



## 3PYP Steering and Hitch Upgrade Kit 3PYP Planters



*When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!*

## General Information

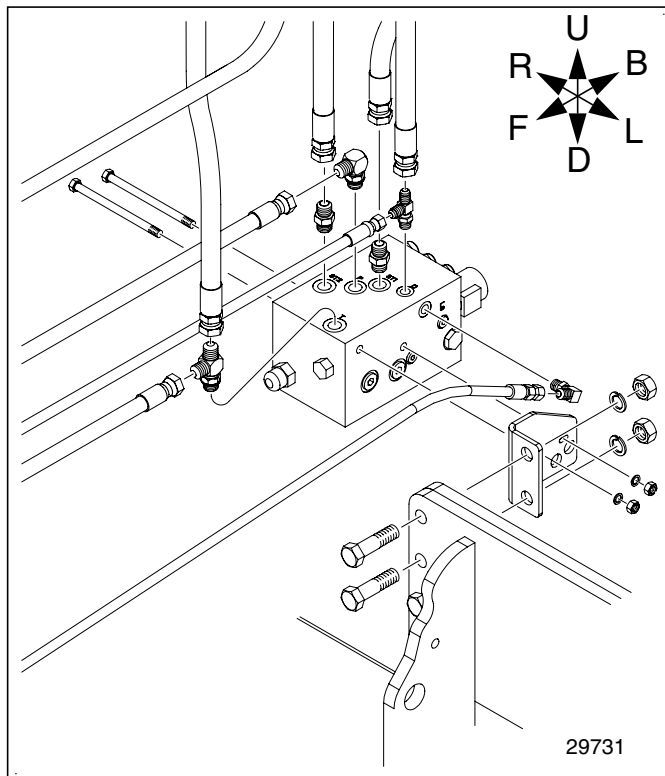
These instructions explain how to install a Steering Upgrade, changing a 3PYP planter that presently is rear steering to forward steering.

It requires changing the steering harness on the planter and the in-cab harness and switch box on the tractor as well as changing the steering control valve manifold and loading a new program into the existing ECU (Electronic Control Unit).

No mechanical changes are required on the rear of the machine. The fan hydraulic supply line is now separated from the steering hydraulics, therefore the fan runs regardless whether the steering is active or not.

The forward steering system becomes passive if the travel speed exceeds 8 mph. In order for the system to monitor the travel speed it is plugged into the DICKEY-john® radar harness. In order for it to monitor the position the planter is in, the steering is tied into the lift switch.

The steering system does not rely on the DICKEY-john® monitor to be powered up and working in order for the steering system to be functional. The steering system powers the radar and lift switch on its own without interfering with or interference from the DICKEY-john® system even though both systems use the same devices.



These instructions apply to an installation of:

Kit	Kit Description
401-637A	3PYP STEERING & HITCH UPGRADE KIT

One kit updates one 3PYP Planter.

## Related Documents

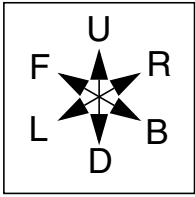
Have the Operator Manual at hand.

401-312M Operator, 3PYP

Have the current Parts Manual at hand for parts ID.

401-312P Parts, 3PYP

## Notations and Conventions



“Left” and “Right” are facing in the direction of machine travel. An orientation rose in the line art illustrations shows the directions of Left, Right, Front, Back, Up, Down.

### Call-Outs

- ① to ⑨ Single-digit callouts identify components in the currently referenced Figure. These numbers may be reused for different items from page to page.
- ⑪ to ⑵② Two-digit callouts in the range 11 to 50 reference new parts from the list on page 11.
- ⑵① to ⑵④ Two-digit callouts in the range 51 to 54 reference existing parts from the list on page 12

