INSTRUCTION MANUAL

Part #1785

NOVAK GT7

PROGRAMMABLE RACING ESC

The Novak Designers asked themselves: How do we make a great speed control like the Cyclone even better?

First, we made it 30% smaller, 30% lighter, increased the number of factory-installed Programs to 7, and eliminated the need for an external programming device for customizing the user-adjustable Program.

Next, we broke down the user-adjustable program into separate Drive and Braking Profiles to allow the user to fine tune the throttle response with a choice of ***5 Drive Profiles***, ***5 Brake Profiles***, ***2 styles of braking***, and ***7 Minimum Brake settings***. Not only that, but each of the 7 Throttle Programs stores its own Minimum Brake setting.

Add to that Novak's new ***Variable Throttle Step Technology***, which delivers ***up to 1300 discrete steps*** for both drive and braking, and you've got the smoothest speed control available—no matter what frequency you select ***(1-23kHz)***.

SPECIFICATIONS

Input Voltage	4-6 cells *(1.2 volts DC/cell)*	
Motor Limit	None	
Case Width	1.37 inches	[3.48 cm]
Case Depth	1.11 inches	[2.82 cm]
Case Height	0.66 inch	[1.68 cm]
Weight *(w/o wires)*	0.93 ounce	[26.26 g]
On-Resistance *@ Transistors*	0.00058 Ω	*@ 25°C transistor junction temp.*
Rated Drive Current	640 amps	
Rated Braking Current	160 amps	
BEC Voltage	6.0 volts DC	
BEC Current	3.0 amps	
Wire Length *(Battery/Motor)*	9 inches	[22.86 cm]
Signal Harness *(replaceable)*	9 inches	[22.86 cm]
Throttle Programs	7 *(6 fixed/1 adjustable)*	
Drive Profiles	1 of 5 *(in Program 7)*	
Brake Profiles	1 of 5 *(in Program 7)*	
Minimum Brake *(all Programs)*	1 of 7 *(20-55%)*	
PWM Frequency	1-23 kHz	

PRECAUTIONS

- **WATER & ELECTRONICS DON'T MIX!** Never allow water, moisture, or other foreign materials to get inside the speed control or on the PC Board.
- **4 TO 6 CELLS ONLY** Never use fewer than 4 or more than 6 cells *(7.2 volts DC)* in the main battery pack.
- **POWER CAPACITOR REQUIRED** An external power capacitor is supplied, and ***MUST*** be used with your GT7. ***Failure to use Power Capacitor will damage speed control and void the warranty!***
- **SCHOTTKY DIODE REQUIRED** An external Schottky diode is supplied, and ***MUST*** be properly installed on every motor to reduce radio interference and obtain the best performance and efficiency from your GT7.
- **NO REVERSE VOLTAGE!** Reverse battery polarity can damage speed control—Disconnect battery immediately.
- **DISCONNECT BATTERIES WHEN NOT IN USE** Always disconnect the battery pack from the speed control when not in use to avoid short circuits and possible fire hazard.
- **TRANSMITTER ON FIRST** Always turn on the power of your transmitter first so that you will have control of the radio equipment when you turn on the speed control.
- **INSULATE WIRES** Always insulate exposed wiring with heat shrink tubing to prevent short circuits.
- **NO SOLVENTS** Exposing the speed control's case to any type of solvents will damage the plastic.

OPTIONAL ACCESSORIES

POWER CAPACITORS *[#5675]*
An external power capacitor is included, and ***MUST BE USED*** to maintain cool and smooth operation. ***Refer to Step 3***
Replacement Power Capacitor is available in Novak kit #5675.

SCHOTTKY DIODES *[#5640]*
The GT7 requires an external Schottky diode on the motor. The external Schottky diode optimizes the speed control's braking and motor performance. ***Refer to Step 3***
Additional Schottky diodes are available in Novak kit #5640.

MOTOR CAPACITORS *[#5620]*
Additional motor capacitors are available in Novak kit #5620.

BATTERY/MOTOR 14G POWER WIRE *[#5500 & 5505]*
Replacement GT7 power wire is available in Novak kits #5500 (36"red & 36"black) & #5505 (36"red & 36"blue).

INPUT SIGNAL HARNESS *[#5315 & 5320]*
The user-replaceable input signal harness is available in both short *(4.5")* and long *(9.0")* lengths to fit different applications.
4.5" harness in Novak kit #5315, and 9.0" harness in kit #5320.

