

SERVICE MANUAL

Tracer 9 Tracer 9 GT

MTT890 MTT890D

B5U-28197-E0

IMPORTANT

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Please refer to "BASIC INFORMATION" (separate volume, Y0A-28197-E0*) for basic instructions that must be observed during servicing. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

Yamaha Motor Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

TIP _

• * If the contents of the manual are revised, the last digit of the manual number will be increased by one.

• Designs and specifications are subject to change without notice.

EAS30001

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following notations.

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.	
	A WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.	
NOTICE	NOTICE A NOTICE indicates special precautions that must be taken to avoid damage t the vehicle or other property.	
TIP	A TIP provides key information to make procedures easier or clearer.	

EAS20002



HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

- The manual is divided into chapters and each chapter is divided into sections. The current section title "1" is shown at the top of each page.
- Sub-section titles "2" appear in smaller print than the section title.
- To help identify parts and clarify procedure steps, there are exploded diagrams "3" at the start of each removal and disassembly section.
- Numbers "4" are given in the order of the jobs in the exploded diagram. A number indicates a disassembly step.
- Symbols "5" indicate parts to be lubricated or replaced. Refer to "SYMBOLS".
- A job instruction chart "6" accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc. This step explains removal and disassembly procedure only. For installation and assembly procedure, reverse the steps.
- Jobs "7" requiring more information (such as special tools and technical data) are described sequentially.



G088877

EAS20005

The following symbols are used in this manual for easier understanding.

TIP_

The following symbols are not relevant to every vehicle.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
0	Serviceable with engine mounted	G	Gear oil
A	Filling fluid		Molybdenum disulfide oil
	Lubricant	BF	Brake fluid
A REAL PROPERTY OF THE PROPERT	Special tool	B	Wheel bearing grease
	Tightening torque		Lithium-soap-based grease
K	Wear limit, clearance		Molybdenum disulfide grease
	Engine speed		Silicone grease
	Electrical data		Apply locking agent (LOCTITE®).
	Engine oil	New	Replace the part with a new one.

TABLE OF CONTENTS	
GENERAL INFORMATION	1
SPECIFICATIONS	2
PERIODIC CHECKS AND ADJUSTMENTS	3
CHASSIS	4
ENGINE	5
COOLING SYSTEM	6
FUEL SYSTEM	7
ELECTRICAL SYSTEM	8
SELF DIAGNOSTIC	9

GENERAL INFORMATION

	1-1
VEHICLE IDENTIFICATION NUMBER	1-1
MODEL LABEL	1-1
EEATURES	1_2
	1 0
GLUSSART	1-2
DISPLAYS	1-2
SETTINGS MENU	1-8
BASIC SERVICE INFORMATION	1-12
ELECTRICAL SYSTEM	1-12
SPECIAL TOOLS	1-13

IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number "1" is stamped into the right side of the steering head pipe.



AS30003

The model label "1" is affixed to the frame under the seat. This information will be needed to order spare parts.



FEATURES

FEATURES

EAS31706

ABS - Anti-lock Brake System ABS ECU - Anti-lock Brake System Electronic Control Unit BC - Brake Control ECU - Engine Control Unit LIF - Lift Control System QS - Quick Shift SCS - Slide Control System TCS - Traction Control System SCU - Suspension Control Unit

EAS31707

This vehicle is equipped with two display screens: a main display and a sub-display The following items can be found on the displays:

MTT890



MTT890D



- 1. Speedometer
- 2. Tachometer
- 3. Quick shift Indicator "QS" (for MTT890D)
- 4. Transmission gear display
- 5. Vehicle information displays
- 6. Settings menu icon " 🛟 "
- 7. Grip warmer indicator (for MTT890D)
- 8. Seat heater indicator (for MTT890D)
- 9. Brake control icon "BC"
- 10. Clock
- 11.MODE display
- 12. Lap timer
- 13. Oil pressure warning "
- 14. Coolant temperature warning " 🚣 "
- 15. Auxiliary system warning ">----"
- 16. SCU trouble warning "
- 17. Error mode warning "Err" (replaces clock when activated)

FEATURES



1. Vehicle information displays

TIP

- This model uses thin-film-transistor liquid-crystal displays (TFT LCD) for good contrast and readability in various lighting conditions. However, due to the nature of this technology, it is normal for a small number of pixels to be inactive.
- The display units can be switched between kilometers/miles and celsius/fahrenheit.

Stop the vehicle before making any setting changes. Changing settings while riding can distract the operator and increase the risk of an accident.

Speedometer

The speedometer shows the vehicle's traveling speed.

