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference |
| 28 | Insulation Class | | H | — | reference |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5° C |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10° C |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. |
| 32 | Winding Capacitance-to-Frame | | 0.00122 | µF | max. |
| 33 | IP Classification | | 65 [8] | rated | standard |
| 34 | Shaft: | Radial-Play At End | 12E-6 (68E-9) | in/lb (m/N) | reference |
| | | At Faceplate | 5.6E-6 (32E-9) | in/lb (m/N) | reference |
| 35 | Material [5] | | RC-#30 | — | — |
| 36 | Magnet Type | | NdFeB | — | — |
| 37 | Loading [6] | 1000 rpm (17 rps) | 84 (374) | lbs. (N) | max. [7] |
| | | 2000 rpm (33 rps) | 67 (298) | lbs. (N) | max. [7] |
| | | 3000 rpm (50 rps) | 58 (258) | lbs. (N) | max. [7] |
| | | 4000 rpm (67 rps) | 53 (236) | lbs. (N) | max. [7] |
| | | 5000 rpm (83 rps) | 49 (218) | lbs. (N) | max. [7] |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. |
| 41 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | |
| 42 | Stator Phase Sequence | | A-C-B (viewed from front face plate) | | |
| 43 | Vendor/Supplier | | Industrial Drives B-106-B | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | |
| 47 | Standard Motor Cable Part Number | | 71-013863-xx | | |
| 48 | Options: | Brake—24VDC (0.57A)—326 oz-in (2.3 Nm) Holding Torque IP67 Classification Incremental Encoder Tachometer No Keyway | | | |
| [1] 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | |
| [2] 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | |
| [3] Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | |
| [4] Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | |

APEX Motor Specifications

| | Motor Size: | APEX605 | Value | Units | Tolerance | |
|---|--|--|--|--|-------------|-----------|
| 1 | Constant (s): | Torque | 68.7 (0.49) | oz-in/A rms (Nm/A rms) | ± 10% | |
| 2 | | Voltage (Sinusoidal) | 29.4 | V rms/Krpm | ± 10% | |
| 3 | | Electrical Time | 10.68 | milliseconds | nominal | |
| 4 | | Mechanical Time | 1.46 | milliseconds | nominal | |
| 5 | | Thermal | 18 | minutes | nominal | |
| 6 | Torque (s): | Continuous, Stall | 367 (2.59) | oz-in (Nm) | min. [1] | |
| 7 | (NOTE: Values are with | Continuous, Stall | 346 (2.44) | oz-in (Nm) | min. [2] | |
| 8 | rated and peak current, | Continuous, Rated | 321 (2.27) | oz-in (Nm) | min. [2] | |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 1085 (7.66) | oz-in (Nm) | min. [1] | |
| 10 | Drive current, and thus | Static Friction | 0.96 (0.007) | oz-in (Nm) | max. | |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 5 | percent | max. [3] | |
| 12 | Speed: | Rated | 6200 (103) | rpm (rps) | reference | |
| 13 | | Maximum | 6200 (103) | rpm (rps) | reference | |
| 14 | Frequency | Rated | 207 | Hz | max. | |
| 15 | Current: | Rated | 5 | A rms | max. [1] | |
| 16 | | Peak | 16.6 | A rms | nominal | |
| 17 | Voltage: | Rated | 240 | V rms | reference | |
| 18 | | Max | 250 | V rms | maximum | |
| 19 | Output Power | Rated | 1.5 (2.0) | kWatts (hp) | min. [1] | |
| 20 | Inductance | Terminal (line-line) | 25 | mH | ± 30% | |
| 21 | D.C. Resistance | Terminal (line-line) | 2.3 | ohms | ± 10 % [1] | |
| 22 | Acceleration at Rated Torque | | 76870 | rads/sec ² | Theoretical | |
| 23 | Rotor Inertia | | 5.43 (99.6) | oz-in ² (kgm ² * 1E-6) | nominal | |
| 24 | Damping | | 0.96 (0.0068) | oz-in/krpm (Nm/krpm) | nominal | |
| 25 | Weight | | 10 (4.5) | lbs. (kg) | max. | |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. | |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference | |
| 28 | Insulation Class | | H | — | reference | |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5° C | |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10° C | |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. | |
| 32 | Winding Capacitance-to-Frame | | 0.00122 | µF | max. | |
| 33 | IP Classification | | 65 [8] | rated | standard | |
| 34 | Shaft: | Radial-Play | At End | 14E-6 (80E-9) | in/lb (m/N) | reference |
| | | | At Faceplate | 8E-6 (45E-9) | in/lb (m/N) | reference |
| 35 | Material [5] | | RC-#30 | — | — | |
| 36 | Magnet Type | | NdFeB | — | — | |
| 37 | Loading [6] | 1000 rpm (17 rps) | 85.4 (380) | lbs. (N) | max. [7] | |
| | | 2000 rpm (33 rps) | 67.8 (301) | lbs. (N) | max. [7] | |
| | | 3000 rpm (50 rps) | 59.1 (263) | lbs. (N) | max. [7] | |
| | | 4000 rpm (67 rps) | 53.8 (239) | lbs. (N) | max. [7] | |
| | | 5000 rpm (83 rps) | 50 (222) | lbs. (N) | max. [7] | |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference | |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference | |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. | |
| 41 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | | |
| 42 | Stator Phase Sequence | | A-C-B (viewed from front face plate) | | | |
| 43 | Vendor/Supplier | | Industrial Drives B-202-C | | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | | |
| 47 | Standard Motor Cable Part Number | | 71-013863-xx | | | |
| 48 | Options: | Brake—24VDC (0.57A)—850 oz-in (6.0 Nm) Holding Torque IP67 Classification Incremental Encoder Tachometer No Keyway | | | | |
| [1] 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | | |
| [2] 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | | |
| [3] Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | | |
| [4] Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | | |

APEX Motor Specifications

| | Motor Size: APEX606 | Value | Units | Tolerance | |
|-----|--|---|--|--|-------------|
| 1 | Constant (s): | Torque | 120 (0.85) | oz-in/A rms (Nm/A rms) | ± 10% |
| 2 | | Voltage (Sinusoidal) | 51.2 | V rms/Krpm | ± 10% |
| 3 | | Electrical Time | 15.32 | milliseconds | nominal |
| 4 | | Mechanical Time | 0.896 | milliseconds | nominal |
| 5 | | Thermal | 20 | minutes | nominal |
| 6 | Torque (s): | Continuous, Stall | 672 (4.75) | oz-in (Nm) | min. [1] |
| 7 | (NOTE: Values are with | Continuous, Stall | 634 (4.48) | oz-in (Nm) | min. [2] |
| 8 | rated and peak current, | Continuous, Rated | 576 (4.07) | oz-in (Nm) | min. [2] |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 1957 (13.82) | oz-in (Nm) | min. [1] |
| 10 | Drive current, and thus | Static Friction | 0.96 (0.007) | oz-in (Nm) | max |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 5 | percent | max. [3] |
| 12 | Speed: | Rated | 3600 (60) | rpm (rps) | reference |
| 13 | | Maximum | 3600 (60) | rpm (rps) | reference |
| 14 | Frequency | Rated | 120 | Hz | max. |
| 15 | Current: | Rated | 5.3 | A rms | max. [1] |
| 16 | | Peak | 17.2 | A rms | nominal |
| 17 | Voltage: | Rated | 240 | V rms | reference |
| 18 | | Max | 250 | V rms | maximum |
| 19 | Output Power: | Rated | 1.6 (2.1) | kWatts (hp) | min. [1] |
| 20 | Inductance: | Terminal (line-line) | 38 | mH | ± 30% |
| 21 | D.C. Resistance | Terminal (line-line) | 2.48 | ohms | ± 10 % [1] |
| 22 | Acceleration at Rated Torque | | 80000 | rads/sec ² | Theoretical |
| 23 | Rotor Inertia | | 9.44 (172.9) | oz-in ² (kgm ² * 1E-6) | nominal |
| 24 | Damping | | 1.344 (0.0095) | oz-in/krpm (Nm/krpm) | nominal |
| 25 | Weight | | 13.4 (6.1) | lbs. (kg) | max. |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference |
| 28 | Insulation Class | | H | — | reference |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5 °C |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10 °C |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. |
| 32 | Winding Capacitance to Frame | | 0.00201 | µF | max. |
| 33 | IP Classification | | 65 [8] | rated | standard |
| 34 | Shaft: Radial-Play | At End | 14E-6 (80E-9) | in/lb (m/N) | reference |
| | | At Faceplate | 8E-6 (45E-9) | ln/lb (m/N) | reference |
| 35 | Material [5] | | RC-#30 | — | — |
| 36 | Magnet Type | | NdFeB | — | — |
| 37 | Loading [6] | 1000 rpm (17 rps) | 90.1 (401) | lbs. (N) | rmax. [7] |
| | | 2000 rpm (33 rps) | 71.6 (318) | lbs. (N) | max. [7] |
| | | 3000 rpm (50 rps) | 62.4 (278) | lbs. (N) | max. [7] |
| | | 4000 rpm (67 rps) | N/A | lbs. (N) | max. [7] |
| | | 5000 rpm (83 rps) | N/A | lbs. (N) | max. [7] |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. |
| 41 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | |
| 42 | Stator Phase Sequence | | A-C-B (viewed from front face plate) | | |
| 43 | Vendor/Supplier | | Industrial Drives B-204-B | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | |
| 47 | Standard Motor Cable Part Number | | 71-013863-xx | | |
| 48 | Options: | Brake—24VDC (0.57A)—850 oz-in (6.0 NM) Holding Torque IP67 Classification Incremental Encoder Tachometer No Keyway | | | |
| [1] | 25°C (77°F) Ambient | [5] | Rotor steel is rated as fatigue proof | | |
| [2] | 40°C (104°F) Ambient | [6] | Loads centered 1 inch from mounting flange | | |
| [3] | Measured at 60 rpm (1rps) in Velocity Mode | [7] | Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | |
| [4] | Rated for 20,000 Hrs or 40,000 Hours@155°C (311°F) | [8] | Motor shaft is IP30 rated. | | |

APEX Motor Specifications

| | Motor Size: APEX610 | Value | Units | Tolerance | | |
|---|--|--|--|--|-------------|----------|
| 1 | Constant (s): | Torque | 61.4 (0.43) | oz-in/A rms (Nm/A rms) | ± 10% | |
| 2 | | Voltage (Sinusoidal) | 26.2 | V rms/Krpm | ±10% | |
| 3 | | Electrical Time | 13.16 | milliseconds | nominal | |
| 4 | | Mechanical Time | 0.762 | milliseconds | nominal | |
| 5 | | Thermal | 21 | minutes | nominal | |
| 6 | Torque (s): | Continuous, Stall | 977 (6.90) | oz-in (Nm) | min. [1] | |
| 7 | (NOTE: Values are with | Continuous, Stall | 921.6 (6.51) | oz-in (Nm) | min. [2] | |
| 8 | rated and peak current, | Continuous, Rated | 653 (4.61) | oz-in (Nm) | min. [2] | |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 2630 (18.57) | oz-in (Nm) | min. [1] | |
| 10 | Drive current, and thus | Static Friction | 0.96 (0.007) | oz-in (Nm) | max | |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 5 | percent | min. [3] | |
| 12 | Speed: | Rated | 7000 (117) | rpm (rps) | reference | |
| 13 | | Maximum | 7000 (117) | rpm (rps) | reference | |
| 14 | Frequency | Rated | 233 | Hz | max. | |
| 15 | Current: | Rated | 15 | A rms | max. [1] | |
| 16 | | Peak | 45 | A rms | nominal | |
| 17 | Voltage: | Rated | 230 | V rms | reference | |
| 18 | | Max | 250 | V rms | maximum | |
| 19 | Output Power: | Rated | 3.3 (4.5) | kWatts (hp) | min. [1] | |
| 20 | Inductance: | Terminal (line-line) | 5 | mH | ± 30% | |
| 21 | D.C. Resistance | Terminal (line-line) | 0.38 | ohms | ± 10 % [1] | |
| 22 | Acceleration at Rated Torque | | 73934 | rads/sec ² | Theoretical | |
| 23 | Rotor Inertia | | 13.72 (251.2) | oz-in ² (kgm ² * 1E-6) | nominal | |
| 24 | Damping | | 1.728 (0.0122) | oz-in/krpm (Nm/krpm) | nominal | |
| 25 | Weight | | 16.35 (7.43) | lbs. (kg) | max. | |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. | |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference | |
| 28 | Insulation Class | | H | — | reference | |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5 °C | |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10 °C | |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. | |
| 32 | Winding Capacitance-to-Frame | | 0.00205 | µF | max. | |
| 33 | IP Classification | | 65 [8] | rated | standard | |
| 34 | Shaft: | Radial-Play At End | 14E-6 (80E-9) | in/lb (m/N) | reference | |
| | | At Faceplate | 8E-6 (45E-9) | in/lb (m/N) | reference | |
| 35 | | Material [5] | RC-#30 | | | |
| 36 | | Magnet Type | NdFeB | | | |
| 37 | | Loading [6] | 1000 rpm (17 rps) | 93.5 (416) | lbs. (N) | max. [7] |
| | | | 2000 rpm (33 rps) | 74.2 (330) | lbs. (N) | max. [7] |
| | | | 3000 rpm (50 rps) | 64.8 (288) | lbs. (N) | max. [7] |
| | | | 4000 rpm (67 rps) | 59 (262) | lbs. (N) | max. [7] |
| | | | 5000 rpm (83 rps) | 54.7 (243) | lbs. (N) | max. [7] |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference | |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference | |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. | |
| 41 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | | |
| 42 | Stator Phase Sequence | | A-C-B (viewed from front face plate) | | | |
| 43 | Vendor/Supplier | | Industrial Drives B-206-D | | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | | |
| 47 | Standard Motor Cable Part Number | | 71-013864-xx | | | |
| 48 | Options: | Brake—24VDC (0.57A)—850 oz-in (6.0 Nm) Holding Torque | | | | |
| | | IP67 Classification | | | | |
| | | Incremental Encoder | | | | |
| | | Tachometer | | | | |
| | | No Keyway | | | | |
| [1] 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | | |
| [2] 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | | |
| [3] Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | | |
| [4] Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | | |

APEX Motor Specifications

| | Motor Size: APEX620 | Value | Units | Tolerance | |
|---|--|--|--|--|-------------|
| 1 | Constant (s): | Torque | 124.2 (0.877) | oz-in/A rms (Nm/A rms) | ± 10% |
| 2 | | Voltage (Sinusoidal) | 53 | V rms/Krpm | ± 10% |
| 3 | | Electrical Time | 23.4 | milliseconds | nominal |
| 4 | | Mechanical Time | 0.82 | milliseconds | nominal |
| 5 | | Thermal | 22 | minutes | nominal |
| 6 | Torque (s): | Continuous, Stall | 1974 (13.94) | oz-in (Nm) | min. [1] |
| 7 | (NOTE: Values are with | Continuous, Stall | 1862 (13.15) | oz-in (Nm) | min. [2] |
| 8 | rated and peak current, | Continuous, Rated | 1632 (11.52) | oz-in (Nm) | min. [2] |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 5299 (37.42) | oz-in (Nm) | min. [1] |
| 10 | Drive current, and thus | Static Friction | 25 (0.176) | oz-in (Nm) | max. |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 4.5 | percent | min. [3] |
| 12 | Speed: | Rated | 3700 (62) | rpm (rps) | reference |
| 13 | | Maximum | 3700 (62) | rpm (rps) | reference |
| 14 | Frequency | Rated | 123 | Hz | max. |
| 15 | Current: | Rated | 15 | A rms | max. [1] |
| 16 | | Peak | 45 | A rms | nominal |
| 17 | Voltage: | Rated | 230 | V rms | reference |
| 18 | | Max | 250 | V rms | maximum |
| 19 | Output Power: | Rated | 4.5 (6) | kWatts (hp) | min. [1] |
| 20 | Inductance: | Terminal (line-line) | 15 | mH | ± 30% |
| 21 | D.C. Resistance | Terminal (line-line) | 0.64 | Ohms | ± 10 % [1] |
| 22 | Acceleration at Rated Torque | | 57025 | rads/sec ² | Theoretical |
| 23 | Rotor Inertia | | 35.8 (656) | oz-in ² (kgm ² * 1E-6) | nominal |
| 24 | Damping | | 2.496 (0.0176) | oz-in/krpm (Nm/krpm) | nominal |
| 25 | Weight | | 29 (13.2) | lbs. (kg) | max. |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference |
| 28 | Insulation Class | | H | — | reference |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5 °C |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10 °C |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. |
| 32 | Winding Capacitance-to-Frame | | 0.0034 | µF | max. |
| 33 | IP Classification | | 65 [8] | rated | standard |
| 34 | Shaft: Radial-Play | At End | 20E-6 (114E-9) | in/lb (m/N) | reference |
| | | At Faceplate | 7E-6 (40E-9) | in/lb (m/N) | reference |
| 35 | Material [5] | | RC-#30 | — | — |
| 36 | Magnet Type | | NdFeB | — | — |
| 37 | Loading [6] | 1000 rpm (17 rps) | 154.7 (688) | lbs. (N) | max. [7] |
| | | 2000 rpm (33 rps) | 122.8 (546) | lbs. (N) | max. [7] |
| | | 3000 rpm (50 rps) | 107.2 (477) | lbs. (N) | max. [7] |
| | | 4000 rpm (67 rps) | N/A | lbs. (N) | max. [7] |
| | | 5000 rpm (83 rps) | N/A | lbs. (N) | max. [7] |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. |
| 41 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | |
| 42 | Stator Phase Sequence | | A-C-B (viewed from front face plate) | | |
| 43 | Vendor/Supplier | | Industrial Drives B-404-D | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | |
| 47 | Standard Motor Cable Part Number | | 71-013864-xx | | |
| 48 | Options: | Brake—24VDC (0.93A)—1130 oz-in (8.0 Nm) Holding Torque | | | |
| | | IP67 Classification | | | |
| | | Incremental Encoder | | | |
| | | Tachometer | | | |
| | | No Keyway | | | |
| [1] 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | |
| [2] 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | |
| [3] Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | |
| [4] Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | |

APEX Motor Specifications

| | Motor Size: APEX630 | Value | Units | Tolerance | | |
|---|--|---|---|---|--|--|
| 1 | Constant (s): | Torque | 175.3 (1.24) | oz-in/A rms (Nm/A rms) | ± 10% | |
| 2 | | Voltage (Sinusoidal) | 74.9 | V rms/Krpm | ± 10% | |
| 3 | | Electrical Time | 26.7 | milliseconds | nominal | |
| 4 | | Mechanical Time | 0.68 | milliseconds | nominal | |
| 5 | | Thermal | 28 | minutes | nominal | |
| 6 | Torque (s): | Continuous, Stall | 2788 (19.69) | oz-in (Nm) | min. [1] | |
| 7 | (NOTE: Values are with | Continuous, Stall | 2630 (18.57) | oz-in (Nm) | min. [2] | |
| 8 | rated and peak current, | Continuous, Rated | 2304 (16.27) | oz-in (Nm) | min. [2] | |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 7488 (52.88) | oz-in (Nm) | min. [1] | |
| 10 | Drive current, and thus | Static Friction | 40.7 (0.287) | oz-in (Nm) | max. | |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 4.5 | percent | min. [3] | |
| 12 | Speed: | Rated | 2500 (42) | rpm (rps) | reference | |
| 13 | | Maximum | 2500 (42) | rpm (rps) | reference | |
| 14 | Frequency | Rated | 83 | Hz | max. | |
| 15 | Current: | Rated | 15 | A rms | max. [1] | |
| 16 | | Peak | 45 | A rms | nominal | |
| 17 | Voltage: | Rated | 230 | V rms | reference | |
| 18 | | Max | 250 | V rms | maximum | |
| 19 | Output Power: | Rated | 4.3 (5.7) | kWatts (hp) | min. [1] | |
| 20 | Inductance: | Terminal (line-line) | 20 | mH | ± 30% | |
| 21 | D.C. Resistance | Terminal (line-line) | 0.75 | Ohms | ± 10 % [1] | |
| 22 | Acceleration at Rated Torque | | 56934 | rads/sec ² | Theoretical | |
| 23 | Rotor Inertia | | 50.7 (929) | oz-in ² (kgm ² * 1E-6) | nominal | |
| 24 | Damping | | 2.88 (0.020) | oz-in/krpm (Nm/krpm) | nominal | |
| 25 | Weight | | 32 (14.5) | lbs. (kg) | max. | |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. | |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference | |
| 28 | Insulation Class | | H | — | reference | |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5 °C | |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 5 °C | |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. | |
| 32 | Winding Capacitance to Frame | | 0.0038 | µF | max. | |
| 33 | IP Classification | | 65 [8] | rated | standard | |
| 34 | Shaft: | Radial-Play At End At Faceplate | 20E-6 (114E-9) 7E-6 (40E-9) | in/lb (m/N) in/lb (m/N) | reference reference | |
| 35 | | Material [5] | RC-#30 | — | — | |
| 36 | | Magnet Type | NdFeB | — | — | |
| 37 | | Loading [6] | 1000 rpm (17 rps) 2000 rpm (33 rps) 3000 rpm (50 rps) 4000 rpm (67 rps) 5000 rpm (83 rps) | 160 (712) 127.1 (565) N/A N/A N/A | lbs. (N) lbs. (N) lbs. (N) lbs. (N) lbs. (N) | max. [7] max. [7] max. [7] max. [7] max. [7] |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference | |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference | |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. | |
| 41 | Basic Motor Design | | 3 phase wye connected 2(P/2) | | | |
| 42 | Stator Phase Sequence—CW rotor rotation | | A-C-B (viewed from front face plate) | | | |
| 43 | Vendor/Supplier | | Industrial Drives B-406-D | | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | | |
| 47 | Standard Motor Cable Part Number | | 71-013864-xx | | | |
| 48 | Options: | Brake—24VDC (0.93A)—1130 oz-in (8.0 Nm) Holding Torque IP67 Classification Incremental Encoder Tachometer No Keyway | | | | |
| [1] 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | | |
| [2] 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | | |
| [3] Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | | |
| [4] Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | | |

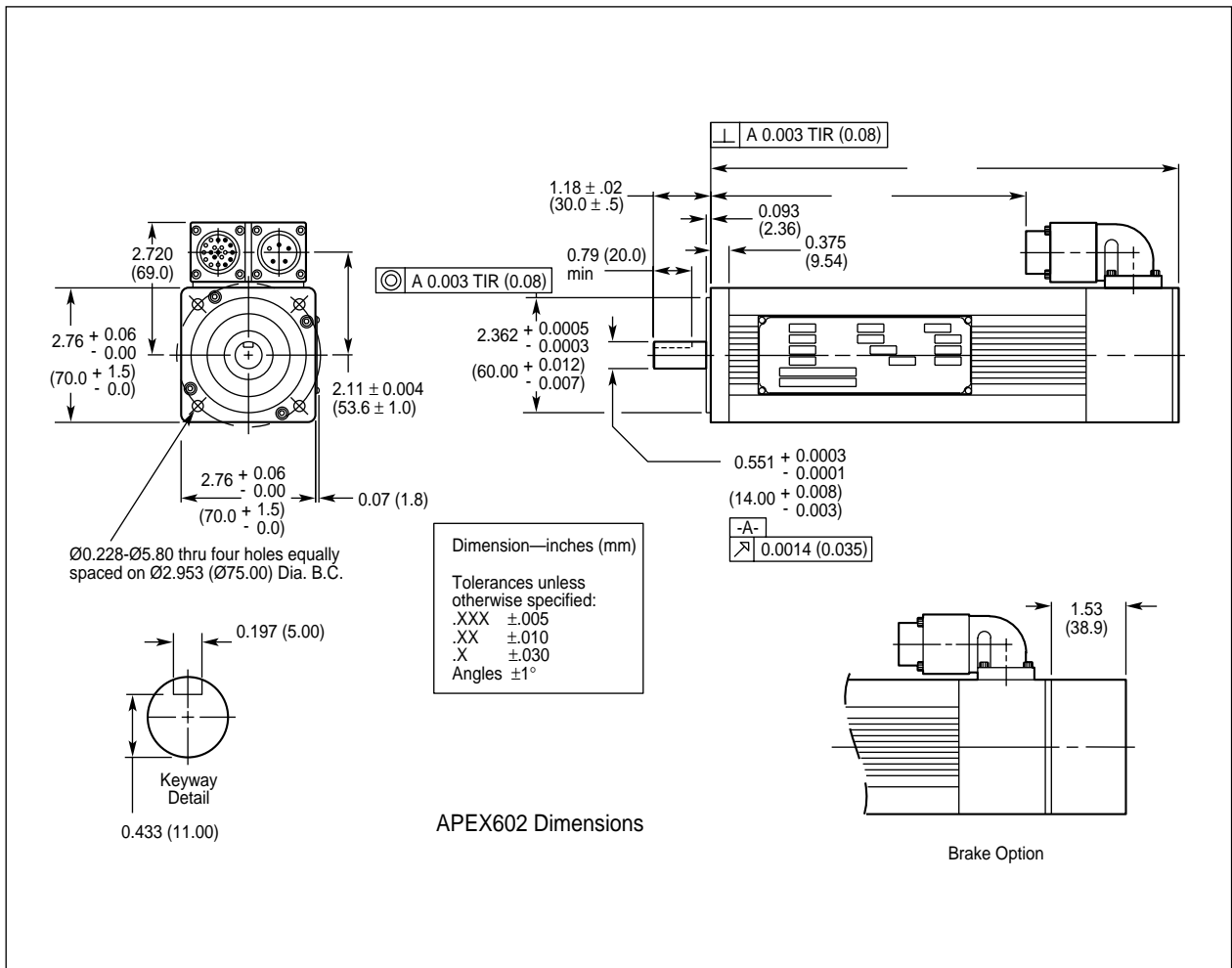
APEX Motor Specifications

| | Motor Size: APEX635 | Value | Units | Tolerance | | |
|---|--|---|---|---|--|--|
| 1 | Constant (s): | Torque | 164.0 (1.154) | oz-in/A rms (Nm/A rms) | ± 10% | |
| 2 | | Voltage (Sinusoidal) | 70 | V rms/Krpm | ± 10% | |
| 3 | | Electrical Time | 0.77 | milliseconds | nominal | |
| 4 | | Mechanical Time | 20.8 | milliseconds | nominal | |
| 5 | | Thermal | 28 | minutes | nominal | |
| 6 | Torque (s): | Continuous, Stall | 2605 (18.39) | oz-in (Nm) | min. [1] | |
| 7 | (NOTE: Values are with | Continuous, Stall | 2458 (17.36) | oz-in (Nm) | min. [2] | |
| 8 | rated and peak current, | Continuous, Rated | 2054 (14.50) | oz-in (Nm) | min. [2] | |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 7008 (49.49) | oz-in (Nm) | min. [1] | |
| 10 | Drive current, and thus | Static Friction | 69 (0.49) | oz-in (Nm) | max. | |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 4.5 | percent | min. [3] | |
| 12 | Speed: | Rated | 3000 (50) | rpm (rps) | reference | |
| 13 | | Maximum | 3000 (50) | rpm (rps) | reference | |
| 14 | Frequency | Rated | 150 | Hz | max. | |
| 15 | Current: | Rated | 15 | A rms | max. [1] | |
| 16 | | Peak | 45 | A rms | nominal | |
| 17 | Voltage: | Rated | 230 | V rms | reference | |
| 18 | | Max | 250 | V rms | maximum | |
| 19 | Output Power: | Rated | 4.5 (6.1) | kWatts (hp) | min. [1] | |
| 20 | Inductance: | Terminal (line-line) | 14 | mH | ± 30% | |
| 21 | D.C. Resistance | Terminal (line-line) | 0.647 | Ohms | ± 10 % [1] | |
| 22 | Acceleration at Rated Torque | | 48945 | rads/sec ² | Theoretical | |
| 23 | Rotor Inertia | | 56.1 (1028) | oz-in ² (kgm ² * 1E-6) | nominal | |
| 24 | Damping | | 2.88 (0.020) | oz-in/krpm (Nm/krpm) | nominal | |
| 25 | Weight | | 37 (16.8) | lbs. (kg) | max. | |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. | |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference | |
| 28 | Insulation Class | | H | — | reference | |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5 °C | |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 5 °C | |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. | |
| 32 | Winding Capacitance to Frame | | 0.0038 | µF | max. | |
| 33 | IP Classification | | 65 | rated | standard | |
| 34 | Shaft: | Radial-Play At End At Faceplate | 20E-6 (114E-9) 7E-6 (40E-9) | in/lb (m/N) in/lb (m/N) | reference reference | |
| 35 | | Material [5] | RC-#30 | | | |
| 36 | | Magnet Type | NdFeB | | | |
| 37 | | Loading [6] | 1000 rpm (17 rps) 2000 rpm (33 rps) 3000 rpm (50 rps) 4000 rpm (67 rps) 5000 rpm (83 rps) | 243.5 (1,083) 193.3 (860) 168.8 (751) N/A N/A | lbs. (N) lbs. (N) lbs. (N) lbs. (N) lbs. (N) | max. [7] max. [7] max. [7] max. [7] max. [7] |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference | |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference | |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. | |
| 41 | Basic Motor Design | | 3 phase wye connected 3(P/2) | | | |
| 42 | Stator Phase Sequence—CW rotor rotation | | A-C-B (viewed from front face plate) | | | |
| 43 | Vendor/Supplier | | Industrial Drives B-602-C | | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | | |
| 47 | Standard Motor Cable Part Number | | 71-013865-xx | | | |
| 48 | Options: | Brake—24VDC (0.93A)— 1130 oz-in(8.0 Nm) Holding Torque IP67 Classification Incremental Encoder Tachometer No Keyway | | | | |
| [1] 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | | |
| [2] 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | | |
| [3] Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | | |
| [4] Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | | |

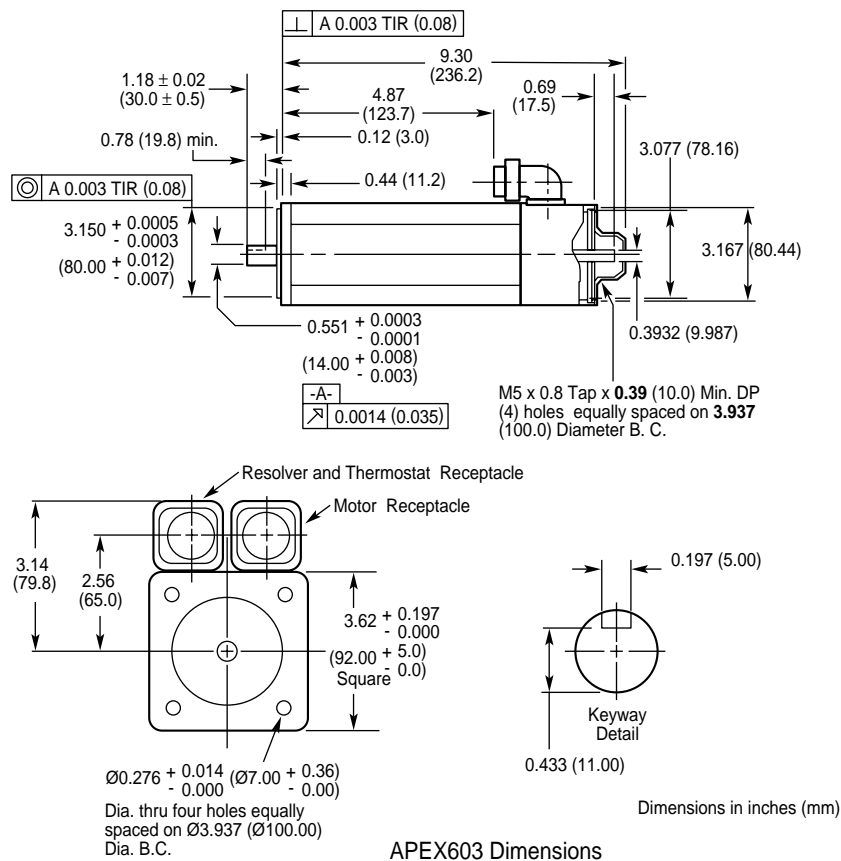
APEX Motor Specifications

| | Motor Size: | APEX640 | Value | Units | Tolerance |
|---|--|---|--|--|-------------|
| 1 | Constant (s): | Torque | 291.5 (2.06) | oz-in/A rms (Nm/A rms) | ± 10% |
| 2 | | Voltage (Sinusoidal) | 124.5 | V rms/Krpm | ± 10% |
| 3 | | Electrical Time | 26.2 | milliseconds | nominal |
| 4 | | Mechanical Time | 0.55 | milliseconds | nominal |
| 5 | | Thermal | 33 | minutes | nominal |
| 6 | Torque (s): | Continuous, Stall | 4640 (32.76) | oz-in (Nm) | min. [1] |
| 7 | (NOTE: Values are with | Continuous, Stall | 4378 (30.92) | oz-in (Nm) | min. [2] |
| 8 | rated and peak current, | Continuous, Rated | 3955 (27.93) | oz-in (Nm) | min. [2] |
| 9 | lines 15 & 16 below. | Peak, Max w/o Saturation | 12461 (87.99) | oz-in (Nm) | min. [1] |
| 10 | Drive current, and thus | Static Friction | 73 (0.52) | oz-in (Nm) | max. |
| 11 | torque, may be lower.) | Ripple (of Rated Torque) | 4.5 | percent | max. [3] |
| 12 | Speed: | Rated | 1600 (27) | rpm (rps) | reference |
| 13 | | Maximum | 1600 (27) | rpm (rps) | reference |
| 14 | Frequency | Rated | 80 | Hz | max. |
| 15 | Current: | Rated | 15 | A rms | max. [1] |
| 16 | | Peak | 45 | A rms | nominal |
| 17 | Voltage: | Rated | 230 | V rms | reference |
| 18 | | Max | 250 | V rms | maximum |
| 19 | Output Power: | Rated | 4.7 (6.3) | kWatts (hp) | min. [1] |
| 20 | Inductance: | Terminal (line-line) | 20 | mH | ± 30% |
| 21 | D.C. Resistance | Terminal (line-line) | 0.763 | Ohms | ± 10 % [1] |
| 22 | Acceleration at Rated Torque | | 43667 | rads/sec ² | Theoretical |
| 23 | Rotor Inertia | | 111.0 (2034) | oz-in ² (kgm ² * 1E-6) | nominal |
| 24 | Damping | | 15.36 (0.1085) | oz-in/krpm (Nm/krpm) | nominal |
| 25 | Weight | | 51 (23.2) | lbs. (kg) | max. |
| 26 | Winding Temperature | | 170°C (338°F) [4] | °C (°F) | max. |
| 27 | Winding Temperature Rise (Above Ambient) [1] | | 145°C (293°F) | °C (°F) | reference |
| 28 | Insulation Class | | H | — | reference |
| 29 | Thermostat TRIP Temperature | | 170°C (338°F) | °C (°F) | ± 5 °C |
| 30 | Thermostat RESET Temperature | | 135°C (275°F) | °C (°F) | ± 10 °C |
| 31 | Dielectric Strength, (Winding-to-Frame) | | 1750 | VAC | min. |
| 32 | Winding Capacitance to Frame | | 0.0082 | µF | max. |
| 33 | IP Classification | | 65 [8] | rated | standard |
| 34 | Shaft: | Radial-Play | 10E-6 (57E-9) | in/lb (m/N) | reference |
| | | At End | 4E-6 (23E-9) | in/lb (m/N) | reference |
| | | At Faceplate | | | |
| 35 | | Material [5] | RC-#30 | — | — |
| 36 | | Magnet Type | NdFeB | — | — |
| 37 | | Loading [6] | 255.6 (1,130) | lbs. (N) | max. [7] |
| | | 1000 rpm (17 rps) | N/A | lbs. (N) | max. [7] |
| | | 2000 rpm (33 rps) | N/A | lbs. (N) | max. [7] |
| | | 3000 rpm (50 rps) | N/A | lbs. (N) | max. [7] |
| | | 4000 rpm (67 rps) | N/A | lbs. (N) | max. [7] |
| | | 5000 rpm (83 rps) | N/A | lbs. (N) | max. [7] |
| 38 | Bearing Class, Internal/External | | 1/Class 3 | ABEC/AFBMA | reference |
| 39 | Bearing Grease | | SRI #2 | Manufacturer | reference |
| 40 | Shaft Seal Pressure | | 3 (0.21) | psi (kg/cm ²) | max. |
| 41 | Basic Motor Design | | 3 phase wye connected 3(P/2) | | |
| 42 | Stator Phase Sequence—CW rotor rotation | | A-C-B (viewed from front face plate) | | |
| 43 | Vendor/Supplier | | Industrial Drives B-604-D | | |
| 44 | Resolver Type/Accuracy | | Single-Speed; Rotor-Excited; ± 10 arc min. | | |
| 45 | Resolver Manufacturer/Model # | | Fasco # 21-BRCX-335-J39 | | |
| 46 | Standard Resolver Cable Part Number | | 71-013862-xx | | |
| 47 | Standard Motor Cable Part Number | | 71-013865-xx | | |
| 48 | Options: | Brake—24VDC (1.27A)—6800 oz-in (48 Nm) Holding Torque IP67 Classification Incremental Encoder Tachometer No Keyway | | | |
| [1] 25°C (77°F) Ambient | | [5] Rotor steel is rated as fatigue proof | | | |
| [2] 40°C (104°F) Ambient | | [6] Loads centered 1 inch from mounting flange | | | |
| [3] Measured at 60 rpm (1 rps) in Velocity Mode | | [7] Loads may be radial and axial such that the sum of the radial and two times the axial does not exceed this figure. | | | |
| [4] Rated for 20,000 Hours or 40,000 Hours @ 155° C (311°F) | | [8] Motor shaft is IP30 rated. | | | |

