

## GEARING UP FOR ENDURANCE RACING

Xtrac has introduced its latest gearbox for endurance sports car racing based on its successful Le Mans-winning 229 transverse design. The new 529 gearbox, which is suitable for LMP1, LMP2 and GT1 class vehicles, is already being manufactured for clients at its UK facility at Thatcham in Berkshire, in readiness for the 2007 race season.

"The 229 family of gearboxes has undoubtedly been one of the most reliable and successful gearboxes to be produced by Xtrac," said Cliff Hawkins, Xtrac's development director. "This winning design has encouraged the development of the 529

gearbox which uses a significant number of well proven carryover parts combined with technical improvements in a number of key areas."

The 529 gearbox is 3.4 kg (7.5 lb) lighter than its predecessor and its development has led to a narrower lightweight cluster, a revised gearchange rack and pneumatic actuator, improved oil feed galleries and, for ease of maintenance, a side mounted alternator and rear mounted starter. The new gearbox can fit inside the minimum diffuser size permitted by the latest Le Mans Prototype regulations without any modifications, and the narrow viscous-coupling plate differential permits longer driveshafts. Options include a low loss bevel bearing for increased mechanical efficiency. ■



LEFT Xtrac's new 529 gearbox is suitable for LMP1, LMP2 and GT1 class vehicles

## BOUNDARY LAYER FRICTION ISSUES

With performance or fuel efficiency ever present in the minds of designers, the subject of boundary layer friction is always a top priority. And so it is with the people at several Formula One teams who used a tungsten disulphide coating in a number of areas on their latest creations. The process – Dicronite – a dry film lubricant, can deposit a 0.000020" (0.5 microns) thick layer of the substance in an extensively modified lamellar form on almost any metallic component to give a coefficient of friction of 0.030 – around half that of graphite based processes.

Although the exact details are guarded jealously, the process itself, which in itself is around 40 years old, would seem to

involve a method of air carrying the finely atomised material onto the components at ambient temperatures up to 60°C. The low temperatures involved prevent distortion of the components unlike some other processes and the resulting dry film is not only chemically stable, but will not crack, peel, chip, flake or damage the surface of the substrate. At less than half the cost of DLC when processed, the components retain their original dimensions (to within 0.5 microns) as well as surface finish and once coated the resulting deposit, we are told, does not migrate.

Suitable for use where boundary layer friction is unavoidable on a wide range of automotive applications – cams, pistons and rocker pads – this is a process which has to be investigated. ■