

Keep With Operator's Manual
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## THIRD FUNCTION SOLENOID SELECTOR VALVE KIT 32LA, 33LA & 52LA Loaders

Third function valve kit can be installed using tools ordinarily available. References to right or left, forward or rearward, refer to position of operator sitting in tractor seat facing front of tractor.



**WARNING:** *Escaping hydraulic fluid under pressure can penetrate skin causing serious injury.*

- *DO NOT use your hands to check for leaks. Use a piece of cardboard or paper to search for leaks.*
- *Stop engine and relieve pressure before connecting or disconnecting lines.*
- *Tighten all connections before starting engine or pressurizing lines.*

*If any fluid is injected into skin, obtain medical attention immediately or gangrene may result.*

### INSTALLING THIRD FUNCTION VALVE KIT (Figure 2)

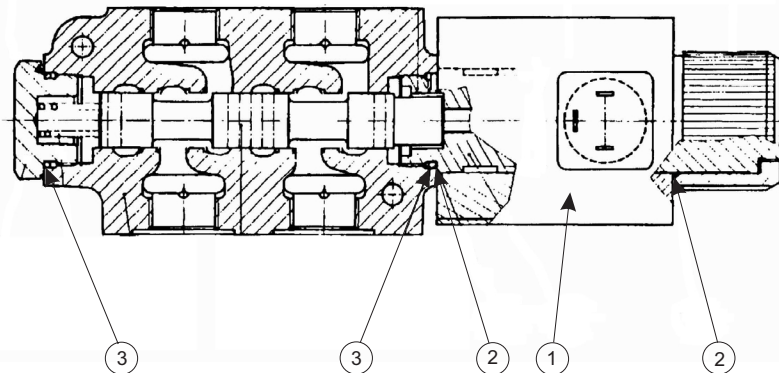
1. Fasten diverter valve (1) to base plate (2) using 5/16 x 2.75 cap screws (5) and 5/16 lock nuts (6). Position diverter valve (1) on base plate (2) so there are no ports to rear and solenoid is to the right.
2. Install adapter fitting 7/8 o-ring x 3/4 JIC (19) into bottom ports of diverter valve (1).
3. Connect 1/2 x 25 hose (33) with 90° fitting to right bottom port of diverter valve. Route hoses to the right. Connect 1/2 x 26 hose (34), to left bottom port of valve. Route 1/2 x 26 hose (34) to rear of 1/2 x 25 hose (33) at diverter valve under base plate. Set this assembly aside.
4. Disconnect bucket cylinder hoses from steel oil lines on right side of loader at boom crossmember. Install 9/16 JIC run tees (26) onto steel oil lines ports where hoses were connected. Point tee on first (front) oil line to left and point tee on second oil line toward the front (See figure 2 inset). Reinstall bucket cylinder hoses to tees making sure hose from bucket cylinder base end is connected to front oil line and hose from bucket cylinder rod end is connected to second oil line (reference bucket cylinder plumbing on left side of loader).
5. Install 90° adapter fitting (21) to second oil line tee and point elbow toward the left.
6. Place valve assembly with hoses to the right on top left side of loader crossmember. Connect hose (33) from lower right valve port to 90° fitting (21) installed in step 5. Connect hose (34) to front oil line tee (26) installed in step 4. Locate valve assembly along crossmember so these hoses route well.
7. Locate base plate mounting holes in crossmember by placing 5/16 x 3/4 cap screws (4) into upper two holes in back of base plate and resting these cap screws on top of back upper edge of crossmember. Place a 3/4" spacer between first (front) steel oil line and bottom surface of base plate. Check for proper clearance between bottom of base plate and top of steel oil lines near relief valve. Space base plate higher in front if necessary. Mark and drill four 9/32" diameter holes into crossmember at location of four lower holes in base plate. Fasten base plate to loader crossmember using four 5/16 x 1.00 self tapping screws (8). Remove spacer and locating cap screws from base plate.
8. Install 7/8 o-ring x 3/4 o-ring fitting (20) into female coupler (23). Install male coupler (22) and female quick coupler (23) into front ports of diverter valve (1). **NOTE:** *To determine which valve port receives which coupler, observe attachment to be mounted on loader. If attachment is a clamping device (i.e. grapple fork, bale clamp, 4 in 1 bucket, etc.) connect attachment hose that is pressurized during clamping to front right port on diverter valve. If this attachment hose has a male coupler, install female coupler in front right port of diverter valve (1) or visa versa.*
9. Install two 1/2 x 114 hoses (32) to top of diverter valve. Route hoses along steel oil lines and secure to oil lines with heavy tie straps (9). Mark for identification the two hoses from loader control valve connected to top two steel oil lines on loader. Disconnect these hoses at top two oil lines and cap steel oil lines with 3/4 JIC caps (18). Connect hose that was installed onto top steel oil line to hose (32) from top left port on diverter valve (1). Connect hose that was connected to second steel oil line to hose (32) from top right port on diverter valve (1).
10. Slip small grommet (16) onto end of tractor harness (11). Install electrical plug (15) onto wiring harness (11), **NOTE:** *Black wire must be connected to center post (+ terminal ) of plug. Clamp grommet (16) between plug halves during assembly of plug.*

