

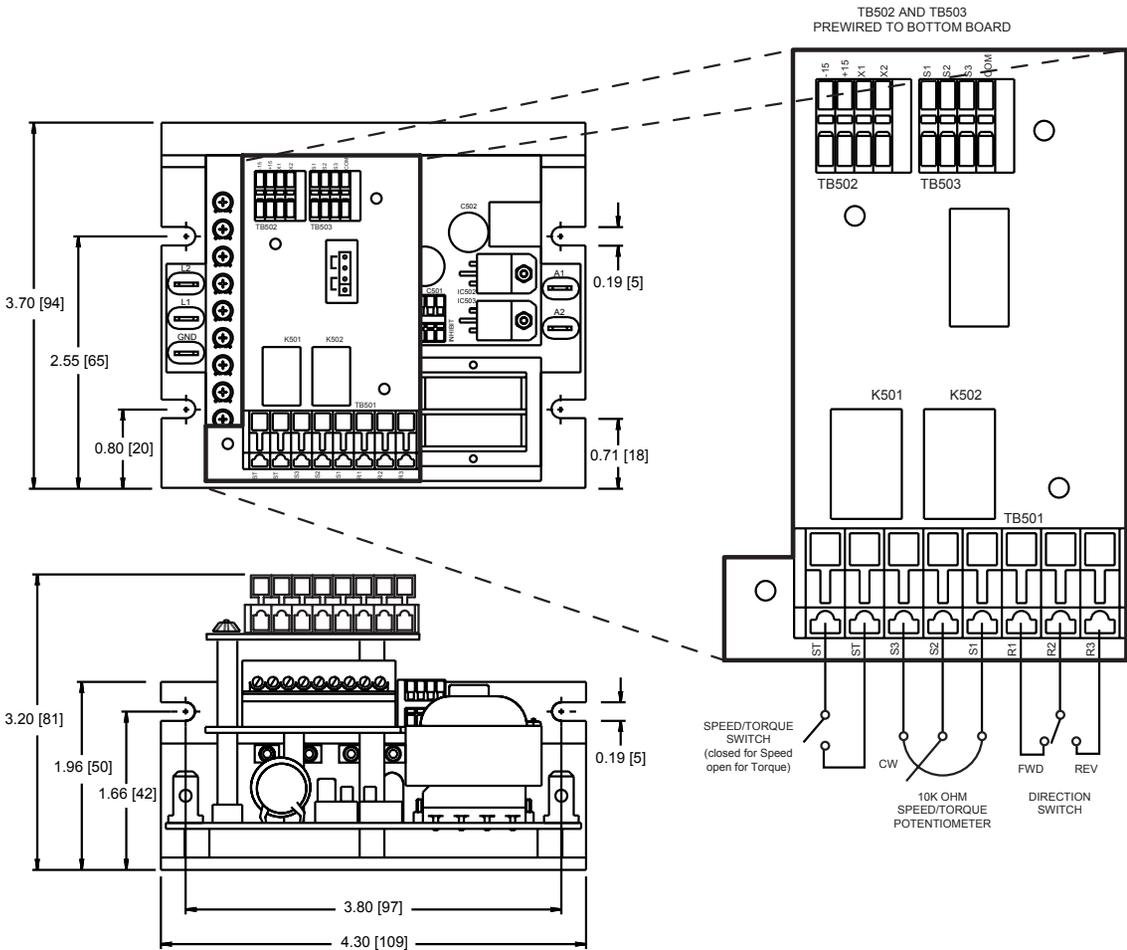


# RG60U-T

## RG60U with Speed / Torque Adder Card

### QUICK START GUIDE

The SPEED/TORQUE option card gives added capability to the RG60U allowing control of torque or speed in either the forward or reverse directions. Selection of torque or speed mode requires a dry contact relay or switch closure. Torque control of a regen drive allows the user to control overhauling loads and the ability to perform basic open loop web tensioning and wind-up applications.



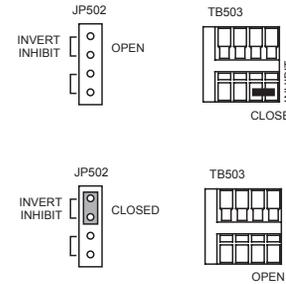
ALL DIMENSIONS IN INCHES [MILLIMETERS]  
**RG60U WITH SPEED/TORQUE ADDER CARD**  
**DIMENSIONAL DRAWING**

### SPEED/TORQUE CARD SWITCH SETTINGS

- **SPEED/TORQUE SWITCH** - connect contacts to the two "ST" terminals on TB501.
- **10 KOHM SPEED/TORQUE POTENTIOMETER** - connect contacts to S1, S2, and S3 on TB501.
- **DIRECTION SWITCH** - connect a single pole, two position switch to R1, R2, & R3 on TB501 as shown.

