

## Application Story

# OGURA PHT KEEPS TENSION UNDER CONTROL

**W**e all hear in the media that more and more products are going wireless, giving the impression that the need for electrical wire is becoming less common. Although control wiring via blue tooth reduces the need for control wiring, the fact is that the requirement for magnet wire is continuing to grow worldwide.

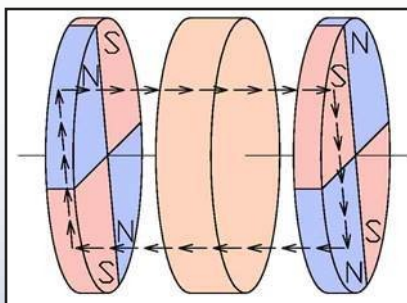
Electricity flowing through magnet wire takes electrical current and changes it into mechanical movement. Magnet wire is used in applications where a magnetic field needs to be generated to cause movements such as electromagnetic clutch or brake, in the windings of motors, as coils in solenoids and relays in industrial and automotive applications.

Wire sizes can be smaller than a human hair or as large as a cable for a bridge. To help control wire tension on the mid to thin wire sizes, customers use Ogura's PHT (permanent hysteresis tensioner). Torque range on the PHT series runs from 0.005 in lbs to 62 in lbs. The PHTs are primarily used in controlling wire sizes 44 through 10 gauge.

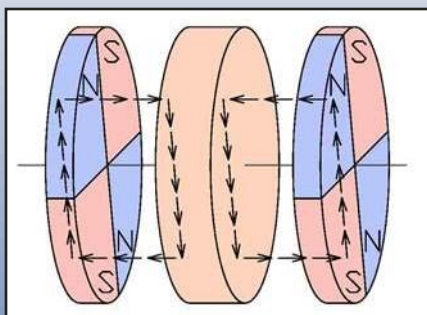
In most applications, a PHT is mounted to a frame with the spool of wire directly underneath the PHT unit. A pulley is then attached to the PHT's shaft and the wire is wrapped a few times around the pulley. As the wire is pulled from the PHT, the PHT applies the proper tension for the application.

The PHT is a permanent magnetic unit, so there is no frictional contact between the rotating plate and the magnet. All drag torque is accomplished magnetically. Also, since the PHT unit uses permanent magnets, no external electrical controls are needed.

The PHT operates by having two multiple pole permanent magnets mounted inside the unit with an air gap between both magnets. A hysteresis plate is connected directly to the PHT's output hub or shaft and equally spaced between the two magnets. As the hysteresis disc rotates between the two permanent magnets, the magnetic lines of flux act upon the hysteresis disc. Each PHT unit is mechanically adjustable. So, by shifting the position of the alignment of the poles, you can control the amount of magnetic drag on the disc.



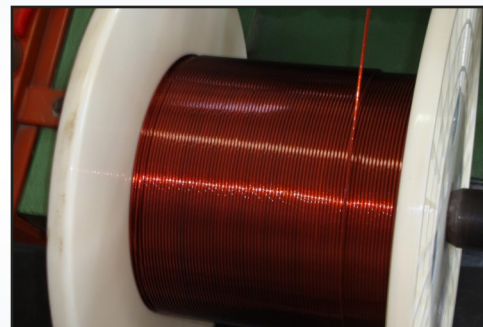
*Minimum torque*



*Maximum torque*



*Ogura PHT series*



*Wire unwind stand*

Since there are no wear particles from the PHT unit, it cannot contaminate the wire or any of the surrounding machinery like other drag brake devices that contain friction material. Also, since the units do not require a separate control, they consume no electricity, so there is no ongoing electrical operating cost.

Paper, film and foil are products where the PHT is used to control tension, but another popular application for the PHT is as a torque limiting device. A high precision screwdriver or screw cap tightener for medical or food industry packaging are also well suited for PHTs. ●