

Vantage

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Case I. Motor fails to operate (prop doesn't spin).

Case II. The motor runs, but the stow and deploy system fails to operate.

Case III. The motor fails to fully extend / deploy when the down button is pressed. (Motor deploys an inch or two and stops.)

Case IV. Vantage motor lower unit does not steer when the handle is turned from side to side.

Vantage Disassembly / Reassembly

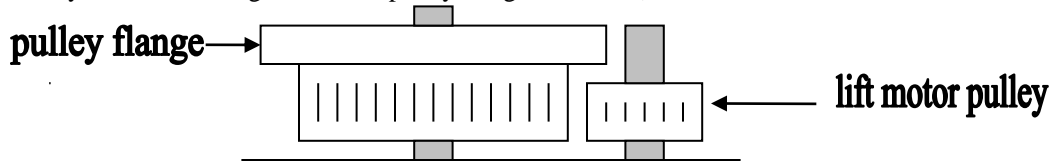
Vantage

Case I. Motor fails to operate (prop doesn't spin).

- Step 1.** Check to ensure proper voltage and polarity at battery (red +, black -). Inspect all battery connections, trolling motor plug (if installed), and any butt splice connections in battery leadwire for corrosion and security.
- Step 2.** Remove extrusion shield (p/n 2050220) (see **figure 1, page 7**), check to ensure that all wires are connected to the proper control board terminals, (consult the appropriate Vantage wiring diagram for proper connections). Visually inspect the wire terminals and connections for corrosion. Clean, if needed.
- Step 3.** Check lower unit to see if it will run when all switches and circuit board are bypassed.
- A.** Disconnect black and black/red stripe wires from main control board. Apply 12 volts directly to these two leads.
 - A-1.** If the motor does not run, a problem exists in the lower unit. Check the lower unit for voltage at the brushes, water in the lower unit, worn brushes, or an open or shorted armature. Repair as needed and test motor for proper operation.
 - A-2.** If the motor does run, go to **Step 4**.
- Step 4.** Check ON/OFF switch and speed control potentiometer in the steering handle.
- A.** Disconnect black and white coil cord wires located behind the extrusion shield (p/n 2050220). (NOTE: the coil cord wires are the small gauge wires with bullet connectors.)
 - B.** Connect the black and white wires coming from the handle assembly to your V.O.M..
 - C.** With your V.O.M. set to test continuity, press and hold the ON/OFF button in the end of the steering handle.
 - C-1.** If no continuity is noted, go to **Step 5**.
 - C-2.** If continuity is observed, go to **Step 6**.
- Step 5.** Disassemble the steering handle assembly (see **figure 2, page 7**).
- A.** Remove the gray steering handle grip and unscrew the four handle screws in order to separate the handle halves.
 - B.** Visually inspect wire connections at the ON/OFF dome switch, the UP/DOWN switches, and the speed control potentiometer. If any corrosion is noted at these points, replace the handle control board assembly (p/n 2994005).
 - C.** If no corrosion is noted, repeat continuity test across black and white coil cord wires (**Step 4**), but press and hold the ON/OFF dome switch with your fingertip. If continuity is now noted but was not observed in **Step 4C**, replace switch plunger (p/n 2053700) and actuator button (p/n 2055115).
- Step 6.** Disconnect the red, yellow, and green coil cord wires at the main control board.
- A.** Check resistance across the red and green coil cord wires coming from the handle assembly. With your V.O.M. set to test resistance, it should indicate 1k ohm or slightly higher.
 - B.** With speed control knob off, check resistance across the green and yellow coil cord wires. Your V.O.M. should indicate about 1 ohm. Observe the V.O.M. reading as the speed control knob is turned. The resistance should increase from 1 ohm to 1k ohm as the knob is turned to the highest speed setting.
 - C.** If your test resistance values differ greatly from those listed in **Step 6A & 6B**, or no resistance or continuity is noted, go to **Step 5**. If the resistance values match those indicated here, and the motor unit ran at **Step 3A**, replace the main control board.

LIFT SYSTEM UPGRADE KIT

NOTE: If you encounter a lift system problem on any Vantage motor with a serial number prior to MKAA1501460, check to see if the *Vantage Lift System Upgrade Kit* has been installed. The upgrade kit consists of the parts shown in **figure 7 (page 10)**. Many Vantage motors have already been updated in the field with the new *Lift System Upgrade Kit*, so the serial number may not always be a good indicator if the kit is required. To determine if the motor being serviced has the upgrade kit, examine the lift motor pulley. The top of the pulley will be machined away to allow the larger diameter pulley flange to clear. (Illustration shown with belt removed for clarity.)



Vantage motors with a serial number MKAA1501460 or later will have the improved lift system already installed from the factory. Use the upgrade parts list numbers when ordering any lift system parts for later model Vantage units.

Case II. The motor runs, but the stow and deploy system fails to operate.

