



# Installation Guide

For Spray King<sup>®</sup>

Water Tank

for

Cat<sup>®</sup> 725/730/740/745

Articulated Truck

Tank Models

SK-5-AT/SK-6-AT

SK-8-AT

SK-9-AT

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**SECTION 1**

**SAFETY FIRST**..... 5

    CONTACT US ..... 5

**INSTALLATION KIT - PARTS LIST** ..... 6

**INSTALLATION CHECKLIST** ..... 7

**VEHICLE ARRIVAL INSPECTION**..... 8

    CONDUCTING A FUNCTION TEST OF HYDRAULIC ENGAGEMENT AND CHANGING ECM SETTINGS ..... 10

**1-2-3 SAFETY: PREPARING TO WORK ON YOUR MACHINE** ..... 13

    1: LOCKOUT/TAGOUT PROCEDURES..... 13

    2: ADD WHEEL CHOCKS..... 13

    3: INSTALL STEERING CYLINDER LOCKS ..... 14

**CHASSIS PREPARATION: TAKE MEASUREMENTS**..... 15

**STEP-BY-STEP INSTALLATION INSTRUCTIONS**..... 17

    1. INSTALL IN-CAB ELECTRICAL (MONITOR, JOYSTICK, WIRING, MOUNTS)..... 17

        a. *Install electrical harness* ..... 19

CONTINUES WITH SECTION 2



## **SAFETY FIRST**

Think safety ALWAYS.

Use the job safety assessment (JSA) for every job.

Use Lock Out/Tag Out (LOTO) procedures

Use proper blocking and cribbing, including wheel chocks and articulating steering cylinder locks

Follow HOLT Manufacturing instructions to install the Spray King® water tank to your Cat OEM machine chassis. Unless otherwise instructed by this guide or by HOLT or your Cat dealer, use only HOLT supplied parts during installation for your safety and to maintain your warranty.

Use appropriate personal protective equipment and clothing, safety helmets, safety harnesses, and procedures.

Installation should be performed on flat and level ground.

Proper machine power lockout procedures should be followed, and wheels should be chocked.

Cleanup work areas at the end of every day.

## **Contact Us**

For questions regarding your tank installation, please contact HOLT Manufacturing at 844.465.8634.

## **INSTALLATION KIT - PARTS LIST**

Screen kit with in-cab harness/USB in-dash connector  
Screen mount base plate and hardware  
Screen mount plate, sockets, knuckle, and hardware  
Nitro monitor kit and nozzle  
Monitor Joystick  
Monitor harness  
Monitor joystick mounting bracket  
Backup camera cable  
Grommets 1"  
Grommets 1½"  
Pivot pins and hardware  
Mud flaps  
Hardware for mud flaps  
Mud flap flat iron clamps  
Step ladder with mounting hardware  
Anti-sway mount kit and hardware  
Spray paint Cat® yellow  
Hydraulic hose kit

## INSTALLATION CHECKLIST

- \_\_\_\_\_ Vehicle arrival inspection
- \_\_\_\_\_ Place truck in work bay, LO/TO, chock wheels, all safety devices in place
- \_\_\_\_\_ Install in-cab electrical (monitor, joystick, wiring, mounts)
- \_\_\_\_\_ Mount tank on truck
- \_\_\_\_\_ Install anti-sway on tank to truck
- \_\_\_\_\_ Connect harness from joystick to nitro monitor box
- \_\_\_\_\_ Connect tank harness to truck harness
- \_\_\_\_\_ Make and install hydraulic lines
- \_\_\_\_\_ Check all electrical and hydraulic lines secured
- \_\_\_\_\_ Check monitor for proper movement
- \_\_\_\_\_ Calibrate water level sensor
- \_\_\_\_\_ Test operation of tank system

# VEHICLE ARRIVAL INSPECTION

Follow this inspection process to verify all physical damage and operations of the truck prior to tank install. Using the checklist below, start by walking around the vehicle completely, examining truck exterior, noting any damage. Next, unlock the truck, enter the cab, and start the vehicle to conduct the operational inspection.



