Manual Override Upgrade

*Ag*GPS® Autopilot™ Automated Steering System

Case IH
- **MX 200 Magnum**
- **MX 210 Magnum**
- **MX 215 Magnum**
- **MX 220 Magnum**
- **MX 230 Magnum**
- **MX 240 Magnum**
- **MX 245 Magnum**
- **MX 255 Magnum**
- **MX 270 Magnum**
- **MX 275 Magnum**
- **MX 285 Magnum**
- **MX 305 Magnum**

New Holland
- **TG 210**
- **TG 215**
- **TG 230**
- **TG 245**
- **TG 255**
- **TG 275**
- **TG 285**
- **TG 305**

Version 4.00
Revision B
October 2008
Part Number 66743-10-E04

Trimble®

Agriculture Business Area

Trimble Agriculture Division
10355 Westmoor Drive
Suite #100
Westminster, CO 80021
USA
(877) 447-7785 (US toll free)
+1-408-856-6491 (International)
trimble_support@trimble.com
www.trimble.com

Legal Notices

Copyright and Trademarks

© 1999–2008, Trimble Navigation Limited. All rights reserved. Trimble, the Globe & Triangle logo, *Ag*GPS, and EZ-Guide are trademarks of Trimble Navigation Limited, registered in the United States and in other countries. Autopilot, AutoSense, FieldManager, and SiteNet are trademarks of Trimble Navigation Limited.
All other trademarks are the property of their respective owners.

Release Notice

This is the October 2008 release (Revision B) of the *Ag*GPS *Autopilot Automated Steering System Installation Instructions*, part number 66743-10-E04. It applies to version 4.00 of the *Ag*GPS Autopilot automated steering system.

The following limited warranties give you specific legal rights. You may have others, which vary from state/jurisdiction to state/jurisdiction.

Product Limited Warranty

Trimble warrants that this Trimble product and its internal components (the "Product") shall be free from defects in materials and workmanship and will substantially conform to Trimble's applicable published specifications for the Product for a period of one (1) year, starting from the earlier of (i) the date of installation, or (ii) six (6) months from the date of product shipment from Trimble. This warranty applies only to the Product if installed by Trimble or a distributor authorized by Trimble to perform Product installation services.

Software Components and Enhancements

All Product software components (sometimes hereinafter also referred to as "Software") are licensed and not sold. Any Software accompanied by a separate End User License Agreement ("EULA") shall be governed by the terms, conditions, restrictions and limited warranty terms of such EULA notwithstanding the preceding paragraph. During the limited warranty period you will be entitled to receive, at no additional charge, such Fix Updates and Minor Updates to the Product software as Trimble may develop for general release, subject to the procedures for delivery to purchasers of Trimble products generally. If you have purchased the Product from an authorized Trimble distributor rather than from Trimble directly, Trimble may, at its option, forward the software Fix Update or Minor Update to the Trimble distributor for final distribution to you. Major Upgrades, new products, or substantially new software releases, as identified by Trimble are expressly excused from this enhancement process and limited warranty. Receipt of software updates shall not serve to extend the limited warranty period.
For purposes of this warranty the following definitions shall apply: (1) "Fix Update" means an error correction or other update created to fix a previous software version that does not substantially conform to its published specifications; (2) "Minor Update" occurs when enhancements are made to current features in a software program; and (3) "Major Upgrade" occurs when significant new features are added to software, or when a new product containing new features replaces the further development of a current product line. Trimble reserves the right to determine, in its sole discretion, what constitutes a significant new feature and Major Upgrade.

Warranty Remedies

Trimble's sole liability and your exclusive remedy under the warranties set forth above shall be, at Trimble's option, to repair or replace any Product that fails to conform to such warranty ("Nonconforming Product"), and/or issue a cash refund up to the purchase price paid by you for any such Nonconforming Product, excluding costs of installation, upon your return of the Nonconforming Product to Trimble in accordance with Trimble's standard return material authorization process. Such remedy may include reimbursement of the cost of repairs for damage to third-party equipment onto which the Product is installed, if such damage is found to be directly caused by the Product as reasonably determined by Trimble following a root cause analysis.