- Step 1.** Check to ensure proper battery connections. (Consult appropriate wiring diagram for the model being serviced.) **NOTE:** On the 24 and 36 volt models the black (-/negative) and the yellow battery lead must be connected to the negative and positive posts of battery #1. In addition, the red(+/positive) battery lead must be connected to the positive post of battery #2 (24 volt units) or battery #3 (on 36 volt models). If the unit is not connected properly, the power stow/deploy feature will not operate.
- Step 2.** If lower unit is stuck in fully deployed (down) position, press and hold both UP and DOWN switches simultaneously to “re-set” system (motor should start to lift immediately). This should over-ride the current limit circuit and return the motor lift system to normal operation. Test unit for proper operation.
- A.** If lift/trim system is not corrected, proceed to **Step 3**.
- Step 3.** Remove extrusion shield (p/n 2050220) (see **figure 1, page 7**), and check to ensure that all wires are connected to the proper control board terminals. (Consult appropriate Vantage wiring diagram.) Visually inspect terminals for corrosion, clean if needed.
- Step 4.** Test lift system motor to see if it will run when the UP/DOWN switches and control board are bypassed.
- A.** Disconnect the black and white lift motor wires from the main control board.
- B.** Apply 12 volts directly to the lift motor leads. (Reverse polarity to reverse the direction of travel.) If the lift system works while bypassing the UP/DOWN switches and control board, go to **Step 4C**.
- B-1.** If the lift motor fails to run, it is faulty and needs to be replaced. (See **Vantage Disassembly Procedure Steps 1, 2, 3, 3C, & 3C-1** and exploded drawings at the end of this section.)
- B-2.** If lift motor runs (audible sound), but motor does not deploy or stow, the lift belt may be slipping due to improper tension (see **Vantage Disassembly Procedure Steps 1, 2, 3, 3B, 3B-1, & 3B-2**) the lift belt may be broken (see **Vantage Disassembly Procedure Steps 1, 2, 3, 3C, & 3C-1**), or the lift yoke is broken or stripped (see **Vantage Disassembly Procedure Steps 1, 2, 3, & 3D**).
- C.** Check the switches for function and continuity.
- C-1.** Disconnect the black, blue, and orange coil cord wires. With your V.O.M. set to test continuity, connect the black and orange wires coming from the handle assembly to the V.O.M. probes while depressing the DOWN button.
- a.** If no continuity is observed, go to **Case I Step 5** for handle disassembly, inspection, and control board replacement.
- b.** If continuity is noted, proceed to next step.

- C-2. Disconnect the orange wire from the V.O.M. and connect the blue wire in its place while depressing the UP button.
- a. If no continuity is observed, go to **Case I Step 5** for handle disassembly, inspection, and control board replacement.
 - b. If continuity is noted, the handle control board UP/DOWN switches are okay and the problem may be due to bad bullet connections on the leads coming from the main control board.
 - c. Check bullet connectors for security and good electrical connection at the black, orange, and blue main board leads. If connectors and electrical connections check okay, the main control board is at fault and needs to be replaced.

Case III. The motor fails to fully extend / deploy when the down button is pressed. (Motor deploys an inch or two and stops.)

NOTE: The Vantage control board monitors the current demands of the lift system motor. If the board detects higher than normal amp draw, or a spike in amp draw, the control board shuts off the power to the lift system motor. (This is how the lift motor stops when fully deployed.) A Vantage motor lift system that stops prematurely when deploying is binding or is restricted in some manner (lift motor is drawing higher than normal amperage.)

Step 1. Perform an amp draw check of the lift system motor bypassing the control board.

- A. Disconnect the black and white lift motor wires from the main control board.
 - A-1. Using an in-line amp meter, apply 12 volts directly to the black and white wires.
 - a. Observe the amp draw while the motor is deploying. A properly operating lift system will draw 5-8 amps while deploying
 - b. Reverse polarity and observe the amp draw while the motor retracting. A properly functioning lift system will draw 10-15 amps.
 - A-2. If the current demands exceed the amperage values listed, check the following:
 - a. Check the tension of the lift system drive belt (p/n 2050800). If the tension is too tight the amp draw will be higher than normal. (**See Vantage Disassembly Procedure Step 3, B-2**)
 - b. If the motor has serial number below MKAG2159171, replace the lower cap (p/n 2996520). On earlier units this cap could shift to the side and bind the lift system causing higher than normal amp draw. (This lower cap change was discussed in our December 2005 Newsletter.)
 - c. Check to make sure that the white plastic lift gear that is about 2" in diameter (p/n 2990426) is not rubbing on the cluster gear / flange pulley. Shim as necessary using thrust and nylatron washers (p/n 2051703 and p/n 2051705).
 - d. Check lubrication of the lift screw (p/n 2053400) and lift yoke (p/n 2051510). Inadequate lubrication will cause higher than normal lift motor amp draw.
 - e. If the air temperature is below freezing, the lubricant in the lift system may be thickened and be too viscous for proper operation.
 - f. The lift motor may have been overheated and damaged (the lift motor should draw less than 5 amps while running in a "no load" or "on-the-bench" situation). Sometimes just by sniffing the motor you will be able to determine if it has overheated.

Case IV. Vantage motor lower unit does not steer when the handle is turned from side to side.

Step 1. Disassemble to visually inspect the steering rack and pinion gear. (See Disassembly Steps 1 & 2.)