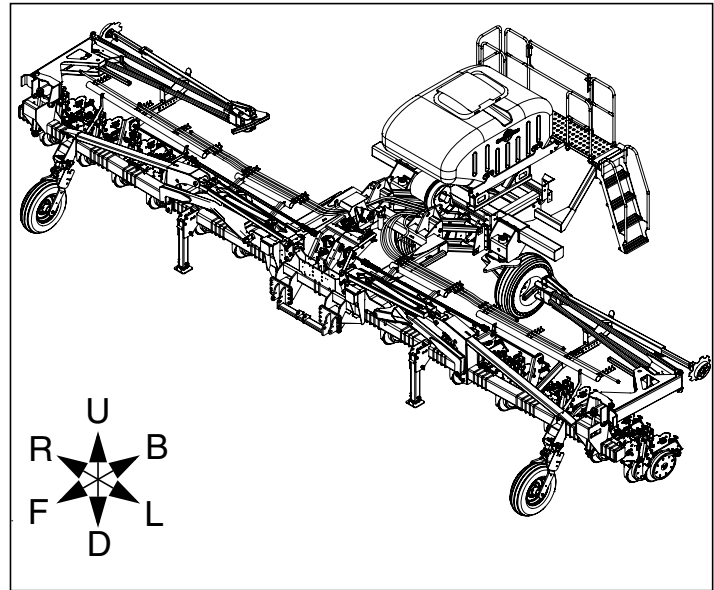


Figure 1  
3PYP Planter

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## Pre-Assembly Preparation

### Tools Required

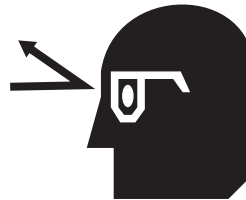
- Updated operator and parts manuals (see page 1)
- suitable tractor for raising implement
- oil spill clean-up materials
- basic hand tools
- light colored tape and indelible marker for identifying hydraulic hoses

### Work Location

1. Move the implement to a location with:
  - flat, smooth surface
  - adequate illumination
  - clear surface beneath for recovery of any falling or dropped parts

### Prepare Implement

2. Raise the planter.
3. Install transport locks.
4. Lower parking stands.
5. Set all remote hydraulic ports to Float.
6. Unhitch.



### **WARNING**

#### **High Pressure Fluid Hazard:**

Relieve pressure from all lines before working on hydraulic connections. Wear eye protection and gloves when opening hydraulic connections. Open connections slowly. Use a piece of paper or cardboard, **NOT BODY PARTS**, to check for leaks. Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

## Remove Steering Control ECU

### Refer to Figure 2

A new program must be downloaded into the ECU (Electronic Control Unit) prior to operating the forward steering system.

7. Remove the ECU from the planter.  
The ECU is mounted inside a bracket ① located on the front of the frame ②.
8. Be sure to write the planter serial number on the ECU.
9. Save all the mounting hardware for later reassembly.
10. Pack the ECU in a sturdy box being sure the ECU is not free to move around in the box.
11. For reprogramming ship it to:  
Great Plains Attn: Service Department.

## Reinstall ECU

Reinstall the reprogrammed ECU. Be sure to match the planter serial number written on the ECU at the time it was removed with the serial number plate on the machine.

