

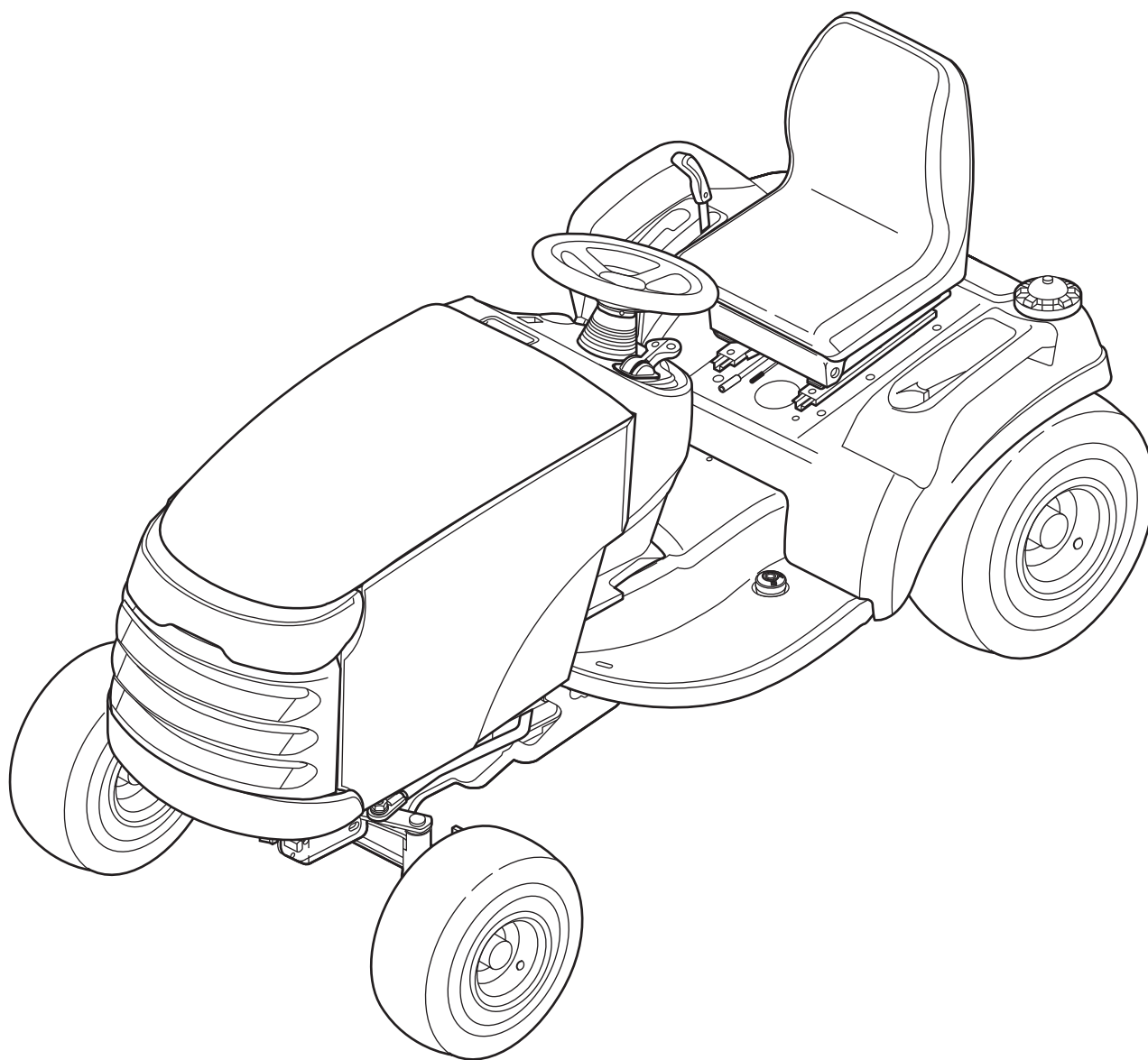
# Installation Instructions

## Power Steering Conversion Kit

Mfg. No. 1687286, 1687302

For Prestige / 500 / 1800 / 2800 Series Tractors

---





**SECTION CONTENTS**

**General Information**

**Safety**

Personal Protective Equipment ..... 1-1  
Battery/Electrolyte Safety .....1-1  
Electrical System Safety .....1-1  
Elevating Unit Safety .....1-1  
Proper Tool Use.....1-1  
Work Area Safety.....1-2  
Compressed Air Safety .....1-2  
Grease & Lubricant Safety.....1-2  
General Servicing Safety .....1-2

**General Repair**

Bearings & Bushings ..... 1-3  
Belts & Pulleys ..... 1-3  
Electrical Parts .....1-3  
Fasteners & Hardware .....1-4  
Genuine Replacement Parts.....1-4  
Hydraulic Parts .....1-4  
Paint.....1-4  
Required Tools & Equipment.....1-4  
System Checks .....1-4  
Notes .....1-5

**Installation Instructions**

Kit Contents ..... 2-1  
Parts, Descriptions..... 2-2  
Hitch Replacement .....2-3  
Front Axle Replacement .....2-3  
Steering Replacement .....2-7  
Tilt & Steering Wheel Installation.....2-11



## SERVICE AND MAINTENANCE

### Personal Protective Equipment

- Wear protective safety glasses whenever using hand or power tools, shop equipment, and whenever working under power equipment to protect your eyes from falling debris and small parts.
- Wear safety goggles or full face protection when handling battery electrolyte fluid, or when performing grinding or sharpening operations that produce sparks or flying debris. Extensive grinding may require the use of protective sleeves and an apron.
- Wear work gloves when handling sharp surfaces such as mower blades, or when working around sharp edges. Never wear gloves that are loose fitting or that have tie straps, as these could cause your hands to get caught by rotating parts, resulting in serious injury. Chemical-resistant Rubber gloves are recommended when handling or pouring battery electrolyte.
- Steel-toe safety shoes are highly recommended to protect feet from falling tools, heavy parts, and other shop equipment.

### Battery/Electrolyte Safety

- Lead-Acid batteries use an electrolyte containing sulphuric acid, a highly corrosive liquid that can cause severe chemical burns if allowed to come into contact with skin, or blindness if allowed to contact your eyes. Always wear approved eye goggles or a full face shield and protective gloves when handling electrolyte or filling the battery.
- Lead-acid batteries also produce hydrogen, a colorless, highly explosive gas that can be easily ignited by a single spark. Charging the battery incorrectly or hooking up jumper cables improperly can cause sparking, and must be avoided. Always follow recommended battery charging and jumper cable procedures.
- When removing or installing battery cables, disconnect the negative cable FIRST, and reconnect it LAST. If not done in this order, the positive terminal could be accidentally shorted to the frame by a tool, creating a dangerous spark that can ignite nearby fuel vapors or escaping hydrogen gas from the battery.
- Keep battery securely fastened in position with vent tube directed down and out of battery compartment. Replace battery if electrolyte leakage occurs. Make sure the battery vent tube is properly installed, and is not plugged with clippings or other debris. Replace the vent tube if cracked, damaged, or missing from unit.
- Old batteries should be disposed of by recycling.

### Electrical System Safety

- Loose connectors, worn wires, damaged wire insulation, and loose termination hardware can cause sparks, short-circuits, and erratic equipment operation. Always check wiring for damage, and make appropriate repairs before placing unit back into operation.
- Use care when working around exposed terminals to prevent short-circuiting the electrical system. Sparking, electric shocks, and damage to the system may result from accidental contact between terminals and metal hand tools.

### Elevating Unit Safely

- Always support unit on approved jack stands when working on an elevated unit, and keep unit from rolling by engaging parking brake and placing wheel chocks behind wheels still on floor or work table.
- Secure unit to work-surface of scissor-lift worktables or other powered lift tables in accordance with the manufacturer's instructions. Unsecured units may roll unexpectedly while work is being done, causing injuries.
- Never work under an elevated unit unless it is properly supported by jack stands, locked from rolling with wheel chocks or equivalent, and you can quickly escape from under the unit in an emergency using a rolling device such as a mechanic's creeper.
- Always protect your eyes from falling debris or small parts by wearing approved safety glasses or goggles.
- Remove the ignition key and disconnect the spark plug wires before working under a unit. Accidental or inadvertent starting could result in serious injuries.

### Proper Tool Use

- Use power and hand tools only for the use that they were designed. Never alter or modify tools, or improvise using tools that are not suitable for the job at hand.
- Keep all hand and power tools in good repair, and put them away when done to avoid cluttering the work area. Use extra care when using corded tools around moving or rotating parts such as belts and pulleys, since the cord could get caught and suddenly pull the tool, or you, into the area of moving parts.
- Always check the unit to ensure that all hand and power tools and tool attachments have been removed from the unit after use. Small tools and tool attachments left on the equipment can fall into the cutting path when the unit is placed into service, and become a hazard to bystanders if struck by mower blades.

## Work Area Safety

- Always keep the work area clear of clutter from discarded parts, and debris from parts boxes or packaging materials. Small parts, hardware items, and other debris or refuse left lying around can become slip, trip, and fall hazards if not removed and discarded properly.
- Always observe general shop safety rules for house-keeping, and tend to oil spills and other spilled fluids promptly to prevent slip and fall injuries.
- Allow sufficient work area around the equipment you are working on to permit comfortable working positions. Never put yourself in a position that would prevent you from escaping quickly in the event of emergencies such as sudden shifts in equipment position, fire, or other situations requiring an immediate reaction on your part.