APEX MOTOR DIMENSIONS

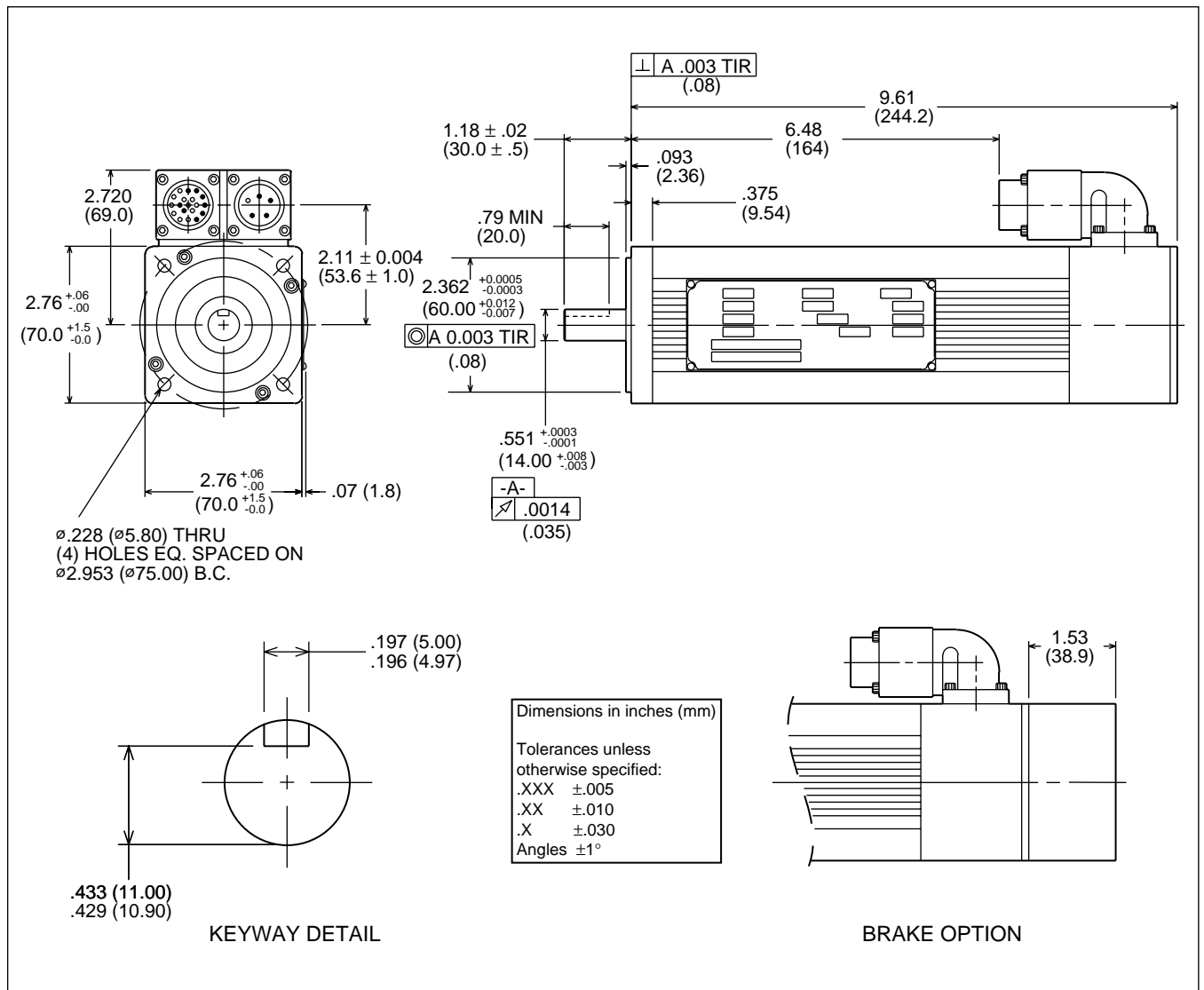


APEX602 Motor Dimensions

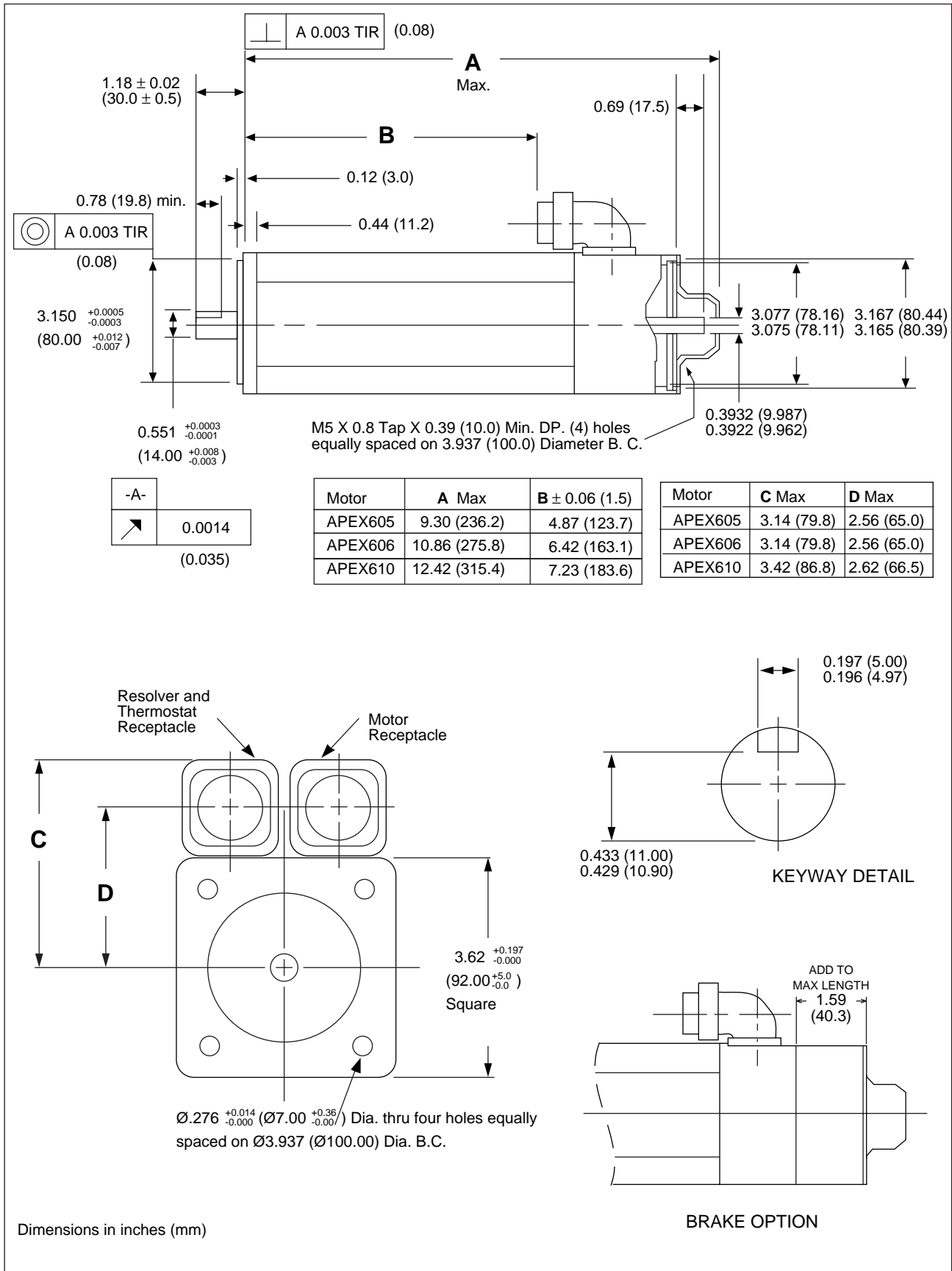


APEX603 Dimensions

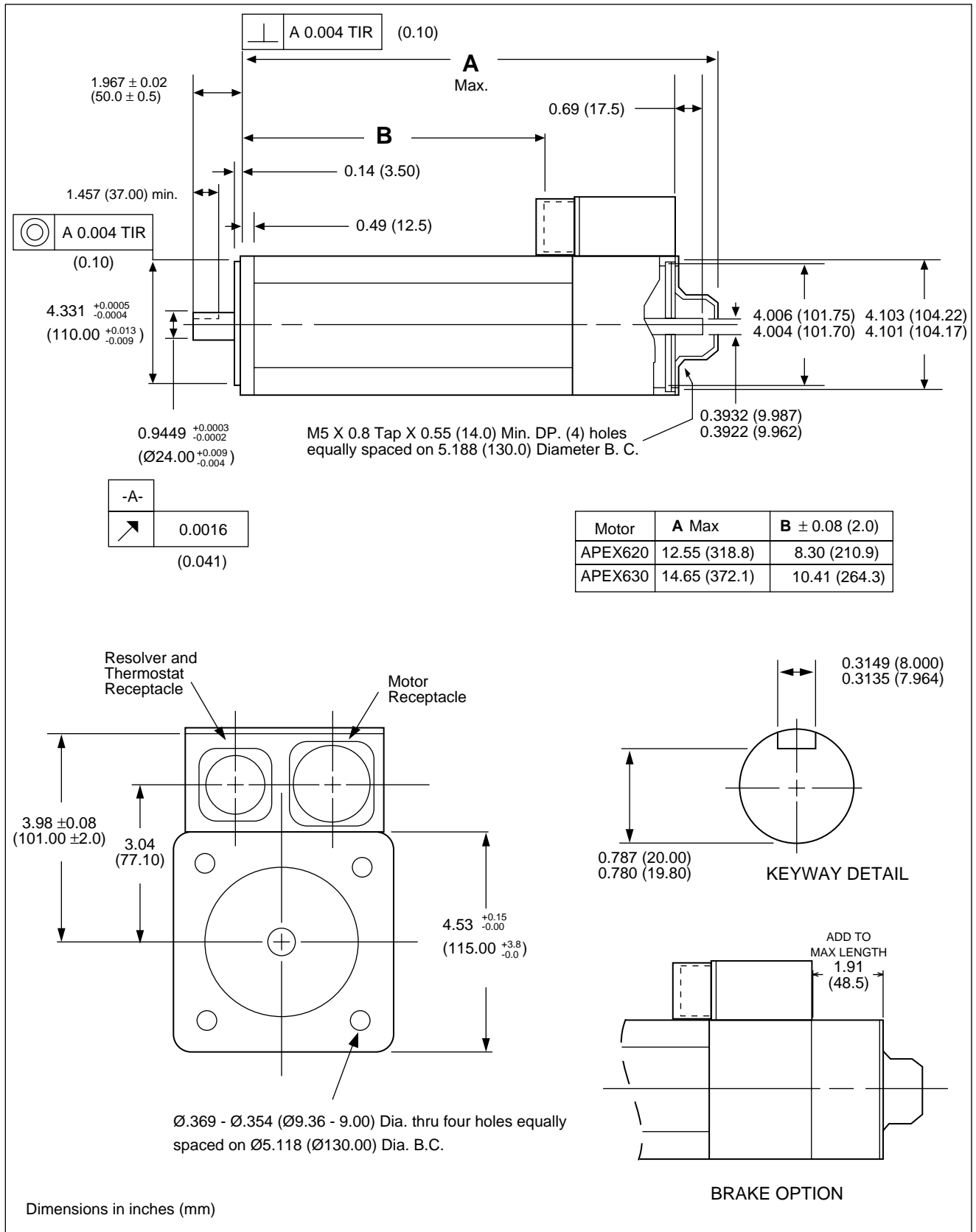