## Vehicle Arrival Inspection

<i>Tractor &amp; Tank serial #:</i>	<i>Model #:</i>	<i>Work Order #:</i>
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### Visual Inspection

Hours:

	ITEMS TO INSPECT	MM/DD/YYYY
<b>CAB</b>		
<b>1</b> Seat belt and seat	Appearance and functional	_____
<b>2</b> Mirrors and all glass	Appearance and functional	_____
<b>3</b> Dash and panels	Appearance	_____
<b>4</b> Floor mat	Appearance	_____
<b>5</b> Door	Appearance and functional	_____
<b>6</b> Other		_____
Original Package Configuration		
<b>6</b> Paint and Decals	Appearance and lettering	_____
<b>7</b> Dump bed or scraper bowl to be removed	Appearance and placement of all attachments	_____
<b>8</b> Hydraulic cylinders	Appearance	_____
<b>9</b> Pivot pins locations	Appearance and placement	_____
<b>10</b> Lights & Back up alarm	Appearance and placement of all attachments	_____
<b>11</b> Fenders & Mud flaps	Appearance and placement of all attachments	_____
<b>12</b> Hoist up control	Appearance and placement	_____
<b>13</b> Battery cables	Appearance and condition	_____
<b>14</b> Hydraulic lines	Leaks of any kind	_____
<b>15</b> Electrical cables	Appearance, loom, placement, and receptacles	_____
<b>16</b> Hood	Alignment and does hood raise	_____
<b>17</b> Handles, guards and walk surfaces.	Appearance and condition	_____
<b>18</b> Wheels, hubs, lugs, and tires	Missing lugs and tire condition	_____
<b>19</b> ID plates	Appearance and placement.	_____
<b>A</b> Cab & Body	Physical Damage	_____

### Operational inspection for mechanical and electronic controlled hydraulics

	ITEMS TO INESPECT	
<b>CAB</b>		
<b>20</b> Function test hydraulic engagement.	Record duty cycles wit ET. Pull PSR and file	_____
<b>21</b> Percentage of load for hoist injector	Record Duty cycle at hold, raise & float	_____
<b>22</b> Warning lamps in cab	Note all warning lamps on and active codes	_____
<b>23</b> Machine voltage engine off	Record voltage	_____
<b>25</b> Machine voltage engine on	Record voltage	_____
<b>26</b> Parameters	Use Cat ET to record parameter set pull PSR	_____
<b>27</b> Drive machine	Does machine achieve all transmission ranges	_____
<b>28</b> Light, back up alarm, and camera	Visually check all lights and back up alarm sound	_____
<b>29</b> Pivot pin location on trucks	Measure and record	_____
<b>30</b> Mechanical controled Hydraulics	Function test all cylinders	_____

*Items found and test results noted on page two*

*Page 1*



REMARKS FROM VISUAL INSPECTION

Insp. #	Remarks

TEST RESULTS AND REMARKS FROM OPERATIONAL TEST

Duty cycle in hoist up _____	
Duty cycle in float or neutral _____	
Machine voltage engine on _____	
Machine voltage engine off _____	
Parameter values list recorded product status report in file _____	
Measurements	From center of pivot pin to center of axle _____
	From center of pivot to center of front mount location _____
	From outside to outside of pivot pin location _____
	From center to center on pivot pin locations _____
Insp. #	Remarks

Inspector:  
Job title:

Date:

Revised 3/22

## Conducting a function test of hydraulic engagement and changing ECM settings

If hydraulics is engaged, the hoist lever would engage the hydraulic system. However, on new Cat machines, the hydraulic system is disabled. Check if enabled.

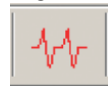
Plug into the diagnostic port in the cab and boot the Caterpillar Electronic Technician (Cat ET) software.

Download and save a product status report. Create a report by selecting all parameters then generate report. Save the report for future reference.

Then, make changes to allow the engagement of hydraulics when the vehicle is moving over 10 mph, as follows:

1. Turn on the hydraulics: Access Configuration screen. Click on Hoist Systems. Double click on Hoist Systems status. Change to enabled and click OK, then yes.
2. Disable Stability Assist: Go to Chassis ECM, then Stability Assist, which is by default enabled. Disable Stability Assist by double clicking on it, changing to disable, then click OK, then yes.
3. Change Body up Gear Limit to 0: In Configuration, click on Body up Gear Limit. Change the number to zero. Click OK, then yes.
4. Change Load Dump Departure Minimum Ground Speed: In the Transmission ECM, click on Load Dump Departure Minimum Ground Speed. Change the number to zero. Click OK, then yes.

Next, check on the current duty cycles on the hoist lever. Click on the status tool, go to Hoist Lever. Click on it, and immediately you'll see parameter of the hoist duty lever. The switch is not engaged, so it should be in Neutral (or Hold).



Look at the duty cycles, save the screen, and keep a record.