## Compressed Air Safety

- Always use care when using compressed air to blow dirt and debris off equipment - always direct the air blast away from yourself and others in the area, and protect your eyes with safety glasses to prevent injury from particles that may blow back toward your face.
- Never use high pressure air directly against your skin to clean dirt and debris - the air pressure could actually force foreign material or fluids into your skin, causing serious injuries.
- Use care when filling tires - lawn and garden tractors utilize low pressure tires, and over-pressurization is hazardous to you and anyone who operates the equipment with improper tire pressures. Always consult the air pressure recommendations for the unit involved before adding additional air to the tires.

## Grease & Lubricant Safety

- Normal service and maintenance involves the use of oils and greases that could present a fire hazard if not handled properly. Always dispose of oily rags properly to prevent fires caused by spontaneous combustion.
- Spilled lubricants pose dangerous slip hazards and must be taken care of immediately. Wipe up spills carefully, or use absorbent materials to soak up spilled fluids. Always dispose of rags, paper towels, and other saturated absorbent properly.
- Store oils and greases away from flame or other ignition sources. Petroleum-based fluids can be ignited by smoking materials and sparks - always treat oils and greases as potentially flammable materials. Always cap oil and grease containers when done using, and store or dispose of properly.

## General Servicing Safety

- Always check safety devices and switches for proper operation - never alter these devices or make temporary or makeshift repairs. Use only factory-authorized parts and procedures, and check newly-installed parts for proper operation.
- Make sure all hardware items are properly tightened, especially blade attachment bolts. Replace any hardware that appears damaged.
- Check brake operation, and adjust or repair as required. Always comply with factory specifications on settings and adjustments.
- Check grass catcher components for wear, damage, or deterioration, and replace with factory authorized parts if necessary.
- Always make repairs using factory authorized replacement parts only. Using parts that don't meet factory specifications can result in sudden or premature failures, poor or erratic equipment performance, and potential safety hazards to operators and bystanders.
- Always comply with factory specifications on settings and adjustments when installing new parts, making repairs, or performing routine service procedures.
- Always test repairs before releasing units to customers, paying special attention to any items that are safety-related. Correct any problems noted, and re-check to ensure that the problems have been fully remedied.
- Make sure all safety and operating instruction decals are legible, properly located, and securely attached. Replace any decals that can't be read or are in danger of falling off.
- Always advise equipment owners of any potential operating or safety problems that may be arising due to anticipated wear, and request that the owner address the problem before a hazard develops.
- Never allow a unit to be placed back into service if a serious safety or operating problem is evident. Advise the owner of the problem and the possible hazards associated with the problem, and request permission to correct the deficiencies.
- Use extreme care when working on older models that do not have all of the latest safety devices and switches. Disengage the PTO and transmission before starting the unit, or commencing repairs.
- Always use care when removing or installing parts to prevent damage from dropping or rough handling. Support heavy parts properly to prevent damage or personal injury to yourself and others.

## GENERAL REPAIR INFORMATION

In addition to providing specific repair procedures for the equipment listed at the beginning of this section, this manual provides the following additional general instructions for dealing with repairs to various types of components.

This information is designed to help you deal more effectively with these components by providing basic service knowledge and other useful tips.

### Bearings & Bushings

Roller bearings, ball bearings, and bushings are used to provide support to rotating shafts and other parts such as gears, pulleys, and sprockets that are used to transmit rotary motion. Over time, bearings and bushings may require additional lubrication to transmit this rotary motion with minimal friction, or may need replacement due to normal operation and wear. Normal service for bearings and bushings includes removal, cleaning, inspection, lubrication, and replacement.

#### REMOVAL

Most bearings and bushings used on the listed equipment can be easily removed by following the appropriate detailed procedures found throughout this manual. Care should always be exercised to avoid scratching or damaging the bearing or bushing, the mounting shaft, and surrounding components. Bearing or bushing removal is usually necessary when excessive play or wobble is noticed on the part it supports, when unusual noise or vibration is apparent, or when a burning smell is present at the bearing location.

#### CLEANING

Sealed bearings and bushings can be cleaned by careful wiping with a cloth. Bearings with one-sided or removable shields and plain bushings can be cleaned by immersion in safety solvent, and brushing with a part cleaning brush. Oil-impregnated bushings, and bushings made of nylon or other synthetic materials, can be cleaned with safety solvents, or wiped clean, but should not be immersed in solvent for periods longer than that necessary to remove heavy or caked-on build-ups of grease. All petroleum-based solvents are flammable, so appropriate precautions regarding flames, sparks, and other ignition sources should always be observed. Gasoline should never be used because of its volatility and its highly toxic nature.

#### INSPECTION

Once cleaned, bearings can be properly inspected for wear, scratches, visible damage such as corrosion, cracked seals or scorching, and rough, or noisy, operation. Bushings can be visually checked for scratches, uneven wear, or other visual damage.

#### LUBRICATION

After passing inspection, bearings and bushings should be lubricated in accordance with factory specifications, and reinstalled according to the appropriate installation instructions. New bearings and bushings must also be properly lubricated before use. For optimal performance, and as a practical preventive maintenance measure, bearings and bushings used in pairs or multiple sets should all be replaced at the same time.

### Belts & Pulleys

Belts and pulleys transmit rotary motion from power sources to work components, providing the force needed to drive transmissions, operate mower decks, and power various attachments. This continual use eventually causes belts to wear out, and over time may also require the replacement of pulleys and pulley bearings.

Belt wear and various types of damage are easily checked by visual examination, which is covered in greater detail elsewhere in this manual. Pulleys may also be checked visually for wear or apparent damage, but pulley bearings usually require removal, cleaning, and inspection to determine if replacement is required.

Belt and pulley life can be optimized by making sure that proper belt tension and alignment are observed when belts are installed. Proper belt tension and alignment should also be maintained by performing periodic checks and adjustments. In addition, only factory authorized replacement belts will minimize problems caused by size, thermal instability, and variations in quality.

### Electrical Parts

The electrical parts used on these units have been specifically engineered for outdoor power equipment, and are designed to provide years of reliable operation. As with all electrical components and systems, electrical contacts must be kept clean and dry, and all terminations must be securely fastened or connected. Also, all electrical components, wiring, and connectors should be periodically inspected for corrosion, signs of excessive heat build-up, or other damage that signals that it is time to repair or replace the item.

Specific procedures for electrical troubleshooting and most common repairs is covered in separate sections of this manual.



## Fasteners & Hardware

All hardware and fasteners used in this equipment must meet factory specifications for SAE grade, size, and torque, and must be kept securely tightened. Locking hardware that degrades with use should be replaced when service is performed in affected areas. Always observe factory specifications for torque, or consult the torque chart for torque information.

## Genuine Replacement Parts

Only factory authorized replacement parts should be used when making repairs or performing routine maintenance. The use of parts that do not meet stringent factory specifications can cause poor performance, premature failures, and lead to potential safety hazards. In addition, the use of non-factory authorized replacement parts will void your warranty.

## Hydraulic Parts

Hydraulic parts are adversely affected by dirt and contamination, and care must be exercised when performing service on these parts to prevent foreign material from entering. Specific service information appears elsewhere in this manual, and all precautions and procedures must be followed when repairing or servicing these parts.

## Paint

The paint on outdoor power equipment provides for an attractive appearance, as well as a barrier to corrosion caused by exposure to moisture in the environment. Scratches, abrasions, and other damage to painted surfaces should be repaired promptly to prevent the formation of rust and premature part failure. Factory supplied paints are available that provide both an accurate color match and superior corrosion resistance.

## Required Tools & Equipment

All repairs in this manual can be accomplished with standard mechanic's hand tools. The use of appropriate power tools such as impact wrenches and power drivers may aid in part removal and replacement, but care must be exercised to avoid causing damage to components from excessive tightening. Transmission service, steering service, tire and wheel service, and service to components located under the frame also requires the use of a jack with suitable capacity, and jack stands to support the unit being worked on.

## Systems Checks

In addition to performing individual component service, components affected by related parts changes should also receive attention at the time service is performed. Examples of this include part replacements that are part of a safety device, electrical components, transmission components, and pulleys that are part of the same power delivery system. Giving attention to related parts will help ensure that the parts most likely to be affected by the wear of similar or nearby parts, or parts subjected to the same amount of stress or wear, are given appropriate attention before a failure can occur.







