Omni Metalcraft RSL

# VectoRoller™ Engineering Test Results and System Considerations


VectoRoller™

REDUCE STRAIN, INCREASE FLOW

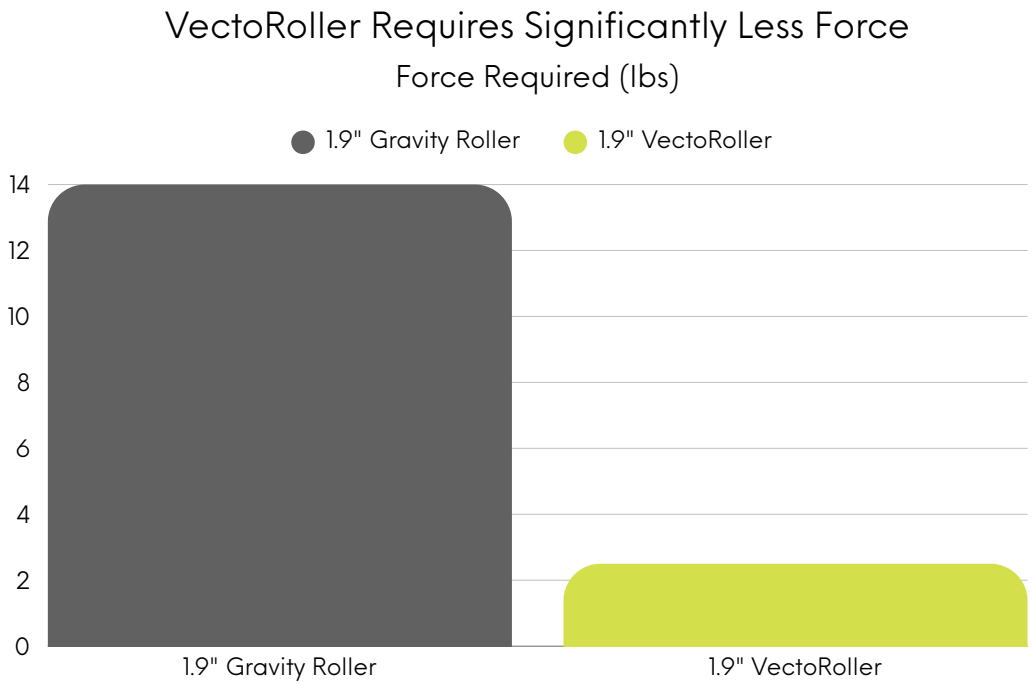
## REDUCING LATERAL FRICTION AT THE ROLLER SURFACE

### Engineering test results demonstrating reduced force during lateral package movement

Lateral friction occurs when packages are moved laterally across conveyor rollers that are designed primarily for forward rotation. This resistance increases the lateral force required for manual handling at pick, merge, and intercept zones. VectoRoller™ was engineered to address this by reducing lateral resistance at the roller surface through a perpendicular wheel design.

## ENGINEERING TEST RESULTS

**Up to 80% reduction in the lateral force required to move a 50 lb tote, compared to a standard 1.9″ gravity roller.**




In controlled testing, a 50 lb plastic tote required approximately 14 lbs of lateral force to move across a standard 1.9″ gravity roller, compared to approximately 2.5 lbs when using the VectoRoller™. Results reflect test conditions and demonstrate the potential impact of reducing lateral friction at the roller surface.

## SYSTEM & OPERATIONAL IMPACT

- Reducing lateral friction at the roller/package interface addresses resistance at the source, rather than relying on downstream conveyor features or workarounds to manage lateral movement.
- Lower lateral resistance can reduce the push-pull force required during manual handling at pick, merge, and intercept zones where lateral movement is frequent.
- Smoother lateral movement may support improved product alignment, helping reduce skew-related handling issues in certain applications and layouts.
- Reduced resistance during lateral movement may help limit scuffing or abrasion, particularly during alignment, accumulation, and manual repositioning of conveyed items.
- Lower side-load forces at the roller surface may help reduce stress on rollers, bearings, frames, and guides.
- Reducing lateral resistance at the roller surface may allow designers to reduce the conveyor length or footprint required to manage lateral movement.
- Reduced lateral force may expand feasible design options in applications where frequent lateral movement presents challenges for traditional rollers.

## DESIGN CONSIDERATIONS

In systems where lateral movement is frequent, roller selection plays a significant role in handling consistency and system layout. Reducing lateral resistance at the roller interface may allow designers to simplify handling zones or reduce the need for additional components used to manage friction-related challenges.

- Consider lateral force when selecting roller technology
- Evaluate side-load conditions at pick, merge, and intercept zones
- Assess whether reduced lateral resistance can simplify handling strategies in certain applications
- In some conveyor configurations, reduced lateral resistance may contribute to lower required drive torque and motor load, which can support reduced energy consumption

## TEST CONTEXT & METHODOLOGY

The engineering test results presented in this document were generated under controlled conditions to compare lateral force between a standard 1.9″ gravity roller and the VectoRoller™. Testing was conducted using a 50 lb tote moved laterally across each roller type to evaluate the force required to initiate and maintain lateral movement.

Results are intended to illustrate relative differences in lateral resistance at the roller surface and should be interpreted within the context of the test setup. Actual performance may vary based on package weight, surface material, conveyor configuration, roller spacing, wheel density, and operating conditions.