Engage the hydraulics hoist up circuit to 100% with the hoist lever and record the duty cycles by saving the screen.

In older trucks it is also useful to record voltage two ways: with key on and engine off as well as with key on and engine at full throttle. This is to ensure that the alternator and battery are working properly.

ET Cat Electronic Technician 2021B v1.0 - Status

File View Diagnostics Information Service Utilities Help

Description	Value	Unit	Min	Max	ECM
Chassis 730 (3T301904)					
Hoist Lever					
Hoist Lever Position	100	%	0	100	Transmission 730 (DW402780)
Hoist Lever Position Status	Raise Detent				Transmission 730 (DW402780)
Hoist Lever Duty Cycle	89.5	%	48.5	89.5	Transmission 730 (DW402780)

Transmission 730 (DW402780)

Transmission Shifting

Transmission Speeds

Transmission Solenoids

Transmission Temperature

Retarder Status

Brake Status

Brake Accumulator

Parking Brake

Machine Speed Limiting

Hoist

Hoist Lever

Steering System

Start Control

Shift Lever

Drivetrain Status

Output Transfer Gear

Location Code

Fluid Levels

Filter Status

Security System

Cooling Fan

Cab Information

Payload System

Groups... Full Screen Zoom In Hold Trigger Snapshot

Active Codes [0] Active Events [0] Status Flags [1]

Hoist Lever Chassis 730 (3T301904)

Type here to search

38°F Sunny 8:22 AM 12/7/2021

# SPRAY KING® WATER TANKS

ET Cat Electronic Technician 2021B v1.0 - Status

File View Diagnostics Information Service Utilities Help

Description	Value	Unit	Min	Max	ECM
Chassis 730 (3T301904)					
Hoist Lever					
Hoist Lever Position	0	%	0	0	Transmission 730 (DW402780)
Hoist Lever Position Status	Neutral				Transmission 730 (DW402780)
Hoist Lever Duty Cycle	49.5	%	48.5	49.5	Transmission 730 (DW402780)

Groups... Full Screen Zoom In Hold Trigger Snapshot

Active Codes [0] Active Events [0] Status Flags [1]

Hoist Lever Chassis 730 (3T301904)

Type here to search 38°F Sunny 8:21 AM 12/1/2021

ET Cat Electronic Technician 2021B v1.0 - Status

File View Diagnostics Information Service Utilities Help

Description	Value	Unit	Min	Max	ECM
Indication Display					
System Voltage					
Battery Voltage	27.5	Volts	27.5	28.0	C13 730 (T4F19620)
Sensor Supply #1 Voltage	5.0	Volts	5.0	5.0	C13 730 (T4F19620)
Sensor Supply #2 Voltage	5.0	Volts	5.0	5.0	C13 730 (T4F19620)
Battery Voltage	27.5	Volts	27.0	27.5	Engine #1 Aftertreatment Controller
Sensor Supply #1 Voltage	5.0	Volts	5.0	5.0	Engine #1 Aftertreatment Controller
Sensor Supply #2 Voltage	Disabled or Not Installed	Volts			Engine #1 Aftertreatment Controller

Groups... Full Screen Zoom In Hold Trigger Snapshot

Active Codes [0] Active Events [0] Status Flags [1]

System Voltage Chassis 730 (3T301904)

Type here to search 38°F Sunny 8:24 AM 12/1/2021

## 1-2-3 SAFETY: PREPARING TO WORK ON YOUR MACHINE

### 1: Lockout/Tagout Procedures

For your safety and the safety of those around your truck, before undertaking any work on your heavy equipment, make sure you know, understand, and follow the lock out/tag out procedures recommended by the manufacturer of your articulated truck. This is to prevent unexpected energizing or startup of equipment or the release of hazardous energy during service activities.



