Tolomatic
EXCELLENCE IN MOTION®

Technical Note

# ServoChoke®/Motor Configuration Using a Control Techniques M700 Drive

Nidec
CONTROL TECHNIQUES

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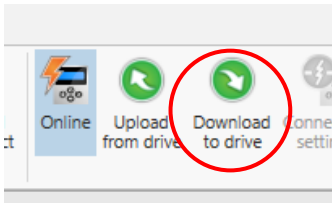
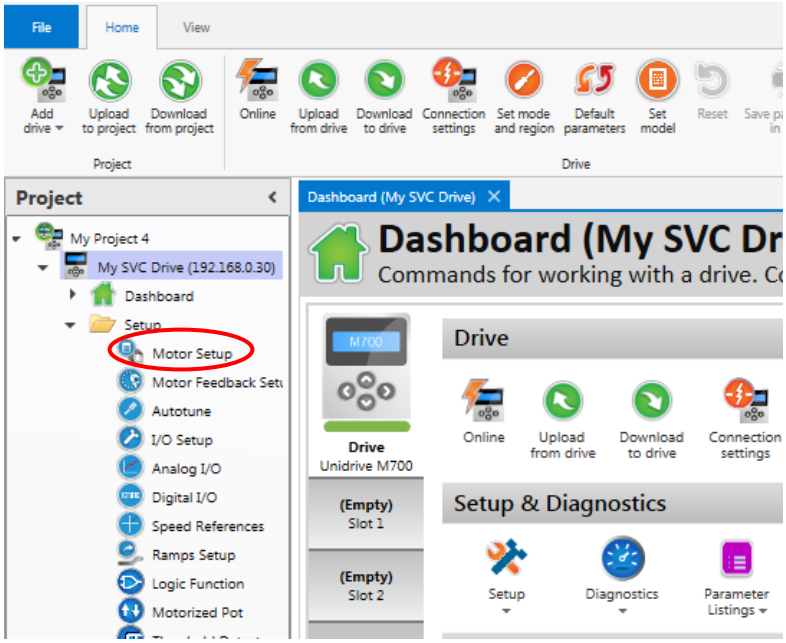
# 1 Basic integration of a Control Techniques M700 Drive to a Tolomatic ServoChoke®/SICK encoder combination

## 1.1 Configuring a new motor

Before proceeding, make sure to download parameters to the drive



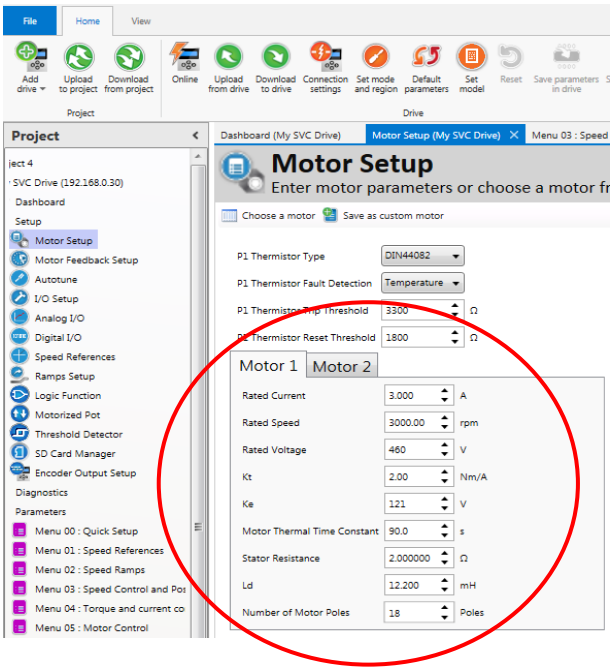

Once communication and drive configuration has been established, open the Setup tab and open “Motor Setup”



Enter motor values per the table shown below:

**Motor / Feedback / Brake - Specifications:**

| | | SERIES | SVC 7k | SVC 15k |
|---|---|---|---|---|
| PEAK SPEED | RPM | | 3,000 | 3,000 |
| Kt (trap) | oz-in/amp DC | | 232.03 | 232.03 |
| Kt (sine) | Nm/Arms | | 2.007 | 2.007 |
| Ke | Vrms/krpm | | 121.34 | 121.34 |
| DC BUS VOLTAGE | Vdc | | 365 | 365 |
| WINDING RESISTANCE | Ohms | | 2.0 | 2.0 |
| INDUCTANCE | mH | | 12.2 | 12.2 |
| MOTOR THERMAL TIME CONSTANT | minutes | | 108.0 | 108.0 |
| CONT. CURRENT | Amp | | 3.0 | 3.0 |
| MAX. MOTOR TEMP | °F | | 302 | 302 |
| | °C | | 150 | 150 |
| NUMBER OF POLES | | | 18 | 18 |
| ROTOR INERTIA | lb-in² | | 11.3 | 11.3 |
| | kg-cm² | | 33.0 | 33.0 |