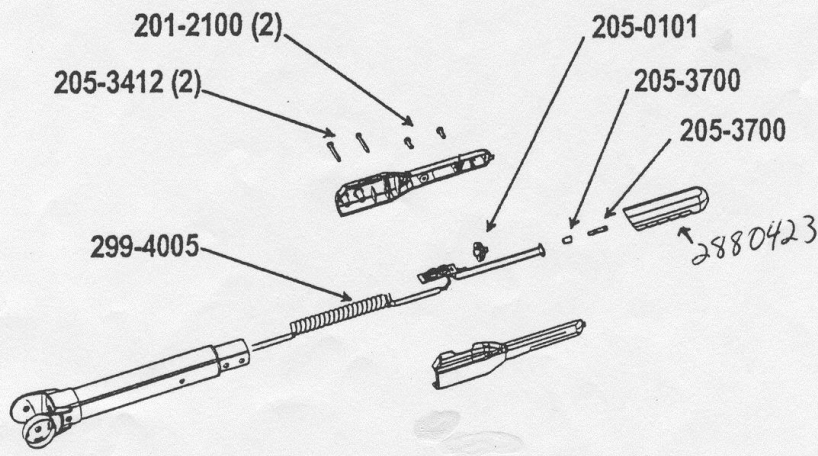
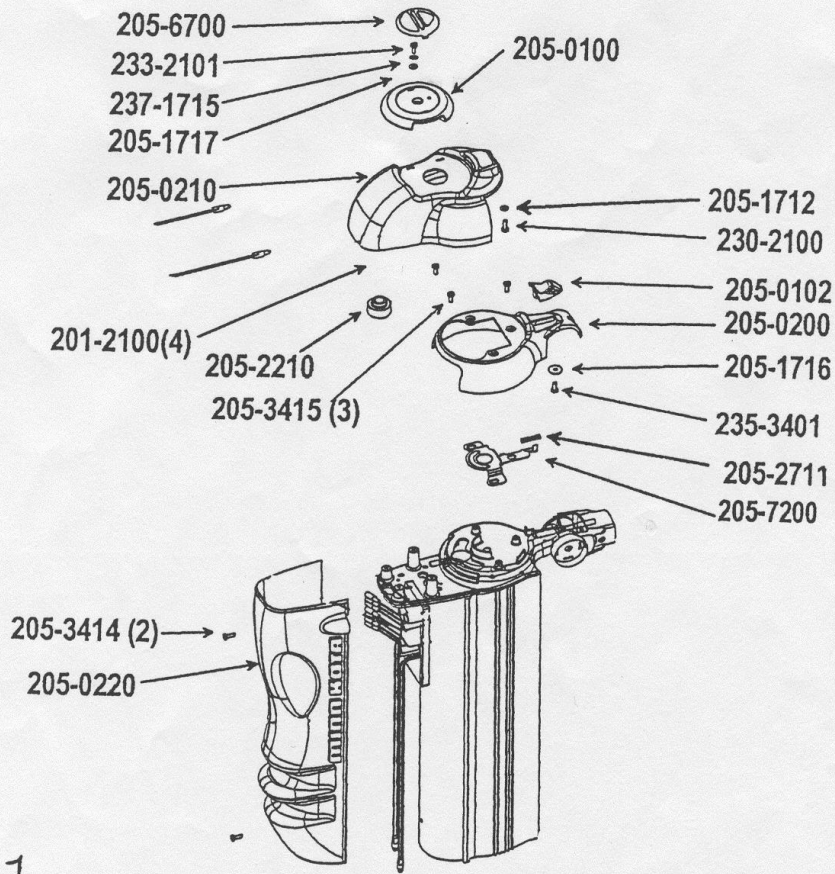
Step 2. Observe steering pinion gear (p/n 2052205) and steering shaft (p/n 2052000) as the steering handle is moved from side to side.

- A.** If the pinion gear rotates, but the steering shaft does not turn with the pinion gear, the drive lock pin (p/n 2052615) is broken and needs to be replaced. (See Disassembly Steps 1, 2, 3, & 3A.)

Vantage Disassembly / Reassembly

- Step 1.** Remove extrusion shield (p/n 2050220), pointer plug (p/n 2056700), and the pointer knob (p/n 2050100). Remove the leadwire clamps located on the side of the housing using a long shank Phillips screwdriver. Then remove the four screws which hold the control head shroud (p/n 2050210) in place, and disconnect the two indicator lights from the shroud. Note the position of the light with black wires and the light with the white wires for proper reassembly (black wire light is motor, white wire light is power indicator). (See **figure 1, page 7**)
- Step 2.** Remove the three Phillips head screws (p/n 2053415) holding the control head cover assembly (p/n 2050200) in place. Lift the cover off. Remove the latch (p/n 2057500), the latch return spring (p/n 2052711), and the steering shaft roller (p/n 2052210). (**NOTE:** for reassembly the small end of the steering shaft roller must be pointed down.)
- Step 3.** Disconnect the coil cord wires from the main control board. Using a 9/16" socket or box end wrench, unscrew the top lock nut (p/n 2053107). Remove the flat and cup washers. Lift off the gear housing upper cap (p/n 2056510) and gear housing ring. Unscrew the three screws (p/n 2053402) and remove the lower gear housing cap (p/n 2056515) along with the gear housing o-ring (p/n 2054600). (See **figure 3, page 8.**) Removing the gear housing cap exposes the steering gear and the lift belt/flange pulley/lift gear assembly of the Vantage motor lift system.
- A.** If it was determined in **Case III Step 2A** that the drive lock pin (p/n 2052615) (see **figure 4, page 8**) was sheared, the broken pin can be replaced at this point. Use a 1/8" diameter punch to remove any broken pieces of the pin left in the steering gear/steering shaft. Install a new pin leaving approximately 1/4" to 5/16" protruding from the pinion gear on the same side as the "D" flat on the steering shaft. Reassemble the unit in reverse order of disassembly to complete the repair.
- B.** If it was determined in **Case II Step 3B-2** that the lift belt was slipping, disassemble the Vantage motor to allow examination of the lift system. This will allow determination if the *Vantage Lift System Upgrade Kit* is needed. (See **NOTE** on top of **page 2** for information on how to identify lift system.)
- B-1.** If examination of the lift system indicates that *Lift System Upgrade Kit* needs to be installed, order and install Minn Kota p/n 2776517 (per instructions on **page 5, Step 3C-1**).
- B-2.** If examination of the lift system indicates that the motor has the newer lift system installed, tighten the belt by loosening the 3 screws (p/n 831-070) that hold the lift motor in place. **NOTE:** To access one of these screws, you will need to rotate the flange pulley/cluster gear assembly (see **figure 7, page 10**). Loosen the setscrew (p/n 2053420) and then, using a 5/32" allen wrench, rotate the belt tensioner (p/n 2058411). Turning the allen wrench CW or CCW will move the motor to adjust the belt tension. With the belt tight, retighten the 3 motor screws and the belt tensioner setscrew. Check motor lift system operation, and reassemble in reverse order of disassembly.
- C.** If it was determined in **Case II Step 3B-1** that the lift motor needs to be replaced or in **Case II Step 3B-2** that the lift belt is broken, examine the lift system to determine if it is the new or older type. (See **NOTE** on top of **page 2** for information on how to identify lift system.) If examination confirms that the motor has the earlier type lift system, order and install p/n 2776517 *Lift System Upgrade Kit*.
- C-1.** To disassemble the Vantage motor for installation of the *Lift System Upgrade Kit*, lower the motor about 7 to 8 inches down from the fully retracted position. If necessary, you may connect the lift motor leads to 12 volts to lower the motor unit or you may rotate the lift gear (p/n 2052208) counter-clockwise (CCW) by hand to lower the motor unit. Failure to lower the motor will make further disassembly difficult and may result in damage to the unit.