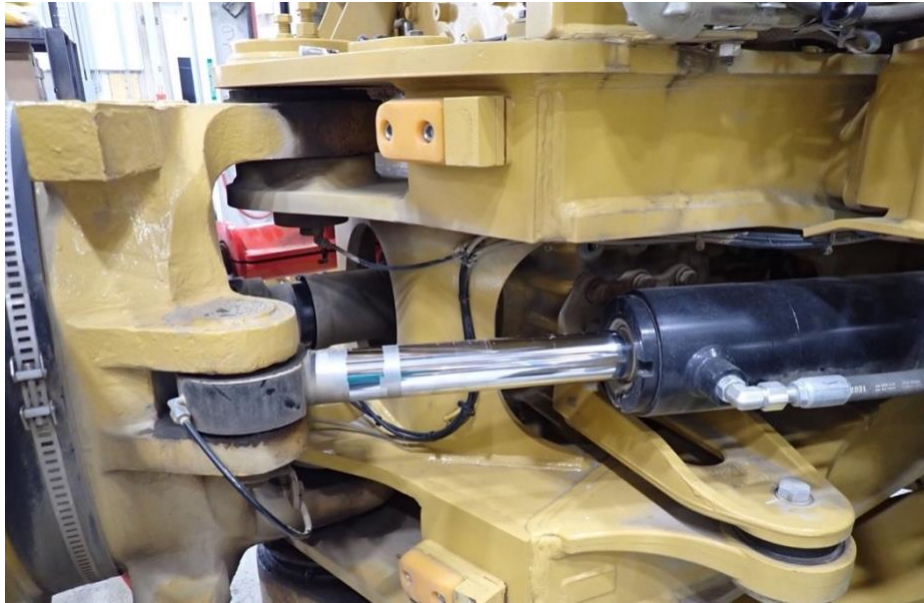
### 2: Add Wheel Chocks

Chock both sides of AT LEAST one wheel.



### 3: Install Steering Cylinder Locks

Make sure truck is straight and cylinders are evenly spaced.



Locate steering cylinder locks; remove and install on steering cylinders.



## CHASSIS PREPARATION: TAKE MEASUREMENTS

Take careful measurements of the truck.

1. From center of pivot pin to center of axle \_\_\_\_\_
2. From center of pivot to center of front mount location \_\_\_\_\_
3. From outside to outside of pivot pin location \_\_\_\_\_
4. From center to center on pivot pin locations \_\_\_\_\_

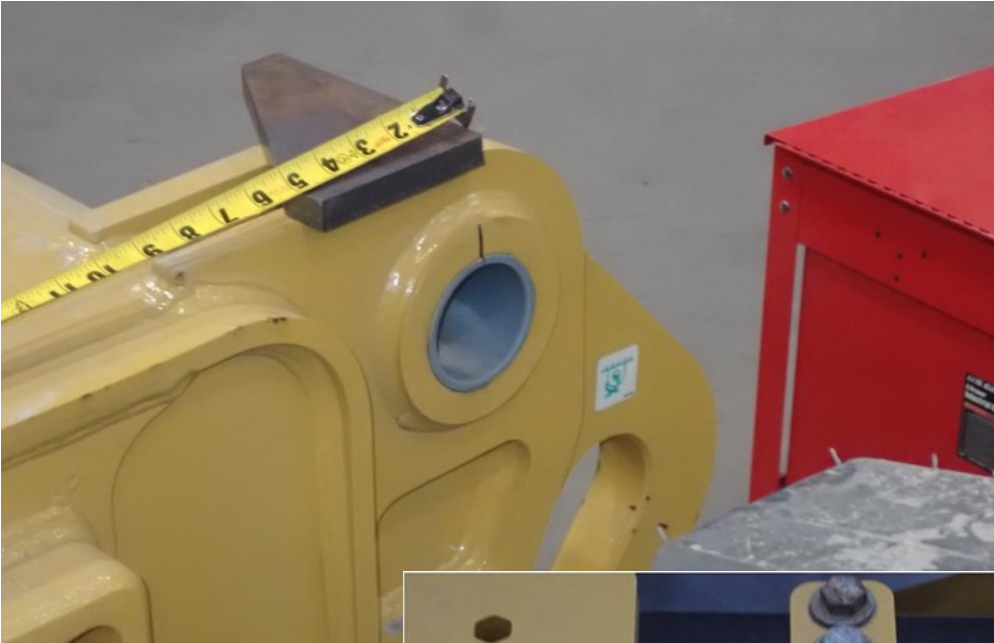
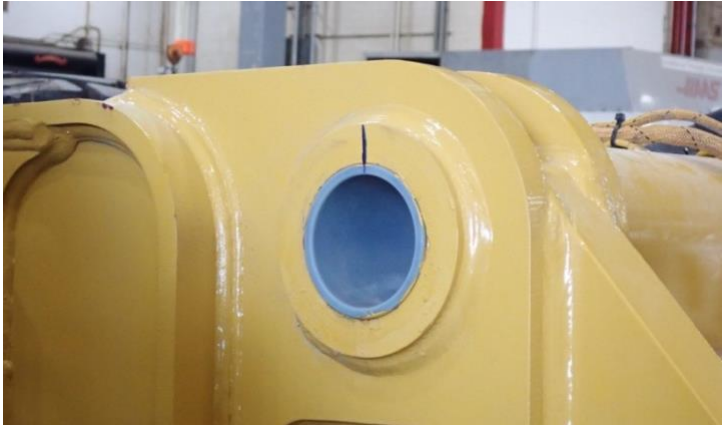
1. *Center of axle located*



