| | |
|---|---|
| **RFQ Number** | BL-INSTRM-RFQ-25001 |
| **Request for Quotation Date** | **13 July 2026** |
| **RFQ Closing Date** | **21 July 2026** |
| **RFQ Closing Time** | **16:00** |
| **Compulsory Site Briefing** | **NA** |
| **Contact Person** | **Sinovuyo.pani@necsa.co.za** |
| **Quotation Validity** | **90 Days from the closing date** |
| **Submission Details** | **RFQ Response must be sent to: Sinovuyo.pani@necsa.co.za** |
| **RFQ Description** | **Request for Quotation: Parker compumotor E-DC microstepping drive** |

Dear Service Provider

Kindly provide a quotation for goods and or services as outlined in section 2 and 3 of this document.

## 1. Introduction

The South African Nuclear Energy Corporation Limited (Necsa) is a state-owned public company (SOC), registered in terms of the Companies Act, (Act No. 61 of 1973), registration number 2000/003735/06.

The Necsa Group engages in commercial business mainly through its wholly-owned commercial subsidiaries: NTP Radioisotopes SOC Ltd (NTP), which is responsible for a range of radiation-based products and services for healthcare, life sciences and industry, and Pelchem SOC Ltd (Pelchem), which supplies fluorine and fluorine-based products. Both subsidiaries, together with their subsidiaries, supply local and global markets, earning valuable foreign exchange for South Africa and are among the best in their field in their respective world markets.

Necsa's safety, health, environment and quality policies provides for top management commitment to compliance with regulatory requirements of ISO 14001, OHSAS 18001 and RD 0034 (Quality and Safety Management Requirements for Nuclear Installations), ISO 9001 and ISO 17025.

Necsa promotes the science, technology and engineering expertise of South Africa and improves the public understanding of these through regular communications at various forums and outreach programmes to the community. We are a proudly South African company continuously striving, and succeeding in many respects, to be at the edge of science, technology and engineering related to the safe use of nuclear knowledge to improve our world.

For more information on Necsa, please visit: www.necsa.co.za

## 2. Scope of Work

The purpose of this RFQ is the supply of Parker E-DC microstepping drive suitable for precision motion control applications. The drive shall be used for the control of linear and rotation stages in conjunction with Heidenhain encoders.

## 3. Specification of Services

Procurement of Parker compumotor E-DC microstepping drives with original Parker E-DC drive specifications attached in Appendix A, subject to the following requirements:

i. The drive shall be suitable for precision motion control.
ii. The drive shall be electrically identical to the installed Parker E-DC drive.
iii. The drive shall be compatible with the current mounting arrangement without requiring any modifications.
iv. The drive shall interface with the existing terminal wiring without the need for rewiring.

If new units are unavailable, refurbished units that meet OEM specifications and include the standard warranty shall be considered.

The supply quantity: 15 units

## 4. Pricing

- All price quoted to include all applicable taxes.
- Price must be fixed and firm.
- Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable, disbursements etc.
- Quotation must be completed in full, incomplete quote could result in a quote being disqualified.
- Payment will be according to Necsa's General Conditions of Purchase.

## 5. Evaluation

### 5.1. Phase 1- Functionality Evaluation / Technical Evaluation

Where functional or technical evaluation criterion is applicable, assessment will be performed in terms of the criterion listed below and the criterion may include Technical, Performance, Quality and Risk.

If the Bidder's response to the Technical templates does not indicate that the Bidder can support an acceptable technical solution, the Bidder's response will be rejected and not evaluated further.

Together the Technical, Performance & Quality and Risk criteria make up the functionality criterion and a Bidder's Proposal will be evaluated for functionality out of a possible 100 points. Only RFQ responses achieving an evaluation score of greater than the set threshold points out of the possible 100 points and which score a number of points for functionality that is greater than or equal to the set threshold points of the number of points achieved by the highest scoring Bid for functionality will be selected to progress to the second stage.

