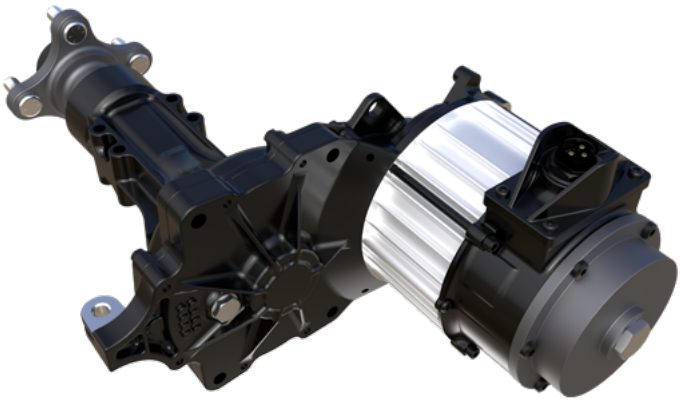
SMARTEC®
by HYDRO-GEAR



ZT-3400e™ Commercial Zero-Turn Electric Drive System

BLN-0124
February 2024

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Section

FORWARD

Headquartered in Sullivan, Illinois, SMARTEC® is a world leader in the design, manufacture, and service of quality electric drive systems for the lawn care industry. The mission of our company is to be recognized by our customers and the industry as a world-class supplier and the quality leader in everything we do.

This Service and Repair Manual is designed to provide information useful in servicing and troubleshooting the residential zero turn electric drive system. Also included is a glossary of terms that are frequently used throughout the industry and in SMARTEC® service publications. Understanding terminology is very important!

It is necessary, and a good shop practice, that your service area be equipped with the proper tools and the mechanics be supplied the latest information available. All repair procedures illustrated in this guide are suggested, but preferred methods of repair.

Internal repair procedures require that the transaxle unit be removed from the vehicle.

This is not a certification, test or study guide for a certification test. If a technician is interested in certification, they should contact an agent representing the EETC (Equipment and Engine Training Council) at (262) 367-6700 or their Central Service Distributor. Many distributors will be hosting certification testing. These study guides will cover most of the products and manufacturers in our industry.

For more information about SMARTEC® or our products, please see www.hydro-gear.com for phone listings to contact your Central Service Distributor, or call our Customer Service Department at (217) 728-2581.

INTRODUCTION

The purpose of this manual is to provide information useful in servicing the SMARTEC® Integrated Electric ZT drive system. This manual includes the SMARTEC® general descriptions, electrical components, technical specifications, servicing and troubleshooting procedures.

Other than recommended external maintenance, the transaxle and deck system dos not require servicing during the life of the vehicle in which it is installed. Should other servicing be required, the exterior of the machine will need to be thoroughly cleaned before beginning most procedures. **Do not use a pressure washer to clean the transaxle or system components.**

General Description

The SMARTEC® Integrated Electric ZT drive system is designed to provide a complete drive and cutting solution in an integrated electric only machine. The SMARTEC® Integrated Electric ZT is an electrically-powered zero-turn transaxle designed for residential mowing applications. It comprises of a brushless DC electric motor attached to an oil-filled gearbox with an output axle for attachment to a wheel hub. It provides an infinitely variable speed range between zero and maximum in both forward and reverse modes of operation.

The SMARTEC® Integrated Electric ZT drive system utilizes two electric motors that provide movement for the vehicle. Each motor powers an integrated gear drive for forward and reverse movement. Electric motors drive the cutting blades for the deck system.

The electromechanical brake has a manual release function to permit moving the vehicle for a short distance at a maximum of 2 m.p.h. without using the electric drive motors.

NOTE: Transaxles with the manual brake release option may not be utilized by all manufacturers using this product.

WARNING

Manually releasing the brakes will result in the loss of mechanical braking capacity. The machine must be stationary on a level surface and the key in the “OFF” position when actuating the manual release.

PRODUCT IDENTIFICATION

The model and configuration of the product can be determined from the label shown in Figure 1 below.

Figure 1. Configuration label

SAFETY

This symbol points out important safety instructions which, if not followed, could endanger the personal safety and/or property of yourself and others. Read and follow all instructions in this manual before attempting maintenance on your drive or deck system. When you see this symbol - **HEED ITS WARNING.**

WARNING

POTENTIAL FOR SERIOUS INJURY

Inattention to proper safety, operation, or maintenance procedures could result in personal injury, or damage to the equipment. Before servicing or repairing the SMARTEC® system, fully read and understand the safety precautions described in this section.

PERSONAL SAFETY

Certain safety precautions must be observed while servicing or repairing the SMARTEC® system. This section addresses some of these precautions but must not be considered an all-inclusive source on safety information. This section is to be used in conjunction with all other safety material which may apply, such as:

1. Other manuals pertaining to this machine,
2. Local and shop safety rules and codes,
3. Governmental safety laws and regulations.
4. OSHA and NFPA 70E Standards for Electrical Safety in the Workplace guidelines.

Be sure that you know and understand the equipment and the hazards associated with it. Do not place speed above safety.

Notify your supervisor whenever you feel there is any hazard involving the equipment or the performance of your job.

Verify that you are qualified and properly trained to perform the required work. Never allow untrained or unauthorized personnel to service or repair the equipment.

Wear appropriate clothing. Loose or hanging clothing or jewelry can be hazardous. Use the appropriate safety equipment, such as eye and hearing protection, and safety-toe and slip-proof shoes.

Never use compressed air to clean debris from yourself or your clothing.

TOOL SAFETY

Use the proper insulated tools and equipment for the task.

Inspect each tool before use and replace any tool that may be damaged or defective.

WORK AREA SAFETY

The work area must be dry; free from any moisture, dampness or liquids.

Keep the work area neat and orderly. Be sure it is well lit, that extra tools are put away, trash and refuse are in the proper containers, and dirt or debris have been removed from the working areas of the machine.

The floor should be clean and dry, and all extension cords or similar trip hazards should be removed.

“Discard used cleaning material in the appropriate containers according to local, state, and federal regulations.”

SERVICING SAFETY

All procedures will require the vehicle to be disabled in order to prevent possible injury to the servicing technician and/or bystanders.

Remove all SMARTEC® controllers before performing any welding repairs on the vehicle.

De-energize the system/components by waiting 1 minute prior to performing any repairs or adjustments.

Never touch two posts of any battery at the same time. Never touch the body frame and the positive lead at the same time.

As a General rule, keep batteries free of debris. Reference machine owners manual for proper battery cleaning and maintenance procedures.

Some cleaning solvents are flammable. Use only approved cleaning materials: Do not use explosive or flammable liquids to clean the equipment.

To avoid possible fire, do not use cleaning solvents in an area where a source of ignition may be present.

Discard used cleaning material in the appropriate containers.

WARNING

POTENTIAL FOR SERIOUS INJURY

Inattention to proper safety, operation, or maintenance procedures could result in personal injury, or damage to the equipment. Before servicing or repairing the SMARTEC® system, fully read and understand the safety precautions described in this section.

Refer to the vehicle manufacturer's operation and service instructions before performing any service or repairs.

SMARTEC® COMPONENTS

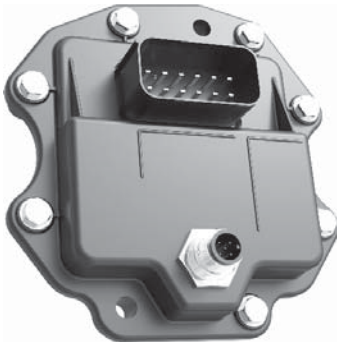
Traction Controller

Deck Controller

Commercial Deck Motor

LBSM (Lap Bar Sensor Module)

Bluetooth Module



VIM (Vehicle Integration Module)

Integrated Electric Transaxle

Smartec Devices

Bluetooth Module

The Bluetooth Module (shown in figure 2) functions as a tool that allows the SMARTEC® system to wirelessly communicate through MyMow® and SMARTEC® applications. A bluetooth compatible smartphone is required to access the MyMow® and SMARTEC® applications.