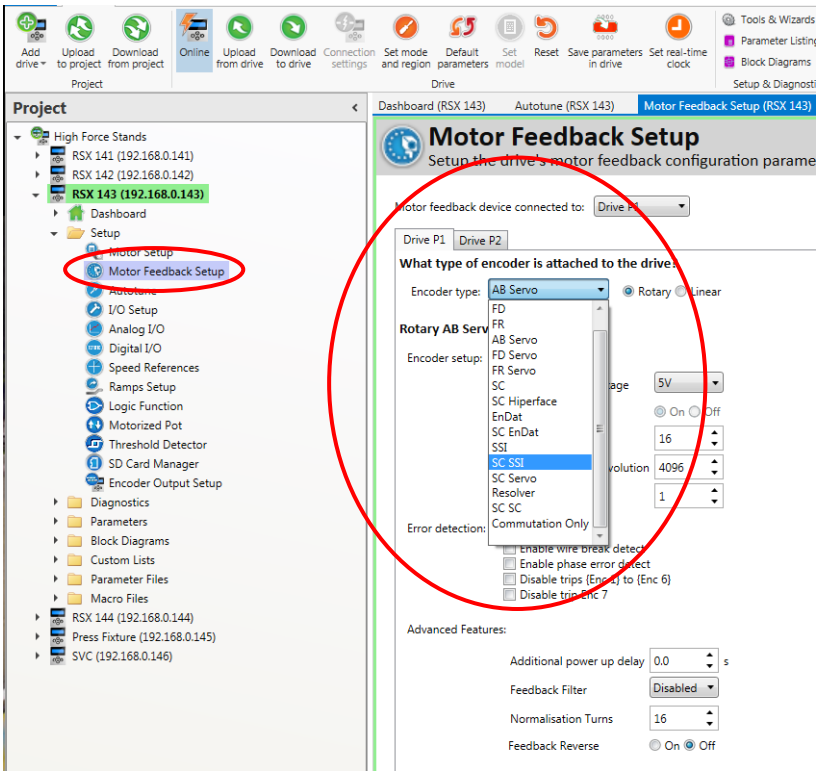

The ServoChoke SVC actuators do not have a Thermistor but come with a Thermal switch. Verify Menu 3, parameter 123 is set to “None” for Thermistor Fault Detection as shown below:

| | | |
|---|---|---|
| 03.118 | **P1 Thermistor Type** | **DIN44082** |
| 03.119 | P1 Thermistor Feedback | 0 Ω |
| 03.120 | **P1 Thermistor Trip Threshold** | **5000 Ω** |
| 03.121 | **P1 Thermistor Reset Threshold** | **1800 Ω** |
| 03.122 | P1 Thermistor Temperature | 0 °C |
| 03.123 | **P1 Thermistor Fault Detection** | **None** |
| 03.127 | P2 Speed Feedback | 0.0 rpm |
| 03.128 | P2 Revolution/Pole Pitch Counter | 0 |

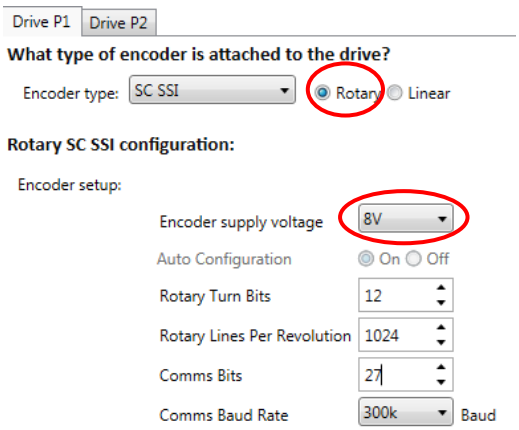
Wiring of the thermal switch can be done based upon your desired logic control to safely shut down the drive in the event of a thermal switch trip.

## 1.2 Setting up the feedback device

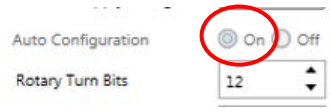
Select “Motor Feedback Setup” from the left pane, then Select either “SC Hiperface” or “SC SSI”




Set type to “Rotary” and set Encoder Supply Voltage to “8V”




Make sure that “Auto Configuration” is “On”

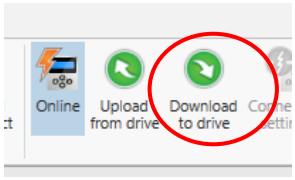



The drive will determine the remaining values during the auto tune process.

