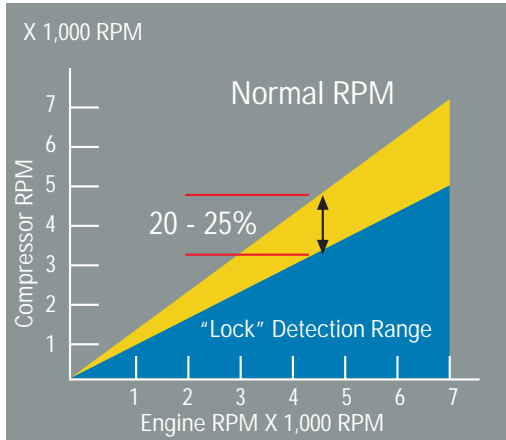


Subaru Loyale and Justy A/C Belt Protection System



Belt Protection System

Customer complaints of “No A/C after driving for several miles” or “A/C cools intermittently” may be caused by problems with the belt protection system found on Subaru Loyale and Justy models. These problems may also be caused by an incorrectly tensioned A/C accessory belt.

There is a great deal of confusion surrounding this system, mostly due to a lack of reliable information. In this short article, we’ll give you a brief overview of the system and explain what it does. For more in-depth diagnostic information on the Belt Protection System, refer to the appropriate model year Subaru Service Manual.

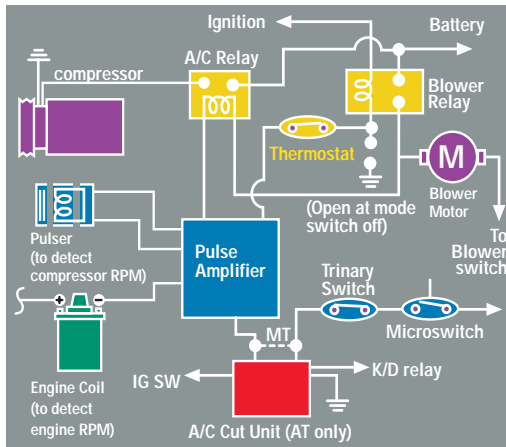
What Does It Do?

The Loyale and Justy belt protection system exists to prevent damage to the air conditioning compressor drive belt and to other engine compartment components that could be damaged by a loose or broken belt.

The first chart depicts the normal RPM ratio between the Hitachi compressor and the engine. When the system senses a drop in the compressor RPM to engine RPM ratio of more than 20-25 percent (the lock detection range), the system disengages the compressor clutch. In the Matsushita system, the range is 27-37 percent.

The pulser monitors the RPM of the compressor and provides a signal to the pulser amplifier, which receives a signal from the ignition coil to detect engine RPM. When the ratio of the compressor RPM to the engine RPM drops below a specified range, the pulser amplifier sends a signal to the air conditioner relay, which disengages the clutch. Once the system detects a “locked” compressor, the A/C compressor’s magnetic clutch will remain disengaged or off until the air conditioner switch is turned to the OFF and ON positions again.

Refer to the schematics on this page to review the operation and differences between the Hitachi and the Matsushita belt protection systems.



Hitachi Belt Protection System

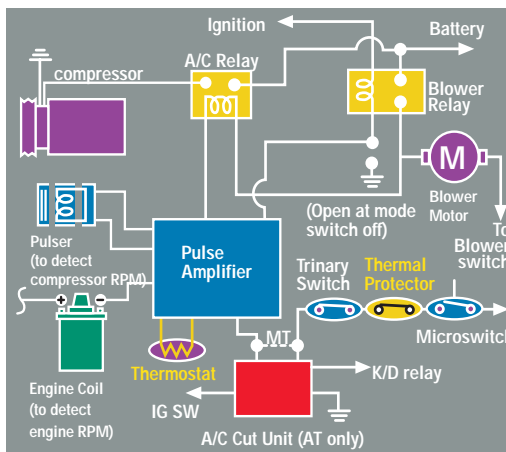
Belt Tension

Proper belt tension is essential on Loyale and Justy vehicles to ensure proper operation of the air conditioning compressor and related components and to extend belt life. Because the drive belts on some Loyale and Justy vehicles have significantly less contact with the circumference of the compressor pulley (reduced pulley wrap), when compared to earlier models, the drive belt tension has been significantly increased.

