



# Triumph Repair/Parts Manual

For Models: E1E 170001 and Above



**Avoid serious injury!**

**Lack of training, human error, or carelessness may cause serious injury or death to the operator, mechanic, or others.**

All users, mechanics, and owners **MUST** read and understand the Operator's Manual before inspecting, operating or repairing the Triumph. If you are not entirely familiar with the Operator's Manual and the safety messages it contains, read it now before proceeding with any repairs or maintenance.



**This product can expose you to chemicals including Ethyl Benzene, Naphthalene, N-Hexane, and Benzene which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**



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**For Technical Support:**

Contact your local dealer or Perma Green at (800) 346-2001 or via e-mail at [support@permagreen.com](mailto:support@permagreen.com)

Perma-Green Supreme, Inc.  
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- If you are not entirely familiar with the Operator's Manual and the Safety Messages it contains, read it now before proceeding with any repairs or maintenance.
- Of particular importance to repair personnel are Operator's Manual Sections:
  - 2. New Machine Pre-operation Inspection (pages 2-3)
  - 3. Safety Manual Warnings (pages 5-13) particularly important to repair personnel are:
    - 1, Owner's Responsibility (page 8)
    - 2, Supervised Driver's Training (page 8)
    - 4, Operator Clothing and PPE (page 8)
    - 5, Safety Devices (page 8)
    - 6, Operation (page 9)
    - 8, Fuel Safety (page 9)
    - 9, Inspect Machine Before Each Use (page 10)
    - 10, Engine Starting Safety (page 10)
    - 14, Parking (page 10)
    - 17, Check Wheel Fasteners (page 12)
    - 18, Tire Safety (page 13)
    - 19, Maintenance and Service (page 13)
    - 20, Pesticide Safety (page 13)
    - 21, Handling and Disposal of Hazardous Waste Products (page 13)
    - 22, Replacement Parts (page 13)
    - 23, P65 Product Exposure (page 13)
  - 4. Driver's Training and Operation (pages 14-19) particularly;
    - a. Component and Safety Device Identification (page 14)
    - g. Testing Safety Devices (page 18)
  - 7. Troubleshooting Manual (pages 29-31)
  - 8. Service Manual (pages 33-37)
- For additional assistance, contact PermaGreen Tech Support at [support@permagreen.com](mailto:support@permagreen.com) or 800.346.2001

## Carburetor Replace P449215 (Referring to Figures 1-1.8)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed:** Wear Protective Eyewear and Gloves

### Parts Included:

1-P449215 Carburetor

### Tools Needed:

Needle Nose Pliers  
10 mm Socket

### Section 1: Removal

1. Remove the air filter.
2. Pull the choke and fuel supply towards you.
3. Remove the 2 nuts and 1 bolt holding the carburetor cover on with a 10 mm socket.
4. Pull the breather tube out of the valve cover and pull the carburetor cover off.
5. Pull the spacer for the carburetor off.
6. Pull the carburetor forward enough to be able to remove the governor rod and throttle return spring.  
Pull up to unhook governor rod and use needle nose pliers to remove spring. Be careful not to bend spring.
7. Use needle nose pliers to move clamp on gas line back.
8. Pull gas line off gas intake

### Section 2: Installation

1. Pull old carburetor off and take the gray choke lever and press onto new carburetor.
2. Slide new carburetor on and reconnect fuel line. Make sure clamp is on the gas intake.
3. Reconnect governor rod and throttle return spring.
4. Put carburetor spacer back on. Make sure the notch lines up with the hole in the carburetor.
5. Put carburetor cover back on and plug breather tube in.
6. Tighten the 2 nuts to cover about ¼ turn, moving one side to the other until it is tight.
7. Tighten bolt on carburetor cover and replace air filter.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig. 1.1, Section 1-Step 2



Fig. 1.2, Section 1-Step 3



Fig. 1.3, Section 1-Step 4



Fig. 1.4, Section 1-Step 5



Fig. 1.5, Section 1-Step 6



Fig. 1.6, Section 1-Step 7



Fig. 1.7, Section 2-Step 1



Fig. 1.8, Section 2-Step 4



## Clutch Spring Replacement T654535 (Referring to Figures 2-2.8)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves**

### Parts Included:

- 1-T654535 Clutch Spring
- 1-T651945 Brass S Hook w/ Bend

### Tools Needed:

- 7/16 Wrench
- Needle Nose Pliers

### Section 1: Removal

1. Remove the 2 bolts on the engine shroud with a 7/16 wrench.
2. Push up on the idler arm and at the same time move the drive belt off the engine pulley.
3. Use needle nose pliers to unhook spring from the top.
4. Pull the spring forward and lift up to remove. Use needle nose pliers if spring is difficult to remove.

### Section 2: Installation

1. The top of the spring should be bent in. Slightly bend the **bottom** open
2. Put spring back on engine plate. Push back with needle nose pliers and bend to original shape.
3. Hook the spring back to idler arm.
4. Make sure the belt did not move off any of the pulleys. Push up on the idler arm, hook the drive belt on the top of the pulley, and push down to reinstall.
5. Reattach engine shroud

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig.2.1, Section 1- Step 1



Fig.2.2, Section 1- Step 2

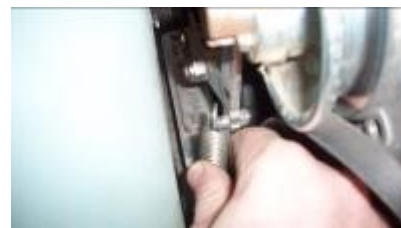


Fig.2.3, Section 1- Step 3



Fig.2.4, Section 1- Step 4

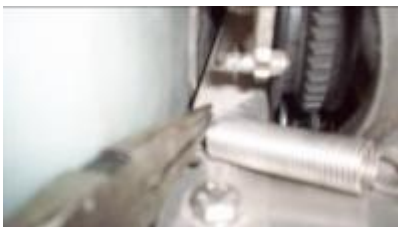


Fig.2.5, Section 1- Step 4



Fig.2.6, Section 2- Step 1

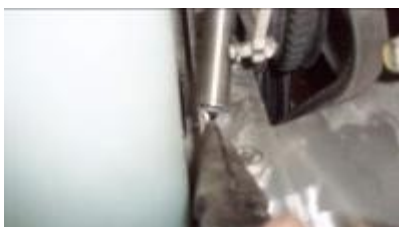


Fig.2.7, Section 2- Step 2



Fig.2.8, Section 2 - Step 4

## Drive Belt Replacement (T653800) (Referring to Figures 3-3.9)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed:** Wear Protective Eyewear and Gloves.

### Parts Included:

1-T653800 Drive Belt

### Tools Needed:

3/8 Wrench/Socket  
7/16 Wrench/Socket  
1/8 Allen Wrench  
#3 Philips Screwdriver

### Section 1: Removing Drive Belt

1. Remove shaft block and spinner assembly using a #3 Philips Screwdriver .
2. Remove hood.
3. Place handlebar in upright position.
4. Use a 7/16" wrench/socket to remove two bolts holding engine shroud in place.
5. Push forward on idler arm to remove tension on drive belt. While holding idler arm forward with your right hand, begin pushing drive belt away from you, up and over clutch pulley with your left hand. Once belt is off the clutch pulley, there is no more tension and can be easily removed.

### Section 2: Installing Drive Belt

1. Start by placing belt around outer pulley located on the transaxle.
2. Feed the belt through so that it follows the diagram shown. Once you are in position to route the drive belt over the clutch pulley. Make sure idler spring is attached correctly, then push forward on idler arm with right hand, and feed belt over clutch pulley with your left hand.
3. Reinstall engine shroud, hood, and spinner assembly.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig 3.1, Section 1-Step 1



Fig 3.4, Section 1-Step 4



Fig 3.5, Section 1-Step 5



Fig 3.6, Section 2-Step 1



Fig 3.7, Section 2-Step 2



Fig 3.8, Section 2-Step 2



Fig 3.9, Section 2-Step 2



Fig 3.10, Section 2-Step 2

## Recoil Starter Replacement T449501 (Referring to Figures below)



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed:** Wear Protective Eyewear and Gloves.

**Parts Included:**

1-T449501 Recoil Starter

**Tools Needed:**

10 mm Socket

**Section 1: Removing Recoil Starter**

1. Using a 10 mm socket, remove the bolt on the bottom of the recoil starter and the bolt by the pull handle completely.
2. Loosen front bolt only a couple of threads. The recoil starter is slotted around the front bolt for easier removal and installation. Pull recoil starter toward tank and then out.

**Section 2: Installing Recoil Starter**

1. Insert recoil starter at a slight angle and line up slot with bolt. Then push recoil starter closed and insert bottom bolt and the bolt near pull handle. Tighten all three bolts.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**



1, Section 1-Step 1



2, Section 1-Step 2

## Engine Removal and Installation – T449403 (Referring to Figures 4-4.16)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves**

### Parts Included:

T449420-Damper Complete Kit (sold separately)  
T449403 Engine Kit

### Tools Needed:

#3 Philips Screwdriver	6 or 8" Extension Bar
5/16 Ream/Drill bit	½ Socket or Swivel Head
1/8 Allen Wrench	2-½ Wrench's or Sockets
7/16 Wrench/Socket	#2 Philips Screwdriver
¼ Drive Ratchet	
3/8 Wrench/Socket	

### Section 1: Engine Removal

1. Use a 7/16 wrench to remove the 2 bolts on the engine shroud.
2. Push forward on idler arm with right hand and push belt forward over clutch pulley with left hand.
3. Remove the air filter and disconnect the throttle cable. Use #2 screwdriver to remove conduit clip.
4. Use a #3 Philips Screwdriver to remove shaft block and spinner assembly.
5. Remove hood.
6. Disconnect the jumper wire and ground wire from the front of the engine.
7. Use a ½ wrench and ½ socket with a 6" or 8" extension bar to remove the 4 bolts that connect the engine to the engine plate.
8. Lift engine off of machine.
- 9a. We recommend checking vibration dampers after removing engine. Remove the 2 torque bolts with a 7/16 socket on a 6" or 8" extension and ratchet, and a 7/16 wrench. **NOTE: Some torque bolts may require ½ wrenches.** Remove five bolts that are holding dampers to the engine plate with a ½" wrench/socket. Lift engine plate off dampers and set aside. Lift up on each damper to make sure it is secure. If any fail, it will look like the picture shown. If one damper has failed, it is recommended to change all five at this time. Follow step 9b for damper removal. If all five dampers are secure, skip to Section 2, Step 1a.
- 9b. Remove five nuts holding dampers to frame using a ½" swivel head socket on a 6" or 8" extension bar while holding the dampers with your hand or pliers. Skip to Section 2, Step 1b.

### Section 2: Engine Installation

**NOTE:** Torque Bolts: The engine vibration Dampers kit includes 2 5/16"-18 torque bolts. If your machine is already equipped with the 5/16"-18 torque bolts, no action is necessary. Use existing torque bolts. If your machine is equipped with ¼"-20 torque bolts, you will need to use a 5/16" ream /drill bit to make the torque bolt holes on the engine plate larger to allow the 5/16"-18 bolts to fit. This change has become a standard of the assembly and needs to be converted. Remove air filter cover and air filter on new engine prior to installation.

- 1a. Set engine plate on dampers and insert five bolts with lock washers. Make sure there is even spacing between engine plate and frame and then tighten completely. Set new engine on machine and line up the four mounting holes. Lift the back of the engine enough to slide two engine spacers in place. Insert two bolts. Repeat for the two front engine spacers. Start lock nuts on bolts by hand and then tighten nuts using a ½" wrench and a ½" socket on a 6" or 8" extension.
- 1b. Install five new dampers on engine plate with five bolts and lock washers. Tighten completely using a ½" wrench/socket. Set new engine on plate. Lift the back of the engine enough to slide two engine spacers in place. Insert two bolts. Repeat for the two front engine spacers. Start lock nuts on bolts by hand and then tighten nuts using two ½" wrenches or a ½" wrench and a ½" socket. Once engine is secure to the engine plate, lift assembly with one hand holding the front of the gas tank and the other hand holding the back of the engine plate and then install assembly on machine. Once all five dampers are seated on Frame, make sure there is even spacing between engine plate and frame and then tighten five lock nuts on dampers using a ½" swivel head socket on a 6" or 8" extension. (Refer to Section 2, Step 1 pictures for spacing).
2. Insert two torque bolts and turn lock nuts on so that a couple threads show through. **NOTE: these torque bolts must remain loose. DO NOT TIGHTEN.**
3. Reconnect jumper wire and ground wire located at the front of the engine.
4. Install drive belt. Start by placing belt around outer pulley located on the transaxle. Feed the belt through so that it follows the diagram shown. Once you are in position to route the drive belt over the clutch pulley, push forward on idler arm with right hand, and feed belt over clutch pulley with your left hand.
5. Reconnect throttle cable to throttle linkage. (Refer to Pictures Section 1---Step 3) Snug down conduit clip so that ferrule is exposed about halfway. This is an initial setting for the throttle cable that should set RPM's close to 3450. **DO NOT** install air filter and cover at this time. Start machine and squeeze throttle lever. If RPM's are near 3450, tighten conduit clip completely. If not close to 3450 loosen clip, pull cable slightly tighter and snug clip, and pull lever again. Continue this process until results are achieved. To adjust RPM in smaller increments loosen cable guide nut. To increase RPM turn cable guide screw out. To decrease RPM turn cable guide screw in. Tighten cable guide nut when finished. **NOTE:** Adjusting max RPM may change idle RPM. To change idle RPM use a #2 Philips screwdriver and turn idle adjustment screw. Turn out to decrease idle and in to increase RPM. Idle RPM should be between 1600-1650. Once RPM's are set, turn machine off and install air filter and cover.
6. Install engine shroud.
7. Install hood and spinner assembly.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).





Fig. 4.1, Section 1-Step 1



Fig. 4.2, Section 1-Step 2



Fig. 4.3, Section 1-Step 3



Fig. 4.4, Section 1-Step 3



Fig. 4.5, Section 1-Step 3



Fig. 4.6, Section 1-Step 3



Fig. 4.7, Section 1-Step 4



Fig. 4.10, Section 1-Step 6



Fig. 4.11, Section 1-Step 7



Fig. 4.12, Section 1-Step 10



Fig. 4.13, Section 2-Step 1

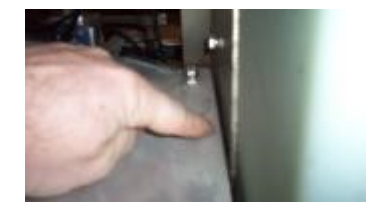


Fig. 4.14, Section 2-Step 2



Fig. 4.15, Section 2-Step 4



Fig. 4.16, Section 2-Step 5



Fig. 4.16, Section 2-Step 5



## Damper Complete Kit T449420 (Referring to Figures 5-5.18)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves.**

### Parts Included:

5-T449415-Damper Assembly  
5-R651482-Lock Washer 5/16  
7-R651214-Lock Nut, 5/16-18  
2-R650672-Bolt 5/16-18 x 2  
5-T645880-5/16-18 x 5/8 SS

### Tools Needed:

#3 Philips Screwdriver or 7/16 Wrench and 1/8 Allen Wrench  
depending on style of set block  
Ratchet  
3/8 Socket  
7/16 Wrench & Socket  
10 inch Extension Bar  
2 ½ Wrench/Sockets  
#2 Philips Screwdriver  
½ Swivel Head Socket

### Section 1: Removal

1. Use a 7/16 wrench to remove the 2 bolts on the engine shroud.
2. Push forward on idler arm with right hand and push belt forward over clutch pulley with left hand.
3. Remove the air filter and disconnect the throttle cable. Use #2 screwdriver to remove conduit clip.
4. Use a #3 Philips Screwdriver to remove shaft block.
5. Remove hood.
6. Disconnect the jumper wire and ground wire from the front of the engine.
7. Remove the 2 torque bolts with a 7/16 socket on a 10 inch extension and ratchet, and a 7/16 wrench.

**NOTE: Some torque bolts may require ½ wrenches.**

8. Remove the 5 nuts for the dampers using a 10 inch extension bar and a ½ inch swivel head socket.
9. Pull out the engine and set it on level ground or a work table.
10. Use a ½ wrench to remove bolts connected to dampers.

**NOTE: even if one damper has failed we recommend replacing all 5 dampers.**

### Section 2: Installation

1. Install new dampers with bolts and lock washers.
2. **Torque Bolts:** The engine vibration Dampers kit includes 2 5/16"-18 torque bolts. If your machine is already equipped with the 5/16"-18 torque bolts, no action is necessary. Use existing torque bolts. If your machine is equipped with ¼"-20 torque bolts, you will need to use a 5/16" ream /drill bit to make the torque bolt holes on the engine plate larger to allow the 5/16"-18 bolts to fit. **This change has become a standard of the assembly and needs to be converted.**
3. Put engine back on machine and check for even spacing between engine plate and frame.
4. Reattach the 5 nuts for dampers and 2 torque bolts. NOTE: 2 torque bolts should be left loose enough to spin freely by hand.
5. Reconnect ground and jumper wires.
6. Reinstall drive belt. Start by placing belt around outer pulley located on the transaxle.
7. Feed the belt through so that it follows the diagram shown. Once you are in position to route the drive belt over the clutch pulley. Push forward on idler arm with right hand, and feed belt over clutch pulley with your left hand.
8. Reconnect throttle cable. Snug down conduit clip when ferrule is just past the clip. This initial adjustment should set RPM's close to 3450.
9. Start machine and squeeze throttle lever. If RPM's are near 3450 tighten conduit clip completely. If not close to 3450 loosen clip and pull cable slightly tighter and snug clip and pull lever again. Continue this process until results are achieved.
10. To adjust RPM in smaller increments loosen cable guide nut. To increase RPM turn cable guide screw out. To decrease RPM turn cable guide screw in. Tighten cable guide nut when finished. NOTE: Adjusting max RPM may change idle RPM. To change idle RPM use a #2 Philips screwdriver and turn idle adjustment screw. Turn out to decrease idle and in to increase RPM. Final RPM should be between 1600-1650.
11. Reinstall air filter.
12. Reinstall engine shroud.
13. Reinstall hood, shaft block, and spinner assembly.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig. 5.1, Section 1-Step 1



Fig. 5.2, Section 1-Step 2



Fig. 5.3, Section 1-Step 3



Fig. 5.4, Section 1-Step 3



Fig. 5.5, Section 1-Step 3



Fig. 5.6, Section 1-Step 3



Fig. 5.7, Section 1-Step 4



Fig. 5.10, Section 1-Step 6



Fig. 5.11, Section 1-Step 7



Fig. 5.12, Section 1-Step 7



Fig. 5.13, Section 1-Step 10



Fig. 5.14, Section 2-Step 1

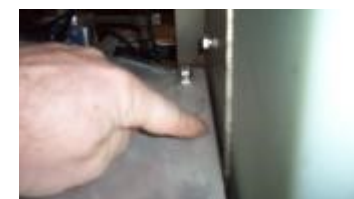


Fig. 5.15, Section 2-Step 2



Fig. 5.16, Section 2-Step 4



Fig. 5.17, Section 2-Step 5



Fig. 5.18, Section 2-Step 5

## Gearbox Complete T422355 (Referring to Figures 6-6.16)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

### Parts Included:

1-T422350 – Gearbox  
1-T653710 – Gearbox pulley  
4-R651216 – ¼ -20 lock nut  
1-T210165 Gearbox Heat Shield 6"

### Tools Needed:

7/16 Wrench/Socket  
3/8 Wrench/Socket  
#3 Philips Screwdriver  
1/8" Allen Wrench  
5/32 Allen Wrench

### Section 1: Removal

1. Using a #3 Philips Screwdriver, remove shaft block and spinner assembly.
2. Remove hood.
3. Use a 3/8" wrench to loosen top nut on the pump. Pull pump slightly forward to remove tension on belt. Remove belt and slide pump back as far as it goes.
4. Remove two bolts holding cable bracket on front of gearbox. Leave bracket hanging in place.
5. Remove four lock nuts on gearbox using a 7/16" socket. Pull gearbox out from brackets. (Note: gearbox/pump bracket only removed from machine to show location of lock nuts) Remove the bushing and internal star washer from old gearbox to be used on new gearbox.

### Section 2: Installation

**NOTE: New gearbox is shipped with locknuts hand tightened on studs and pulley snug on shaft.**

**Remove these parts prior to Installation, set screw requires a 5/32" Allen wrench.**

1. Install gearbox on bracket and tighten four lock nuts.
  2. Install cable bracket on front of gearbox with two bolts.
  3. Turn gearbox shaft so flat side is facing up. Put a couple drops of blue Loctite on gearbox shaft, and on set screws of pulley. Slide pulley on shaft. Line up pulley with pump pulley and transaxle pulley. Make sure one set screw is lined up over flat side of shaft. Tighten both set screws with a 5/32" Allen wrench.
  4. Slide pump forward, but not out of bracket. Position belt around all three pulleys. Once belt is around pump pulley, carefully slide pump/pulley back creating tension on belt. (CAUTION, do not push back too far. Too much tension may cause pump shaft to bend and could potentially break under high RPM). Tighten nut on top of bracket and test belt tension. To test belt tension, place a straight edge from pump pulley to gearbox pulley. Push down on belt with your finger. Belt should be approximately ½" from straight edge. (Samples of straight edges; piece of flat stock steel, ruler, etc.) Repeat step 4 until proper tension is achieved.
  5. Place bushing and internal star washer on the upper shaft of gearbox.
  6. Install gearbox cover (not shown)
- Install hood and spinner assembly.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**



Fig. 6.1, Section 1-Step 1



Fig. 6.4, Section 1-Step 3



Fig. 6.5, Section 1-Step 3



Fig. 6.6, Section 1-Step 4



Fig. 6.7, Section 1-Step 5



Fig. 6.8, Section 1-Step 5



Fig. 6.9, Section 1-Step 5



Fig. 6.10, Section 2-Step 3



Fig. 6.11, Section 2-Step 3



Fig. 6.12, Section 2-Step 3



Fig. 6.13, Section 2-Step 4



Fig. 6.14, Section 2-Step 4



Fig. 6.15, Section 2-Step 5



Fig. 6.16, Section 2-Step 5



## Pump Spinner Belt Replacement T653805 (Referring to Figures 7-7.13)



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves**

### Parts Included:

1-T653805 Spinner Belt

### Tools Needed:

3/8 Wrench  
Straight Edge at least 10" long. (Flat Stock Steel, Ruler, etc.)  
7/16 Wrench/Socket  
1/8 Allen Wrench  
#3 Philips Screwdriver

### Section 1: Removing Drive and Spinner Belt

1. Remove shaft block and spinner assembly using a #3 Philips Screwdriver.
2. Remove hood.
3. Place handlebar in upright position.
4. Use a 7/16" wrench/socket to remove two bolts holding engine shroud in place.
5. Push forward on idler arm to remove tension on drive belt. While holding idler arm forward with your right hand, begin pushing drive belt away from you, up and over clutch pulley with your left hand. Once belt is off of clutch pulley, there is no more tension and can be easily removed.
6. Use a 3/8 wrench to loosen nut on top of the pump bracket
7. Pull pump forward to relieve tension on belt.
8. Remove belt.