- a. Use a 1/8" diameter punch to remove the pin (p/n 2052620) from the lift gear (p/n 2052208) and lift screw shaft (p/n 2053400).
 - b. Remove the lift gear from the lift screw shaft. (See figure 5, page 9.)
 - c. Remove the 2 screws (p/n 2053414) that hold the steering shaft (p/n 2052000) and steering shaft bearing (p/n 2057306) in place. Note the position of the "D" flat on the steering shaft in relation to the motor lower unit. Proper reassembly requires that the "D" flat be in the same position as it was prior to disassembly (relative to the motor lower unit).
 - d. Lift the steering shaft, steering pinion gear, and bearing assembly straight up and out of the top plate (p/n 2051900).
 - e. Using a 5/16" nut driver, remove the 4 screws (p/n 2053413) that hold the top plate in place on the housing (p/n 2056505). (See figure 5, page 9.)
 - f. Remove the screw and washer (p/n 2053415 and 2051716) that hold the motor leadwire in place.
 - g. Disconnect the motor leads and lift motor wires from the control board. Remove the 2 control board mounting screws and insulating washers (p/n 2053407 and 2261712). (See figure 3, page 8.)
 - h. Lift the top plate and motor assembly off the housing and install the new top plate, lift motor, and lift system included with the *Lift System Upgrade Kit* (p/n 2776517).
 - i. Reassemble the motor in reverse order of disassembly. Adjust lift belt tension on the new upgrade kit as outlined in **Step 3B-2** (above).
 - j. Test motor for proper operation upon completion of the Lift System Upgrade Kit installation.
- D.** If it was determined in **Case II Step 3B-2** that the lift yoke (p/n 2051510) (see figure 6, page 9) is broken or stripped further disassembly is required. **NOTE:** the Vantage motor uses a retractable tape spring to hold/control the two-conductor wire that goes to the motor lower unit. The wire control system consists of two parts, the wire clamp assembly (p/n 2053200, 2053205, & 2053417) and the tape spring assembly (p/n 2051900, 2052305, 2052610, 2052705, & 2053418). (See figure 5, page 9 and figure 8, page 11) Both of these items are slid onto the raised "rib" located on the inside surface of the housing (p/n 2056505). The lower wire clamp is held in place by means of a small plastic "finger" that catches in a 1/4" diameter hole in the Vantage motor housing (p/n 2056505). (The hole is located on the transom bracket side of the housing 9 inches down from the top.) Use a 1/4" diameter pin punch in this hole. From the outside, push in the end of the finger to release the lower wire clamp and slide it up and lift the tape spring assembly and wire clamp off of the rib. Next, while supporting the Vantage motor lower unit, use the 5/16" nut driver to remove the four screws (p/n 2053414) that hold the lower support cage (p/n 2990420) assembly into the housing (p/n 2056505). After removing these four screws the entire motor lower unit and shaft, lift screw (p/n N 2053400), lift screw yoke (p/n 2051510), and yoke bearing race (p/n 2056200) can be lowered out the bottom of the Vantage housing. (See figures 5 & 6, page 9 and figure 8, page 11.) Remove the lower wire clamp, wire tie, and tape spring assembly from the motor wire leads. Then remove the two screws (p/n 2053401) that hold the yoke bearing to the motor shaft. Remove the coil spring (p/n 2990429) and washer from the top end of the lift screw shaft. Remove the broken/stripped lift screw yoke from the lift screw shaft. If necessary, turn the lift screw to unscrew the old yoke and bearing race assembly. Slide the old parts up and off the motor wire leads. Install the required new parts and reassemble the Vantage motor in reverse order of disassembly. Take special care not to twist the motor wire leads and to reinstall the wire tie, lower wire clamp, and the tape spring in the same manner and position they were in prior to disassembly.