GT7 REPLACEMENT TRANSLUCENT CASE *[#5680]*
Replacement GT7 case is available in Novak kit #5680, and includes the slide-mount Power Capacitor brackets.

NOVAK

STEP 1 — GT7 BASIC SET-UP — CHANGING INPUT HARNESS

The GT7 speed control comes with the industry standard connector on a user-replaceable input harness. This connector works with all major radio brands. However, with some older style receivers, the wiring sequence in the plastic connector must be changed. ***This is an important step, because the receiver electronics may be damaged if the sequence is incorrect.***

JR • Hitec • Futaba • New KO • Airtronics Z

JR, Hitec, Futaba, new KO, & Airtronics Z receivers do not need to have the ESC's input harness wire sequence changed. *New Airtronics Z receivers have blue plastic cases & new KO cases have tabs on the input harness openings as in **Figure 1**.*

- Insert one end of the input harness into receiver with the ***BLACK wire toward the outside edge*** of receiver case.
- Insert opposite end of input harness into ESC with the ***WHITE wire toward the 'S' (signal) marking*** in the ESC's case.

FIGURE 1

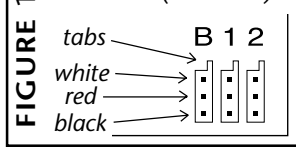
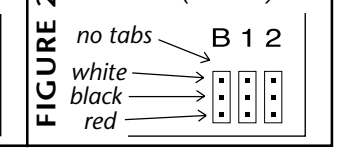


FIGURE 2

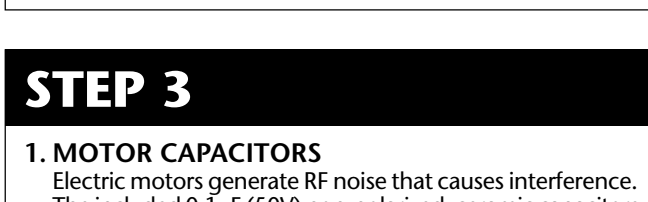


Old-style KO • Old-style Sanwa/Airtronics

If your receiver is an older KO or Sanwa/Airtronics, you must change the sequence of the ESC's input harness wires. *Old Sanwa/Airtronics cases are black in color & Old KO cases do not have the tab openings, as in **Figure 2** above.*

- Insert one end of input harness into ESC with the ***WHITE wire toward the 'S' (signal) marking*** in the ESC's case.
- ***Interchange the red and black wires*** in the plug plastic at the opposite end of the input harness as in ***Figure 3*** below.
- Insert modified end of the harness into the receiver with the ***RED wire toward the outside edge*** of receiver case.

FIGURE 3 *With a small standard screwdriver, gently lift plastic prong until wire and metal socket easily slide out of plastic housing.*



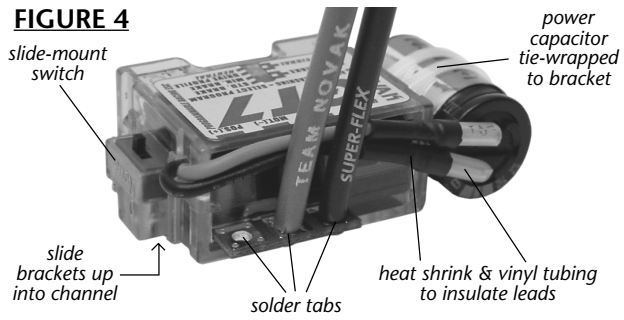
STEP 2 — GT7 BASIC SET-UP — MOUNTING INSTRUCTIONS

1. DETERMINE BEST ESC MOUNTING LOCATION
Choose a mounting position that keeps power wires away from the receiver and antenna, and will provide maximum airflow around case to allow for proper cooling.
The GT7 has slide mount channels in each side of the case for holding the ON/OFF switch & power capacitor.
This lets you to put the power capacitor on one side of ESC, while positioning ON/OFF switch facing up, down, forward, or back on the opposite side. The switch also has a hole in it for attaching with a 4-40 or smaller screw, or you can use the included double-sided tape.

