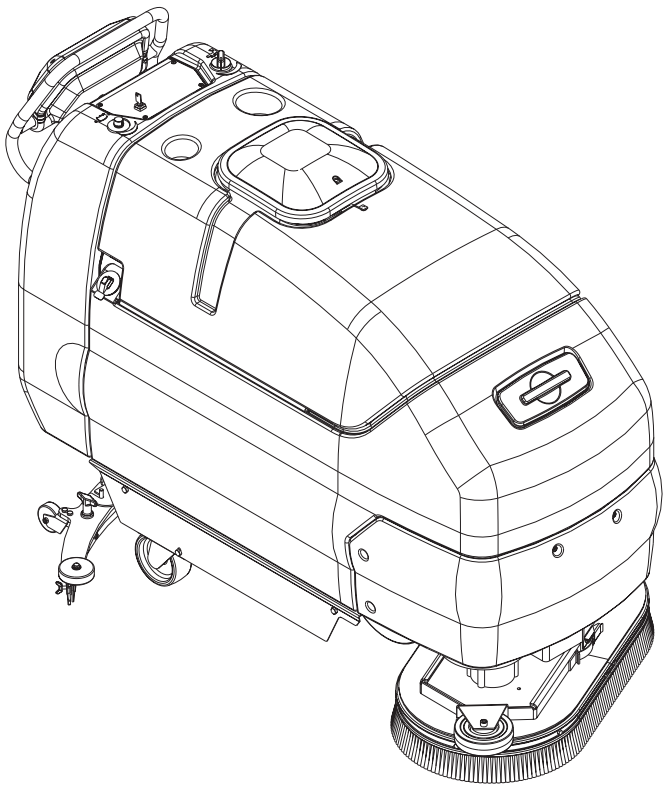
CMAX™ 28/34ST
I-MAX™ 28/32C
BA 750/850ST, BA 750C



SERVICE MANUAL
Advance MODELS 56396010, 56397403, 56397400, 56397401
Nilfisk MODELS 56396011, 56396012, 56397402

Nilfisk Advance
setting standards

6/02 revised 12/04 Form Number 56043071

FUNCTIONAL DESCRIPTION OF CONTROLS:

Solution Tank Fill (1) – Open to fill the solution tank, use non-foaming chemicals only.
Recovery Tank Cover (2) – Point of entry for waste water into tank. Also houses float ball which shuts off vacuum port to vac motor when tank is full.
Drive Paddle (3) – Located on top at the rear of the machine, the operator can make the machine go forward by pushing forward on it, or reverse by pulling backward on it. The speed is variable depending on how far forward or backward the paddle is moved. When the brush head is in the "DOWN" position, the brushes and solution will operate when the drive is engaged in either direction, but will stop after the machine is stationary for 3 seconds.
Solution Drain Hose / Level Indicator (4) – Used to empty the solution tank and show current level of solution in tank, graduations are marked on the side of the solution tank next to the hose.
Recovery Drain Hose (5) – Used to empty the recovery tank.
Squeegee Adjustment Bolt (6) – Used to adjust the tilt of the squeegee. Turn bolt clockwise to tilt the squeegee backwards and counter-clockwise to tilt it forward.
Squeegee Blade Latch (7) – Holds rear squeegee blade and straps in place, release to replace rear blade.
Squeegee (8) – Picks up solution after scrubbing.
Machine Battery Connector (9) – Batteries plug into this connector, disconnect to charge batteries.
Solution Flow Control Knob (10) – Turn this dial to the right to decrease solution flow to the floor. Turn to the left, to increase the amount of solution flow to the floor. When the Drive Paddle **(3)** is released from either forward or reverse travel, the solution flow will stop automatically, and resume when the drive is engaged.
Speed Limit Control Knob (11) – The Speed Limit Control Knob is used to adjust the maximum speed in both forward or reverse.
Wheel Drive Circuit Breaker (12) – Provides overload protection to machine's wheel drive motor. If it trips, it will pop out. To reset, wait one minute and press the button back in. If any breaker trips repeatedly, have the machine serviced.
Control Circuit Circuit Breaker (13) – Provides overload protection. If it trips, it will pop out. To reset, wait one minute and press the button back in. If any breaker trips repeatedly, have the machine serviced.
Brush Deck (14) – Contains brush drive motors and brushes.
Operator Control Handle (15) – Operator holds onto this to control the machine.
Operator Hand Brake (optional) (16) – Use to prevent machine from rolling.
Squeegee Lever (17) – This lever is used to lower or raise the squeegee assembly.
Solution Filter (18) – Filters solution prior to dispensing on floor.
Hopper (19) – Found only on cylindrical models, catches debris.
Idler Assembly (20) – Found only on cylindrical models, remove this to access broom on each side.