### Section 2: Installing Spinner Belt

1. Route belt as shown.
2. If bolt and washer come out of the slot, make sure washer is on the outside when inserting back into slot.
3. Once belt is around pump pulley, carefully slide pump/pulley back creating tension on belt. (CAUTION, do not push back too far. Too much tension may cause pump shaft to bend and could potentially break under high RPM). Tighten nut on top of bracket and test belt tension.
4. To test belt tension, place a straight edge from pump pulley to gearbox pulley. Push down on belt with your finger. Belt should be approximately 1/2" from straight edge. (Samples of straight edges; piece of flat stock steel, ruler, etc.) Repeat step 3 until proper tension is achieved.

### Section 3: Installing Drive Belt

1. Start by placing belt around outer pulley located on the transaxle.
2. Feed the belt through so that it follows the diagram shown. Once you are in position to route the drive belt over the clutch pulley. Push forward on idler arm with right hand, and feed belt over clutch pulley with your left hand.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**





Fig. 7.1, Section 1-Step 1



Fig. 7.4, Section 1-Step 4



Fig. 7.5, Section 1-Step 5



Fig. 7.6, Section 1-Step 6



Fig. 7.7, Section 1-Step 7



Fig. 7.8, Section 2-Step 1



Fig. 7.9, Section 2-Step 2



Fig. 7.10, Section 2-Step 4



Fig. 7.11, Section 3-Step 1



Fig. 7.12, Section 3-Step 2

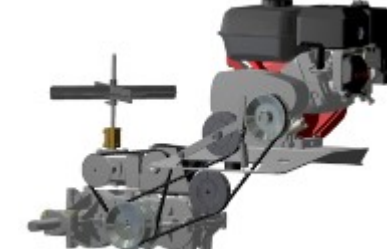


Fig. 7.13, Section 3-Step 2

## Triumph Transaxle-Sales T210303 (Referring to Figures 9-9.21)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

### Parts Included:

T210305-Triumph Box Kit  
-2-P654725-Hub w/ Drum  
T210307-Triumph Trans Bag  
-5-P651512-Washer, 1" x 18ga 0.048  
-2-P651705-E-Clip, 1"  
-2-P651640-Key, 1/4 X 1- 1/2  
-1-P653601-V-Pulley, A3.50 x 3/4"  
T000665-Transaxle Vent Kit  
-1-T210111-Trans vent  
T210309-Triumph Trans Brake Kit  
-4-T442055-Anti-seize 0.04pk  
-2-T654053-Brake Cover Assembly  
-2-T101708- Top Brake Cover  
-2-T654283- Brake Hub Cap 1"  
-2- R347041- Wire Tie 8 Nylon  
-1- 710187- Application Brush  
T210303-Transaxle Assembly

### Tools Needed:

2- 7/16 wrench/socket  
13/16 socket  
1/8 Allen wrench  
#3 Philips Screwdriver  
Needle nose pliers  
2- 1/2 socket wrench  
Flathead screwdriver  
Floor jack  
2- 2ton jack stands

### Section 1: Removing Transaxle

Remove spinner assembly **using a #3 Philips Screwdriver to loosen shaft block. Remove assembly.**

1. Remove hood.
2. Remove engine guard by using a 7/16" wrench/socket and take out two bolts.
3. Using your right hand push idler arm forward to relieve tension on belt.
4. Use your left hand to push belt forward over clutch pulley. Once belt is off pulley, remove belt from machine completely.
5. Remove spinner belt using a 3/8" wrench to loosen nut on top of pump bracket. Pull pump toward you to relieve tension on belt. Remove belt from machine completely.
6. Peel back heat shield to expose both the front brake bracket and the rod end that connects shift cable to shift bracket.
7. Remove bolt holding shift cable rod end on shift bracket using two 7/16" wrenches/sockets.
8. Remove hairpin from front brake bracket and slide assembly off hub. Use needle nose pliers to squeeze snap fitting and then pull cable through bracket. Disconnect hook from eyelet and remove front brake assembly from machine completely. Squeeze snap fitting on service brake cable and remove from bracket.
9. Use caution disconnecting elbow fittings from the pump. You will have some spillage that may get on your hands or in your eyes. Be sure to have protective eyewear and gloves. Slide blue locking tabs out and then pull elbow fitting from pump.
10. Using a 3/8" wrench loosen nut on bottom of pump bracket at the pivot point. Pull pump forward until top bolt and washer are out of bracket. Then pull pump up and out.
11. Remove four bolts holding pump/gearbox bracket on transaxle using a 1/2" socket with extension/wrench. There are two nylon spacers located under the front bolts of the pump/gearbox bracket. Do not lose the spacers. You will need them when installing new transaxle. The torque strap is located under rear bolts. Remove entire bracket with gearbox still attached. (You will have to move hoses aside to get bracket out.) Nylon spacers may either be on the transaxle or stuck to the bottom of the bracket.
12. Peel off seal patch and unplug wire harness from neutral safety switch.
13. Lower handlebars and remove two screws using 3/8" wrench/socket to open cover. Using needle nose pliers and 3/8" wrench/socket, loosen nut on steering cables to remove tension on brake bands.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.**  
**(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**



Fig. 9.2, Section 1-Step 1



Fig. 9.4, Section 1-Step 3



Fig. 9.5, Section 1-Step 4



Fig. 9.6, Section 1-Step 5



Fig. 9.7, Section 1-Step 6



Fig. 9.8, Section 1-Step 7



Fig. 9.9, Section 1-Step 8



Fig. 9.10, Section 1-Step 8



Fig. 9.11, Section 1-Step 8



Fig. 9.12, Section 1-Step 8



Fig. 9.13, Section 1-Step 9



Fig. 9.14, Section 1-Step 10



Fig. 9.15, Section 1-Step 11



Fig. 9.16, Section 1-Step 12



Fig. 9.17, Section 1-Step 12



Fig. 9.18, Section 1-Step 12



Fig. 9.19, Section 1-Step 13



Fig. 9.20, Section 1-Step 13



Fig. 9.21, Section 1-Step 14  
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**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves**

**Parts included:**

T210305-Triumph Box Kit  
-2-P654725-Hub w/ Drum  
T210307-Triumph Trans Bag  
-5-P651512-Washer, 1" x 18ga 0.048  
-2-P651705-E-Clip, 1"  
-2-P651640-Key, 1/4 X 1- 1/2  
-1-P653601-V-Pulley, 1.50 x 3/4"  
T000665-Transaxle Vent Kit  
-1-T210111-Trans vent  
T210309-Triumph Trans Brake Kit  
-4-T442055-Anti-seize 0.04pk  
-2-T654053-Brake Cover Assembly  
-2-T101708- Top Brake Cover  
-2-T654283- Brake Hub Cap 1"  
-2-R347041- Wire Tie 8 Nylon  
-1- 710187- Application Brush  
T210303-Transaxle Assembly

**Tools needed:**

2- 7/16 wrench/socket  
13/16 socket  
1/8 Allen wrench  
#3 Philips screwdriver  
Needle nose pliers  
2- 1/2 socket wrench  
Flathead screwdriver  
Floor jack  
2- 2ton jack stands

**Section 1: Removing Transaxle**

14. Place sulky brake lever in lock position and place blocks in front and back of sulky tires. Crack loose all lug nuts on both front tires. Slide floor jack under front of machine to the lower stringer. (Lower stringer runs directly under spray tanks.) Raise one side so tire is at least 3" off ground.  
Remove lug nuts on raised tire only. Remove tire and lay flat with valve stem facing down. Slide tire under lower stringer according to picture. Lower jack and repeat procedure for other tire.
- 15a. Remove e-clips using a flathead screwdriver or needle nose pliers on both hubs. Remove both hubs from the transaxle. NOTE: If either hub is locked on transaxle and will not come off refer to step 15b for removing brake assembly. If both hubs come off easily, skip to step 16.
- 15b. Remove hairpin and slide brake assembly off tab. Hold cable stud with needle nose pliers and remove nut with a 3/8" wrench/socket. Slide cable out of brake assembly. Remove front brake pin to allow bracket to open up and slide off hub. Once brake assembly is off it can be assembled again.
- Brake Pin Instructions:** When removing cable from brake band assembly, it is important to identify which brake pin the cable needs to pass through first when installing. There is a universal brake pin and a brake pin that has been counter sunk to allow the ferrule to be seated in the brake pin. (See pictures.) If ferrule is not seated in the counter sunk brake pin, the brake band will not engage properly which will result in poor brake function. Initial setting for left side is to turn lock nut down where 3/8" threads are shown. Right side is 1/8". After brake is assembled, flip upside down and insert on tab. This will keep cable out of the way while removing transaxle.
16. Remove hairpin from brake tab and remove brake assembly. Flip upside down and place back on brake tab and insert hairpin. Repeat for other side. (See picture Section 1 Step 15b.)
17. Insert jack from right side of machine and place jack under transaxle lining it up in the center of the mounting holes. Raise jack until you make slight contact with transaxle. DO NOT apply any more pressure. The floor jack is only there to support transaxle when the bolts are removed so it does not fall when bolts are removed.
18. Remove shift cable.
19. Remove four bolts holding transaxle to frame using two 1/2" wrench/socket. When removing last bolt use caution because transaxle is loose. With one hand hold axle and then slowly lower jack with other hand. Lower jack completely. Guide transaxle and jack out from under machine. (Wear gloves when grabbing axle, keyway is **extremely sharp!**)
20. Remove shift bracket from old transaxle using 3/8" wrench/socket. Install shift bracket on new transaxle with the new bolt included.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig. 9.22, Section 1-Step 14



Fig. 9.23, Section 1-Step 14



Fig. 9.24, Section 1-Step 14



Fig. 9.25, Section 1-Step 14



Fig. 9.26, Section 1-Step 14



Fig. 9.27, Section 1-Step 15a



Fig. 9.28, Section 1-Step 15b



Fig. 9.29, Section 1-Step 15b



Fig. 9.30, Section 1-Step 15b



Fig. 9.31, Section 1-Step 15b



Fig. 9.32, Section 1-Step 15b



Fig. 9.33, Section 1-Step 15b



Fig. 9.35, Section 1-Step 15b



Fig. 9.36, Section 1-Step 15b



Fig. 9.37, Section 1-Step 17



Fig. 9.38, Section 1-Step 18



Fig. 9.39, Section 1-Step 18



Fig. 9.40, Section 1-Step 18



Fig. 9.41, Section 1-Step 19





**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

## **Section 2: Transaxle Installation**

**NOTE: Outer pulley on transaxle left loose by manufacturer to be adjusted after installation of transaxle is complete.**

1. Make sure floor jack is completely lowered. Place transaxle so it is centered on floor jack. Transaxle should be parallel to the ground if placed on jack properly.
2. Carefully guide the jack and transaxle under machine by holding axle with one hand and pushing jack with the other. Position transaxle so that it is centered under frame. Start raising jack and guide transaxle to line up mounting holes with frame and line up back of transaxle with torque strap. Only apply light pressure on jack to allow slight movement for lining up mounting holes. Insert four bolts and hand tighten nuts.
3. Center transaxle with frame by carefully moving it back and forth until there is an equal amount of reveal on each end cap. Tighten all four bolts completely. Lower jack and move aside.
4. Install brake band assembly on brake tab. Insert hairpin to hold in place.
5. Install hubs. Refer to diagram included with new transaxle kit for proper installation.
6. Place jack on either side under lower stringer next to a tire. Raise machine enough to slide tire out. Install tire on hub and tighten log nuts. Lower jack and repeat for other side.
7. Plug wire harness on neutral switch of transaxle. Install seal patch over plug.
8. Place round nylon spacers over center mounting holes of transaxle. Carefully set the gearbox/pump bracket on transaxle lining up holes with the torque strap and nylon spacers. Insert four bolts and tighten completely. Route hoses over and around bracket as shown in the picture.
9. Install pump by inserting bottom stud at pivot of bracket and then insert top nut and washer into slot of bracket making sure washer is on the outside. Snug bottom nut with a 3/8" wrench but leave enough room to allow pump to pivot. Leave top nut loose until further instruction.
10. Install elbow fittings into pump as shown. Be sure to push in blue lock tabs on pump to secure fittings.
11. Install front brake assembly. Insert hairpin to hold in place. Make sure cable is routed under the shift bracket and to the bracket located on gearbox. Slide cable through slot and snap cable in place. Connect eyelet from service cable to front brake cable and then feed into slot and snap into place.
12. Mount shift cable to shift bracket using two 7/16" wrench/socket.
13. Install spinner belt. Push pump back to create tension on belt. To achieve proper tension place a straight edge on top of pump pulley to top of gearbox pulley. Use your finger to push down on belt. Belt should be pushed down approximately 1/2".
14. Place handlebars in upright position. Leave handlebar cover loose. Route drive belt on machine as shown in diagram. When ready to place belt over clutch pulley push forward on idler arm with your right hand and feed belt over clutch pulley with your left hand towards you.
15. Install engine guard using a 7/16" wrench/socket.
16. Install hood. Tighten down two screws with a 3/8" wrench/socket.
17. Install spinner assembly. Before tightening shaft block make sure cam is positioned in agitator arm as shown in picture. Tighten shaft block.
18. Lower handlebars and open cover. Adjust each steering cable with needle nose pliers and 3/8" wrench/socket. Lift cable stud and hold. Tighten nut down until about 1 to 2 threads are shown. This is only the initial setting. Once you operate machine and test steering you may have to adjust cable.
19. Install handlebar cover.
20. Ride machine and test steering. See steering cable instructions.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**



Fig. 9.42, Section 2-Step 1



Fig. 9.43, Section 2-Step 2



Fig. 9.44, Section 2-Step 3



Fig. 9.45, Section 2-Step 3



Fig. 9.46, Section 2-Step 4



Fig. 9.47, Section 2-Step 7



Fig. 9.48, Section 2-Step 8



Fig. 9.49, Section 2-Step 8



Fig. 9.50, Section 2-Step 9



Fig. 9.51, Section 2-Step 10



Fig. 9.52, Section 2-Step 11



Fig. 9.53, Section 2-Step 11



Fig. 9.54, Section 2-Step 12



Fig. 9.55, Section 2-Step 13



Fig. 9.56, Section 2-Step 13



Fig. 9.57, Section 2-Step 14



Fig. 9.58, Section 2-Step 17



Fig. 9.59, Section 2-Step 18

## Fert. Control Assembly Replacement T101010 (Referring to Figures 10-10.12)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves**

### Parts Included:

1-T101010 Fert Control Assembly

### Tools Needed:

#2 Philips Screwdriver  
7/8 Socket  
3/8 Wrench  
3/32 Allen Wrench  
11/32 Socket  
¼ Socket  
7/16 Wrench  
7/16 Swivel Head with 10" Extension  
#3 Philips Screwdriver  
1/8 Allen Wrench

### Section 1: Removal

1. Place handlebar in down position.
2. Use a 3/8 wrench/socket to remove the 2 screws on the handlebar cover.
3. Use a #2 Philips screwdriver and a 3/8 wrench/socket to remove the 2 bolts on left and right columns and place handlebar cover inside hopper. (It is not necessary to remove the third hole cable)
4. Use a 3/8 wrench and a #2 Philips screwdriver to detach hopper cable
5. Use a 3/32 Allen wrench and 7/8 socket to remove high gear manifold.
6. Unplug the 2 wires on the on/off switch.
7. Remove the 4 bolts for the handlebar assembly and let the handlebar assembly hang down.  
Use a 7/16 wrench and 7/16 swivel head socket with a 10" extension bar to remove bolts.
8. Use the 7/16 wrench and 7/16 extension to remove the 2 bolts for the fertilizer control assembly.
9. Use an 11/32 socket and ¼ socket to remove fertilizer control assembly from deflector cable.

### Section 2: Installation

1. Installation is the reverse of removal. NOTE: When tightening the fertilizer control assembly use 2 bolts in the 2 extra holes to make sure the assembly lines up properly.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**



Fig. 10.1, Section 1-Step 2



Fig. 10.2, Section 1-Step 2



Fig. 10.3, Section 1-Step 3



Fig. 10.4, Section 1-Step 3



Fig. 10.5, Section 1-Step 4



Fig. 10.6, Section 1-Step 5



Fig. 10.7, Section 1-Step 5



Fig. 10.8, Section 1-Step 6



Fig. 10.9, Section 1-Step 7



Fig. 10.10, Section 1-Step 8



Fig. 10.11, Section 1-Step 9



Fig. 10.12, Section 2-Step 1

## Front Service Brake-1 T654250 (Referring to Figures 11-11.13)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves.**

### Parts Included:

1-T654250 Front Brake Cable-1

### Tools Needed:

3/8 Wrench/Socket  
7/16 Wrench/Socket  
1/8 Allen Wrench  
Needle Nose Pliers  
Side Cutters/Dykes  
#3 Philips Screwdriver

### Section 1: Removing Service Brake Cable

1. Place Handlebars in down position.
2. Open handlebar cover by removing two screws using a 3/8" wrench/socket.
3. Remove shaft block and spinner assembly using a #3 Philips Screwdriver.
4. Remove hood.
5. Cut cable tie and close in line adjuster completely to create slack in cable.
6. Unhook eyelet from front brake cable. Use needle nose pliers to squeeze snap fitting and pull out of gearbox bracket.
7. Open lever to create slack to allow you to remove cable from lever housing.
8. Grab end of cable near in line adjuster and pull cable until completely removed from the machine

### Section 2: Installing Service Brake Cable

1. Hook eyelet to front brake cable and pull cable through slotted bracket and snap fitting into place. (Refer to picture Section 1---Step 6)
2. Route other end of cable behind stringer and up through cable loop. Follow same route as the throttle cable.
3. Open lever, place end of cable in lever housing and close. (Refer to picture Section 1---Step 7)  
To adjust tension, turn in line adjuster until slack in cable is gone and spring on front brake cable opens About 1/8". \*Before installing hood and spinner assembly, carefully follow testing instructions. Make Sure you are in an open, safe area. Mark a line on the ground to use to test stopping distance.
4. Operate machine in high gear towards designated mark. When front of sulky tires reach the line, squeeze service brake lever. Machine should stop approximately 5' from line. If machine stops too suddenly or past 5', you will need to adjust front brake cable. See front brake cable instructions and follow steps 3-5 of removing front brake cable. Once removed, use needle nose pliers to hold stud and tighten nut if machine stops beyond 5'. If machine stops too suddenly loosen nut. Test braking and continue this procedure until results are achieved. Once adjusted to correct stopping distance, use supplied cable tie to tie shift cable and service brake cable as shown.
5. Reinstall hood and spinner assembly and handlebar cover.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**





Fig. 11.1, Section 1-Step 2



Fig. 11.2, Section 1-Step 2



Fig. 11.3, Section 1-Step 3



Fig. 11.4, Section 1-Step 3



Fig. 11.5, Section 1-Step 4



Fig. 11.6, Section 1-Step 5



Fig. 11.7, Section 1-Step 6



Fig. 11.8, Section 1-Step 6



Fig. 11.9, Section 1-Step 6



Fig. 11.10, Section 1-Step 7



Fig. 11.11, Section 2-Step 2



Fig. 11.12, Section 2-Step 2



Fig. 11.13, Section 2-Step 5

## Front Service Brake Cable 2 T654055 (Referring to Figures 12-12.11)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed:** Wear Protective Eyewear and Gloves. Clean off any debris from hood & spinner platter.

### Parts Included:

1-T654255 Front Service Brake Cable-2  
1-T101733 Brake Pin Sheath  
1-R651206— 10 x 24 Lock Nut

### Tools Needed:

#3 Phillips Screwdriver  
3/8 Wrench/Socket  
7/16 Wrench/Socket  
1/8 Allen Wrench  
Needle Nose Pliers  
Side Cutters

### Additional Parts may need to be Ordered:

1-R347041 Wire Tie 8" Nylon  
2-R651206 Lock Nut, 10-24  
2-R651450 Fender Washer, 3/16 x 3/4  
2-T654525 Brake Tension Spring  
1-R347042 Wire Tie Stud  
1-R651570 Hair Pin

### Section 1: Removing Front Brake Cable

1. Remove shaft block and spinner assembly using a #3 Phillips Screwdriver.
2. Remove hood.
3. Use needle nose pliers to squeeze tabs on the snap fitting and push cable out of slotted bracket. Unhook from eyelet of service brake cable.
4. Lift heat shield to expose the hairpin and brake band assembly. Remove hairpin.
5. Remove brake assembly from tab and pull out.
6. Using needle nose pliers, hold onto stud and use 3/8" wrench / socket to remove lock nut. Carefully remove so you do not lose brake band tension spring or washer. When pulling stud through brake pins, be careful so pins do not fall out. BRAKE PINS: When removing cable from brake band assembly it is important to identify which brake pin the cable needs to pass through first when installing. There is a universal brake pin and a brake pin that has been counter sunk to allow the ferrule to be seated in the brake pin. (See pictures) If ferrule is not seated in the counter sunk brake pin, the brake band will not engage properly which will result in poor brake function.