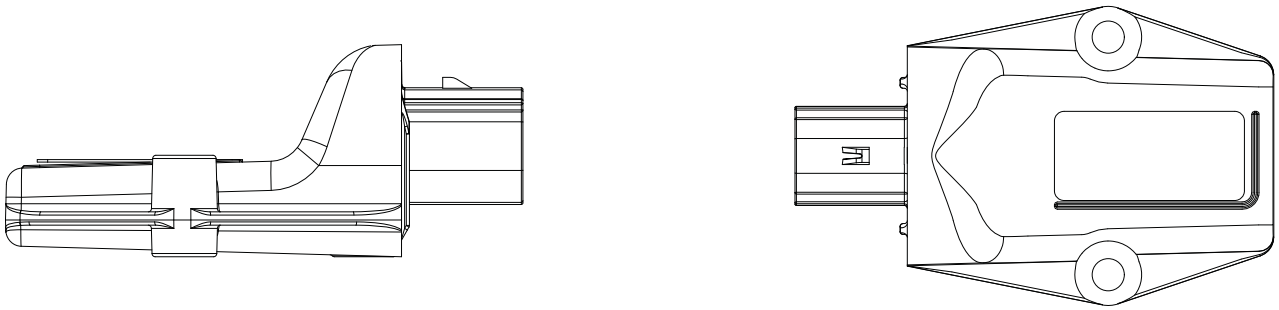


Figure 2.

Vehicle Integration Module (VIM)

The VIM (shown in Figure 3) is the core communicating module of the SMARTEC® ZT drive system and performs several critical functions. The VIM interfaces with all of the modules within the SMARTEC® ZT drive system by performing machine state checks and ensuring feedback data from the modules are within configured parameters.

When the VIM is initialized various mechanical safeties are observed before the vehicle is fully operational.

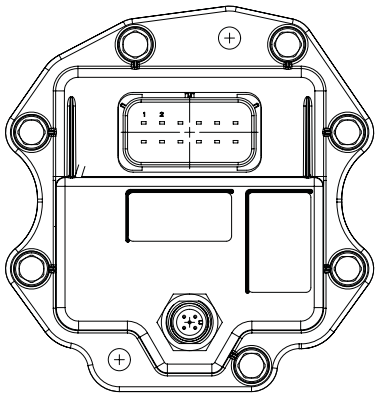


Figure 3.

Smartec Devices

Traction Controller

The Smartec Traction Controller is a three-phase, hex-bridge inverter designed to optimally drive Hydro-Gear's line of BLDC (brushless DC) electric traction motors in residential applications. The controller receives three-phase rotor position signals from three analog devices embedded within the attached brushless DC motor. In addition, the controller provides a speciifc amount of current to the brake coil to disengage the brake.

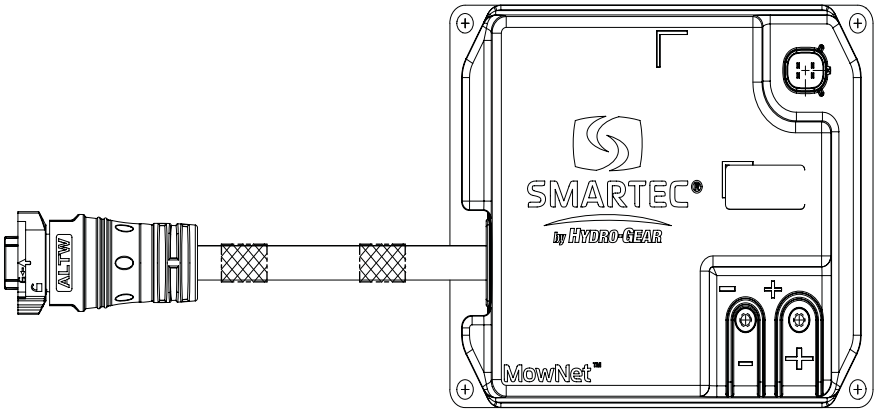


Figure 4.

LBSM (Lap Bar Sensor Module)

The Smartec Electric Drive system consists of two LBSMs (shown in Figure 5a and 5b). The Lap Bar Sensor Modules (left and right) translate rotational input from the lap bars positioning via the operator. These angles of position are then communicated to the Vehicle Integration Module (VIM) which checks the data to ensure it is within configured parameters.

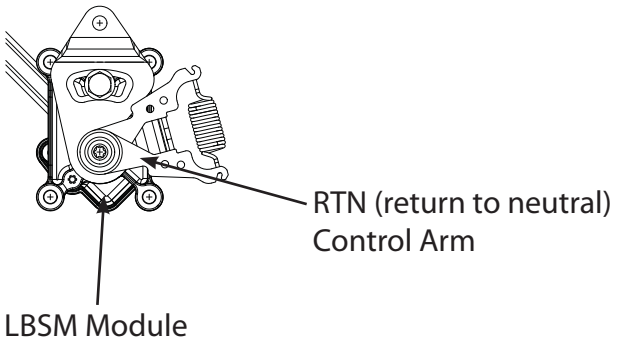


Figure 5a, Back side view

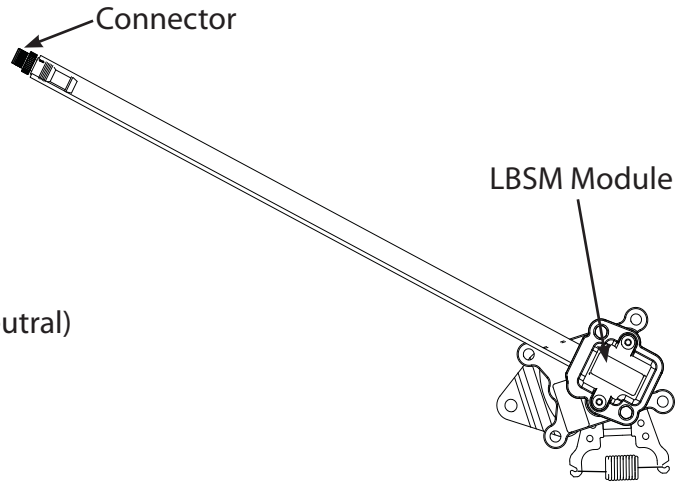


Figure 5b, Frontal view

Smartec Devices

Deck Controller

The Smartec Deck Controller (shown in Figure 6) is a three-phase inverter designed to optimally drive Hydro-Gear's line of electric deck motors in residential applications which drive the cutting blades.

The deck controller monitors current, voltage and temperature of the controller board. The deck controller also monitors CAN (controller area network) bus messages and MowNet™ power.

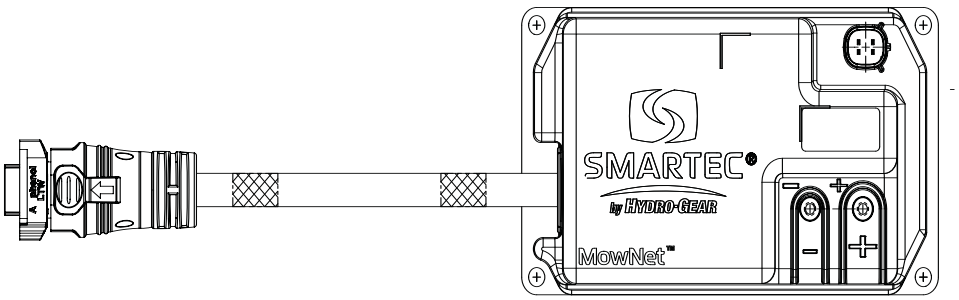


Figure 6.