FUNCTIONAL DESCRIPTION OF CONTROL BUTTONS:

The controls were designed with one touch operation in mind. For single pass scrubbing the user can simply depress one button and all systems on the machine will be ready to go.

For most single-pass scrubbing operations, the operator should only need to use the left-hand two buttons on the control panel. These are the Scrub OFF and Scrub ON buttons. For this reason these buttons are outlined in bright white on the control panel while the other buttons are outlined in gray.

Solution Button (D) - This button is used to select the mode of operation for the solution system. There are 3 modes of operation for this system. The modes are OFF, AUTO, MOMENTARY ON. Following is a description of each mode and how they are selected.
OFF MODE: In this mode the solution flow is turned off. As mentioned in the following, when the scrub ON button **(G)** is pushed, the solution system will be placed in the AUTO mode. If it is desired to scrub without dispensing solution, the solution can be turned off by pressing this button at any time.
AUTO MODE: This mode is automatically selected when the scrub ON button **(G)** is pushed. In this mode the solution flow will be turned on whenever forward or reverse direction is selected via the Drive Paddle **(3)**. The solution flow will be turned off otherwise.
MOMENTARY ON MODE: This mode can only be selected when the scrub mode is OFF. Solution can be dispensed by pressing and holding the solution button. Solution will be dispensed for as long as the button is held. This is for pre-wetting the floor prior to scrubbing.