### Section 2: Installing Front Brake Cable

1. Push stud through brake pins in the correct order, which was identified in the previous step. Use needle nose pliers to hold stud in place. Reinstall washer, brake band tension spring, and locknut. Tighten lock nut down until 3/8" of thread is revealed.
2. Install brake band assembly on tab. Insert hairpin. Cable should be routed underneath shift bracket, then to gearbox bracket.
3. Route cable through slot and push snap fitting through slotted bracket. Re-attach hook to eyelet of service brake cable.
4. Before Installing hood and spinner assembly, carefully follow testing instructions. Make sure you are in an open, safe area. Mark a line on the ground to use to test stopping distance. Operate machine in high gear towards designated mark. When front of sulky tires reach the line, squeeze service brake lever. Machine should stop approximately 5' from line to the front of sulky tires. If machine stops too suddenly or past 5', you will need to adjust front brake cable. See front brake cable instructions and follow steps 3-5 of removing front brake cable. Once removed, use needle nose pliers to hold stud and tighten nut if machine stops beyond 5'. If machine stops too suddenly loosen nut. Test braking and continue this procedure until results are achieved. Once adjusted to correct stopping distance, use supplied cable tie to tie shift cable and service brake cable as shown. Reinstall hood and Spinner assembly.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig. 12.1, Section 1-Step 1



Fig. 12.4, Section 1-Step 3



Fig. 12.6, Section 1-Step 4



Fig. 12.5, Section 1-Step 3



Fig. 12.7, Section 1-Step 6



Fig. 12.8, Section 1-Step 6



Fig. 12.9, Section 1-Step 6



Fig. 12.10, Section 2-Step 1



Fig. 12.11, Section 2-Step 2

## Hopper Cable Replacement T654020 (Referring to Figures 13-13.8)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

### Parts Included:

1-T654020 Hopper Cable

### Tools Needed:

3/8 Wrench/Socket  
#2 Philips Screwdriver  
2-11/16 Wrench

### Section 1: Removing Hopper Cable

1. Place handlebar in down position. Open handlebar cover by removing two screws using a 3/8 wrench/socket.
2. Using #2 Philips and 3/8 wrench, remove screw holding rod end on hopper control arm.
3. Use two 11/16 wrenches to loosen nuts holding cable on slotted tab located inside handlebar cover.
4. Use two 11/16 wrenches to loosen nuts on hopper bracket.
5. Use a 3/8 wrench/socket to remove nut holding rod end to hopper plate. Cable can now be removed from the machine.

### Section 2: Installing Hopper Cable

1. Route end of cable without boot over top stringer of frame and up to slotted bracket. Unscrew nuts to open up enough so you can slide the cable on the bracket with one washer and one nut on top and the other washer and nut on bottom. Hand tighten only at this point.
2. Unscrew nuts on cable and slide onto hopper bracket keeping one nut and washer all the way towards the back of threads. Slide onto bracket and tighten nuts using two 11/16 wrenches. (Refer to Picture Section 1 Step 4)
3. Place flat washer on stud of hopper plate. Hold in place and slide rod end over stud and then tighten lock nut with 3/8 wrench/socket. (Refer to picture Section 1---Step 5)
4. To adjust hopper control plate, first open hopper plate completely by hand. Push hopper control lever forward all the way in open position. (Fig 13.8)
5. Hold rod end up to hopper control lever. You want to see if hole on rod end lines up with hopper control lever. (NOTE: This rod end should be tightened down completely so if hole needs to move down, the adjustment is done at the 11/16 nuts. If rod end hole needs to move up slightly the adjustment is done by loosening the rod end.) Depending on which situation described above pertains to the machine you are working on, before you attach rod end to hopper control lever, the 2 -11/16 nuts need to be tightened first.
6. Install screw to attach rod end using #2 Philips screwdriver and 3/8 wrench. Loosen white lock nut on hopper control lever. Operate hopper control to make sure it opens and closes completely and freely with no restrictions. (NOTE: if hopper does not close completely, remove rod end screw and tighten rod end a couple of turns, hook back up and test again until hopper opens and closes completely.)
7. Reinstall handlebar cover.
8. Re-calibrate spreader application rate.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**





Fig. 13.1, Section 1-Step 1



Fig. 13.2, Section 1-Step 1



Fig. 13.3, Section 1-Step 2



Fig. 13.4, Section 1-Step 3



Fig. 13.5, Section 1-Step 4



Fig. 13.6, Section 1-Step 5



Fig. 13.7, Section 2-Step 1



Fig. 13.8, Section 2-Step 4



Fig. 13.8, Section 2-Step 4



Fig. 13.8, Section 2-Step 5



Fig. 13.8, Section 2-Step 5



## Shift Cable Replacement T654030 (Referring to Figures 14-14.16)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**NOTE: Wear Protective Eyewear and Gloves.**

### Parts Included:

1-T654030-A-B Shift Cable Assembly

### Tools Needed:

3/8 Wrench/Socket  
2-7/16 Wrench/Socket  
2-15/16 Wrench  
11/32 Socket  
¼ Socket  
#2 Philips Screwdriver  
Side Cutters

### Section 1: Removing Shift Cable

1. Lower handlebars and remove two screws at top of handlebar cover using 3/8" wrench/socket.
2. Remove two bolts at pivot point of handlebar cover using a 3/8" wrench/socket and #2 Philips screwdriver. Set handlebar cover in hopper and raise handlebars to upright position.
3. Remove shaft block and spinner assembly using a #3 Philips Screwdriver.
4. Remove hood.
5. Remove white lock nut with a 7/16" wrench/socket. Remove two orange urethane washers. Leave the two nylon washers on pivot stud.
6. Remove shift lever using 2 – 7/16" wrenches/sockets.
7. Remove rod end from end of cable and slide lower boot up the cable shaft. Loosen two nuts using two 15/16" wrenches. Twist top nut and washer off by hand and slide over boot and off cable completely. Pull cable down through hole.
8. Clip cable tie holding shift cable and service cable together.
9. Remove clamp using a 3/8" wrench/socket and a #2 Philips screwdriver.
10. Remove cable rod end from shift arm using two 7/16" wrench/sockets.
11. Pull cable towards the front to remove completely from machine.

### Section 2: Installing Shift Cable

1. Pull shift arm all the way forward so transaxle is in high gear. Before attaching cable to shift arm, make sure the rod end is turned all the way on cable. (This rod end is located on the end of the cable without the 15/16 nuts and washers) Attach cable to shift arm with one bolt and one lock nut (Refer to Picture Section 1---Step 10)
2. Install cable clamp. Notice there is a groove in the cable where the clamp should seat itself. This will position cable properly on the frame.
3. Route end of cable with the 15/16 nuts under the lower stringer, then up and over engine shroud. Remove rod end and ONLY the top nut and washer from the end of the cable. Slide lower boot up the cable to allow nut to pass over.
4. Route cable up through hole on handle column frame and then place washer and nut on cable. Turn the top nut down until the first thread passes through the top of the nut. Push cable back down through hole until the top nut and washer touch the frame. Then turn bottom nut up until it is snug on the bottom of the handle column frame. Slide boot back in place. Install rod end and turn all the way down until it is right.
5. Position shift lever as shown in picture and slide between handle column and frame. Connect shift lever to rod end and first by inserting bolt through the back of the lever and then through the rod end. Tighten nut completely. Place end of lever on the pivot stud. Install two orange urethane washers and white nylon lock nut. Snug down white nut, but do not over tighten. Orange washers will begin to squeeze out if white nut is too tight. (Refer to picture Section 1---Step 5.)
6. Before tightening the two 15/16 nuts completely, the shift lever must be properly positioned. Push up on the shift lever to extend the cable completely. The shift lever should come close to the top of the handle column frame approximately 1/8" to ¼" of space between the lever and frame. Adjust the two 15/16 nuts either up or down until you achieve the spacing specified. Once the shift lever position is set, tighten the 15/16 nuts completely.
7. Check position of the shift stop. Shift into neutral. Shift stop should be just below shift lever. Adjust nut using ¼" socket and 11/32" socket. Once set, move shift lever through all gears to make sure it is working properly. NOTE: When pulling lever up to high gear, make sure lever does not hit top of column. If lever hits the top, it may not shift completely into high gear. Refer back to section 2---Step 6 to adjust if necessary.
8. Install hood, spinner assembly, and handlebar cover.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig. 14.1, Section 1-Step 1



Fig. 14.2, Section 1-Step 2



Fig. 14.3, Section 1-Step 3



Fig. 14.5, Section 1-Step 5



Fig. 14.6, Section 1-Step 6



Fig. 14.7, Section 1-Step 7



Fig. 14.8, Section 1-Step 8



Fig. 14.9, Section 1-Step 9



Fig. 14.10, Section 1-Step 10



Fig. 14.11, Section 2-Step 2



Fig. 14.12, Section 2-Step 3



Fig. 14.13, Section 2-Step 3



Fig. 14.14, Section 2-Step 5



Fig. 14.15, Section 2-Step 6



Fig. 14.16, Section 2-Step 7

## Steering Cable Replacement T654060 (Referring to Figures 15-15.21)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed:** Wear Protective Eyewear and Gloves.

**Note:** Clean off any debris from hood & spinner platter, and around axle end of front tires. Using a jack or lift, raise front of machine so that the tire you are working on is off the ground.

### Parts Included:

T654275– B-SS Cable  
T101733 Brake pin, Sheath  
R651206-Lock Nut, 10-24

### Tools Needed:

#3 Philips Screwdriver  
3/8 Wrench/Socket  
7/16 Wrench/Socket  
1/8 Allen Wrench

### Section 1: Removing Smart Steer Cable

1. Place handlebars in down position
2. Open handlebar cover by removing two screws using a 3/8" wrench.
3. Remove shaft block and spinner assembly using a #3 Philips Screwdriver.
4. Remove hood.
5. Use a flathead screwdriver to pry e-clip from the axle. Use caution, e-clips are under tension and may pop off suddenly. Remove tire and make sure you do not lose the flat washers and keyways. (See exploded diagram)
6. Remove hairpin that holds brake band bracket in place and remove bracket from tab.
7. Use needle nose pliers and 3/8 wrench/socket to remove lock nut and then carefully pull cable through brake pins. (Hint: use a marker to mark which brake pin the cable needs to pass through when installed.) BRAKE PINS: When removing cable from brake band assembly it is important to identify which brake pin the cable needs to pass through first when installing. There is a universal brake pin and a brake pin that has been counter sunk to allow the ferrule to be seated in the brake pin. (See Pictures) If ferrule is not seated in the counter sunk brake pin the brake band will not engage properly which will result in poor brake function.
8. Use needle nose pliers and 3/8 wrench/socket to remove lock nut on v-bracket.
9. Use needle nose pliers to squeeze tabs on cable housing and gently pull on cable from underneath and then feed cable out of bracket. Then pull from top to remove.
10. Repeat steps 1-9 for other side. **NOTE:** left side cable is tied to other cables and hoses. Clip tie and replace with supplied cable tie.

### Section 2: Installing Smart Steer Cable

1. Install new cables on each brake band assembly. Remember to route through brake pins correctly. Once threaded stud is through brake pins install nut on end of stud. Initial settings for nut on left side is approximately 3/8". The right side is approximately 1/8". Using needle nose pliers to hold stud and 3/8 wrench/socket to adjust.
2. Place each brake band assembly on the brake tab bracket.
3. Install hairpin on each side.
4. Route left side cable through frame slot. Then behind lower stringer up through cable loop.
5. Feed cable through slotted bracket tab and snap into place. Slide boot over cable.
6. Push stud end of cable through v-bracket and place nut on stud and hand tighten only. Tie all cables and hoses together except for the deflector cable.
7. Route right side cable through frame slot. Then behind lower stringer and directly up to slotted bracket. Make sure cable is routed between spray valve plumbing and the sulky brake and spray cable. Feed cable through slotted bracket tab and snap into place. Slide boot cover cable. Push stud end of cable through v-bracket and place nut on (Hand tighten only)
8. Reinstall tires, make sure keyways are in place. Install washers and e-clips. Grease each hub. (Refer to diagram)
9. Initial setting for both cables is slightly different but done in the same manor. Using needle nose pliers, grab the square bottom of the stud and lift up. You will notice a gap between the lock nut and the v-bracket. This gap should be approximately 1/8" on both the left and right cable. You will notice that one side seems tighter than the other. That's OK. It all depends on the positioning of the handlebars.
10. Before closing handlebar cover and reinstalling hood and spinner assembly, ride machine in a safe area and engage the left and right steering to ensure proper adjustment. If you need either side tighter, adjust individual side separately until smart steering is adjusted correctly.
11. Once steering is adjusted reinstall hood and spinner assembly and close handlebar cover.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**





Fig. 15.1, Section 1-Step 2



Fig. 15.2, Section 1-Step 2



Fig. 15.3, Section 1-Step 3



Fig. 15.5, Section 1-Step 4



Fig. 15.6, Section 1-Step 5

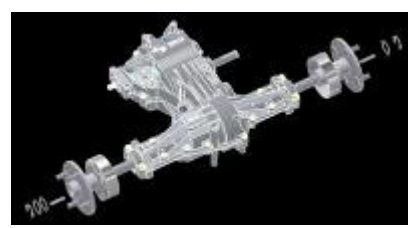


Fig. 15.7



Fig. 15.8, Section 1-Step 6



Fig. 15.9, Section 1-Step 7



Fig. 15.10, Section 1-Step 7



Fig. 15.11, Section 1-Step 8



Fig. 15.12, Section 1-Step 9



Fig. 15.13, Section 1-Step 10



Fig. 15.14, Section 2-Step 1



Fig. 15.15, Section 2-Step 4



Fig. 15.16, Section 2-Step 5



Fig. 15.17, Section 2-Step 6



Fig. 15.18, Section 2-Step 7



Fig. 15.19, Section 2-Step 7



Fig. 15.20, Section 2-Step 9



Fig. 15.21, Section 2-Step 9



## Spray/Brake Lever Replacement T654140 (Referring to Figures 16.1-16.2)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**NOTE:** Before removing any lever, become familiar with the factory set position so new levers are mounted properly.

### Parts Included:

T654140 Spray/Brake Lever

### Tools Needed:

5/32 Allen Wrench

### Section 1: Removing and Replacement of Spray/Brake Lever

1. For the front brake, sulky brake, and spray levers use a 5/32 Allen wrench and remove the 2 bolts on the lever link.
2. Pull back on the cable to expose the metal wire and push cable forward to detach.  
Reattach cable and tighten in original place.

**NOTE:** When replacing spray lever, it is not necessary to adjust spray cable, when replacing the front brake lever, it is recommended that you check brakes for proper cable replacement and front brake cable replacement on adjusting brakes.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig. 16.1, Section 1-Step 1



Fig. 16.2, Section 1-Step 2

## Spray Cable Replacement T654265 (Referring to Figures 17-17.9)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

### Parts Included:

- 1-T654265 Spray Cable
- 2-R347041 8" Wire Tie, Nylon (sold separately)

### Tools Needed:

- Needle Nose Pliers
- Side Cutters
- 3/8 Wrench/Socket
- #2 Philips Screwdriver

### Section 1: Removing Spray Valve Cable

1. Lower handlebar to down position.
2. Use a 3/8 wrench/socket to remove the 2 screws on the handlebar cover, and open.
3. Use a #2 Philips screwdriver and a 3/8 wrench/socket to remove the 2 bolts on left and right columns and place handlebar cover inside hopper. (It isn't necessary to remove the third hole cable)
4. Use needle nose pliers and squeeze snap fitting. Pull top of cable to free cable from spray valve bracket mount.
5. Remove cable from spray valve handle and spray lever.

### Section 2: Installing Spray Valve Cable

1. Route barrel end through cable loop and connect to spray lever.
2. Insert z bend of cable into bottom hole of spray valve handle.
3. Insert snap fitting into spray valve bracket mount.
4. Check handle position on valve. The bottom should not be making contact with valve. Turn in line adjuster until there is a small gap between valve and handle.
5. Install handlebar cover.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).

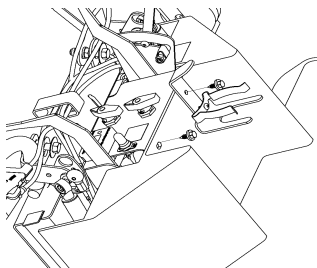


Fig. 17.1, Section 1-Step 2

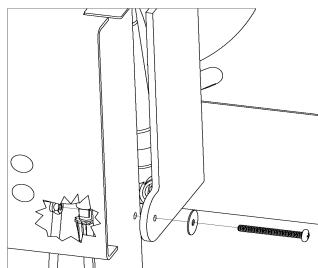


Fig. 17.2, Section 1-Step 3

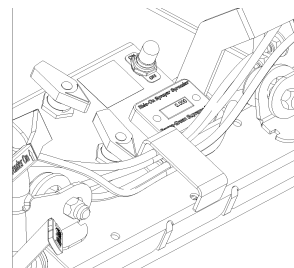


Fig. 17.4, Section 1-Step 5

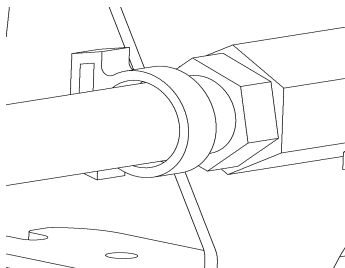


Fig. 17.5, Section 2-Step 1

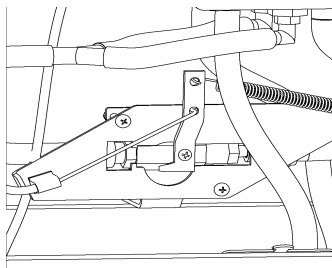


Fig. 17.6, Section 2-Step 2

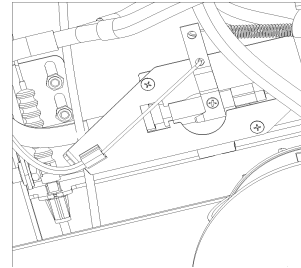


Fig. 17.7, Section 2-Step 3

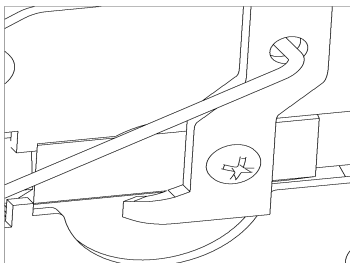


Fig. 17.8, Section 2-Step 4

## Sulky Brake Cable Replacement T654040 (Referring to Figures 18-18.26)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed:** Wear Protective Eyewear and Gloves during the removal and installation of sulky brake cable.

### Parts Included:

1-T654260- Sulky Brake Cable  
2-T100733-Brake Pin Sheath  
2-R651206- Lock Nut, 10-24

### Tools Needed:

1/8 Allen Wrench  
3/8 Wrench/Socket  
5/16 Wrench/Socket  
7/16 Wrench/Socket  
Needle Nose Pliers  
Side Cutters  
#3 Philips Screwdriver

### Additional Parts may be ordered:

1-R347041-Wire Tie 8 Nylon  
2-R347042-Wire Tie Stud  
2-R651206-Locknut, 10-24  
2-R651450-Fender Washer, 3/16 x 3/4  
2-T654525-Brake Band Tension Spring

### Section 1: Removing Sulky Brake Cable

1. Raise sulky high enough so that tires are not touching the ground. You may use a lift jack or simply have large enough blocks to place under sulky deck.
  2. Remove cotter pin from axle on each side using a pair of dykes or other set of pliers.
  3. Carefully remove each tire. Do not lose spacing washers located on outside of rim.
- NOTE: There may be a different quantity for each side, make sure you reinstall same amount of spacing washers as removed.**
4. Remove hairpin from each brake band holder tab.
  5. Use needle nose pliers and 3/8 wrench/socket to remove lock nut and then carefully pull cable through brake pins. **BRAKE PINS:** When removing cable from brake band assembly it is important to identify which brake pin the cable needs to pass through first when installing. There is a universal brake pin and a brake pin that has been counter sunk to allow the ferrule to be seated in the brake pin. (See pictures) If ferrule is not seated in the counter sunk brake pin, the brake band will not engage properly which will result in poor brake function.
  6. Use a 5/16 wrench and 3/8 wrench to remove conduit clips (not shown) on each fender of the sulky.
  7. Open handlebar cover using 3/8 wrench and remove two screws.
  8. Remove shaft block and spinner assembly using a #3 Philips screwdriver.
  9. Remove hood by using 3/8 wrench and take out two screws. (Steps 8 & 9 will allow you to see how to route replacement cable)
  10. Disconnect sulky brake cable from lever. (NOTE: upper lever on left handle bar). Cut cable tie on right handle column. Push cable through back of frame and then out under frame and feed rest of cable out.