Deck Motor

The Smartec Electric Deck motor (shown in figure 7) is a brushless direct current motor (BLDC Motor). The deck motor cannot function without the commutation provided by the controller.

The Smartec Electric Deck System includes all electrical components required to electrically drive the cutting blades powered by the deck motor or motors that are part of the deck system.

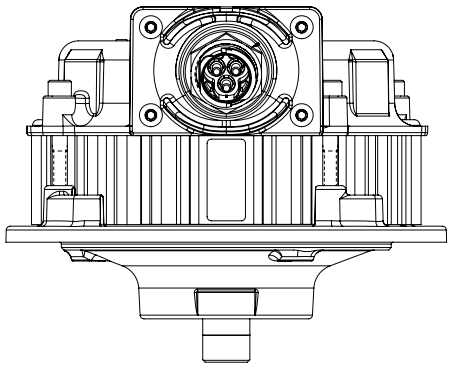
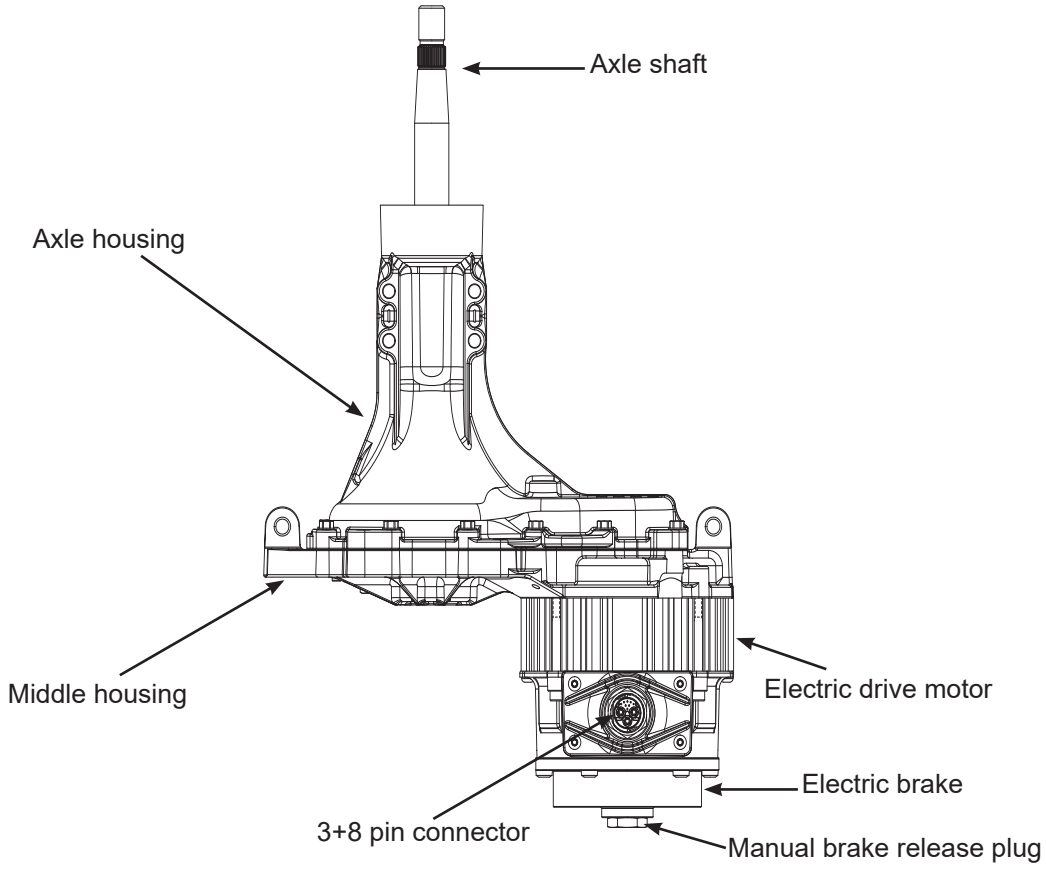
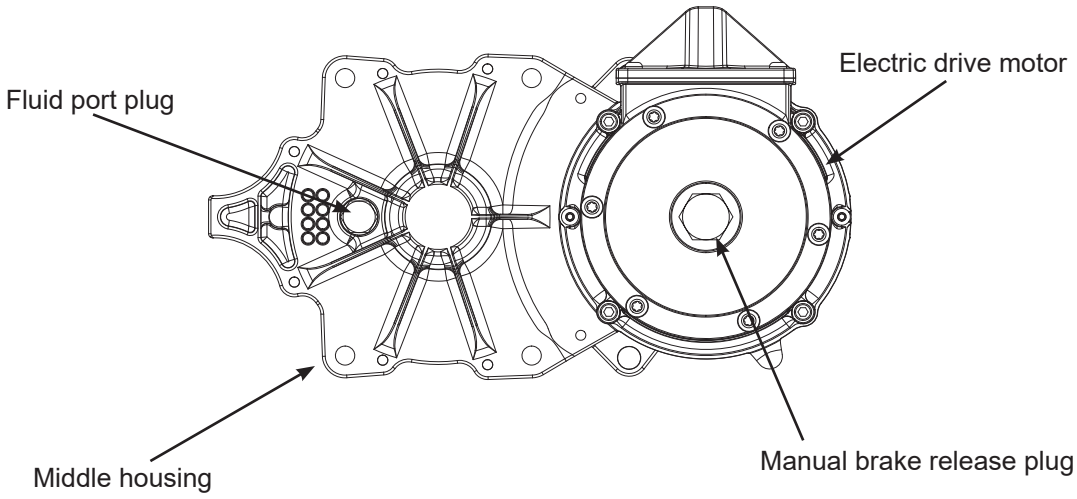


Figure 7.

EXTERNAL FEATURES ZT-3400e™



Top View



Side View

TECHNICAL SPECIFICATIONS

Table 1. Technical Specifications

Smartec Integrated Electric ZT Drive System Specifications	
Product	3400e™
System Voltage (up to)	88V
Electric Motor	Smartec Brushless DC Motor
SMARTEC® Mobile Apps Compatible	Yes
Output Torque (up to)	500 lb-ft, [677 Nm]
Speed (up to)	10 mph, [16 kph]
Gross Vehicle Weight (up to)	1562 lbs, [708 kg]
Axle Shaft Diameter	1.125 in, [28.56 mm]
IP Rating	66k
Electric Brake	Standard

EXTERNAL MAINTENANCE

Regular external maintenance of the Smartec Drive & Deck system should include the following:

1. Check the vehicle operator's manual for the recommended load ratings. Insure the current application does not exceed load rating.
2. Inspect the vehicle wiring harnesses for loose connections or broken wires. If wire insulation shows signs of cracking or wear, the wire harness should be replaced.
3. Inspect the fail safe brake release to insure proper operation of the brake.

SERVICE AND MAINTENANCE PROCEDURES

All the service and maintenance procedures presented on the following pages can be performed while the Smartec components are mounted on the vehicle, provided the vehicle frame allows access. Any repair procedures as mentioned in the tear down and assembly section of this manual must be performed after the component has been removed from the vehicle.

Battery Service

Refer to the specific vehicle manufacturers operating manual for the correct charging and service procedures for the battery.

FLUIDS

The fluids used in Smartec products have been carefully selected, and only equivalent, or better products should be substituted.