Warranty Exclusions and Disclaimer

These warranties shall be applied only in the event and to the extent that (i) the Products and Software are properly and correctly installed, configured, interfaced, maintained, stored, and operated in accordance with Trimble's relevant operator's manual and specifications, and; (ii) the Products and Software are not modified or misused. The preceding warranties shall not apply to, and Trimble shall not be responsible for defects or performance problems resulting from (i) the combination or utilization of the Product or Software with hardware or software products, information, data, systems, interfaces or devices not made, supplied or specified by Trimble; (ii) the operation of the Product or Software under any specification other than, or in addition to, Trimble's standard specifications for its products; (iii) the unauthorized, installation, modification, or use of the Product or Software; (iv) damage caused by accident, lightning or other electrical discharge, fresh or salt water immersion or spray; or (v) normal wear and tear on consumable parts (e.g., batteries). Trimble does not warrant or guarantee the results obtained through the use of the Product.

THE WARRANTIES ABOVE STATE TRIMBLE'S ENTIRE LIABILITY, AND YOUR EXCLUSIVE REMEDIES, RELATING TO PERFORMANCE OF THE PRODUCTS AND SOFTWARE. EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, THE PRODUCTS, SOFTWARE, AND ACCOMPANYING DOCUMENTATION AND MATERIALS ARE PROVIDED "AS-IS" AND WITHOUT EXPRESS OR IMPLIED WARRANTY OF ANY KIND BY EITHER TRIMBLE NAVIGATION LIMITED OR ANYONE WHO HAS BEEN INVOLVED IN ITS CREATION, PRODUCTION, INSTALLATION, OR DISTRIBUTION INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NONINFRINGEMENT. THE STATED EXPRESS WARRANTIES ARE IN LIEU OF ALL OBLIGATIONS OR LIABILITIES ON THE PART OF TRIMBLE ARISING OUT OF, OR IN CONNECTION WITH, ANY PRODUCTS OR SOFTWARE. SOME STATES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS ON DURATION OR THE EXCLUSION OF AN IMPLIED WARRANTY, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

TRIMBLE NAVIGATION LIMITED IS NOT RESPONSIBLE FOR THE OPERATION OR FAILURE OF OPERATION OF GPS SATELLITES OR THE AVAILABILITY OF GPS SATELLITE SIGNALS.

Limitation of Liability

TRIMBLE'S ENTIRE LIABILITY UNDER ANY PROVISION HEREIN SHALL BE LIMITED TO THE AMOUNT PAID BY YOU FOR THE PRODUCT OR SOFTWARE LICENSE. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL TRIMBLE OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER UNDER ANY CIRCUMSTANCE OR LEGAL THEORY RELATING IN ANY WAY TO THE PRODUCTS, SOFTWARE AND ACCOMPANYING DOCUMENTATION AND MATERIALS, (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS), REGARDLESS WHETHER TRIMBLE HAS BEEN ADVISED OF THE POSSIBILITY OF ANY SUCH LOSS AND REGARDLESS OF THE COURSE OF DEALING WHICH DEVELOPS OR HAS DEVELOPED BETWEEN YOU AND TRIMBLE. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

NOTE: THE ABOVE LIMITED WARRANTY PROVISIONS MAY NOT APPLY TO PRODUCTS OR SOFTWARE PURCHASED IN THE EUROPEAN UNION. PLEASE CONTACT YOUR TRIMBLE DEALER FOR APPLICABLE WARRANTY INFORMATION.

Notices

Class B Statement – Notice to Users. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

Notice to Our European Union Customers

For product recycling instructions and more information, please go to:

www.trimble.com/ev.shtml

Recycling in Europe: To recycle Trimble WEEE, Call +31 497 53 2430, and ask for the "WEEE Associate"
Or
Mail a request for recycling instructions to:
Trimble Europe BV
c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL



Safety Information

Always follow the instructions that accompany a Warning or Caution. The information they provide is intended to minimize the risk of personal injury and/or damage to property. In particular, observe safety instructions that are presented in the following format:

WARNING – This alert warns of a potential hazard, which, if not avoided, can cause severe injury.

CAUTION – This alert warns of a hazard or unsafe practice which, if not avoided, can cause injury or damage.

Note – *An absence of specific alerts does not mean that there are no safety risks involved.*

Warnings

WARNING – When you are working on the vehicle's hydraulic systems, vehicle attachments that are suspended can drop. If you are working around the vehicle, you could suffer serious injury if an attachment dropped on you. To avoid this risk, lower all vehicle attachments to the ground before you begin work.

WARNING – If someone else attempts to drive the vehicle while you are working on or under it, you can suffer serious or fatal injuries. To avoid this possibility, install a lockout box on the battery terminal to prevent the battery from being reconnected, remove the key from the vehicle's ignition switch, and attach a "Do not operate" tag in the cab.