### Section 2: Installing Sulky Brake Cable

1. Route the threaded stud ends of the cable from under frame through the back center of frame. Routing one cable end on each side of center column and over plumbing assembly. Feed through until cable no longer pulls through.
2. Route single end of cable above the plumbing that connects the spray tanks underneath the frame and then up and around engine plate.
3. Route cable along the right handle column up and behind steering cable. Pass through cable loop and then insert into lever.
4. Carefully route cable through brake band assembly. It is important that you insert cable correctly so that the ferrule seats in the correct brake pin. (Refer to Section 1--- Step 5) Once cable is through install lock nut so that 11/16" of the threads are shown. Then install brake band bracket assembly on sulky and reinstall hairpin to hold in place. (Repeat this step for both sides.)
5. Install two stud wire ties on sulky and loop around each cable. Do not pull completely tight. Leave some room for cable to move freely.
6. Install conduit clips on sulky fender as shown. Route the cable on top side of screw. When tightening conduit clip, be sure to leave enough slack as shown so that cable runs straight with brake band bracket.
7. Install both tires making sure you put spacing washers in place and then install cotter pin and bend one end with dykes. Pull sulky brake lever once and then release. You want to make sure there is no gap when lever springs back into position. To remove slack, turn the upper in line adjuster until lever is drawn against bracket then tighten the white locking nut in position.
8. Initial brake testing. Place sulky brake lever in lock position. See if either wheel turns when lever is locked. If either wheel turns slightly as if brake band is not engaging, each brake has its own in line adjuster. First release lever from lock position. Individually adjust each in line adjuster as needed. Then repeat beginning of this step. Continue this process until you can't turn either wheel by hand. (NOTE: Grease wheel hubs).
9. Final Brake Inspection. Mark a line on the ground. Operate machine in high gear. Pass over line marked on the ground. When sulky wheels reach the line engage the brakes by squeezing the lever. (Only the sulky brakes.) Machine should stop within 5' to 8' of starting line. Potential Situation: Machine does not stop within specified range. Solution 1, turn inline adjusters slightly out and test again. Solution 2, tighten lock nut on each cable stud in small increments until desired braking results.
10. Once brakes are adjusted properly reinstall hood and spinner assembly and handlebar cover.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Fig. 18.1, Section 1-Step 1



Fig. 18.2, Section 1-Step 2



Fig. 18.3, Section 1-Step 4



Fig. 18.4, Section 1-Step 5



Fig. 18.5, Section 1-Step 5



Fig. 18.6, Section 1-Step 5



Fig. 18.7, Section 1-Step 5



Fig. 18.9, Section 1-Step 7



Fig. 18.10, Section 1-Step 7



Fig. 18.12, Section 1-Step 8



Fig. 18.14, Section 1-Step 10



Fig. 18.15, Section 1-Step 10



Fig. 18.16, Section 2-Step 1



Fig. 18.17, Section 2-Step 1



Fig. 18.18, Section 2-Step 2



Fig. 18.19, Section 2-Step 3



Fig. 18.20, Section 2-Step 4



Fig. 18.21, Section 2-Step 5



Fig. 18.22, Section 2-Step 6



Fig. 18.23, Section 2-Step 7



Fig. 18.24, Section 2-Step 7



Fig. 18.26, Section 2-Step 9



## Throttle Cable T654270, Throttle Lever Replacement P654136 (Referring to Figures on following page)



**WARNING. AVOID INJURY:** Before beginning, read Safety Message on page 3 of this manual.

### Parts Included:

I-T654270 Throttle Cable (Sold Separately)  
I-P654136 Throttle Lever (Sold Separately)

### Tools Needed:

Pliers  
5 mm Allen Wrench  
5/64 Allen Wrench

### Section 1: Removing Throttle Lever

1. Use pliers to loosen cable guide nut and line up with slot on bottom of throttle lever.
2. Push forward on cable then back on throttle lever.
3. Unhook cable barrel on throttle lever.
4. Use compressed air or soapy water between the grip and handlebar to remove hand grip.
5. Use a 5mm Allen wrench to loosen lever and slide out.

### Section 2: Installing Throttle Lever

1. Use a 5/64 Allen wrench to turn adjustment nut until it is flush.
2. Slide throttle lever on handle, but do not tighten. Install grip. **NOTE:** if you used soapy water to help remove grip, wipe handle clean and dry before installing new grip. If you have trouble pushing grip all the way on, use a rubber mallet to tap on. Seat throttle lever up against brake lever while holding throttle lever. Place your index finger between throttle lever and service brake lever. This will give you approximate spacing. Tighten completely. See Pictures as an example.
3. Line up slots of cable guide nut, feed cable through and connect barrel fitting of cable to lever.
4. Place machine in neutral and start. Adjust top RPM using cable guide nut, tighten nut when 3500 RPM is achieved. **NOTE:** Check idle RPM. Adjustment can be made using a #2 Philips screwdriver in small increments. Turn out to decrease and in to increase. Rpm should be between 1600-1650.

### Section 3: Replacing Throttle Cable

1. Remove Air Filter Cover, air filter,
2. Loosen Cable clamp and remove cable.
3. Loosen handlebar cover.
4. Route cable and attach in reverse order.
5. Adjust slack using.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.

(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



Section 1-Step 2



Section 1-Step 5



Section 3-Step 2



Section 3-Step 4



Section 3-Step 5



Section 1-Step 4



Section 3-Step 1



Section 3-Step 2



Section 3-Step 4



Section 1-Step 4



Section 3-Step 1



Section 3-Step 3



Section 3-Step 4

## Wire Harness Replacement T300307-T300305 (Referring to Figures 21-21.12)



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**NOTE:** Wear Protective Eyewear and Gloves.

### Parts Included:

- 1- T300307-Starting Module
- 1- T300309 Wire Harness Lead Only

### Tools Needed:

- 3/8 Wrench/ Socket
- 5/16 Wrench/Socket
- #3 Philips Screwdriver
- #2 Philips Screwdriver
- 7/16 Wrench/Socket
- 1/8 Allen Wrench
- Side Cutters

### Additional Parts may need to be ordered:

- 1-346276 2 1/2" Seal Patch
- 1-R347042-Wire Tie, Stud
- 3-R347041 8" Wire Tie

### Section 1: Removal and Replacement

1. Remove spinner assembly using a #3 Philips Screwdriver.
2. Remove hood.
3. Lower handlebars. Remove two screws on top of handlebar cover using 3/8" wrench/socket.
4. Remove two bolts at handlebar cover pivot point using a 3/8" wrench/socket and a #2 Philips screwdriver. Set handlebar cover inside hopper.
5. Use dykes to clip all wire ties that hold the group of plumbing hoses and cables together. Clip and remove stud wire tie located on the lower stringer.
6. Lift heat shield on gearbox/pump bracket and locate where wire harness connects to neutral switch on transaxle. Remove seal patch and slide wire harness off neutral switch. Disconnect ground wire and jumper wire located in front of engine.
7. Unhook front wire from kill switch and unplug black wire from connector that leads to hour meter.
8. Remove bolt holding delta located behind spray valve using a 5/16" wrench/socket and 3/8" wrench/socket.
9. The wire harness is now completely disconnected and can be removed. When removing existing wire harness, make note on how it is routed throughout the machine. The plug that connects to neutral switch on transaxle is routed behind the gearbox/pump bracket. Then passes through cable loop behind plumbing to the back of the spray valve bracket. Once everything is connected use supplied cable ties to fasten the plumbing hoses and cables together. DO NOT tie down deflector cable. Install seal patch.
10. Install handlebar cover, hood, and spinner assembly.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**

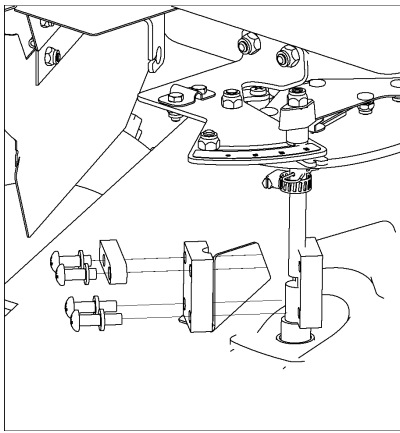


Fig. 21.1, Section 1-Step 1

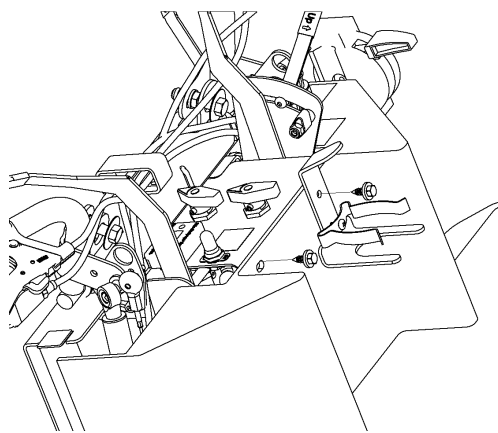


Fig. 21.2, Section 1-Step 3

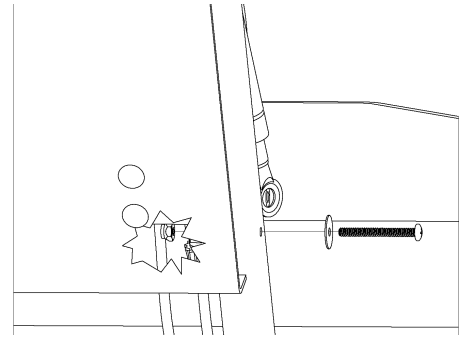


Fig. 21.3, Section 1-Step 4



Fig. 21.4, Section 1-Step 5



Fig. 21.5, Section 1-Step 5



Fig. 21.6, Section 1-Step 6



Fig. 21.7, Section 1-Step 6



Fig. 21.8, Section 1-Step 7



Fig. 21.9, Section 1-Step 7



Fig. 21.10, Section 1-Step 8



Fig. 21.11, Section 1-Step 9



Fig. 21.12, Section 1-Step 9



## Sulky Rod End Replacement T652511 Referring to Figures 32.1



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves.**

### Parts Included:

2-R652478 3/4" Rod End Seal  
2-R652476 1" Rod End Seal  
1-T652663 Rod End, Hardened  
1-T652662 TOP Female Rod End 3/4"  
1-T652526 1" Rod End

### Tools Needed

1 1/8 Wrench  
(2) 7/16 Wrenches  
Adjustable Wrench

## Important! READ FIRST: Lock the front brake and sulky brake by engaging the locks on the levers.

- If replacing top rod end **only** crack two top bolts loose and follow steps 1-4.
- If replacing bottom rod end **only** skip steps 1-4 and begin with step 5.
- If replacing **both** rod ends, you must remove safety bolt lock first and then crack three bolts loose before raising machine, before removing bolts completely.

IMPORTANT: Replace or clean all bolts and female threads with solvent. Apply blue Loctite to bolt threads before reassembling. Make sure machine and sulky are supported equally. Use extreme caution machine is very heavy and could cause serious injury if support fails.

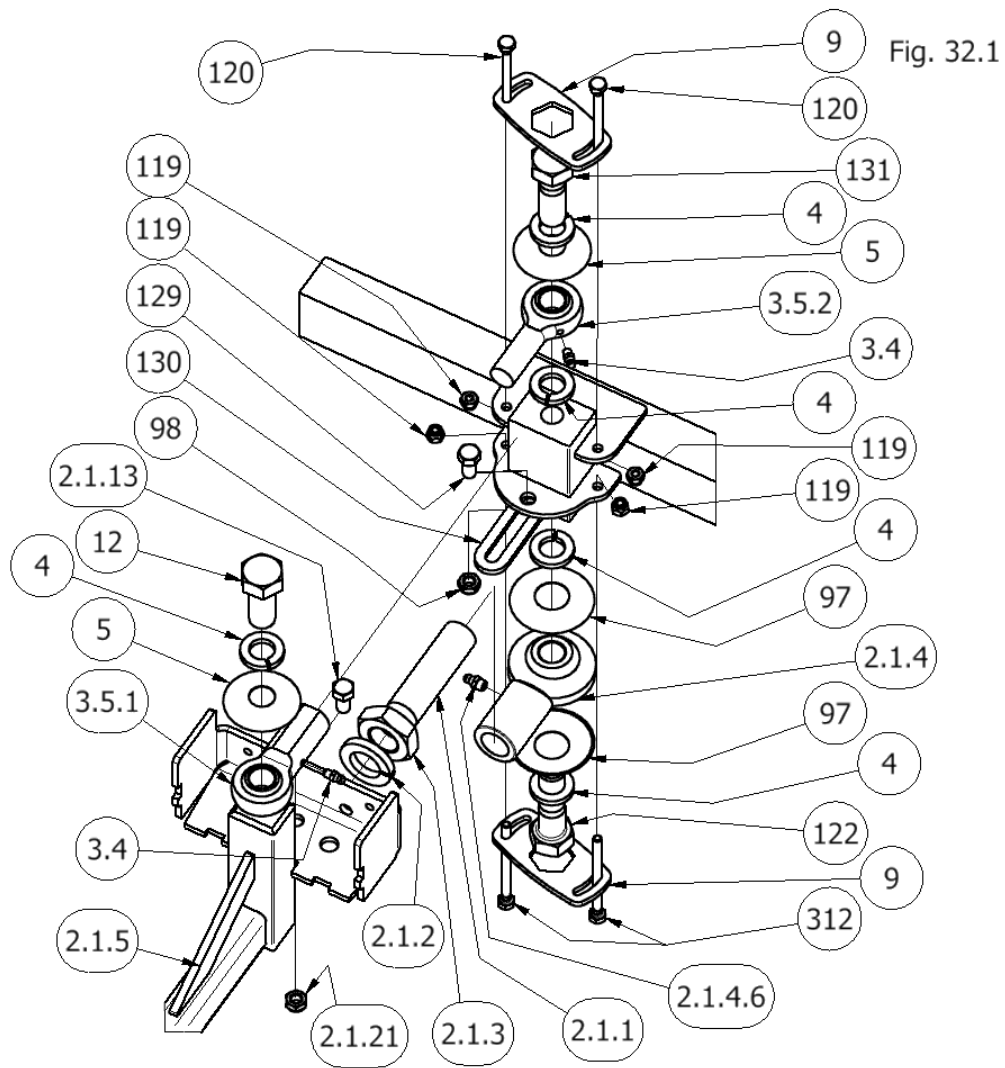
### RECOMMENDATIONS FOR SUPPORT:

Use two jack stands or bottle jacks underneath back of frame and a floor jack or sturdy block underneath front of sulky. (See picture step 1)

1. Raise machine and make sure sulky is supported and will not move when loosened.
2. Use a 1- 1/8 wrench and remove both top bolts on sulky and remove rod end assembly. Make sure the same bolts go back into the same positions. When removing rod end assembly do not turn assembly. This will change length of assembly.
3. Measure or count threads on old rod end assembly and copy to new assembly.
4. and start by tightening bolt mounted on the frame. Then line up bolt mounted on sulky. (You may have to move the sulky up or down in order to line up sulky properly) Tighten. \*\*If only replacing top rod end assembly Stop Here\*\*
5. Use 2 7/16 wrenches to remove safety bolt lock.
6. Crack bolt loose on bottom rod end, but do not remove.
7. Raise machine and make sure sulky is supported and will not move when loosened.
8. Use a 1—1/8 wrench to remove sulky bolt.
9. Turn rod end out to remove. If rod end is stuck put an adjustable wrench on flat part of rod end and another adjustable wrench on 1-14 nut. Try to remove rod end without moving threaded stud.
10. Twist new rod end on threaded stud until there are 1/4" of threads showing.
11. Line bolt up with frame. (You may have to raise or lower the sulky to do this.) Make sure bolt is not cross-threaded before tightening. Also make sure seal is between frame and top of rod end.
12. Reattach safety bolt lock. Leave bolt lock loose enough that you can easily move it with your hand.

Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).

\*\*\*Reference page 75 of this manual for Part number information.\*\*\*



## Triumph Manifold Kit T000530 (Referring to Figures 23-23.11)



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves.**

### Parts Included:

- 1- T454240 701 Valve
- 1 – T454242 701 Locknut
- 1 – T454241 701 Handle w/Set Screw
- 2 – R481246 Spare Hose Clamps #26
- 2 – R481243 Spare Hose Clamps #38
- 2- R454022 L-Fitting ¼ mpt x ¼ hose
- 2- R454023 L-Fitting ¼ mpt x 3/8 hose

### Tools Needed:

- 3/8" Wrench/Socket
- #2 Philips Screwdriver
- 3/32" Allen Wrench
- 7/8" Wrench/Socket
- Needle Nose Pliers
- 5/8" Wrench

### Section 1: Removal

**NOTE: It is recommended to remove both valves from dashboard even when one valve is being replaced for easier accessibility. Also, if replacing both valves, it is recommended to replace one at a time not to confuse configuration of plumbing.**

1. Lower handlebars and remove two screws at top of handlebar cover using 3/8" wrench/socket.
2. Remove two bolts at pivot point of handlebar cover using a 3/8" wrench/socket and #2 Philips screwdriver. Set handlebar cover in hopper.
3. Disconnect wire on front of kill switch.
4. Turn control knob to the side so the set screw is facing forward and use a 3/32" Allen wrench to loosen set screw and remove knob.
5. Use a 7/8" wrench/socket to remove brass nut on valve.
6. Pull valve down and out of the dashboard. The valve will remain in the same position as they would be if connected to the dashboard.  
**NOTE: Low selector valve is in back. High selector valve is in front.**
7. Remove hose clamps with pliers. (If replacing both valves, it is recommended you replace one at a time so hoses do not get connected to the wrong valve.)
8. **(Tip: before disconnecting, mark (T) trim and (W) wide on the hoses for easy identification when installing new valve.)** Apply heat to the hoses around the three elbow fittings with a heat gun or small torch. Do not hold heat source too close to hoses or they will burn. If you do not have a heat source, you can use needle nose pliers and pry hoses from elbow fittings. This method is more difficult, but is an alternative option. Hoses should remain in position.

### Section 2: Installation

1. Assemble new valve according to one removed. Low selector valve: Trim-1/4" elbow fitting. Wide-3/8" elbow fitting. High selector valve: Trim and wide-1/4" elbow fitting.
2. Push hoses on the correct elbow fittings. If hoses are difficult to push on, you can dip elbow fittings in soapy water.
3. Install hose clamps.
4. Install valve on dashboard. The valve must be turned in the on position to either side in order to fit through dashboard.
5. Install brass nut on valve. **CAUTION: DO NOT over tighten.** These nuts have fine threads and can easily strip or cross thread.
6. Install knob on valve and tighten set screw.
7. Reconnect wire to kill switch.
8. Install handlebar cover.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**

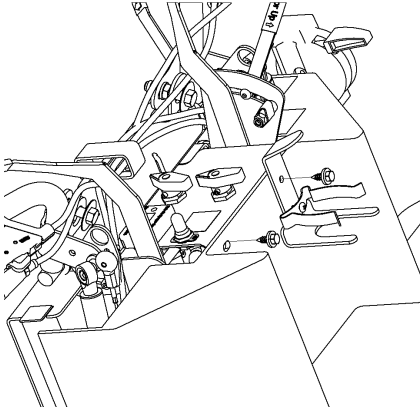


Fig. 23.1, Section 1-Step 1

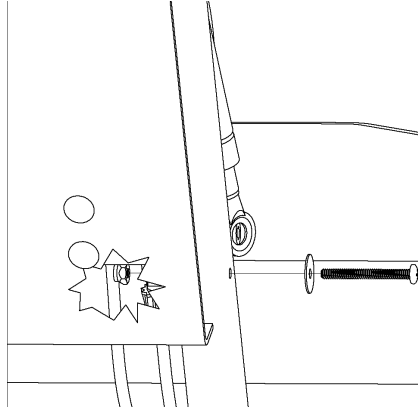


Fig. 23.2, Section 1-Step 2



Fig. 23.3, Section 1-Step 3

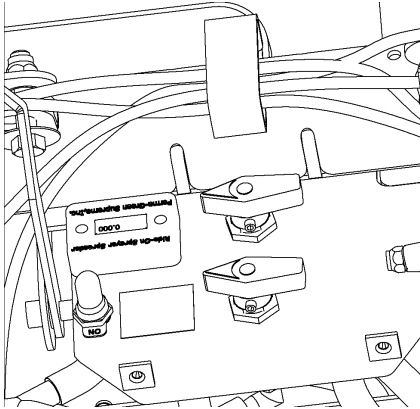


Fig. 23.4, Section 1-Step 4

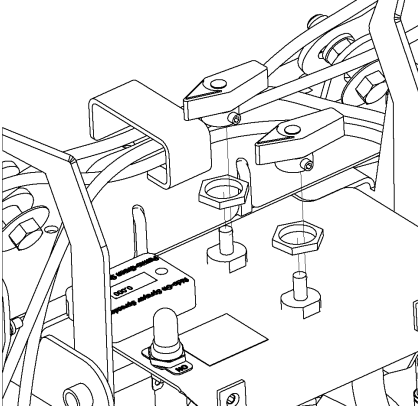


Fig. 23.5, Section 1-Step 5

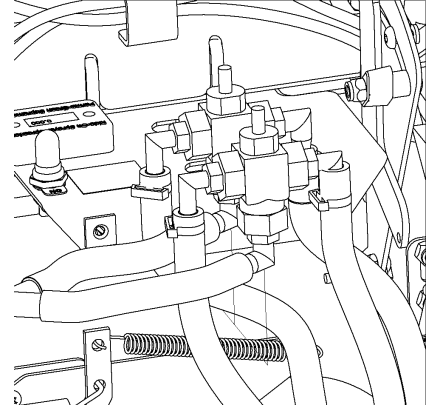


Fig. 23.6, Section 1-Step 6, Section 2-Step 4

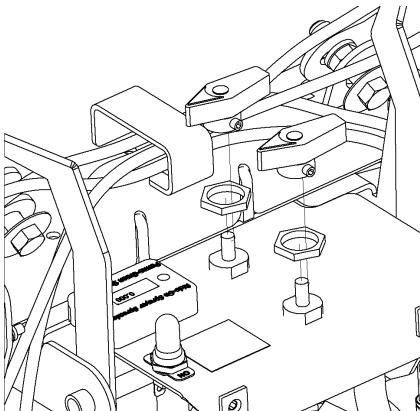


Fig. 23.7, Section 2-Step 5

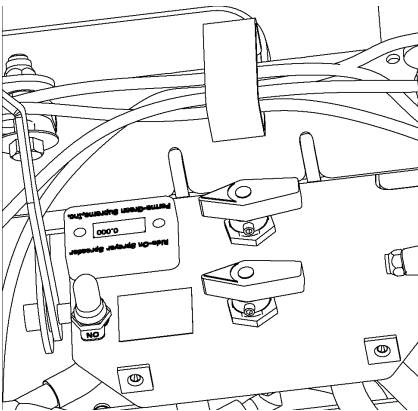


Fig. 23.8, Section 2-Step 6



Fig. 23.9, Section 2-Step 7

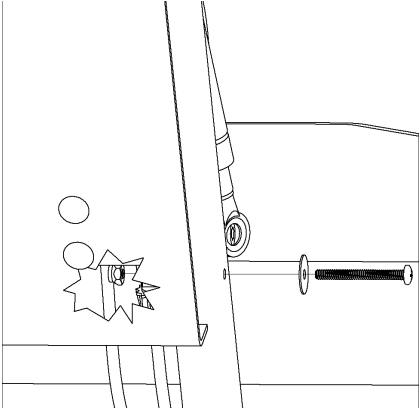


Fig. 23.10, Section 2-Step 8

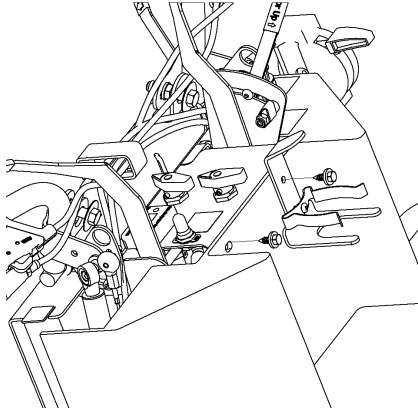


Fig. 23.11, Section 2-Step 8



## Triumph Spray Valve Kit T500270 (Referring to Figures 24-24.11)



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves.**

### Parts Included:

1-P205010 Spray Valve  
1-R347042 Wire Tie, Stud  
2-R347041 8" Wire Ties  
2-R481243 Hose Clamp #38  
1-R452222 Fitting 1/4 mpt x 3/8 hose  
1-T454245 Fitting 3/8 mpt x 3/8 hose

### Tools Needed:

#2 Philips Screwdriver  
Needle Nose Pliers  
3/8 Wrench

### Section 1: Spray Valve Removal

1. Lower handlebars and remove two screws at top of handlebar cover using 3/8" wrench/socket.
2. Remove two bolts at pivot point of handlebar cover using a 3/8" wrench/socket and #2 Philips screwdriver. Set handlebar cover in hopper.
3. Unhook spring from spray valve and bracket.
4. Unhook cable from spray valve.
5. Remove two bolts holding front bracket to rear bracket using a 3/8" wrench and #2 Philips screwdriver. Let bracket hang off to the side.
6. Use needle nose pliers to remove the hose clamps on each end of spray valve.
7. Remove hoses from spray valve, use needle nose pliers to pry hoses from spray valve fittings.