Typically, an engine oil with a minimum rating of 9.0 cSt (55 SUS) at 230°F (110° C) and an API classification of SL is recommended. A 20W-50 engine oil has been selected for use by the factory and is recommended for normal operating temperatures.

"All fluids should be handled and disposed of according to local, state, and federal regulations."

FLUID VOLUME AND LEVEL

Fluid volume information is provided in Table 3, page 18.

Certain situations may require additional fluid to be added or even replaced. Refer to Figure 8, page 18 for the proper fill port location.

Fill the Smartec transaxle according to page 18.

Note: "Any and all Hydro-Gear components removed and replaced during service are recyclable."

TOOLS AND TORQUE SPECIFICATIONS

Table 4. Required Tools

REQUIRED TOOLS	
Miscellaneous	**Sockets**
Hub Puller	1/2”-3/8” Adapter
Ratchet, 1/2”	3/8” Deep
Flat Blade Screw Driver (2)	1-1/8” Deep
Torque Wrench	1/4” Deep
Air Impact Wrench	1/4” Allen
Rubber or Neoprene Mallet	3/4” Deep
Breaker Bar	9/16” Deep
Side Cutters/Snips	T-40 Torx Head
Needle Nose Pliers	7/8” Standard
Large Internal Snap Ring Pliers	
7/8” Open End Wrench	

Table 5. Required Torque Values

REQUIRED TORQUE VALUES			
Item	**Description**	**Torque**	**Operation**
5	Plug 9/16-18 (Metal)	110 – 150 lb-in (12.4 - 16.9 Nm)	Fluid Port Plug
20	Screw, Hex head 1/4-20 x 1.25”	105 – 155 lb-in (11.8 - 17.5 Nm)	Axle Housing Screws
43	Lock Nut, Hub 3/4-16	240 - 260 lb-ft (325.4-352.5 Nm)	Hub Nut
48	Plug, 7/8-14	240 - 280 ib-in	Brake Release Plug
73	Screw 1/4-20x1	80 - 120 lb-in [9-14 Nm]	Brake Assembly Screw

BLUETOOTH APPLICATIONS

MyMow®

MyMow® is the end-user application for the SMARTEC® System.

This application allows the end-user to communicate via Hydro-Gear Bluetooth with the system to perform simplified troubleshooting and customize pre-set performance parameters.

MyMow® is a key component for the end-user to interface with the SMARTEC® system and perform the following features:

1. Simplified troubleshooting
2. Customizing performance
3. Receiving and installing live updates

Customizing

Customize the top end performance of the mower which is determined by factory pre-set parameters as well as restore defaults to factory settings when necessary.

Troubleshooting

The end-user will be able to see the status of Seat Switch, Neutral, PTO, and Battery. The inputs will either show up as green or red on the screen. If one of the inputs is shown red, then the end-user is made aware of the reason the mower won't run.

Clicking on one of the diagnostic inputs will provide additional information.

MyMow® Access

End-user should follow the following steps to access and utilize MyMow®.

1. Download MyMow® application from Apple Store or Google Play Store.
2. Open up MyMow® application on device.
3. Establish bluetooth connection via the MyMow® bluetooth connection.

Smartec Connect™

Smartec Connect™ is the dealer service application for the SMARTEC® System.

This application is a key component allowing authorized SMARTEC® service dealers to communicate with the SMARTEC® system via Hydro-Gear bluetooth to assist in the following:

1. Component Replacements
2. In-App Troubleshooting
3. Component Calibration
4. Maintenance Notices

For questions or concerns the servicing dealer should contact their authorized Central Service Distributor, Hydro-Gear Technical Support at 217-728-2582 or email Hydro-Gear at info@Hydro-Gear.com.

Smartec Connect™ Access

To access Smartec Connect™ the authorized SMARTEC® servicing dealer should perform the following procedures:

Note: In order to utilize Smartec Connect™ and perform the functions listed below the user must be an "Authorized SMARTEC® Dealer."

1. Download the Smartec Connect™ application from Apple Store or Google Play Store.
2. Open up Smartec Connect™ application on device.
3. Log-in to Smartec Connect™ with Hydro-Gear credentials.
4. Establish bluetooth connection via the Smartec bluetooth connection.

TROUBLESHOOTING

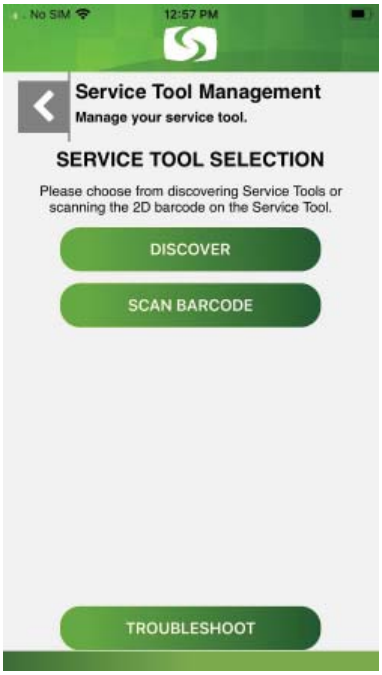
Electrical Troubleshooting

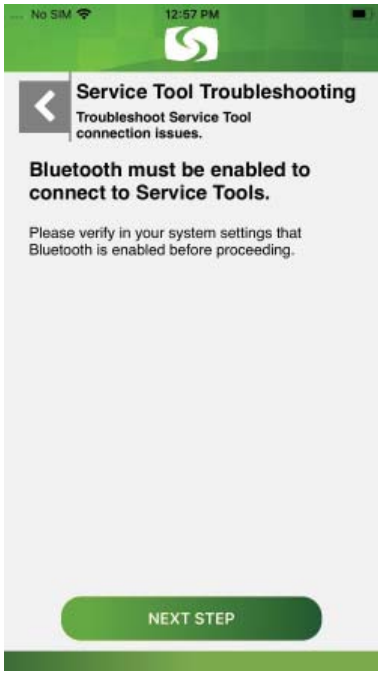
Troubleshooting may be performed by the end user through the MyMow® application software. For information on downloading the MyMow® application software see page 15.

Authorized SMARTEC® service dealers may perform service troubleshooting through the use of the Smartec Connect™ application software. For information on downloading the Smartec Connect™ application software see page 15.

Bluetooth Connection Troubleshooting

If a bluetooth connection cannot be established follow the bluetooth service tool troubleshooting directions from the images displayed below.





Mechanical Drive Troubleshooting

Mechanical Symptoms		
Symptom	***Why***	***How to Repair***
Reduced Drive Speed	Stripped Internal Axle Spline.	Replace axle shaft.
Reduced Drive Speed	Stripped gear.	Replace transaxle.
No Drive	Stripped internal or external axle spline.	Replace axle shaft.
No Drive	Stripped or broken gear.	Replace transaxle.
Leaks	Damaged or malfunctioning seal or sealant.	Replace seals or sealant as needed.

Mechanical Deck Troubleshooting

Deck System Symptoms		
Symptom	***Why***	***How to Repair***
No Deck Operation	Extreme mowing conditions.	Refer to machine owners manual for proper mower use. Move to short grass area.
	Blockage under mower deck.	Refer to machine owners manual for clearing the mowing deck of debris.

HOW TO USE THIS SECTION

Each assembly illustrated in this manual is illustrated with an exploded view showing the parts involved. **The item reference numbers in each illustration are for assembly instructions only.** See pages 24-25 for part names and descriptions. A complete exploded view and item list of the transaxle is provided at the end of the repair section.