2. SLIDE-MOUNT POWER CAPACITOR
To use the included slide bracket to mount the capacitor on the side of the ESC, be sure you have enough space in the desired location.
Slide the bracket into one of the channels on the ESC *(start at the bottom and slide up into the channel).* ***Secure the capacitor to the bracket with the included tie-wraps.***

3. INSTALL THE SPEED CONTROL & SWITCH
If desired, slide the switch into one of the channels on the side of the ESC as described above for the power capacitor.
Mount the ESC using the included double-sided tape.

FIGURE 4

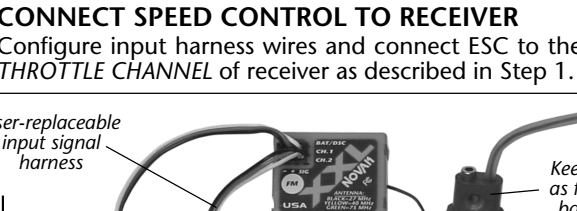


4. INSTALL THE RECEIVER AND ANTENNA
Mount receiver as far from ESC, motor, power wires, battery, and servo as possible. These components all emit RF noise when throttle is being applied. On graphite or aluminum, it may help to place receiver on edge with crystal and antenna as far above chassis as possible.
Note: Mount the antenna as close to the receiver as possible, and trail any excess wire off the top of the antenna mast—cutting or coiling the excess antenna wire will greatly reduce radio range.

STEP 3 — GT7 BASIC SET-UP — HOOK-UP INSTRUCTIONS

1. MOTOR CAPACITORS
Electric motors generate RF noise that causes interference. The included 0.1µF (50V) non-polarized, ceramic capacitors must be installed on every motor to help reduce the motor noise and also to prevent possible ESC damage.
Note: Some motors come with capacitors built-in. If your motor only has two capacitors, you only need to install the capacitor between the positive & negative motor tabs.
Solder 0.1µF (50V) capacitors between:
- POSITIVE (+) motor tab & NEGATIVE (–) motor tab.
- POSITIVE (+) motor tab & GROUND tab*.
- NEGATIVE (–) motor tab & GROUND tab*.

**If motor has no ground tab, solder the capacitors to motor can.*



Extra 0.1µF capacitors are available in Novak kit #5620.

2. INSTALL SCHOTTKY DIODE
- Solder the lead ***CLOSEST to the silver stripe*** on the body of the Schottky diode to the ***POSITIVE (+) motor tab***.
- Solder the lead ***OPPOSITE the silver stripe*** on the body of the Schottky to the ***NEGATIVE (–) motor tab***.

If Schottky diode is installed backwards it will be destroyed. Replace only with Schottky diodes with a minimum rating of 35 volts/8 amps. ***Schottky diodes are available in Novak kit #5640.***

3. INSTALL POWER CAPACITOR *(see Set-Up Photo & Fig. 4)*
WHY POWER CAPACITOR IS NEEDED: ***The Power Capacitor drops ESC operating temperatures by 10-15°F and dissipates noise & voltage spikes from the ESC's high switching speed. You MUST use Novak capacitors, because other capacitors with similar ratings will not provide the same protection. We have done extensive research to find capacitors with the very best Quality Factors.***
- ***Mount Power Capacitor*** using the included slide bracket—insert bracket into one of the channels on the side of the GT7's case, and secure with the included tie-wraps. Otherwise, mount Power Capacitor using the included double-sided tape in desired position.
- ***Bend Power Capacitor's leads flat along the top*** of the capacitor in the direction of the PowerCap wires coming out of the right side of the GT7's case.
- ***Insulate capacitor's leads*** with the included vinyl tubing and heat shrink as shown in ***Figure 4***.
- Solder capacitor's ***NEGATIVE (–) lead*** *{shorter lead on capacitor}* to the GT7's ***BLACK PowerCap wire***.
- Solder capacitor's ***POSITIVE (+) lead*** to ***RED PowerCap wire***.

4. CONNECT SPEED CONTROL TO RECEIVER
Configure input harness wires and connect ESC to the *THROTTLE CHANNEL* of receiver as described in Step 1.