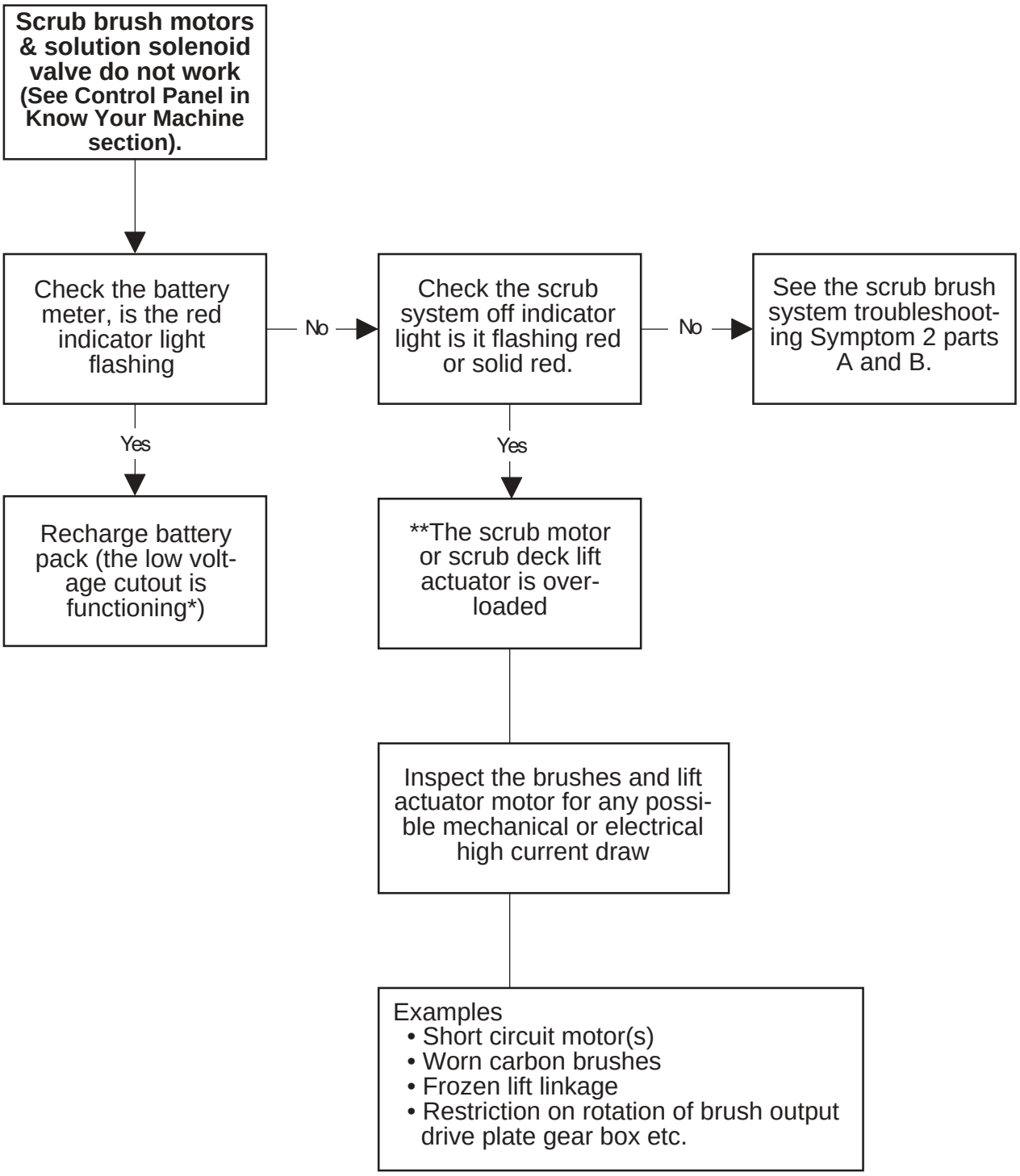
SCRUB BRUSH SYSTEM

TROUBLESHOOTING GUIDE ELECTRICAL

Possible Symptoms

1 Scrub brush motors and solution solenoid valve do not work
2 Scrub brush motors do not work
3 Scrub brush auto remove function does not work (optional)

SYMPTOM ONE



*Reference the Description of the Battery Low Voltage Cutout Feature in the Electrical System of this manual.

**When experiencing a scrub system overload, the scrub and solution systems will turn off and the scrub-off/pressure-decrease indicator will flash red at a fast rate (four times per second). Correct the cause of the overload and to reset, turn the key switch off and then back on.