5.2. **Phase 2 - Evaluation In Terms Of Preferential Procurement Policy Framework Act, 2022**

This bid will be evaluated and adjudicated according to the 80/20 point system, in terms of which a maximum of 80 points will be awarded for price and 20 points will be allocated based on the specific goals ( B-BBE status level).

| | POINTS |
|---|---|
| **PRICE** | **80** |
| **SPECIFIC GOALS ( B-BBEE status level)** | **20** |
| **Total points for Price and SPECIFIC GOALS** | **100** |

**Preference goal**
**B-BBEE status level contributor**

| B-BBEE Status Level of Contributor | Number of points (80/20 system) |
|---|---|
| 1 | 20 |
| 2 | 18 |
| 3 | 14 |
| 4 | 12 |
| 5 | 8 |
| 6 | 6 |
| 7 | 4 |
| 8 | 2 |
| Non-compliant contributor | 0 |

## 6. Required Documentation

- Tax Clearance Certificate ( Tax pin issued by SARS)
- Declaration of interest ( SBD 4)
- BEE Certificate / Applicable Affidavit if classified as EME
- Letter of Good Standing (COID) only if Applicable due to the nature of work required
- Any other document or certification that might have been requested on this RFQ

## 7. Important

7.1. Quotation must be submitted on or before the RFQ closing date and time stated above.

7.2. Orders above R 30 000 will be evaluated according to the PPPFA 80/20-point system and a functionality scorecard where applicable and the ones above R 1 Million will be subjected to the tender process.

7.3. This RFQ is subjected to the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC) and, if applicable, any other legislation or special conditions of contract

7.4. Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for specific goals are not claimed.

7.5. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to specific goals, in any manner required by the purchaser.

7.6. For a Bidder to obtain clarity on any matter arising from or referred to in this document, please refer queries, in writing, to the contact details provided above. Under no circumstances may any other employee within Necsa be approached for any information. Any such action might result in a disqualification of a response submitted in competition to this RFQ.

7.7. No goods and/or services should be delivered to Necsa without an official Necsa Purchase order.

7.8. Necsa reserves the right to; cancel or reject any quote and not to award the RFQ to the lowest Bidder or award parts of the RFQ to different Bidders, or not to award the RFQ at all.

7.9. The supplier shall under no circumstances offer, promise or make any gift, payment, loan, reward, inducement, benefit or other advantage, which may be construed as being made to solicit any favour, to any Necsa employee or its representatives. Such an act shall constitute a material breach of the Agreement and the Necsa shall be entitled to terminate the Agreement forthwith, without prejudice to any of its rights

7.10. By responding to this request, it shall be construed that: the bidder, hereby acknowledge to be fully conversant with the details and conditions set out in the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC), Technical Information and Specifications attached, and hereby agree to supply, render services or perform works in accordance therewith

Appendix A:




## Lower-Cost DC Power Input Microstepping Drive

Compumotor's new E-DC microstepping drive is designed for a 48VDC input power requirement and provides current up to 4.8 Amps peak of current to the motor.

### Features

#### Performance

- Designed for use with motor inductance range of 0.2 mH–80 mH
- Three-state current control allows the drive and motor to run cooler and more efficiently than two-state drives
- Selectable resolution up to 50,800 steps/rev
- Auto standby reduces motor current (and heating) at rest
- Provides 0.2 Amps to 4.8 Amps (peak)
- Single 24-48 VDC power supply input
- Compatible with a variety of motors
- Six predefined current waveforms to optimize smoothness

#### Protection

- Optically isolated step and direction inputs
- Short circuit protected—phase-to-phase, and phase-to-ground
- Power dump circuitry to protect drive from regeneration caused by large inertial loads
- Self-test feature to verify proper system operation
- Overtemperature circuitry protects the drive from thermal damage

