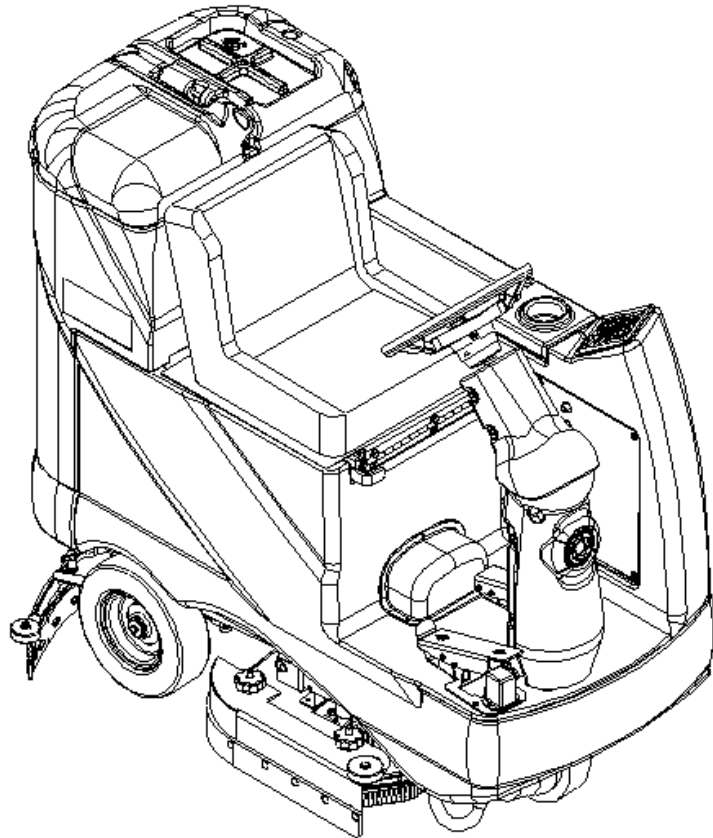


Advenger™ 2400D, 2600D, 2810D,
3210D, 2400C, 2600C, 2810C, 3210C

BR 600S, 650S, 700S, 800S,
600CS, 650CS, 700CS, 800CS



SERVICE MANUAL

Advance MODELS 56314000, 56314001, 56314002, 56314003, 56314004,
56314005, 56314006, 56314007

Nilfisk MODELS 56314010, 56314011, 56314012, 56314013, 56314014,
56314015, 56314016, 56314017