Power Steering Conversion Components

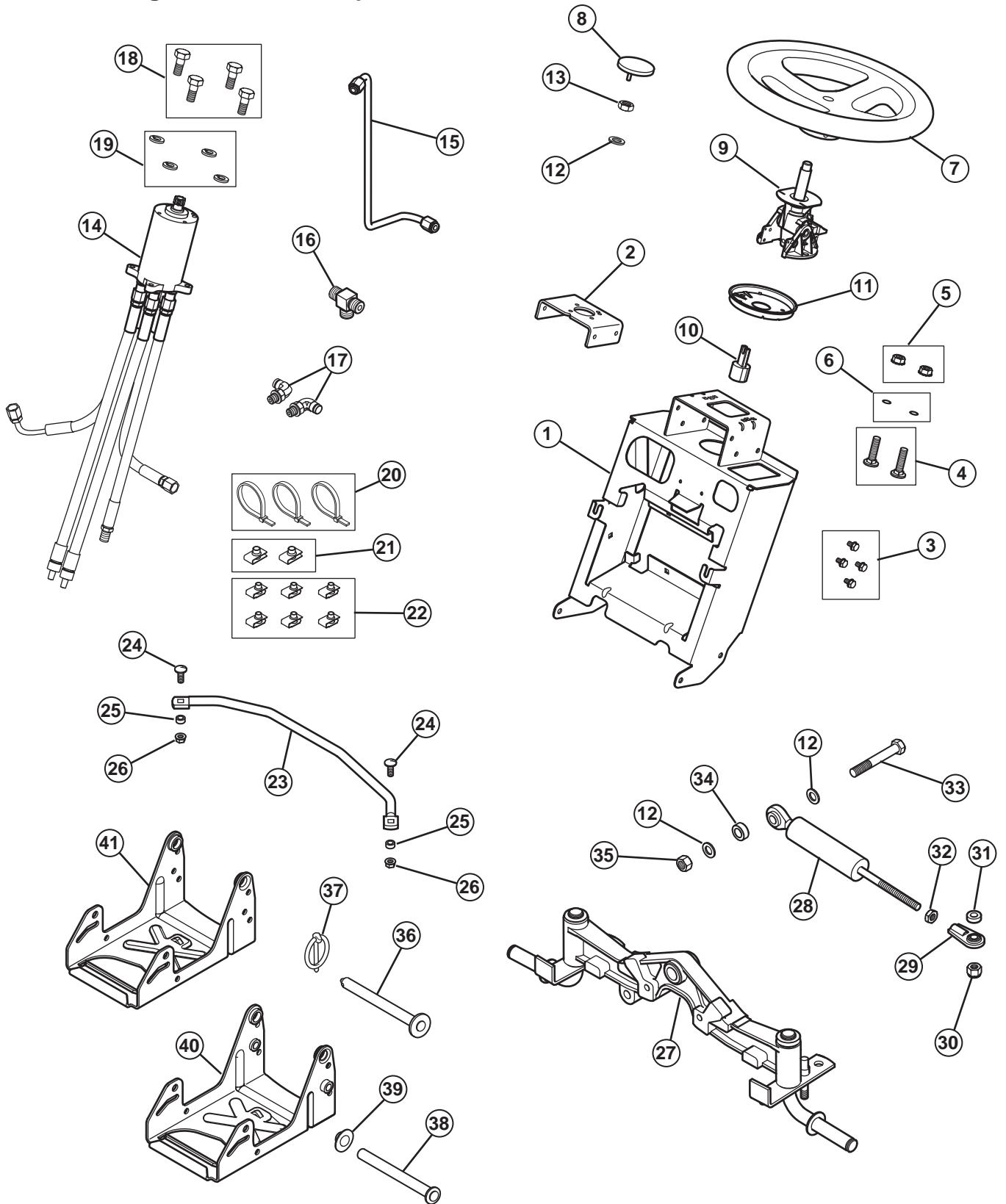


Figure 1. Contents

Ref	Part No.	Qty.	Description
1	1733139A	1	TOWER, Steering
2	1733044A	1	PLATE, Support
3	1924856	4	SCREW, Taptite 5/16-18 x 1/2
4	1960655	2	CARRIAGE BOLT, 5/16-18 x 1-1/4
5	1960636	2	NUT, KEPS, 5/16-18
6	1933988	2	NUT, Push, 5/16
7	1733363	1	STEERING WHEEL
8	1725024	1	CAP, Steering Wheel
9	1733790	1	TILT STEERING UNIT
10	1725294	1	ADAPTER, Titt
11	1724685A	1	PLATE, Mounting
12	1924366	3	WASHER, 5/8
13	1960576	1	NUT, HEX, 5/8-18
14	1733506	1	POWER STEERING Assembly, 5-Port
15	1733727	1	TUBE, Hydraulic
16	1733211	1	TEE FITTING
17	1733230	2	FITTING, Perma-Push
18	2860444	4	SCREW, HEX, M6 x 16mm
19	1916964	4	WASHER, LOCK, 1/4
20	1701011	3	TIE, Self Locking
21	1935225	2	NUT, SPEED, 5/16-18
22	1960368	6	NUT, SPEED, 1/4-20
23	1732759A	1	TIE ROD
24	1931350	2	BOLT, 3/8-16 x 1
25	1611705	2	SPACER
26	1930645	2	NUT, Flange, Lock 3/8-16
27	1732937A	1	FRONT AXLE Assembly
28	1732439	1	STEERING CYLINDER
29	1702779	1	BALL JOINT
30	1960355	1	NUT, Hex, Lock ESNA, 1/2-13
31	1719725	1	SPACER
32	1919262	1	NUT, Hex, Jam, 1/2-20
33	1960713	1	SCREW, Hex, M16-110mm
34	1733912A	1	SPACER
35	1960714	1	NUT, Lock, 1/2-20
36	1734011	1	PIN, HitchH
37	1709189	1	PIN, Klik
38	1713578	1	ROD, 1/2 x 7-5/8
39	1960519	1	NUT, PUSH, 1/2
40	1733229A	1	HITCH, 54 Inch Mower
41	1733717A	1	HITCH, 44/50 Inch Mower

*NOTE: Read through these instructions, the SERVICE MANUAL, and OPERATOR'S MANUAL before beginning installation.*

## **⚠ WARNING**

Before beginning any service work turn off the PTO, set the parking brake, turn off the ignition, and disconnect the spark plug wire(s).

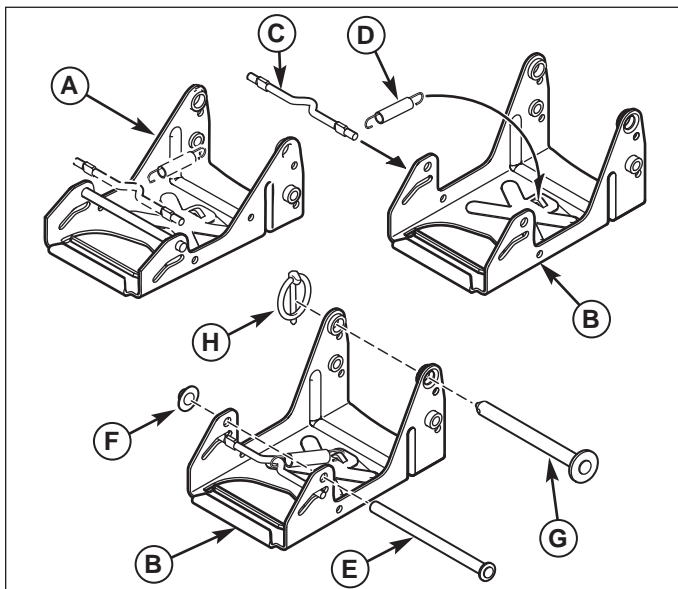
## INITIAL ASSEMBLY

### Hitch Replacement

1. Remove mower deck. See OPERATOR'S MANUAL.
2. Remove hitch (A, Figure 1) from mower deck.

*Note: Hardware used to attach leveling rod to hitch must be saved and re-used during reassembly.*

3. Remove spring (D, Figure 1) and lever (C) from original hitch (A).
4. Discard original hitch and mounting hardware used to attach hitch to mower deck.
5. Install spring (D) and lever (C) to new hitch (B) removed in step 3.



**Figure 2 Hitch Replacement**

- |                          |                     |
|--------------------------|---------------------|
| <b>A. Original Hitch</b> | <b>B. New Hitch</b> |
| <b>C. Lever</b>          | <b>D. Spring</b>    |
| <b>E. Rod</b>            | <b>F. Push Nut</b>  |
| <b>G. Hitch Pin</b>      | <b>H. Klik Pin</b>  |

6. Install new rod (E, Figure 2) to new hitch (B), and secure in place with push nut (F).
7. Install new hitch (B) to mower deck using new hitch pin (G) and secure with klik pin (H).

**SEE OPERATOR'S MANUAL.**

## **⚠ DANGER**

**PREVENT SERIOUS INJURY OR DEATH FROM FALLING UNIT**

Always use a properly working lifting device with a capacity suitable for the weight of the unit being serviced.

Always use a jack stand to support the unit while performing service and chock remaining wheels to prevent the unit from rolling off the supports.

Never work under or around an elevated unit that is not properly supported and secured in position with wheel chocks.

### Front Axle Replacement

1. Remove hood assembly, dash assembly, seat and seat deck. See SERVICE MANUAL, Section 15 - Hood & Dashboard Service, and Section 16 - Seat Deck & Fuel Tank Service.

*NOTE: Clean and remove all debris from work area.*

2. Disconnect and remove the battery.

## **⚠ WARNING**

Be careful when handling the battery. Avoid spilling electrolyte. Keep flames and sparks away from the battery.