#### Physical

- Status/fault LED indicators to confirm proper operation
- ASIC and surface mount technologies minimize product footprint, overall package size, and increase product reliability
- Removable snap-on molded cover for convenient configuration and protection against contaminants
- Optically isolated fault output for embedded applications
- Heat plate design allows thermal dissipation through a suitable heat dissipating mounting surface
- Simplified, two-screw mounting
- Right-angle screw terminal allows side-to-side mounting or Eurorack compatibility
- Overall dimensions 5.0 x 3.6 x 1.6 in. (127 x 91 x 41 mm)
- Convenient configuration DIP switches
- Certified as UL-recognized component
- CE (LVD & EMC)

Catalog 8000-4/USA

## Specifications E SERIES

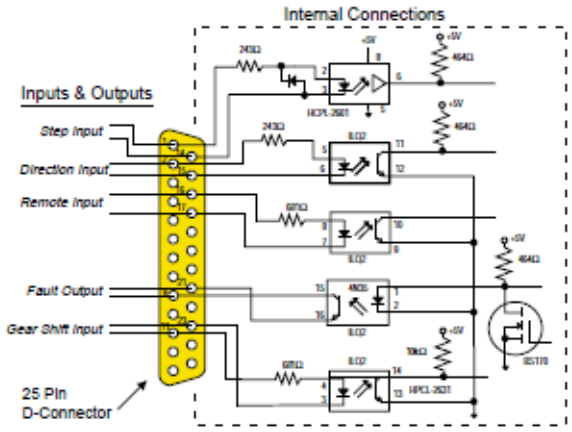
### E-DC Drive Specifications

| | Parameter | Value |
|---|---|---|
| **Power Input** | | |
| | DC | 24–48 VDC @ 2.0 Arms (motor dependant) |
| **Performance** | | |
| | Accuracy | ±5 arc min (0.0833°) typical.<br>Unloaded-bidirectional with Compumotor supplied motors. Other motors may exhibit different absolute accuracy.<br>±1 arc min (0.0167°) typical/per each frictional load equal to 1% rated torque.<br>Loaded-In addition to unloaded accuracy. |
| | Repeatability | ±5 arc sec (0.0014°) typical.<br>Unloaded-one revolution returning to start point from same direction. |
| | Hysteresis | Less than 2 arc min (0.0334°) unloaded-bidirectional. |
| | Resolution | 16 selectable choices: 200, 400, 1000, 2000, 5000, 10000, 12800, 18000, 20000, 21600, 25000, 25400, 25600, 36000, 50000, 50800 |
| | Waveform | Selectable. Allows waveform shaping for optimum smoothness or relative accuracy. Pure sine; -4%, -6%, -8%, -10% 3rd harmonic. |
| **Amplifier** | | |
| | Type | 20 kHz fixed frequency, variable duty cycle pulse width modulated (PWM)<br>Current Controlled, bipolar chopper |
| | Number of Phases | 2 |
| | Output Current | 0.2–4.8 amps current per phase peak (selectable) |
| | Drive Supply Voltage | 24–48 VDC (dependent on external power supply) |
| | Standby Current Reduction | 25%, 50%, or 75% of selected motor current |
| | Nominal Chopping Frequency | 20 kHz |
| | Max Stepping Rate | 2 MHz max pulse rate; 50 rps max speed |
| | Step Input | High-going pulse, 200 nsec min width; max pulse rate is 2 MHz; User-supplied driver for the step and direction inputs should be capable of providing a minimum of 6.5 mA to maximum of 15 mA |
| | Direction Input | Logic High = positive (CW) rotation—3.5–5.0V<br>Logic Low = negative (CCW) rotation—0–0.4V<br>User-supplied driver for the step and direction inputs should be capable of providing a minimum of 6.5 mA to a maximum of 15 mA. The direction input must be stable for at least 200 µsec before the drive receives the first pulse |
| | Fault Output | Open-Collector/Emitter, Vce = 70 VDC, Vce sat = 0.3 VDC, Ic = 10 mA (max)<br>Maximum dissipation = 55 mW<br>Conducting = normal operation<br>Non conduction = drive fault |
| **Protective Circuits** | | |
| | Short Circuit* | Phase-to-phase, phase-to-ground |
| | Undervoltage | If DC supply drops below 24 VDC |
| | Overtemperature* | The drive will fault if heat plate exceeds 55°C |
| **Environmental** | | |
| | Drive Temp | Max allowable ambient temperature is 122°F (50°C). Fan cooling may be required if airflow is restricted. Max allowable heatplate temperature is 55°C. |
| | Humidity | 0 to 95%, Non-condensing |
| **Physical** | | |
| | Drive Dimensions | 5.0 x 3.6 x 1.6 in (127 x 91 x 41 mm) |
| | Weight | 12 oz |
| **Motor** | | |
| | Type | Two-phase hybrid permanent magnet, 1.8° |
| | Number of Leads | 4, 6, or 8 |
| | Inductance Range | 0.2 mH–80 mH |