Tachometer

The tachometer shows the engine speed, as measured by the rotational velocity of the crank-shaft, in revolutions per minute (r/min).

NOTICE

Do not operate the engine in the tachometer red zone.

Vehicle information displays



1. Vehicle information displays



1. Vehicle information displays

The six vehicle information displays can be individually set to show the following items:

- ODO: odometer
- F-TRIP: fuel reserve tripmeter (main display (upper) only)
- TRIP1: tripmeter
- TRIP2: tripmeter
- F.AVE: average fuel economy
- F.CRNT: instantaneous fuel economy
- A.TEMP: air temperature
- C.TEMP: coolant temperature
- Fuel meter
- FUEL CON: amount of fuel consumed
- TRIP TIME: running time
- The setting speed setting

Operate the vehicle information displays as follows:

Rotate the wheel switch to move the cursor over an information display.

Push the wheel switch inward and the selected display will highlight gray.

Rotate the wheel switch to choose a different display item.

Push the wheel switch inward to confirm the new display item.

TIP ____

- In LAP TIME mode, the two vehicle information displays on the main display screen are replaced by lap information.
- TRIP1, TRIP2, F-TRIP, F.AVE, FUEL CON and TRIP TIME items can be individually reset.

FEATURES

Odometer: Average fuel economy: 123456 km 8.7 km/L ada F.AVE The odometer shows the total distance traveled The average fuel economy display can be set to "km/L" or "L/100km". by the vehicle. TIP_ TIP_ ODO will lock at 999999 and cannot be reset. After resetting the average fuel economy display, "--.-" will be shown until the vehicle has Fuel reserve tripmeter: traveled 1 km. Instantaneous fuel economy: 20.0 km F-TRIP 8.7 km/L F.CRNT When the fuel tank reserve level has been reached, F-TRIP appears automatically and begins recording distance traveled from that point. The instant fuel economy display can be set to After refueling and traveling some distance, F-"km/L" or "L/100km". TRIP will automatically disappear. TIP Tripmeters: If traveling at speeds under 10 km/h, "--.-" will be displayed. Air temperature: 98.7 km TRIP1 43.2 km TRIP2 17 °C A.TEMP TRIP1 and TRIP2 show the distance traveled since they were last set to zero. TIP . The air temperature is displayed from -9 °C (16 TRIP1 and TRIP2 will reset to 0 and begin °F) to 50 °C (122 °F) in 1 °C (1 °F) increments. counting again after 9999.9 has been reached. The temperature displayed may vary from the actual ambient temperature. TIP_

• "--" will be displayed if the detected temperature is lower. • "--" will be displayed if the detected temperature is higher.

Coolant temperature:



The coolant temperature is displayed from 40 $^\circ C$ (104 $^\circ F)$ to 124 $^\circ C$ (255 $^\circ F) in 1 <math display="inline">^\circ C$ (1 $^\circ F)$ increments.

TIP

- If the vehicle coolant temperature is below 40 °C (104 °F) the coolant temperature display will read "Lo"
- If the vehicle coolant temperature is above 124 °C (255 °F) the coolant temperature display will read "Hi"

Fuel Meter:



The instantaneous fuel consumption function should be used for general reference only. Do not use this figure to estimate the distance that can be traveled on the current tank of fuel.

Trip time:



Displays engine running time. Cruise control speed setting:





The fuel meter indicates the amount of fuel in the fuel tank. The display segments of the fuel meter disappear from "F" (full) towards "E" (empty) as the fuel level decreases. When the last segment starts flashing, refuel as soon as possible. Fuel consumption trip meter:



Displays how much fuel has been consumed since the trip meter was last reset.

Displays the selected speed setting for the cruise control system.

To reset information display items (if able):

- 1. Rotate the wheel switch to highlight one of the six vehicle information displays.
- 2. Press the wheel switch inward to select the information display.
- 3. Rotate the wheel switch to select the desired information display item.
- 4. Press and hold the wheel switch inward until the display item is reset.

Transmission gear display

This shows which gear the transmission is in. This model has 6 gears and a neutral position. The neutral position is indicated by the neutral indicator light "N" and by the transmission gear display "N".

MODE display (for MTT890D)



This display shows the currently selected "D-MODE", "SUS-MODE" and "TCS-MODE" settings. The mode that is enlarged and displayed on the right can be adjusted using the MODE up/ down switches. Use the "MODE" switch to rotate counterclockwise between "TCS-MODE", "SUS-MODE" and "D-MODE".

