

## **BRAKE TEST RESULTS**

Transmitted by the Expert from Japan

### **PURPOSE**

To conduct an experiment on the behavior of a sleeping child, in response to the questions raised at the 29th GRSP meeting.

- (1) Brake test conditions : After the vehicle has reached a prescribed speed, maintain a constant-speed run and then apply rapid braking
- (2) Test vehicle : A mini van
- (3) Test CRS : A CRS with a webbing sensor (WSIR) installed on the right seat of the second row, and a CRS with a vehicle sensor (VSIR) on the left seat of the second row
- (4) Test dummy : VIP3C (normal state), and P3C (free moving joint state)

"Free moving joint state", prepared by loosening the neck, arm and pelvis bolts, is intended to simulate the bodily state of a sleeping child.

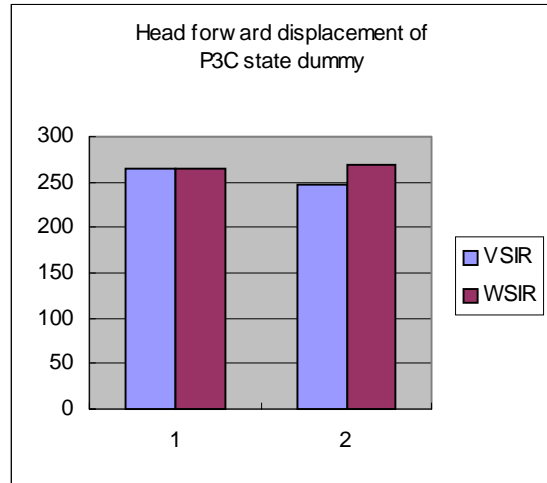
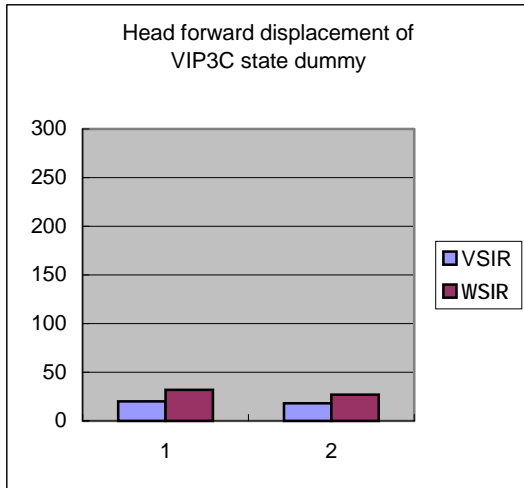
The P3C state was selected because it allows the adjustment of neck rotation -- a major factor affecting the dummy's displacement -- by adjusting a bolt.

### **CONCLUSION**

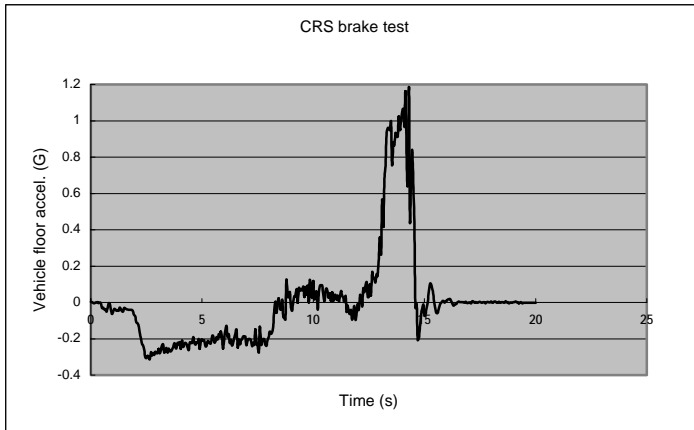
A brake test using a dummy with free-moving joints (simulating a sleeping child) indicated that forward head displacement was equivalent between CRS with a VSIR and CRS with a WSIR.