5. CONNECT SPEED CONTROL TO BATTERY PACK
- Cut GT7's ***BLACK power wire*** to desired length and strip 1/8-1/4" of insulation off the end. ***Solder to battery NEGATIVE (–)*** of a charged 4 to 6 cell pack.
- Cut ***RED power wire*** to desired length *(so it will go from GT7, to battery positive, then to motor positive)* and strip 1/8-1/4" of insulation off the end. Then strip a 1/4-3/8" section of insulation from the mid-section of the wire where it will attach to battery positive. The stripped mid-section gets ***soldered to battery POSITIVE (+)*** *[see Set-Up Photo]*

6. CONNECT SPEED CONTROL TO MOTOR
- Take the stripped end of the ***RED power wire*** and ***solder to the POSITIVE (+) motor tab***.
- Cut GT7's ***BLUE power wire*** to desired length and strip 1/8-1/4" of insulation of the end. ***Solder to the NEGATIVE (–) motor tab***.

TIP: *Twisting BLUE & RED wires once or twice around each other as they go to the motor helps reduce RF noise emitted from power wires.*

REPLACING POWER WIRES AT SPEED CONTROL

- Remove power wires at the PCB *(printed circuit board)*, by first removing ESC from the model so that you have access to the bottom side of the solder tabs. Use a soldering iron to apply heat to the power wire's solder joint on the bottom side of the solder tab, while gently pulling up on the wire to remove it from the hole in the PCB.
- Replace power wires by stripping 1/8-1/4" of insulation from the end of new wire. Tightly twist strands of wire, and insert into proper solder tab's hole. Use soldering iron to apply heat to exposed wire that is extending past bottom of PCB, and begin adding solder to tip of soldering iron and to wire. ***Add just enough solder to form a clean & continuous joint from the plated area of solder tab up onto the wire.*** Using side cutters, trim remaining *(now soldered)* wire from below the solder tab—about 1/16" above PCB.

IMPORTANT NOTE: **DO NOT OVERHEAT SOLDER TABS**
Prolonged/excessive heating of solder tabs will damage PCB.

USING PLUGS FOR BATTERY & MOTOR CONNECTION

High-quality/low-resistance connectors, such as Dean's Ultra Plugs, can also be used to connect motor and battery.
Note: While plugs make component changes quick and easy, they will never have as low of resistance as a good solder joint.
Use connectors that can not be connected backwards!
It is good practice to use female connectors on battery packs to avoid shorting the connector and the battery.
If using connectors for both battery & motor:
Use a male connector on the ESC wires going to the battery and a female connector on the wires going to the motor. ***This will help prevent cross connection of the battery and motor outputs that would cause internal damage to the ESC.***
For additional information on using connectors, please visit our website.

SET-UP PHOTO

STEP 4 — GT7 BASIC SET-UP
TRANSMITTER ADJUSTMENTS

For proper ESC operation, adjust transmitter as follows:

A. Set **HIGH ATV** or **EPA** to **maximum** setting.
[amount of throw at full throttle]

B. Set **LOW ATV**, **EPA**, or **ATL** to **maximum** setting.
[amount of throw at full brakes]

C. Set **EXPONENTIAL** to **zero** setting.
[throttle channel linearity]

D. Set **THROTTLE CHANNEL REV. SWITCH** to **either** position.

E. Set **THROTTLE CHANNEL TRIM** to **middle** setting.
[adjusts neutral position/increases or decreases coast brakes]

F. Set **ELECTRONIC TRIGGER THROW ADJUSTMENT** to **70% throttle** and **30% brake** throw (or 7:3).
[adjusts trigger throw electronic/digital pistol-grip transmitters]

G. Set **MECHANICAL TRIGGER THROW ADJUSTMENT** to position with **2/3 throttle** and **1/3 brake** throw.
[adjusts trigger throw on mechanical/analog pistol-grip transmitters]

•NOT ALL TRANSMITTERS HAVE THESE ADJUSTMENTS•

Checking That Transmitter Has Adequate Throw

With transmitter ON, GT7 OFF & connected to receiver & battery:

1. **PRESS & HOLD SPEED CONTROL'S SET BUTTON**
2. **TURN ON SPEED CONTROL'S POWER** *(while holding SET button)*
3. **HOLD SET BUTTON UNTIL RED, YELLOW, & BLUE LEDs ON**
4. **RELEASE SPEED CONTROL'S SET BUTTON**
   Once yellow, blue, & red LEDs (top 2 LEDs + bottom LED) turn on, release the GT7's SET button. Red LED will stay on.
5. **PULL TRANSMITTER THROTTLE IN DRIVE DIRECTION**
   Slowly pull throttle toward full drive—blue LED blinks until 500µS of throw is reached then it turns solid. (adjust throw in Step A above)
6. **PUSH TRANSMITTER THROTTLE IN BRAKE DIRECTION**
   Slowly push throttle toward full brake—yellow LED blinks until 200µS of throw is reached then it turns solid. (adjust throw in Step B above)

Note: Without transmitter adjustments mentioned in Step A & B, ESC will still program & operate normally with a minimum of ±90µS of throw.