* Drive shuts down in conditions listed. Power must be cycled or drive reset to resume operations.

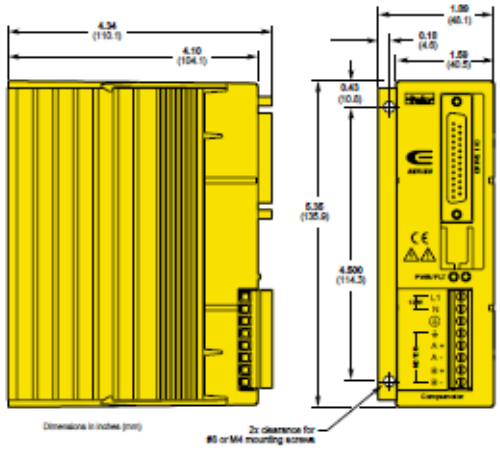
See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

## E Series Connections

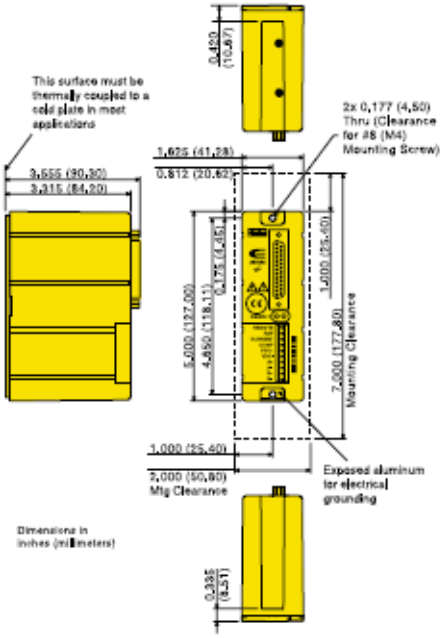



| E Series Screw-Terminal | |
|---|---|
| **Pin No** | **Signal** |
| 1 (Top) | LINE |
| 2 | NEUTRAL |
| 3 | GND |
| 4 | MOTOR GND |
| 5 | A+ |
| 6 | A- |
| 7 | B+ |
| 8 (Bottom) | B- |