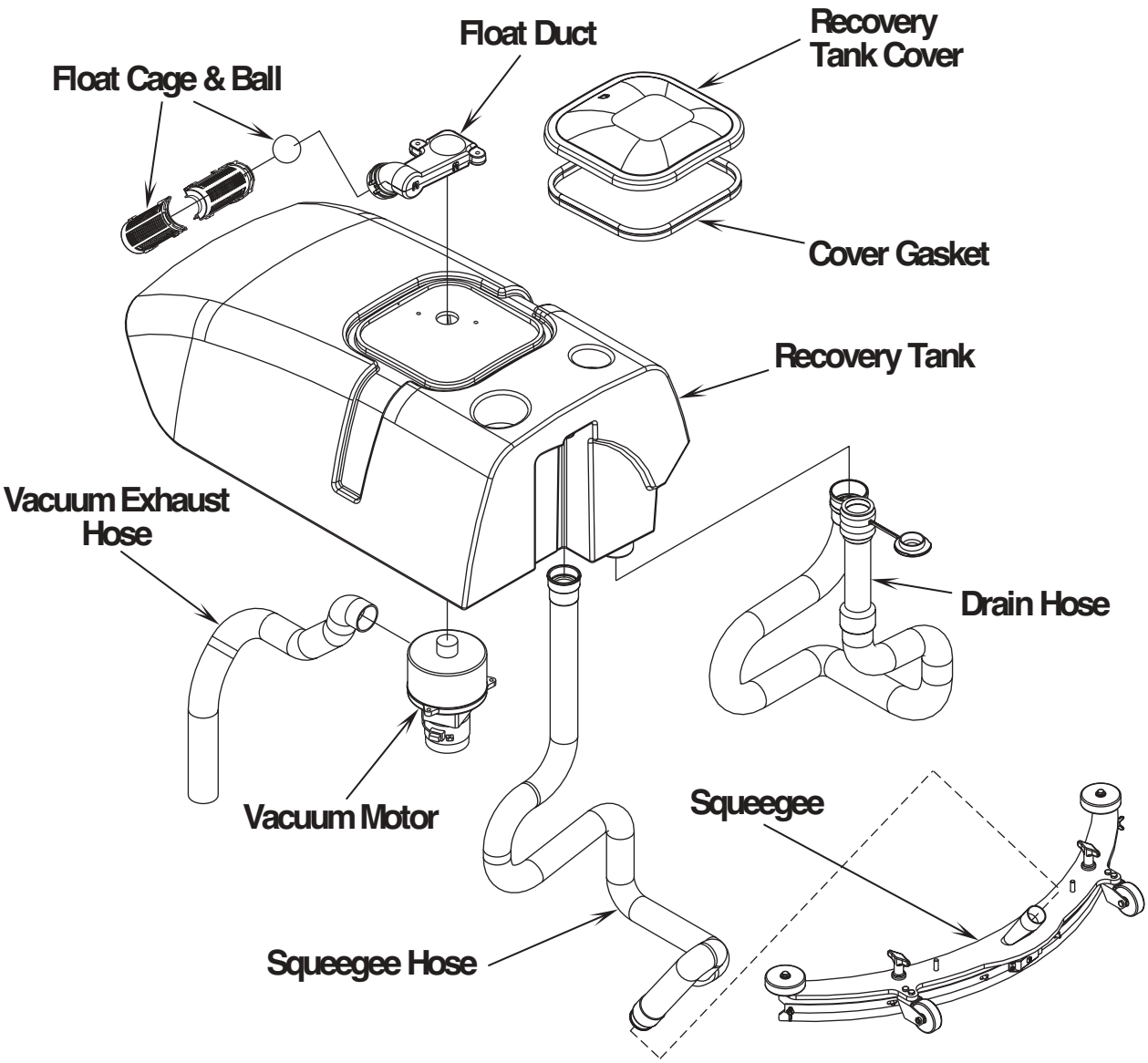
FUNCTIONAL OVERVIEW

Vacuum / Recovery System General

Dirt and water are lifted off the floor into the recovery tank by airflow, created by a 3-Stage 24V or 36V vacuum motor. The wastewater and air enter the vacuum system at the squeegee tool, through small openings (notches) located in the front squeegee blade. The small openings are the entrance points for the water and air, and help speed up the airflow producing the suction to lift the wastewater off of the floor. The air and wastewater move through the squeegee hose at high speed until it reaches the recovery tank. There the air slows down because of the increased volume (large size) of tank. With the decreased air speed the heavier water falls to the bottom of the recovery tank. Then at the same time the airflow continues through the tank, shutoff float, vacuum motor and is exhausted out of the vacuum exhaust hose. No wastewater ever actually moves through the vacuum motor, just clean air.

The vacuum system uses a shutoff float to prevent the tank from being overfilled and stops any water from being sucked into the vacuum motor.