*(Continued on page 4)*

**PARTS LIST - THIRD FUNCTION SOLENOID SELECTOR VALVE KIT (Figure 2)**

Item	SMC Part No.	NH Part No.	Description	Qty.
1	48391	SML48391	VALVE, Diverter	1
2	48428	SML48428	BASE PLATE	1
3	48429	SML48429	COVER, Valve	1
4	G180077	87872	SCREW, Cap, 5/16-18 x 3/4	4
5	G180112	87626	SCREW, Cap, 5/16-18 x 2-3/4	4
6	G9413447	9635082	NUT, Lock, 5/16-18	6
7	8137-1	SML81371	STRAP, Adjustable, Plastic, 3/16"	7
8	40253-5	SML402535	SCREW, Self Tapping, 5/16 x 1"	4
9	8137-6	SML81376	STRAP, Plastic Adjustable	4
10	41802	SML41802	CONNECTOR, Two Pole	1
11	48403	SML41803	WIRING HARNESS, 8' Long	1
12	48404	SML48404	WIRING HARNESS, 15' Long	1
13	48420	SML48420	TAB HOUSING, Plastic	2
14	48416	SML48416	SWITCH ASSEMBLY	1
15	42142	SML42142	PLUG, Electrical	1
16	6079-8	SML60798	GROMMET, Rubber	1
17	6067-1	SML60671	NUT, Speed	2
18	G9403372	262159	FITTING, Cap, 3/4-16 JIC	2
19	32844-7	SML328447	FITTING, Adapter, 7/8 O-Ring x 3/4-16 JIC	2
20	48415-1	SML484151	FITTING, Nipple, 7/8 O-Ring x 3/4 O-Ring	1
21	34128-3	SML341283	FITTING, Elbow, 90°, 9/16 JIC x 9/16 JIC	1
22	48482-1	SML484821	FITTING, Coupler, Male	1
23	45291-2	SML452912	FITTING, Coupler, Female	1
24	4838-16	SML483816	DUST CAP, 1" I.D.	1
25	4838-15	SML483815	DUST CAP, 1-1/2" I.D.	1
26	37850-3	SML378503	TEE, Swivel Nut Run 3/4-16 JIC	2
27	G120214	80681	WASHER, Lock, 5/16	2
28	51819	SML51819	KNOB	1
29	48412-2	SML484122	SHRINK TUBE, 1.50" I.D.	1
30	48412-1	SML484121	SHRINK TUBE, .75" I.D.	1
31	48411	SML48411	CONNECTION TAB	2
32	48413-1	SML484131	HOSE, 1/2 x 114	2
33	48414-1	SML484141	HOSE, 1/2 x 25	1
34	48414-2	SML484142	HOSE, 1/2 x 26	1

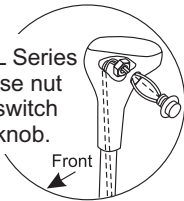
**Figure 1**  
Selector Valve  
Repair Parts

**REPAIR PARTS LIST - SELECTOR VALVE- WALVOIL 48391 (Figure 1)**

Item	Part No.	NH Part No.	Description	Qty.
1	48615	SML48615	SOLENOID	1
2	*	*	O-RING SEAL, 1.176 I.D. x .070	2
3	*	*	O-RING SEAL, .924 I.D. x .103	2
4	48614	SML48614	SEAL KIT	1

\* Included in seal kit

NOTE: TL Series tractors use nut to install switch (14) into knob.



TN Series tractors use two types of joysticks.