STEP 5 — GT7 BASIC SET-UP
ONE-TOUCH PROGRAMMING

With GT7 connected to receiver & a charged battery pack:

1. **TURN ON THE TRANSMITTER'S POWER**
2. **PRESS & HOLD SPEED CONTROL'S SET BUTTON**
3. **TURN ON THE SPEED CONTROL'S POWER**
   With transmitter throttle at neutral, and still **pressing the SET button**, slide the GT7's **ON/OFF switch** ***to ON position***.
4. **HOLD GT7'S SET BUTTON UNTIL RED LED IS ON**
   Continue **pressing SET button** until the GT7's **red status LED** ***turns solid red***.
5. **RELEASE GT7'S SET BUTTON WHEN LED IS RED**
6. **PULL TRANSMITTER THROTTLE TO FULL-ON POSITION**
   Hold it there until the **green status LED** ***turns solid green***.
   Note: Motor will not run during programming even if connected.
7. **PUSH TRANSMITTER THROTTLE TO FULL-BRAKES**
   Hold it there until the **green status LED** ***blinks green***.
8. **RETURN TRANSMITTER THROTTLE TO NEUTRAL**
   Red status LED will ***turn solid red***, indicating that throttle is at neutral, and proper programming has been completed.

NOTE: If transmitter setting are changed, programming must be repeated. If you experience any problems, turn off ESC and repeat programming.

STEP 6 — OPTIONAL GT7 SET-UP
THROTTLE PROGRAM SELECTION

The GT7 is equipped with ***7 user-selectable Throttle Programs*** to choose from. The chart below shows how the different Throttle Programs change the feel of the throttle response.

Refer to 'Factory-Installed Programs' chart below for Drive Frequency, Minimum Drive, Brake Frequency, Deadband, and Minimum Brake values for the factory installed Programs 1-7.

FEEL:	SMOOTH →						AGGRESSIVE
PROGRAM#:	7	1	2	3	4	5	6
POSSIBLE APPLICATION	slick tracks	smooth modif.	aggr. modif.	stock	aggr. stock	oval	4-cell

Each Throttle Program is comprised of 3 parameters:

- **Drive Profile**--*Drive PWM Frequency, Minimum Drive, & #drive steps.*
- **Brake Profile**--*Brake PWM Frequency & #braking steps.*
- **Minimum Brake Percentage**--*1 of 7 settings from 20 to 55%.*

[*Each Throttle Program stores its own Min.Brake setting independently* **]**

FACTORY-INSTALLED PROGRAMS 1-7

Program #:	1	2	3	4	5	6	7
Drive Frequency (kHz):	15	11	7.5	4.5	3.5	2	23
Minimum Drive (%):	3	2	2	4	3	3	1
Brake Frequency (kHz):	3.5	4	5.5	5.5	1.5	3	5.5
Deadband (%):	5	5	5	5	5	5	5
Minimum Brake (%):	20	20	20	20	20	20	20

NOTE: GT7 is factory set to Program #1.

Selecting Throttle Program

With the GT7 connected to a charged battery pack:

1. **TURN ON THE SPEED CONTROL'S POWER**
   TRANSMITTER ON: Red status LED will be on, indicating that speed control is at neutral.
   TRANSMITTER OFF (or input harness disconnected):
   [When speed control is powered on and ***no input signal is being received*** from the receiver, the ***green and red status LEDs will both turn on solid***. *This acts as a system check at all times to let you know the condition of the connection between your receiver and the GT7.*]
2. **PRESS & HOLD SPEED CONTROL'S SET BUTTON**
   Press and hold SET button on GT7 ***until all 4 LEDs turn on***.
3. **RELEASE SPEED CONTROL'S SET BUTTON**
   All ***status LEDs will flash together***. The number of times the LEDs flash indicates the Throttle Program selected.
4. **PRESS & RELEASE SET BUTTON TO SELECT PROGRAM**
   Each press will change to the next consecutive Program.
5. **WAIT FOR SPEED CONTROL TO EXIT PROGRAMMING**
   SET button not pressed for 3 sec.--*ESC* exits programming.