FIGURE 1



Note: Figure 1 shows the vacuum recovery components of the CMAX™ 28ST, BA 750ST and BA 850ST. Similar components are found on the CMAX™ 34ST, I-MAX™ 28C, I-MAX™ 32C and BA 750C.

WHEEL DRIVE SYSTEM

TROUBLESHOOTING GUIDE ELECTRICAL

Possible Symptom

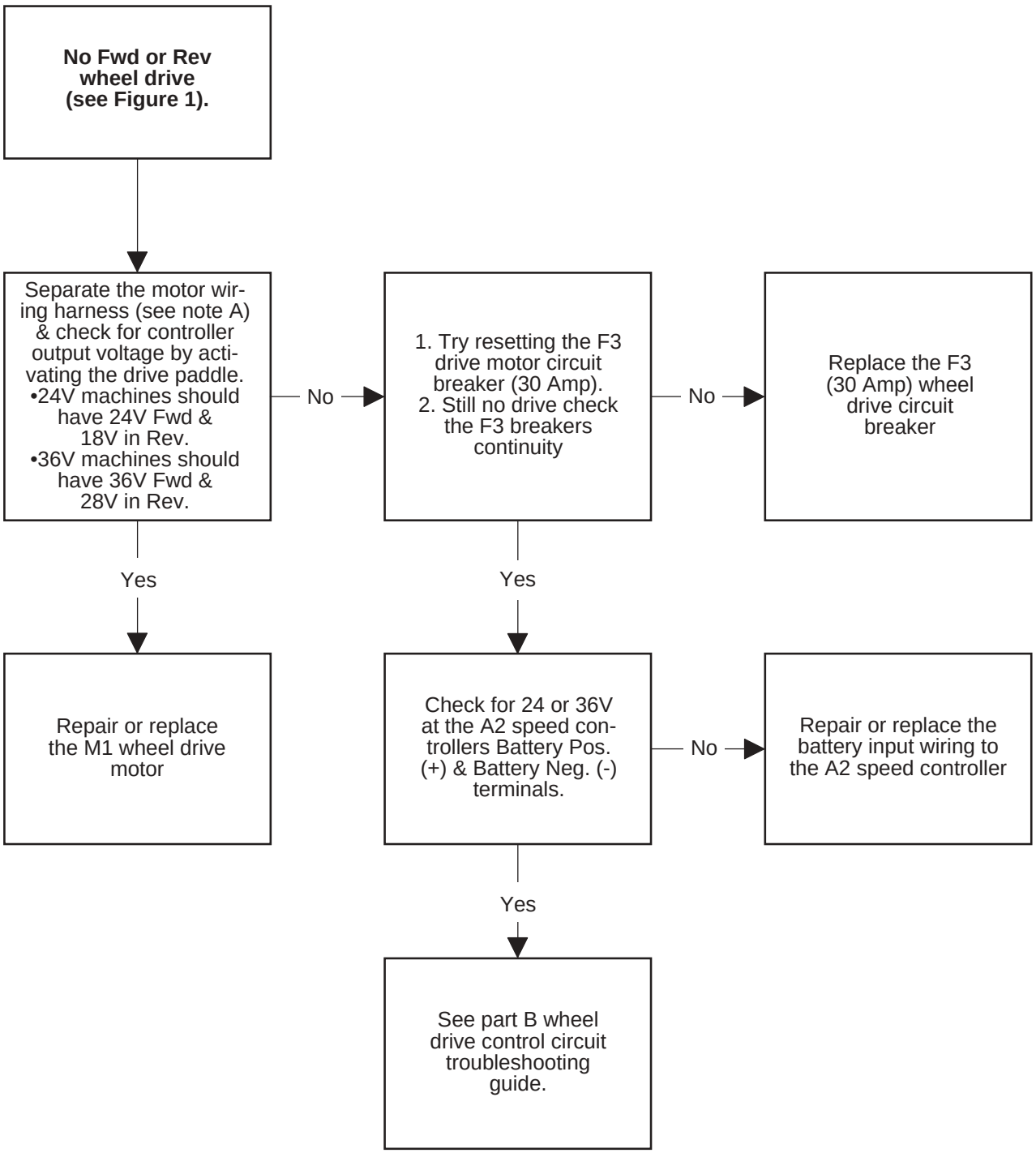
1 No forward and no reverse wheel drive

SYMPTOM ONE

Note: Do all testing with control panel R2 speed limiting pot in the maximum position, the drive wheel jacked up off the floor, key switch ON, and the drive paddle activated (pushed Fwd or pulled into Rev.)

Note 2: Enter the Service Test Mode Program in the Electrical System manual section, for **alternate** machine troubleshooting procedures.

Part A: Wheel drive system motor load circuit troubleshooting guide



Note A: The drive wheel motor harness disconnect is located in the lower rear of the machine frame next to the right rear caster wheel.

Instructions for Scrub Brush Lift Actuator Drive Nut Adjustment (continued)