2a. *Center of front mount*



2b. Pin pivot center



3. Front mount –





## STEP-BY-STEP INSTALLATION INSTRUCTIONS

1. Install in-cab electrical (monitor, joystick, wiring, mounts)

Cat 725 cab



1. Location of screen

2. Location of joystick/monitor

Cat 740 cab



**a. Install electrical harness**

Remove panels, as follows--

- \_\_\_\_\_ Post panel cover (A/C vent – right side of cab)
- \_\_\_\_\_ Cold storage box
- \_\_\_\_\_ Panel around shift hoist lever
- \_\_\_\_\_ Right Cat panel and screen for ease of harness install
- \_\_\_\_\_ Light switch panel
- \_\_\_\_\_ Center panel and gauge cluster
- \_\_\_\_\_ Left AC panel
- \_\_\_\_\_ Top dash panel over fuse box
- \_\_\_\_\_ Panel cover around fuse panel
- \_\_\_\_\_ Fuse panel

Remove post panel cover (A/C vent – right side of cab)



Remove cold storage box



Remove panel around shift hoist lever



Remove light switch panel



Remove Cat screen and panel for ease of harness install



Remove center panel and gauge cluster





Remove left AC panel



Remove top dash panel over fuse box (behind right side driver's seat)



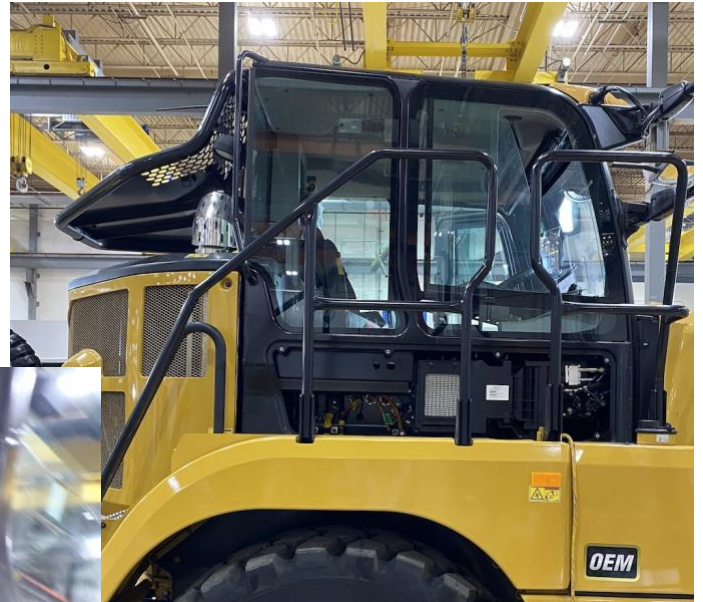
Remove panel cover around fuse box



Remove fuse panel box

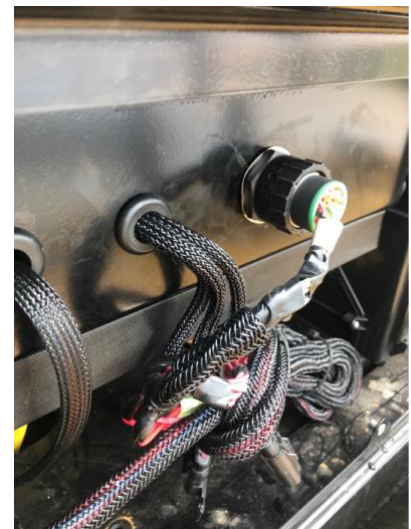


On the exterior of the cab on the right side, remove the side cab cover



Punch a 1.5-inch hole in the bulkhead using hydraulic punch driver

Interior view- 2 types: without bulkhead connectors (left), and with bulkhead connectors (right two photos)



Route cab harness from outside into cab through bulkhead hole



Route harness along right side of dash

Then, route under switch panel up to front of dash.



Important: place this part of the harness around the dash panel support.



Route harness under center gauge cluster





Allow sufficient harness length to reach center of left storage pocket (here, removed).