TIP _

- When the malfunction indicator light "^C, the auxiliary system warning "⁻, or the coolant temperature warning "^L, " are on, "D-MODE", "SUS-MODE" and "TCS-MODE" cannot be adjusted.
- When the SCU trouble warning " / " is on, "SUS-MODE" cannot be adjusted.
- The previously selected modes will be displayed when the vehicle power is turned on.

To turn off the traction control system, select "TCS-MODE" with the "MODE" switch, then push and hold the MODE up switch until "OFF" is displayed. To turn TCS back on, press the MODE down switch ("TCS-MODE" will return to its previous setting).

TIP

- When "TCS-MODE" has been set to "OFF", the TCS, SCS and LIF systems are all turned off together.
- The "TCS-MODE OFF" and "TCS-MODE M" settings can only be selected while the vehicle is stopped.

MODE display (for MTT890)



This display shows the currently selected "D-MODE" and "TCS-MODE" settings. The mode that is enlarged and displayed on the right can be adjusted using the MODE up/down switches. Use the "MODE" switch to toggle left-right be-tween "TCS-MODE" and "D-MODE".

TIP _

- When the malfunction indicator light " , the auxiliary system warning " , or the coolant temperature warning " , and "TCS-MODE" cannot be adjusted.
- The previously selected modes will be displayed when the vehicle power is turned on.

To turn off the traction control system, select "TCS-MODE" with the "MODE" switch, then push and hold the MODE up switch until "OFF" is displayed. To turn TCS back on, press the MODE down switch ("TCS-MODE" will return to its previous setting).

TIP _

- When "TCS-MODE" has been set to "OFF", the TCS, SCS and LIF systems are all turned off together.
- The "TCS-MODE OFF" and "TCS-MODE M" settings can only be selected while the vehicle is stopped.

Clock

The clock uses a 12-hour time system. Quick shift indicator "QS" (for MTT890D)

When able to shift, the respective QS \blacktriangle or \checkmark turns green.

When unable to shift, QS $_{\bigtriangleup} \bigtriangledown$ is white.

If the QS function is turned OFF, QS $\triangle \bigtriangledown$ itself is not displayed.

The QS functions can be turned on or off in the setting MENU.

TIP_

The upshift and downshift functions are independent and can be activated separately.

For more information on the QS system.

Setting menu icon " 🔅 "

Choose this icon and push the wheel switch to access the settings MENU.

Grip warmer indicator (for MTT890D)

The grip warmers can be used when the engine is running. There are 10 temperature levels. When activated, the indicator will display the temperature level from 1 (lowest) to 10 (highest). To activate the grip warmer, use the wheel switch to highlight the grip warmer display with the cursor.

Press the wheel switch inward to select the grip warmer function.

Once selected, rotate the wheel switch up and down to adjust the temperature level.

Press the wheel switch inward to confirm the temperature level and exit the grip warmer function.

NOTICE

- Be sure to wear gloves when using the grip warmers.
- Do not use the grip warmers in warm weather.
- If the handlebar grip or throttle grip becomes worn or damaged, stop using the grip warmers and replace the grips.

Seat heater indicator (for MTT890D)

The seat heater can be used when the engine is running. There are 10 temperature levels. When activated, the indicator will display the temperature level from 1 (lowest) to 10 (highest).

To activate the seat heater, use the wheel switch to highlight the seat heater display with the cursor.

Press the wheel switch inward to select the seat heater function.

Once selected, rotate the wheel switch up and down to adjust the temperature level.

Press the wheel switch inward to confirm the temperature level and exit the seat heater function.

ECA25721

- Be sure to wear protective clothing that covers your hip and legs when using the seat heater.
- Do not use the seat heater in warm weather.
- If the seat becomes worn or damaged, stop using the seat heater and replace the seat.

The function of the wheel switch can be locked into grip warmer/seat heater mode by pressing and holding the wheel switch inward while the grip warmer indicator or the seat heater indicator is highlighted by the cursor.

In this mode, the temperature levels can be instantly adjusted by rotating the wheel switch up/ down.

While in this mode, press the wheel switch inward to toggle between the grip warmer and seat heater functions.

To exit this mode and return the wheel switch to its normal functionality, press and hold the wheel switch inward.

TIP .

The current grip warmer/seat heater settings are saved when the vehicle is turned off.

Lap timer

This stopwatch function can be activated through the settings MENU.

Once activated, the two vehicle information displays on the main display screen are replaced with:



- 1. Lap count
- 2. Current lap time
- 3. Latest/Previous lap time

To start the timer, push the dimmer/pass switch down towards "PASS".