## E-AC Dimensions



## E-DC Drive Dimensions



Catalog 8000-4/USA

## Specifications

## E SERIES

### OS Series Motor Specifications Size 23 Frame

| Parameters | | E-DC OS2HA | E-DC OS21A | E-DC OS22A | E-AC OS2HB | E-AC OS21B | E-AC OS22B |
|---|---|---|---|---|---|---|---|
| Static torque | oz-in (Nm) | 49.1 (0.35) | 114 (0.81) | 186 (1.31) | 61.35 (0.43) | 126.5 (0.84) | 238 (1.68) |
| Rotor Inertia | oz-in$^2$ (kg-cm$^2$) | 0.39 (0.07) | 0.66 (0.12) | 1.39 (0.25) | 0.39 (0.07) | 0.66 (0.12) | 1.39 (0.25) |
| Drive Current Apk (Arms) | Series<br>Parallel | 3.0 (2.12)<br>NA | 4.8 (3.39)<br>NA | 4.8 (3.39)<br>NA | 1.76 (1.24)<br>3.25 (2.30) | 1.88 (1.33)<br>3.5 (2.47) | 2.38 (1.68)<br>3.5 (2.47) |
| Phase Inductance (mH) | Series<br>Parallel | 1.7<br>NA | 1.8<br>NA | 2.8<br>NA | 8.6<br>2.2 | 12<br>3 | 16.6<br>4.2 |
| Detent Torque | oz-in (N-m) | 2.5 (0.02) | 4.0 (0.03) | 7.0 (0.05) | 2.5 (0.02) | 4.0 (0.03) | 7.0 (0.05) |
| Bearings Information | | | | | | | |
| Thrust Load | lb (kg) | 13 (5.9) | 13 (5.9) | 13 (5.9) | 13 (5.9) | 13 (5.9) | 13 (5.9) |
| Radial Load | lb (kg) | 20 (9.1) | 20 (9.1) | 20 (9.1) | 20 (9.1) | 20 (9.1) | 20 (9.1) |
| End Play (Reversing load equal to 1 lb) | in (mm) | 0.001 (0.025) | 0.001 (0.025) | 0.001 (0.025) | 0.001 (0.025) | 0.001 (0.025) | 0.001 (0.025) |
| Radial Play (Per 0.5 lb load) | in (mm) | 0.0008 (0.02) | 0.0008 (0.02) | 0.0008 (0.02) | 0.0008 (0.02) | 0.0008 (0.02) | 0.0008 (0.02) |
| Motor Weight | lb (kg) | 1 (0.5) | 1.5 (0.7) | 2.5 (1.1) | 1 (0.5) | 1.5 (0.7) | 2.5 (1.1) |
| Certifications | UL recognized<br>CE (LVD)<br>CE (EMC & LVD) | Pending<br>Yes<br>No | Pending<br>Yes<br>No | Pending<br>Yes<br>No | Pending<br>Yes<br>No | Pending<br>Yes<br>No | Pending<br>Yes<br>No |

See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

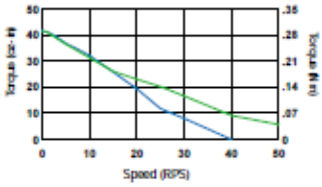
VS Series
Motor Specifications
Size 17, 23 and 34 Frame

