Phase Dock WorkBench Project Development Kit

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The Phase Dock WorkBench Project Development Kit (PDK) is an innovative approach to the old breadboard system of developing projects. This review pertains to the WorkBench 1007 PDK, but the other members of the WorkBench series share many of the same features and accessories.

For years, I've done much of my project development and testing using the traditional breadboard method of mounting everything to a wooden board, with a 400- or 800-pin solderless plastic breadboard to mount the smaller components, and then connecting everything together using jumper wires. Switching out any of the larger components, such as an Arduino Uno microcontroller for an Arduino Mega or a Raspberry Pi, would involve dismounting the old circuit board and mounting the new one in its place.

In the Box

The WorkBench 1007 PDK, shown in Figure 6, comes with a 13.75 × 7.75 inch base (including handles) that provides about 54 square inches of work area. The base consists of a 10 × 7 primary matrix of holes, along with a 9 × 6 secondary matrix of smaller holes. The larger primary holes are used for mounting the boards that contain your components.

The boards that mount to the base are called *clicks*. The click is designed to snap into place on the base and is available in two sizes. The 1007 PDK comes with four 2 × 3 inch clicks and one 1 × 3 inch click. A direct-mount hardware kit with standoffs and screws is included, and it allows you to custom mount your own components, breadboards, and other assemblies to the clicks. The Phase Dock website also shows components mounted with cable ties or double-sided tape.

The 1007 PDK also includes three *slides* designed to mount to the top of the clicks. One slide has mounting holes pre-drilled for attaching an Arduino Uno (or any Arduino-type board that has the same mounting configuration, such as the Arduino MEGA). Another slide matches the Raspberry Pi 2, 3, or 4, and the last slide matches the Adafruit Feather series/Particle Argon, Boron, or Xenon.

To test the flexibility of the WorkBench slide concept, I mounted an Arduino Nano and an I/O pin breakout board to the 1 × 3 Feather click and slide. One interesting idea I saw on the Phase Dock website is to mount a USB battery power source to power your project. I chose to mount a 2.2-inch color TFT display module on one click and a 400-pin solderless breadboard on another. Additional clicks and slides are available separately.

Bottom Line

Phase Dock's WorkBench series is an innovative approach to the breadboarding method of project development.

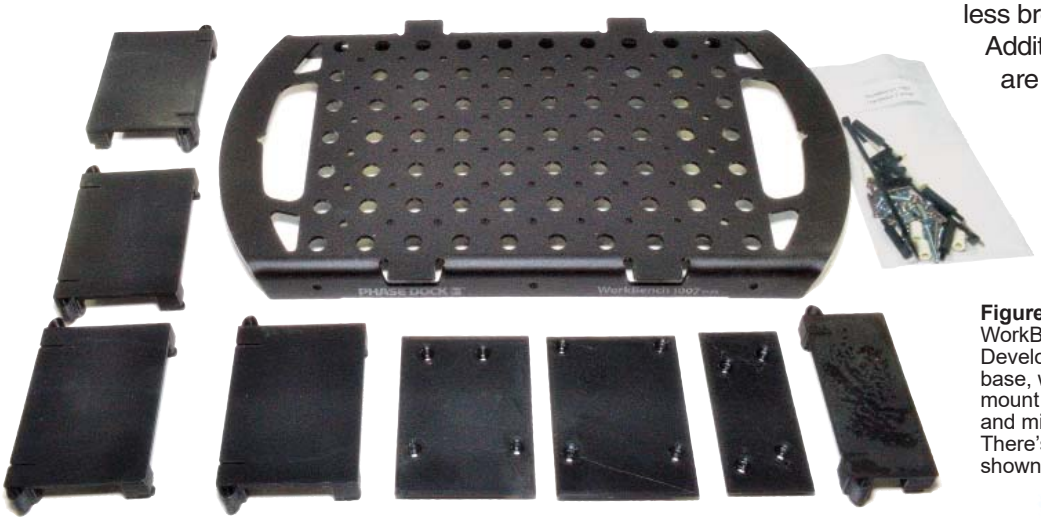

Figure 6 — The Phase Dock WorkBench 1007 Project Development Kit includes the base, with clicks and slides to mount electronic components and microprocessor boards. There's also a clear cover (not shown) and hardware packet.