## TEST RESULTS

Test No.	Samples	Test method	Body G (sensor set on vehicle floor)	Dummy head forward displacement (mm)	
				VIP3C	P3C
1	CRS with a VSIR	After constant 50km/h run, rapid braking	MAX: Approx. 1.2G	20	
	CRS with a WSIR				265
2	CRS with a VSIR	After constant 50km/h run, rapid braking	MAX: Approx. 1.1G	18	
	CRS with a WSIR				270
3	CRS with a VSIR	After constant 50km/h run, rapid braking	MAX: Approx. 1.1G		265
	CRS with a WSIR			32	
4	CRS with a VSIR	After constant 50km/h run, rapid braking	MAX: Approx. 1.1G		246
	CRS with a WSIR			27	



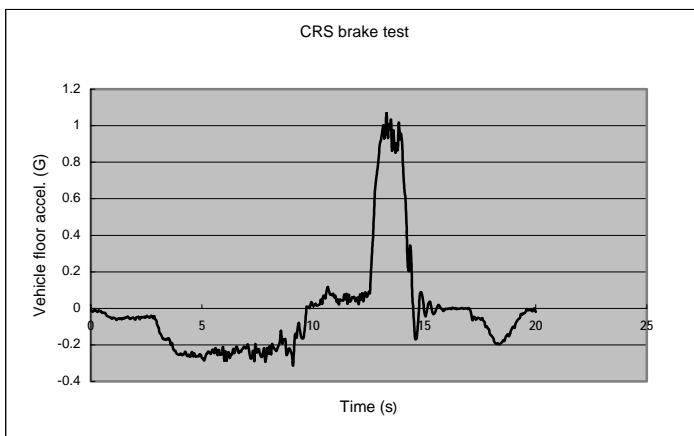
## Vehicle deceleration waveform (sensor set on vehicle floor)



### Test No.1

Following constant 50 km/h run,  
apply rapid braking

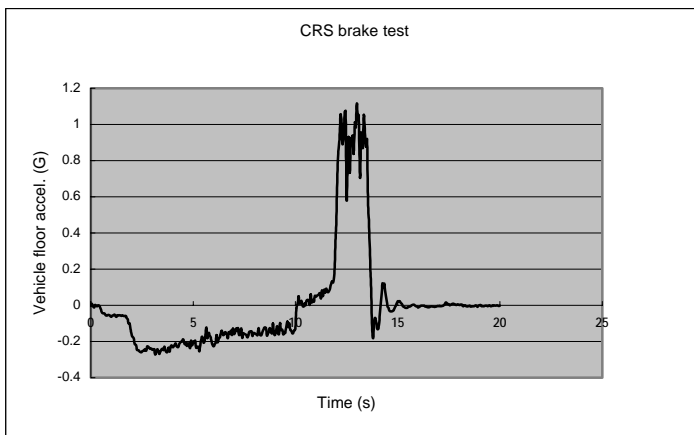
Data sampling at 20 Hz



### Test No.2

Following constant 50 km/h run,  
apply rapid braking

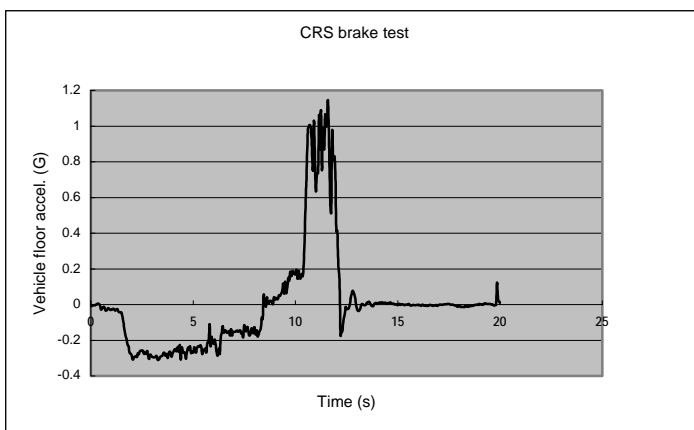
Data sampling at 20 Hz



### Test No.3

Following constant 50 km/h run,  
apply rapid braking

Data sampling at 20 Hz



### Test No.4

Following constant 50 km/h run,  
apply rapid braking

Data sampling at 20 Hz