

Application Note 5317

Description

The objective of this note is to provide a step-by-step manual assembly guide for the alignment and installation of the AEAT-601x magnetic encoder to a motor shaft.

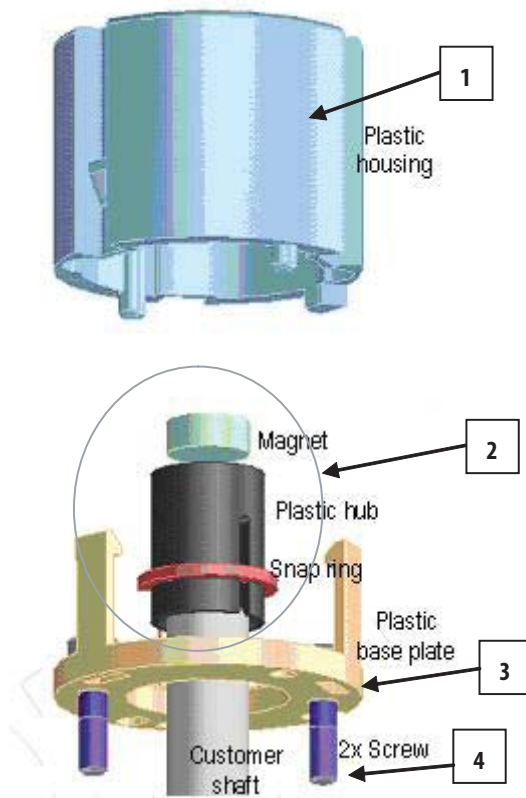
In this first release only a 6 mm shaft is supported. Other shaft diameter sizes of 2, 4, 8 and 10 mm may be introduced in future product releases.

List of Components

A total of four components are supplied in the magnetic encoder components kit. (refer to the numbered items in the exploded view)

1. Plastic housing
 - Pre-assembled with PCB glued to the housing.
2. Magnet, plastic hub and snap ring
 - Supplied pre-assembled as one unit.
3. Plastic base plate
4. 2 pcs x Screws of M2 x 0.4 x 8
(socket head cap screw, head $\varnothing 3.8 \pm 0.18$ mm)

Exploded View of Components

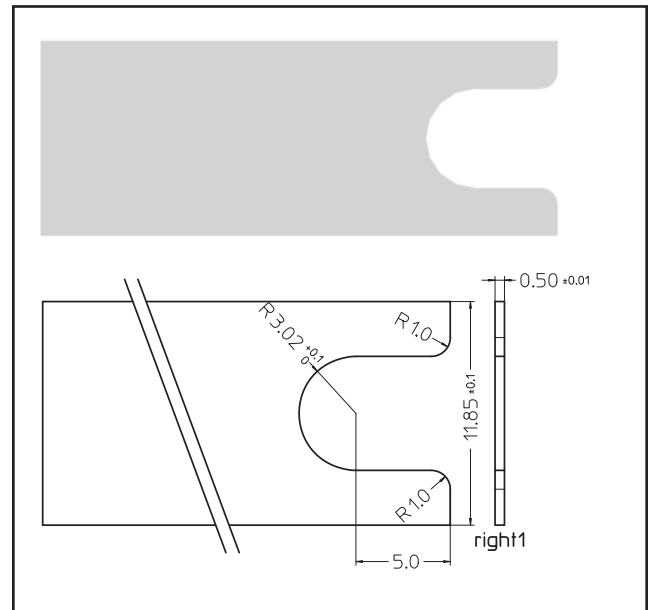


Alignment Tool Set

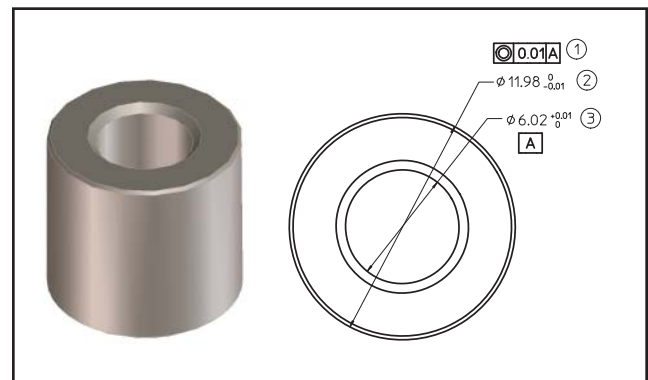
(Ordered separately – Part number HEDS-8934)