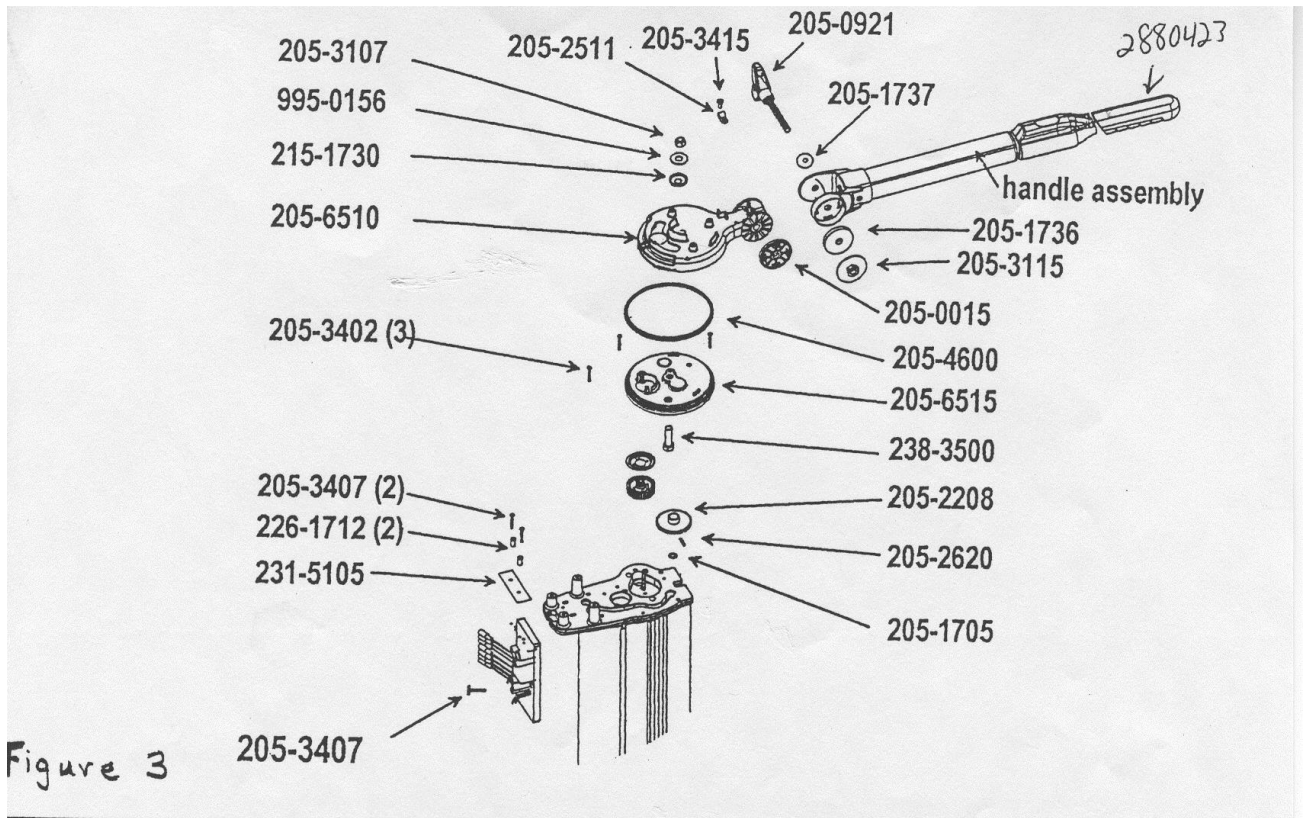


Figure 3

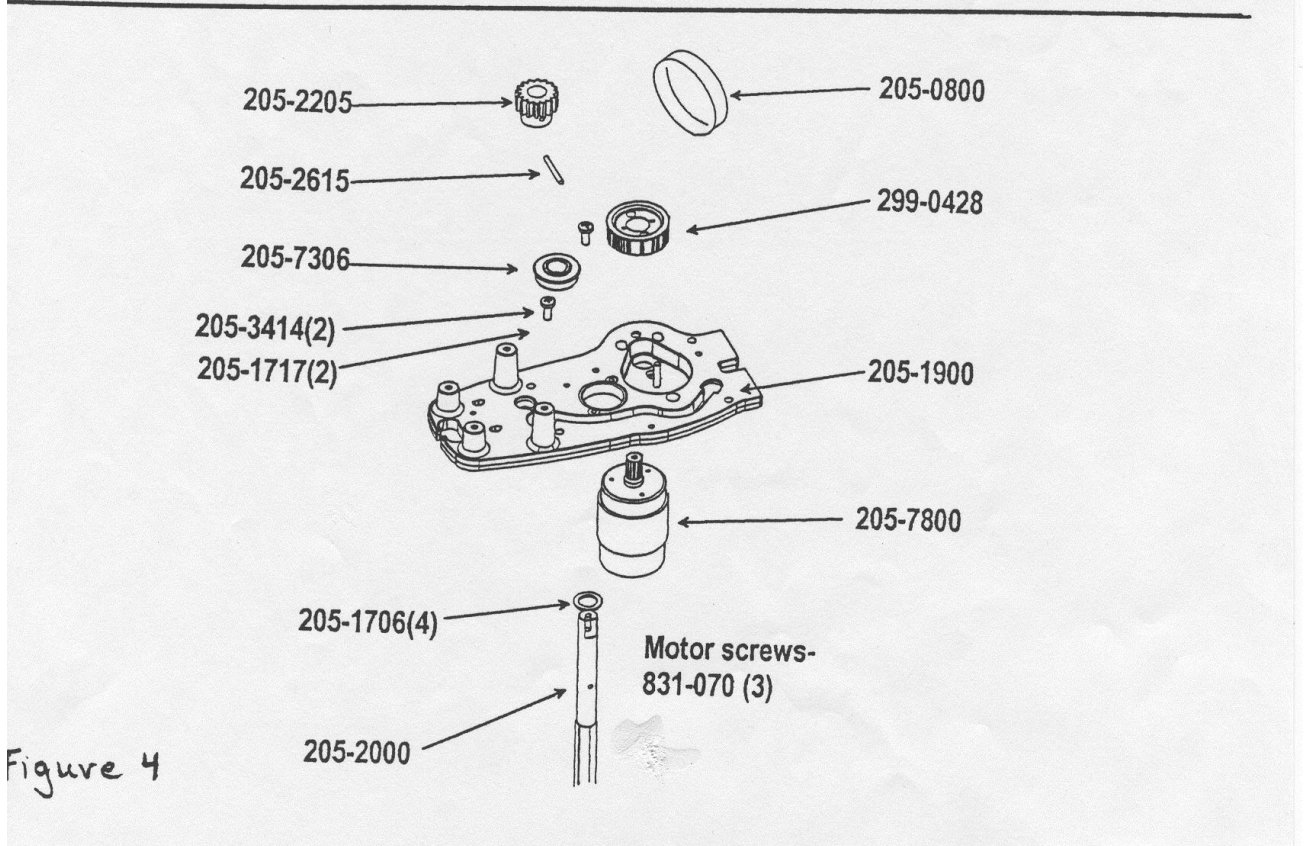


Figure 4

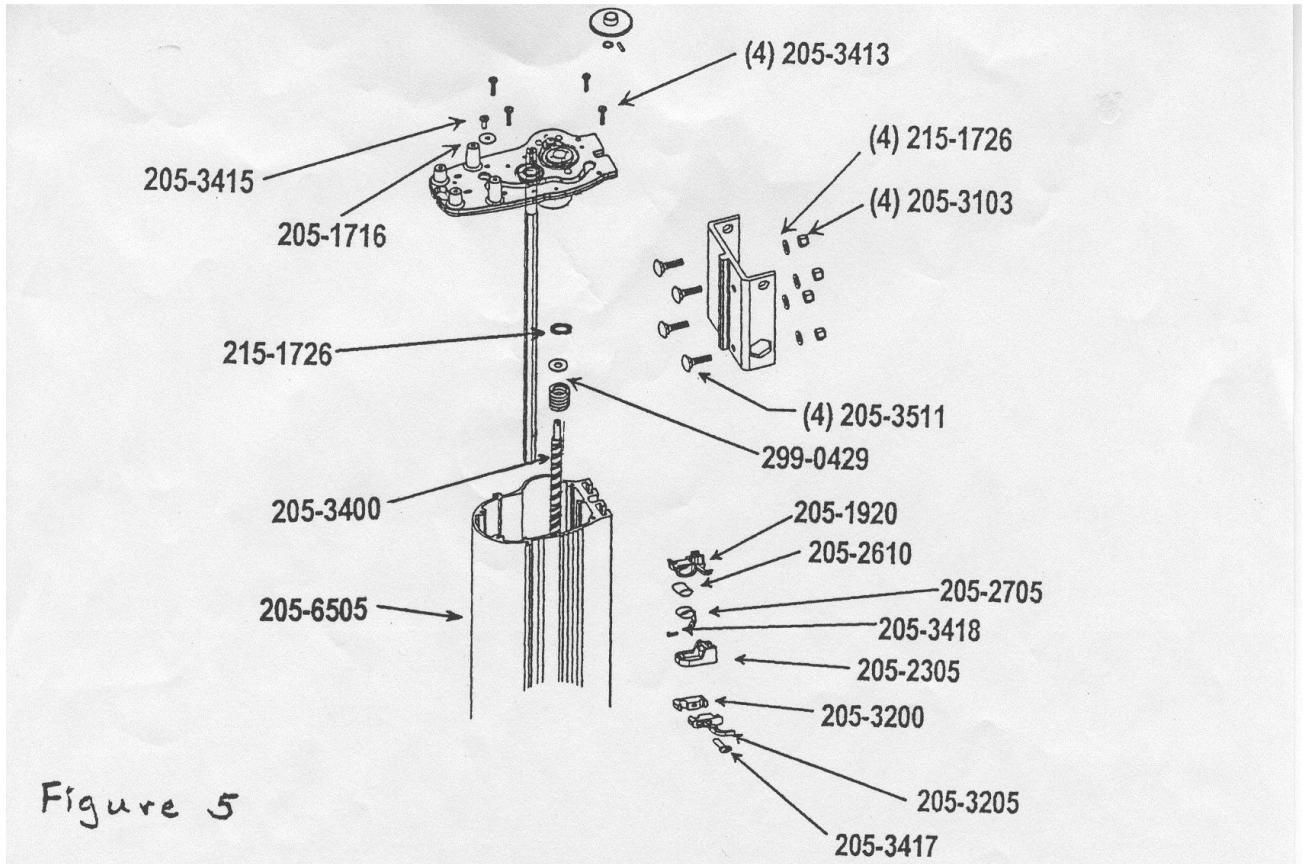


Figure 5

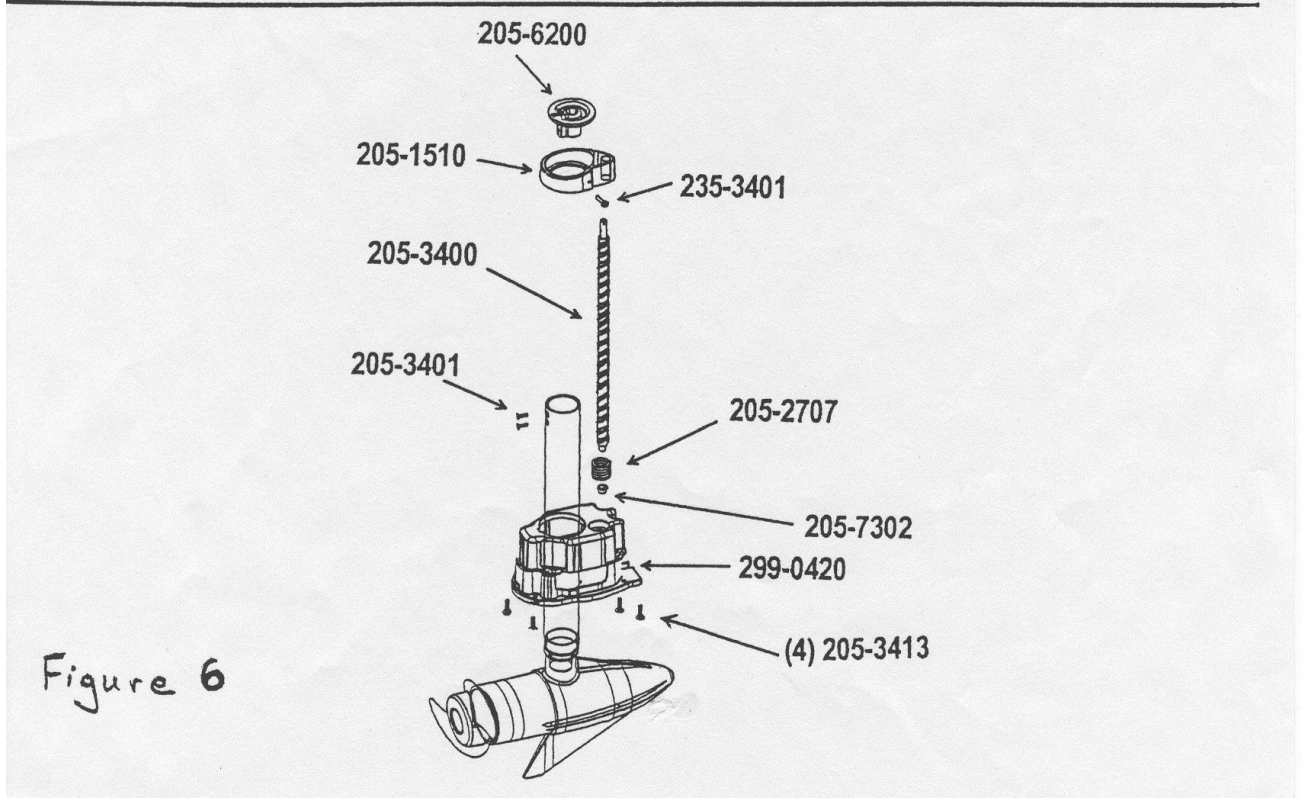


Figure 6

277-6517 VANTAGE UPGRADE KIT

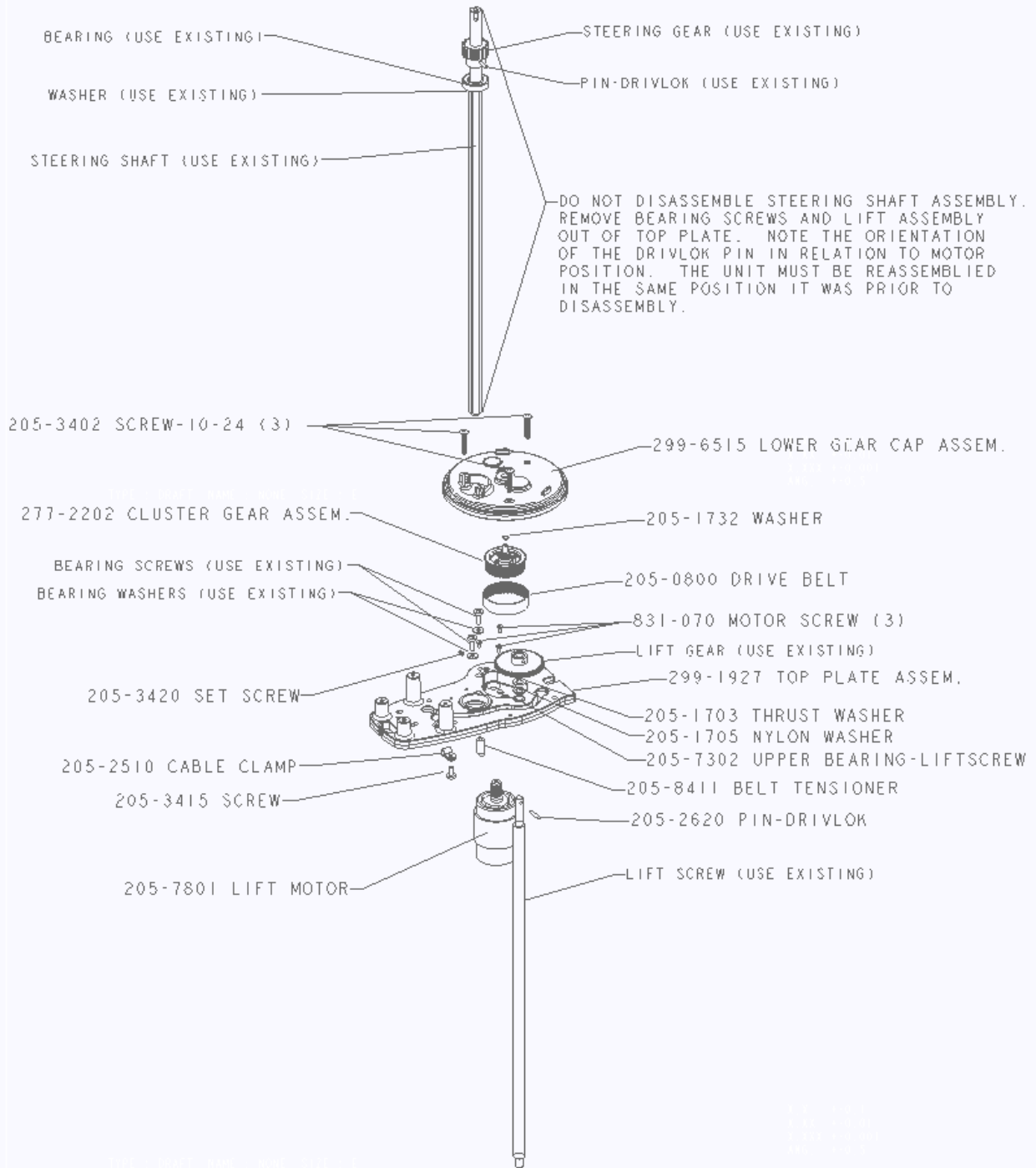
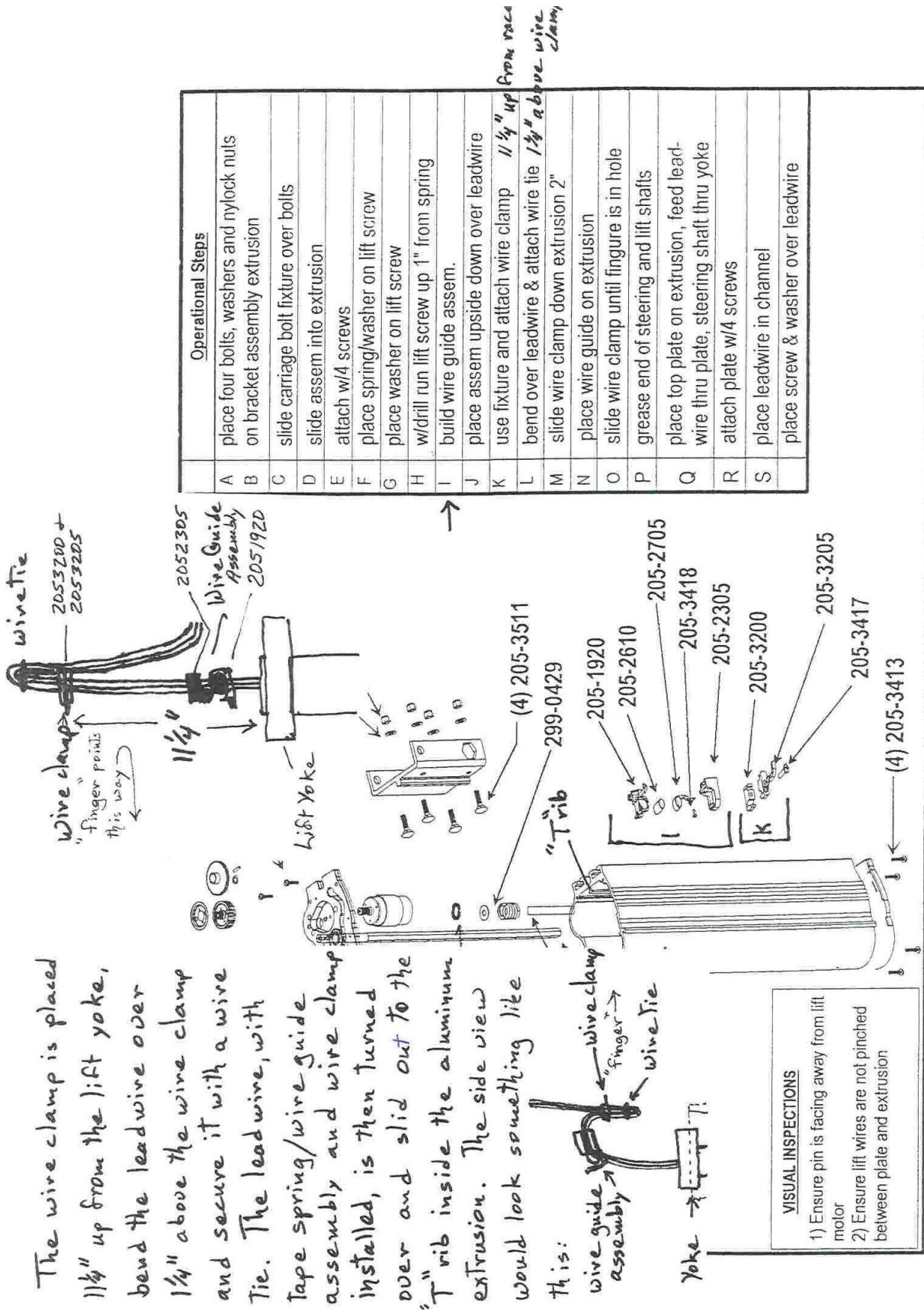
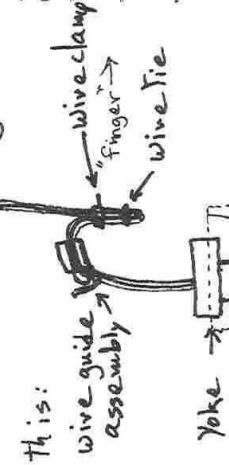


Figure 7



	Operational Steps