GENERAL INSTRUCTIONS

Cleanliness is a primary means of assuring satisfactory life on repaired units. Thoroughly clean all exposed surfaces prior to any type of maintenance. Cleaning of all parts by using a solvent wash and air drying is usually adequate. As with any precision equipment, all parts must be kept free of foreign material and chemicals.

Protect all exposed sealing surfaces and open cavities from damage and foreign material. The external surfaces should be cleaned before beginning any repairs. **Do not use a pressure washer to clean the transaxle.**

Upon removal, it is recommended that all seals, O-rings, and gaskets be replaced. During installation lightly lubricate all seals, O-rings and gaskets with a clean petroleum jelly prior to assembly. Also protect the inner diameter of seals during installation by covering the shaft with a cellophane or plastic wrap material. Be sure all remnants of this covering are removed after servicing.

Parts requiring replacement must be replaced from the appropriate parts and kits identified in the Parts Description Listing, found at the end of this manual. Use only original Hydro-Gear replacement parts found at www.hydro-gear.com or at your Hydro-Gear Central Service Distributor.

Note: "Any and all Hydro-Gear components removed and replaced during service are recyclable."

TRANSAXLE REMOVAL

NOTE: If it is necessary to remove the transaxle from the vehicle before performing the repair procedures presented in this section reference the vehicle manufacturers specific service instructions for removal and replacement of the transaxle.

To remove the wheel from the hub, do so by removing the lug nuts. **Do not remove the axle/hub nut unless replacing the hub, the axle seal or removing the axle shaft.**

Before starting any disassembly, make certain that your work area is neat and clean. Clean the external parts of the transaxle.

The following procedures are presented in the order recommended for disassembly of the transaxle.

Do not disassemble the unit any farther than necessary to accomplish the required repairs.

Reassembly is accomplished by performing the "Assembly" portions of the procedures.

FLUID CHANGE PROCEDURE ZT-3400e™

This transaxle is factory filled, sealed and does not require oil maintenance. However, in the event of oil contamination, degradation or leaks an oil service may be performed .

1. Remove the transaxle from the vehicle.

NOTE: If removing the wheel from the transaxle, do so by removing the lug nuts. Do not remove the axle/hub nut.

2. Clean the fluid fill port area of any debris.

3. To drain the oil, position the transaxle above an appropriate receptacle capable of securing a minimum of 2 quarts of engine oil.

4. Remove the fluid port plug (5).

5. Allow the transaxle to completely drain.

6. Position the transaxle as shown in figure 8 below to replace the oil.

   Note: If the internal main drive gear obstructs the fluid access port it may be necessary to rotate the axle slightly to remove the obstruction.

7. Fill the transaxle at the fluid access port with the correct volume specified in Table 3 below.

8. Install the fluid port plug (5). Reference page 13 for the correct torque specification.

9. Reinstall the transaxle.

Table 3. Fluid Volumes

Series	Fluid Description	Volume
ZT-3400e™	20W50 engine oil	.69 qts/22 oz/650 mll

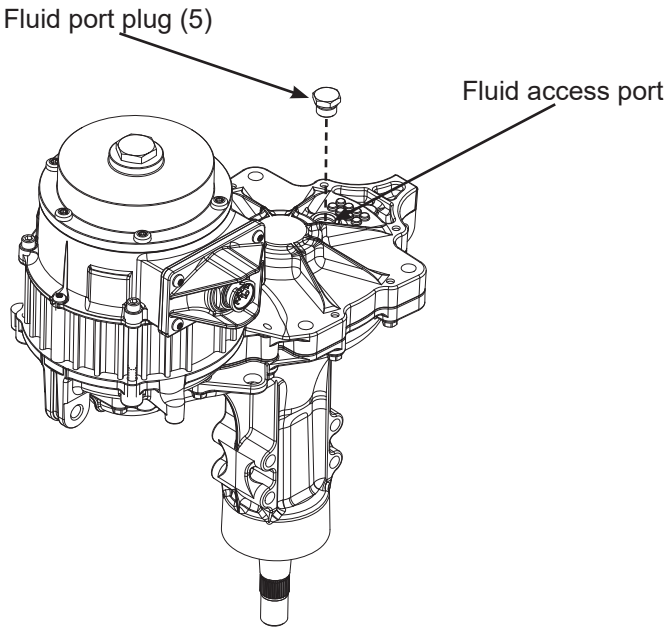


Figure 8. Fluid level and fluid access port

e-BRAKE

Electric Brake

The electric drive motor utilizes an internal brake system (e-brake) that is managed by the traction controller. See figure 9 below.

The e-brake is always engaged until disengaged by the traction controller for drive operation.

The e-brake requires no maintenance and does not allow for mechanical adjustment.

If the function of the e-brake requires service contact an authorized Hydro-Gear SMARTEC® service center.

The vehicle may be moved without use of the electric drive motor by activating the manual brake release plug (48) .

WARNING

Manually releasing the brakes will result in the loss of electrical braking capacity. The machine must be stationary on a level surface and the key in the "OFF" position when actuating the manual release.

Rotating the manual brake release plug (shown in Figure 10) counter-clockwise 4 full turns with a 7/8" wrench will allow the vehicle to free wheel and be pushed by hand.

To set the e-Brake to safe operation mode rotate the manual brake release plug (48) clockwise to a torque value of 240 - 280 in. lbs.

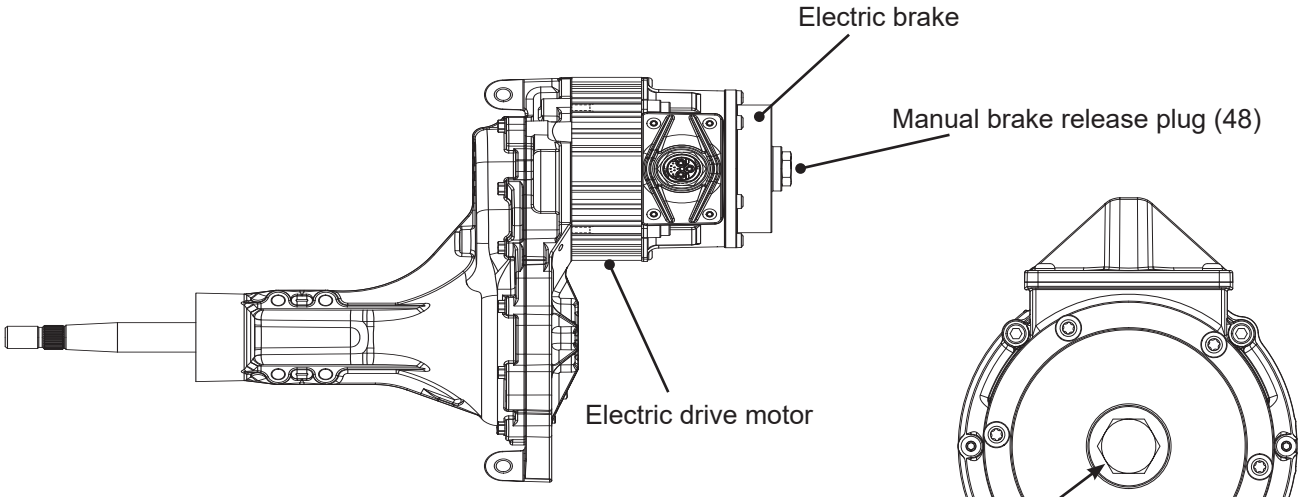


Figure 9

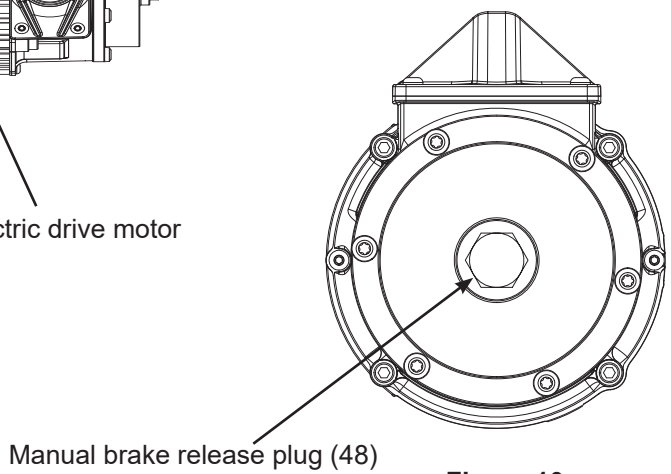


Figure 10

HUB REMOVAL - TAPER AXLE

Do not use this procedure to remove the drive wheel from the transaxle. Remove the drive wheel by removing the lug nuts.

