

Internal Leakage Analysis from Pd to Pc Port Direction in ECV Body Used in External Variable Type A/C Compressor

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Abstract : Solenoid operated electromagnetic control valve (ECV) playing an important role for car's air conditioning control system. ECV is used in external variable displacement swash plate type compressor and controls the entire air conditioning system by means of a pulse width modulation (PWM) input signal supplying from an external source (controller). Complete form of ECV contains number of internal features like valve body, core, valve guide, plunger, guide pin, plunger spring, bellows etc. While designing the ECV; dimensions of different internal items must meet the standard requirements as it is quite challenging. In this research paper, especially the dimensioning of ECV body and its three pressure ports through which the air/refrigerant passes are considered. Here internal leakage test analysis of ECV body is being carried out from its discharge port (Pd) to crankcase port (Pc) when the guide valve is placed inside it. The experiments have made both in ordinary and digital system using different assumptions and thereafter compare the results.

Keywords : electromagnetic control valve (ECV), leakage, pressure port, valve body, valve guide

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