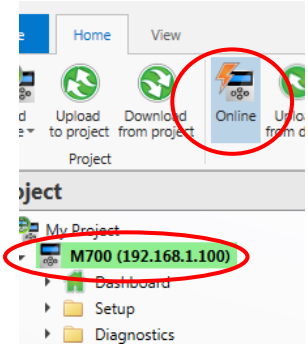
# 2. Running Autotune

## 2.1 Set-up

Before proceeding, make sure to download parameters to the drive

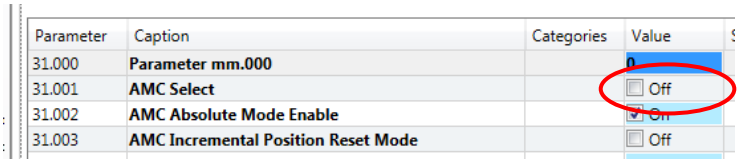



Verify the drive is connected and online. “Online” and Drive Name will be highlighted

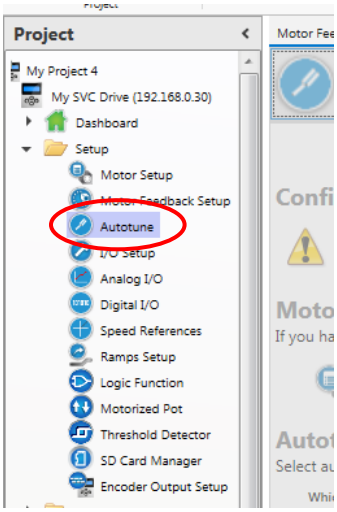



Navigate to Menu 11, parameter 047 and set it to “STOP”


Navigate to Menu 31, parameter 001 and set it to “off”