Each push of the dimmer/pass switch will increase the lap count by 1 and reset the current lap timer.

To pause the lap timer, press the wheel switch inward.

To unpause the timer, push the dimmer/pass switch down towards "PASS" and the timer will resume without counting a new lap.

To exit the lap time mode, turn it off in the settings MENU.

TIP

• The engine must be running to start the lap timer.

- The headlight will flash when the dimmer/pass switch is pressed.
- Whenever the lap timer is paused, it can be resumed using the dimmer/pass switch.

Brake control icon "BC"

This icon is replaced by the auxiliary system warning and coolant temperature warning indicators when they are activated.

Error mode warning "Err"

When an internal error occurs (e.g., communication with a system controller has been cut off), the error mode warning will appear as follows.

"Err" and " SC" indicator light indicates an ECU error.

"Err" and the SCU trouble warning " [" indicates a SCU error (for MTT890D).

"Err" only indicates an ABS ECU error.

TIP _

Depending on the nature of the error, the display may not function properly and the TCS settings may be impossible to change. Additionally, the ABS may not function properly. Use extra care when braking and check the vehicle immediately.

SCU trouble warning "

This icon appears if a problem is detected in the front or rear suspension.

Auxiliary system warning ">>> "

This icon appears if a problem is detected in a non-engine-related system.

Coolant temperature warning " \pounds "

This icon appears if the coolant temperature reaches 116 °C (241 °F) or higher. Stop the vehicle and turn off the engine. Allow the engine to cool.

NOTICE

Do not continue to operate the engine if it is overheating.

Oil pressure warning "****

This icon appears when the engine oil pressure is low. When the vehicle is first turned on, engine oil pressure has yet to build, so this icon will come on and stay on until the engine has been started.

TIP .

If a malfunction is detected, the oil pressure warning icon will flash repeatedly.

ECA26410 NOTICE

Do not continue to operate the engine if the oil pressure is low.

EAS33582 SETTINGS MENU



The settings MENU screen contains the following settings modules. Select a module to make related settings changes.

Module	Description
"Exit"	Exit MENU and return the main display
"Display Setting"	Switch lap time mode on/off and adjust the tachometer color
"Manual TCS Setting"	Adjust TCS/SCS/LIF settings for the "TCS- MODE M"
"Vehicle Setting"	Adjust BC/QS settings
"Shift Indicator"	Turn the shift indicator on/off and adjust ta- chometer settings
"Maintenance"	View and reset mainte- nance intervals
"Unit"	Set fuel consumption and measurement units
"Brightness"	Adjust screen bright- ness
"Clock"	Adjust the clock
"SUS. Sensor Calibra- tion" (for MTT890D)	Perform a sensor cali- bration
"All Reset"	Return all settings to factory default

Settings MENU access and operation

How to use the settings MENU: Rotate the wheel switch up or down to highlight items or increase/decrease values and briefly press the wheel switch inward to confirm the selection. Press and hold the wheel switch until the screen returns to the main display to exit the MENU at any time.

TIP _

- Certain settings menu screens have an upward pointing triangle mark item. Select the triangle mark to save settings changes and exit the current screen.
- Should vehicle motion be detected, the screen will automatically exit the settings MENU and return to the main display.
- To ensure that the desired settings changes are saved, be sure to exit each menu via the triangle mark (if displayed). Exiting the settings menu by pressing and holding the wheel switch may not save settings changes.

"Display Setting"



This module allows you to switch the lap time mode and tachometer color mode ON/OFF. When the lap time mode is ON, the twin vehicle information displays on the main display screen will show a lap timer and a lap counter. To exit the lap time mode, the turn lap timer OFF in the Display Setting module.

To change the tachometer to color mode, select ON.

"Manual TCS Setting"



This module allows you to customize the "TCS-MODE M" which is accessible on the main display using the MODE switches.

<u>TCS</u>

This model uses a variable traction control system. For each setting level, the further the vehicle is leaned over, the greater the amount of traction control (system intervention) is applied. There are 3 setting levels available for the "TCS-MODE M".

Setting level 1 applies the least amount of overall system intervention, while setting level 3 applies the greatest amount of overall traction control.

TIP .

- TCS can only be turned on or off via the main screen using the MODE switches.
- SCS and LIF can be turned off independently of TCS for "TCSMODE M".
- When "TCS-MODE" has been set to "OFF" on the main display: TCS, SCS and LIF are all turned off together.

<u>SCS</u>

SCS can be set to OFF, 1, 2, and 3. OFF turns the slide control system off, setting level 1 provides the least amount of system intervention, and setting level 3 provides the greatest amount of system intervention. LIF

LIF can be set to OFF, 1, 2, and 3.