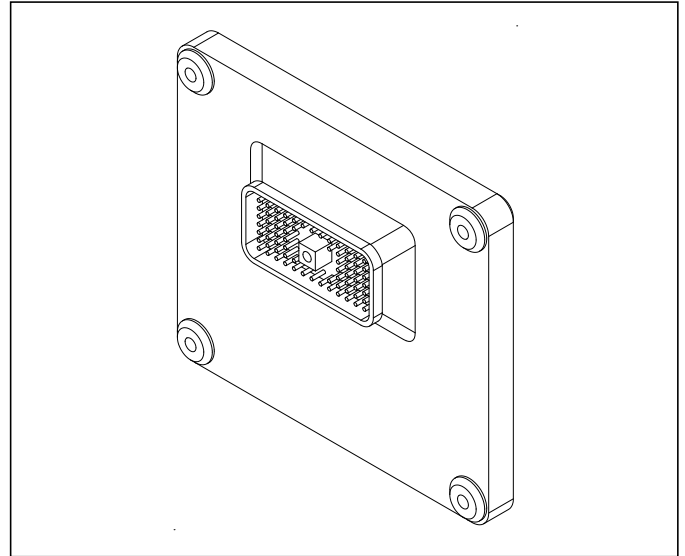


Figure 2  
Steering Control ECU

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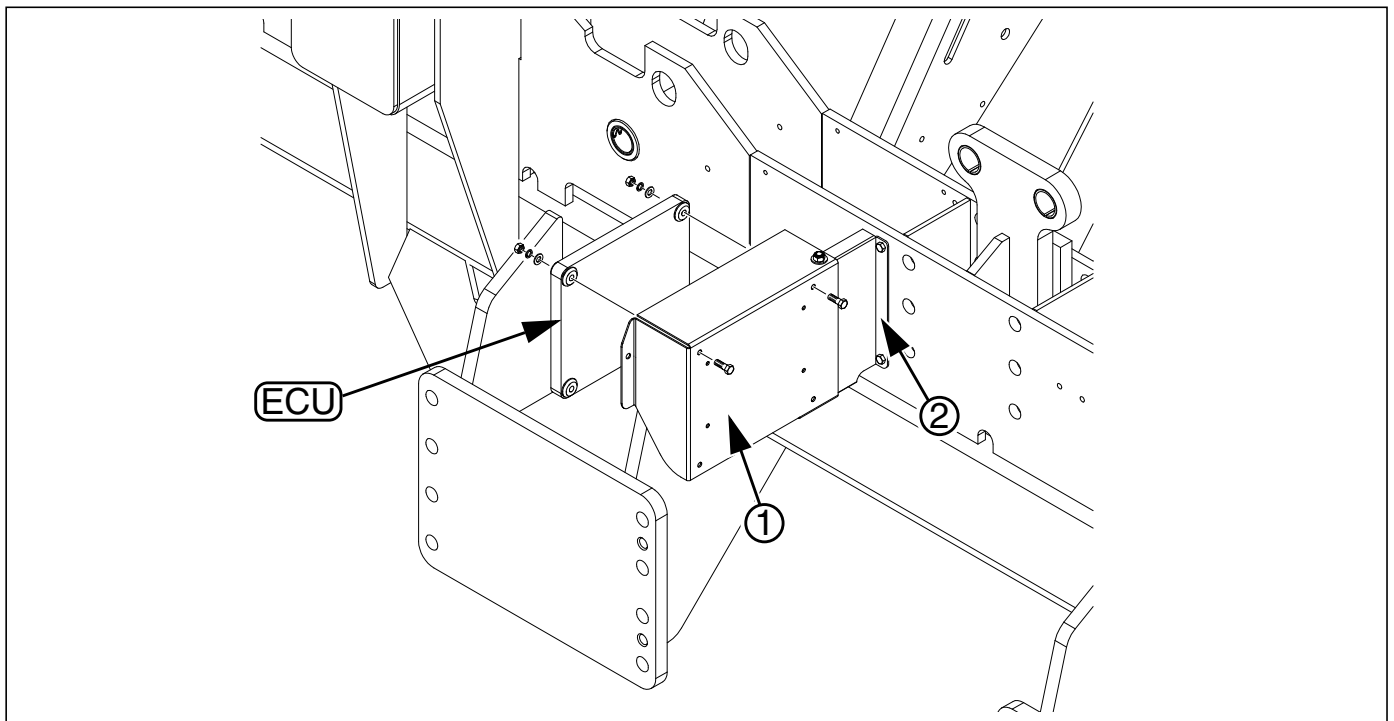


Figure 3  
Steering Control ECU

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## Hydraulic System Changes

### Remove Old Steering Valve Manifold

#### **CAUTION**

##### **Oil Spill Hazard:**

Take precautions to collect or mitigate spilled hydraulic fluid. Avoid slipping on spilled oil. Some fluid will be lost as hoses are disconnected and reconnected.



##### **Refer to Figure 4**

The steering valve manifold will be replaced. The new manifold also requires a new bracket (23) 411-616D.

12. Unplug the wiring harness from the valve harness by unplugging the two 6 conductor weatherpack connectors located near the valve manifold.
13. Mark each hose with the port designation:  
All the hydraulic hoses attached to the old steering valve manifold need to be marked as to their ports on the manifold. Each port is stamped with a designation: P, T, M1, M2, DR, ST1, and ST2.
14. Remove each hose from the existing valve manifold.
15. Plug all the hoses.
16. After all the hoses are removed:  
Unbolt and remove the old valve and bracket from the planter. (The bracket is secured in place with the two bottom bolts (52) in a row of four as pictured.)  
Remove the two bottom bolts, nuts and washers:  
(52) 802-383C HHCS 3/4-10X3 GR5  
(53) 803-027C NUT HEX 3/4-10 PLT  
(54) 804-023C WASHER LOCK SPRING 3/4 PLT  
The bolts, nuts and washers are not reused.
17. Select and install two new bolts, nuts and washers:  
(26) 802-086C HHCS 3/4-10X2 3/4 GR5  
(These bolts are 1/4 in. shorter than the ones you just removed to avoid protruding out too far.)  
  