DESCRIPTION: Follow the directions below for removal of flanged hubs from tapered axle shafts to facilitate maintenance.

Note: *Anytime a hub and/or hub nut is removed, it is to be discarded and replaced with a new hub and/or hub nut.*

WARNING

POTENTIAL FOR SERIOUS INJURY

Inattention to proper safety, operation, or maintenance procedures could result in personal injury, or damage to the equipment. Before servicing or repairing the transaxle, fully read and understand the safety precautions described in the transaxle Service and Repair manual that pertains to the specific transaxle to be repaired.

Note: *Before using the appropriate Hub Removal Tool, apply a thin coat of anti-seize to the bolt threads. Thread the bolt in and out of the Hub Puller prior to using it for the first time.*

1. Chock the front wheels, insure the machine brake is engaged. Raise the vehicle drive tires off the ground and remove the lug nuts from the vehicles' drive wheel/hub studs.

2. Remove the hex retaining nut 3/4"-16 (43) from the center of the axle hub (41) and discard.

3. Back out the hub removal tool bolt with a 1-1/8" socket before installing the hub removal tool to the axle hub.

4. Insert the hub removal tool over the flange wheel hub studs. Install lug nuts and secure evenly. Torque to 100 lb-in. (11.3 Nm).

5. Tighten the 1-1/8" socket head center bolt evenly and slowly. Note: This pressure will separate the hub from the tapered axle.

6. Remove the lug nuts and separate the hub removal tool from the flanged hub and discard the "old" flanged hub and replace with a new flanged hub.

7. Apply machine brake to assist in achieving proper retaining nut torque during reassembly of the flanged hub to the tapered axle. Reference page 13 for torque values.

8. Install wheel and rim and torque lug nuts. Reference applicable vehicle service manual for proper lug nut torque.

9. Lower the vehicle to the ground, remove chocks. Note: Brake will still be in engaged mode.

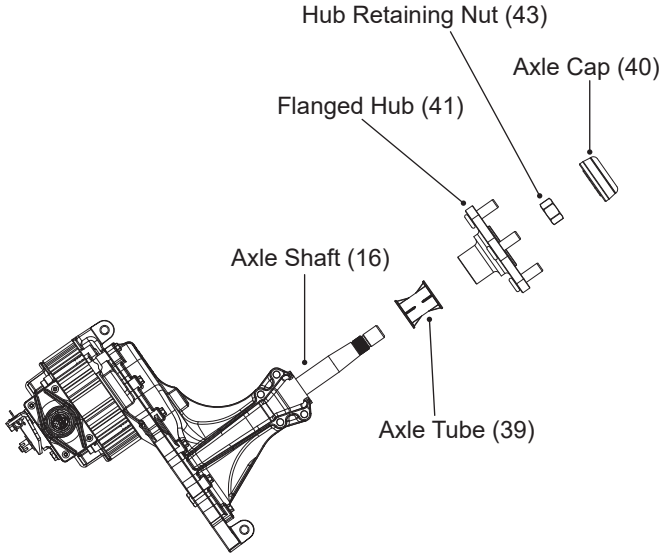


Figure 12, Hub assembly

SEAL KIT AND AXLE SHAFT REPLACEMENT

Refer to Figure 13.

Disassembly

1. Remove oil from the transaxle. See page 18.
2. Remove the axle hub. See page 20
3. Remove the housing screws (20).
4. Remove the axle housing (1) from the middle housing (2).
5. Remove axle retaining ring (19), seal (18), axle shaft (16) and bearing (17a).

Inspection

1. Inspect the axle shaft and bearing.

Assembly

1. Install the axle bearing (17a) and axle shaft (16) into the axle housing (1).

   Note: Installing the axle shaft into the axle housing may require aligning the splined axle shaft with the internal splined main drive gear. Reference page 24 if needed.

2. Install the axle housing (1) to the middle housing (2).
3. Install the axle seal (18) and retaining ring (19).
4. Install the axle housing screws (20). Reference page 13 for torque values.
5. Fill the transaxle with oil. See page 18.
6. Reinstall the transaxle. *Reference the manufactures service manual specific to the vehicle for installation of the transaxle.*