7 To increase the travel of the spring housing assembly, turn the adjuster clockwise. To decrease the travel of the assembly, turn the adjuster counter clockwise.
NOTE: Use a 5/16" (8mm) wrench to turn the adjuster. Each click of the adjuster will change the spring housing assembly travel 1/16 inch (1.6mm).

8 After each adjustment, hold the spring housing assembly, run the actuator IN & OUT and check both dimensions. After checking that the spring housing limits are set correctly then replace the adjuster cover. **Service Tip Note:** Use the above power cord adapter to help position the spring housing assembly (in or out) for ease in actuator motor installations.

9 After adjusting the actuator spring housing dimensions, follow the Scrub Brush Lift Actuator Removal (Disc or Cylindrical) manual section to reassemble.

Service Tip: See Figure 4. Note the correct orientation of the Spring Housing **(E)** when installing the complete motor assembly and also run the spring housing assembly to the IN (retracted) position for machine installation.

FIGURE 3

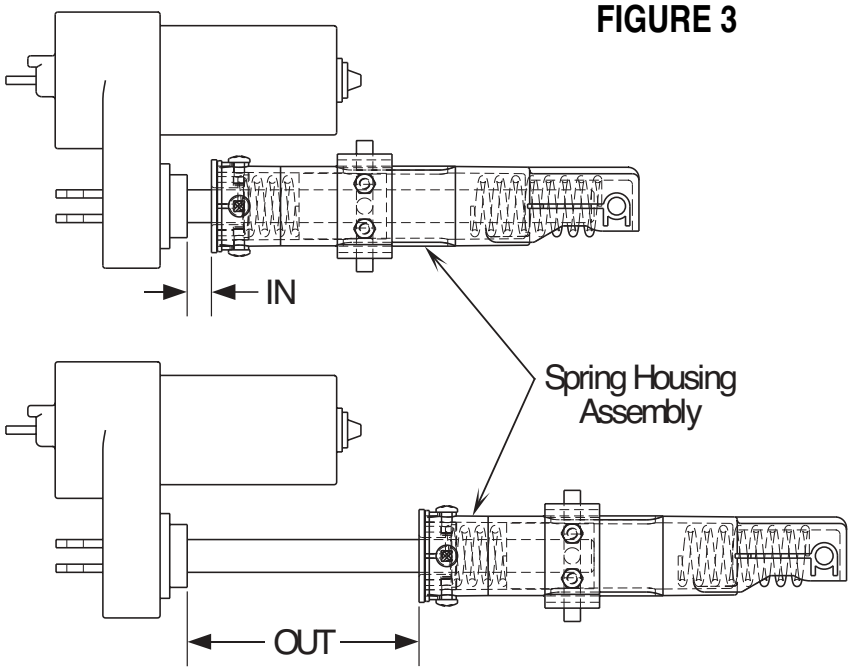


FIGURE 4