**Nilfisk
Advance**

setting standards

3/03 revised 5/06 Form Number 56043088

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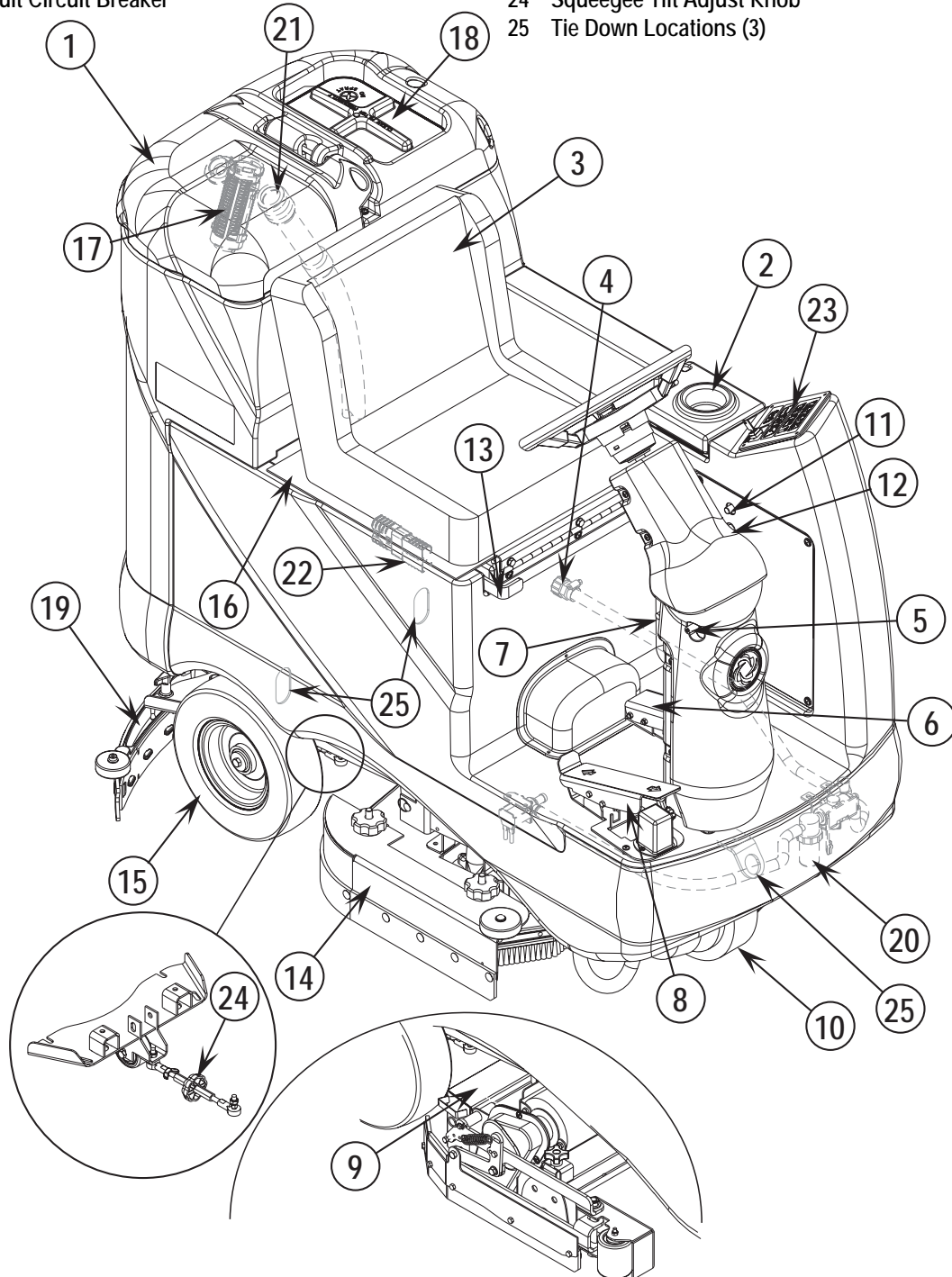


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KNOW YOUR MACHINE

- | | |
|------------------------------------|---|
| 1 Recovery Tank Cover | 13 Emergency Stop Switch / Battery Disconnect Lever |
| 2 Solution Tank Fill Cover | 14 Scrub Deck |
| 3 Operator's Seat | 15 Rear Wheel |
| 4 Solution Tank Drain Hose | 16 Battery Compartment (under seat) |
| 5 Steering Wheel Tilt Adjust Knob | 17 Recovery Tank Shutoff Float |
| 6 Brake Pedal / Parking Brake | 18 Vacuum Motor Filter Housing |
| 7 Solution Flow Control Lever | 19 Squeegee Assembly |
| 8 Drive Pedal, Directional/Speed | 20 Solution Filter |
| 9 Hopper (cylindrical models only) | 21 Recovery Tank Drain Hose |
| 10 Drive and Steer Wheel | 22 Machine Battery Connector |
| 11 Wheel Drive Circuit Breaker | 23 Control Panel |
| 12 Control Circuit Circuit Breaker | 24 Squeegee Tilt Adjust Knob |
| | 25 Tie Down Locations (3) |