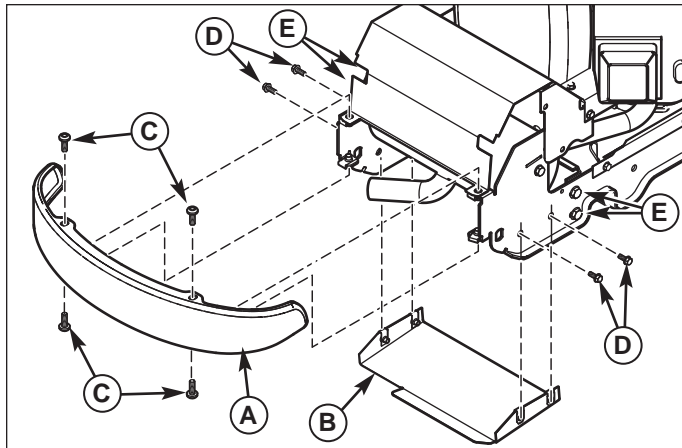
When removing or installing battery cables, disconnect the negative cable FIRST and reconnect it LAST. If not done in this order, the positive terminal can be shorted to the frame by a tool.

3. Block both rear tires to prevent rolling; elevate and support the front end to allow adequate access for removal of the front axle.

# Installation Instructions

# Power Steering Conversion Kit

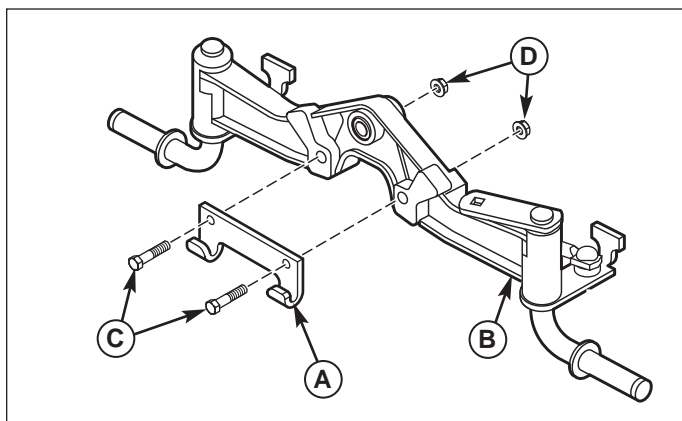
- Remove front bumper (A, Figure 3) by removing the four 5/16-18 Torx screws (C). Save all parts for reassembly.
- Remove muffler lower heat shield (B, Figure 3) by removing the four 1/4-20 whiz lock screws (D). Save all parts for reassembly.
- Loosen but do not remove all four 3/8-16 support plate bolts (E, Figure 2).



**Figure 3 Bumper and Heat Shield Removal**

- A. Bumper
- B. Lower Heat Shield
- C. Torx Screws, 5/16-18
- D. Whiz Lock Screws, 1/4-20
- E. Whiz Lock Screws, Support Plate, 3/8-16

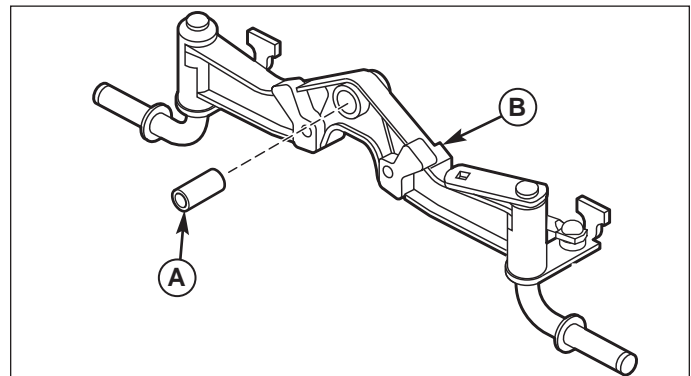
- Remove front axle and steering linkage. See **SERVICE MANUAL, SECTION 8 - Steering & Front Wheel Repair**.
- Remove J-hook (A, Figure 4) from original axle (B). Save J-hook (A), 7/16-14 x 2 capscrews (C), and 7/16-14 lock nuts (D) for installation on new axle.



**Figure 4 J-Hook Removal**

- A. J-Hook
- B. Original Axle
- C. Capscrews, 7/16-14 x 2
- D. Lock Nuts, 7/16-14

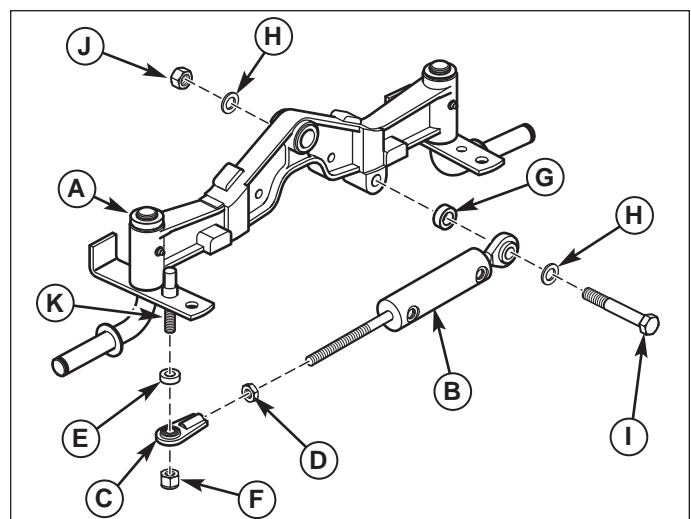
- Remove spacer (A, Figure 5) from original axle center mount (B). Inspect spacer for wear. Replace spacer if excessive wear is indicated.



**Figure 5 Spacer Removal**

- A. Spacer
- B. Original Axle

- Thread 1/2-20 jam nut (D, Figure 6) onto steering cylinder (B). Then attach ball joint (C) to steering cylinder (B).
- Attach spacer (E), ball joint (C), and 1/2-13 lock nut (F) to mount (K) on axle as shown.
- Attach steering cylinder (B) to axle (A) using a M16 x 110mm capscrew (I), two 5/8 flat washers (H), a spacer (G), and M16 lock nut (J) as shown.
- Tighten lock nut (J) to 150 ft. lbs (203.4 Nm).
- Tighten lock nut (F) to 48 ft. lbs (60.3 Nm).



**Figure 6 Steering Cylinder Installation**

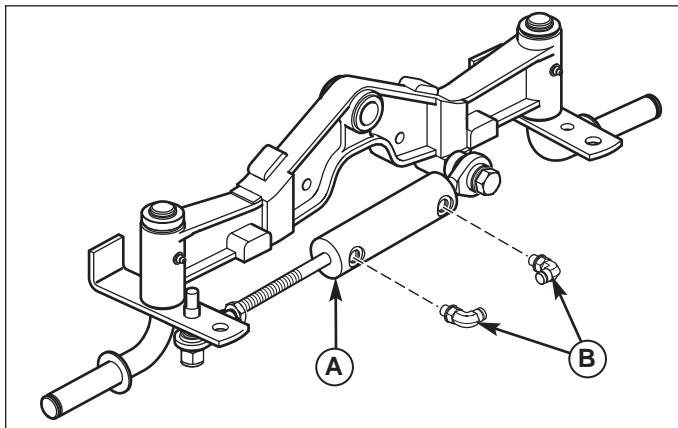
- A. New Axle
- B. Steering Cylinder
- C. Ball Joint
- D. Jam Nut, 1/2-20
- E. Spacer
- F. Lock Nut, 1/2-13
- G. Spacer
- H. Flat Washer, 5/8
- I. Capscrew, M16 x 110mm
- J. Lock Nut, M16
- K. Mount, Ball Joint



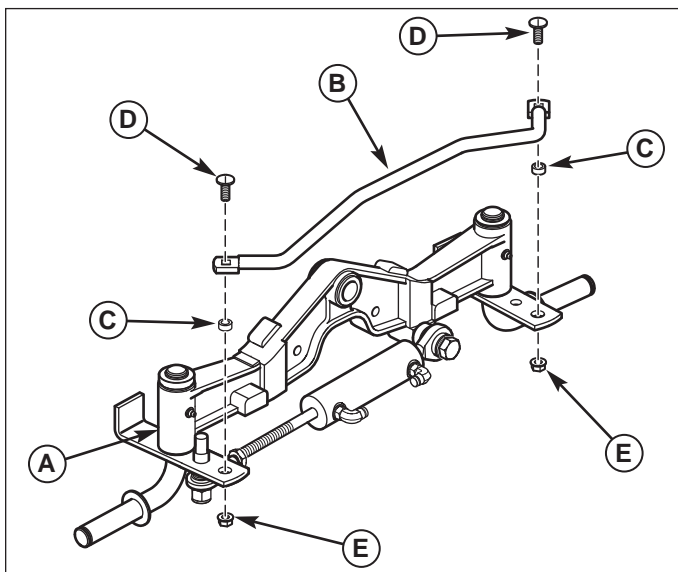
Do not allow dirt, water, or other debris to enter the expansion chamber or transmission. Even a small amount of dirt can damage the transmission

The hydraulic system is powered by the hydrostatic transmission charge pump, and subsequently shares oil with the transmission. It is for this reason that great care must be taken when adding or replacing hydraulic system parts to prevent contaminants from entering the transmission.

