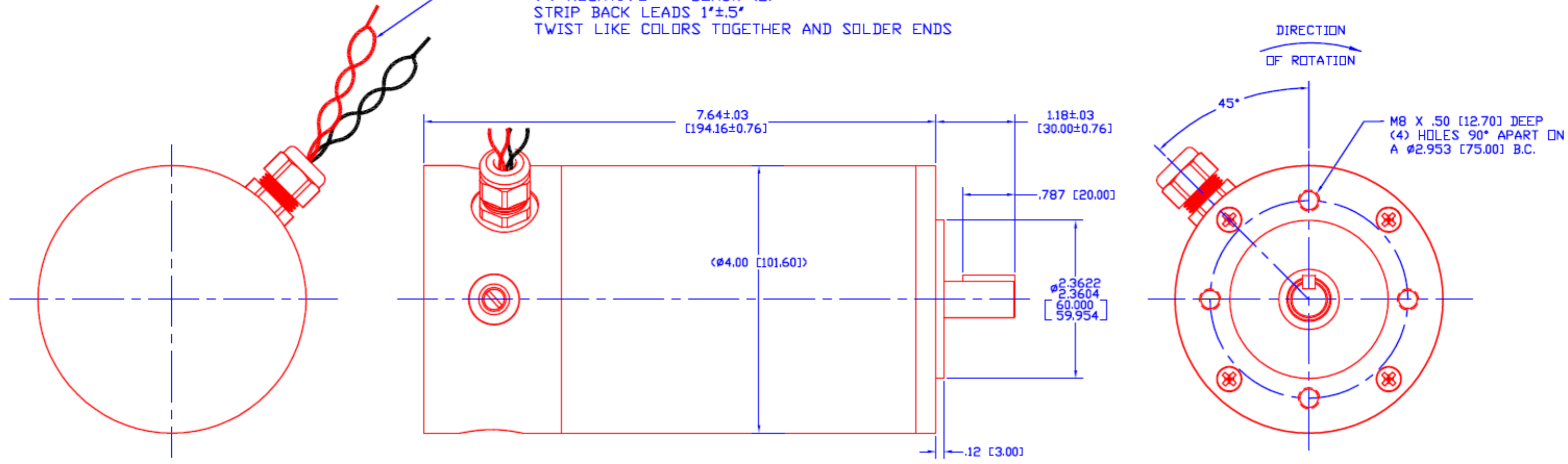
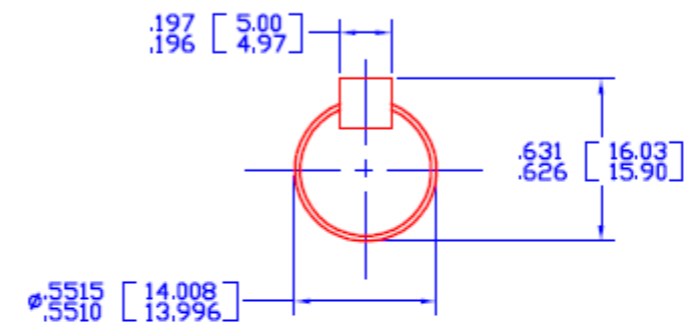


| REVISIONS |             |          |          |
|-----------|-------------|----------|----------|
| REV       | DESCRIPTION | REDACTOR | DATE     |
| A         | PROTOTYPE   |          | 00/00/00 |

MOTOR LEADS 13"±1", 10 AWG TEFLON  
 MEASURED FROM STRAIN RELIEF  
 (+) POSITIVE: RED (2)  
 (-) NEGATIVE: BLACK (2)  
 STRIP BACK LEADS 1"±.5"  
 TWIST LIKE COLORS TOGETHER AND SOLDER ENDS



DIRECTION OF ROTATION  
 45°  
 M8 X .50 [12.70] DEEP  
 (4) HOLES 90° APART ON  
 A Ø2.953 [75.00] B.C.



**MOTOR SPECIFICATIONS:**

TORQUE CONSTANT (Kt) = 6.8 ±10% OZ-IN/AMP  
 VOLTAGE CONSTANT (Ke) = 5.1 ±10% VOLTS/KRPM

NOTE: MOTOR ROTATION IS CLOCKWISE WHEN VIEWED FROM OUTPUT SHAFT WITH POSITIVE VOLTAGE APPLIED TO RED LEAD.