(34) 803-027C NUT HEX 3/4-10 PLT  
(37) 804-023C WASHER LOCK SPRING 3/4 PLT

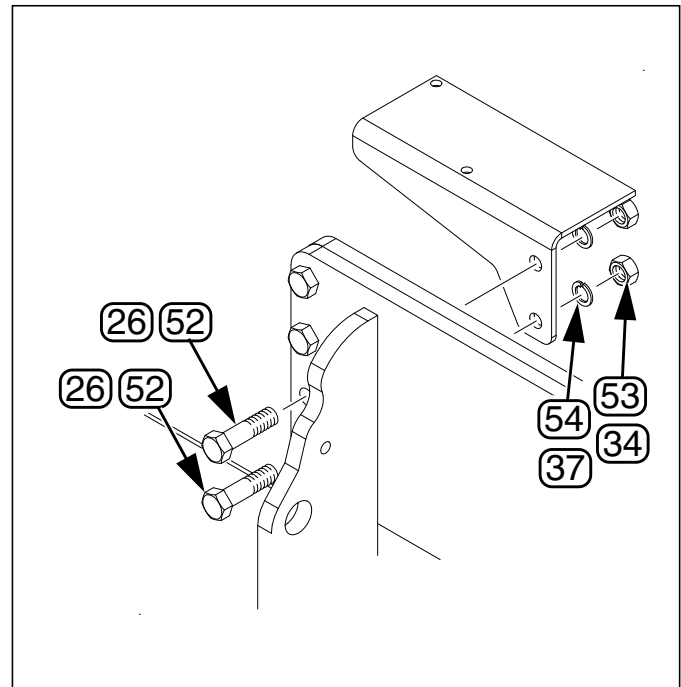


Figure 4  
Old Steering Manifold Bracket

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## Attach New Valve Manifold Bracket

Refer to Figure 5

18. Remove the two top bolts, nuts and washers:

⑤① 802-086C HHCS 3/4-10X2 3/4 GR5  
(directly above the two bolts that were taken off in order to remove the old bracket)  
⑤③ 803-027C NUT HEX 3/4-10 PLT  
⑤④ 804-023C WASHER LOCK SPRING 3/4 PLT  
The bolts, nuts and washers are not reused.

19. The new bracket ②③ 411-616D mounts into these top two holes. Be sure the long side of the bracket is toward the rear and center of the machine.

Select one new bracket:

②③ 411-616D BRKT FRWD STR VLV BLK

Select two new (longer) bolts, nuts and washers:

②⑦ 802-383C HHCS 3/4-10X3 GR5

③④ 803-027C NUT HEX 3/4-10 PLT

③⑦ 804-023C WASHER LOCK SPRING 3/4 PLT

Install the new bracket.

Tighten all the 3/4 in. bolts.

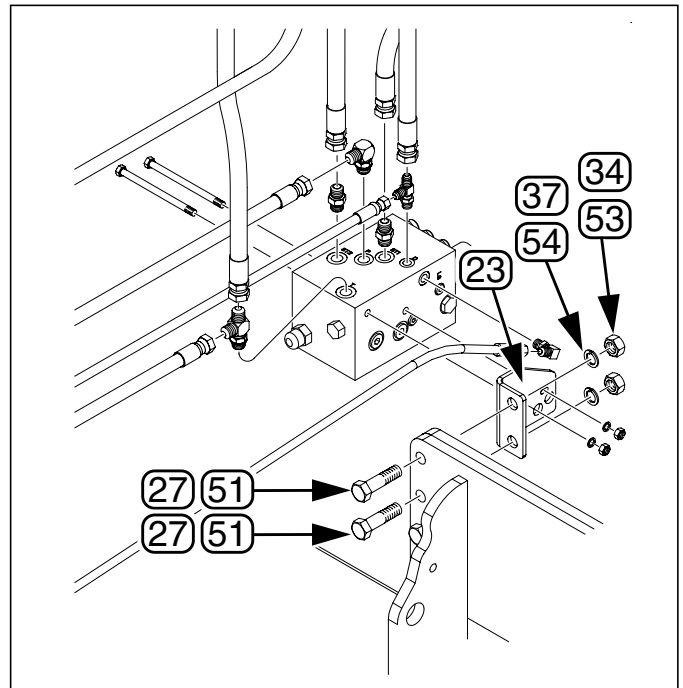


Figure 5  
New Valve Manifold Bracket

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## Install Hydraulic Adaptors

### Refer to Figure 6

Before mounting the new valve manifold (12) 303-113 onto the machine, install the hydraulic adaptors into the valve manifold as follows:

### Adaptors

20. At valve port LS (Load Sense) (LS) install one 811-065C ELBOW (41) position elbow forward and 30 degrees up
21. At valve port D (Case Drain) (D) install one 811-064C TEE (40) mount so branch points forward, away from coils
22. At valve port P (Pressure) (P) install one 811-063C ELBOW (39) mount so 3/4 M JIC points forward, away from coils

