

C. Motorcycles With Integrated Braking

1. The Honda Petition for Temporary Exemption

Among the requests for temporary exemption from FMVSS No. 123's right foot rear brake control requirements was one from American Honda Motor Company, Inc. for its NSS250 scooter, also called the "Reflex." The NSS250 scooter is equipped with an integrated braking system which replaces the dedicated rear brake control with a control connected to the rear brake caliper but also to one piston of the multi-piston front caliper, thus providing partial front brake application along with rear brake application. In accordance with FMVSS No. 123, a separate front brake control on the right handlebar activates the remaining front caliper pistons.

At present, FMVSS No. 123 at S5.2.1 specifies that, if provided, an integrated brake control must be located and operable in the same manner as a rear brake control. This provision addresses motorcycles which have only a single control for all braking functions, *i.e.*, those without separate front and rear brake controls. It also addresses systems with two separate controls in which one of the two is a control that applies braking force to both brakes, as in the case of the NSS250.

Under both proposed regulatory alternatives, on any motorcycle with a manual clutch, the control for an integrated brake system would have to be on the right foot pedal since that would be the required location of the rear brake control. For clutchless motorcycles, the first alternative would require that a control for an integrated brake system be located on the left handlebar. Under the second alternative, for clutchless scooters, there must be a control for an integrated brake system on the left handlebar. For all other clutchless motorcycles, the second alternative would require the integrated brake system control to be on the right foot pedal.

On the Honda NSS250, for example, the integrated brake system control is considered the rear brake control since it acts primarily on the rear brake caliper and is the only rear brake control provided. The NSS250 and other motorcycles with integrated braking systems would be able to comply with either regulatory alternative.

2. Supplemental Controls on Integrated Braking Systems

Since a motorcycle could be equipped with integrated braking as well as a supplemental brake control, it is necessary to specify that the

supplemental control provide the same integrated braking effect that is provided by the primary rear brake control. To allow a supplemental rear brake control that produced a different braking effect than the primary rear brake control may lead to rider confusion or hesitation.

To ensure that a supplemental brake control provides the same braking function as a primary rear brake control in cases where the primary control is an integrated control, we propose to add the following statement to S5.2.1: "The supplemental brake control shall provide brake actuation identical to that provided by the required control of Table 1, Item 11, of this Standard."

Because an integrated control may be located either on the left handlebar or on the right foot pedal depending on whether a motorcycle is clutchless (first alternative) or is a clutchless scooter (second alternative), we believe that it is important to make the regulatory text definitive on this issue. In order to clarify that an integrated brake control must be located as if it were a rear brake control, we have modified the last statement in S5.2.1 under both regulatory alternatives as follows: "If a motorcycle is equipped with self-proportioning or antilock braking devices utilizing a single control for front and rear brakes, the control shall be located and operable in the same manner as a rear brake control, *as specified in Table 1, Item 11, and in this paragraph.*" (Italicized language is new language that would be added to the texts of both regulatory alternatives.)

3. Request for Comments on New Developments in Motorcycle Integrated Braking Systems

Since the new type of braking system on the NSS250 has generated a high level of interest from members of the public, the agency seeks information about alternative configurations for motorcycle brake controls and other anticipated developments that might influence future brake system safety requirements. In particular, we are interested in finding out if integrated braking systems such as the current Honda system in which independent control of the front brake but not the rear brake remains possible, are likely to proliferate. We are also interested in knowing if motorcycle manufacturers are considering arrangements such as fully integrated brakes for which there would be one control for all brakes, where as in passenger automobiles and trucks, there are no separate controls for front and rear brakes. To gauge public response to some of these issues, we request responses to the following questions:

(1) Should the agency anticipate an increase in the use of or the demand for integrated brake systems similar to those that are currently in production, or for systems that integrate front and rear brakes to an even greater extent than current systems?

(2) Should the agency anticipate the emergence of completely integrated motorcycle brake systems in which separate control of front and rear brakes by the operator is no longer provided? If so, where should the single brake control be located and why?

(3) How should FMVSS No. 123 be formulated so that it remains relevant if partially or fully integrated motorcycle brake systems become more common?

(4) What brake control locations should FMVSS No. 123 specify now in order to anticipate future developments?

(5) How should FMVSS No. 122, *Motorcycle brake systems*, be revised to accommodate integrated motorcycle brake systems? How should the partial service brake system test be run?

(6) How would the emergence of completely integrated motorcycle brake systems facilitate harmonization of brake regulations where separate front and rear brake application is required?

We would be interested in any test data, crash data, simulation data, or other information that would support any suggested actions in this area.

V. Minor Revisions to Table 1

Column 2 of Table 1 in FMVSS No. 123 specifies motorcycle locations where specified controls must be placed. In three places in Column 2 of Table 1, the abbreviation "do." (for "ditto") is used at present. The text that is replaced by "do." is "Left handlebar" for item no. 4, "Horn," and "Right handlebar" for items no. 9 "Supplemental engine stop" and no. 10 "Front wheel brake." Because we are concerned that the term "do." may cause confusion, we propose to replace "do." in the three places it appears in Column 2 of Table 1 with the full text of the location, "Left handlebar" or "Right handlebar," as appropriate.

VI. Leadtime

We propose to make the amendments effective 12 months after the final rule is published, but to allow optional early compliance 30 days after the final rule is published. We believe that because this proposal would permit controls for rear motorcycle brakes to be placed on left motorcycle handlebars, a regulatory restriction would be lifted, and motorcycles that do not presently meet FMVSS No. 123 would be permitted. All other existing motorcycles would also meet the provisions of the proposed