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ONLINE ISSN : 1880-1986

PRINT ISSN : 1346-8235

Journal of Textile Engineering

Vol. 54 (2008) , No. 2 41-47

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Geometry Effect of Air Suction Gun on the Yarn Suction Characteristics
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(Received December 23, 2007)

(Accepted for publication April 11, 2008)

Abstract: We experimentally discussed the effects of airflow geometries in an air suction gun on the suction characteristics of running yarn. Geometry parameters focused on were 1) compressed-air inflow angle of nozzle, 2) diverging angle of nozzle, 3) throat diameter of de Laval tube, 4) converging angle of de Laval tube and 5) yarn propulsion tube length. As a result, effects of the geometry parameters on the yarn suction force, the mass flow rate of compressed-air and the yarn suction efficiency, which is defined as the yarn suction force divided by the mass flow rate of compressed-air, were made clear and the optimum geometry of an air suction gun was obtained on the basis of the energy efficiency. In addition, the yarn suction force showed two types of time dependency because of different yarn motion on some experimental conditions.

Key Words: [Suction gun](#), [Geometry effect](#), [Yarn suction force](#), [Yarn suction efficiency](#), [Fluid machinery](#)

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Yoshiyuki IEMOTO, Shuichi TANOUE, Jun-ichi HOSOKAWA, Yonggui LI, Atsuji MASUDA and Tetsuhiko MURAKAMI, J. Text. Eng., Vol. **54**, p.41 (2008) .

JOI JST.JSTAGE/jte/54.41

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