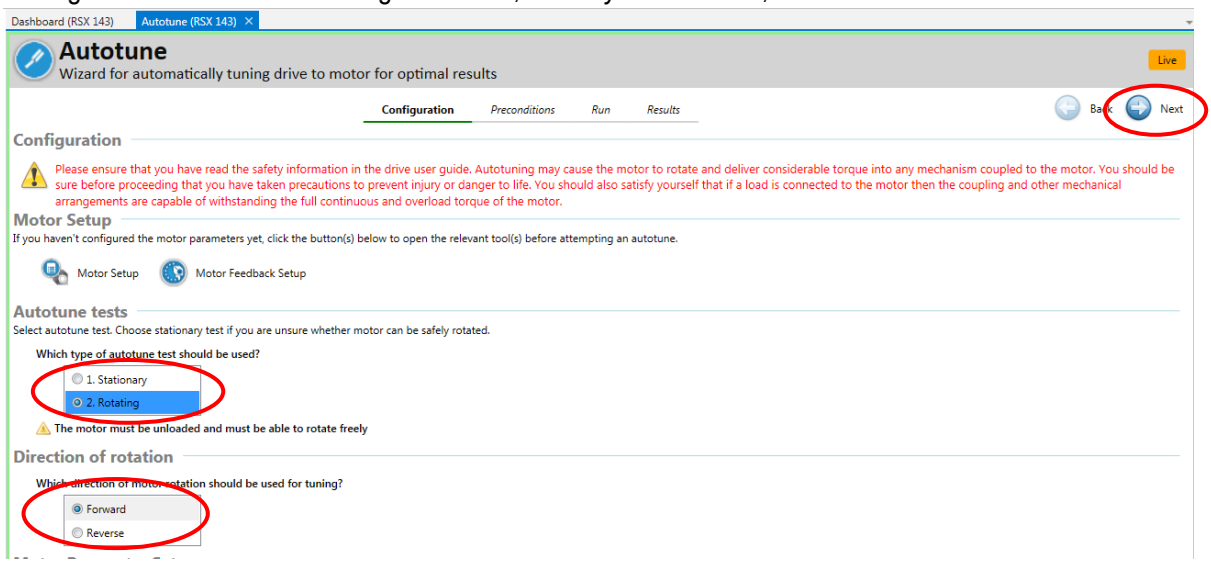


On the left pane select “Autotune” from the Setup folder

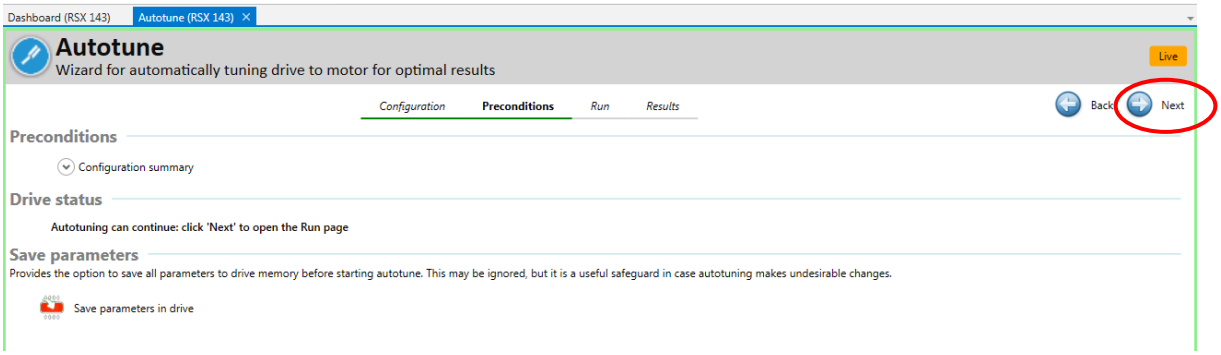



Verify that the enable switch/input is disabled. Drive should display Inhibit “Inh”

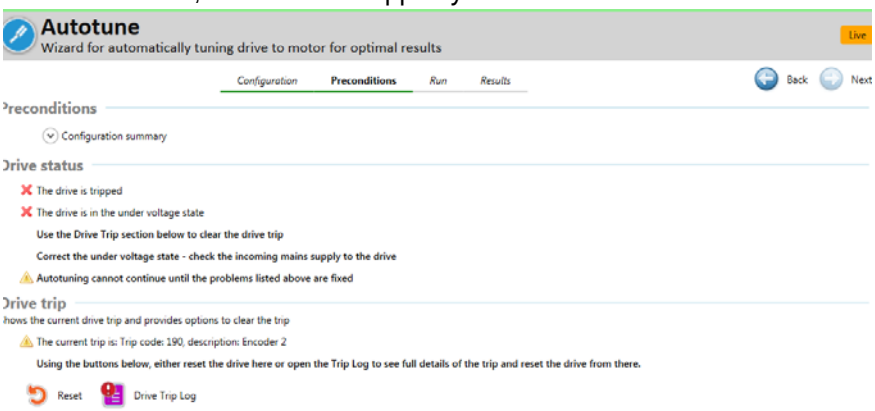
Change the autotune to “Rotating Autotune”, select your direction, and then click next.



Click “Next” again



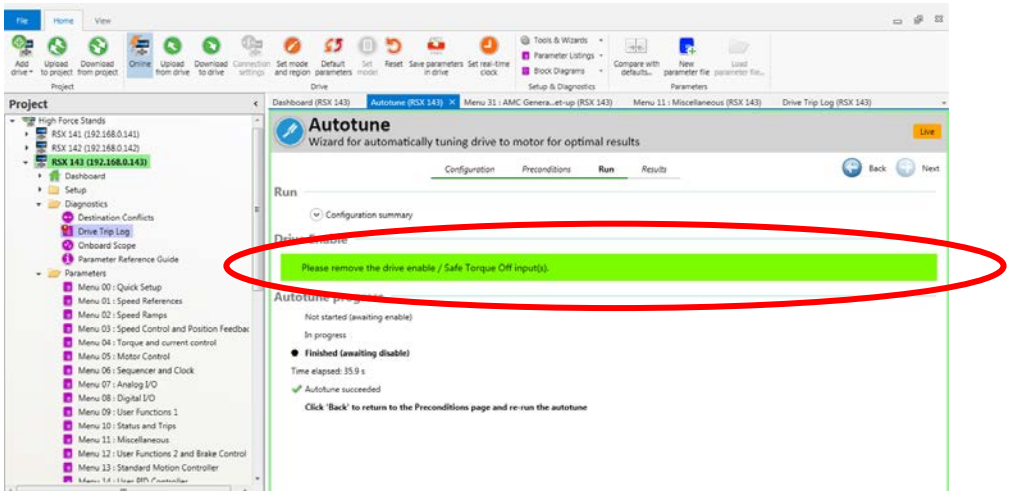

As shown below, if the drive is tripped you will not be able to continue until the trip has been fixed