### Section 2: Spray Valve Installation

1. Hold spray valve with valve closed and handle pointing up. Connect hoses to spray valve. If you have difficulty pushing hoses over barbed fitting dip barbed fittings in soapy water.
2. Install hose clamps on each side of spray valve with the locking side facing towards the back bracket.
3. Hold spray valve so it is laying flat against rear bracket. Slide front bracket over spray valve and line up bolt holes. Insert two bolts and tighten lock nuts evenly.
4. Hook cable z bend to the bottom hole of spray valve handle and then close valve by hand so the handle is upright.
5. Hook spring to top hole of spray valve handle and then hook other end to bracket.
6. Check handle position on valve. The bottom should not be making contact with valve. Turn in line adjuster until there is a small gap between valve and handle.
7. Install handlebar cover.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**

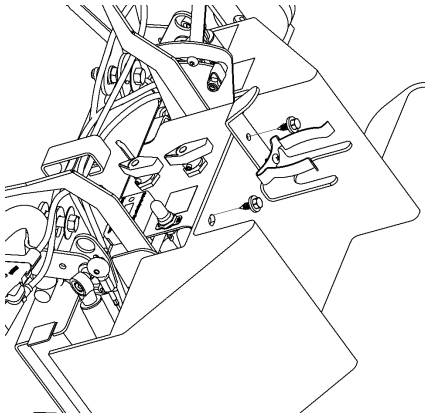


Fig. 24.1, Section 1-Step 1

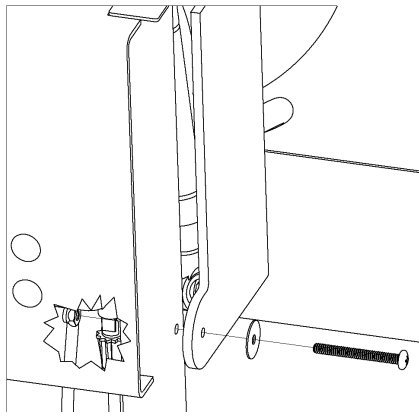


Fig. 24.2, Section 1-Step 2

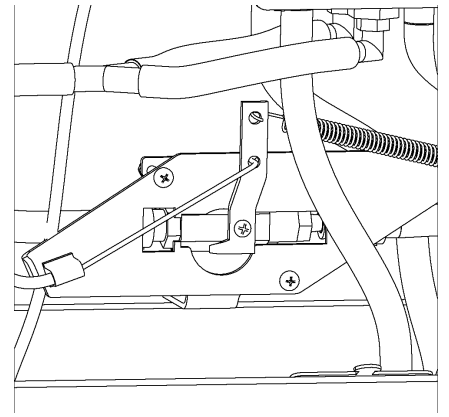


Fig. 24.3, Section 1-Step 3&4

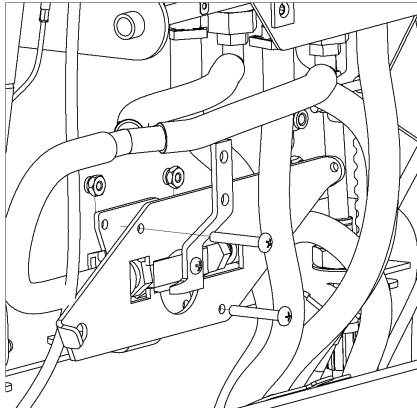


Fig. 24.4, Section 1-Step 5

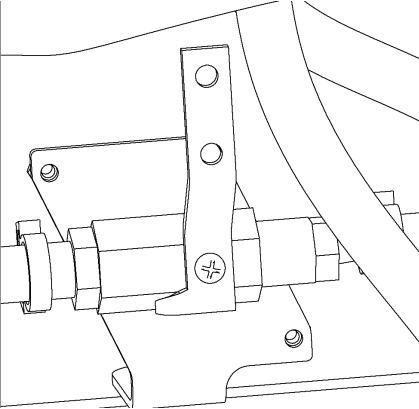


Fig. 24.5, Section 1-Step 6

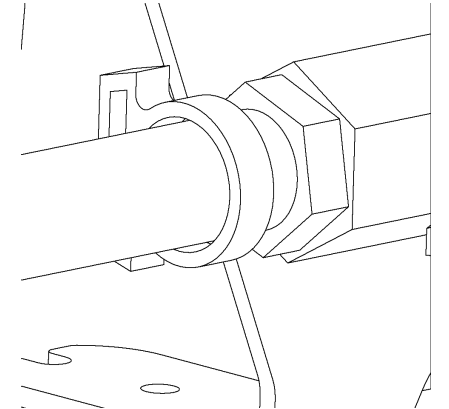


Fig. 24.6, Section 2-Step 2

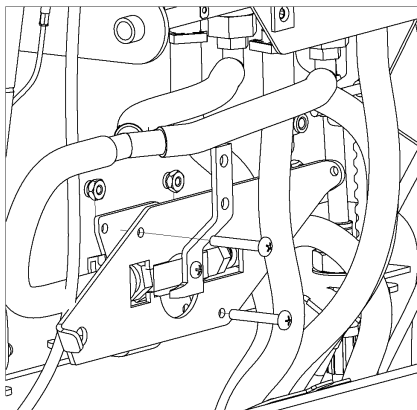


Fig. 24.7, Section 2-Step 3

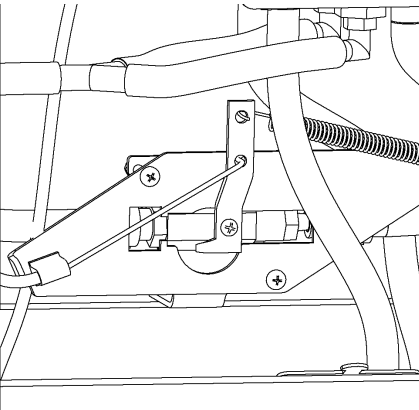


Fig. 24.8, Section 2-Step 4&5

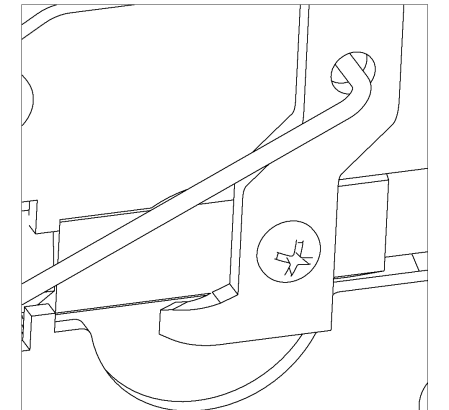


Fig. 24.9, Section 2-Step 6

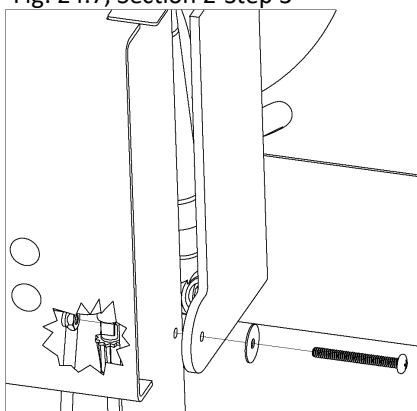


Fig. 24.10, Section 2-Step 7

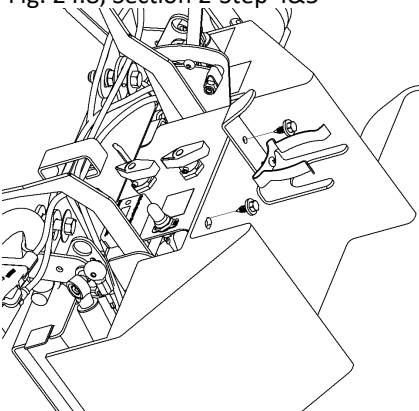


Fig. 24.11, Section 2-Step 7

## Tank Replacement T204994 Left Tank Assembly, T204996 Right Tank Assembly (Figures 25-25.11)



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves**

**NOTE: Drain tanks completely before removing**

### Parts Included:

1-T204994 Left Tank Assembly  
and/or  
1-T204996 Right Tank Assembly  
\*New Feature  
T500296—2019 In Tank Strainer Assembly

### Tools Needed:

7/16 Wrench/Socket  
1/8" Allen Wrench  
#3 Philips Screwdriver  
Needle Nose Pliers  
½" Wrench  
½" Swivel Head Socket on 8" or 10" Extension  
¼" Allen Wrench  
3/8" Wrench/Socket  
Heat Gun or Torch

### Section 1: Remove Tank (s)

1. Remove shaft block and spinner assembly using a 7/16" wrench/socket and 1/8" Allen wrench or a #3 Philips screwdriver.
2. Remove hood using a 3/8 wrench/socket and take out two screws.
3. NOTE: Follow step 3 if replacing **left** tank. If replacing **right** tank skip step 3. Remove engine guard using a 7/16" wrench/socket to remove two bolts.
4. Each tank has two hoses connected at the bottom of the tank and one hose connected on the top of the tank. Remove the two clamps at the connection points of the tank that is being replaced. Use a torch or heat gun to soften the hoses around the fittings to make it easier to remove hoses. CAUTION: Do not hold heat source too close to hoses or for an extended amount of time or hoses will burn.
5. Each tank has four bolts holding it on the frame. (3 hex bolts, 1 socket bolt.) Use a ½" wrench/socket to remove two rear hex bolts. Use a ½" swivel head socket on an 8 or 10" extension to remove front hex bolt. Use a ¼" Allen wrench to remove the socket bolt located on the frame under the hopper.

### Section 2: Install Tank (s)

1. Connect hoses on the appropriate fittings on the bottom of tank. (3/8 hose to 3/8 barb fitting, ¼ to ¼ etc.) Use soapy water if you have trouble pushing hoses on the fittings. Install hose clamps around fittings.
2. Hold tank in position. First get the socket bolt (located at front of tank under hopper) started by hand. Line up other holes and start all three hex bolts by hand. Tighten all four bolts.
3. Push hose on fitting located at top of tank.
4. NOTE: Follow step 4 if left tank was replaced. If right tank was replaced skip to step 5. Install engine guard on left tank with two bolts using a 7/16" wrench/socket.
5. Install hood and spinner assembly.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**

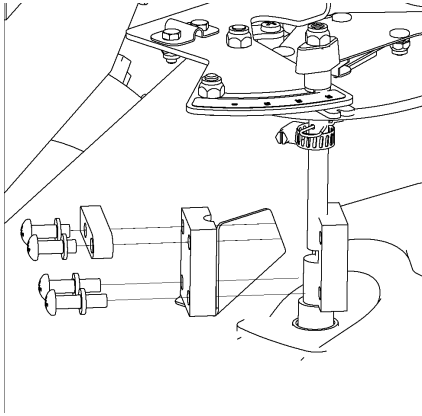


Fig. 25.1, Section 1-Step 1&2

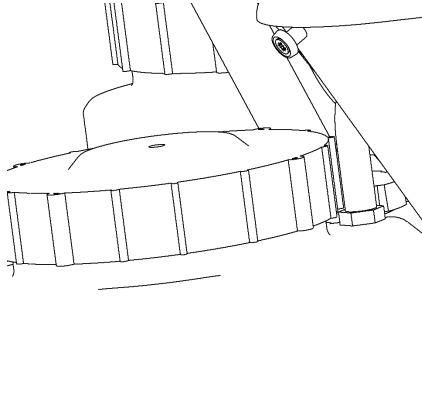


Fig. 25.2, Section 1-Step 4

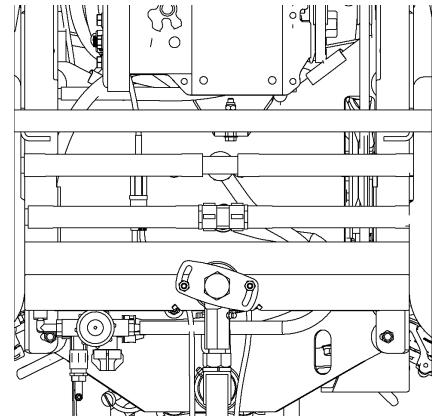


Fig. 25.3, Section 1-Step 4

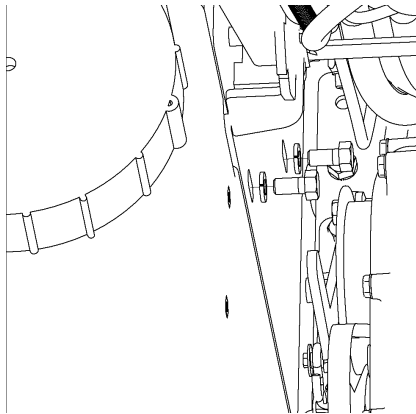


Fig. 25.4, Section 1-Step 5

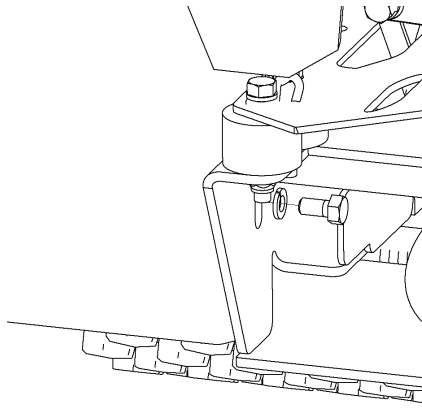


Fig. 25.5, Section 1-Step 5

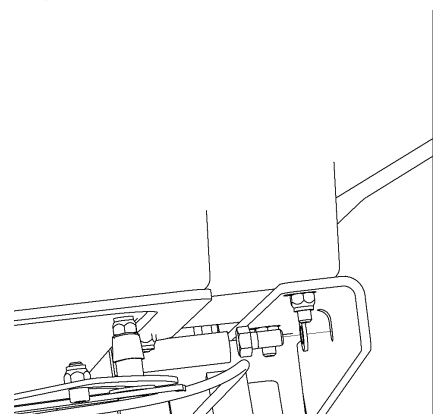


Fig. 25.6, Section 1-Step 5

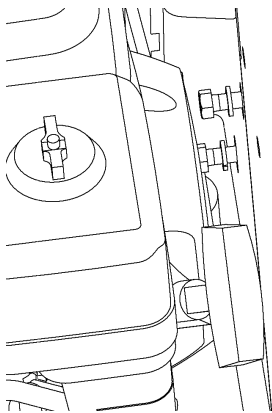


Fig. 25.7, Section 1-Step 5

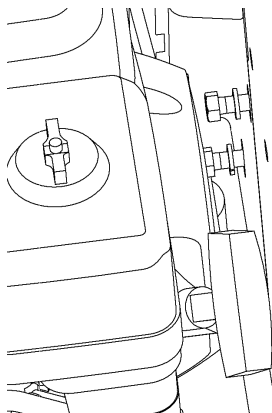


Fig. 25.8, Section 1-Step 5

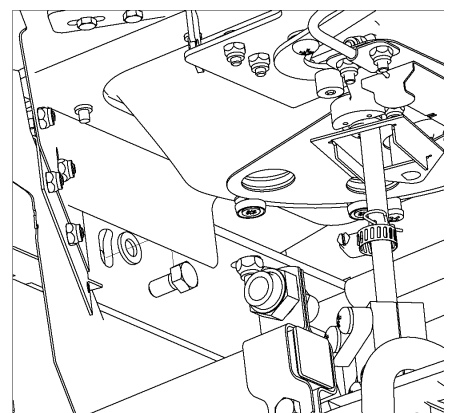


Fig. 25.9, Section 1-Step 5



Fig. 25.10, Section 1-Step 5



Fig. 25.11, Section 1-Step 5



## Shut off Plate Replacement— T422957 (Referring to Figures 26-26.9)



**WARNING.** AVOID INJURY: Before beginning, read Safety Message on page 3 of this manual.

**Safety Equipment Needed: Wear Protective Eyewear and Gloves**

### Parts Included:

1-T422957 Shutoff plate  
\*Kit Available—T442965—Shut Off Plate Kit

### Tools Needed:

3/8 Wrench/Socket  
7/16 Wrench/Socket  
1/8" Allen Wrench  
#3 Philips Screwdriver  
#2 Philips Screwdriver (short)  
Side Cutters

### Section 1: Remove Shut Off Plate

1. Remove shaft block and spinner assembly using a 7/#3 Philips screwdriver
2. Remove agitator and agitator arm by removing cotter pin using dykes.
3. Remove hopper cable from shut off plate using a 3/8" wrench/socket.
4. Remove three tension screws using a #2 Philips screwdriver (short) and a 3/8" wrench/socket.
5. Remove center bolt using a #2 Philips screwdriver (short) and a 7/16" wrench/socket. The shut off plate will drop down but it will still be connected to the third hole remote cable. Remove bushing from plate.
6. Remove two nuts and cable clamp using a 3/8" wrench/socket.

### Section 2: Install Shut Off Plate

1. Hook third hole remote cable to the slide plate of the shut off plate. Install cable clamp on shut off plate positioning it over the same spot on the cable from where it was before removing it. Test third hole remote to make sure it operates smoothly and opens and closes properly.
2. Insert bushing on the shut off plate. Insert bolt through bushing and then up through hopper. Make sure bronze bushing is still seated in hopper and then tighten lock nut.
3. Install three tension screws. Each tension screw consists of 1 screw, 1 orange urethane washer, 1 counter sunk nylon washer, and 1 nylon flat washer. The nylon flat washer must go between shut off plate and hopper and then screw, orange urethane washer and counter sunk nylon washer go over shut off plate. Snug down all three tension screws but do not over tighten. Slide plate back and forth by hand to make sure it functions smoothly. If it seems tight, you may have to loosen one or all tension screws. If it seems too loose you may have to tighten one or more tension screws a couple turns.
4. Install hopper cable on shut off plate. Make sure fender washer goes on stud first, then the cable rod end.
5. Install agitator arm and agitator. Insert cotter pin and bend one end out with dykes to secure it in place.
6. Install shaft block and spinner assembly.

