

ABSTRAK

Nama : Wahyu Saputra
NPM : 062230200245
Jurusan / Program Studi : Teknik Mesin / D-III Teknik Mesin
Judul Laporan Akhir : Rekondisi Mesin Bor Bangku *Rockwell*
Type 420m Bengkel Produksi Teknik
Mesin Politeknik Negeri Sriwijaya

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Mesin bor bangku merupakan salah satu perlengkapan penting yang menunjang kegiatan praktikum mahasiswa di Bengkel Produksi Jurusan Teknik Mesin Politeknik Negeri Sriwijaya. Alat ini berfungsi untuk melakukan pengeboran pada logam dan berbagai material lain sebagai bagian dari pelatihan dasar teknik permesinan. Namun, mesin bor bangku Rockwell Type 420M mengalami sejumlah kerusakan, seperti ausnya komponen, tidak berfungsinya sistem kelistrikan, serta hilangnya beberapa bagian penting. Kondisi ini menyebabkan mesin tidak bisa digunakan secara maksimal dan berisiko menghambat jalannya kegiatan praktikum. Laporan akhir ini dibuat sebagai upaya untuk melakukan rekondisi atau perbaikan total guna mengembalikan fungsi mesin agar dapat digunakan kembali secara layak. Proses rekondisi mencakup beberapa tahapan, mulai dari identifikasi kerusakan, penggantian komponen yang rusak, perakitan ulang mesin, hingga pengujian kinerja setelah diperbaiki. Tahapan perbaikan meliputi penggantian komponen seperti bearing, v-belt, pulley, motor listrik, serta bagian pengunci dan sistem kelistrikan. Setelah perakitan selesai, dilakukan pengujian menggunakan dua jenis benda kerja, yakni besi UNP65 (profil U) dan besi strip. Uji coba dilakukan dengan mata bor berukuran 3, 5, 7, dan 10 mm untuk mengevaluasi kecepatan spindle dengan dibantu menggunakan alat tachometer dari hasil pengukuran menggunakan tachometer dibandingkan dengan standar kecepatan yang sudah di hitung sebelumnya, serta ketepatan dan kualitas pengeboran. Dari hasil pengujian, mesin menunjukkan performa normal tanpa getaran yang berlebihan dan kecepatan spindle yang sesuai. Lubang yang dihasilkan sesuai dengan ukuran mata bor yang digunakan. Rekondisi ini berhasil meningkatkan akurasi, efisiensi, serta keselamatan saat pengoperasian. Diharapkan hasil rekondisi ini dapat menjadi referensi dalam perawatan rutin serta menjadi media pembelajaran bagi mahasiswa.

Kata Kunci: mesin bor, rekondisi, pengujian, pengeboran, pengujian fungsi

ABSTRACT

**Reconditioning of Rockwell Bench Drill Machine Type 420m
Mechanical Engineering Production Workshop
Sriwijaya State Polytechnic
(Testing)**

(2025: xiii + 46 pp. + 33 Figures + 12 Tabels + 4 Attachments)

Wahyu Saputra
NPM. 062230200245

DIPLOMA–III MECHANICAL ENGINEERING STUDY PROGRAM
MECHANICAL ENGINEERING DEPARTMENT
STATE POLYTECHNIC OF SRIWIJAYA

The bench drill machine is one of the essential tools supporting students' practical activities in the Production Workshop of the Mechanical Engineering Department at Sriwijaya State Polytechnic. This machine is used for drilling into metal and various other materials as part of basic mechanical engineering training. However, the Rockwell Type 420M bench drill machine has suffered several damages, such as worn-out components, malfunctioning electrical systems, and the loss of some important parts. This condition prevents the machine from being used to its full potential and poses a risk of disrupting laboratory activities. This final report is prepared as an effort to carry out a complete overhaul or repair to restore the machine's functionality so it can be used again in a suitable manner. The reconditioning process involves several stages, starting from damage identification, replacement of damaged components, reassembly of the machine, to performance testing after repair. The repair stages include replacing components such as bearings, V-belts, pulleys, electric motors, as well as locking parts and electrical systems. After assembly is complete, testing is conducted using two types of workpieces: UNP65 steel (U-profile) and steel strips. The tests are conducted using drill bits of 3, 5, 7, and 10 mm in diameter to evaluate spindle speed, assisted by a tachometer. The measurements taken with the tachometer are compared to the previously calculated standard speed, as well as the accuracy and quality of the drilling. From the test results, the machine demonstrated normal performance without excessive vibration and appropriate spindle speed. The holes produced matched the size of the drill bits used. This reconditioning successfully improved accuracy, efficiency, and safety during operation. It is hoped that the results of this reconditioning can serve as a reference for routine maintenance and as a learning tool for students.

Keywords : drilling machine, reconditioning, testing, drilling, functional testing