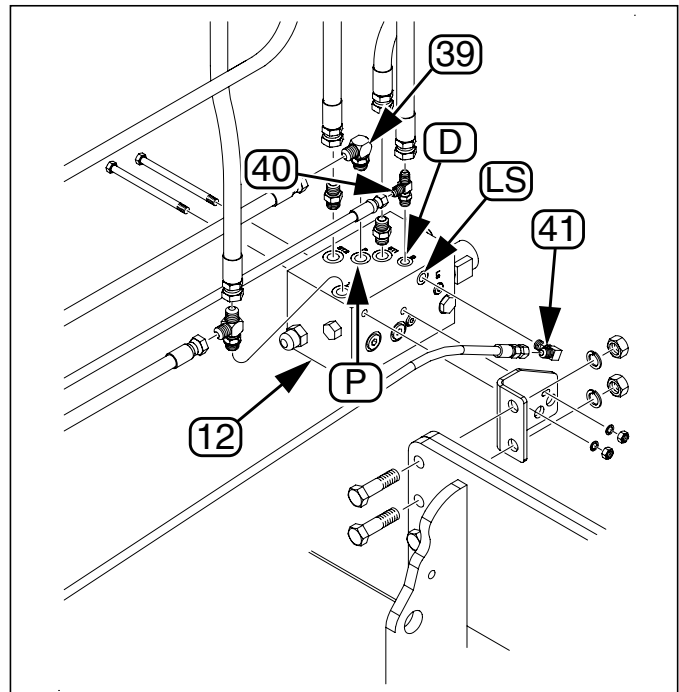


Figure 6  
Hydraulic Adaptors

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### Refer to Figure 7

23. At valve port T (Tank Return) (T) install one 811-080C TEE (43) mount so branch points forward
24. At valve port ST1 (Steering 1) (ST1) install one 811-088C MORB STRAIGHT (44)
25. At valve port ST2 (Steering 2) (ST2) install one 811-088C MORB STRAIGHT (44)

Select two 1/4X6 in. bolts and two nuts and washers:

- (30) 802-893C HHCS 1/4-20X6 GR5 PLT
- (32) 803-006C NUT-HEX 1/4-20 PLT
- (35) 804-006C WASHER LOCK SPRING 1/4 PLT

Mount the valve manifold to the side of the newly installed bracket. The wires and coils on the valve manifold should be positioned to the rear of the machine and all the connection ports except for the Load Sense (LS) which will be toward the top.

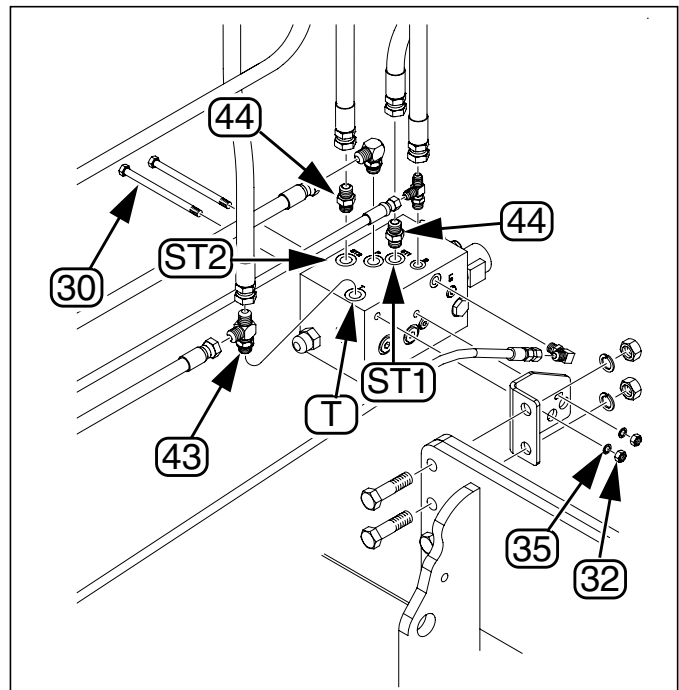


Figure 7  
Hydraulic Adaptors

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## Install New Steering Harness

### Refer to Figure 9

Remove the old steering harness from the planter.

35. Remove the direction sensor and sensor bracket from the left caster wheel.
36. Install the new planter harness starting at the ECU. Be sure to have enough free wire to connect to the ECU and to swing the ECU mount without binding, pulling or pinching any wires. The harness plugs into the steering valve manifold, the implement radar, the implement lift switch, and the steering hydraulic cylinder.
37. Connect the steering valve manifold harness to the implement steering harness ①. The connector is a 6 pin weatherpack fitting.
38. Locate the connection between the radar harness and the DICKEY-john® monitor harness ②. It is a 4 pin round threaded connector and is located just to the left of center of the planter above the 7x7 toolbar and in between the two 1/2 inch vertical stiffener plates welded to the top of the toolbar.
39. Unplug the radar from the monitor harness. Plug the steering harness into the monitor harness then plug the radar into the end of the steering harness ②
40. Locate the connection between the lift switch harness and the DICKEY-john® monitor harness ③. It is also located just to the left of center of the planter above the 7x7 toolbar and in between the two 1/2

inch vertical stiffener plates welded to the top of the toolbar. This connection is made up of three single weatherpack connectors. In the original configuration only two are used and the third is free. Unplug the connectors and plug the steering harness into the monitor harness ③. Plug the steering harness into the monitor main harness as follows:

- Steering Harness Blue wire to Monitor Harness Red
- Steering Harness White wire to Monitor Harness Black
- Steering Harness Other White wire to Switch Harness Black
- Steering Harness Black wire to Switch Harness Red
- Steering Harness Red wire to Switch Harness Green

41. At the rear of the planter attach the 4 pin round threaded steering harness connector ④ to the sensor mounted in the end of the steering cylinder.
42. Using wire ties secure the new harness to the planter. All wires should be secured adequately enough so they will not sag or get caught on anything nearby. Be sure to leave adequate loose wires wherever there is movement possible with the planter.

