



U.S. Department  
of Transportation

National Highway  
Traffic Safety  
Administration

# Memorandum

Subject: Informal testing of 2002 GL1800 Honda Gold Wing motorcycle at Honda's Mojave, Ca. facility. Date: March 20, 2003

From: *Bob Young*— Vehicle Defects Investigator, ODI

To: Public File, PB02-077

## 1.0 INTRODUCTION

On November 11, 2002 ODI conducted informal riding tests of a 2002 (Built August 2001) Gold Wing, VIN 1HPSC47012A102004.



ODI intended to:

- Gauge how long it took the coolant to overheat and begin to be expelled.
- Once overheated and being expelled, measure how long it took (in minutes) the coolant to return to "normal" temperature when motorcycle speed was increased.
- Assess what, if any effect, coolant expulsion would have on motorcycle stability and rear tire traction.

These tests were performed at Honda's "Proving Course, California" (HPCC) facility in Cantil City, Ca. and were conducted by the author, a motorcyclist with 33 years of on and off-road motorcycling experience and, currently, a Motorcycle Safety Foundation certified instructor.

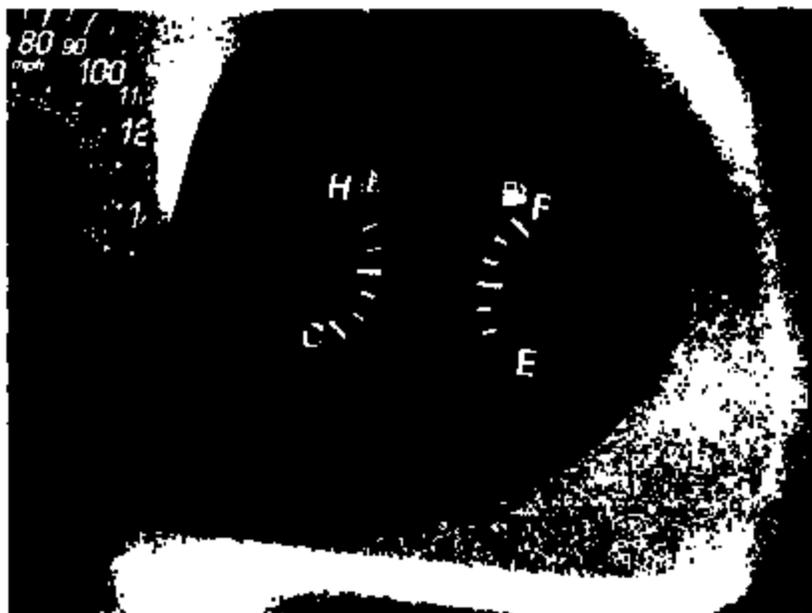
### 2.0 THE COOLANT DUMP TUBE

As with most liquid-cooled vehicles (including motorcycles), the subject Gold Wings are equipped with a coolant expulsion tube. By design, Honda has positioned the dump tube between 20 and 40mm to the left of the rear tire left sidewall so that expelled coolant is not directly in the path of the rear tire contact patch.



### 3.0 THE "RED ZONE"

The temperature gauge is shown here. The "red zone" is positioned directly below the "H."



#### 4.0 TEST PROCEDURE

1. With the coolant at "normal" temperature, begin riding the motorcycle on the handling course in 1<sup>st</sup> gear. Note time to:  
Coolant temperature above normal  
Coolant temperature into the gauge "red zone"  
Coolant temperature over the "red zone"  
Coolant expulsion
2. Once coolant is being expelled, continue riding the handling course in first gear and assess effect on motorcycle stability and rear tire traction.
3. Then, shift to second gear and increase speed to 40 mph. Note time it takes for coolant to return to normal temperature.
4. Repeat test in 2<sup>nd</sup> gear.
5. With coolant being expelled, perform the following maneuvers on the skid pad in first gear:

Execute rear brake only panic stop from 20 mph

Execute Motorcycle Safety Foundation (MSF) Exercise 10, "Limited Space Maneuvers" (both left and right)

Execute Motorcycle Safety Foundation (MSF) Exercise 16, "Avoiding hazards"

Ride multiple laps around a 30' circle with floorboard scraping the pavement.