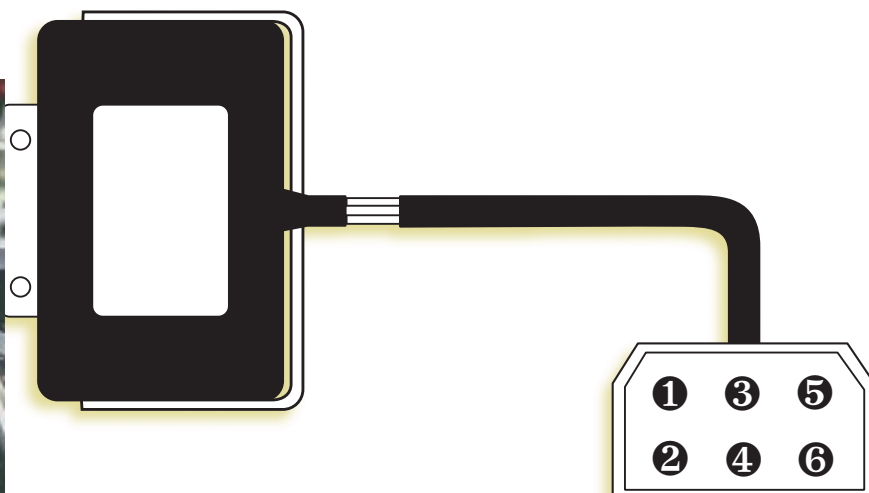
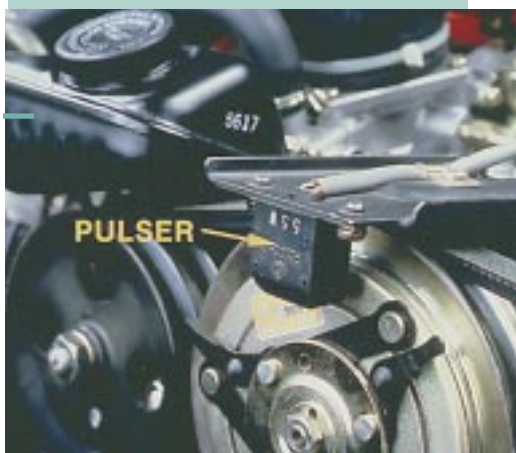
Proper belt tension prevents damage to the compressor, drive belt, and other engine components. A loose belt can cause noise and slow compressor operation, which causes disengagement of the belt protection system, and decreased belt life.

An over-tight belt can increase wear of the compressor bearings, engine component bearings, and can decrease belt life.

To maintain the delicate balance between an A/C belt that is too tight and one that is too loose, refer to the appropriate model year Subaru Service Manual for correct belt tension specifications and procedures.



Matsushita Belt Protection System



For proper operation, Pulser clearance must be adjusted to $3 \pm 1\text{mm}$.

Subaru Loyale A/C Pulser Amplifier

No.	Wire Color	Terminal Destination	Description
①	RY (MT) RB (AT)	Power Supply	Supplies current to the pulser amplifier through the air conditioner switch and trinary (low pressure) switch for the purpose of activating accessories.
②	Y	Ignition Coil (-)	Transmits engine RPM to the pulser amplifier in pulse form.
③	R	Pulse Sensor (-)	Transmits compressor RPM to the pulser amplifier for comparison of ignition pulses.
④	GW	Pulse Sensor (+)	When compressor RPM drops below 75-80 percent of engine RPM, the RG's grounding circuit will open.
⑤	RG	Magnetic Clutch Drive Relay Coil	When the thermostat activates to close the ground circuit with the air conditioner switch "ON," the clutch will engage. When the compressor is locked, the thermostat activates to open the ground circuit, disengaging the clutch.
⑥	RB	Ground	The thermostat opens and closes the ground circuit, depending on the temperature of the evaporator.