WHEEL DRIVE SYSTEM

Low Current A1 Speed Control Pin Key Detail

Pin #	Wire Color	Controller Pin Description & Function
1	-	Open not used
2	-	Open not used.
3	Vio	Throttle Pot R1 pot high input
4	Gra	Throttle Pot R1 pot wiper input
5	Orn	KSI (key switch input): Battery (+) powers up controller logic circuits.
6	Red/Blk	Auxiliary Driver: Battery (-) output to main controller (E1) to turn on (activate) all auto scrub functions.
7	-	Open not used
8	Brn/Wht	Mode Select 1: Drive motor scrub speed input, battery (+) from the (E1) Main Controller.
9	Orn/Blu	Status Fault: Speed controller fault output to main control panel fault indicator light (accessory wand)
10	-	Open not used
11	-	Open not used
12	-	Open not used
13	Yel	Throttle Pot R1 pot low input
14	-	Open not used
15	-	Open not used
16	Blu/Blk	Rev/Alarm Driver output Battery (-) commands turns off solution, raises squeegee & sounds back up alarm
17	-	Open not used
18	Blk	Speed limit pot input (battery ground) connection.

WHEEL DRIVE TROUBLESHOOTING GUIDE

Problem	Possible Cause
<ul style="list-style-type: none"> Wheel drive motor will not run in forward and reverse. 	<ul style="list-style-type: none"> Batteries need charging (low battery voltage, recharge batteries) Wheel Drive Motor Circuit Breaker (F2) tripped (reset 45A circuit breaker) Control Circuit Circuit Breaker (F4) tripped (reset circuit breaker) Parking Brake (6) set (release parking brake) Emergency Stop Switch (13) tripped (reconnect battery to reset) Safety Switch (S2) in seat not closed (check seat switch) Defective Wheel Drive Motor (replace motor) * Defective Throttle Potentiometer (R1) (replace) *
<ul style="list-style-type: none"> Wheel drive in one direction only, loss of either forward or reverse. 	<ul style="list-style-type: none"> Test the Fwd & Rev (R1) wiring outputs (pins 3, 4 & 13) at the speed control for an open. Repair wiring or replace the R1 pot. Controller can't change electrical polarity to wheel motor replace the (A1) speed control.
<ul style="list-style-type: none"> Hourmeter/status display shows an error 03 fault code. 	<ul style="list-style-type: none"> Speed controller has sensed an operation error code fault. (see the <i>Status LED Fault Codes (Table 1)</i> in the Electrical System)

* = See Curtis Speed Control Troubleshooting Section.

SCRUB BRUSH SYSTEM

SCRUB BRUSH MOTOR ASSEMBLY REMOVAL (DISC)

Service Note: The items listed; shaft dust covers, keys, output shafts, shaft mounting hardware and gear-box mounting brackets, must be salvaged (saved) and reused when replacing the complete motor and gear-box assembly. As shown in Figure 3.

- 1 Follow steps 1-7 of the *Scrub Brush Deck Removal (Disc & Cylindrical)* section.
- 2 See Figure 3. Remove the scrub brushes from the Brush Holders (F).
- 3 Remove the (3) Screws (G) from each thermoid disc (flexible coupler) (H) and remove the Brush Holders (F) from both (I) Hubs. Note: Use a 13mm socket wrench to remove Screws (G).
- 4 Remove all (8) hardware items (J & K) that secure the gear case Mount Brackets (L) to the scrub deck plate. Then remove the complete Motor Assembly (M) from the scrub deck plate by pulling it straight up.
- 5 Remove the (8) hex Screws (P) that secure the Mounting Brackets (L) to the gearboxes and separate.
- 6 Remove the (8) (Q) Screws (use a 5mm hex wrench) that hold in place the Dust Covers (R). Next remove the shaft retainer hardware items (S & T). Then tap out the Output Shaft (U) using a brass shaft to help prevent any possible damage.
- 7 Re-assemble in reverse order and test for proper operation. Note: The proper motor installation position is where the two motor wires face the front and left side on the scrub deck platform.

SCRUB BRUSH GEARBOX REMOVAL AND OUTPUT SHAFT REPLACEMENT (DISC)

- 1 Follow steps 1-7 of the *Scrub Brush Deck Removal (Disc & Cylindrical)* section and steps 2-6 of the Scrub Brush Motor Removal (Disc) section.
- 2 See Figure 3. Remove the hardware items (N & O) that secure the Hub (I) to the Output Shaft (U) then pull the hub from the shaft and save the key. Note: Skip this step if shaft does not need to be replaced.
- 3 Remove the (4) socket head cap screws (use a 5mm hex wrench) securing the gearbox that needs replacement.
- 4 Re-assemble in reverse order and test for proper operation. Service Tip: Apply a small amount of grease or "Never Seize" to the gearbox output shafts when reinstalling the drive Hub(s) (I).