### INHIBIT SETTINGS

#### CONFIGURATION



#### DRIVE RESPONSE

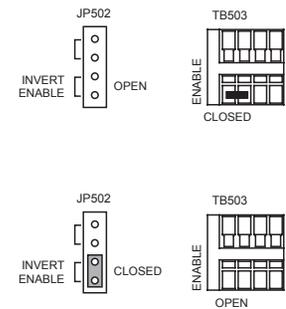
**INHIBIT MODE**  
 MOTOR REGENERATIVELY BRAKES WHEN INHIBIT TERMINALS ARE CLOSED

**INVERT INHIBIT MODE**  
 MOTOR REGENERATIVELY BRAKES WHEN INHIBIT TERMINALS ARE OPENED

NOTE: The RG60U will operate in normal running mode when all jumpers on JP502 and all terminals on TB503 are simultaneously opened. Likewise, it will operate in normal running mode when all jumpers and terminals are simultaneously closed.

### ENABLE SETTINGS

#### CONFIGURATION



#### DRIVE RESPONSE

**ENABLE MODE**  
**MOMENTARILY CLOSED** MOTOR COASTS TO ZERO SPEED AND ACCELERATES TO SET SPEED WHEN ENABLE TERMINALS ARE MOMENTARILY CLOSED  
**MAINTAINED CLOSED** MOTOR COASTS TO STOP WHEN ENABLE TERMINALS ARE MAINTAINED CLOSED

**INVERT ENABLE MODE**  
**MOMENTARILY CLOSED** MOTOR COASTS TO ZERO SPEED AND ACCELERATES TO SET SPEED WHEN ENABLE TERMINALS ARE MOMENTARILY OPENED  
**MAINTAINED CLOSED** MOTOR COASTS TO STOP WHEN ENABLE TERMINALS ARE MAINTAINED OPEN

NOTE: The RG60U will operate in normal running mode when all jumpers on JP502 and all terminals on TB503 are simultaneously opened. Likewise, it will operate in normal running mode when all jumpers and terminals are simultaneously closed.

## C A L I B R A T I O N   S E T T I N G S

**⚠ WARNING!** Dangerous voltages exist on the drive when it is powered. When possible, disconnect the voltage input from the drive before adjusting the trimpots. If the trimpots must be adjusted with power applied, use insulated tools and the appropriate personal protection equipment. BE ALERT. High voltages can cause serious or fatal injury.

### MAXIMUM SPEED (MAX SPD)

The MAX SPD trimpot setting determines the maximum forward and reverse speed. It is factory set for maximum rated motor speed.

To calibrate MAX SPD:

1. Set the MAX SPD trimpot to full CCW.
2. Turn the speed adjust potentiometer CW so that the motor is running at full speed.
3. Adjust the MAX SPD trimpot until the desired maximum motor speed is reached.

CAUTION! Do not attempt to run the motor above 90 VDC on 115 VAC, or above 180 VDC on 230 VAC.

### FORWARD TORQUE (FWD TQ)

**⚠ WARNING!** Although FWD TQ can be set to 120% of motor nameplate current rating, continuous operation beyond this rating may damage the motor. If you intend to operate beyond this rating, contact your Minarik representative for assistance.

The FWD TQ setting determines the maximum current limit for accelerating and driving the motor in the forward direction. It is factory set at 120% of maximum rated drive current.

To calibrate FWD TQ:

1. With the power disconnected from the drive, connect a DC ammeter in series with the armature.
2. Set the FWD TQ trimpot to minimum (full CCW).
3. Set the speed adjust potentiometer to maximum (full CW).
4. Carefully lock the motor armature. Be sure that the motor is firmly mounted.
5. Apply line power. The motor should be stopped.
6. Slowly adjust the FWD TQ trimpot CW slowly until the armature current is 120% of motor rated armature current.
7. Set the speed adjust potentiometer to minimum.
8. Remove the power from the drive.
9. Unlock the motor shaft.
10. Remove the ammeter in series with the motor armature if it is no longer needed and re-apply power to the drive.

### REVERSE TORQUE (REV TQ)

**⚠ WARNING!** Although REV TQ can be set to 120% of motor nameplate current rating, continuous operation beyond this rating may damage the motor. If you intend to operate beyond this rating, contact your Minarik representative for assistance.

The REV TQ setting determines the maximum current limit for accelerating and driving the motor in the reverse direction. It is factory set at 120% of maximum rated current.

To calibrate REV TQ:

1. With the power disconnected from the drive, connect a DC ammeter in series with the armature.
2. Set the REV TQ trimpot to minimum (full CCW).
3. Set the speed adjust potentiometer to maximum (full CW).
4. Carefully lock the motor armature. Be sure that the motor is firmly mounted.
5. Apply line power. The motor should be stopped.
6. Slowly adjust the REV TQ trimpot CW slowly until the armature current is 120% of motor rated armature current.
7. Set the speed adjust potentiometer to minimum.
8. Remove the power from the drive.
9. Unlock the motor shaft.
10. Remove the ammeter in series with the motor armature if it is no longer needed and re-apply power to the drive.

### IR COMPENSATION / REGULATION (IR COMP)

The IR COMP trimpot setting determines the degree to which motor speed is held constant as the motor load changes. It is factory set for optimum motor regulation.