A	place four bolts, washers and nylock nuts on bracket assembly extrusion
B	slide carriage bolt fixture over bolts
C	slide assem into extrusion
D	attach w/4 screws
E	place spring/washer on lift screw
F	place washer on lift screw
G	w/drill run lift screw up 1" from spring
H	build wire guide assem.
I	place assem upside down over leadwire
J	use fixture and attach wire clamp <i>1 1/4" up from race</i>
K	bend over leadwire & attach wire tie <i>1 1/4" above wire clamp</i>
L	slide wire clamp down extrusion 2"
M	place wire guide on extrusion
N	slide wire clamp until figure is in hole
O	grease end of steering and lift shafts
P	place top plate on extrusion, feed lead-wire thru plate, steering shaft thru yoke
Q	attach plate w/4 screws
R	place leadwire in channel
S	place screw & washer over leadwire

The wire clamp is placed 1 1/4" up from the lift yoke, bend the lead wire over 1 1/4" above the wire clamp and secure it with a wire tie. The lead wire, with tape spring/wire guide assembly and wire clamp installed, is then turned over and slid out to the "T" rib inside the aluminum extrusion. The side view would look something like this:



VISUAL INSPECTIONS
 1) Ensure pin is facing away from lift motor
 2) Ensure lift wires are not pinched between plate and extrusion

Figure 8