AFTER STEP 5, GT7 IS FULLY PROGRAMMED & READY TO RUN
(Your GT7 is now set-up just like our top factory drivers prefer it)
Steps 6 & 7 are considered optional & Step 8 is strictly advanced!

STEP 7 — OPTIONAL GT7 SET-UP
MINIMUM BRAKE ADJUSTMENT

The GT7 lets you set the minimum braking force for each of the 7 Throttle Programs—***each Program stores its own value independently***. The value for the minimum braking force is a percentage of full-brakes *(transmitter's throttle at full-brake position)*. ***The 7 available choices are 20, 30, 35, 40, 45, 50, & 55%.*** *Brakes then range from selected value to 100% braking force.*

Selecting Minimum Brake %--TRANSMITTER ON

With transmitter ON & GT7 connected to receiver and battery:

1. **TURN ON THE SPEED CONTROL'S POWER**
2. **PRESS & HOLD SPEED CONTROL'S SET BUTTON**
   With transmitter throttle at neutral, **press and hold SET button** on GT7 ***until all 4 LEDs turn on***.
3. **PUSH TRANSMITTER THROTTLE TO FULL-BRAKES**
   When the transmitter's throttle is moved to the full-brake position while **still pressing SET button** on the GT7, only the ***blue status LED will remain on*** *(2nd LED from top)*.
4. **RELEASE SPEED CONTROL'S SET BUTTON**
   Blue status LED will flash. The number of times the LED flashes indicates the Minimum Brake selection *(1 of 7)*.
5. **PRESS & RELEASE SET BUTTON TO CHANGE SELECTION**
   Each press will change to the next consecutive Minimum Brake value. *(After value #7, the sequence begins again at value #1)*
6. **WAIT FOR SPEED CONTROL TO EXIT PROGRAMMING**
   When SET button is not pressed for about 3 seconds, the ***selected Minimum Brake value is loaded*** into memory. The *blue status LED will then flash a few times rapidly, then the status LEDs will come on, one at a time, scrolling from top-to-bottom indicating that you are exiting programming. The red status LED will then turn on solid, indicating that the speed control is at neutral and ready to go.*

Selecting Minimum Brake %--WITHOUT TRANSMITTER

With the transmitter power OFF (or input harness disconnected):

1. **TURN ON THE SPEED CONTROL'S POWER**
   Green and red status LEDs will both turn on solid indicating ***no input signal is being received***.
2. **PRESS & HOLD SPEED CONTROL'S SET BUTTON**
   Continue to hold SET button on GT7 ***beyond the point when all 4 LEDs turn on***, until ***only the blue status LED is on***.
3. **RELEASE SPEED CONTROL'S SET BUTTON**
   Blue status LED will flash. The number of times the LED flashes indicates the Minimum Brake selection *(1 of 7)*.
4. **PRESS & RELEASE SET BUTTON TO SELECT PROGRAM**
   Each press will change to the next consecutive Program.
5. **WAIT FOR SPEED CONTROL TO EXIT PROGRAMMING**
   When SET button is not pressed for about 3 seconds, the blue status LED flashes rapidly, the four status LEDs scroll from top-to-bottom, and ESC exits back to neutral.

STEP 8 — ADVANCED PROGRAMMING
CUSTOMIZING PROGRAM 7

The GT7'S ***7th Throttle Program can be customized*** to fine tune the speed control to feel just the way you like it.

The 7th Throttle Program lets you tune the following items:

- **Drive Profile**--*1 of 5 Drive Profiles (each profile is comprised of Drive PWM Frequency, Minimum Drive %, & number of throttle steps for the transmitter's forward/drive trigger throw).*
- **Brake Profile**--*1 of 5 Brake Profiles (each Brake Profile is comprised of Brake PWM Frequency & number of braking steps for brake throw).*
- **Braking Type**--*1 of 2 types of braking styles (STD.BRAKE--Novak's Constant Force braking or DRAG BRAKE style braking).*
- **Minimum Brake Percentage**--*1 of 7 settings from 20 to 55%.*

See 'Custom Profile Data' chart (above/right) for Profile values.

