

Anaylsis of Air Conditioning System (AC) on Toyota Great Corolla Type 4A-FE

Irfan Ari Pamungkas¹ Andika Wisnujati² Rinasa Agista³

Diploma 3 Teknik Mesin Universitas Muhammadiyah Yogyakarta
Jln Lingkar Selatan, Bantul, Yogyakarta 55185 telp: +62274 387656
e-mail: irfanap.iap@gmail.com

Abstract

To provide the comfortability in the vehicle room, we require a cabin spaces that can be adjusted to the desire of rider. The equipment of air conditioning system is used to regulate or control the temperature, including humidity, air circulation and cleanliness. Those papers aimed to understand the work principles, components, functions and work flows, refrigerant charge and discharge process, electrical system assembly, problem analysis or troubleshooting and performance improvement efforts as well.

These final research method includes: concepts, tools and materials preparation, closed system assembly and refrigerant charge and discharge, electrical components assembly, testing and data retrieval, data processing of the testing process. As a method of observing these writing paper by collecting some data on materials object of the final project and doing literature review as a literature review related to the final task object of air conditioning system.

Air conditioning system works based on the cooling cycle, refrigerant circulates through the functional component to produce a cooling effect by absorbing the heat, compressor rises its pressure, magnetic clutch connect and disconnect the compressor rotation, condenser perform condensation, receiver/dryer filtering and holding the refrigerant, expansion valve and evaporator to evaporate refrigerant and to absorb heat and electrical panel display as regulator or control and for learning in assembling of electrical circuits air conditioning system. There are problems and damages closed system refrigerant components, freezing evaporator, damage compressor and other components, clogged receiver/dryer and refrigerant charging when the air cooling effect does not match to the desire one. During the observation, examination and testing the results are obtained and function properly.

Key words: refrigerant, electrical, air conditioner, troubleshooting.

Analisis Sistem *Air Conditioning* (AC) pada Mesin Toyota Great Corolla Tipe 4A-FE

Irfan Ari Pamungkas¹ Andika Wisnujati² Rinasa Agista³

Diploma 3 Teknik Mesin Universitas Muhammadiyah Yogyakarta
Jln Lingkar Selatan, Bantul, Yogyakarta 55185 telp: +62274 387656
e-mail: irfanap.iap@gmail.com

Abstrak

Untuk memberikan suasana nyaman dalam ruangan kendaraan, perlu dipasang suatu peralatan yang berfungsi untuk memberikan kenyamanan didalam ruang kabin yang dapat disesuaikan dengan keinginan pengendara. Peralatan sistem pengkondisian udara digunakan untuk mengatur temperatur mencakup sirkulasi, kelembaban serta kebersihan udara. Penulisan ini bertujuan memahami prinsip kerja, komponen, fungsi dan alur kerja, proses pengosongan dan pengisian, perakitan sistem kelistrikan, analisis permasalahan (*troubleshooting*), serta upaya peningkatan kinerja.

Beberapa metode penelitian tugas akhir meliputi: konsep, persiapan alat dan bahan, perakitan sistem tertutup dan pengosongan pengisian gas refrigeran, perakitan kelistrikan, pengujian, dan pengambilan serta pengolahan data dari proses pengujian.

Pembahasan dari penelitian ini yaitu: proses pembongkaran, pemeriksaan dan pengecekan komponen, pemeriksaan dan perakitan kelistrikan, pengujian dan pengambilan data. Sistem pengkondisian udara bekerja berdasarkan siklus pendinginan, gas refrigeran bersirkulasi melalui komponen fungsional untuk menghasilkan efek pendinginan dengan menyerap panas, kompresor menaikkan tekanan, kopling magnet menghubungkan dan memutuskan putaran kompresor, kondenser melakukan pengembunan, *receiver/dryer* menyaring dan menampung, katup ekspansi mengabutkan menurunkan tekanan, *evaporator* menguapkan gas refrigeran, dan panel peraga kelistrikan. Kemungkinan terdapat permasalahan dan kerusakan sistem tertutup gas refrigeran, pembekuan *evaporator*, kerusakan kompresor, filter tersumbat, pengisian refrigeran, dan kerusakan lainnya, bila hasil tidak sesuai yang diinginkan. Selama pemeriksaan dan pengujian didapatkan hasil dan berfungsi baik.

Kata kunci: refrigeran, kelistrikan, *air conditioner*, *troubleshooting*.