

ABSTRAK

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(2025: xi + 50 Halaman, 17 Gambar, 7 Tabel + 4 Lampiran)

Laporan akhir ini membahas secara mendalam proses rekondisi dan pengujian mesin bor bangku Rockwell Type 420M yang berlokasi di Bengkel Produksi Jurusan Teknik Mesin Politeknik Negeri Sriwijaya. Mesin tersebut mengalami kerusakan pada sejumlah komponen utama, antara lain pulley, bearing, V-belt, chuck, serta sistem kelistrikan, sehingga tidak dapat digunakan dalam kegiatan praktikum. Kondisi tersebut menuntut dilakukannya tindakan rekondisi secara menyeluruh dengan tujuan mengembalikan fungsi dan kinerja mesin sesuai standar operasional. Proses rekondisi dilaksanakan melalui beberapa tahapan, meliputi identifikasi kerusakan, pembongkaran mesin, evaluasi kondisi komponen, penggantian bagian yang aus atau hilang, perbaikan sistem kelistrikan, hingga pengecatan ulang untuk memperbaiki tampilan serta memberikan perlindungan terhadap korosi. Seluruh tahapan dikerjakan dengan memperhatikan penerapan aspek K3 (Kesehatan dan Keselamatan Kerja) agar proses perbaikan berlangsung aman dan sesuai prosedur. Setelah rekondisi selesai, dilakukan pengujian teknis sebagai bentuk verifikasi akhir terhadap kelayakan mesin. Pengujian dilakukan dengan menggunakan dua jenis material, yaitu besi ST37 (profil U) dan besi strip AISI 1080, dengan variasi mata bor berdiameter 3 mm, 5 mm, 8 mm, dan 10 mm. Hasil pengujian menunjukkan bahwa mesin bor bangku Rockwell Type 420M mampu beroperasi kembali secara stabil, menghasilkan pengeboran dengan tingkat akurasi yang baik, serta tidak menimbulkan getaran berlebih. Mesin dinyatakan layak untuk digunakan kembali dalam kegiatan praktikum mahasiswa. Keberhasilan rekondisi ini tidak hanya menghidupkan kembali fungsi mesin yang sebelumnya tidak optimal, tetapi juga meningkatkan aspek keselamatan, efisiensi operasional, serta efektivitas proses pembelajaran di bengkel. Dengan demikian, kegiatan rekondisi ini berkontribusi dalam mendukung peningkatan kualitas pendidikan vokasi dan menjadi contoh nyata penerapan ilmu teknik mesin dalam pemecahan permasalahan di bidang praktik permesinan.

Kata Kunci: rekondisi mesin bor, pengujian mesin, *Rockwell 420M*.

ABSTRACT

Reconditioning of Rockwell Type 420m Bench Drilling Machine at The Production Workshop, Mechanical Engineering Department, Sriwijaya State Polytechnic (Testing Process)

(2025: xi + 50 Pages, 17 Figures, 7 Tables + 4 Attacchments)

his final report comprehensively discusses the reconditioning and testing process of the Rockwell Type 420M bench drilling machine located at the Production Workshop of the Mechanical Engineering Department, Sriwijaya State Polytechnic. The machine had previously suffered from severe damage to several critical components, including the pulley, bearings, V-belt, chuck, and electrical system, which rendered it inoperable for practical activities. Therefore, a complete reconditioning process was required to restore its functionality and operational performance in accordance with standard specifications. The reconditioning process was carried out through several stages, namely damage identification, machine disassembly, evaluation of component conditions, replacement of worn or missing parts, electrical system repairs, and repainting to restore appearance as well as protect the body from corrosion. All stages were performed with strict adherence to occupational health and safety (OHS) standards to ensure a safe and systematic workflow. Upon completion of the reconditioning, technical testing was conducted as the final verification of machine feasibility. The tests were performed using two types of materials, namely ST37 steel (U-profile) and AISI 1080 steel strip, with drill bit variations of 3 mm, 5 mm, 8 mm, and 10 mm in diameter. The results of the testing demonstrated that the Rockwell Type 420M bench drilling machine was able to operate stably, produce accurate drilling results, and function without excessive vibration. Based on these outcomes, the machine was declared feasible for reuse in student practical activities. The successful reconditioning not only restored the machine's operational capability but also enhanced safety, improved workshop efficiency, and strengthened the effectiveness of the learning process. Thus, this activity contributes significantly to supporting the quality improvement of vocational education and serves as a practical example of applying mechanical engineering knowledge in solving real workshop problems.

Keywords: Drilling machine reconditioning, machine testing, Rockwell 420M.