To calibrate IR COMP:

1. Set the IR COMP trimpot to minimum (full CCW).
2. Rotate the speed adjust potentiometer until the motor runs at mid-speed without load (for example, 900 RPM for an 1800 RPM motor). A handheld tachometer may be used to measure motor speed.
3. Load the motor armature to its full load armature current rating. The motor should slow down.
4. While keeping the load on the motor, rotate the IR COMP trimpot until the motor runs at the speed measured in step 2. If the motor oscillates (overcompensation), the IR COMP trimpot may be set too high (CW). Turn the IR COMP trimpot CCW to stabilize the motor.

### FORWARD ACCELERATION (FWD ACC)

The FWD ACC setting determines the time the motor takes to ramp to either a higher speed in the forward direction or a lower speed in the reverse direction, within the limits of available torque. The FWD ACC setting is factory set for its fastest forward acceleration time. Turn the FWD ACC trimpot CW to increase the forward acceleration time, and CCW to decrease the forward acceleration time.

### REVERSE ACCELERATION (REV ACC)

The REV ACC setting determines the time the motor takes to ramp to either a higher speed in the reverse direction or a lower speed in the forward direction, within the limits of available torque. The REV ACC setting is factory set for its fastest reverse acceleration time. Turn the REV ACC trimpot CW to increase the reverse acceleration time, and CCW to decrease the reverse acceleration time.

### DEADBAND (DB)

The deadband trimmer potentiometer determines the time that will elapse between the application of current in one direction before current is applied in the opposite direction.

The deadband trimmer potentiometer affects the resistance that a motor has to changes in shaft position at zero speed. It does this by applying AC voltage to the motor armature.

Deadband is factory calibrated with the notch at approximately the 3 o'clock position for 60 Hz AC line operation. Recalibrate the deadband with the notch at the 9 o'clock position for 50 Hz AC line operation. If you hear motor noise (humming), the deadband might be set too high. Turn the deadband trimpot CCW until the motor noise ceases.

### TACH GENERATOR (TACH)

Calibrate the TACH setting only when a tachogenerator is used. The TACH setting, like the IR COMP setting, determines the degree to which motor speed is held constant as the motor load changes.

To calibrate TACH:

1. Connect the tachogenerator to T1 and T2. The polarity is positive (+) and negative (-) for T2 with the motor running in forward direction.
2. Set SW503 to ARM for armature feedback.
3. Set the speed adjust potentiometer full CW. Measure the armature voltage across A1 and A2 using a voltmeter.
4. Set the speed adjust potentiometer to 0 (zero speed).
5. Set SW503 to TACH for tachogenerator feedback.
6. Set the IR COMP trimpot to full CCW.
7. Set the TACH trimpot to full CW.
8. Apply line power.
9. Set the speed adjust potentiometer to full CW.
10. Adjust the TACH trimpot until the armature voltage is the same value as the voltage measured in step 3.

Check that the tachogenerator is properly calibrated. The motor should run at the same speed when SW503 is set to either armature or tachogenerator feedback.7

## S P E C I F I C A T I O N S

| Model            | Armature Current Range (ADC) | Armature Horsepower | Voltage Range (VDC) |
|------------------|------------------------------|---------------------|---------------------|
| RG60U, RG60U-PCM | 5.0*                         | 1/4 - 1/2*          | 0 - 90              |
|                  | 5.0**                        | 1/4 - 1**           | 0 - 180             |
| RG61U, RG61U-PCM | 3.0                          | 1/20 - 1/8          | 0 - 90              |
|                  | 3.0                          | 1/10 - 1/4          | 0 - 180             |

\* Max. Armature Current = 10 ADC and

Max. Horsepower = 1 hp when mounted to heat sink kit part number 223-0159.

\*\* Max. Armature Current = 10 ADC and

Max. Horsepower = 2 hp when mounted to heat sink kit part number 223-0159.

|                                     |   |
|-------------------------------------|---|
| <b>AC Line Voltage</b>              | 115 VAC / 230 VAC, ±10%, 50/60 Hz, single phase                     |
| <b>Form Factor</b>                  | 1.37 at base speed  |
| <b>Acceleration Time Range</b>      | 0.5 - 6 seconds   |
| <b>Deceleration Time Range</b>      | 0.5 - 6 seconds   |
| <b>Analog Input Voltage Range</b>   | (without -PCM option, signal must be isolated; S0 to S2) 0 - 10 VDC |
| <b>Input Impedance (S0 to S2)</b>   | 30 kohms  |
| <b>Load Regulation</b>              |   |
| <b>with Armature Feedback</b>       | 1% base speed   |
| <b>with Tachogenerator Feedback</b> | 0.1% base speed   |
| <b>Vibration</b>                    | 0.5G max. (20-50 Hz)<br>0.1G max. (> 50 Hz)                         |
| <b>Ambient Temperature Range</b>    | 10°C - 55°C   |
| <b>Weight</b>                       | 1.1 lb  |

M I N A R I K   D R I V E S

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