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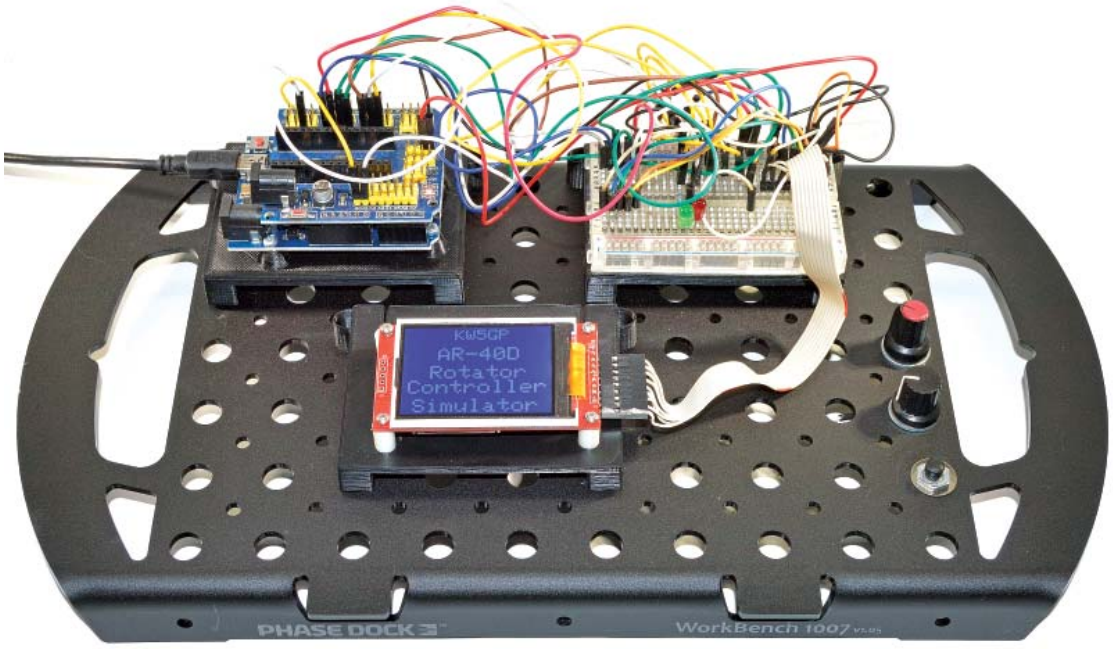

Figure 7 — An antenna rotator controller and simulator project in development. The Arduino Uno with an I/O shield are mounted on a click at the upper left. Other components are on a breadboard mounted to a click at the upper right, and the 2.2-inch display is on another click.

The 1007 PDK kit comes with a snap-on clear plastic cover to protect your project in between development sessions. It even comes with several tie-wrap bases for cable management, allowing you to run cables on the underside of the base and helping to keep the top side uncluttered.

Initial Assembly

Assembling a slide to a click was the most difficult part of getting the WorkBench ready to use — if you could call any part of it difficult. You have to insert mounting nuts for the screws that will secure the microcontroller board and then glue the bottom of the slide to the top of the click. The instructions call for making a small jig (essentially two small pieces of wood and some clamps) to ensure the proper placement of the slide to the top of the click. A video on the Phase Dock website shows exactly how to do the assembly.

With its unique click and slide design, you can quickly rearrange and swap out major components as you switch between projects or designs during development. The Phase Dock website has an excellent series of tutorial and support videos to help you get started assembling and using the system.

Building a Project

In order to see just how much of an improvement the Phase Dock WorkBench was over my traditional breadboard method, I used the WorkBench to create a prototype of an MFJ AR-40 rotator controller, as shown in Figure 7.

I used holes in the WorkBench base to mount a potentiometer and a switch on the right edge to simulate the antenna direction dial and start switch on the controller, and an additional potentiometer to simulate the rotator position sensor. I mounted an I/O shield to the top of the Arduino Uno in its click and slide assembly, allowing for quick and easy access to the Arduino's I/O pins for connecting to another click with a breadboard mounted on top.

The prototyping went quickly and smoothly. I really liked the flexibility the click and slide units gave me in project component selection and their placement on the base. The ability to rearrange the project on the base made for quick and easy wiring between modules. I could easily swap out the Arduino Uno click for an Arduino Nano click in just a matter of minutes.

Manufacturer: Phase Dock, **www.phasedock.com**. Price: Phase Dock 1007 Project Development Kit, $69.95 with a black base. Other colors are available for $79.95. Other versions and additional clicks, slides, and hardware kits are available.

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