IGV TT TEST FIXTURE

OPERATIONS MANUAL

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Safety Warning ⚠️

The IGV TT Test Fixture uses laser transmitters, flashing lights and magnetic sensors to perform its operation. Avoid direct eye-contact with the laser transmitters and keep electronics away from the system to avoid interference. Warning: Any photosensitive operators could be at potential risk of seizures.

BILL OF MATERIALS

| Assembly Reference	Reference Symbol	Description	Part Number	Quantity
Structure Assembly	S-M8	Standard M8 Bolt		5
	LP-M8	Low-Profile M8 Bolt		1
	L1	Vertical 80/20 Support Beam		1
	L2	Horizontal 80/20 Support Beam		1
	L3	Gusset 80/20 Support Beam		1
	TP1	Test Plate		1
Sensor Assembly	S-M8	Standard M8 Bolt		1
	S-M2	Standard M2 Bolt		10
	L-M2	Long M2 Bolt		1
	CB1	Corner Bracket		1
	XY	XY-Calibration Tool		1
	LH1	Laser Housing		1
	LM1	Laser Modules		2
Baseplate Assembly	BP1	Baseplate		1
	HS1	Hall Sensors		2
	CS1	Color Sensor		1
	W	Wires		AR
Arduino Assembly	A	Arduino		1
	AC	Arduino Case		1
	AS	Arduino Case Sled		1
	W	Wires		AR
	S-M8	Placement Bolt		1
	PC	Power Cable		1

Test Fixture Set Up

1. Structure Assembly

   a. Fasten together the vertical (L1) and horizontal (L2) 80/20 aluminum support beams using a standard head M8 bolt as shown below.

   b. Fasten the gusset beam (L3) to the vertical (L1) and horizontal (L2) support beams using standard M8 bolts as shown below.

   c. Install the test plate (TP1) to the bottom of the vertical (L1) support beam using low-profile M8 bolts as shown below.
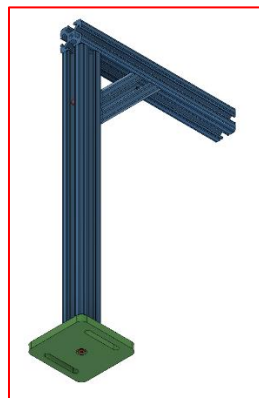
    d. Lastly, using standard M8 bolts (S-M8) fasten the test assembly to the workstation through the test plate slots as shown below.

2. Arduino Assembly

    a. Place the Arduino () inside of the Arduino case (). Close the case and place the Velcro side of the case down onto the Velcro of the Arduino case sled (). Once secure, slide the Arduino case sled into the railing of the horizontal beam (L2).

    b. Slide the Arduino case sled until it stops at the back of the horizontal beam. Fasten the set bolt as shown below.
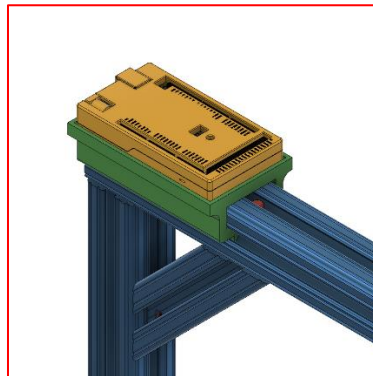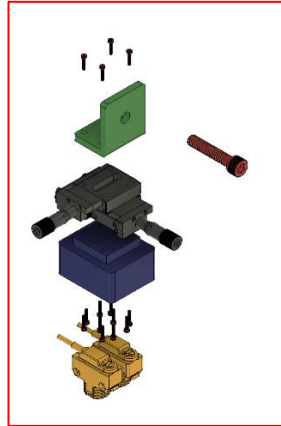

    c. Using the pin-diagram document, place and solder the wires to their appropriate sensors. Be sure to feed the wires through their respective channels.
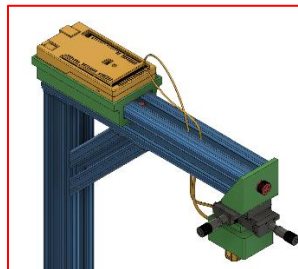
3. Sensor Assembly

    a. Fasten the XY calibration tool (XY) to the corner bracket () using a standard M2 bolt (S-M2).

b. Fasten the XY calibration tool (XY) to the laser housing () using the standard M2 bolts (S-M2) as shown below.

c. Insert the laser modules into the laser housing and thread the long M2 bolt through the hole on the side of the housing to set the modules. Ensure that the faces of the modules are flush with their respective housing and that the modules are not angled.

d. Fasten the corner bracket (CB1) to the horizontal beam (L2) using a standard M8 bolt (S-M8) as shown below.