Setting level 1 provides the least amount of system intervention and setting 3 most strongly reduces the rate of wheel lift. OFF turns LIF off.

"Vehicle Setting"



The vehicle setting module allows you to adjust setting for the BC and QS systems.



The brake control system has two settings, BC1 and BC2. Select BC1 when only standard ABS is desired. Select BC2 to have the brake control system further regulate brake pressure while cornering to suppress lateral wheel slip.

TIP _

BC

For skilled riders and when riding at the track, due to varying conditions, the BC2 brake system may engage sooner than expected relative to your desired cornering speed or intended cornering line.

<u>QS</u>



The quick shift system indicators are divided into QS $_{\bigtriangleup}$ and QS $_{\bigtriangledown}$ sections.

 QS_{Δ} and QS_{∇} are not linked and can be independently turned on or off.

QS can be set to ON or OFF.

OFF turns the respective upshift or downshift function off, and the clutch lever must then be used when shifting in that direction.

TIP .

- If the QSS setting cannot be changed: turn the engine off with the gear position set to neutral, then change the setting.
- If the QSS is not equipped on the vehicle: this module is still displayed and can be accessed from the settings MENU but it is inoperable and any changes cannot be saved.

"Shift Indicator"



This module allows a custom shift indicator to be set. When the engine r/min (rotations per minute) are in the specified range, the gear indicator will flash.

This module has 3 options:

"IND Mode" - the shift indicator can be turned $\ensuremath{\mathsf{ON/OFF}}$

"IND Start" - the r/min at which the indicator starts flashing can be chosen.

Once selected, rotate the wheel switch up/down to increase or decrease the r/min value by increments of 200 r/min.

"IND Start" is settable between 6000-12800 r/ min.

"IND Stop" - the r/min at which the indicator stops flashing can be chosen.

Once selected, rotate the wheel switch up/down to increase or decrease the r/min value by increments of 200 r/min.

"IND Stop" is settable between 6200–13000 r/ min.

"Maintenance"



This module allows you to record the distance traveled between engine oil changes (use the OIL item), and for two other items of your choice (use INTERVAL 1 and INTERVAL 2). To reset a maintenance trip meter, select it and then press and hold the wheel switch.

TIP __

Maintenance item names cannot be changed.

"Unit"



This module allows you to switch the display between metric and imperial measurement units. When using kilometers, the fuel consumption units can be changed between "km/L" or "L/ 100km". When using miles, MPG will be available.

Temperature units can be switched between Celsius and Fahrenheit.

"Brightness"



This module allows you to adjust the general brightness level of the display screens. Select the desired brightness level by rotating the wheel switch, and then press the wheel switch to fix the setting and return to the top MENU screen.

"Clock"



This module allows you to set the clock. When the clock module is selected, the hours will be highlighted.

Set the hours by rotating the wheel switch. Push the switch to confirm and highlight the minutes.

After confirming the minutes, you will be returned to the top MENU screen. "SUS. Sensor Calibration" (for MTT890D)

SUS. Sensor Calibration		
Result :		
Execute		
10:00 0 km/h		

After any service to the rear suspension, a sensor calibration must be performed using this module.

Select "Execute" and within approx. 5 seconds the result of the calibration (success/failed) will be displayed.

TIP_

When performing the sensor calibration, place the motorcycle on the centerstand and there should be no weight on the motorcycle.

"All Reset"



This module resets all settings items (except the odometers, Clock and SUS. Sensor Calibration (for MTT890D)) to their default or factory presets.

Select YES to reset all items. After selecting YES, all items will be reset and the screen will automatically return to the top MENU screen.

BASIC SERVICE INFORMATION

ELECTRICAL SYSTEM

Electrical parts handling

ECA27350

- Do not perform angle adjustment of the IMU and battery box by pinching the washer and related parts.
- When installing the IMU, apply a thin coat of silicone grease onto the washer and collar where they contact the IMU grommet.
- When installing the IMU, use only a genuine bolt and washer, and tighten the bolt to the specified torque.
- Pay attention not to expose the IMU to strong shocks, such as striking or dropping it.
- Do not place any foreign objects in and around the battery box.
- Do not obstruct breather opening "a" of the IMU.
- Do not clean the breather opening and do not blow it with compressed air.
- When replacing the collar or grommet, replace all four collars and grommets.
- Use only the specified genuine YAMAHA battery. Using a different battery may cause the IMU to fail and the engine to stall.