Entering Program 7 Customizing Mode

With the transmitter power OFF (or input harness disconnected):

1. **TURN ON THE SPEED CONTROL'S POWER**
2. **BE SURE THAT THROTTLE PROGRAM 7 IS ACTIVE**
   If you are not sure that Program 7 is selected, follow the procedures in Step 6 to check/select Program 7.
3. **DOUBLE-CLICK SPEED CONTROL'S SET BUTTON**
   With Program 7 active & speed control in neutral, **momentarily press & release SET button twice** on GT7 to enter Program 7 customizing mode. ***All 4 LEDs will turn on solid*** for about 1 second, then turn off. The ***green status LED*** *(3rd LED down/marked "DRIVE PROFILE" on label)* ***will then flash to indicate the active Drive Profile***.
4. **PRESS & RELEASE SET BUTTON TO SELECT DRIVE PROFILE**
   Each press will change to the next consecutive Profile.
5. **WAIT FOR SPEED CONTROL'S LED TO FLASH YELLOW**
   If SET button not pressed for 3 seconds, the Drive Profile is stored into memory and ***either the yellow status LED*** *(top LED/"STD. BRAKE" on label)* ***or the yellow & blue LEDs*** *(top 2 LEDs/"DRAG BRAKE" on label)* ***will then flash to indicate the active Constant Force or Drag Brake Profile*** *(select in Step 7)*.
6. **PRESS & RELEASE SET BUTTON TO SELECT BRAKE PROFILE**
   Each press will change to the next consecutive Profile.
7. **PRESS & HOLD SET BUTTON TO SELECT BRAKING TYPE**
   If **SET button is pressed and held for 3 seconds** at any time in customizing mode, the ***Braking Type is switched***. *Yellow LED=Constant Force • Yellow & Blue LEDs=Drag Brake.*
8. **WAIT FOR SPEED CONTROL'S LED TO FLASH BLUE**
   If SET button is not pressed for 3 seconds, Brake Profile is stored into memory and ***blue status LED*** *(2nd LED down/marked "MIN. BRAKE" on label)* ***will then flash to indicate the active Minimum Brake setting.***
9. **PRESS & RELEASE SET BUTTON TO SELECT MIN. BRAKE**
   Each press will change to the next consecutive setting.
10. **LEDs SCROLL UP & DOWN, THEN PROGRAMMING LOOP STARTS OVER AT SELECT DRIVE PROFILE**
    Pressing SET button during LED scroll lets you ***exit the customizing mode***. If you do not press the SET button, the programming loop will repeat itself 3 more times, before exiting the customizing mode by itself.

Restoring Programming to GT7 Factory Defaults

Every time you perform the One-Touch Set-Up, the GT7's factory default programming values are restored. This is also the only way to get back to the original 7th Program with 23kHz.

PROGRAM 7 CUSTOM PROFILE DATA

Drive Profile:	1	2	3	4	5
Drive PWM Frequency (kHz):	1	5.5	12	15	20
Minimum Drive (%):	3	3	3	3	2
Std. Brake Profile:	**1**	**2**	**3**	**4**	**5**
Brake PWM Frequency (kHz):	2.5	3.5	5.5	8	11
Drag Brake Profile:	**1**	**2**	**3**	**4**	**5**
Brake PWM Frequecny (kHz):	2.5	3.5	5.5	8	11
Drag Brake Frequency (kHz):	2.5	3.5	5.5	8	11

RECEIVER BATTERY PACK

If using an external receiver battery pack with the GT7:

1. Plug an external 5 cell (1.2VDC/cell) receiver battery pack into the battery slot of the receiver.
2. Leave the **GT7's ON/OFF switch** in the ***OFF*** position.
3. Use **receiver battery pack's ON/OFF switch** to turn the ***system power on and off***—Do not use the GT7's switch.

TROUBLE-SHOOTING GUIDE

This section describes possible ESC problems, causes, and solutions.

Steering Channel Works But Motor Will Not Run

- Check motor connections. Check motor and brushes.
- Make sure input signal harness is plugged into throttle channel of receiver and the ESC. Check throttle channel operation with a servo. Check wiring color sequence of receiver signal harness.
- Possible internal damage—Refer to Service Procedures.