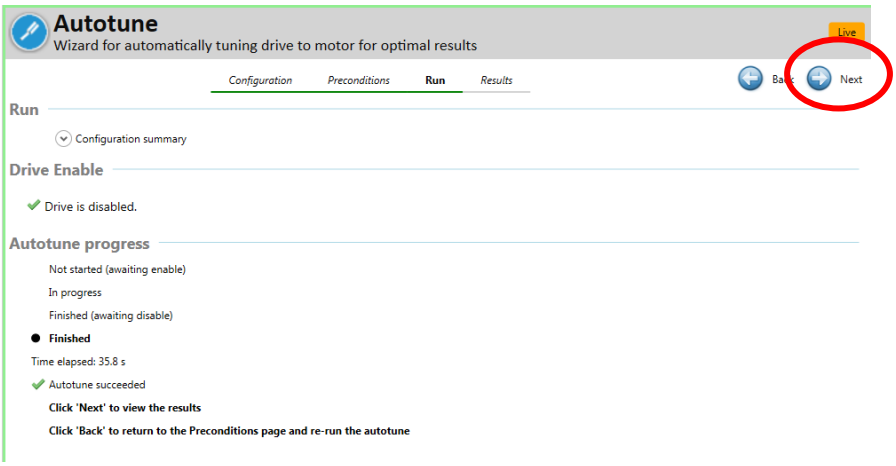

Enable the drive to start the Autotune

## 2.2 Reviewing tuning values

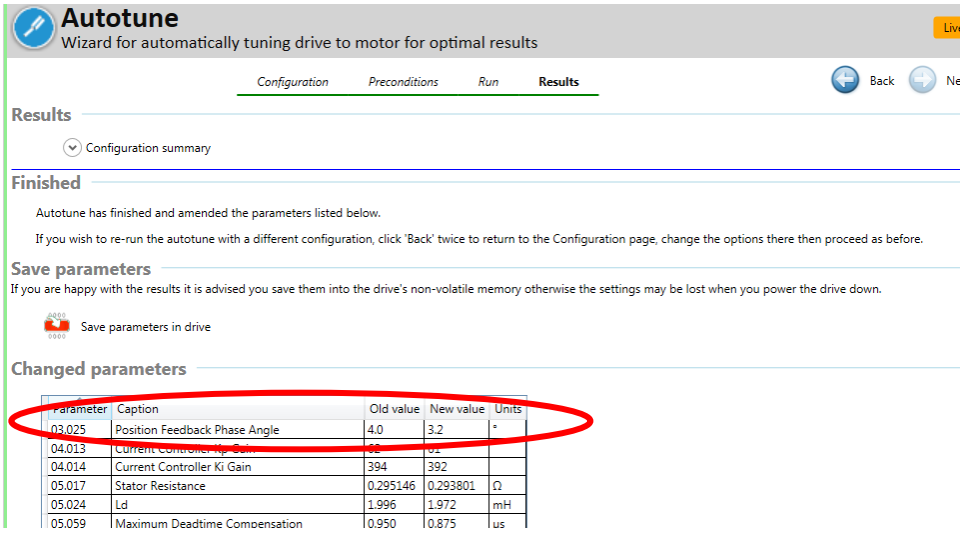
Once the autotune has completed, the drive enable will need to be removed



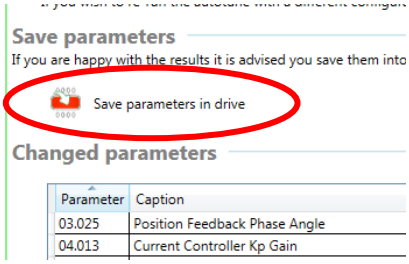
Click Next to view the calculated values for the ServoChoke actuator




It is advisable that this process is repeated multiple times, and note the phase angle variation from one autotune to the next. Large angle variations (> 10 degrees) may be a sign of significant electrical noise that may prohibit consistent operation.




Once the motor phase angle appears to be stable, click “Save parameters in drive”




You are now ready to proceed with testing jog functionality, motion control set-up and programming

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COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =
Certified site: Hamel, MN

**USA**
3800 County Road 116
Hamel, MN 55340, USA
**Phone:** (763) 478-8000
**Fax:** (763) 478-8080
Toll-Free: **1-800-328-2174**
sales@tolomatic.com
**www.tolomatic.com**

**CHINA**
**Tolomatic Automation Products (Suzhou) Co. Ltd.**
*(ServoWeld® inquiries only)*
No. 60 Chuangye Street, Building 2
Huqiu District, SND Suzhou
Jiangsu 215011 - P.R. China
**Phone:** +86 (512) 6750-8506
**Fax:** +86 (512) 6750-8507
ServoWeldChina@tolomatic.com

**EUROPE**
**Tolomatic Europe GmbH**
Zeilweg 42
60439 Frankfurt am Main
Germany
**Phone:** +49 69-2045-7837
EuropeSales@tolomatic.com