15. Install hydraulic perma-push fittings (B, Figure 7) to steering cylinder (A) as shown.



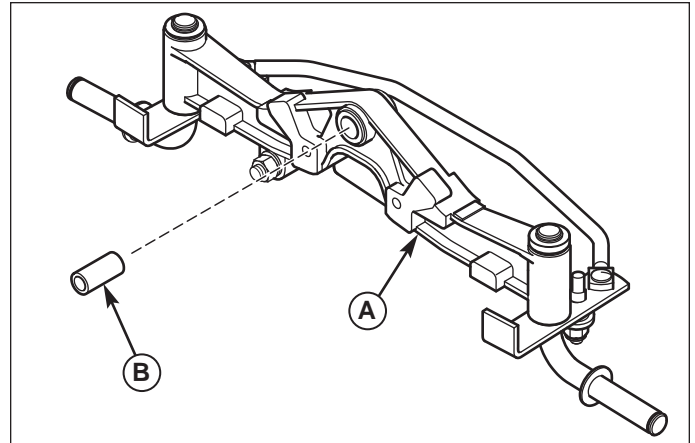
**Figure 7 Hydraulic Fitting Installation**  
**A. Steering Cylinder**  
**B. Perma-Push Fittings**



**Figure 8 Tie Rod Installation**  
**A. New Axle**  
**B. Tie Rod**  
**C. Spacers**  
**D. Square Head Bolt, 3/8-16 x 1**  
**E. Flange Nut, 3/8-16**

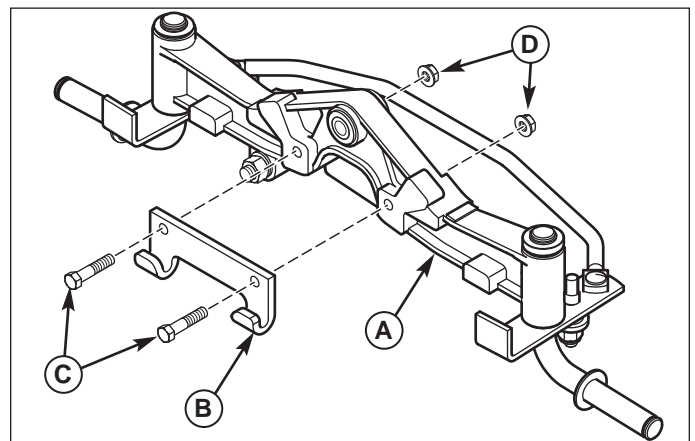
16. Attach tie rod (B, Figure 8) to new axle (A) using two spacers (C), two 3/8-16 x 1 square head bolts (D), and two 3/8-16 flange nuts (E) as shown. Tighten flange nuts to 19.5 ft. lbs (26.5 Nm).

17. Clean and grease spacer (B, Figure 9) previously removed from old axle. Then install spacer (B) into new axle (A) as shown.



**Figure 9 Spacer Installation**  
**A. New Axle**  
**B. Spacer**

18. Install j-hook (B, Figure 10) to new axle (A) using two 7/16-14 x 2 capscrews (C), and two 7/16-14 lock nuts (D) as shown. Tighten lock nuts to 32 ft. lbs (44.2 Nm).

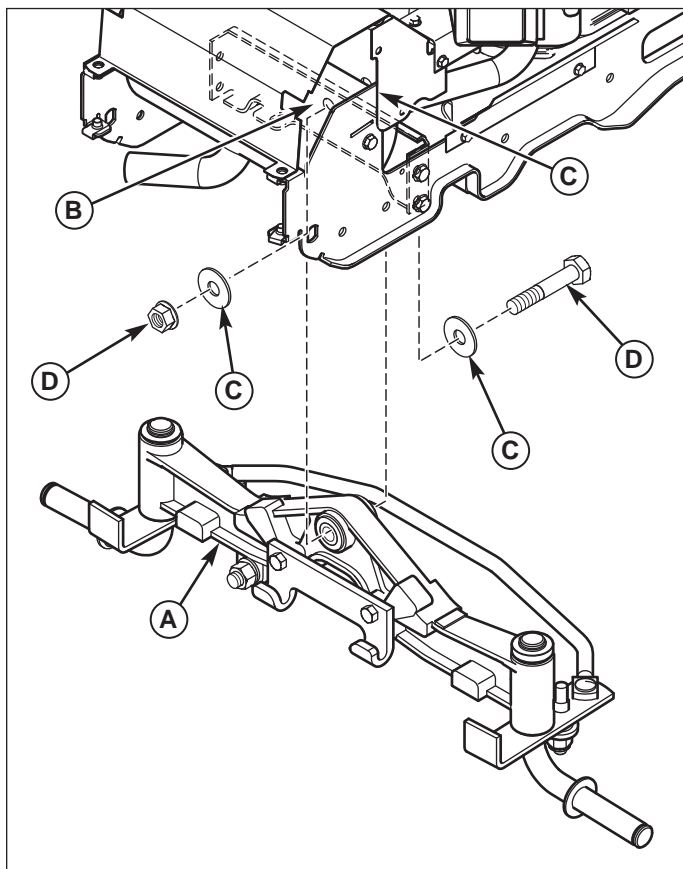


**Figure 10 J-Hook Installation**  
**A. New Axle**  
**B. J-Hook**  
**C. Capscrew, 7/16-14 x 2**  
**D. Lock Nuts, 7/16-14**



19. Install new axle (A, Figure 11) between axle support plate (B) and frame (C) using a 5/8-11 x 3-1/2 cap-screw (D), two 5/8 flat washers (E), and a 5/8-11 flange nut (F) as shown. Tighten flange nut to 150 ft. lbs (204 Nm).

22. Tighten all four 3/8-16 support plate bolts (E, Figure 2) to 19.5 Ft. lbs (26.5 Nm)



**Figure 11 New Axle Installation**

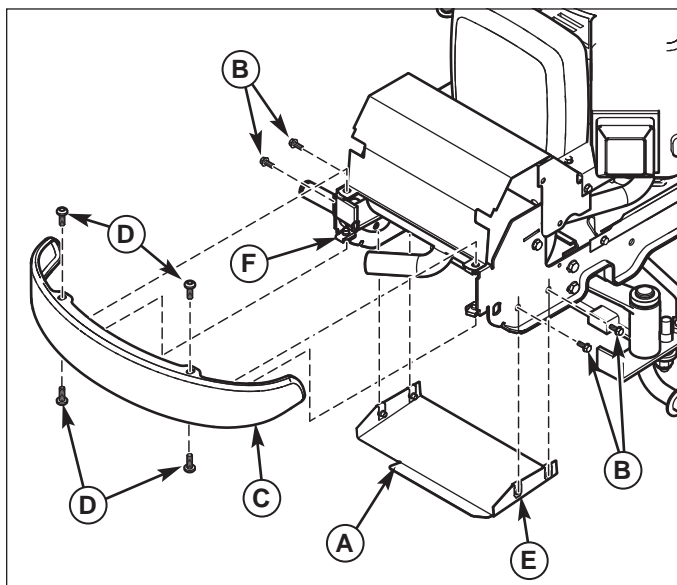
- A. New Axle
- B. Axle support Plate
- C. Frame
- D. Capscrew, 5/8-11 x 3-1/2
- E. Flat Washers, 5/8
- F. Flange Nut, 5/8-11

21. Install heat shield (A, Figure 12) using four 1/4-20 Whiz Lock screws (B) as shown. Tighten screws to 10 ft. lbs (13.6 Nm).

*NOTE: Replace any speed nuts (E) broken or missing from heat shield with parts from kit.*

22. Install bumper (C, Figure 12) using four 5/16-18 x 7/8 Torx screws (D) as shown. Tighten screws to 7 ft. lbs (9.75 Nm).

*NOTE: Replace any speed nuts (F) broken or missing from bumper mounts with parts from kit.*



**Figure 12 Bumper and Heat Shield Installation**

- A. Heat Shield
- B. Whiz Lock Screws, 1/4-20
- C. Bumper
- D. Torx Head Screw, 5/16-18 x 7/8
- E. Speed Nut, 1/4-20
- F. Speed Nut, 5/16-18

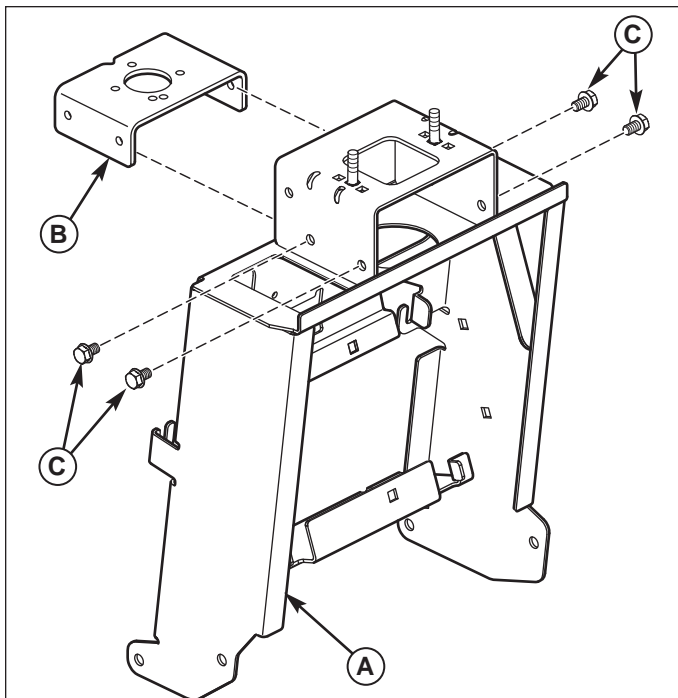
## Steering Replacement

### Tear-down and Removal of Steering System

1. See the **SERVICE MANUAL, Section 10 - Hydraulic System Service** for removal and installation of the valve control spool.
2. Remove the control spool & support from the tower assembly, and save all hardware for reinstallation.
3. Disconnect and discard the return side tube to the control spool.
4. Disconnect and discard T-fitting, and tube to transmission between torque generator and control spool.
5. See the **SERVICE MANUAL, Section 8 - Steering & Front Wheel Repair** for removal of steering wheel, torque generator, steering gear, and drag link.
6. Remove and discard the steering wheel, mounting plate, tilt steering unit, tilt adapter, steering shaft, steering mounting plate, steering gear assembly, torque generator, and drag link.
7. Remove and discard tower.