**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**

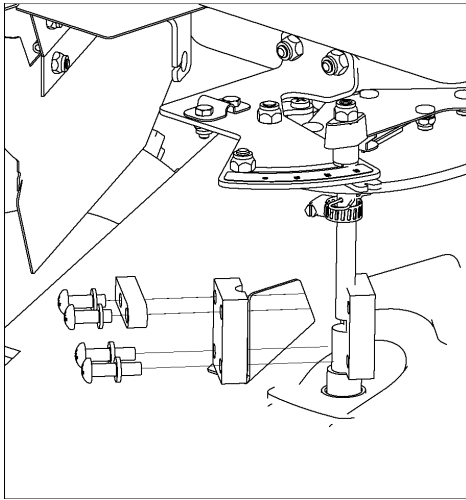


Fig. 26.1, Section 1-Step 1

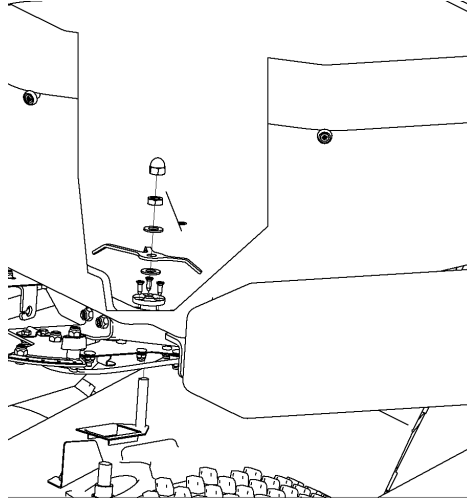


Fig. 26.2, Section 1-Step 2

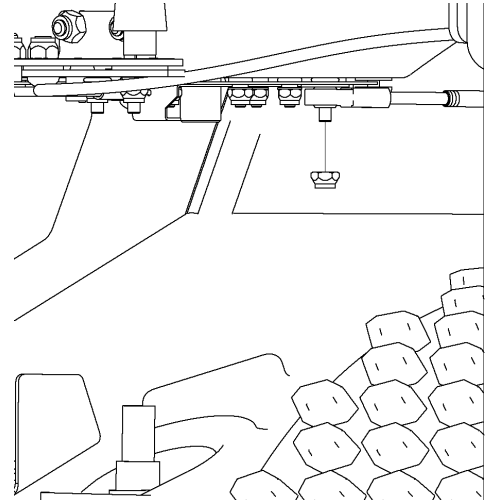


Fig. 26.3, Section 1-Step 3

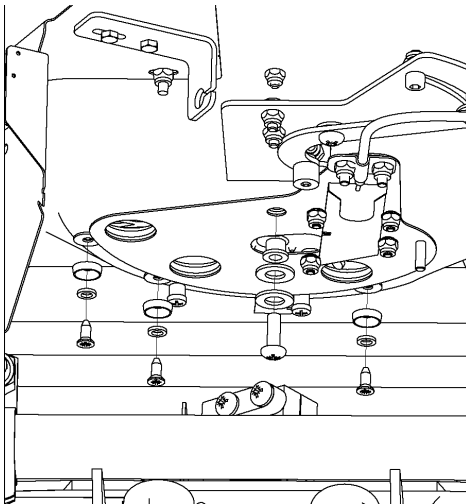


Fig. 26.4, Section 1-Step 4&5

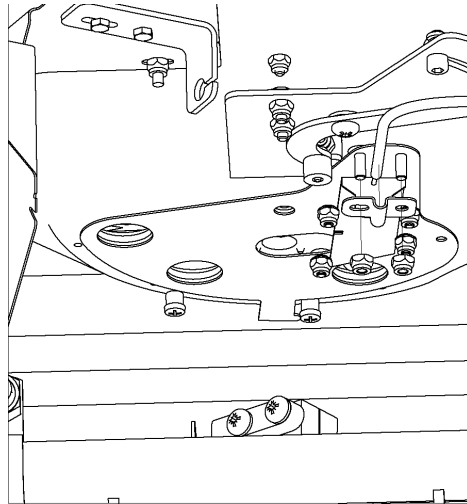


Fig. 26.5, Section 1-Step 6, Section 2-Step 1

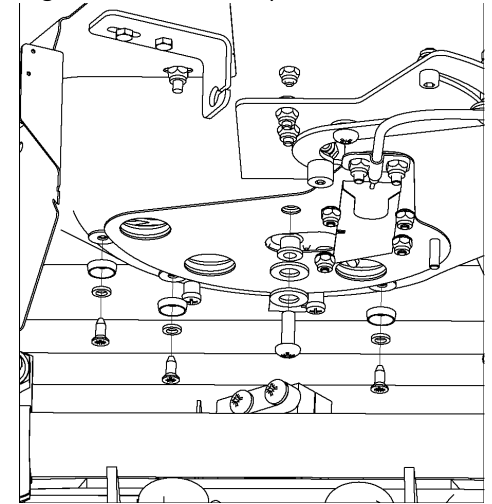


Fig. 26.6, Section 2-Step 2&3

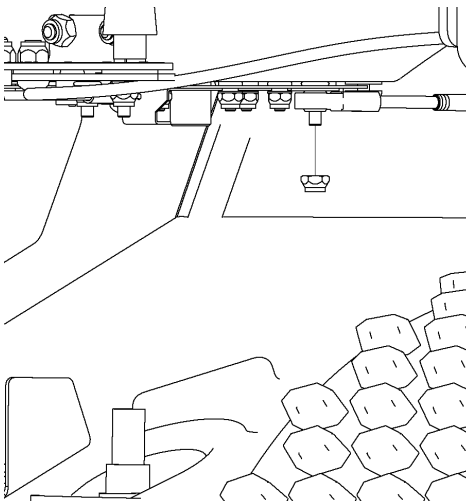


Fig. 26.7, Section 2-Step 4

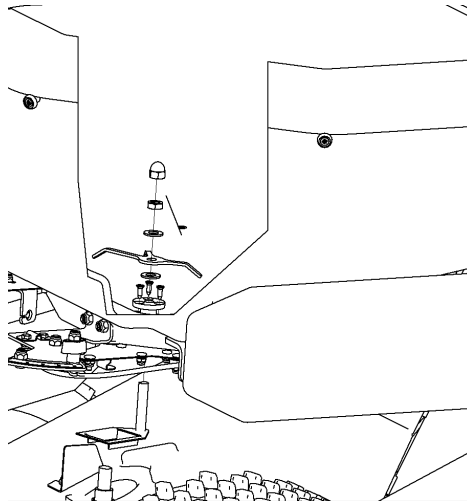


Fig. 26.8, Section 2-Step 5

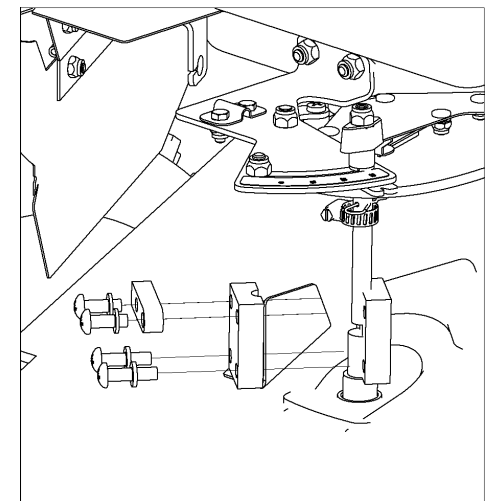
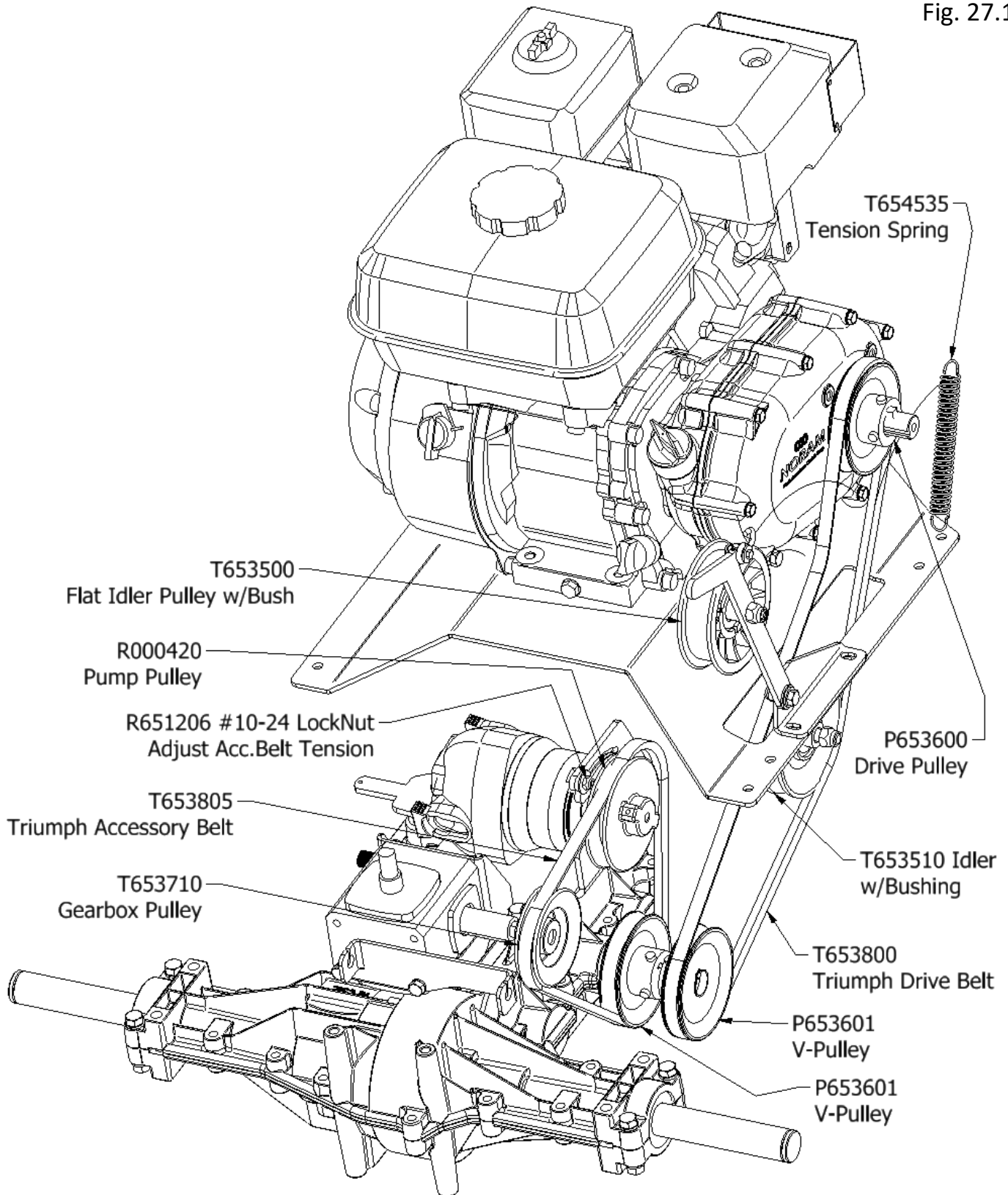


Fig. 26.9, Section 2-Step 6

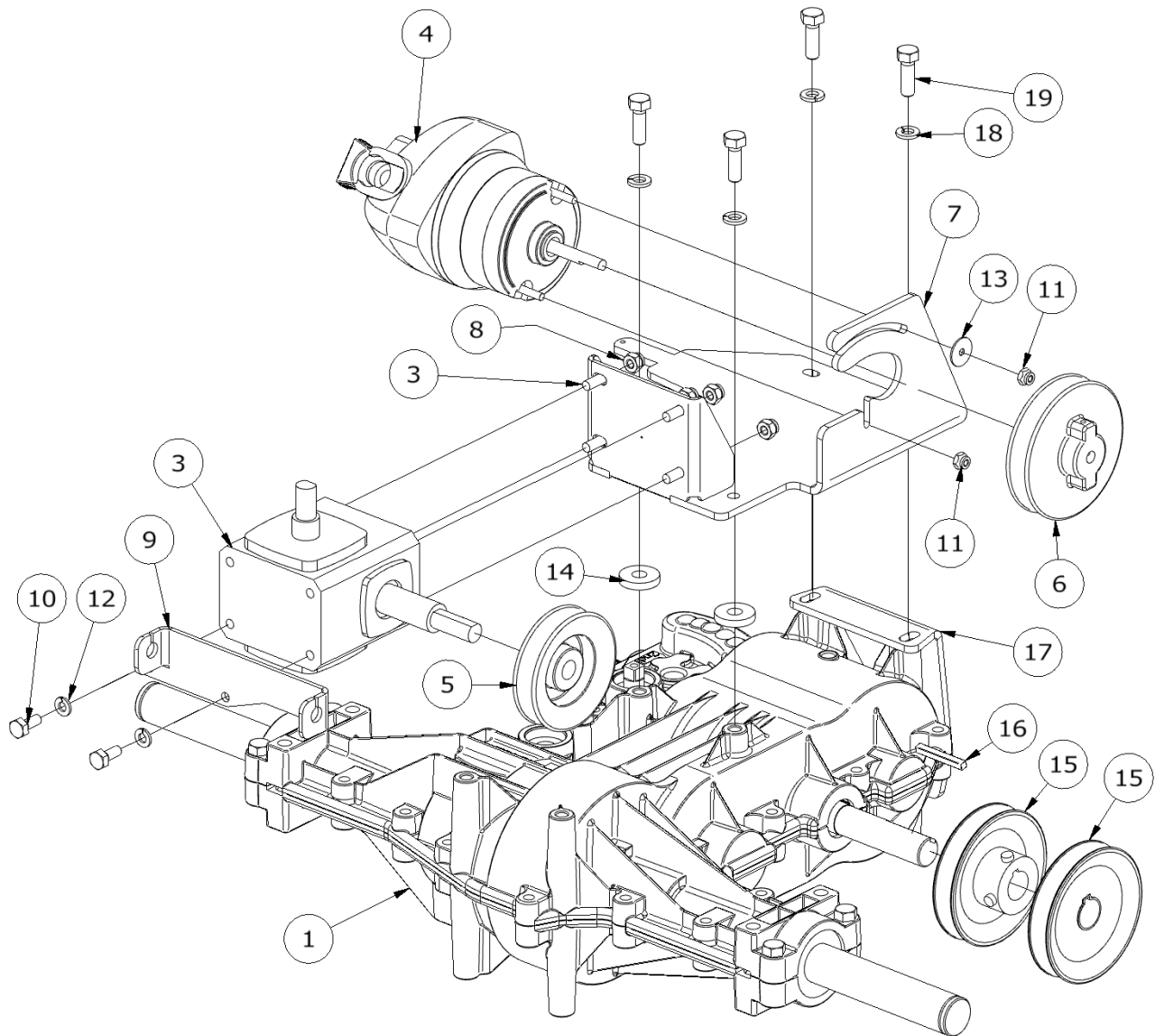
## POWER TRANSMISSION SCHEMATIC GROUP

Fig. 27.1



## POWER TRANSMISSION SCHEMATIC GROUP

Fig. 27.2

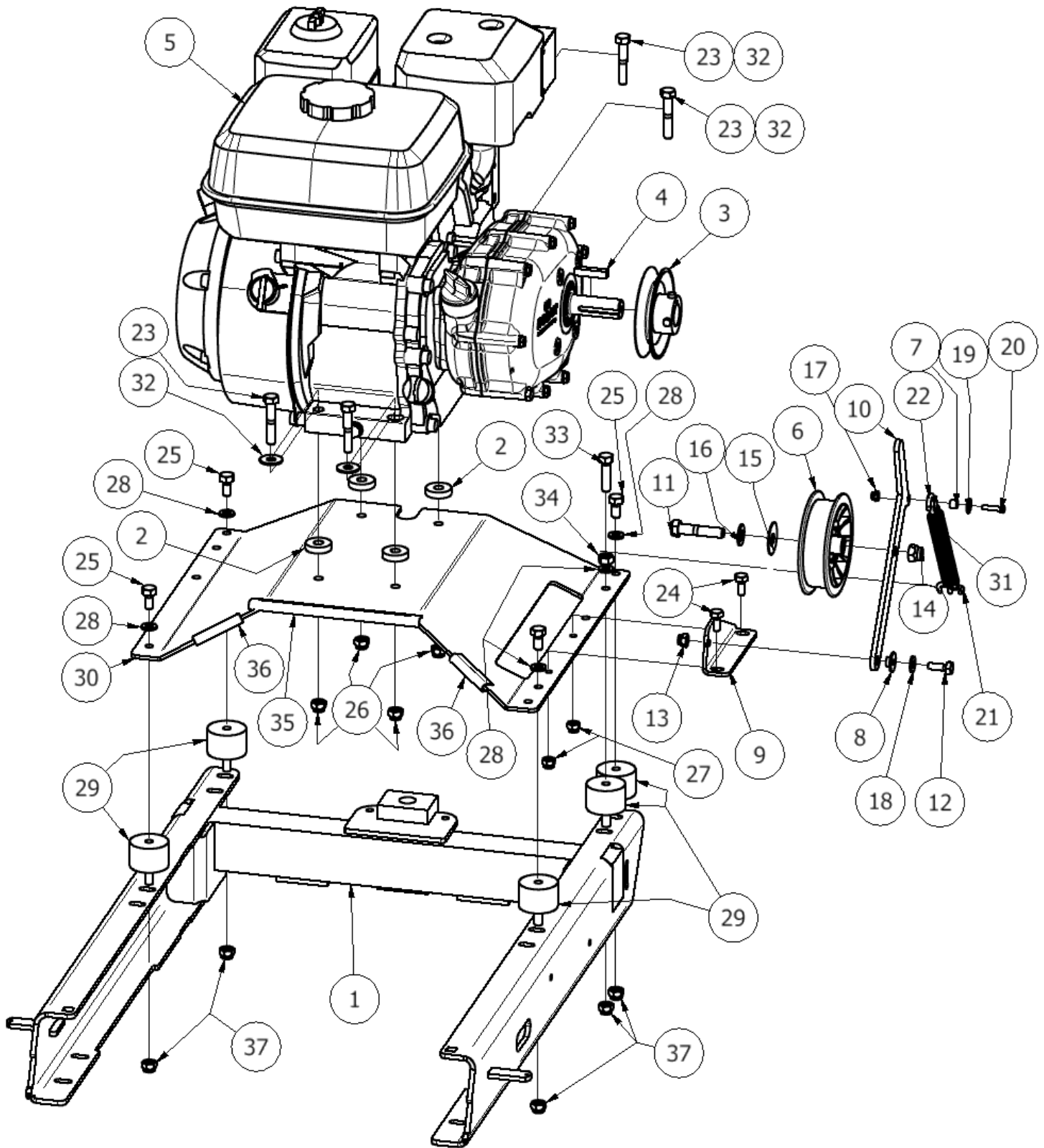


ITEM	QTY	STOCK #	DESCRIPTION	ITEM	QTY	STOCK #	DESCRIPTION
1	1	T210303	Transaxle	11	2	R651206	#10-24 Lock Nut
3	1	T422355	Gearbox Complete	12	2	R651480	1/4" LockWasher
4	1	T442100	Triumph Pump	13	1	R651450	3/16"x 3/4" FenderWasher
5	1	T653710	3"OD 1/2"Bore	14	2	T650850	Spacer
6	1	R000420	3.5" Pulley, 5/16"Bore	15	2	P653601	V-Pulley, A3.50 x 3/4"
7	1	T101045	Pump/Gearbox Brkt Welded	16	1	R651628	3/16" x 1 1/2" Machinery Key
8	4	R651216	Locknut, 1/4-20	17	1	T101788	Torque Strap
9	1	T101745	Front Cable Holder	18	4	R651482	5/16" Lock Washer
10	2	P651660	1/4-20 x 5/8	19	4	R650122	Bolt, 5/16-18 x 1



# POWER TRANSMISSION SCHEMATIC GROUP

Fig. 27.3a



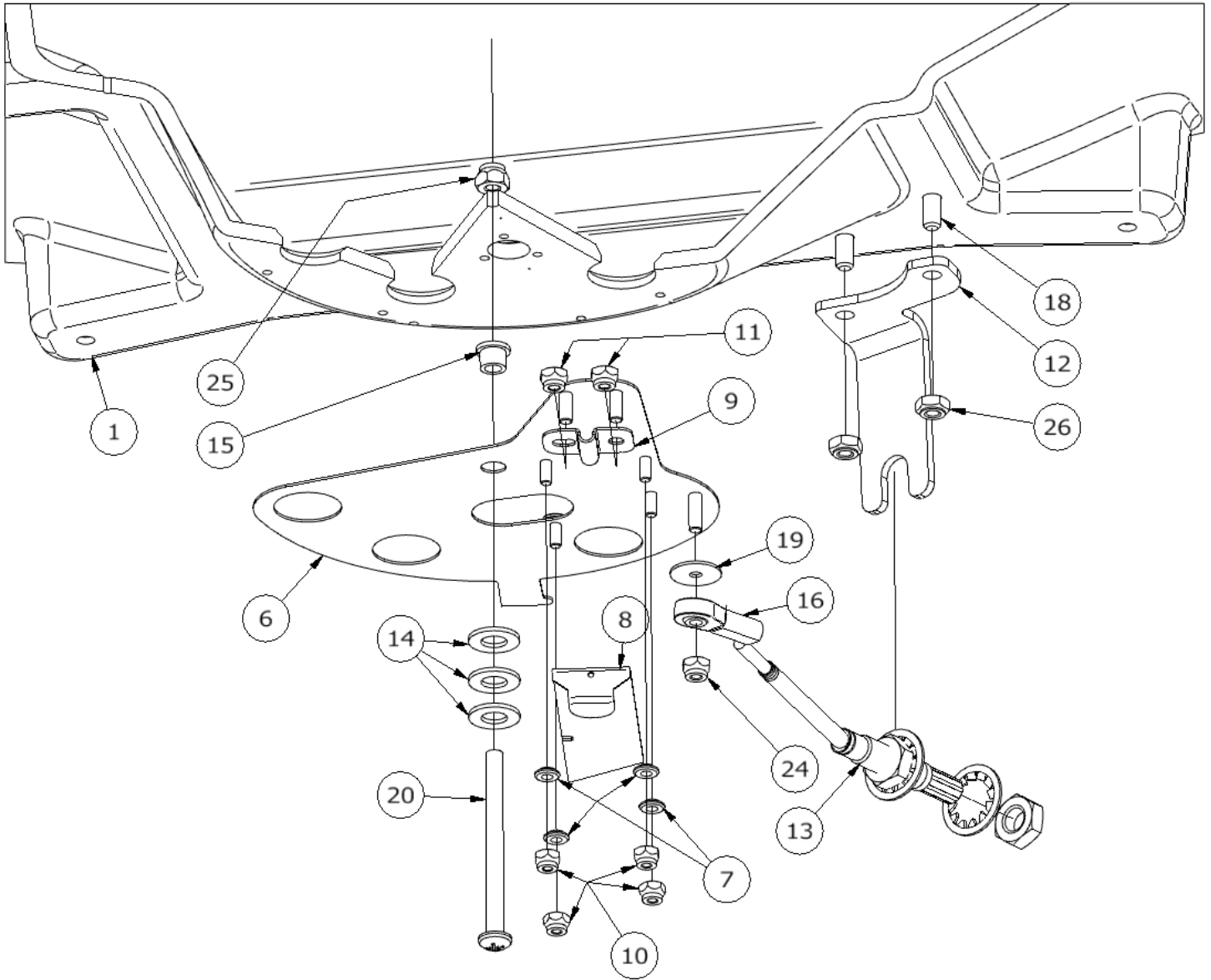
## POWER TRANSMISSION SCHEMATIC GROUP

Fig. 27.3b

ITEM	QTY	STOCK NUMBER	DESCRIPTION
1	1	T101004	Triumph Frame E1E
2	4	P100160	Engine Spacer
3	1	P653600	V-Pulley, A3.50 x 3/4"
4	1	P651645	Stock Honda Key 1 1/4"
5	1	T449403	5HP Motor
6	1	T653500	Flat Idler Pulley w/Bush
7	1	T650880	#8 Spacer
8	1	T651940	Sleeve Bearing/Thrust Washer
9	1	T101580	Idler Bracket
10	1	T101585	Idler Arm
11	1	R650738	Hex Bolt - 3/8-16 x 1.75"
12	1	R650620	1/4-20x 3/4" Hex Bolt
13	1	R651216	Locknut, 1/4-20
14	1	P645203	Hex Locknut 3/8-16
15	1	P651203	3/8x 1.25" Fender Washer
16	1	R651419	3/8 Washer
17	1	P650117	#8-32 Lock Nut
18	1	R651420	1/4" Washer
19	1	T650875	#10 x 9/16 Washer
20	1	T650870	#8-32 x 3/4"
21	1	T651945	S Hook w/Bend
22	1	T651290	Brass S Hook
23	4	R650665	5/16-18 x1.75"
24	2	P651660	1/4-20 x 5/8
25	4	T645880	5/16-18x 5/8"
26	4	R651214	5/16-18 Hex Lock Nut
27	2	R651216	Locknut, 1/4-20
28	5	R651482	5/16" Lock Washer
29	5	T449415	Damper Assembly
30	1	T101756	Triumph MotorPlate
31	1	T654535	Tension Spring
32	4	651422	5/16" Washer
33	1	R650660	5/16-18x 1 1/4"
34	1	R651224	5/16 Hex Nut
35	1	T654345	Mtr. Center 5.5" Strip
36	2	T654350	Mtr. Side 2" Strip
37	12	R651214	5/16-18 Hex Lock Nut