Note: The gearbox output shafts rotate the brush holders in the opposite direction of other Nilfisk-Advance automatic scrubbers (see below).

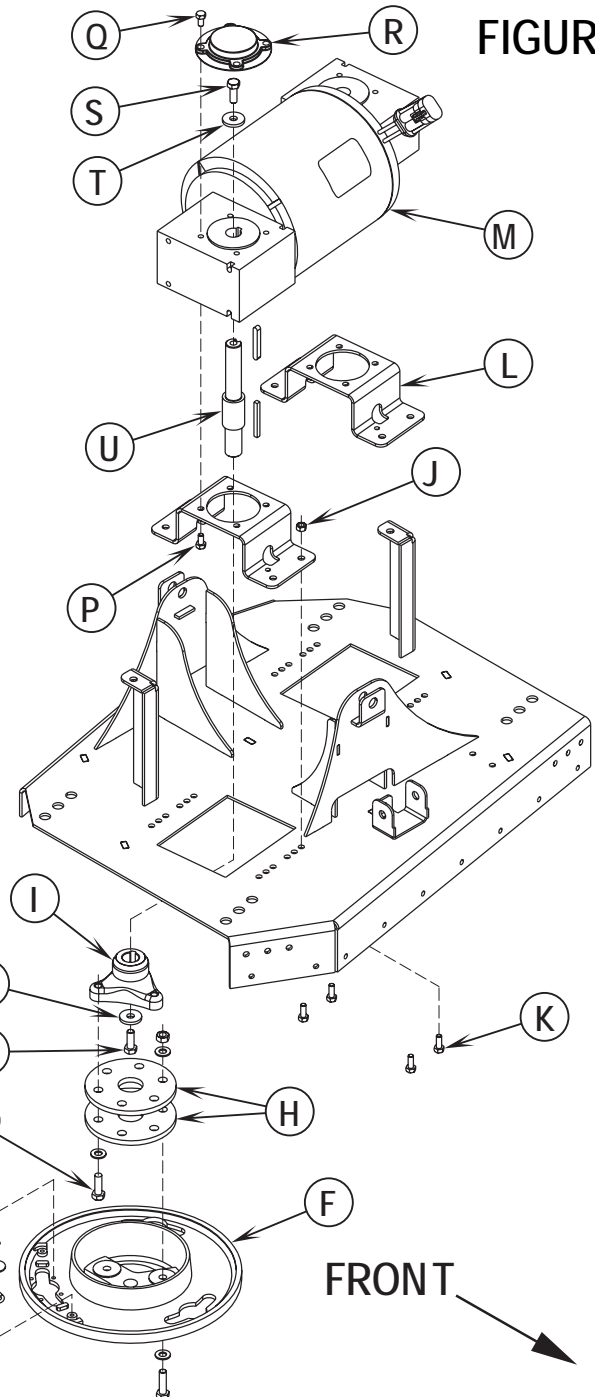
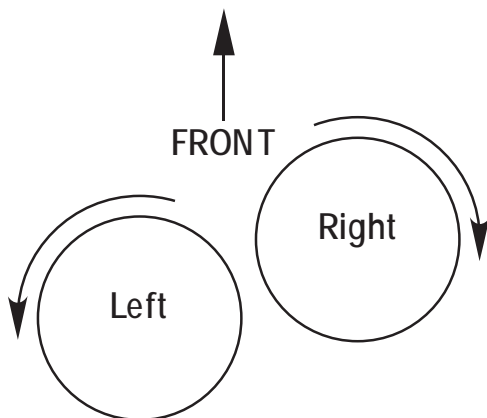


FIGURE 3



RECOVERY SYSTEM

VACUUM MOTOR CIRCUIT OVERVIEW

Auto Mode (See Figure 2)

+ Positive battery circuit inputs and outputs

Inputs:

- A Solenoid circuit control coil (+) voltage input to control board E1 connector J2 pin #'s 6 & 7 (wire colors Brn/Yel). Note: This input voltage supplies all the machine's accessory and solenoid coil circuits (solution, vacuum, brush, headlight, warning beacon etc.).
- A closed S1 key switch supplies (+) input voltage to the E1 terminal J2 pin #10 (wire Brn). This powers up (turns on) the control board's processing logic functions.
- A closed S2 operator safety seat switch enables the starting of the entire automatic machine scrubbing system functions. Its E1 terminal connection is J4 pin #11 (wire Orn).

