Informal document No. **WP.29-137-8**
(137th WP.29, 15-18 November 2005,
agenda items 6.4. and B.2.3.2.)

Motorcycle Brake gtr – ABS discussion

(Transmitted by the representative from Canada)

The development of Motorcycle Brake gtr is almost completed. The primary outstanding issue is ABS performance testing; specifically, adhesion utilization test in its entirety and performance requirements for the low to high surface transition test.

ECE regulation No.78 requires the adhesion utilization test. It compares the separate performance of the front and rear ABS brakes with the separate maximum braking performance of the front and rear brakes with the ABS disabled. It is evaluated on two road surfaces, a high-friction surface and a low-friction surface. In both cases the stopping distance with activated ABS must be no greater than 143 percent of the stopping distance without the ABS engaged.

The test has a high potential for producing non-repeatable and bias results since it is dependent on rider skill, the condition of the test equipment (tires, brakes and track surface), and the weather conditions. A non-skilled rider may stop the motorcycle in shorter distance with the ABS than with ABS deactivated.

In addition to influence by the rider and test conditions, ECE R78 requires that a constant control force be applied for the entire stop. Research has shown that the available surface friction (i.e. PFC) increases as the vehicle speed decreases, and therefore the ABS system will have the advantage of increased deceleration at lower speeds.

There are also safety and logistical issues with the ECE R78 adhesion utilization test:

- Rider safety. The test requires that the rider achieve an impending locked-wheel braking condition with the ABS disabled. This impending locked-wheel braking condition is at the beginning of loss-of-control of the vehicle, which could result in a crash. Even with protective outriggers in place, it is a hazardous condition that is asked of the test rider.
- Logistical. The test requires modifying the braking system to disable the ABS. This may not be possible depending on the complexity of the motorcycle braking system. Furthermore, the standard requires that maximum deceleration be recorded with an altered braking system (i.e. to disable ABS), hens possibly outside of the manufacturer design parameters.

In addition, some Contracting Parties are concerned with the ambiguous language describing the test results of ABS performance in transition from low- to high-friction surface. The present requirement states that the motorcycle's deceleration rises to an "appropriate" value. To make the test more objective and acceptable to all Contracting Parties, an actual performance number would have to be added to define what is appropriate.

At this time attempts have failed to find immediate solution to the above concerns. The next page illustrates possible solutions to proceed with timely development of the Motorcycle Brake gtr.

Issue: Motorcycle Brake gtr & ABS

LEGEND:

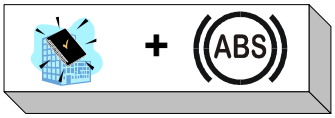
text of Motorcycle Brake gtr excluding ABS tests

agreed upon ABS tests (wheel lock tests on high and low friction surface, surface transition test from high to low friction, and ABS failure test)

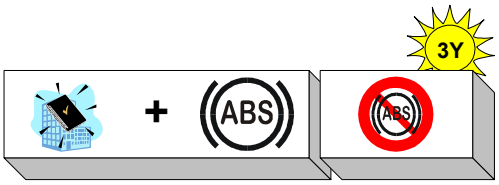
disputed ABS tests (adhesion utilization test and performance requirements for the low to high surface transition test)

Proposed solutions:

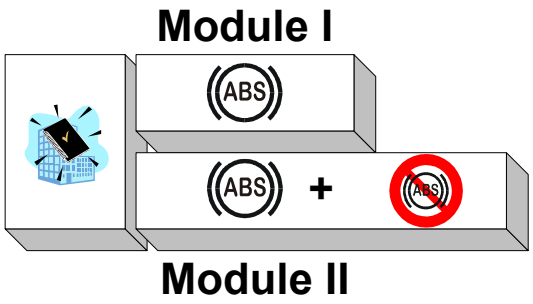
A **Exclude disputed ABS** requirements from gtr



B **Sunset clause** introduced to include the agreed upon and disputed ABS tests in gtr
The disputed requirements must be amended or eliminated from the gtr within [3 years] after gtr is registered



C **Modules** created to deal with disputed ABS requirements



D **Stop development** of Motorcycle Brake gtr.
Develop new ABS test procedures and reintroduce Motorcycle Brake gtr development in the list of AC.3 priorities at later date