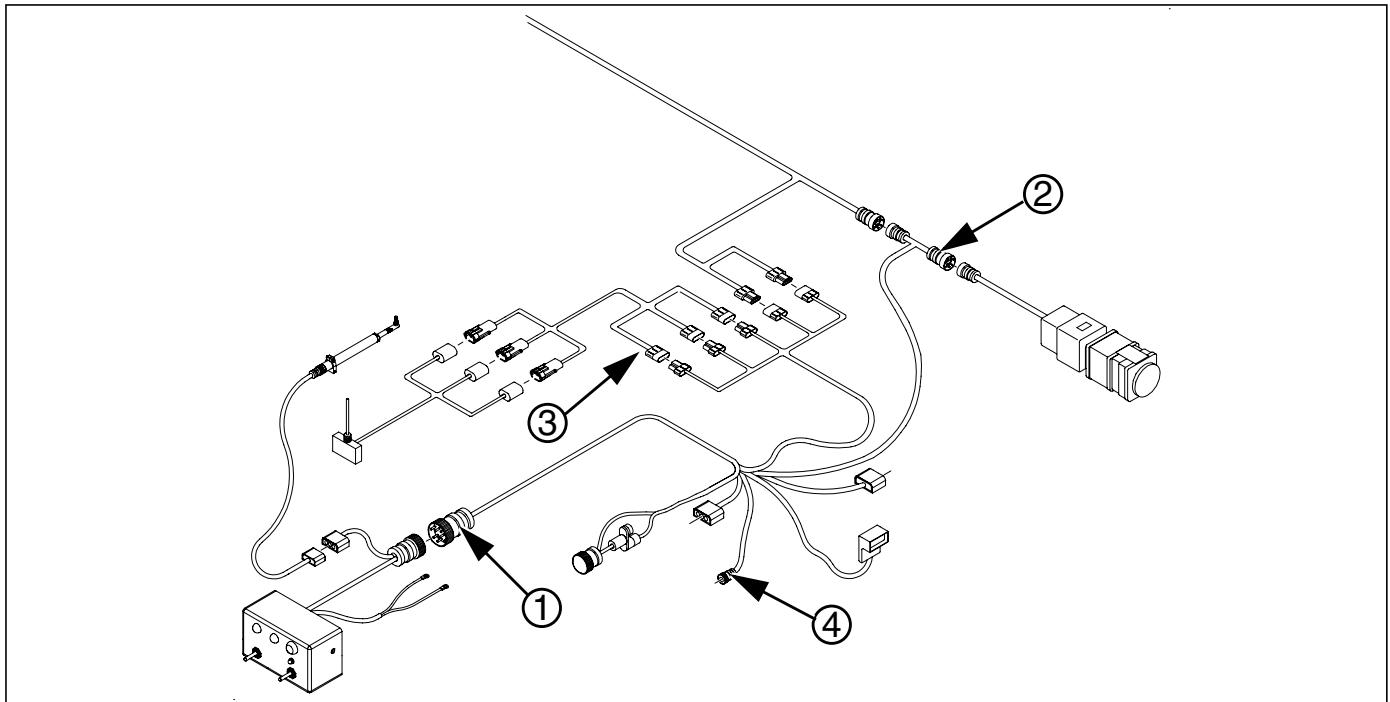


Figure 9  
New Steering Harness

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## Install New Steering Harness and Control Box

**Refer to Figure 10**

The old main tractor steering harness and control box ① are to be removed and replaced with a new harness and control box ②.

The harness that goes to the front wheel sensor on the tractor is to remain unchanged. This harness ③ is to be unplugged from the main tractor steering harness just in front of where the plug that connects to the planter is located. The new harness ④ is to be hooked directly to the tractor battery. Otherwise the harnesses look similar.

The functions on some of the switches on the control box perform differently. Once the new tractor harness is installed be sure the tractor wheel sensor harness is plugged into the tractor steering harness.