Outputs:

- A control board E1 battery (+) voltage output from the solenoid accessory terminal connection J2 pin #8 Wht/Brn wire completes the positive voltage to the vacuum solenoid coil.

- Negative battery circuit inputs and outputs

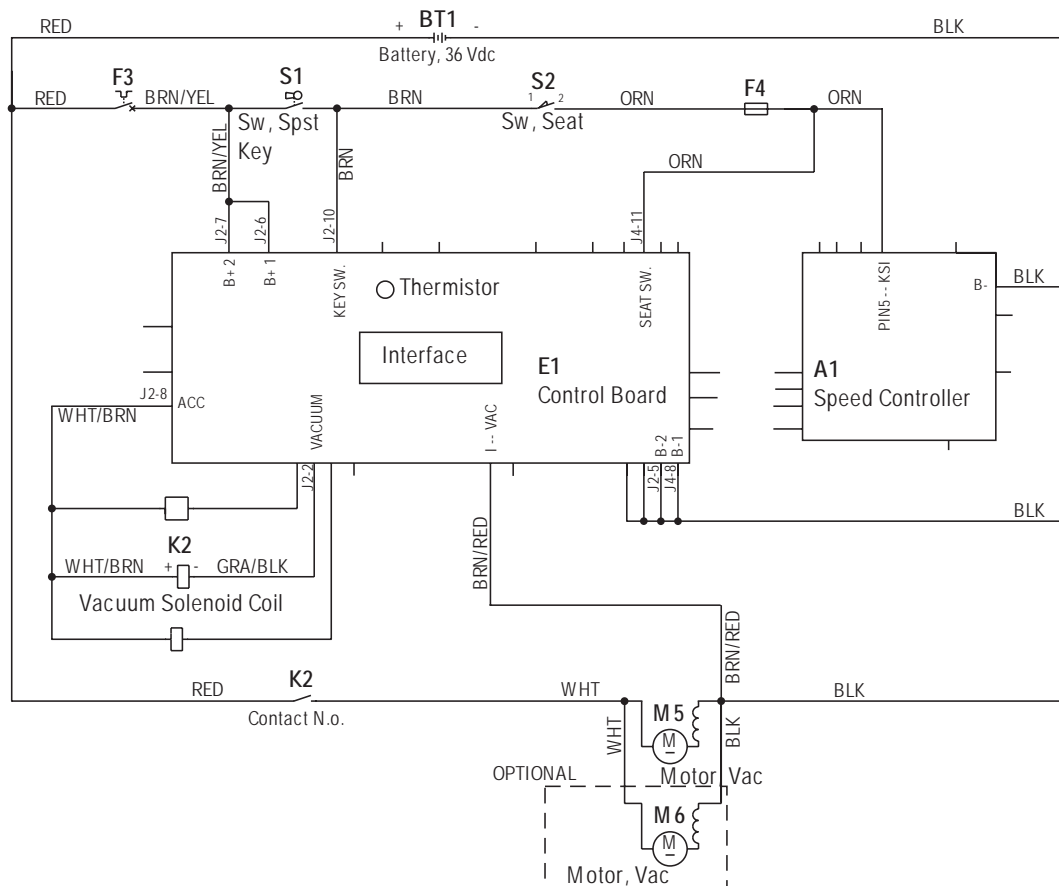
Inputs:

- A main (-) battery ground input for the control board E1 terminal J4 pin #8 wire Blk. This supports the operation of the board's processing logic functions with the above mentioned S1 (+) key switch input.
- A battery ground input for all the (E1 boards) negative solenoid coil output circuits. Its E1 terminal connection is J2 pin #5 (wire Blk).