### New Steering System Assembly

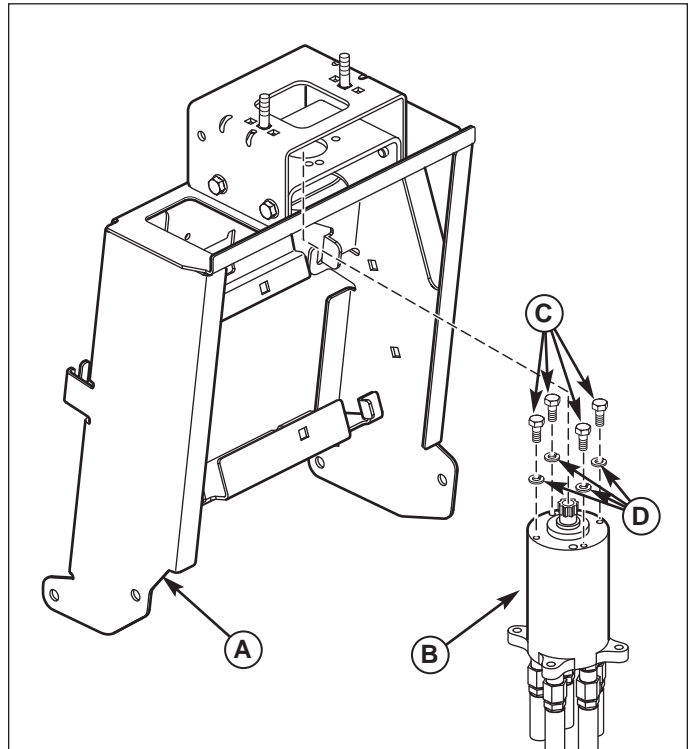
1. Install steering support plate (B, Figure 13) into new tower (A) using four 5/16-18 x 1/2 Taptite screws (C). Tighten screws to 7 ft. lbs (9.75 Nm).



**Figure 13 Steering Support Plate Installation**  
**A. New Tower**  
**B. New Steering Support Plate**  
**C. Taptite Screws, 5/16-18 x 1/2**

*NOTE: Attach new push nuts to carriage bolts (supplied with kit) as required.*

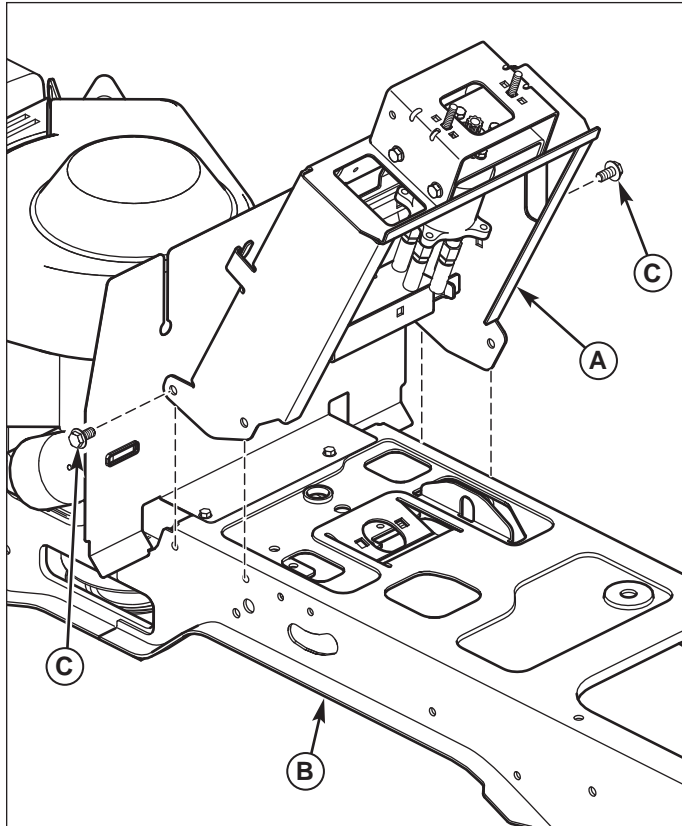
2. Attach new power steering unit (B, Figure 14) to new tower (A) using four M6 x 16 mm screws (C), and four 1/4 lockwashers (D). Tighten screws to 97 in. lbs (10.96 Nm).



**Figure 14 Power Steering Installation**  
**A. New Tower**  
**B. New Power Steering Unit**  
**C. Screws, M6 x 16 mm**  
**D. Lock Washers, 1/4**

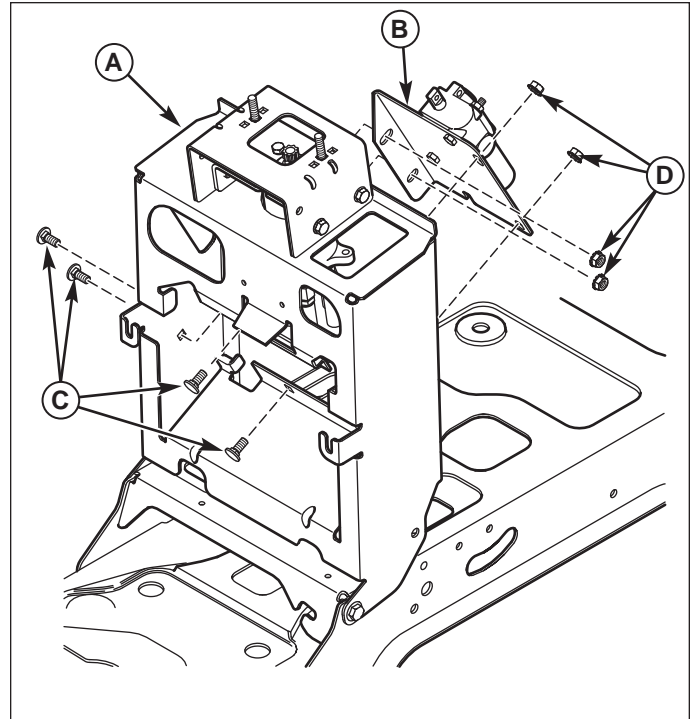
*NOTE: For initial installation, only two screws are used (as shown) and the screws are to be loosely installed to allow the tower to pivot.*