4. Baseplate Assembly
   a. Insert hall (flux) sensors into the bottom of the baseplate and fasten into place using a standard M2 bolt (S-M2).

   b. Fasten the baseplate to the table without pinching any of the wiring underneath the baseplate.

   c. Route the wires from the baseplate to the Arduino for control and power.
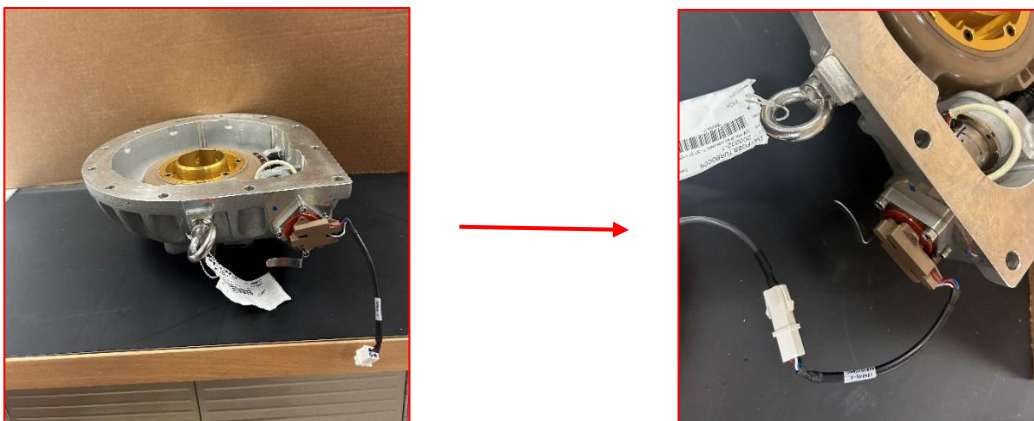
Operation of the Test Fixture

Insertion of IGV Assembly

To place the IGV inside of the test fixture, first ensure that the baseplate is completely clear of stray wires or foreign objects that the IGV could snag or crush when being placed into the system. Then pick up the IGV and slowly move it between the top of the sensing assembly and the base block before lowering it into the baseplate. Ensure that the IGV is properly seated within the grooves of the baseplate and that the IGV is in the correct orientation to be plugged into the test system. If the IGV is not in the correct orientation, lift it and rotate it until it can be plugged into the test system.
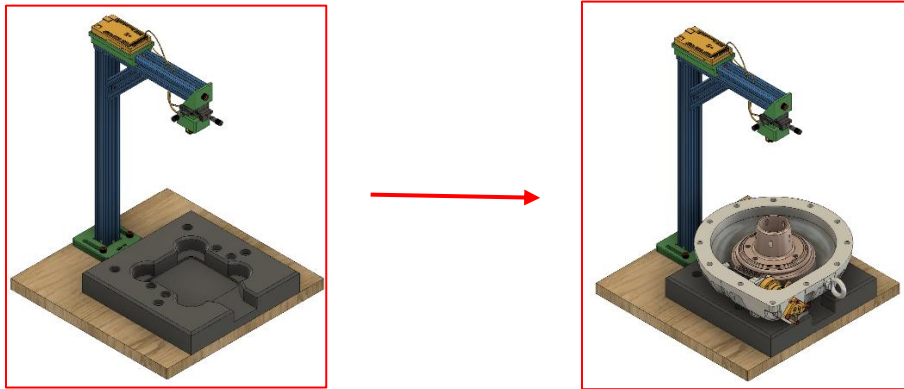
Wiring

Plug the test system wire into the IGV at the four-prong receiver on either the far left or far right side of the IGV. Ensure that the wire is not obstructing the view of any sensors on the test system.

Test Initiation

To start the test, turn on the power to the test fixture if the power is not already on. Interact with the user interface projected by the computer monitor. Be certain that the IGV is properly seated within the baseplate and that there are no objects obstructing the view of the blades from the point of view of the laser module. Click the "Start Test" button to start the test.

Unit Passes	Unit Fails
If the unit has passed the functionality test, you can now record necessary data and initiate the removal prosses in the directions below	If the unit fails the functionality test, view the data to determine the point of failure. This may require removal of the unit which is detailed in the directions below. If the unit does not have noticeable defects, notify your supervisor, and run the test again. If the defects are found then remove the unit and proceed with necessary defective unit protocol.

IGV Assembly Removal

To remove the IGV upon completion of the test, first ensure that the test system has completely finished its cycle. Then unplug the IGV from the test fixture and ensure that there are no wires or stray components at risk of snagging or being bumped by the IGV when moved. Raise the IGV a couple of inches above the baseplate and pull outwards from the test fixture. Once clear of the test fixture, transport the IGV to the next workstation specified by the SOP.