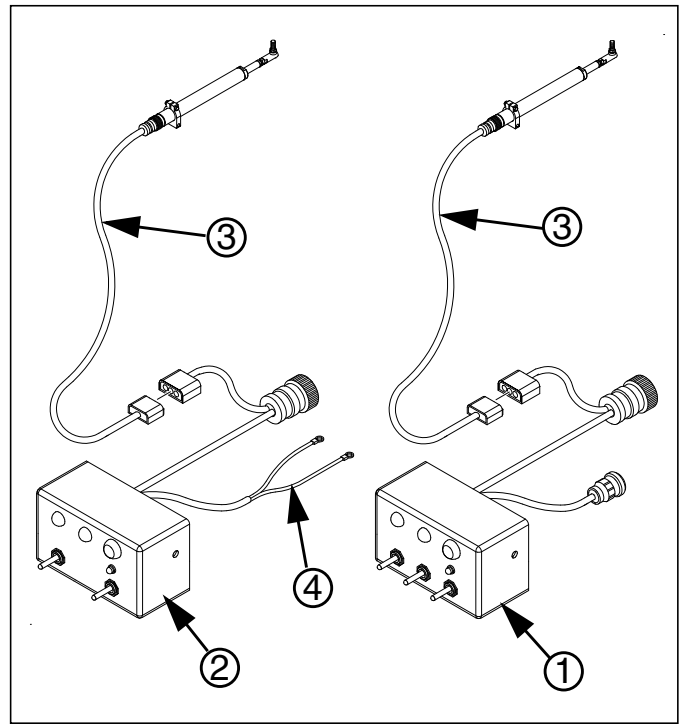


Figure 10  
Switch Boxes

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## Lift Switch Test

### Refer to Figure 11 and Figure 12

It is possible to have the logic of the lift switch reversed. Follow this procedure to check the switch logic.

43. The tractor must be running.
44. The IntelliAg® Monitor must be on.
45. The main screen must be showing on the screen.
46. With the planter in the full up position the direction arrow located in the upper right portion of the IntelliAg® Monitor screen should be pointing up ① and RED in color.
47. Set the planter in the planting position (fully down) and the arrow should point down ② and be GREEN in color.
48. If the arrow is pointing down when the planter is up from step 40 switch the following wires:
  - Steering Harness Other White wire to Switch Harness Green
  - Steering Harness Red wire to Switch Harness Black
49. Recheck the arrow direction on the Intelliag Monitor:

The arrow should be pointing up and RED ① when the planter is in the FULL UP position.

The arrow should be pointing down and GREEN ② when the planter is in the planting position FULLY DOWN.

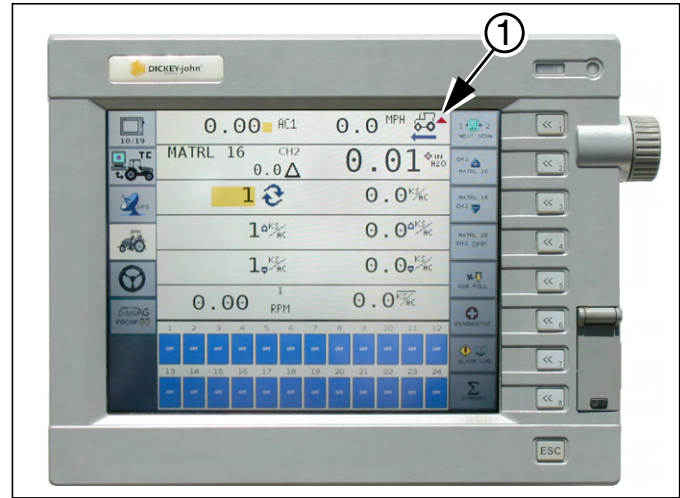


Figure 11  
IntelliAg Monitor Main Screen  
Red Arrow Pointing Up

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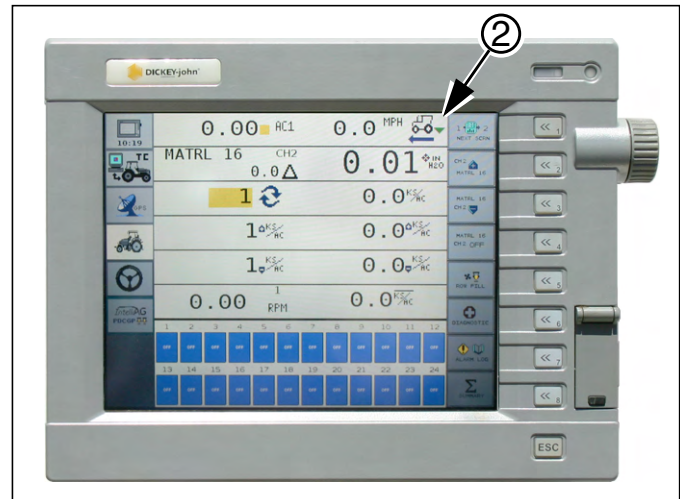


Figure 12  
IntelliAg Monitor Main Screen  
Green Arrow Pointing Down

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## Calibrate Tractor and Planter Wheel

Once the steering control components and reprogrammed ECU are installed the right/center/left tractor and planter wheel calibration is required. The system will not function until the calibration process has been successfully completed. See the operators manual for directions. No EHPR (electrohydraulic proportional regulating) calibration is required.