APEX603 Motor Dimensions



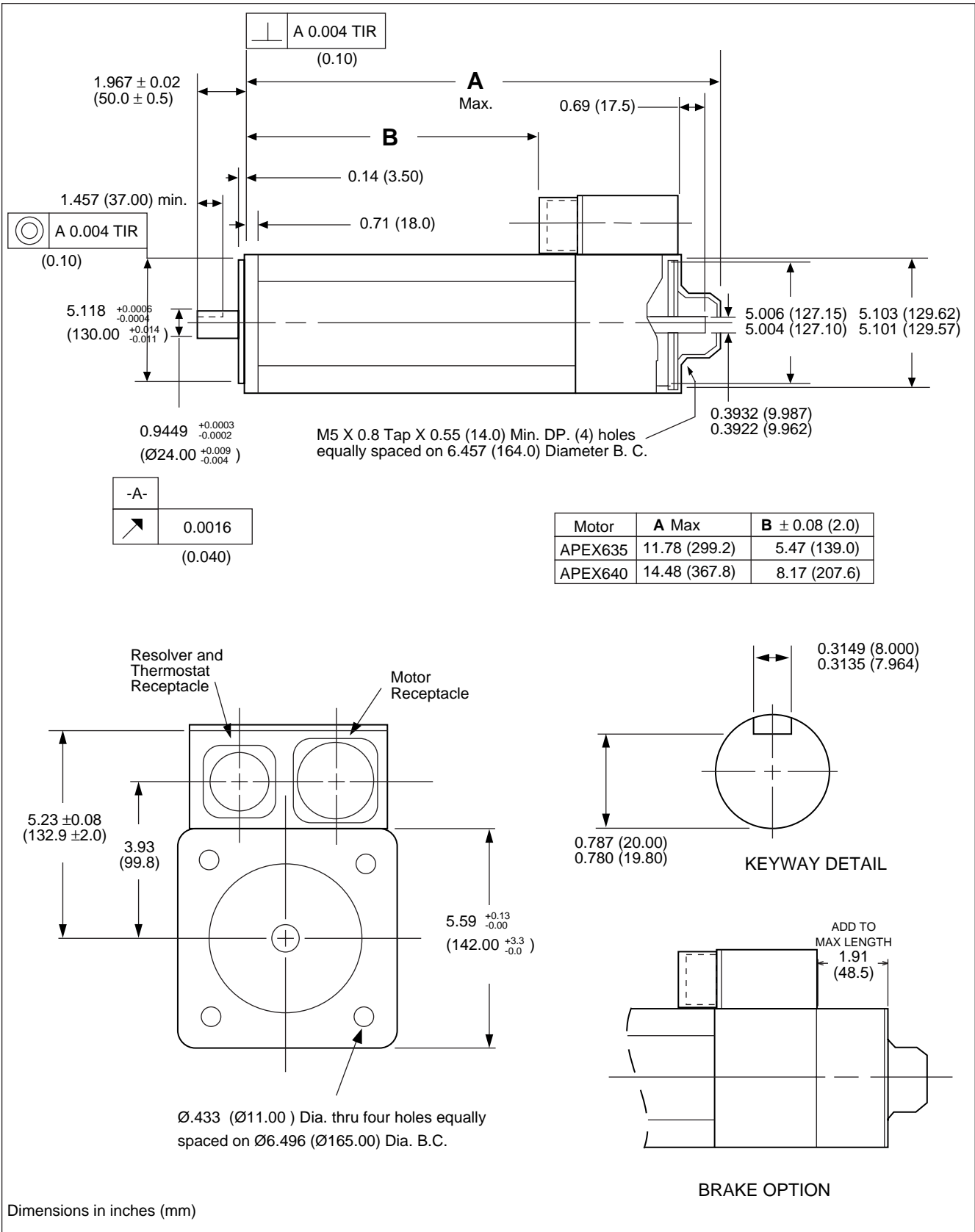
APEX604 Motor Dimensions



APEX605, APEX606, APEX610 Motor Dimensions



APEX620 & APEX630 Motor Dimensions



APEX635 & APEX640 Motor Dimensions