Efforts of the Automobile Business Unit Environmental Report

We at Subaru are always working to develop high performance automobiles that provide customers with safety, comfort and pleasure while driving by combining our unique technologies. Developing safe automobiles, contributing to traffic safety, developing user-friendly and environmentally friendly automobiles — Subaru always works with the development of an automobile-oriented society and the future of automobile manufacturing in mind.

# **Development of Safe Automobiles**

## **Fundamental Philosophy**

In order to realize a prosperous society where automobiles, people, society and the environment are in harmony, Subaru is dedicated to pursuing excellent environmental and safety performance as far as possible and also to providing each customer with an exciting drive.

Subaru has been making advances in high-performance AWD that provides drivers with a safe, comfortable and pleasurable drive on any road. In accordance with our belief that optimizing performance will lead to safety, Subaru has been focusing on development of sophisticated active safety technologies to prevent accidents, as well as passive safety technologies to ensure safety in the event of an accident. Through these advanced technologies, we will continue to provide safety, security and an exciting drive to customers.

# **Efforts to Create Safe Automobiles**

## • Technologies for Driving and Safety

Active safety is technology that prevents accidents from occurring by improving automobile's basic functions, driving, cornering and stopping; and by utilizing advanced safety systems.

We at Subaru believe that the best way to provide safety is through accident prevention and we are conducting research and development on state-of-the-art safe automobiles that support drivers by recognizing in advance the various risk factors that lead to accidents. We are researching and developing technologies which optimally and comprehensively assist drivers' judgment and driving by combining Subaru's core forward image-recognition technology using stereo cameras with information and communications technologies in order to reach a high standard of recognition and identification of a wide variety of traffic conditions in front of the driver.

### Philosophy of Subaru's Intelligent Vehicle Development

We at Subaru are actively working to develop Intelligent Vehicles based on the principle of, "Safety regardless of conditions," to provide safety, security and an exciting drive to customers through innovative and advanced safety systems.

### Collision Safety Technology

Subaru's driving and Safety Roadmap

#27-521

We have succeeded in securing a cabin (survival space) safe against collision

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from all directions by adopting the new ring-shaped reinforcement structure to create an original lightweight, high-strength, safe body for our automobiles including the Legacy and mini cars. We utilize simulations to develop collision safety technologies, conduct car-to-car collision tests in a variety of conditions and thoroughly test components for seat belts and air bags in order to deliver completely safe automobiles. We believe that the purpose of passive safety is not only to secure passenger safety but also to minimize harm throughout the entire society. In order to advance such technologies, we are striving to develop automobiles under the safety principle of "Compatibility" (or mutual safety), which fully considers the protection of the automobiles, motorcycles and pedestrians with which drivers may collide.

This safety principle has also been applied to the Stella, Subaru's newest mini car. Its new ring-shaped reinforcement structure has a frame structure with the same height as a passenger car, to guarantee a high degree of safety in a collision with such vehicles. Moreover, the Stella has safety superior to other passenger cars as a result of our efforts to increase the safety of this next generation mini car by incorporating advanced pedestrian protection, a seat structure which reduces whiplash injuries as a standard feature, high tensile steel and the tailored blank construction method for high rigidity and weight reduction.



### Subaru safety — Future Vehicle Image



# **Contributions to Traffic Safety**

# Utilization of ITS<sup>\*1</sup> Technologies

In the near future, automobiles will be able to share external information by connecting to a network. Subaru is advancing the development of an automobile information management system to realize a safer and more convenient society through the utilization of ITS technologies.

This system will help prevent breakdowns and be able to forecast deterioration of components by remotely monitoring the condition of an automobile while running. It also becomes possible to take early action even when a failure occurs. We have applied this technology to electric vehicles and now are conducting verification testing. By optimally managing deterioration of components and practical performance, which used to be problems for electric vehicles, we are able to support customers so that they can use electric vehicles with confidence. We are aiming to harmonize with society with respect to both safety and the environment.

Moreover, we are actively striving to develop technologies for the utilization of probe information system, by means of which automobiles will act as one of many sensors in the community. Utilizing the characteristics of Subaru products which have been widely used in snow-covered terrain, we have actively joined the working group on verification testing for information collection pertaining to icy road surfaces at the Internet ITS Consortium. Together with research institutes such as universities, we are aiming to prevent accidents on icy road surfaces by studying methods to detect such surfaces using wheel speed information, GPS information and ABS operation information collected as probe information and creating the Hiyari Hatto\* maps based on such information. We will broadcast our findings to the community through the Internet ITS Consortium.

### Information management system





Experimental test at the Internet ITS Consortium

\*Hiyari Hatto : Please refer to p.48, footnote \*2.

## **Making User-Friendly Automobiles**

## **About the TransCare Series**

FHI has been manufacturing and selling vehicles in a series called TransCare, vehicles for the disabled, since 1982. TransCare, a word coined from "Transportation" and "Care," was registered as a trademark for Subaru's vehicles for the disabled in 1977. Subaru is now focusing its efforts on developing laborsaving devices that can be easily used by both caregivers and care-receivers.

#### **Outline of Vehicles for the Disabled**

Subaru offers a wide selection of TransCare automobiles, from mini-car

Subaru R1, R2 and wagon Sambar, to the Legacy, a standard-sized car for enjoying long-range drives. TransCare Wing Seat<sup>\*2</sup> version is available for all models. Also, in response to the increasing demand for wheelchair accessible vehicles, our Sambar mini car offers an electrically operated wheelchair lifter<sup>\*3</sup> that allows for loading and unloading of passengers in wheelchairs. We also offer a type equipped with a stretcher<sup>\*4</sup>, which allows for loading and unloading of passengers who are lying down.

#### Sales Results of TransCare Series

With the aim of sharing the happiness of living with cars with all people, Subaru develops and distributes vehicles for the disabled so that disabled and aged people can enjoy a safe, comfortable ride.

Furthermore, we have been working on the expansion of the software for the sales of the vehicles for the disabled, promoting the acquisition of the certification of Service Care Attendant for Sales since 2004.

Sales Results of Subaru TransCare Series (Units)							
		2000	2001	2002	2003	2004	2005
	Standard (Small) cars	13	32	63	103	88	130
	Mini cars	397	469	475	401	464	427
	Total units delivered	410	501	537	504	552	557



Subaru R2 with TransCare Wing Seat (with R option)



Samber TransCare with an electrically operated wheelchair lifter

\*1: ITS is the next generation intelligent transport system \*2: Wing seats: Rotating front and left rear seats to allow for easy loading and unloading of passengers. We placed importance on interior comfort and we installed an electric seat sliding system on the Legacy and R2. \*3: This is the only mini car to adopt the Side-lifting System. This lifter is electrically operated, providing passenger security and safety by loading and unloading from the side of the car, instead of from the roadway. \*4: The car is equipped with a stretcher with wheels to carry patients in a prone position. This is the only mini car equipped with a stretcher.