This alignment tool set consist of a gap plate and a centering jig as listed below:

1. A gap plate with a “U” shaped end – for setting the magnet height to the IC (on the PCB)



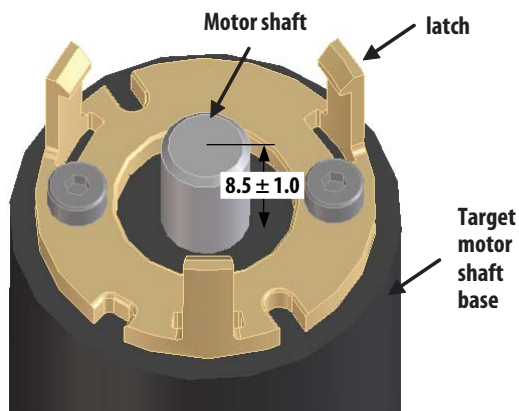
2. The plastic base plate centering jig.- for centering the plastic base plate to customer shaft.



Encoder to Motor Installation Procedure

Step 1:

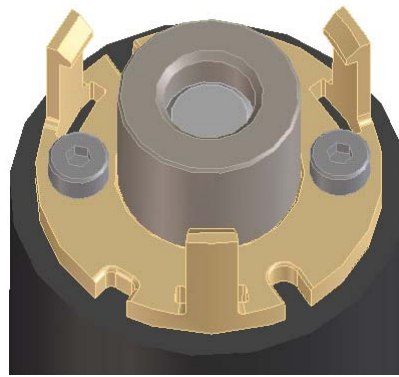
1. Insert the 2 pcs x screw into the plastic base plate.
2. Place the plastic base plate over the intended target motor shaft and do an initial partial screw down to the target motor. (Do not tightened the screw yet and the base plate must be still loose on the motor, to accommodate the centering jig in the next step).



CAUTION: For optimal performance, all three latches should not be subjected to more than 1.5 mm outward bending. Excessive outward bending will affect subsequent latch-to-plastic housing grip effectiveness.

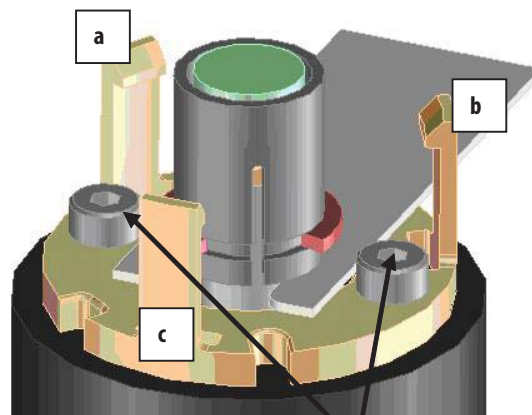
Step 2:

- a) Place the centering jig into the target shaft and ensure that the centering jig outer diameter is "sitting" inside the plastic base plate inner hole.
- b) Tightened both screws once the centering jig is sitting inside the plastic base plate hole. The recommended screw tightening torque should be 0.6 in·lb (0.7 kgf·cm)
- c) The centering jig can then be removed once both screws are tightened accordingly.



