



Fluid Power Success Story: Wheel Motors Enhance Performance of Sweepers

By Poclair Hydraulics

Poclair Hydraulics has built its international reputation serving the off-road industry. As they rationalize manufacturing of their smaller units, an increasing number of lighter-duty, on-road OEMs are turning to them. The company's collaboration with Johnston Sweepers, the UK-based manufacturer of outdoor surface cleansing equipment, is an example.

Johnston Sweepers' machines are known for their simplicity and ruggedness. Two of their models, the compact CN200 and the CN400, are equipped with wheel motors from Poclair Hydraulics.

"The smaller CN200, which works mainly in the pedestrian areas and the curbs, is definitely the more challenging application of the two; the combination of high traveling speed--up to 40 km an hour--and a small wheel diameter results in the motor turning as fast as 480 rpm," explains Mark Allport, technical program manager.

Several features are combined to make the motor's high-speed capability possible (MS02 motors typically rotate at a maximum speed of 280 rpm): on the transmission level, 24 liters of oil are purged every minute to cool the oil. The dedicated MS02 motor integrates also two unique features: although it is single displacement, the distribution's ports are those of a twin displacement motor, allowing more oil to flow through and reducing internal heat. More importantly, the motors include the Diamond™ option: a heat treatment that increases the rotating group's ability to withstand temporary conditions above peak ratings.

Although sweepers appear light duty compared to most off-road applications, such as compactors or sprayers, they put up with harsh treatment. "The machines are in some cases very poorly maintained and operated by inexperienced drivers who have not had adequate training. It is even been known for people to go directly from sweeping with a broom and shovel to driving one of our machines,"

explains Mike Hasler, chief engineer. "The machine's components must be able to hold up to a lot of abuse"

The motors went through accelerated endurance testing on Johnston's grueling proving grounds, equating to five years of extreme use. The results were 100% satisfactory.

To assist the operator in maneuvering in busy streets while efficiently cleaning their surface, Johnston sweepers integrate in-house designed controllers. One of them provides automotive-style driving, maintaining constant engine speed in the work mode and allowing the operator to focus on the sweeping functions. The motors work in perfect harmony with the controller, providing seamless speed variation and smooth shifting from forward to reverse.

"Our assembly costs have been greatly reduced with the motors' integrated brake and bearing support," says Mike Allport. "We were also very impressed by the level of expertise of Poclair Hydraulics' engineers and technicians during the machines' design and testing."

For more information, contact Poclair Hydraulics at www.poclair-hydraulics.com.

Machine Specifications

Model	CN200 (2700 kgs unloaded)	CN400 (4600 kgs unloaded)
Front Axle	Steerable, non-powered drum brakes	Steerable, non-powered disc brakes
Rear Axle	2 x MS02 at the rear. Single speed with drum brake	2 x MS05 at the rear. Single speed with drum brake
Pump	Linde 75 cc	Linde 105 cc
Traveling Speed	40 km per hour	40 km per hour
Working Speed	16 km per hour	8-10 km per hour