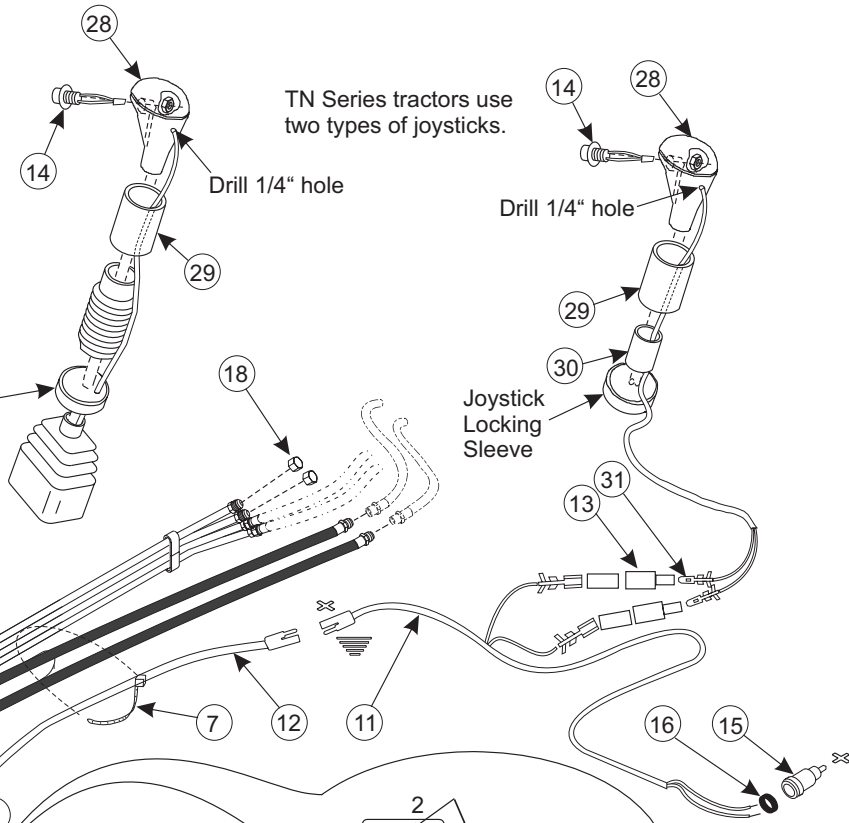
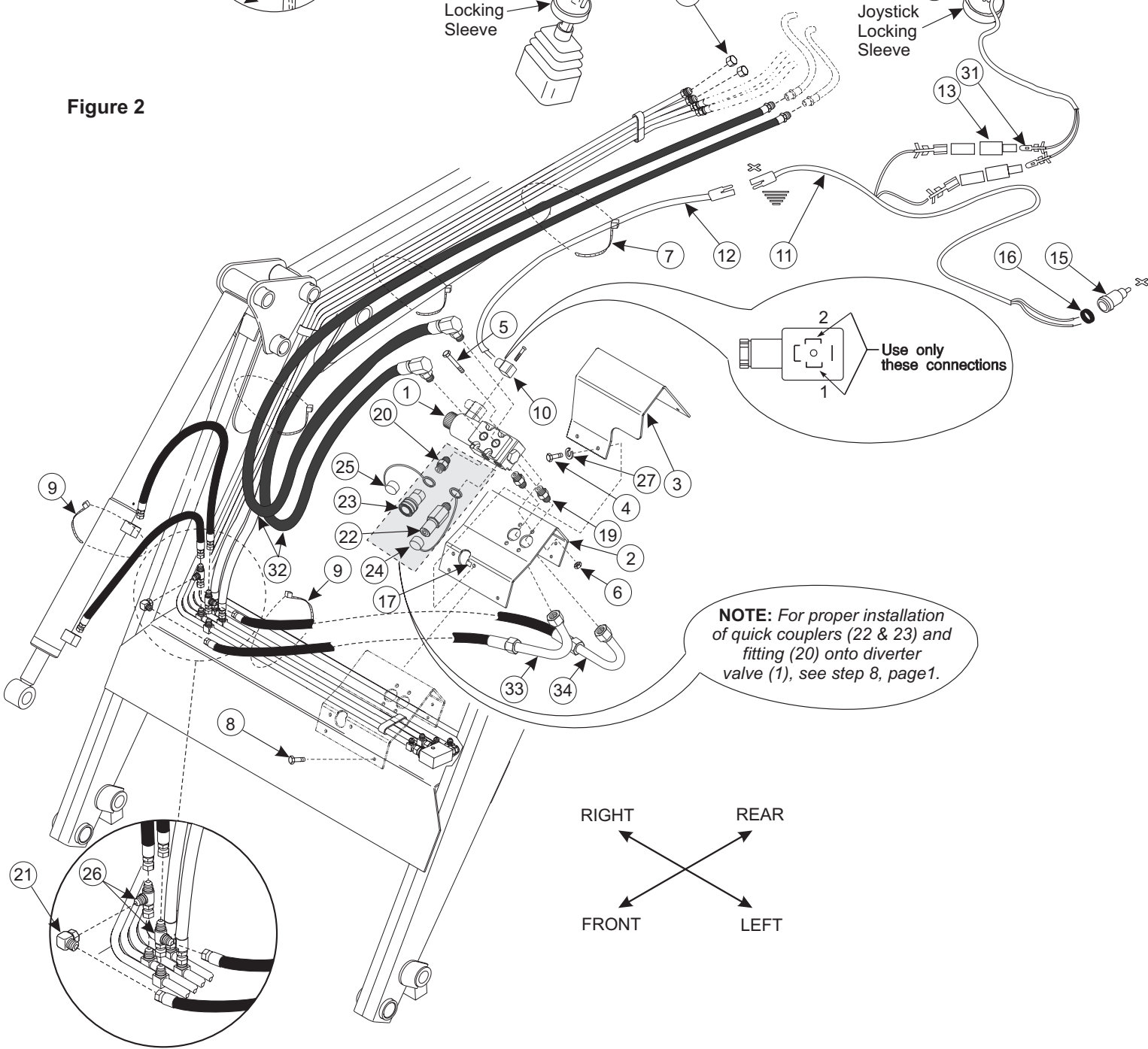
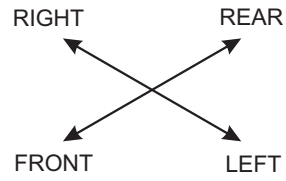
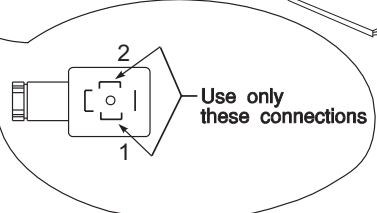