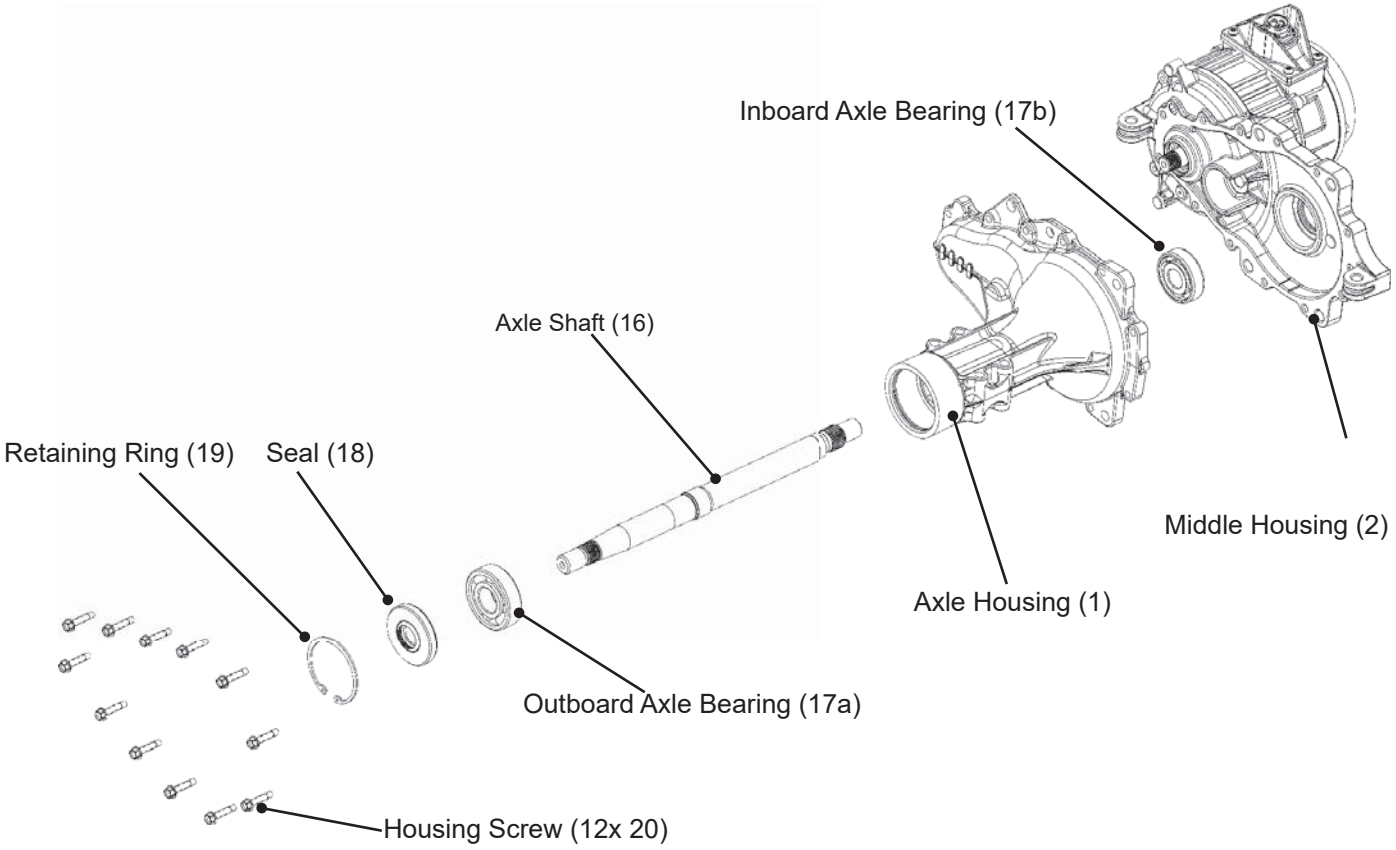


Figure 13, Axle assembly

SEALANT APPLICATION

NOTE: Prior to applying the new sealant, the old sealant must be removed from all surfaces.

A small consistent bead of the sealant around the housing face will be sufficient.

Use sparingly.

The illustration below indicates the correct areas.

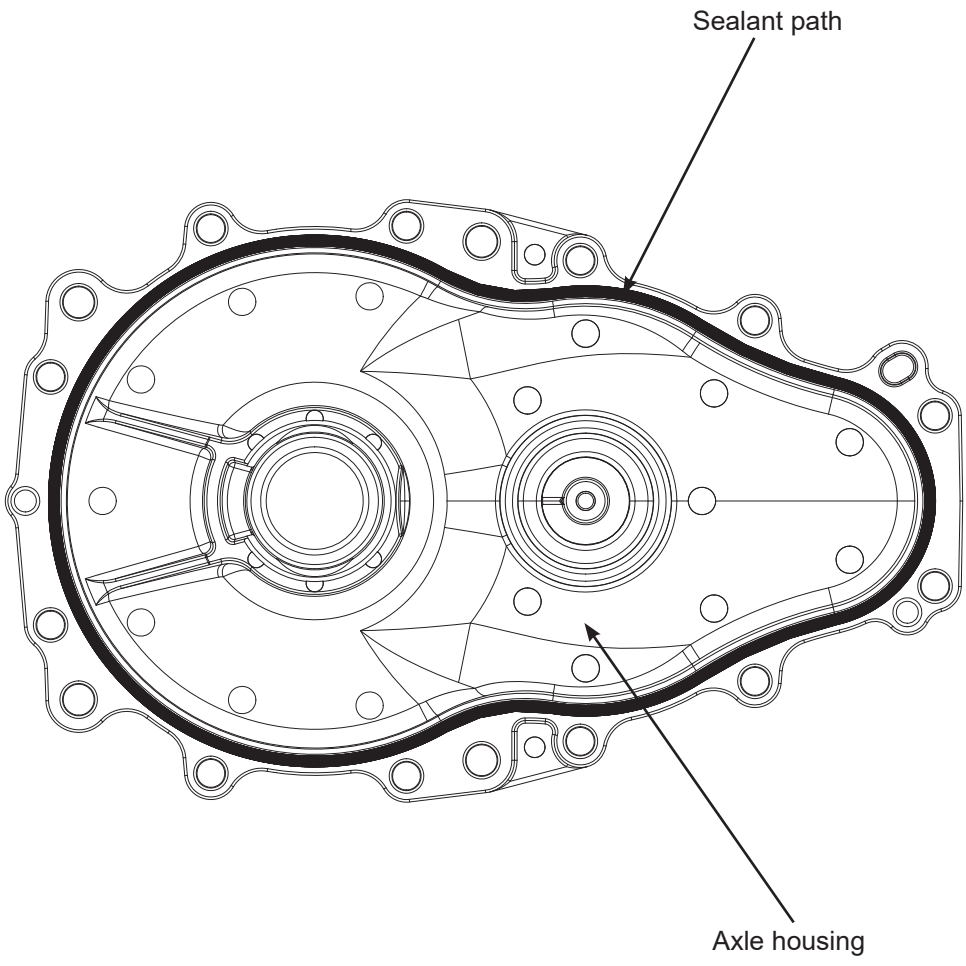


Figure 14, Sealant path

HOUSING – SCREW TIGHTENING SEQUENCE

Starting with the number “1” screw location, tighten sequentially through to “12.”

Torque each screw to 105 - 155 lb-in (11.87 - 17.52 Nm). Reference page 13 for torque values.