Step 3

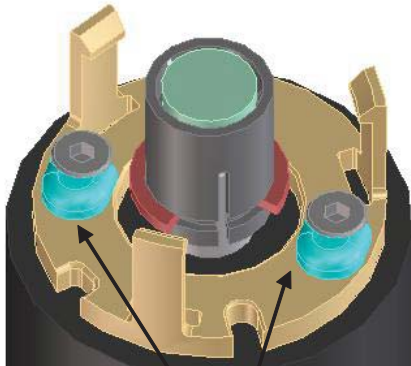
- a) Place the gap setting plate "U" end onto the motor shaft between the latches of "a" and "b" (with latch "c" in front). The plate must be sitting flatly on the plastic base plate.
- b) With the plate still pressed onto the shaft; press fit the magnet and hub assembly; all the way down into the shaft till the hub touches the gap setting plate.
- c) Removed the gap plate



CAUTION: For optimal performance, magnet and hub assembly are recommended for a ONE time assembly process only. Removal and reassembly should be avoided.

Step 4

Due to the properties of plastic softness at high temperature, gluing should be applied at least to the screw-plastic interface to prevent screw loosening. Glue may be applied to the underside of this plastic baseplate when deemed appropriate by the end user. For optimal results, the gluing surface has to be free from contamination (i.e grease).

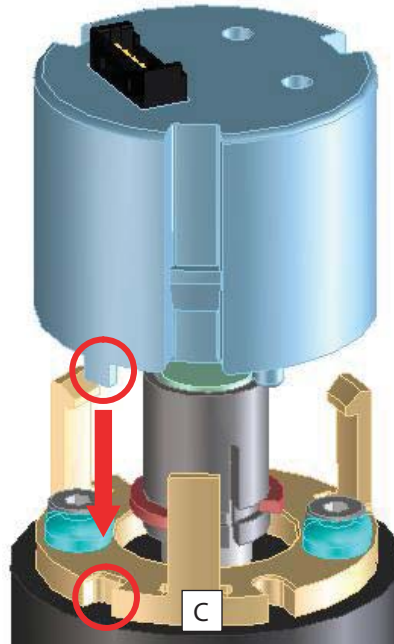


It is recommended to apply glue to this area to prevent screw loosening due to the effect of high temperature on the plastic.

Note : High temperature rated adhesive such as Hernon Ultra Poxxy 317 (www.hernon.com) is recommended

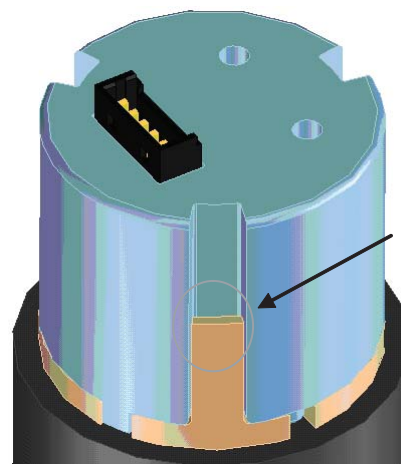
Step 5

Similarly, with latch (marked "c" positioned in front) and both screws on the left and right respectively; assemble the plastic housing to the base plate; guided by the rectangular protrusion on the plastic housing and the matching slot in the base plate (see circled region and arrow indication in following drawings). Press fit the combination with a force of about 4 kgf.



Step 6

Check that the three "latch – catch" combinations are well secured, as seen below.



Ensure that all three latch-catch interfaces are well secured (no bulging seen)

CAUTION: For optimal performance, the base plate and plastic housing assembly are recommended for a ONE time assembly process only. A removal and reassembly process should be avoided due to the potential weakness of the latch after reassembly.

Optional Female Connectors

For interface purposes the following female connectors may be used with the AEAT-601x series magnetic encoders:

Manufacturer	Part Number	Notes
Joint Tech Electronic Ind	A1250H-05P	Temperature range -25°C~ 85°C
Molex	51021-0500/50079	Temperature range -40°C ~ 85°C

Note: Customers / users are encourage to evaluate the above mentioned connectors and other connectors that fit their application.

For product information and a complete list of distributors, please go to our web site: www.avagotech.com

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