

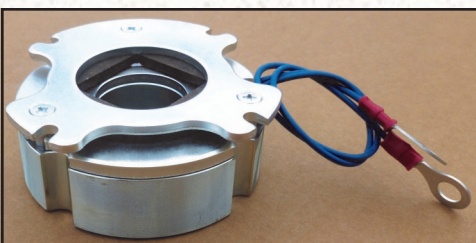
Application Story

Ogura and Power Hawk Help Save Lives

The Power Hawk P-16 rescue tool is unlike any other rescue tool in the world. Most portable rescue tools are designed to run directly on hydraulics or electro hydraulics. The P-16 is an all-electric construction, so unlike alternative tools, it is extremely lightweight and portable and is an ideal tool for many first responders. Even with the variety of attachments, total weight of the system only varies between 42 and 47 lbs. Although lightweight, the jaws of the tool can apply an incredible amount of force for spreading, cutting and crushing.

The spreader jaws can produce anywhere from 11,000 lbs near the tip of the jaw to 45,000 lbs of force towards the back of the jaw. This amount of power could easily pop open a trunk, pry open a door or even lift a car off the ground. The cutter blade option can produce anywhere from 21,000 lbs near the center of the blades to 45,000 lbs near the notch easily cutting through a wide variety of materials, up to a 3/4" steel bar."

Because of the high torque/lightweight requirement, a special custom brake was required by Ogura. Once the size/weight and torque challenges were overcome, the brake was also



Ogura model MCNB-25-26

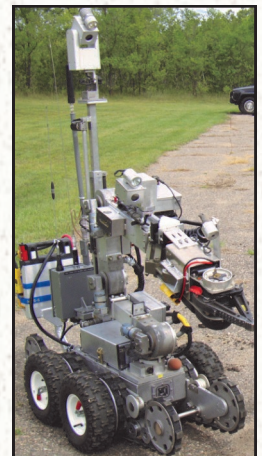
required to survive rigorous testing for heavy shock, vibration, extreme environmental conditions, low voltage operating conditions, and was even required to operate under water.



*Power Hawk P-16
Spreader Jaws*

In Power Hawk's application, when the tool's cutting or spreading jaws are working, both the motor and the brake are powered. Applying power to the brake creates a magnetic field which attracts a pressure plate across an air gap, compressing internal coil springs and thereby releasing (or freeing) a rotating friction disc. This friction disc is attached by a hub to the jaw motor's drive shaft. Once the jaw has reached its desired location and the motor is stopped, power is removed from both the motor and brake together. This collapses the brake's magnetic field allowing the brake's internal coil springs to extend, applying a linear force to the brake's pressure plate, clamping and holding the rotational friction disc/hub and jaw shaft assembly. This keeps the P-16 jaws locked in position without the risk of back driving, even with several thousands of pounds of force acting on the tool. The holding force and strength of the Ogura brake is critical to proper function and safety to personnel in the field.

The Power Hawk P-16 can also be added to Remotec's remote controlled robot (see 2011's 4th quarter application story). The combined product still provides all the power of Power Hawk's P-16, but with the added advantage of allowing the operator to control the jaws from a remote location, keeping a potential operator far away from a hazardous situation that may involve explosives, chemicals or radiation. Bomb disposal personnel must have absolute confidence in their equipment when handling live munitions.



Ogura is proud to be part of Power Hawk's equipment and their company slogan, "Power Hawk Rescue Systems versatility saves lives."●

The Ogura power off brakes in the Power Hawk's P-16 and Remotec's Andros F6A/B Robot deliver high torque, lightweight and robust construction to handle the most demanding rescue and IED defusing applications.