Outputs:

- A battery ground output from the E1 control board terminal connector J2 pin #2 wire Gra/Blk. This control board output completes the K2 vacuum solenoid coil circuit (Pos. & Neg.) and pulls in the vacuum solenoid load contact K2 making the vacuum motor(s) M5 & M6 run. This occurs every time the throttle is moved off its neutral setting and the vacuum switch is on. Note: When the throttle is returned to neutral the vacuum will remain on for 10 seconds and the indicator light will flash green.

FIGURE 2



Instructions for Scrub Brush Lift Actuator Drive Nut Adjustment

- 1 See Figures 4 and 5. On a new scrub lift actuator motor remove (spin-off) the Drive Nut (C) and install the short compression Spring (D) onto the actuator (lead screw) shaft first. Next reinstall the plastic drive nut as shown (with the nut pin pocket away from the motor).
- 2 Follow steps 1-7 in the section labeled *Instructions for Squeegee Lift Actuator Drive Nut Adjustment* (reference previous page).
- 3 After adjusting the actuator drive nut (dimensions) follow step 10 (in the *Brush Deck Actuator Removal* manual section) to reassemble.

Service Tip: See Figure 5. Note the correct orientation of the Spring Housing (E) when installing the complete motor assembly and also run the spring housing assembly to the OUT (extended) position for machine installation.