NOTE: *As a general rule, use the low end of the torque specification.*

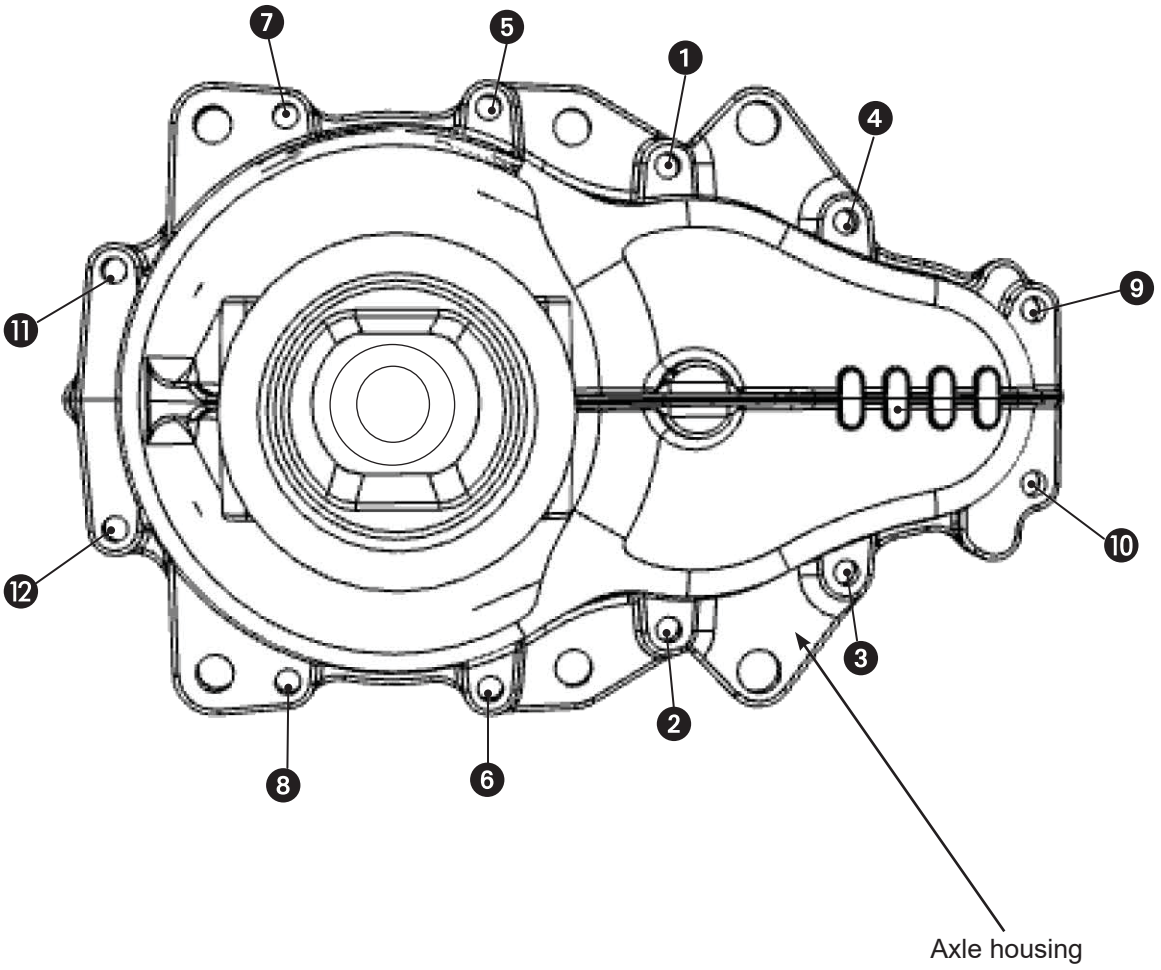


Figure 15, Screw tightening sequence diagram

ZT-3400e™ EXPLODED PARTS VIEW

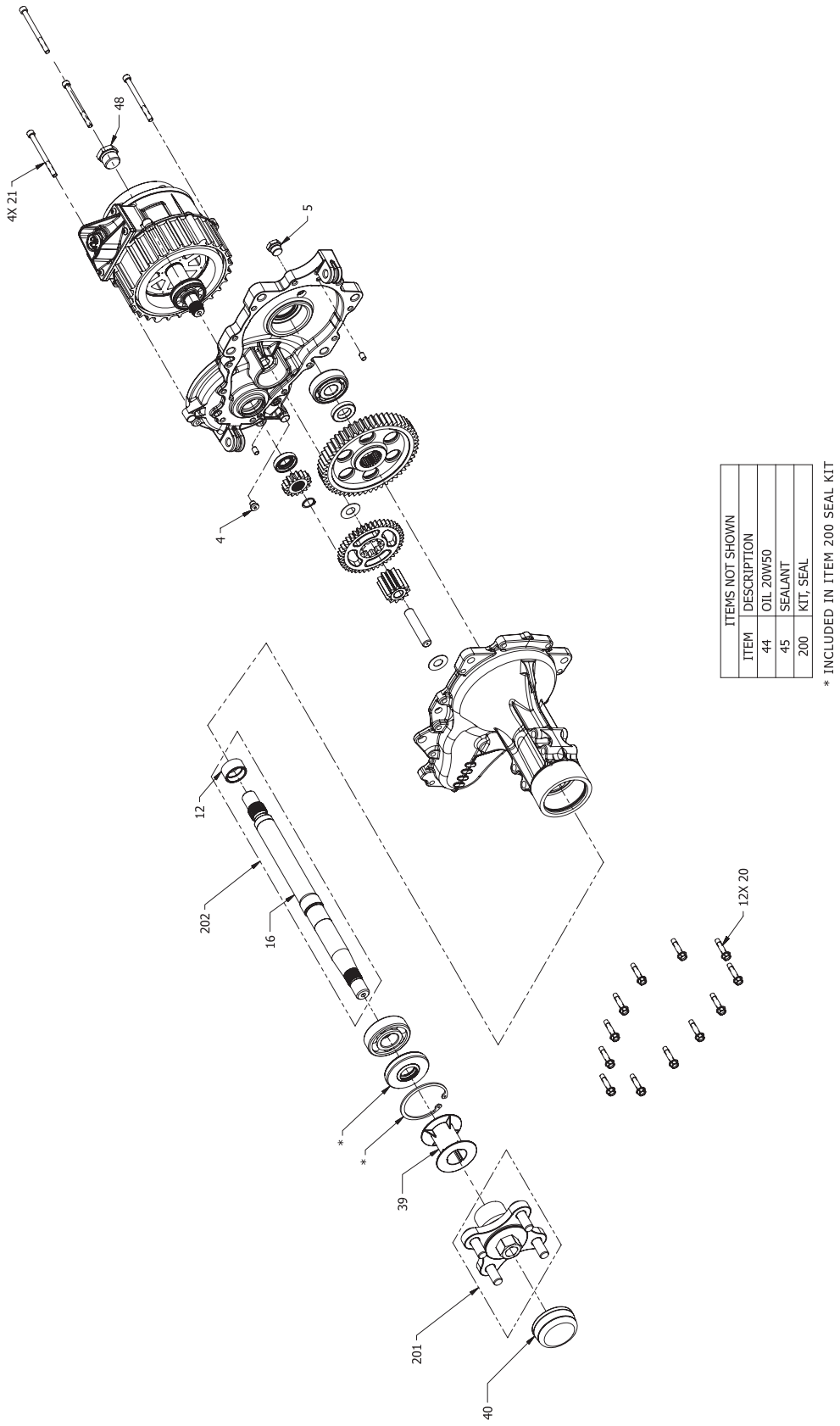


Figure 17, ZT-2800e™

ZT-3400e™ PARTS DESCRIPTION

No.	DESCRIPTION
4	Plug, 5/16-24 Socket Head
5	Plug, External Hex Vent 9/16-18
16	Shaft, Axle
17	Bushing, 1.003 X 1.571 X .625
21	Screw, 1/4-20 x 3
24	Puck, Brake
25	Rotor, Brake
35	Nut, Castle 5/16-24 PL
39	Tube, Axle
40	Cap, Axle
41	Hub, Flanged
44	Oil, 20W50
45	Tube, Sealant
48	Plug, 7/8-14
200	Kit, Seal
201	Kit, Hub
202	Kit, Axle

GLOSSARY OF TERMS

Bluetooth Module: A short-range wireless technology standard that is used for exchanging data between fixed and mobile devices over short distances using UHF radio waves that is It is mainly used as an alternative to wire connections to exchange files between nearby portable devices.

Bus Bar: In electrical power distribution, a bus bar is a metallic strip or bar, typically housed inside a busway enclosure for local high current power distribution.

CAN: Control Area Network, a communication protocol for active components in a system.

Capacitor: A device for storing electrical energy consisting of two conductors in close proximity and insulated from each other.

Capacitor Discharge: A dissipation of stored energy within a capacitor.

Continuity: Is an uninterrupted path from point A to point B.

Contactor: An electromagnetic switch device (a relay) used for switching an electrical circuit.

DC: Direct current.

Deck Controller: The computer controller for the deck motors, reports to the traction controller.

Deck Motor: The electric motor that powers the cutting blades.

Derate: Reducing the power rating of a component or device.

Digital Display: LCD dash display that communicates system status from the traction controller to the operator.

DMM: Digital Multi-Meter; combination ohm, voltage and current meter.

Drive Motor: The electric motor that powers the gear case.

Integrated Electric Transaxle: The electric motor and gear case assembly that transmits power to the wheels.

Electric Current: Is the rate of charge flow past a given point in an electric circuit measured in amperes.

Electric Short: A low resistance connection between two points in an electrical circuit. The current flows through the area of low resistance, bypassing the intended current flow in the circuit.

GLOSSARY OF TERMS (cont.)

LBSM: Lap Bar Sensor Module. The Lap Bar Sensor Modules translate rotational input from the position of the lap bars.

NC: Normally closed switch.

NO: Normally open switch.

Ohm Meter: A meter that only measures resistance, measured in ohms.

Resistance: Is the level of opposition to current flow in an electrical system, measured in ohms (Ω).

Traction Controller: Controller for the drive motors.

VIM: Vehicle Integration Module. It interfaces with all of the modules within the Smartec drive system by performing machine state checks and ensuring feedback data from the modules are within cinfigured parameters.

Voltage: Pressure from an electrical circuit's power source that pushes charged electrons (current) through a conducting loop.

Notes

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