Motor weighs approx. 9kgs

| UNLESS OTHERWISE SPECIFIED TOLERANCES |        |       | PROJECTION |      | <b>MOTION</b><br>CONTROL PRODUCTS LTD |                   |     |
|---------------------------------------|--------|-------|------------|------|---------------------------------------|-------------------|-----|
| DECIMALS                              | Inch   | MM    |            |      | TITLE                                 |                   |     |
| .0                                    | ±.020  | ±0.50 |            |      | MOTOR ASSEMBLY                        |                   |     |
| .00                                   | ±.010  | ±0.25 | APPROVALS  | DATE | SIZE                                  | DWG. NO.          | REV |
| .000                                  | ±.005  | ±0.13 | DRAWN      | ZONG | D                                     | 102BDS194-405-025 | A   |
| FRACTIONS                             | ANGLES |       | CHECKED    |      | SCALE: FULL                           |                   |     |
| 1/16                                  | 1/16   |       | APPROVED   |      | SHEET 1 OF 1                          |                   |     |
| BREAK ALL SHARP EDGES                 |        |       | USED ON    |      |                                       |                   |     |

**MOTOR SPECIFICATIONS**

Final Product No.: **102BDS194-405-025**

RFQ

By: **JP**

This is a calculation data sheet

4 T/C

Attn.:

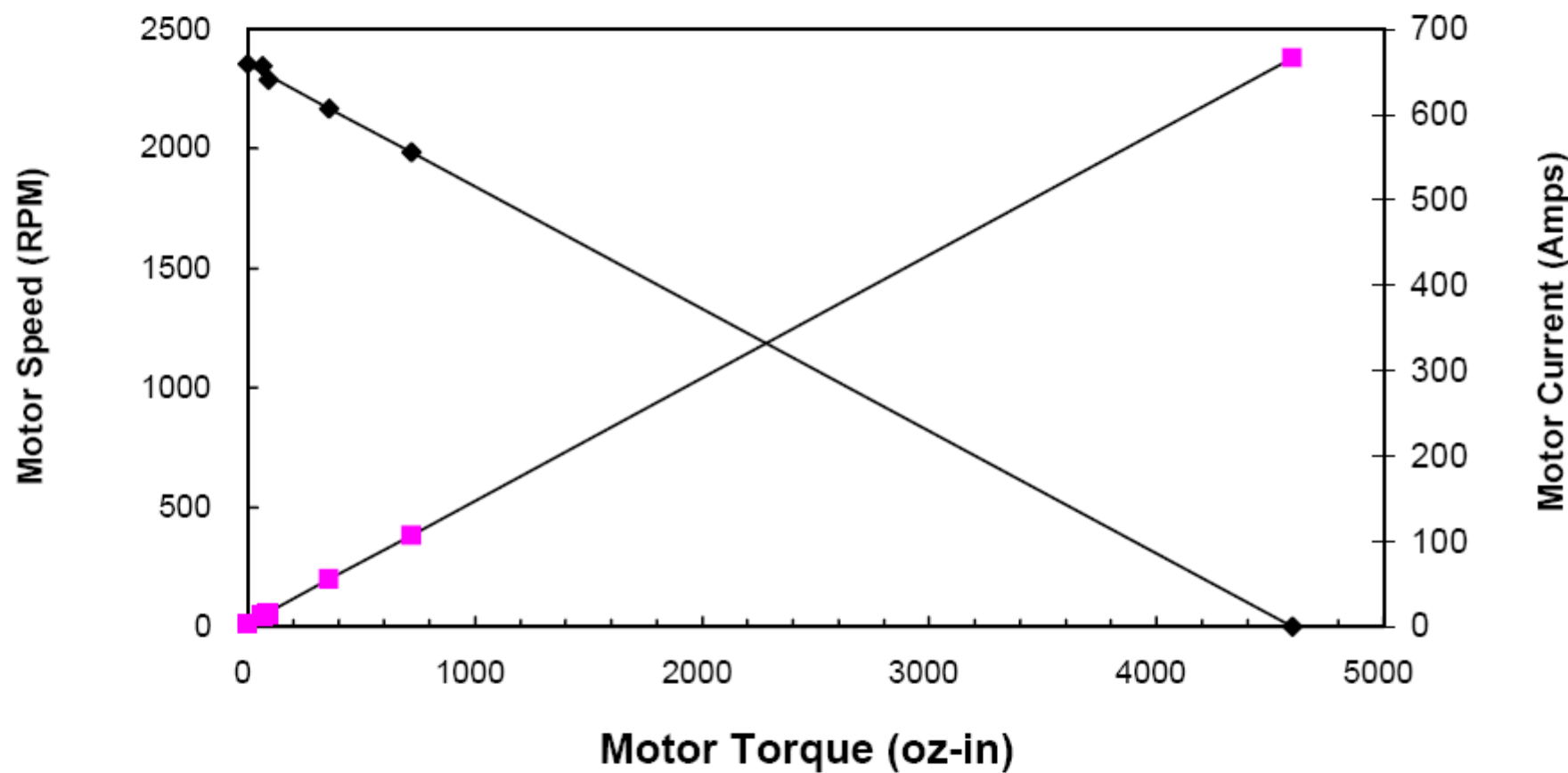
Customer:

Phone/Fax:

Date: 2011-9-2

| SPECS       | Series      | Frame        | Length Code | Winding      | Part No    | Options                          | Gear Ratio  |
|-------------|-------------|--------------|-------------|--------------|------------|----------------------------------|-------------|
| MODEL #     | <b>4SP</b>  | <b>102</b>   | <b>16</b>   | <b>Z3</b>    | <b>XXX</b> |                                  | <b>0.00</b> |
| V input =   | <b>12</b>   | Vdc          |             |              |            | Input Voltage                    |             |
| Ke =        | <b>5.10</b> | V/krpm       |             |              |            | Voltage Constant                 |             |
| Kt =        | 6.9         | Oz-in/A      |             |              |            | Torque Constant                  |             |
| Rt =        | <b>0.02</b> | Ohms(@20° C) |             | <b>0.008</b> |            | Terminal Resistance+Amplifier    |             |
| Io=         | <b>3.16</b> | Amps         |             |              |            | No load current                  |             |
| RPM nl =    | 2353        | RPM          |             |              |            | No Load RPM                      |             |
| T 1 =       | <b>360</b>  | Oz-in        |             | <b>2.54</b>  | Nm         | Torque-1                         | 0.0 Nm      |
| I 1 =       | 55.4        | Amps         |             |              |            | Current @ Torque=T1              |             |
| RPM 1 =     | 2169        | RPM          |             |              |            | RPM @ T-1                        | #DIV/0! RPM |
| T 2 =       | <b>720</b>  | Oz-in        |             | <b>5.08</b>  | Nm         | Torque-2                         | 0.0 Nm      |
| I 2 =       | 107.6       | Amps         |             |              |            | Current @ Torque=T2              |             |
| RPM 2=      | 1985        | RPM          |             |              |            | RPM @ T-2                        | #DIV/0! RPM |
| T st =      | 4598        | Oz-in        |             | <b>32.47</b> | Nm         | Stall Torque (@ E in)            |             |
| I samp =    | 666.7       | Amps         |             |              |            | Stall Current                    |             |
| R th =      | <b>0.98</b> | °C/W         |             |              |            | Thermal Resistance               |             |
| T rise@T1 = | 85          | °C           |             |              |            | Temperature Rise (above ambient) |             |

**Speed Torque Curve**



**Calculation data**

| Voltage      | Torque | RPM  | Amp   | Efficiency | Watts Out |
|--------------|--------|------|-------|------------|-----------|
| 12           | 0      | 2353 | 3.2   | 0.0%       | 0.0       |
| 12           | 360    | 2169 | 55.4  | 86.9%      | 577.5     |
| 12           | 720    | 1985 | 107.6 | 81.9%      | 1056.8    |
| 12           | 4598   | 0    | 666.7 | 0.0%       | 0.0       |
| CW test data |        |      |       |            |           |
| 12.14        | 65     | 2347 | 13.1  | 71.0%      | 112.8     |
| 11.92        | 90     | 2289 | 15.5  | 82.5%      | 152.4     |