



Product Bulletin

Document Number		DPB0002	
Title		SDC - Subaru Diff Controller	
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Revision	Date	Prepared By	Change History
1	27/09/2004	Daniel Sadique	

Product News

MoTeC P/L is proud to announce the release of the *MoTeC* SDC - Subaru Diff Controller, P/n 14009.

Subaru's WRX STi 2003 and 2004 models are fitted with a Driver Controlled Centre Diff (DCCD) controller.

MoTeC's Subaru Diff Controller (SDC) replaces the (DCCD) and fits inside the OEM DCCD case, taking the place of the factory circuit board. The Subaru DCCD controller box is bolted to the steering column underneath the dashboard.



SDC Functionality

The SDC is used to adjust torque split between the front and rear differentials by controlling the current to the centre differential solenoid. The centre diff is essentially a limited slip differential with adjustable preload, where the preload is proportional to current. The centre diff has a typical operating current range of 0 amps to 5 amps. This current range is described as 0% to 100% lock, where 100% lock is the maximum centre differential preload.

When no current is applied (0% lock) the centre differential operates as an "open" diff with a mechanical torque distribution of 65% rear, 35% front (60:40 in some vehicles). As current (% lock) is increased the "preload" is increased, requiring more torque difference between front and rear before the centre differential will slip.

The SDC can be used to adjust several aspects of vehicle handling. For example increasing lock during braking can improve braking stability on loose surfaces. Reducing lock can improve turn in, while increasing lock can promote understeer on both corner entry and exit. Naturally the SDC can also influence traction.

There are six selectable control modes, 0%, 100% and four user configurable modes. The control modes are selected using the factory thumbwheel, and the mode is indicated on the standard dash board as follows:

Thumbwheel	Dash Light	SDC Mode
		100% lock
		User Mode 4
		User Mode 3
		User Mode 2
		User Mode 1
		0% lock

Lock Calculation

The Lock percentage applied to the centre diff is determined from a 3D table of vehicle speed vs throttle position. There is an option to add %lock based on wheel slip, ie: increase lock and thus power to the front wheels when slip is greater than the desired slip at a particular throttle position.

Each of the four user modes consists of an acceleration table, a braking override table, a desired slip table and slip control parameters. The braking table acts as an optional override under brakes.

Communications

SDC Manager

The SDC Manager software is used to configure an SDC unit from a PC. The SDC software can be installed either from the MoTeC Resource CD supplied with the SDC, or from the MoTeC website.

The SDC Manager software allows configurations to be created, edited and sent to the SDC. The SDC configuration file determines exactly how the SDC unit will operate.

SDC Firmware is user upgradeable over the CAN bus from SDC Manager.

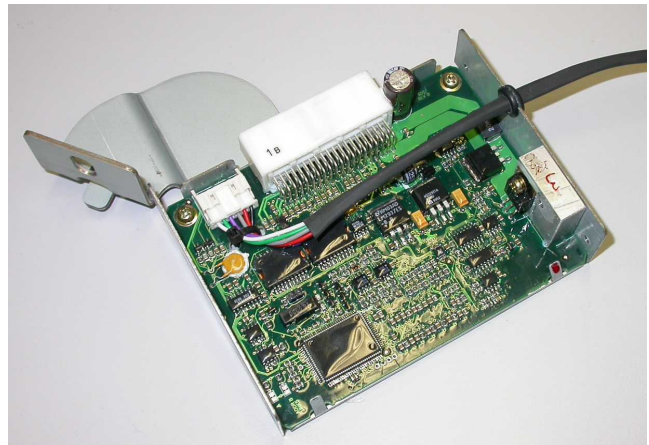
To prevent unauthorised copying of configuration data, *configurations **cannot** be read out of the SDC.*

Connecting to a SDC

The SDC connects to the PC using the MoTeC CAN cable connected to the PC parallel port. The SDC unit must be powered to communicate with the PC.

A CAN adaptor cable can be fitted directly to the SDC. A cable entry hole should be made in the case before the SDC board is installed, and the CAN cable should be cable tied to the SDC board using the two holes provided.

Alternatively, the factory wiring loom can be utilised for CAN communications by using the existing communication bus wiring to the dash mounted OBD-II connector (Subaru Data Link Connector B40) and the Check Connector (Subaru connector B79).



Diagnostics

The SDC CAN interface can optionally transmit sensor and diagnostic information to a MoTeC ADL. This allows the collection of wheel speed, throttle and brake data without the need for additional sensors.

Software & Documentation

The SDC Manager software is available for download from the MoTeC software website. The installation includes the SDC User Manual.

Price and Availability

Price – please refer to your MoTeC Dealer price list. The SDC is available ex stock MoTeC P/L.

Should you have any further queries regarding this bulletin, do not hesitate to contact MoTeC Support.

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