3. Attach new tower assembly (A, Figure 15) to frame (A) using two 3/8-16 x 3/4 taptite screws (C).

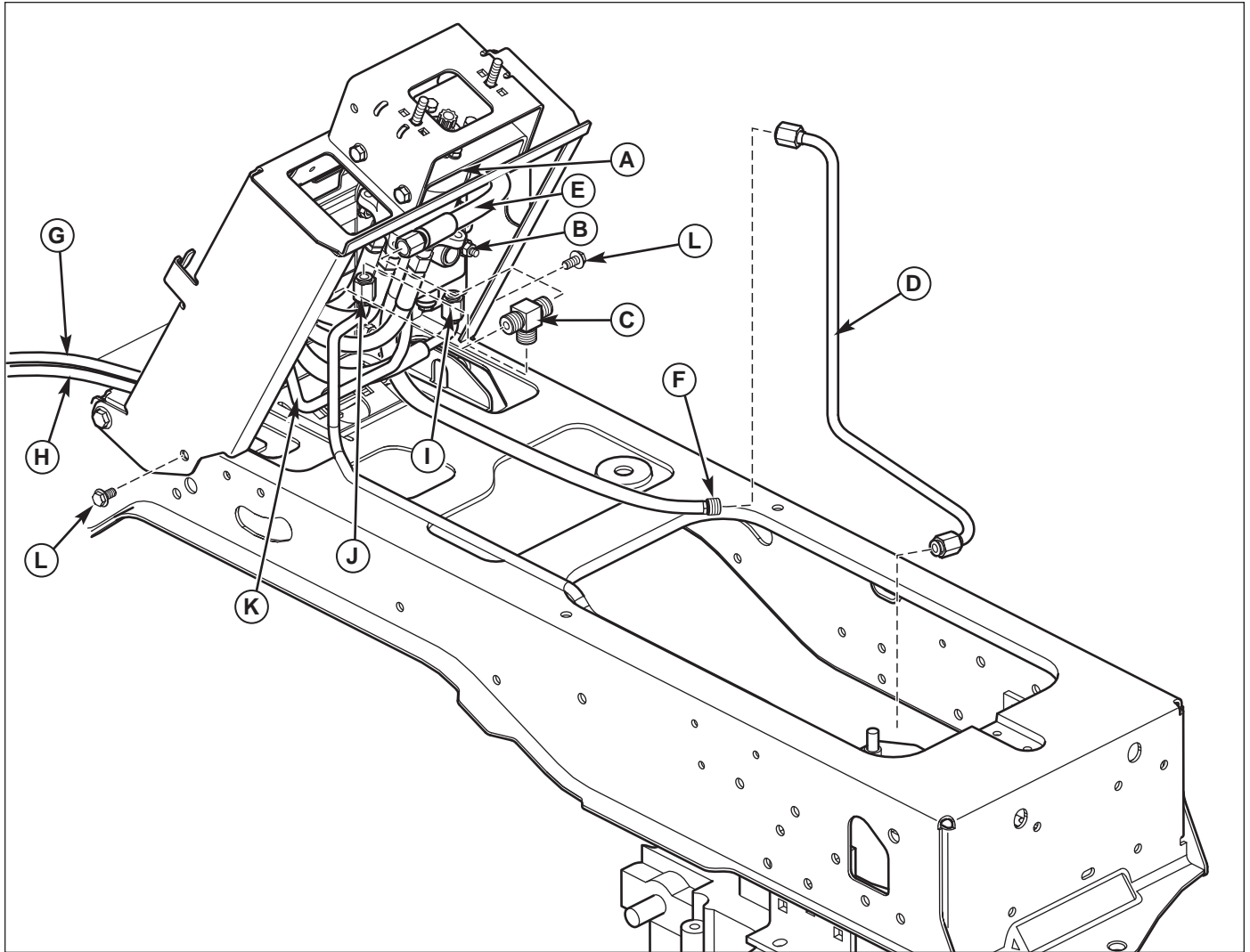


**Figure 15 Tower Assembly Installation**  
A. New Tower Assembly  
B. Frame  
C. Taptite Screws, 3/8-16 x 3/4

4. Install control valve spool and support (B, Figure 16) to the new tower (A) using (previously removed) four 5/16-18 x 3/4 carriage bolts (C), and four 5/16-18 KEPS lock nuts (D). Tighten lock nuts to 7 ft. lbs (9.75 Nm).



**Figure 16 Control Valve Spool & Support Installation**  
A. New Tower Assembly  
B. Control Valve Spool & Support  
C. Carriage Bolts, 5/16-18 x 3/4  
D. Lock Nuts, KEPS, 5/16-18



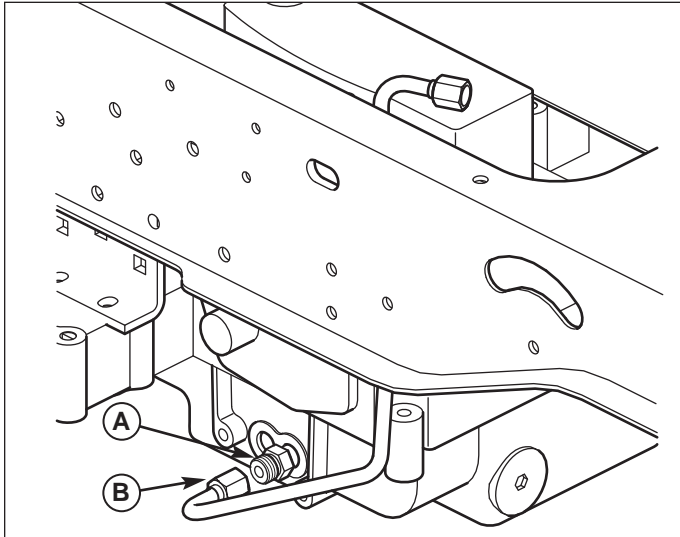
**Figure 17 Power Steering & Hydraulic Hose Installation**

- A. Power Steering Unit**
- B. Control Valve Spool**
- C. Three-way “T”**
- D. Hydraulic Tube (from Port P to Transmission)**
- E. Hydraulic Hose (Port T) to “T” fitting**

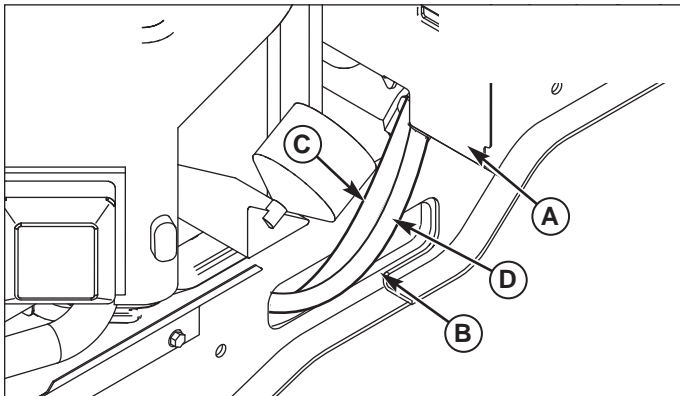
- F. Hydraulic Hose (Port P) to hydraulic tube**
- G. Hydraulic Hose (Port R) to steering cylinder**
- H. Hydraulic Hose (Port L) to steering cylinder**
- I. Hydraulic Hose (Port E) to control valve spool**
- J. Hydraulic Tube to Transmission from “T” fitting**
- K. Hydraulic Tube from spool to “T” fitting**
- L. Taptite Screws, 3/8-16 x 3/4**

5. Attach existing tube (K, Figure 17), and existing tube (J) to new three-way “T” (C) as shown.
6. Wrap hydraulic hose (E) (labeled “Port T”) around the back of the power steering unit (A), and attach it to the new three-way “T” (C) as shown.
7. Loop hydraulic hose (I) (labeled “Port E”) around the front of the power steering unit (A), and attach the hose fitting to the control valve spool (B) as shown.
8. Route hydraulic hoses (G) and (H) (labeled “Port R” and “Port L”) out the bottom of the bulkhead heat-shield, and through the frame as shown in Figure 17 and Figure 19.
9. Attach hydraulic tube (D) to hydraulic hose (F) (labeled “Port P”) as shown.
10. Install two 3/8-16 x 3/4 Taptite screws (L) as shown. Tighten all four screws to 30 ft. lbs (40.8 Nm).

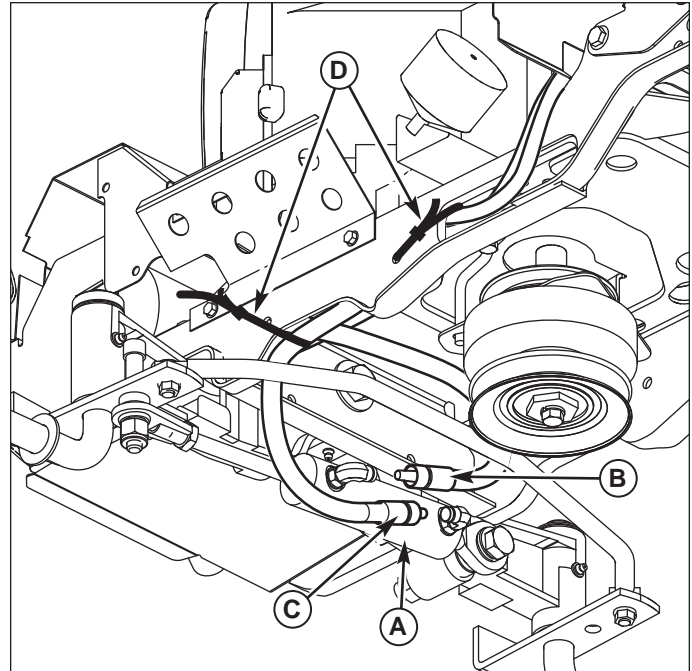
11. Attach hydraulic tube (B, Figure 18) to transmission (A) as shown.



**Figure 18 Hydraulic Tube to Transmission**  
A. Transmission Port  
B. Hydraulic Tube



**Figure 19 Hydraulic Hose Routing**  
A. Bulkhead Heatshield  
B. Frame  
C. Hydraulic Hose (labeled "Port R")  
D. Hydraulic Hose (labeled "Port L")



**Figure 20 Steering Hose Connection**  
A. Steering Cylinder  
B. Hydraulic Hose (labeled "Port L")  
C. Hydraulic Hose (labeled "Port R")  
D. Tie Wraps

12. Route and attach hydraulic hose (B, Figure 20) (labeled "Port L") to hose fitting on left side of steering cylinder (A) as shown.
13. Route and attach hydraulic hose (C) (labeled "Port R") to hose fitting on right side of steering cylinder (A) as shown.
14. Secure hydraulic hoses (B) and (C) to frame using tie wraps (D) as shown.