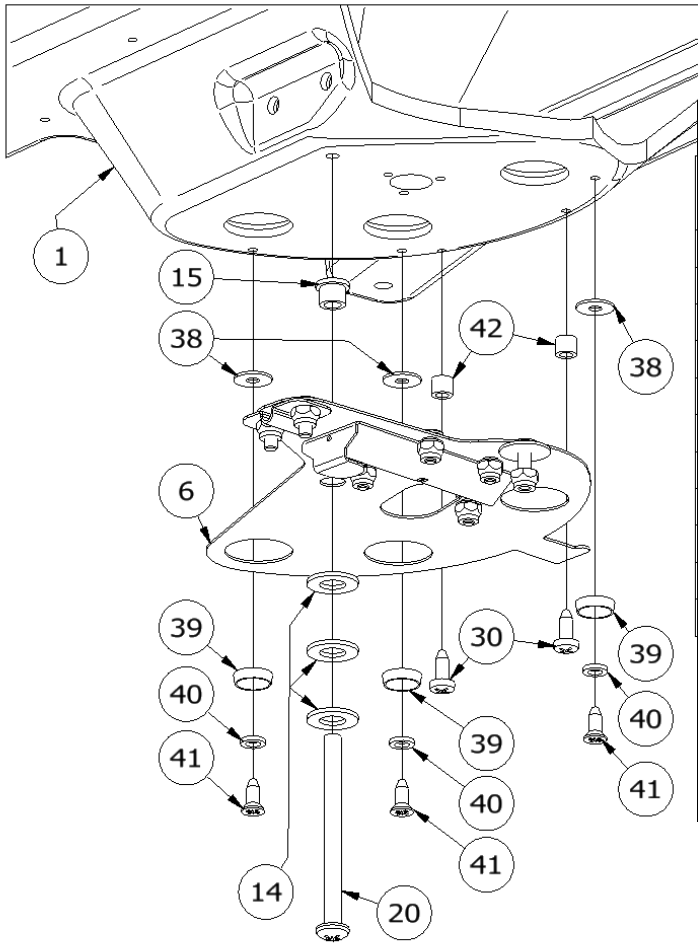
## HOPPER SCHEMATIC GROUP

Fertilizer Rate, 3rd Hole Plates Fig. 28.1



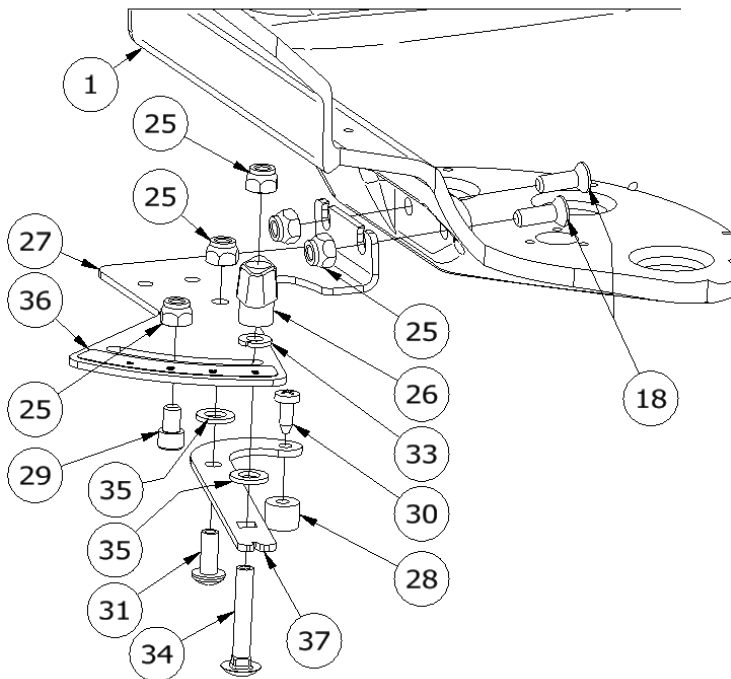
ITEM	QTY	STOCK #	DESCRIPTION	ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	2015 Hopper (sold complete)	14	3	U422896	3/8 Nylon Washer
6	1	T422957	Shut Off Plate Assembly	15	1	T645925	Nylon Insert
7	4	P650112	#8 Shoulder Washer, Nylon	16	1	P652465	3/16" Tie Rod End
8	1	T422957	Shut Off Plate Assembly	18	2	T645955	1/4-20x 3/4" Flat Screw
9	1	P100443	Shut Off Plate Clamp	19	1	R651450	3/16"x 3/4" Fender Washer
10	4	P650117	#8-32 Lock Nut	20	1	T650918	1/4-20x 3" Phil Rnd
11	2	P645204	Hex Locknut #10-32	24	1	R651206	#10-24 Lock Nut
12	1	T101617	Fert. Rate Adjust Cable Mnt.	25	1	R651216	Locknut, 1/4-20
13	1	T654020	Hopper Cable Assembly	26	2	T645945	1/4 x 20 Zinc Lock Nut

## HOPPER SCHEMATIC GROUP



Fertilizer Rate Plate Guides Fig. 28.2

ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	2015 Hopper (sold complete)
6	1	T422957	Fert. Shut Off Plate Assembly
14	3	U422896	3/8 Nylon Washer
15	1	T645925	Nylon Insert
20	1	T650918	1/4-20x 3" Phil Rd M.S.
30	2	T645970	#10 x 1/2" Pan Screw-Phillips
38	3	P645225	#10 Nylon Washer
39	3	P655220	Countersink Washer, #10
40	3	P645230	Urethane Washer, #10
41	3	T645975	#10-16x 1/2" Flat Screw-Phillips
42	2	P422918	#10x 0.25" Nylon Spacer



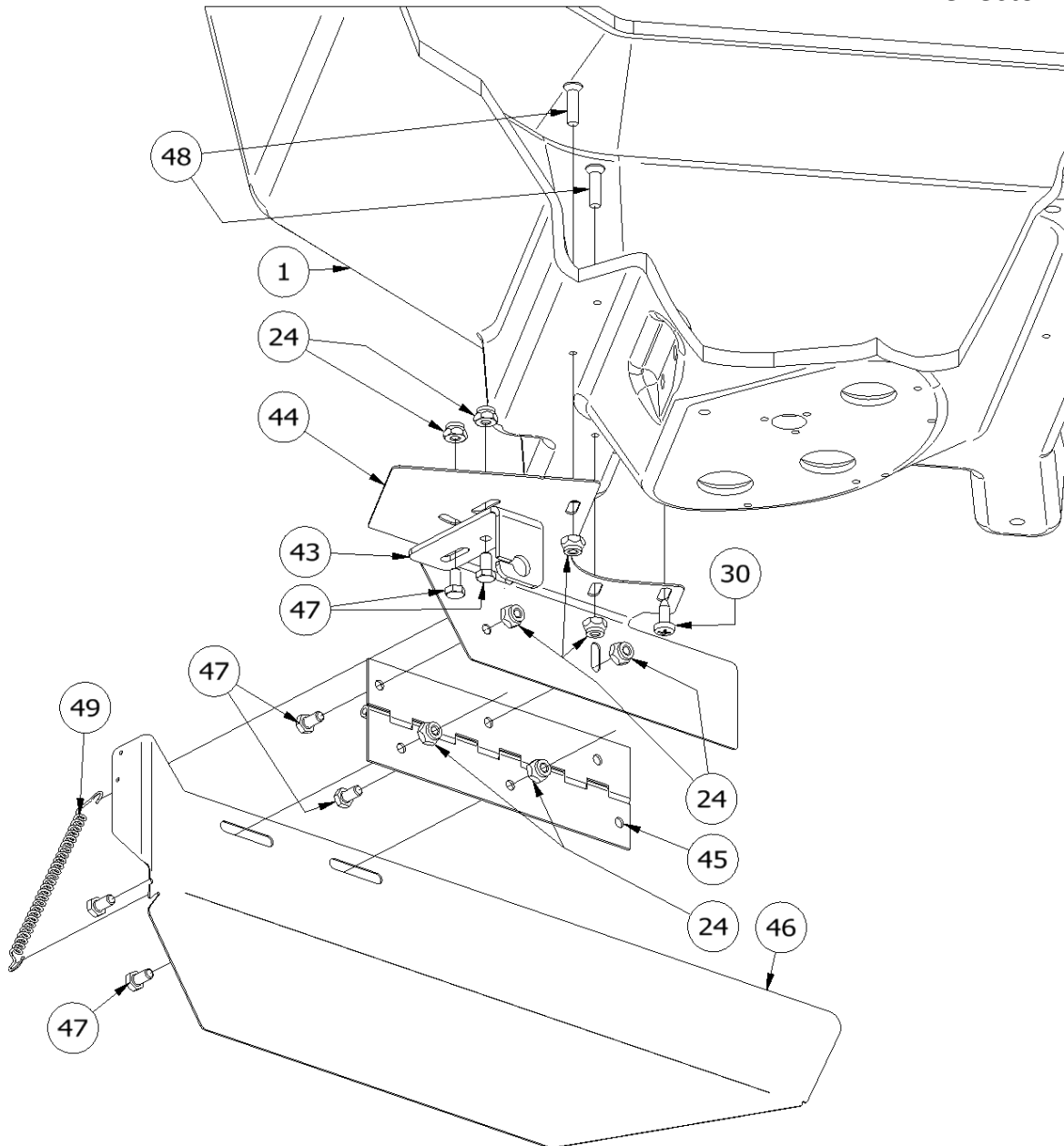
Fert. Rate Adj. Fig. 28.3

ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	Hopper (sold complete)
18	2	T645955	1/4-20x 3/4" Cross Flat
25	5	R651216	Lock nut, 1/4-20
26	1	T422937	Fert. Rate Knob
27	1	T101536	Fert. Rate Control Mount
28	1	T651600	#10x1/2" 3/8" Nylon Spacer
29	1	T645270	1/4-20 x3/8 screw
30	1	T645970	#10 x 1/2" Pan Screw-Phillips
31	1	T645280	1/4-20x 5/8" Cross Pan
33	1	R651480	1/4" Lock Washer
34	1	T645275	1/4-20x 1.5" Carriage Bolt
35	2	R651550	.32"ID x0.5"OD Nylon Washer
36	1	T000140	Fert. Rate Sticker
37	1	T101538	Fert. Rate Control Lever



## HOPPER SCHEMATIC GROUP

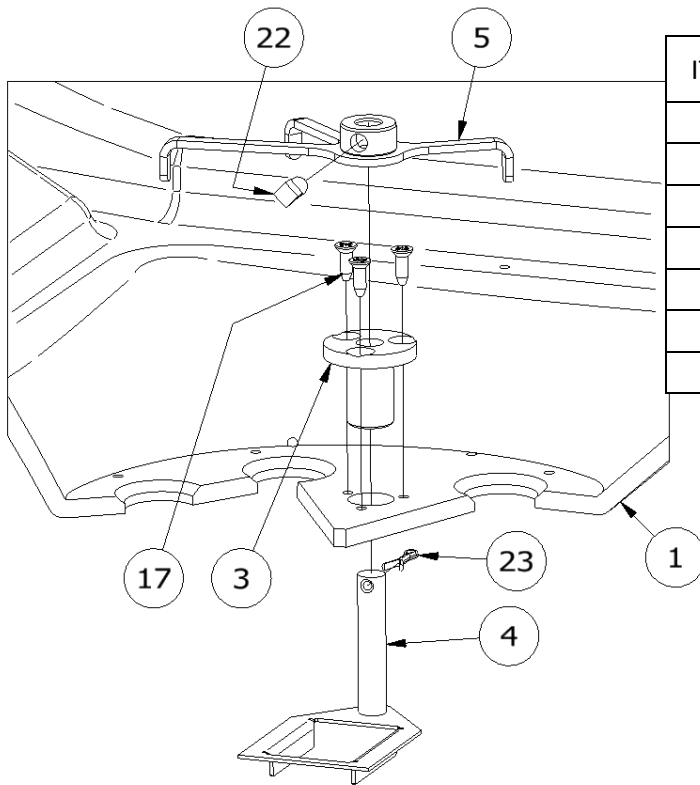
Trim Deflector Fig.28.4



ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	2015 Hopper (sold complete)
24	8	R651206	#10-24 Lock Nut
30	1	T645970	#10 x 1/2" Pan Screw-Phillips
43	1	T101547	Deflector Cable Mount
44	1	T101543	Deflector Hinge Mount
45	1	R652092	Deflector Hinge
46	1	T101541	Deflector 2016 Triumph
47	6	T645817	#10-24x 3/8" Hex Screw
48	2	T645235	#10-24x 3/4" Flat Screw-Phillips
49	1	P205020	Deflector Spring

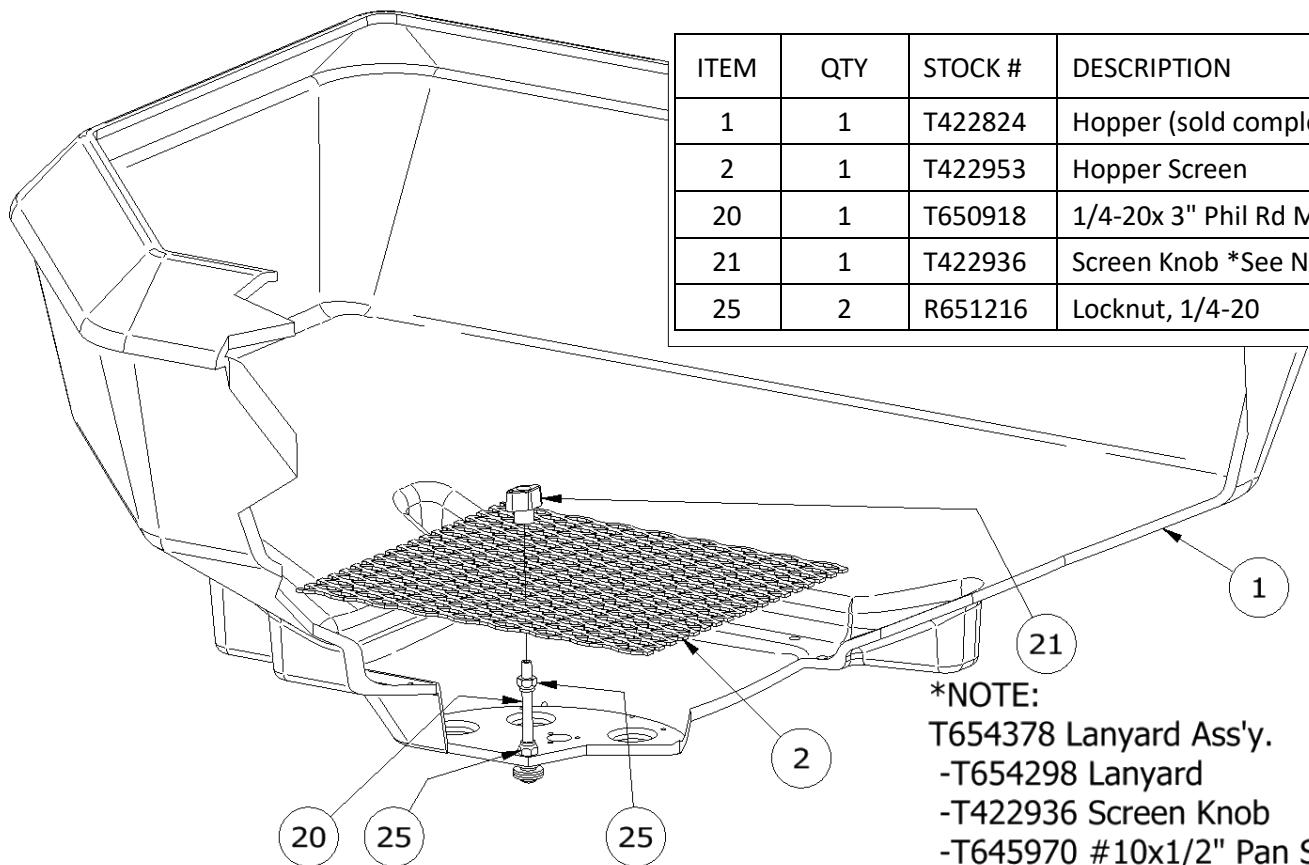
## HOPPER SCHEMATIC GROUP

Agitator Fig. 28.5



ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	Hopper (sold complete)
3	1	T651925	Agitator Bushing
4	1	T100103	B-Agitator Cam
5	1	T100107	Agitator
17	3	T645965	#8x0.50 Cross Flat Screw
22	1	T650228	1/4-20 x 3/8" Square SS
23	1	R651590	Cotter Pin 1/8 x 1/2

Screen Fig. 28.6

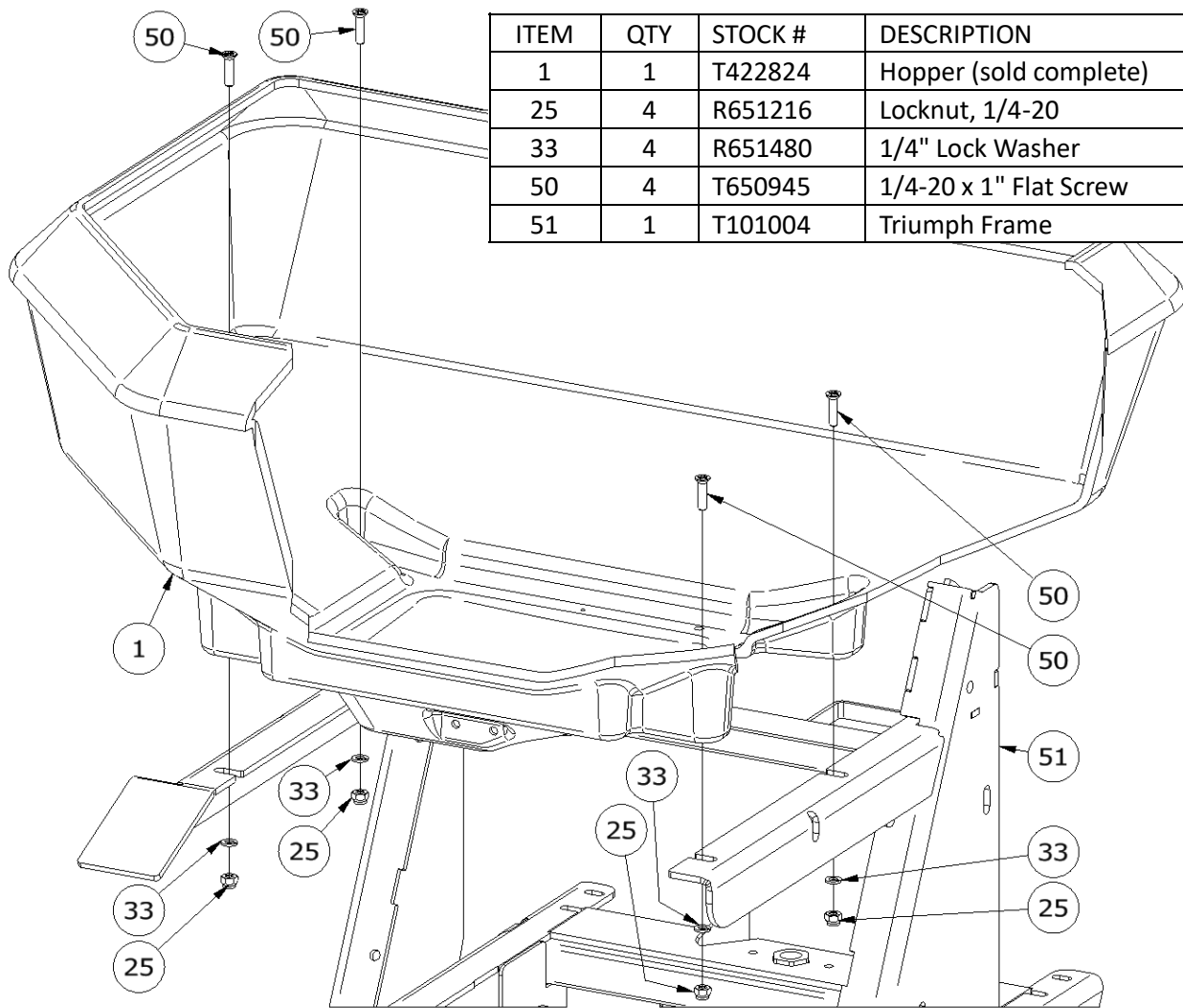


ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	Hopper (sold complete)
2	1	T422953	Hopper Screen
20	1	T650918	1/4-20x 3" Phil Rd M.S.
21	1	T422936	Screen Knob *See Note
25	2	R651216	Locknut, 1/4-20

