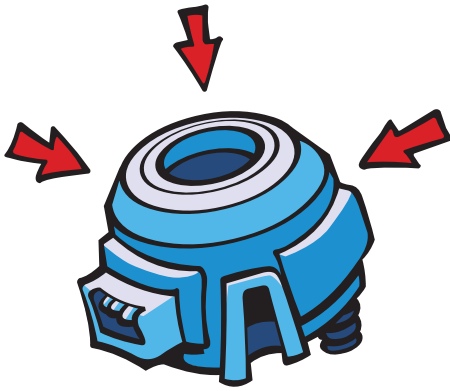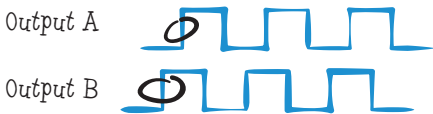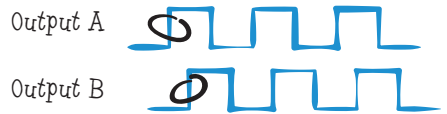# FIRST Robotics FAQ

What is this thing?

You've got a US Digital E4P kit encoder. This encoder, when mounted to the AndyMark Toughbox, is used to tell the cRio controller how fast the output shaft is turning. Knowing that info... you can effectively program the robot to move during autonomous mode!

how does it work?

The E4P outputs two square waves (A and B) that are 90° apart (called quadrature). Along with increased resolution, the difference in alignments between the signals also give directional information.
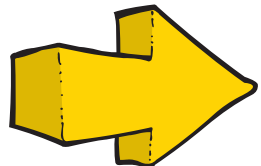
Output A

Output B

If A follows B, the rotation is in one direction.

Output A

Output B

If B follows A, the direction is reversed!

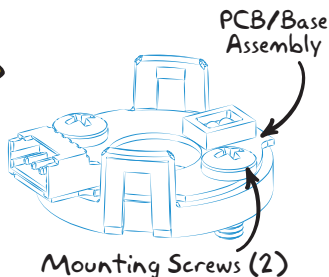## how is it installed?

See the other side of this page.

US DIGITAL

US Digital E4P Assembly
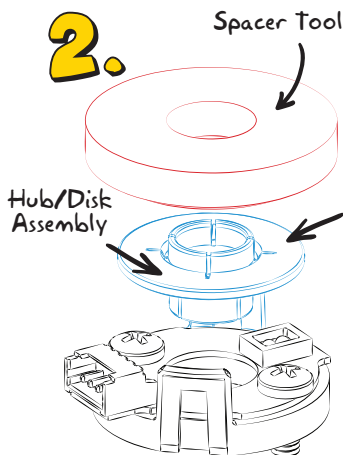## Item Number: E4P-360-250-D-H-D-B

1.

PCB/Base Assembly

Mounting Screws (2)

Attach the "PCB/Base Assembly" to the AndyMark Toughbox (not shown) using the pre-installed mounting screws.

2.

Spacer Tool

Hub/Disk Assembly

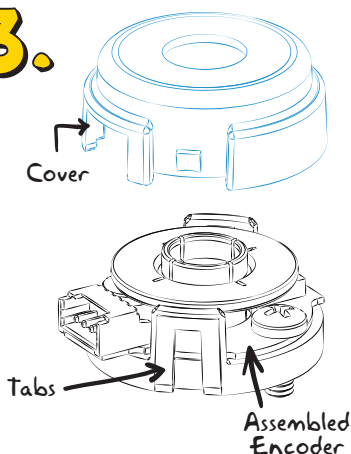Use CLEAN HANDS or gloves when installing the Hub/Disk Assembly. Grease or fingerprints may cause incorrect readings.

For significant fingerprints, clean it by gently buffing with a soft cloth. DON'T USE LIQUIDS!

Using the included "Spacer Tool", press the "Hub/Disk Assembly" onto the shaft... pattern side down.

NOTE... Press down until the Spacer Tool bottoms out on the tabs of the encoder base. You can discard the Spacer Tool once the Hub/Disk Assembly is secure.
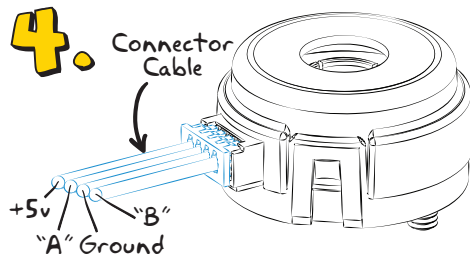
3.

Cover

Tabs

Assembled Encoder

Snap the cover onto the assembled Encoder Base. Press in on the tabs to ensure that the cover fully latches.

DO NOT snap on cover until ready to be permanently installed. The tabs are meant for one-time use only and break easily!

4.

Connector Cable

+5v   "B"
   "A" Ground

Finally... Attach the included cable to the completed E4P Assembly Unit!

Oops! Need replacement parts?
Order by calling **(800) 736-0194**
(Be sure to mention your involvement with the FIRST competition to receive a discount!)

Need <u>more</u> help? Then visit us at **www.usdigital.com/first**