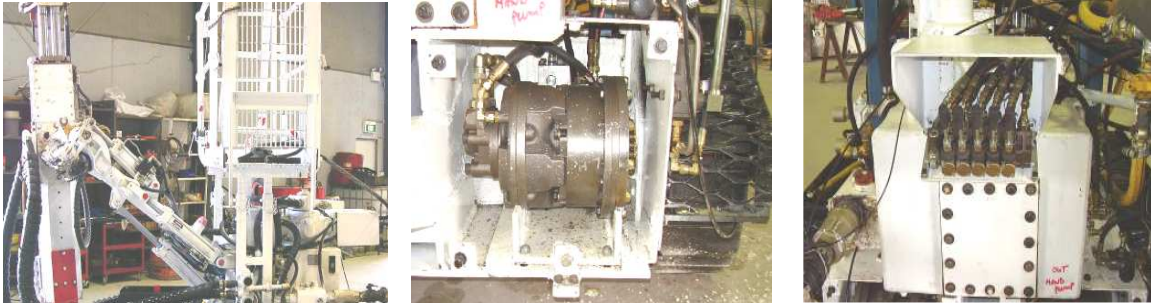


**Application:** Underground Coal Mining Air Track Drill Rig

**Product Group:** Mobile, Sun, and Manifolds



**Summary:** The customer had purchased an old Ingersoll Rand LM100 Air Track Drill Rig. The original machine had pneumatic traction motors, which were mounted onto a gearbox and chain drove the tracks. The hydraulic pump was close coupled to a pneumatic motor and the drill motor was also pneumatic. The positioning cylinders were hydraulic. The purpose of the Air Track Drill is to complete bolting projects in underground, coal mines. These include additional bolting requirements for intersections etc.

The problem experienced by the customer was that the existing machine required a large volume of air and that high air pressure could not be guaranteed in the areas where the machine operated. This could cause the machine to be inoperable and prevent the customer completing contracts on-time. The machine also had no braking system, the traction motors were disengaged from the track drives by a dog clutch. The machine was steered by engagement and dis-engagement of the dog clutches. The operator stood behind the machine and other changes were made during the rebuild to comply with Mining Design Guidelines (MDG's).

**Solution:** Reduce the air requirement for the drill rig by replacing the pneumatic traction motors with hydraulic traction motors. The existing pneumatic traction motors were replaced with SAI GM1-250D40F21. Upgrade the existing air motor (Globe RM410), which drives the hydraulic pump, and replace the existing single vane pump with a tandem vane pump. Fit pneumatic actuators to the Dinoil DNC65 tramming valves and operate the valves from a pneumatic pendant.

**Advantages of Solution:** The air motor still generates enough power, at low air pressure, to provide sufficient hydraulic power to operate the drill rig. The drill rig now has hydrostatic braking; via a CFP S06R36A Traction Control Manifold and the SAI F21 brakes provide park braking.

The tandem pump provides a dedicated oil supply to each traction motor when in tramming mode. This allowed the machine to be trammed remotely. The steering of the machine was improved dramatically.

A pneumatic pendant was developed to operate the tramming function. This allowed the machine to be trammed remotely and removed the operator from a dangerous interaction zone behind the machine. The pendant was fitted with a two-hand module, which meant that two buttons had to be depressed simultaneously before air was supplied to two tramming joysticks. This helped reduce the chance of an operator accidentally tramming the drill rig.

When the drill rig is in drill mode, a dedicated oil supply is provided to both the positioning functions and the drill functions.