WARNING – Agricultural chemicals can pose serious health risks. If the vehicle has been used to apply agricultural chemicals, steam clean the vehicle to remove any chemical residue from the areas of the vehicle where you will be working.

Cautions



CAUTION – When the vehicle has been running, parts of the vehicle, including the engine and exhaust, can become extremely hot and can cause serious burns. To avoid burns, allow hot machine parts to cool before you begin working on them.



CAUTION – The system installation may bring you into contact with chemical substances, such as oil, which can cause poisoning. Ensure that you wash your hands thoroughly after you finish working on the system.



CAUTION – Battery posts, terminals, and related accessories contain lead and lead compounds, which can cause serious illness. To avoid ingesting lead, ensure that you wash your hands thoroughly after touching the battery.



CAUTION – Vehicle cabs can be quite high in the air. To avoid potentially serious injury through falling from this height, always use the steps and handrails, and face the vehicle, when you enter or exit it.



CAUTION – Always wear protective equipment appropriate to the job conditions and the nature of the vehicle. This includes wearing protective glasses when you use pressurized air or water, and correct protective welder's clothing when welding. Avoid wearing loose clothing or jewelry that can catch on machine parts or tools.



CAUTION – Parts of the vehicle may be under pressure. To avoid injury from pressurized parts, relieve all pressure in oil, air, and water systems before you disconnect any lines, fittings, or related items. To avoid being sprayed by pressurized liquids, hold a rag over fill caps, breathers, or hose connections when you remove them. Do not use your bare hands to check for hydraulic leaks. Use a board or cardboard instead.

Contents

Safety Information 3

Warnings 3

Cautions. 4

1 Manual Override Upgrade Kit 7

Technical assistance 8

Required components 8

Preparing the vehicle for installation. 8

Install the hydraulic control valve in the vehicle. 9

Manual Override Upgrade Kit

- Technical assistance
- Preparing the vehicle for installation
- Install the hydraulic control valve in the vehicle

This document describes how to install the Manual Override Upgrade Kit on the Trimble® *Ag*GPS® Autopilot™ automated steering system.

Note – *This kit is for use with Case IH MX Magnum and New Holland TG tractors that currently have the Trimble-branded "aftermarket" Autopilot system installed. It is specifically targeted for machines that have issues with manual override triggering when remote valves are used – this kit replaces the pressure sensor with a flow switch. You must install a new Autopilot Profile that takes advantage of this configuration.* ***This kit will not work on any factory equipped Accuguide and IntelliSteer or Accuguide and IntelliSteer Ready Hybrid machines.***

This document must be read in conjunction with the following documents:

- *AgGPS Autopilot Automated Steering System Installation Instructions for the Case IH MX series*, Version 3.00, Revision C, May 2007 (P/N 54035-25-E03)
- *AgGPS Autopilot Automated Steering System Installation Instructions for the New Holland TG series*, Version 3.00, Revision B, March 2006 (P/N 54035-27-ENG)

Even if you have used other Global Positioning System (GPS) products before, Trimble recommends that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GPS, visit the Trimble website (www.trimble.com) for an interactive look at Trimble and GPS.

Technical assistance

If you have a problem and cannot find the information you need in the product documentation, contact Trimble technical support:

1. Go to the Trimble website (www.trimble.com).
2. Click the *Support & Training* link at the top of the screen, select *Support* and then select *Support A–Z list of products*.
3. Scroll to the bottom of the list.
4. Click the *submit an inquiry* link. A form appears.
5. Complete the form and then click **Send**.

Required components

Components required	Special tools
Platform kit: P/N 66743-10	STC fitting removal tool
Hydraulic hose kit: P/N 66744 (included in platform kit)	Allen wrench set (metric and SAE)
Flow switch: P/N 49955 (included in platform kit)	

Preparing the vehicle for installation

Step 1

Park the vehicle on a hard, level surface. Block the front and rear wheels.

Align the steering straight ahead. On an articulated vehicle, install the articulation locks.

Step 2

Remove all dirt and debris from the areas of the vehicle where the *Ag*GPS Autopilot system will be installed.

Step 3

Open all kit boxes and check the contents of the box against the packing list/s. Lay all of the parts out on a clean workbench.

Note – *The left and right sides of the vehicle are referenced while standing behind the unit, facing the normal direction of travel.*

Install the hydraulic control valve in the vehicle

Step 1

Do one of the following:

- If the machine is equipped with snap-to-connect fittings, assemble the supplied fittings and hose onto the flow switch as shown. Make sure that the arrow on the flow switch points in the right direction.