FIGURE 4

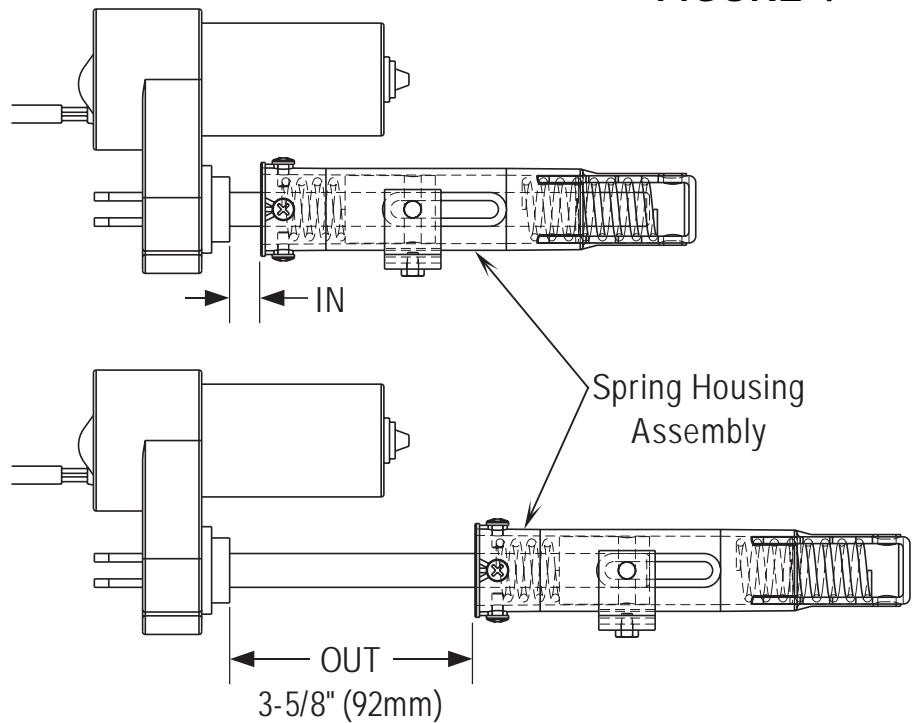
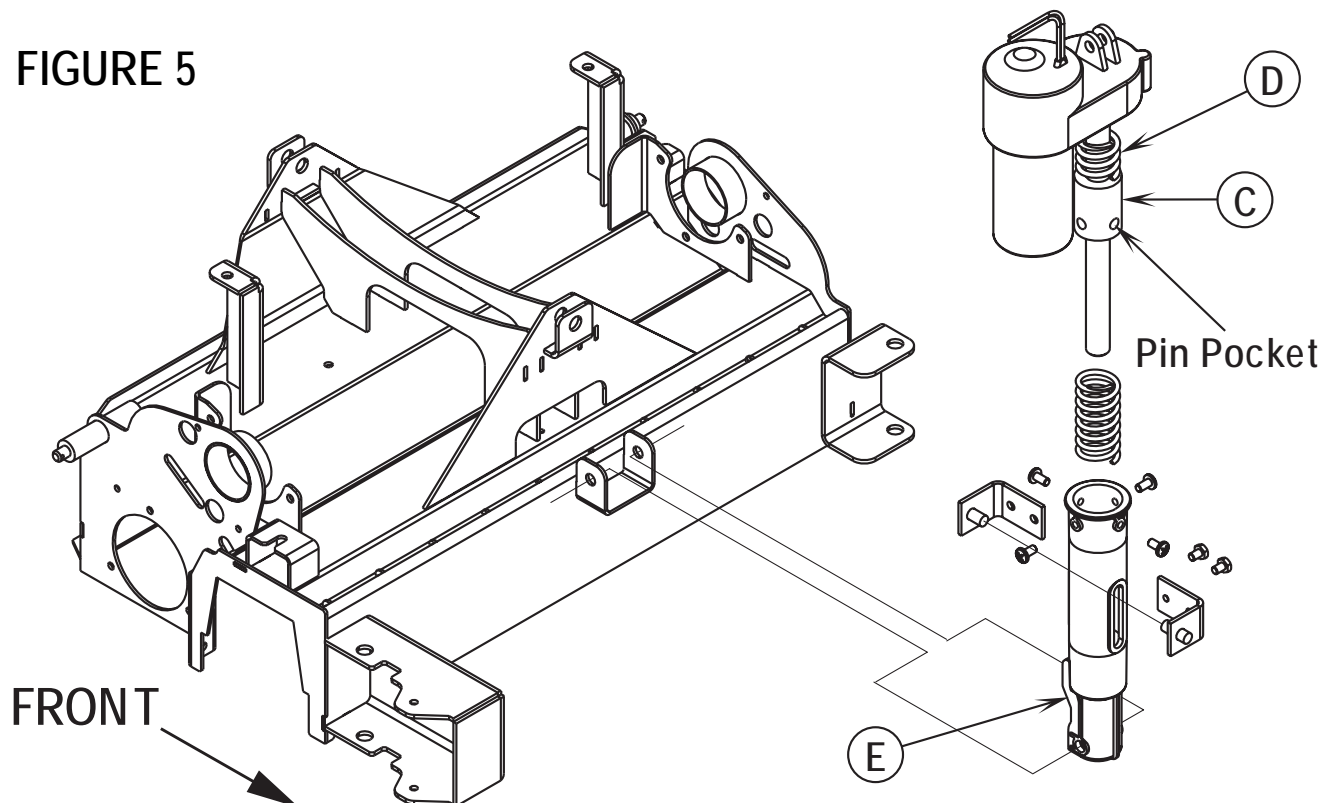


FIGURE 5



SERVICE TEST MODE (CONTINUED)

Solution Switch (R):

This switch is used to toggle the state of the solution solenoid. Pressing and releasing this switch will alternately turn the solution solenoid on and off. The indicator **(Q)** provides the following status information:

Off - Solenoid output is off.

Green - Solenoid output is on.

Flashing Red - Solution solenoid / contactor coil overload has occurred.

Horn Switch (N):

This switch is used to momentarily activate either the scrub deck lift actuator or the squeegee lift actuator. See the descriptions above for more details.

Fast / Slow Switch (L):

This switch is used to toggle the state of the multimode output to the speed control. This is used to select which speed limit the speed control uses. Pressing and releasing this switch will alternately turn the multimode output on and off. The indicator **(M)** provides the following status information:

Steady Green - Speed control mode 1 is selected (transport speed).

Brief Off Green Flash - Speed control mode 2 is selected (scrub speed).

Wand Switch (I):

This switch does not control any output functions. Pressing this switch will illuminate the wand indicator.

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