Receiver Glitches/Throttle Stutters During Acceleration

- Receiver or antenna too close to speed control, power wires, battery, or motor—Refer to Step 2.
- Bad connections—Check wiring and connectors.
- Motor brushes worn—Replace brushes.
- Excessive motor current—Use milder motor or smaller pinion gear.
- External Power Capacitor damaged/not installed—Refer to Step 3/Replace Power Capacitor *(possible internal damage)*.

Motor and Steering Servo Do Not Work

- Check wires, receiver signal harness wiring & color sequence, radio system, crystals, battery & motor connectors, and battery pack.
- Possible internal damage—Refer to Service Procedures.

Model Runs Slowly/Slow Acceleration

- Check motor and battery connectors—Replace if needed.
- Bad battery or motor—Check operation with another.
- Incorrect transmitter/ESC adjustment—Refer to Steps 4 & 5.
- External Power Capacitor damaged/not installed—Refer to Step 3/Replace Power Capacitor *(possible internal damage)*.
- External Schottky diode damaged—check that diode is installed correctly/Refer to Step 3.

Motor Runs Backwards

- Motor wired backwards—Check wiring and reverse.
- Backwards motor timing—Reverse motor end bell.

ESC Is Melted Or Burnt/ESC Runs With Switch Off

- Internal damage—Refer to Service Procedures.

****For more assistance call our Customer Service Department.***

SERVICE PROCEDURES

Before sending your GT7 in for service, review the Trouble-Shooting guide and instructions. The speed control may appear to have failed when other problems exist.

After reviewing the instructions, if you feel that your GT7 requires service, please obtain the most current product service options and pricing by one of the following methods:

WEBSITE: Print a copy of the ***PRODUCT SERVICE FORM*** from the SERVICE section of the website. Fill out the needed information on this form and return it with the Novak product that requires servicing.

PHONE/FAX/E-MAIL: If you do not have access to the internet, contact our customer service department by phone, e-mail, or fax as listed in the CUSTOMER SERVICE section below.

WARRANTY SERVICE: For warranty work, you *MUST CLAIM WARRANTY* on the ***PRODUCT SERVICE FORM*** and include a valid cash register receipt with purchase date on it, or an invoice from previous service work. If warranty provisions have been voided, there will be service charges.

ADDITIONAL NOTES:

- Hobby dealers or distributors are not authorized to replace Novak products thought to be defective.
- If a hobby dealer returns your speed control for service, submit a completed ***PRODUCT SERVICE FORM*** to the dealer and make sure it is included with the speed control.
- Novak Electronics, Inc. does not make any electronic components *(transistors, resistors, etc.)* available for sale.

PRODUCT WARRANTY

The GT7 speed control is guaranteed to be free from defects in materials or workmanship for a period of 120 days from the original date of purchase *(verified by dated, itemized sales receipt)*. Warranty does not cover incorrect installation, components worn by use, damage to case, damage from using fewer than 4 or more than 6 cells *(1.2 volts DC/cell)* input voltage, cross-connection of battery/motor, overheating solder tabs, reverse voltage application, damage resulting from thermal overload, damage from incorrect installation of FET servo or receiver battery pack, not installing three 0.1µF (50V) capacitors on motor, not installing or incorrect installation of a Novak power capacitor on the ESC, splices to input harness, damage from excessive force when using the One-Touch/SET button or from disassembling case, tampering with internal electronics, allowing water, moisture, or any other foreign material to enter ESC or get onto the PC board, incorrect installation/wiring of input plug plastic, allowing exposed wiring or solder tabs to short-circuit, or any damage caused by a crash, flooding, or act of God.

In no case shall our liability exceed the product's original cost. We reserve the right to modify warranty provisions without notice.

★ 120 DAY WARRANTY

Because Novak Electronics, Inc. has no control over the connection and use of the speed control or other related electronics, no liability may be assumed nor will be accepted for any damage resulting from the use of this product. Every Novak speed control is thoroughly tested and cycled before leaving our facility and is, therefore, considered operational. *By the act of connecting/operating speed control, the user accepts all resulting liability.*

CUSTOMER SERVICE

NOVAK ELECTRONICS, INC.
Monday-Thursday: 8:00am-5:00pm (PST)
Friday: 8:00am-4:00pm *(closed every other Friday)*
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