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Instructions for Converting the LV/MB Joystick from “A2” to “A3”

TOOL LIST		
1 – 3/8” WRENCH	1 – 7/16” WRENCH	1 – 9/16” WRENCH
1 – 5/32” ALLEN WRENCH	1 – 3/16” ALLEN WRENCH	1 – ¼” DRIVE PUNCH, OPTIONAL

Use along with DWG #: LV2-HA2 & LV2-HA3

Disassembly of the “A2” configuration:

1. With a 9/16” wrench, remove the handle assembly, i.e. the control knob (LV40), the joystick handle (LV21), and hex nut (LV11)
2. Set the handle assembly aside.
3. Slip rubber dust boot (LV27) over the retaining plate (LV60), then the entire joystick mechanism
4. Set the dust boot aside.
5. With a 3/16” Allen wrench, remove the large button head cap screw (S048)
6. Set large button head cap screw aside
7. With a 5/32” Allen wrench, remove the two (2) small button head cap screws (P1985)
8. Set the small button head caps screws aside
9. Remove the rod end retaining plate (LV66) and the joystick handle link (LV69)
10. Set the rod end retaining plate and joystick handle link aside
11. Remove the three (3) hex nuts (LV14) from their rods ends (P2108 and LV67 & LV68)
12. Set the hex nuts aside.
13. Remove the spool pivot (LV67) and the spherical rod end (LV68) from the first spool.
14. Set the spool pivot and spherical rod end aside
15. Remove studded rod end (P2108) from the retaining plate (LV60)
16. Set the studded rod end aside
17. Rotate the second spool and last studded rod end (P2108) 90° CCW (counter-clockwise)
18. Remove studded rod end (P2108) from spool
 - a. If the spool bushing (LV30) comes loose with the studded rod end, continue to Step #19
 - b. If the spool bushing (LV30) does not come loose with the studded rod end:
 - i. Tap it out, gently using a drive punch
 - ii. Reinstall in studded rod end (P2108)
 - iii. Continue to Step #19
19. Set the final studded rod end and spool pivot aside
20. With a 5/32” Allen wrench, remove the two (2) button head cap screws (P1984) holding the retaining plate (LV60) to the valve
21. Set the button head cap screws aside
22. Pull retaining plate (LV60) off of valve.
23. Set the retaining plate aside.



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Joystick assembly and valve are now ready to be reconfigured for the “A3” joystick configuration.

Reassembly into the “A3” configuration:

1. Align the retaining plate (LV60) so the anchor point is below the 1st spool
2. Install the retaining plate (LV60) flush against the valve with the anchor point facing away from the valve
3. With a 5/32” Allen wrench, install the two (2) button head cap screws (P1984) that secure the retaining plate (LV60) to the valve.
4. Install the first studded rod end (P2108) into the retaining plate (LV60) with the socket end facing the second spool
 - a. This is the right side when viewing the valve with the joystick facing towards you
5. With a 7/16” wrench, secure the studded rod end (P2108) with one (1) hex nut (LV14) to the retaining plate (LV60)
6. Install the second studded rod end (P2108) and the spool bushing (LV30) in the spool directly above the retaining plate anchor point
7. Rotate the installed studded rod end (P2108) and the spool 90° CW (clockwise)
 - a. The threaded ends of both the studded rod ends (P2108) should be pointing in the same direction
8. With a 7/16” wrench, secure the studded rod end (P2108) with one (1) hex nut (LV14) to the first spool
9. Rotate the 2nd spool until it is perpendicular to the 1st spool
 - a. If you are converting from “A2” to “A3”, this was done during disassembly
10. Install the threaded end of the spool pivot (LV67) thru the bottom of the 2nd spool
11. With a 3/8” wrench, secure the spool pivot (LV67) to the 2nd spool with a hex nut (LV14)
 - a. When installed the threaded end of the spool pivot and hex nut will point upward in the same direction as the fluid work ports
12. Align the small grooves in the rod end retaining plate (LV66) with the flats in the tapped end of the studded rod ends (P2108) already installed
13. With a 5/32” Allen wrench, secure the rod end retaining plate (LV66) to the studded rod ends using the two (2) small button head cap screws (P1985)
 - a. When installed, the flat on the rod end retaining plate will face to the right, when looking at the valve with the joystick facing you.
 - b. If you just disassembled the “A2” configuration, the joystick handle link (LV69) will still be attached to the rod end retaining plate (LV60)
14. Install the socket end of the spherical rod end (LV68) into the spool pivot (LV67)
15. With a 3/16” Allen wrench, secure the spherical rod end (LV68) to the rod end retaining plate (LV66) using the large button head cap screw (S048)
16. With a 9/16” wrench, install the joystick handle link (LV69)
 - a. If you just disassembled the “A2” configuration, skip this step and continue to Step #17
17. Slide the rubber joystick boot (LV27) over the joystick mechanism with the square end of the boot facing the valve until the retaining plate (LV60) rests in the first groove of the rubber joystick boot and the joystick handle link (LV69) is thru the round hole of the rubber dust boot.



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- 18. Install the handle assembly (LV11, LV21 & LV40) into the joystick handle link (LV69)
- 19. Secure the handle assembly (LV11, LV21 & LV40) by tightening the hex nut (LV11)

The joystick is now converted to the “A3” configuration.

Loader valve conversion information:

When converting your loader valve you must consider your current spool/joystick configuration and the spool/joystick configuration you are switching to. The regen ‘R’ spool bore and tandem ‘T’ spool bore are machined differently. Our tandem ‘T’ spool will not function properly in the regen ‘R’ spool bore.

The table below shows which configurations are obtainable with each loader valve part number. Spool action refers to the components attached to the end of the spool. The attachments used can be fourth position spring centering ‘FS’, fourth position float ‘K’ and/or spring to center ‘S’.

P.N. LV22 – Retaining plate is for ‘A’ & ‘A1’ joystick movement scheme

P.N. LV60 – Retaining plate is for ‘A2’ & ‘A3’ joystick movement scheme

P.N. of Current Configuration	P.N. of Desired Configuration	P2243 Req. for Conversion	LV60 Req. for Conversion	Switch Spool Action
LV22RFSTKAB	LV22RFSTKA2B	No	Yes	No
LV22TSTKAB	LV22TKTSA1B	Yes	No	Yes
LV22TSTKAB	LV22TSTKA2B	No	Yes	No
LV22TSTKAB	LV22TKTSA3B	No	Yes	Yes
LV22TKRFSA1B	LV22TKRFSA3B	No	Yes	No
LV22TKTSA1B	LV22TSTKAB	Yes	No	Yes
LV22TKTSA1B	LV22TSTKA2B	No	Yes	Yes
LV22TKTSA1B	LV22TKTSA3B	No	Yes	No
LV22RFSTKA2B	LV22RFSTKAB	Yes	No	No
LV22TSTKA2B	LV22TSTKAB	Yes	No	No
LV22TSTKA2B	LV22TKTSA1B	Yes	No	Yes
LV22TSTKA2B	LV22TKTSA3B	No	Yes	Yes
LV22TKRFSA3B	LV22TKRFSA1B	Yes	No	No
LV22TKTSA3B	LV22TSTKAB	Yes	No	Yes
LV22TKTSA3B	LV22TKTSA1B	Yes	No	No
LV22TKTSA3B	LV22TSTKA2B	No	Yes	Yes