#### UPS F59 Image Processing Module (IPM) (Camera) Alignment 8/15/23

#### Job Requirements

- Ford software: IDS (2000 2022 model years), FDRS (2023 & newer model years)
- Ford VCM adapter
- 7mm or 9/32in combination wrench
- 7mm or 9/32in socket and wrench
- Inclinometer
- Up to 15 min road test above 40 MPH on straight road with highly visible lane markers. Average time is 5 minutes.
  - OK to stop vehicle during calibration process just don't turn ignition key off until completed.
  - OK if road is not straight and turns made during calibration
- Parts for reference

DESCRIPTION	SERVICE PART # (Part # to order)	ENGINEERING PART # (Part # on part)		
Camera - Image Processing Module (IPM)	2020-2022: LU9Z-19H406-A	2020-2022: LU9T 19H406 CC		
NOTE: Requires Ford IDS/FDRS tool for replacement	2023: PU9Z 19H406 A	2023: PU9T 19H406 CB		
Camera (IPM) heater jumper harness	LU9Z-14A411-C	LU9T 14C210 AA		
Camera (IPM) windshield mounting assembly	Utilimaster: LU9Z-18A456-D	Utilimaster: LU9T 18A456 AB		
(glareshield, heater & adhesive)	Morgan Olson: LU9Z-18A456-E	Morgan Olson: LU9T 18A456 BB		
Camera (IPM) windshield mounting heater adhesive strip	LU9Z-14D696-A	LU9T 18D695 AB		
Camera (IPM) windshield mounting supplemental adhesive strip				
(2 required)	IVIU92-19E523-A	INIU91 80AZIS CA		



#### Steps

- 1. Address all non- IPM related fault codes
- 2. If a new IPM is being installed, perform:
  - As-Built programming on it w/ IDS (2000 2022 model years)
  - Configuration on it w/ FDRS (2023 & newer model years)
- 3. Ensure proper camera mounting to windshield
- 4. Adjust camera to proper angle
- Perform road test alignment using Ford software: IDS (2000 – 2022 model years), FDRS (2023 & newer model years) and Ford VCM adapter

#### Step 3. Ensure Proper Camera Mounting to Windshield

- 1. Check for 80 100% "wetout" of glareshield (camera mounting bracket) and supplemental adhesive strips (top and bottom) to windshield
- 2. If < 80% can not be achieved refer to separate instructions to remove and replace the camera glareshield and supplemental adhesive strips



#### Step 4. IPM (Camera) Angle Adjustment

- 1. Loosen camera mounting capscrews slightly so camera can be moved when manipulated: 1 on driver's side and 2 on passenger side as shown
- 2. Place inclinometer on top of camera as shown and manipulate camera until proper inclinometer angle indicated. Refer to the following camera angle slides for proper adjustment setting
- 3. Tighten mounting screws to 57 in-lb (5 ft-lb) and recheck to confirm proper camera angle





#### **Utilimaster** F59 Camera Angle (60 degree windshield angle)

- After zeroing inclinometer to windshield, proper inclinometer reading for camera shown below
- Vehicle does not have to be on level ground when using inclinometer zeroed to windshield
   Windshield



#### Morgan Olson F59 Camera Angle (67 degree windshield angle)

- After zeroing inclinometer to windshield, proper inclinometer reading for camera shown below
- Vehicle does not have to be on level ground when using inclinometer zeroed to windshield
   Windshield



# Ford IDS software (2000 – 2022 model years)

See next section for FDRS instructions

• Connect Ford IDS and launch IPM alignment as shown below



Introduction							
This procedure should be performed following							
Camera replacement							
Windshield replacement							
Change in tire size							
Suspension work or an alignment							
When directed by a service procedure							
Pre-Conditions:							
Make sure all IPMA components are in place and ready for calibration							
• If Image Processing Module "A" IPMA was replaced, PMI inhale/exhale must have been performed prior to calibration procedure and configured properly for vehicle							
Perform self-test and make repairs for DTCs found that may prevent the calibration from completing							
This procedure will require the vehicle to be driven							
Continue							

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Vehicle cond	dition
Ensure the	e camera view is clear
Remove any	ny contamination / obstructions, e.g. condensation, water, snow, stickers
Note: Due t original fact	to the variability with aftermarket windshield quality, tint, material, and bracket placement, Ford is unable to guarantee a successful camera calibration if the vehicle is fitted with an aftermarket windshield that does not meet the ctory installed windshield standards.
Drive cycle ro	route planning
Select a rou	ute where the road is as straight as possible and has clear uninterrupted lines on both sides of the lane
Outside cond	ditions
• To assist th	he process conduct the drive cycle when the following conditions exist
• It is a clear i	r and dry day. (no fog, rain, snow etc.)
The roads a	are dry and clear of obstructions (snow, leaves etc)
• The sun wil	ill not be at an angle that may blind the camera along the route
	Continue

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#### IPM alignment – Wheel Arch Heights

If wheel arch heights are already programmed they will be listed. Measure to confirm they are correct.

- 1. Heights are measured from the ground to the top of the wheel house.
- 2. Both wheel wells need to be measured. The left and right values need to be placed in the tool *in millimeters*

	TOP OF WHEEL HOUSE
Left Front	
	FROM TOP OF WHEEL HOUSE TO GROUND
Right Front	
Enter the height of the right front wheel arch in millimeters	GROUND

#### IPM alignment – Wheel Arch Heights

• If wheel arch heights are already programmed they will be listed as shown. Measure to confirm they are correct.

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Right Front : 990 mm ( 39.0 in )	
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#### IPM alignment – Wheel Arch Heights

• If wheel arch heights are not already programmed, the screen below will be shown.

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	Park the vehicle on a level surface.		
	Make sure that the vehicle is at normal operating height and not overloaded		
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- Up to 15 min road test above 40 MPH on straight road with highly visible lane markers. Average time is 5 minutes.
  - OK to stop vehicle during calibration process just don't turn ignition key off until completed.
  - OK if road is not straight and turns made during alignment

The IPMA is in alignment mode:
• Drive the vehicle on a road with visible lane markers. Drive in a steady manner over 64kph (40mph) avoiding lane crossing, excessive steering angle changes, or sudden changes in vehicle speed.
Do not key off until the calibration is complete
Select Continue to monitor calibration completion progress
Continue

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• Follow instructions on IDS to finish with calibration



# Ford FDRS software (2023 & newer model years)

- Connect Ford FDRS and launch IPM alignment as shown below
  - NOTE an internet connection is required to download and run the alignment

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- Connect Ford FDRS and launch IPM alignment as shown below
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• Follow instructions on FDRS to finish with alignment