# Appendix

## Part Lists

### New Parts

The part call-out numbers in this list match all Figures in these installation instructions. Part descriptions match those in your updated Parts Manual.

Quantities are units ("ea").

### Kit Contents

Callout	Quantity	Part Number	Part Description
11	1	401-640M	MANUAL 3PYP STEERING & HITCH UP
12	1	303-113	MANIF F/FWD STEER W/HARN
13	1	315-029	SWTCH BOX W/ HARN F/FWD STEER
14	1	315-032	HARNNESS IMPLEMENT F/FWD STEER
15	2	401-305H	PIN HITCH WELD W/ TAB
16	1	401-628H	HITCH 3PYP OFFSET F/TOP LNK
17	1	401-629H	BRKT TOP LINK WIDE WLDMT
18	1	401-630H	SPACER 3 PT 1 1/2 X 2
19	1	401-631A	HITCH 3PYP WIDE RETROFIT KIT
20	5	411-442D	LOWER 3PT PIN SPACER 1/2 TH
21	2	411-448D	LOWER 3PT PIN SPACER 1/4 TH
22	1	411-607D	PIN 1 1/4 X 6.75 LONG
23	1	411-616D	BRKT FRWD STR VLV BLK
24	1	802-038C	HHCS 1/2-13X2 1/4 GR5
25	1	802-082C	HHCS 1/2-13X1 3/4 GR5
26	14	802-086C	HHCS 3/4-10X2 3/4 GR5
27	2	802-383C	HHCS 3/4-10X3 GR5
28	1	802-424C	HHCS 1/2-13X4 FTHD
29	6	802-469C	HHCS 3/4-10X8 GR5 PLT
30	2	802-893C	HHCS 1/4-20X6 GR5 PLT
31	3	803-020C	NUT HEX 1/2-13 PLT
32	2	803-006C	NUT-HEX 1/4-20 PLT
33	4	803-021C	NUT HEX 5/8-11 PLT
34	24	803-027C	NUT HEX 3/4-10 PLT
35	2	804-006C	WASHER LOCK SPRING 1/4 PLT
36	3	804-015C	WASHER LOCK SPRING 1/2 PLT
37	24	804-023C	WASHER LOCK SPRING 3/4 PLT
38	4	805-117C	PIN ROLL 1/4 X 2 1/2 PLT
39	1	811-063C	EL 3/4MJIC 3/4MORB
40	1	811-064C	TE 9/16MJIC 9/16MJIC 9/16MORB
41	1	811-065C	EL 9/16MJIC 9/16MORB
42	1	811-069C	CP 1 1/16FORB QD
43	1	811-080C	TE 3/4MJIC 3/4MORB 3/4MJIC
44	2	811-088C	AD 3/4MORB 3/4MJIC
45	1	811-430C	AD 3/4MJIC 3/4MJIC
46	1	833-518C	STEERING CNTRL COMP 3PYP UPGRD
47	1	841-002C	AD 1 1/16MORB 3/4FORB
48	1	841-197C	HH1/2R2 060 3/4FJIC 3/4MORB
49	1	841-455C	HH1/4R2 060 9/16FJIC 9/16MORB
50	1	841-457C	CP 9/16 FORB QD 1/4 BODY

## Existing Parts Affected

The following existing parts are involved in the kit installation. The Disposition column indicates whether the part is left in place, moved or not re-used.

The part call-out numbers in the list matches all Figures in the installation instructions. The descriptions match those in your implement Parts manual.

Callout	Part No.	Part Description	Part Disposition
51	802-086C	HHCS 3/4-10X2 3/4 GR5	Removed. Not reused.
52	802-383C	HHCS 3/4-10X3 GR5	Removed. Not reused.
53	803-027C	NUT HEX 3/4-10 PLT	Removed and re-installed.
54	804-023C	WASHER LOCK SPRING 3/4 PLT	Removed and re-installed.

## Abbreviations

3PYP	Planter Model Number
3P, 3-PT	Three Point (hitch)
AD	Adaptor
BRKT	Bracket
CP	Coupling
ECU	Electronic Control Unit
EHPR	Electrohydraulic Proportional Regulating
EL	Elbow
F	Female
F/	For
FTHD	Full Thread
FWD	Forward
GR5	Grade 5

HH	Hydraulic Hose
HHCS	Hex Head Cap Screw (Bolt)
JIC	Joint Industry Conference (Fitting)
M	Male
ORB	O-Ring Boss
PLT	Plated
STR	Steering
TH	Thick
VLV	Valve
QD	Quick Disconnect
W/	With
X	by

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