Install rubber grommet, then install zip ties on harness on both sides of bulkhead to prevent harness movement.



Punch 1.25-inch hole in left AC duct panel on left side of dash.

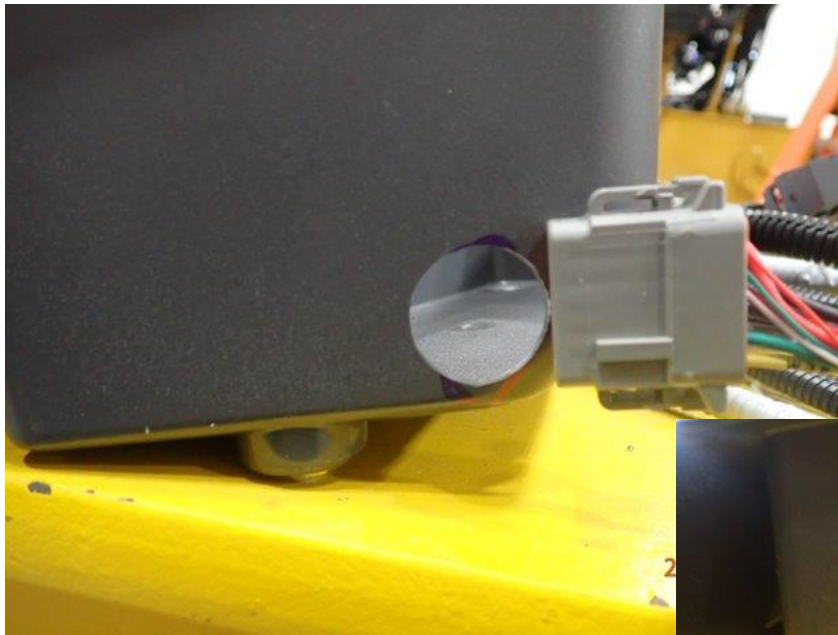




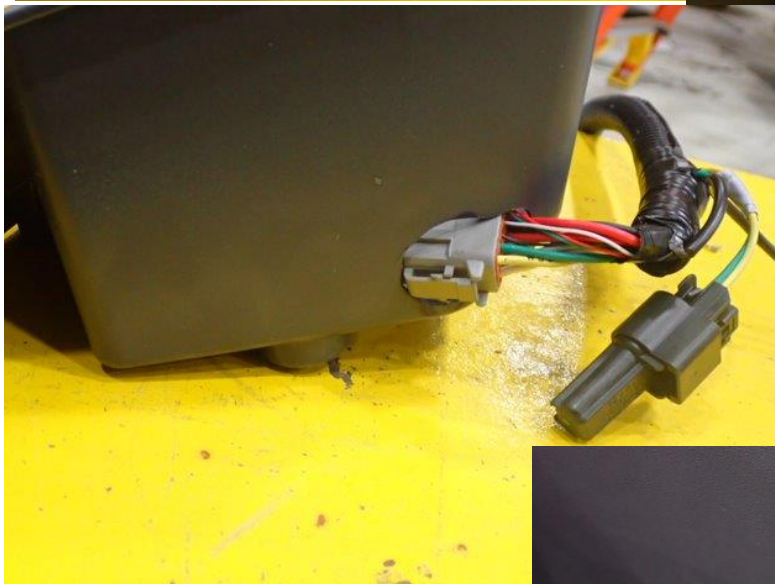
Notch the hole in order to accommodate 12 pin plug.

Reinstall the left AC dash panel and route harness through; add grommet.





Punch a 1.25-inch hole with notch in the pocket; route harness through.



Install pocket in dash.



Install rubber grommet.



b. Install screen



Install screen mount base plate.

Install ball socket mount to base plate.





Note: Older style trucks that do not offer an extra pocket on left of dash will use a wrap-around screen mount that secures to side on dash and bolts through top of dash.



Drill an access hole in dash for the harness directly behind screen mount. Install grommet in dash

Drill four ¼-inch holes in the top of the dash panel. Drill holes with caution, as an AC duct runs under the dash panel in this location.





Install ball socket to screen. Install knuckle pivot joint from mount socket to screen socket.

Screen mounted in place.



Note: Example of joystick and screen in older-style Cat cabs.



Depending on year model of truck, joystick mounting bracket will differ.

This older Cat 730 shows joystick mount using grab handle bolts to secure to dash.

Newer style trucks will mount in second cupholder base.