*NOTE: The hoses must be secured to the frame to prevent any movement and prevent contact with the steering or clutch.*

## Tilt & Steering Wheel Installation

### Battery, Dash, Seat Deck, Seat, and Hood Assembly Installation

1. Install battery, but DO NOT connect.
2. Install seat deck and seat. **See the SERVICE MANUAL, Section 16 - Seat Deck & Fuel Tank Service.**
3. Install dash assembly, and hood assembly. **See the SERVICE MANUAL, Section 15 - Hood & Dashboard Service.**
4. Install front tires. **See the SERVICE MANUAL, Section 8 - Steering & Front Wheel Repair.**

### Base, Tilt, Boot, and Steering Wheel Installation

1. Attach tilt adapter (C, Figure 21) to tilt assembly (F), and secure in place with included fastener.
2. Attach mounting plate (D), spacers (E), tilt assembly (F) to dash (A) using installed carriage bolts (B), and two 5/16-18 KEPS nuts (G) as shown. Tighten nuts to 23 ft. lbs (31 Nm).
3. Install boot (H) over tilt assembly (F) so that tilt lever extends out of boot.

*NOTE: Make sure that base of boot (H) is secured to mounting plate (D) - boot over lip edge of base.*

4. Install steering wheel (I) onto tilt assembly (F). Secure using a 5/8 washer (J), and a 5/8-18 nut (K). Tighten nut to 180-240 in. lbs (20.3-27.1 Nm).
5. Attach steering wheel cap (L) to steering wheel (I). Tabs on cap snaps into slots on steering wheel.
6. Check and verify that all parts removed have been reinstalled, and tightened correctly.

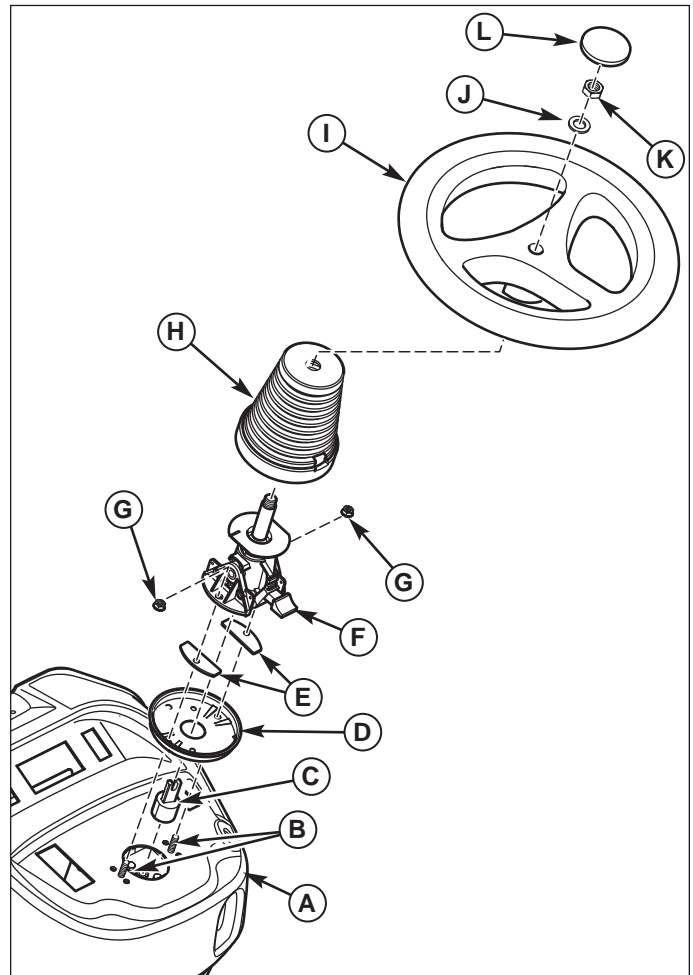
### WARNING

Be careful when handling the battery. Avoid spilling electrolyte. Keep flames and sparks away from the battery.

When removing or installing battery cables, disconnect the negative cable FIRST and reconnect it LAST. If not done in this order, the positive terminal can be shorted to the frame by a tool.

7. Connect battery. **See the OPERATOR'S MANUAL - Battery Maintenance.**

8. Install mower deck. **See the OPERATOR'S MANUAL.**
9. Start tractor and verify all hose connections are tight and do not leak.
10. Check fluid level of transmission and add fluid as necessary. **See the SERVICE MANUAL, Section 3 - Maintenance Procedures** for fluid requirement and levels.



**Figure 21 Base, Tilt, Boot and Steering Wheel Installation**

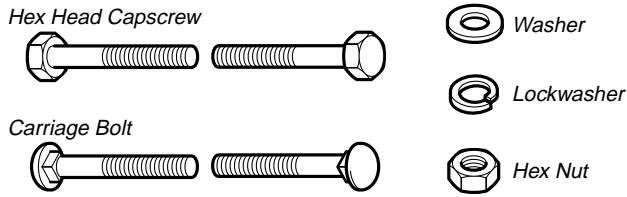
- A. Dash
- B. Carriage Bolts
- C. Tilt Adapter
- D. Mounting Plate
- E. Spacers
- F. Tilt Assembly
- G. KEPS Nuts, 5/16-18
- H. Boot
- I. Steering Wheel
- J. Washer, 5/8
- K. Nut, 5/8-18
- L. Steering Wheel Cap





# Hardware Identification & Torque Specifications

## Common Hardware Types

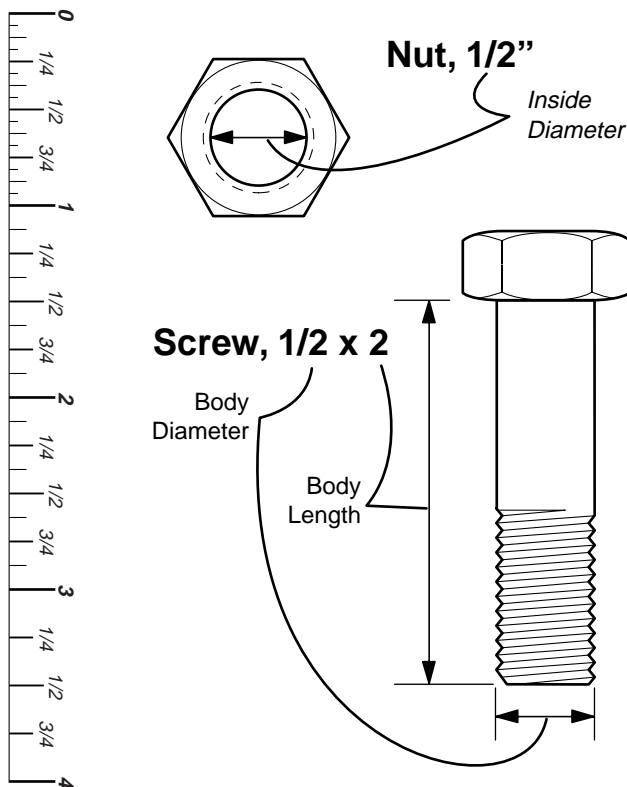


## Standard Hardware Sizing

When a washer or nut is identified as **1/2"**, this is the *Nominal size*, meaning the *inside diameter* is 1/2 inch; if a second number is present it represent the *threads per inch*

When bolt or capscrew is identified as **1/2 - 13 x 2"**, this means the *Nominal size*, or *body diameter* is 1/2 inch; the second number represents the *threads per inch* (13 in this example, and the final number is the *body length* of the bolt or screw (in this example 2 inches long).

**The guides and ruler furnished below are designed to help you select the appropriate hardware and tools.**



Torque Specification Chart						
FOR STANDARD MACHINE HARDWARE (Tolerance ± 20%)						
Hardware Grade	No Marks SAE Grade 2		SAE Grade 5		SAE Grade 8	
	in/lbs ft/lbs	Nm.	in/lbs ft/lbs	Nm.	in/lbs ft/lbs	Nm.
8-32	19	2.1	30	3.4	41	4.6
8-36	20	2.3	31	3.5	43	4.9
10-24	27	3.1	43	4.9	60	6.8
10-32	31	3.5	49	5.5	68	7.7
1/4-20	66	7.6	8	10.9	12	16.3
1/4-28	76	8.6	10	13.6	14	19.0
5/16-18	11	15.0	17	23.1	25	34.0
5/16-24	12	16.3	19	25.8	27	34.0
3/8-16	20	27.2	30	40.8	45	61.2
3/8-24	23	31.3	35	47.6	50	68.0
7/16-14	30	40.8	50	68.0	70	95.2
7/16-20	35	47.6	55	74.8	80	108.8
1/2-13	50	68.0	75	102.0	110	149.6
1/2-20	55	74.8	90	122.4	120	163.2
9/16-12	65	88.4	110	149.6	150	204.0
9/16-18	75	102.0	120	163.2	170	231.2
5/8-11	90	122.4	150	204.0	220	299.2
5/8-18	100	136	180	244.8	240	326.4
3/4-10	160	217.6	260	353.6	386	525.0
3/4-16	180	244.8	300	408.0	420	571.2
7/8-9	140	190.4	400	544.0	600	816.0
7/8-14	155	210.8	440	598.4	660	897.6
1-8	220	299.2	580	788.8	900	1,244.0
1-12	240	326.4	640	870.4	1,000	1,360.0

### NOTES

1. These torque values are to be used for all hardware excluding: locknuts, self-tapping screws, thread forming screws, sheet metal screws and socket head setscrews.
2. Recommended seating torque values for locknuts:
  - a. for prevailing torque locknuts - use 65% of grade 5 torques.
  - b. for flange whizlock nuts and screws - use 135% of grade 5 torques.
3. Unless otherwise noted on assembly drawings, all torque values must meet this specification.

## Wrench & Fastener Size Guide

