ABD offers a range of electrically-driven pedal robots to suit its customers’ requirements. Robots can be combined to give control of multiple pedals and can also combine with ABD steering robots to give full vehicle control. The range comprises a choice of several brake robots, an accelerator robot, a combined brake and accelerator robot (CBAR) and a clutch robot. All ABD pedal robots are designed to allow a human driver access to the pedals to drive the vehicle manually when the robot is inactive. ABD pedal robots are used in ABD’s award-winning Driverless Test System (see SP6021).

A brake robot is used to apply accurate inputs to a vehicle’s brake pedal for braking characterisation and handling behaviour measurement. It is typically used to apply step or ramped force or position inputs to the brake pedal. It can also be used to control vehicle deceleration or brake-line pressure with a suitable feedback transducer. Using a brake robot together with an accelerator robot, accurate control of a vehicle’s speed can be achieved.

The BR1000 brake robot is the original model and is available in two configurations. The on-seat configuration (above left) is optimised to allow quick installation in a wide range of vehicles, while the under-seat configuration gives the most rigid installation and includes a racing bucket seat for the driver. It offers a reliable, high-performance actuator suitable for most brake testing.

The RBR1500 and RBR500 use compact rotary actuators which provide a very high apply rate. The RBR1500 offers the highest performance of any ABD brake robot and is designed to give the combination of high force and rapid apply rate needed for Brake Assist System testing. The RBR500 uses the same actuator as a CBAR for moderate brake force testing.

The BR1000HS uses two parallel actuators to give the same peak force as the BR1000 but at up to twice the apply rate.

The AR1 accelerator robot uses a compact rotary actuator to control throttle pedal position. Used on its own it can give accurate speed control for constant speed/acceleration, and it can be combined with a brake robot to give full speed control (including deceleration). It can also be used for control of throttle pedal position.
The combined brake and accelerator robots are single actuator units with two output levers to control a vehicle’s brake and throttle. The CBAR500 is designed to provide vehicle speed control and has a lower peak brake force than the BR1000 / RBR1500, but can also be used for accurate brake force inputs up to 500N. The CBAR1000 is slightly larger in size but offers performance similar to a BR1000HS. Compared to separate brake and throttle actuators, the CBAR is more compact, lighter and quicker to install. 

Which brake robot is most suitable for you:

**BR1000**  The standard brake robot model in use around the world. High force capability allows aggressive brake tests, but can also be used for more subtle tests such as pedal-feel quantification. Available in on-seat or under-seat configuration, both versions suitable for upgrade to driverless testing.

**CBAR500**  Controls both the brake and accelerator pedal, with enough power to replicate typical driving pedal inputs. Perfect for AEB and other ADAS testing. Easiest to upgrade for driverless testing.

**CBAR1000**  As CBAR500 but with >1000N force capability and close to BR1000HS levels of speed capability.

**RBR1500**  For customers needing the ultimate in aggressive brake testing. High-power rotary actuator gives the highest braking force and speed. Well-suited for brake fade testing.

**RBR500**  Compact brake robot which gives high speed (over 1000mm/s) but lower peak force than BR1000 or RBR1500.

Performance characteristics:

<table>
<thead>
<tr>
<th>Brake robot force/speed curves</th>
<th>Accelerator robots</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR1: Maximum force: 150N</td>
<td>CBAR: Max throttle force: 200N</td>
</tr>
<tr>
<td>Maximum speed: 300mm/s</td>
<td>Max throttle speed: 750mm/s</td>
</tr>
<tr>
<td>Max pedal stroke: 130mm</td>
<td>Max throttle stroke: 125mm</td>
</tr>
</tbody>
</table>

The clutch robot is available in two different formats for use with either the CBAR or the underseat BR1000 brake robot. It is used in conjunction with the Gearshift Robot to enable driverless testing in cars with manual gearboxes. Clutch engage / declutch profiles can be defined to suit the test vehicle.

Pedal robots for use in Driverless Testing:
The CBAR is the simplest and cheapest route to driverless testing, with a mechanical spring acting as a failsafe back-up brake system. The BR1000 and AR1 can also be used for driverless testing, using a failsafe pneumatic system as a safety backup.

For more detailed information on this and other related products contact:

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For details please refer to our website: 
www.abd.uk.com

All of the top 25 most successful vehicle manufacturers in the world use ABD technology to develop their vehicles

*OICA World Motor Vehicle Production survey 2012*