| Parameters | | Size 17 Frame VS12B | Size 17 Frame VS13B | Size 23 Frame VS21B | Size 23 Frame VS22B | Size 23 Frame VS23B | Size 34 Frame VS31B | Size 34 Frame VS32B |
|---|---|---|---|---|---|---|---|---|
| Static torque - E-AC | oz-in (Nm) | 55.27 (0.39) | 72.8 (0.51) | 115.5 (0.82) | 194.5 (1.37) | 334.5 (2.36) | 551.8 (3.90) | 1269.67 (8.97) |
| Static torque - E-DC | oz-in (Nm) | 58 (0.41) | 81 (0.57) | 115 (0.81) | 156 (1.10) | 330 (2.33) | 442 (3.12) | 664 (4.69) |
| Rotor Inertia | oz-in$^2$ (kg-cm$^2$) | 0.3 (0.054) | 0.37 (0.068) | 0.66 (0.12) | 1.64 (0.3) | 2.62 (0.48) | 7.65 (1.4) | 14.8 (2.7) |
| Drive Current Apk (Arms) - E-AC | Series<br>Parallel | 1.0 (0.71)<br>2.0 (1.42) | 1.01(0.71)<br>2.02 (1.43) | 2.26 (1.6)<br>3.5 (2.47) | 2.01 (1.42)<br>3.5 (2.47) | 2.01 (1.42)<br>3.5 (2.47) | 3.0 (2.12)<br>3.5 (2.47) | 3.13 (2.21)<br>3.5 (2.47) |
| Drive Current Apk (Arms) - E-DC | Series<br>Parallel | NA<br>3.0 (2.12) | NA<br>3.0 (2.12) | NA<br>4.8 (3.39) | NA<br>4.0 (2.83) | NA<br>4.8 (3.39) | NA<br>4.8 (3.39) | NA<br>4.8 (3.39) |
| Phase Inductance (mH) | Series<br>Parallel | 12.8 (3.2) | 11.2 (2.8) | 5 (1.25) | 12 (3.0) | 15.4 (3.85) | 15.8 (3.95) | 25.0 (6.25) |
| Detent Torque | oz-in (N-m) | 2.5 (0.02) | 4.0 (0.03) | 7.0 (0.05) | 8.8 (0.06) | 18.0 (0.13) | 27.0 (0.19) | 50 (0.35) |
| **Bearings Information** | | | | | | | | |
| Thrust Load | lb (kg) | 11.0 (5) | 11.0 (5) | 17.6 (8) | 17.6 (8) | 17.6 (8) | 35.3 (16) | 35.3 (16) |
| Radial Load | lb (kg) | 7.7 (3.5) | 7.7 (3.5) | 15.0 (6.8) | 15.0 (6.8) | 15.0 (6.8) | 30.9 (14) | 30.9 (14) |
| End Play (with 2.2 lbs axial load) | in (mm) | 0.003 (0.075) | 0.003 (0.075) | 0.003 (0.075) | 0.003 (0.075) | 0.003 (0.075) | 0.0032 (0.080) | 0.0032 (0.080) |
| Radial Play (with 1.1 lb radial load) | in (mm) | 0.001 (0.025) | 0.001 (0.025) | 0.001 (0.025) | 0.001 (0.025) | 0.001 (0.025) | 0.0008 (0.020) | 0.0008 (0.020) |
| Motor Weight | lb (kg) | 0.55 (0.25) | 0.77 (0.35) | 1.03 (0.47) | 1.54 (0.7) | 2.2 (1.0) | 3.86 (1.75) | 6.18 (2.8) |
| Certifications | UL recognized | No | No | No | No | No | No | No |

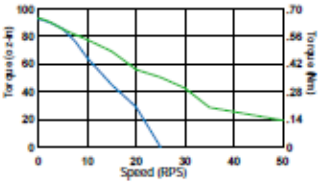
## Motor Speed-Torque Performance Curves