Figure 2



NOTE: For proper installation of quick couplers (22 & 23) and fitting (20) onto diverter valve (1), see step 8, page 1.



## INSTALLING THIRD FUNCTION VALVE KIT (Continued from page 1) (Figure 2)

11. Route wiring harness (11) around back of tractor (through back lower window on cab tractor). Allow enough wire to install plug (15) into 8 amp receptacle at rear right of tractor. Route harness (11) forward under operator platform/cab. Secure harness wire to oil lines and other components with small tie straps (7). Make sure harness cannot become pinched by valve levers, links etc. Harness should end near right front of operator platform or cab.
12. Route wiring harness (12) through tie straps (9) for diverter valve hoses on loader steel oil lines so that end with bare wires is towards diverter valve. Allow enough wire at loader upright for plugging into harness (11) on tractor. Cut off excess length of harness at diverter valve.
13. Disassemble electrical connector (10) by removing center screw and prying out receptacle portion of connector. Also remove compression nut. Slide compression nut onto wiring harness (12) and thread harness into connector housing. Expose about 1" of individual wire and strip about 3/8 of insulation off. Connect black wire to #1 terminal and white wire to #2 terminal of connector receptacle.
14. Install receptacle part of connector into connector housing so terminal 3 is adjacent to wire entrance port in housing. Tightly screw compression nut into connector housing. Reinstall screw and rubber seal onto connector assembly. Plug connector onto diverter valve and tighten screw. **NOTE:** *Adjust solenoid on diverter valve so connector is to the rear as shown in figure 1. Adjust by loosening plastic nut on end of diverter and turn solenoid. Retighten plastic nut.*
15. For TN series tractors, a knob (28) is provided that will hold switch. **NOTE:** *Look at positioning before removing knob from joystick so replacement knob (28) is positioned accordingly.* There are two types of joysticks used on TN series tractors. Follow installation instructions for your joystick type.

