

SMC Pneumatics helps in a community project

SMC Pneumatics has recently been involved in a community project to rebuild a wheel chair lift. SMC provided a new pneumatic cylinder, filter regulator, solenoid valve, fittings and technical information as part of its contribution to the project.

The lift is used by Peter Spooner to travel between the two levels in his house. Peter was injured in an industrial accident about 15 years ago while working as a self employed plumber. He didn't receive a compensation payout and only received some government assistance with basic items of equipment for his house.

One of these items was a second hand lift. The lift is essential because the lower level bath room is fitted for Peter while most of the living area and bedrooms are on the upper level. The original lift operated as a scissor lift with an air bag underneath it. The air bag was always catching on the scissor mechanism and there was a constant problem with leaks. Peter has patched it many times but there were patches on patches with leaks that could not be effectively repaired. The lift could no longer reach full height and Peter had to launch himself up about 100mm to exit the lift. It was taking a few minutes to even get to this height. A new air bag could only be sourced in England at a high cost and within a few months would have started leaking and would need patching again.

Peter asked a friend who is an engineer to look at a practical solution and possibly a new lifting mechanism. The engineer consulted SMC and it was decided to use a pneumatic cylinder drive rather than the air bag because:-

- 1) A pneumatic cylinder would be far more reliable and probably last a lifetime without needing replacement.
- 2) A pneumatic cylinder would be safer because it would be extremely unlikely to have a failure where the lift could fall rapidly.
- 3) A pneumatic cylinder would be quieter because the exhaust can be outside and there would be no noise as the bag expands.
- 4) Other expensive and specialised parts such as the low pressure blower, and digital controller could be deleted and replaced with parts that were easier to source and cheaper to repair or replace.

The existing lift mechanism was not suitable for fitting with a pneumatic cylinder. The floor underneath the lift is solid concrete and there was no practical way of lowering the floor level so there was no easy way to reuse the scissor type mechanism. The design solution was to make a 'forklift' type mechanism with a cylinder and frame

running up the wall and the lift tray supported on the 'tynes'. The existing tray part of the lift, including the safety switches and retracting ramp, were rebuilt and used in the new lift. A 100 mm diameter SMC Pneumatics CG1 cylinder now operates the lift via a 5/3 way solenoid valve.

The manufacture of the lift has been a community effort with SMC Pneumatics providing the pneumatic equipment and technical assistance, St. George College of TAFE providing assistance with the fabrication and Quality Handling Systems supplying the steel, electric controls and minor fittings.

Peter did most of the fabrication of the frame, covers and fittings as part of his course at the Metal Fabrication and Welding Department at St. George College of TAFE. Family and friends helped with the purchase of the air compressor and with the design, fabrication and installation of the new lift.

Peter Spooner is not able to perform regular work but does make a contribution to the community with his unpaid work. He is on the Sutherland Shire Council Access Committee and regularly assists the University of Western Sydney in their spinal cord research work as a 'lab rat'. His community efforts were recognised when he was selected as a torch bearer for the 2000 Para Olympics.



Fig 1- The old lift with an air bag could not longer reach the top level



Fig 2- The new lift during construction showing the SMC CG1 cylinder



Fig 3- The new lift with out the covers showing the SMC CG1 pneumatic cylinder



Fig 4- Peter gives the new lift a thumbs up

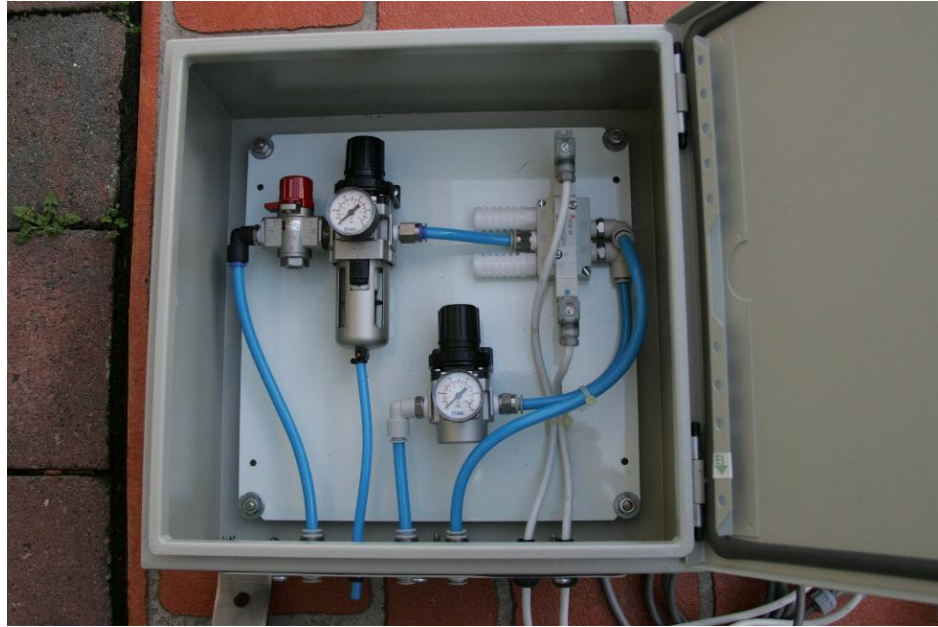


Fig 5- The control panel with the SMC equipment