### E-DC Drive with OS and VS Series motors, 17, 23 and 34 frame

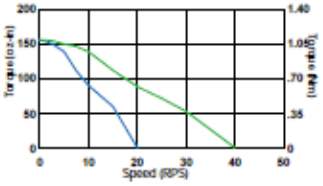
OS2HA/E-DC




OS21A/E-DC

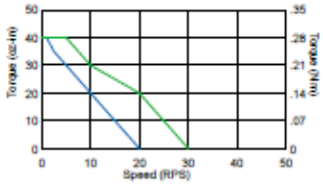



OS22A/E-DC

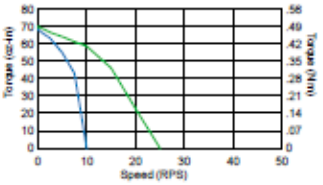




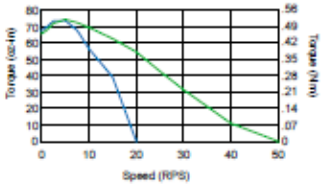
VS12B/E-DC



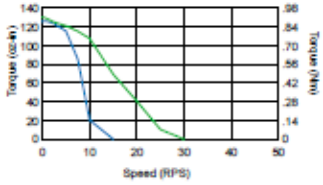

VS13B/E-DC



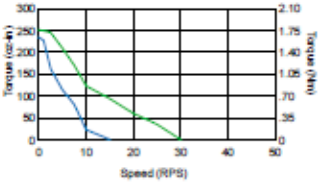

VS21B/E-DC



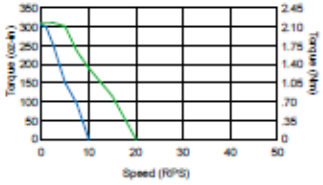

VS22B/E-DC



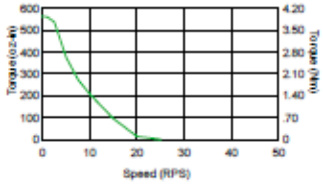

VS23B/E-DC




VS31B/E-DC

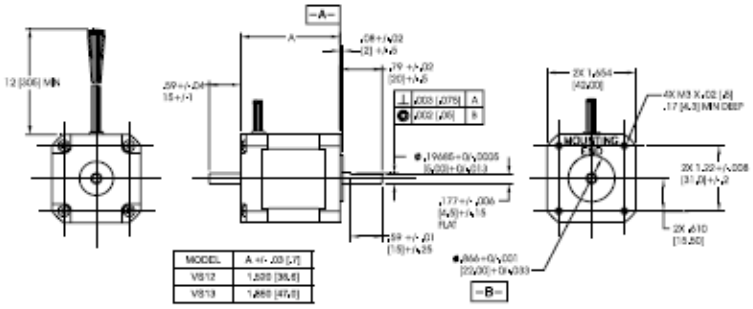



VS32B/E-DC

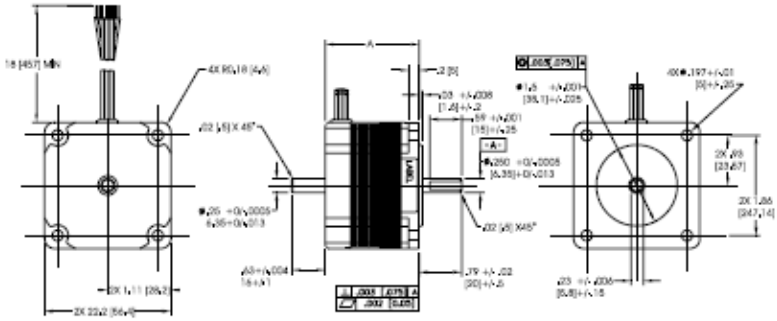



## Dimensional Drawings

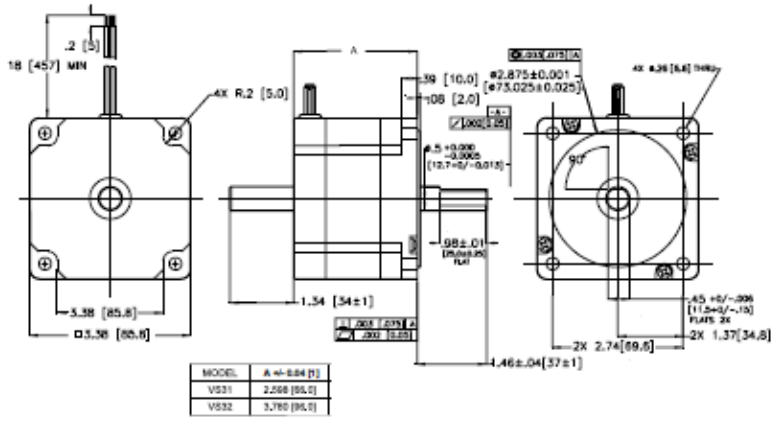
### VS Series Motors, Size 17 Frame



### Size 23 Frame



### Size 34 Frame



See Servo Drive section for the full line of Gemini servo drives and drive/controllers.