### A. Knob On Joystick Has No Setscrew For Removal:

Remove original knob by holding handle firmly with a vice grip and turn knob left or right with a pipe wrench. After turning 1/4 turn, begin pulling up and turning simultaneously until knob is removed and discard. Pry off top half of joystick knob (28). Drill 1/4" diameter hole in knob opposite side of switch hole already in knob. Remove retaining nut from switch (14) and cut off spade terminals on switch wires. More spade terminals (31) have been included in kit. Install switch (14) into new knob (28) by placing switch wires through front hole, place retaining nut on switch wires and continue switch wires through rear hole of knob. Secure switch (14) in place with retaining nut. Slip two short lengths of shrink tubing over handle. Place knob (28) onto joystick handle and secure with knob setscrew. Route switch wire through shrink tube

(29) and slide larger tube over bottom portion of knob, apply heat to shrink tube. Position smaller heat shrink tube (30) over wire and handle just under knob and apply heat to shrink tube. Loop wire so there is clearance with joystick locking sleeve on handle. Install spade terminals (31) onto wires and route wires along joystick assembly, down along control cable and out through cab platform or floor. Install plastic tabs (13) over spade terminals of switch wire and connect to wiring harness (11). Can be connected in any order. Fasten wire to control cables with good quality black electrical tape. Snap top half of joystick knob back onto knob.

### B. Knob On Joystick Has A Setscrew For Removal:

Loosen setscrew, remove and discard knob from joystick handle. Pry off top half of joystick knob (28). Drill 1/4" diameter hole in knob opposite side of switch hole already in knob. Remove retaining nut from switch (14) and cut off spade terminals on switch wires. More spade terminals (31) have been included in kit. Install switch (14) into new knob (28) by placing switch wires through front hole, place retaining nut on switch wires and continue switch wires through rear hole of knob. Secure switch (14) in place with retaining nut. Slip one short length of shrink tubing (29) over top part of handle. Place knob (28) onto joystick handle and secure with knob setscrew. Route switch wire through shrink tube (29) and slide tube over bottom portion of knob, apply heat to shrink tube. Route switch wire through hole provided in joystick locking sleeve on handle, down inside of lower boot on joystick handle, along control cable and out through cab platform or floor. Install new spade terminals (31) onto wires. Install plastic tabs (13) over spade terminals (31) of switch wire and connect to wiring harness (11). Can be connected in any order. Fasten wire to control cables with good quality black electrical tape. Snap top half of joystick knob back onto knob.

16. On TL series tractors, pry off top half of joystick knob and remove switch in knob. It will be necessary to remove remainder of knob from handle (use 3/32 Allen wrench) and lift up joystick rubber boot to remove switch wire and to install new switch. Note how switch wire is routed through joystick assembly. On some early TL tractors it may be necessary to drill out hole through center of handle to 5/16" dia. to accept new switch wire. Install switch (14) into knob and route wire same as original switch through joystick. Continue to route switch wire along one of joystick control cables down through operator platform or cab floor. After switch wire spade terminals are below platform or cab floor, install plastic tabs (13) over spade terminals and connect to wiring harness (11). Switch wires can be connected to wiring harness in any order. Secure switch wire to control cable with good quality black electrical tape. Reinstall knob onto handle and resecure boot onto joystick assembly. Snap top of joystick knob back onto knob.

17. Make sure all hydraulic connections are tight.

**INSTALLING THIRD FUNCTION VALVE KIT**

18. Plug wiring harnesses (11 & 12) together and insert plug into 8 amp receptacle at rear of tractor. Start tractor engine and check operation of joystick. Loader bucket should roll back when joystick is moved to left. Also check operation of attachment. Attachment should clamp when joystick is moved to left and button on joystick switch is depressed. If bucket function is backwards but attachment is correct, switch hoses where diverter valve feeder hoses (32) are connected to original hoses removed from loader steel oil lines. This will mean attachment hoses and diverter valve couplers will have to be switched also. If both functions are backwards, only switch hoses where diverter valve feeder hoses (32) are connected to original hoses removed from loader steel oil lines. If just attachment is backwards, switch attachment hoses and couplers at diverter valve.

19. Install speed nuts (17) to front of base plate. Fasten cover (3), to base plate using 5/16 x 3/4 cap screws (4), lock nuts (6) in rear and lock washers (27) in front.

**OPERATING THIRD FUNCTION VALVE**

After installing third function attachment onto loader, connect hoses to third function valve. Optional accessory will function when button on switch is activated and lever is moved as if to activate bucket cylinders.

**NOTE:** To insure proper shifting of selector valve, always bring bucket control lever to neutral before pressing switch button. Selector valve may not shift when 12 GPM or more oil is flowing through it.

# **INSTALLATION INSTRUCTIONS**