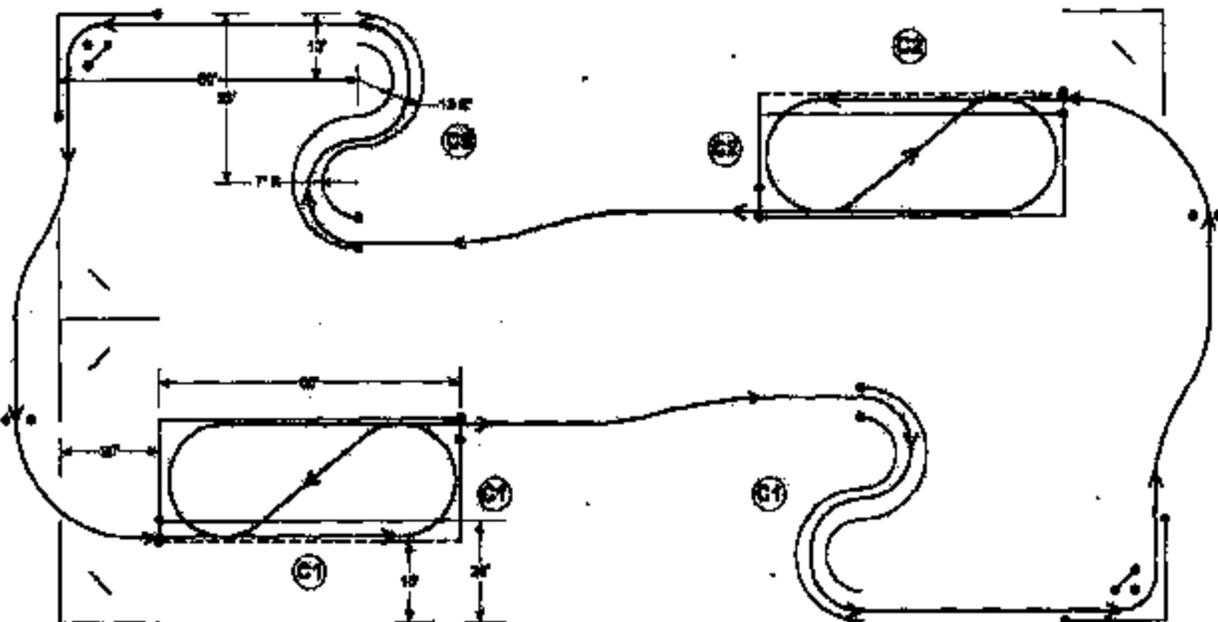
Position rear tire in expelled coolant and aggressively accelerate from a stop.

6. Measure volume of coolant expelled

#### 4.2 The Motorcycle Safety Foundation (MSF) Exercises

To evaluate the effect expelled coolant would have on motorcycle stability and rear tire traction, we used a variety of tests. Two were taken directly from the MSF's "Basic Rider Course."

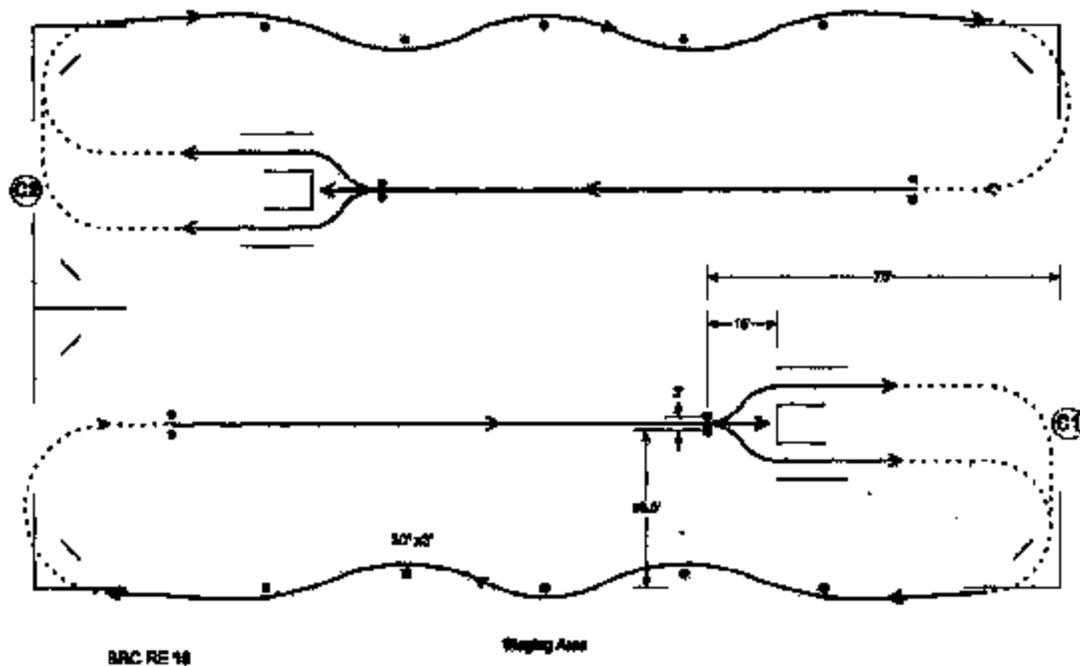
##### 4.2.1 MSF Exercise 10, "Limited Space Maneuvers"



ENC 00E 10

Skid Area

#### 4.2.2 MSF Exercise 16, "Avoiding Hazards"



#### 5.0 RESULTS

With an ambient temperature of approximately 72 degrees, ODI began the tests at 11:10A on HFCC's "handling course" which includes grades and various radii curves as well as long straight sections. Here's what we found.

#### 5.1 Coolant Temperature Over Time

With the coolant at "normal" temperature, motorcycle on the handling course.

CONDITION	CUMMULATIVE TIME (Minutes)
<b>1<sup>st</sup> Gear -- 13 mph</b>	
Coolant temperature above normal	6 (includes warm-up)
Coolant temperature into the gauge "red zone"	9:45
Coolant temperature over the "red zone"	14
Coolant expulsion	21
Return to normal in 2 <sup>nd</sup> gear @ 40 mph	4:21
<b>2<sup>nd</sup> Gear -- 13 mph</b>	
Coolant temperature above normal	3:40
Coolant temperature into the gauge "red zone"	Did not reach red zone
Coolant temperature over the "red zone"	N/A
Coolant expulsion	N/A
Return to normal in 2 <sup>nd</sup> gear @ 40 mph	: 45
<b>Total Coolant Expelled</b>	<b>200cc</b>

#### 5.2 Stability and rear tire traction

With coolant being expelled while conducting very aggressive maneuvers (including some that involved riding through previously expelled coolant), the rider did not sense that motorcycle stability or rear tire traction was compromised.