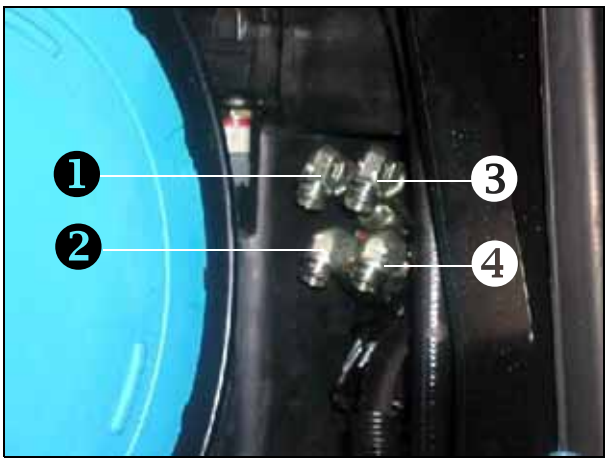


- If the machine is equipped with O-ring face seal fittings, assemble the supplied fittings onto the flow switch as shown. Make sure that the arrow on the flow switch points in the correct direction.



Step 2

Label all of the connections on the steering hand pump.



❶ Tank port	❸ Left port
❷ Pressure port	❹ Right port

Step 3

Locate the lower left pressure port on the hand pump: the Flow switch will be installed into this line.

Remove the pressure hose: If the machine is equipped with snap-to-connect fittings (as shown here) use the “Snap to Connect” tool.

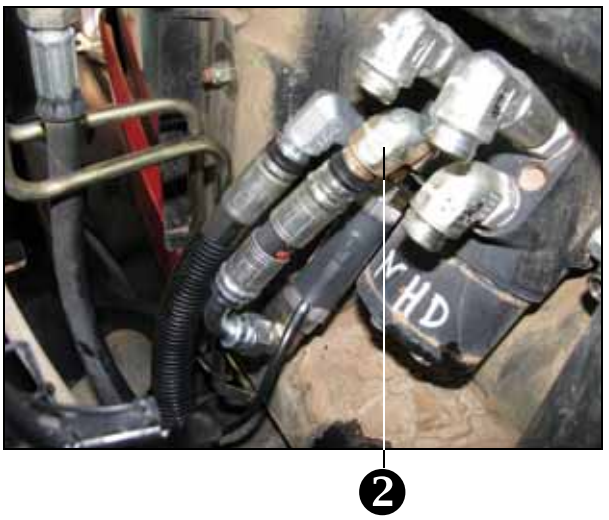
Note – *You may need to remove the surrounding hoses to gain access to the pressure hose.*



Step 4

Install the provided flow switch into the pressure port (❷): pull firmly on the hose to ensure that the connection is made.

Note – *If the tractor is equipped with a tee fitting to supply pressure to the Autopilot valve, you* ***must*** *re-attach the tee after the flow switch. Mount the flow switch directly to the steering motor as shown and then mount the tee running to the Autopilot system.*



Step 5

Reconnect the tractor hose to the snap to connect connector on the end of the flow switch assembly, or if the tractor is equipped with the Autopilot system, to the tee fitting running to the Autopilot valve.

Step 6

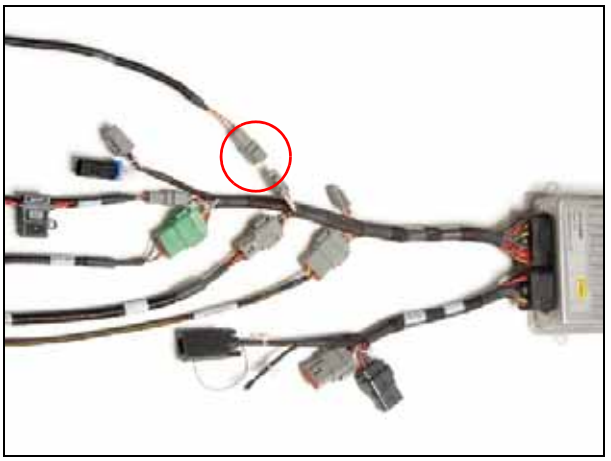
If they were removed for access, reconnect the tank, left and right ports to the steering hand pump.

Step 7

a. Plug the supplied manual override cable (P/N 66034) into the flow switch.

b. Remove the old cable from P7 on the NavII controller.

c. Connect the other end of the supplied manual override cable (P/N 66034) to the P7 connector on the NavII controller.



Step 8

Install the new profile and then re-calibrate the tractor.