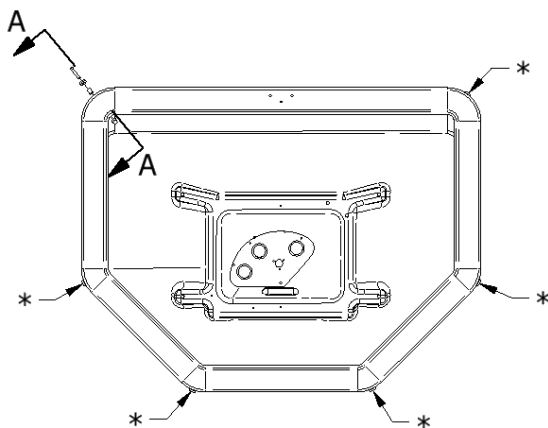
**\*NOTE:**  
T654378 Lanyard Ass'y.  
-T654298 Lanyard  
-T422936 Screen Knob  
-T645970 #10x1/2" Pan Screw

## HOPPER SCHEMATIC GROUP

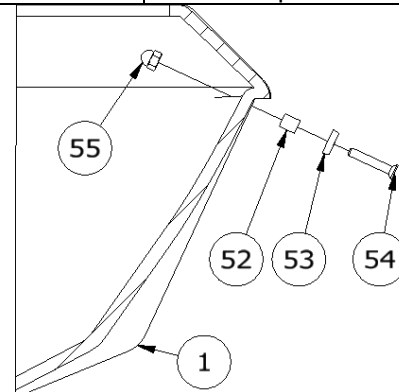
Hopper Mount Fig. 28.7



ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	Hopper (sold complete)
25	4	R651216	Locknut, 1/4-20
33	4	R651480	1/4" Lock Washer
50	4	T650945	1/4-20 x 1" Flat Screw
51	1	T101004	Triumph Frame



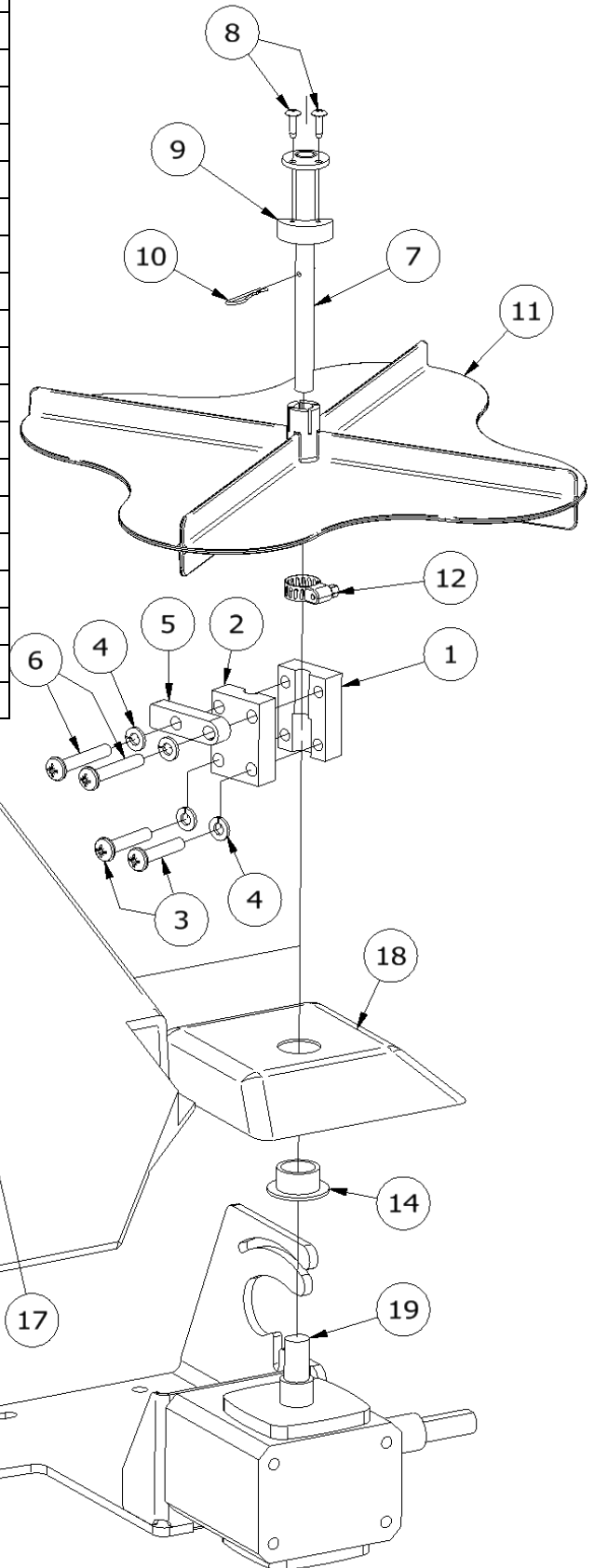
ITEM	QTY	STOCK #	DESCRIPTION
1	1	T422824	2015 Hopper (sold complete)
52	6	T650883	Spacer
53	6	T645290	Countersunk Washer #10
54	6	T650405	10-24 x 1 1/8" Phillips Flat MS
55	6	T651217	#10-24 Cap Nut



## HOPPER SCHEMATIC GROUP

Spinner Group Fig. 28.8

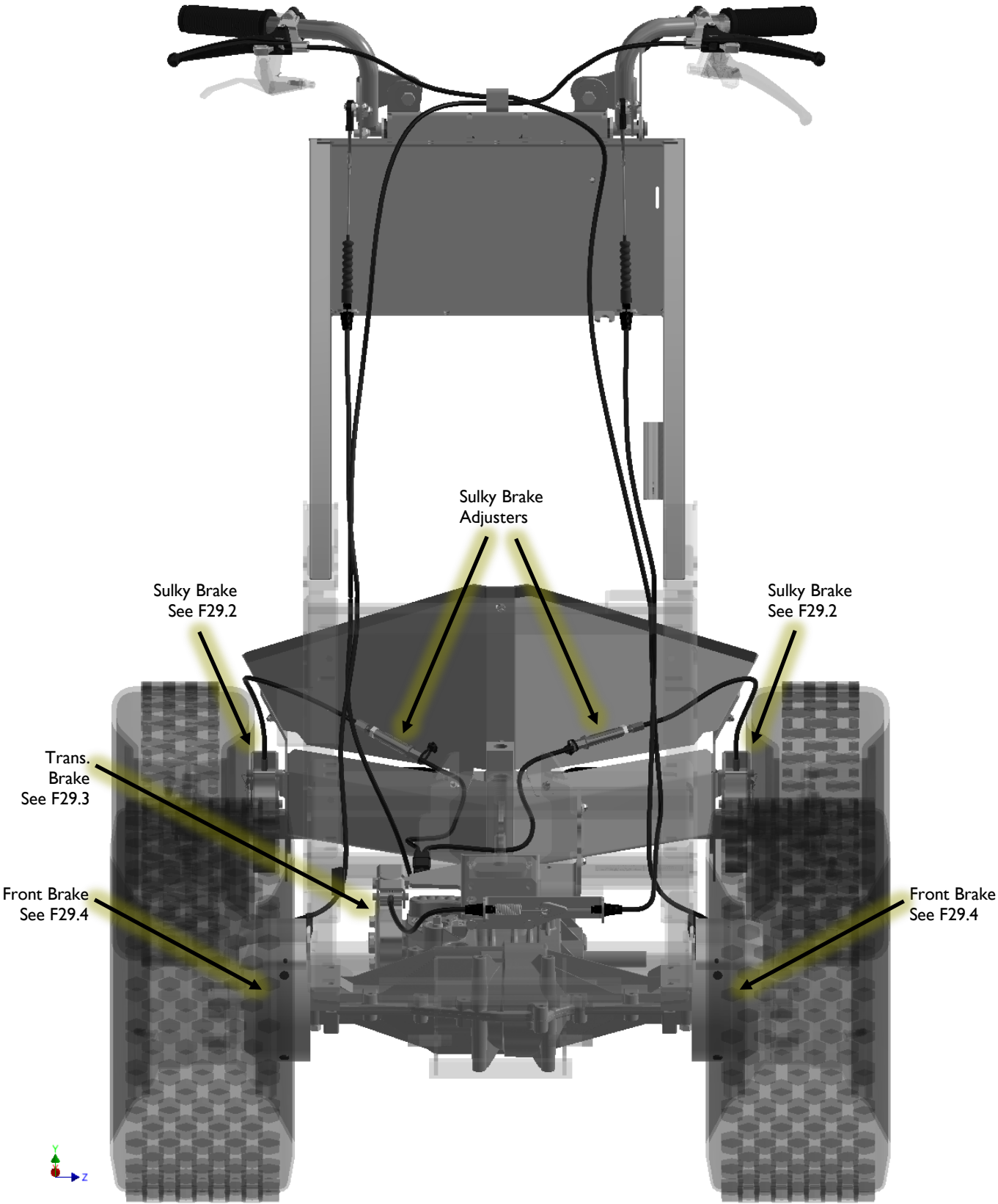
ITEM	QTY	STOCK #	DESCRIPTION
1	1	T651969	Shaft Block Assembly
2	1	T651969	Shaft Block Assembly
3	2	650430	1/4-20x 1 1/4" Phil.MS
4	4	R651480	1/4" Lock Washer
5	1	T651937	2015 Shaker Striker
6	2	R650428	1/4-20x 1.5" Phil Rd M.S.
7	1	T422310	B-Spinner Shaft Assembly
8	2	T645900	#6-20x1/2" Tapping Philip
9	1	T651935	B-Cam, Agitator
10	1	R651570	Hair Pin 3/8
11	1	T422100	Straight Fin Spinner Platter
12	1	T651280	#5 Worm Clamp
13	1	T101905	Hood -2015
14	1	T651913	Hood Bearing
15	1	T101833	Hood Shaker Bracket
16	1	T651939	Hood Shaker Back plate
17	2	T650943	#10x3/4" Phil. SM Screw
18	1	T210165	Gearbox Heat Shield 6"
19	1	T422355	Gearbox Complete





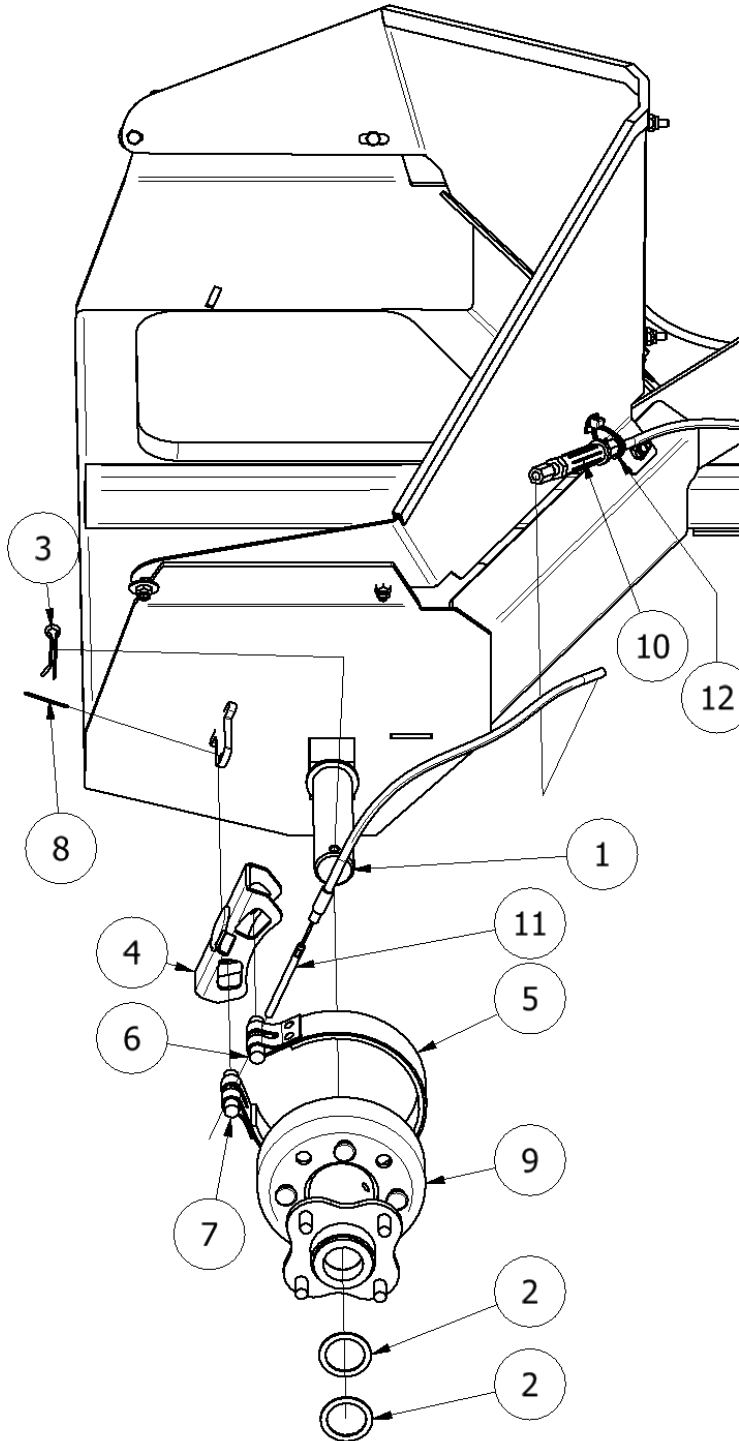
CABLE AND LEVER SCHEMATIC GROUP

Brakes Fig. 29.1



## CABLE AND LEVER SCHEMATIC GROUP

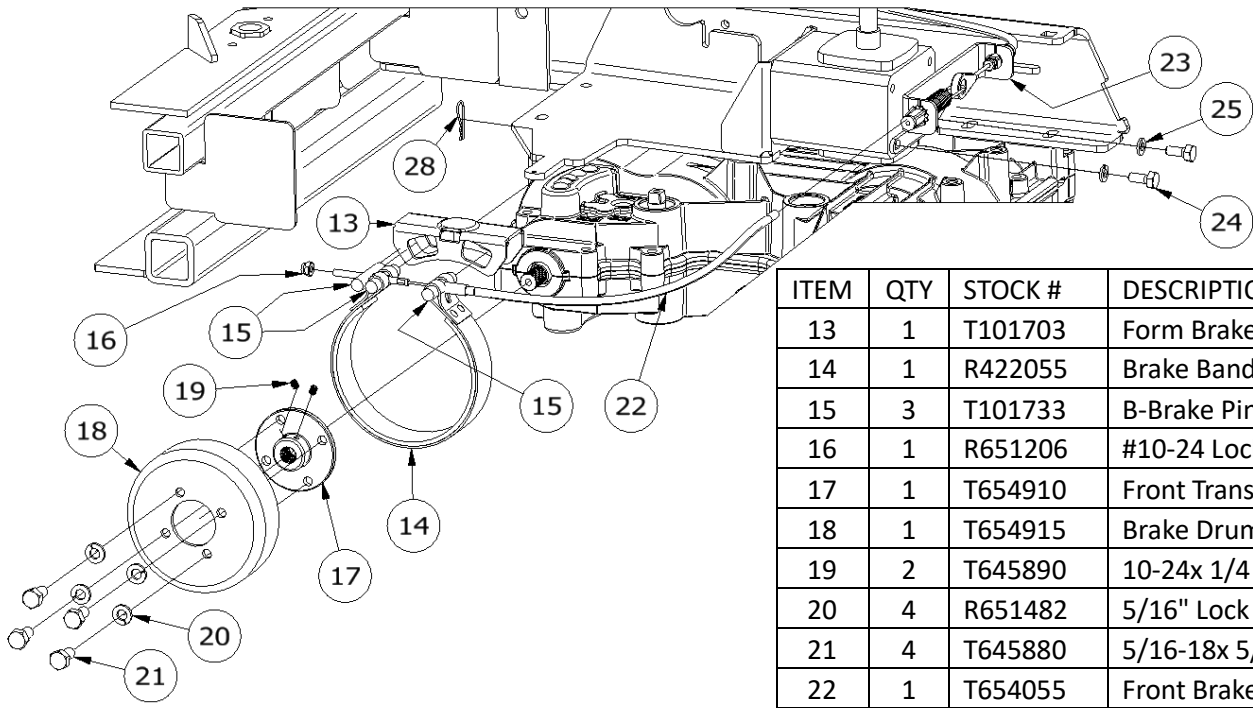
Sulky Brakes Fig. 29.2



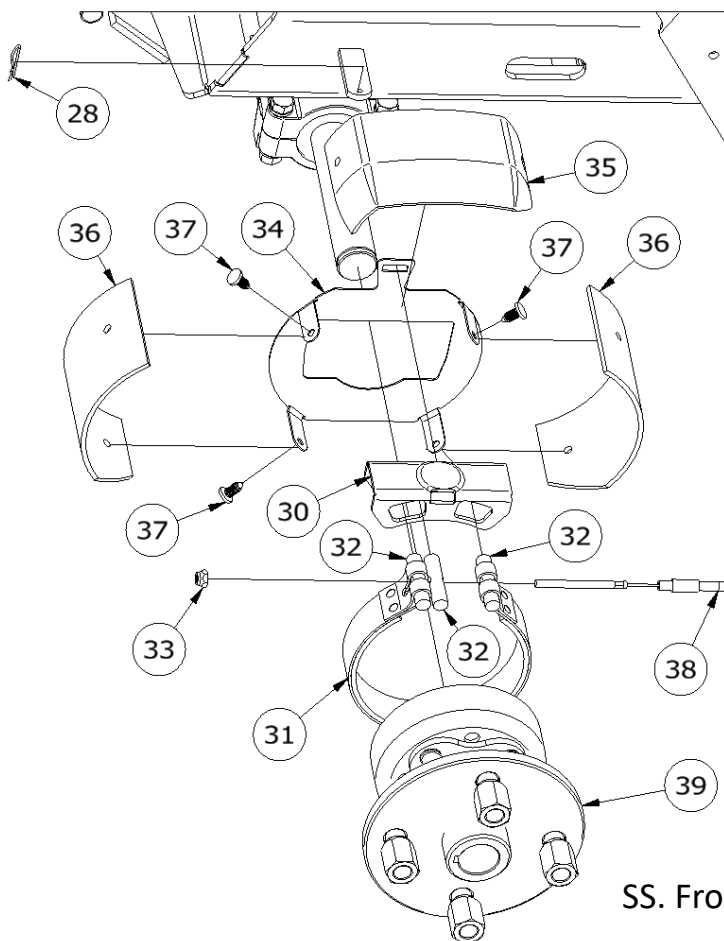
ITEM	QTY	STOCK #	DESCRIPTION
1	2	T101419	Axle
2	8	P651512	Washer 1" x 18 Ga
3	2	T651605	3/16-1 1/4 Cotter Pin
4	2	T101703	Form Brake Holder
5	2	R422055	Brake Band 892424
6	2	T101733	B-Brake Pin-Sheath
7	2	T101740	Brake Pin Rod
8	2	R651570	Hair Pin 3/8
9	2	T654750	Small 1" Hub Assembly
10	2	T654040	Sulky Cable
11	2	T654040	Sulky Brake Cable
12	2	R347042	Wire Tie, Stud

## CABLE AND LEVER SCHEMATIC GROUP

Trans Brake Fig. 29.3



ITEM	QTY	STOCK #	DESCRIPTION
13	1	T101703	Form Brake Holder
14	1	R422055	Brake Band
15	3	T101733	B-Brake Pin-Sheath
16	1	R651206	#10-24 Lock Nut
17	1	T654910	Front Trans Brake Hub
18	1	T654915	Brake Drum
19	2	T645890	10-24x 1/4 Set Screw
20	4	R651482	5/16" Lock Washer
21	4	T645880	5/16-18x 5/8" bolt
22	1	T654055	Front Brake Cable
23	1	T101745	Trans Cable Holder
24	2	P651660	1/4-20 x 5/8
25	2	R651480	1/4" Lock Washer
28	3	R651570	Hair Pin 3/8
30	2	T101703	Form Brake Holder
31	2	R422055	Brake Band 892424
32	6	T101733	B-Brake Pin-Sheath
33	2	R651206	#10-24 Lock Nut
34	2	T654054	Brake Cover Assembly
35	2	T101708	Top Rubber Brake Cover
36	4	T101709	Side Rubber Brake Cover
37	8	T422987	Rivet .187"
38	1	T654060	Smart Steer Brake Cable
39	2	P654725	Front Hub and Brake Drum
40	2	T651610	1/2 Retaining Ring
41	1	T651615	1/2 Washer
42	1	T654930	Drum Hub Assembly

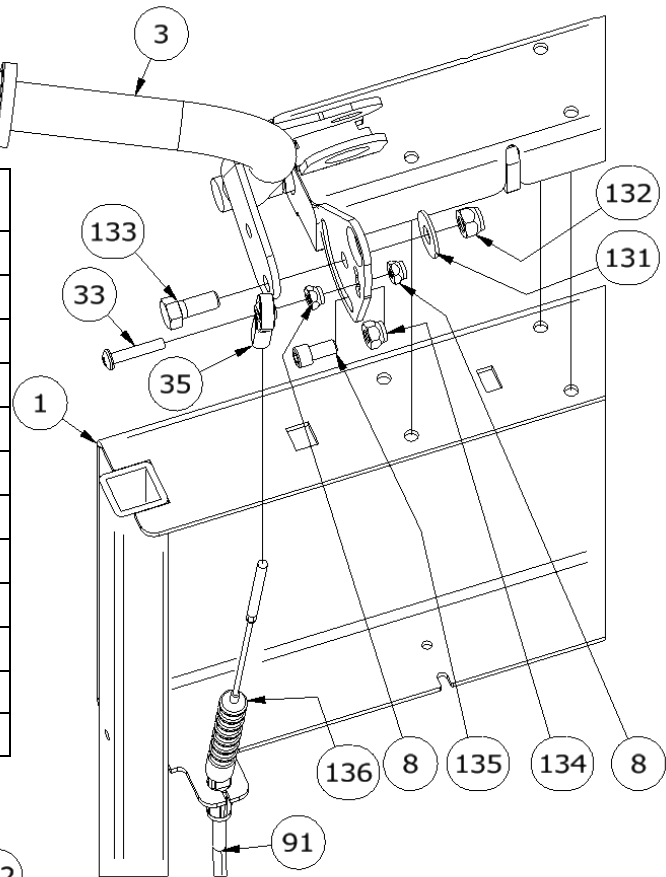


SS. Front Brake Fig. 29.4

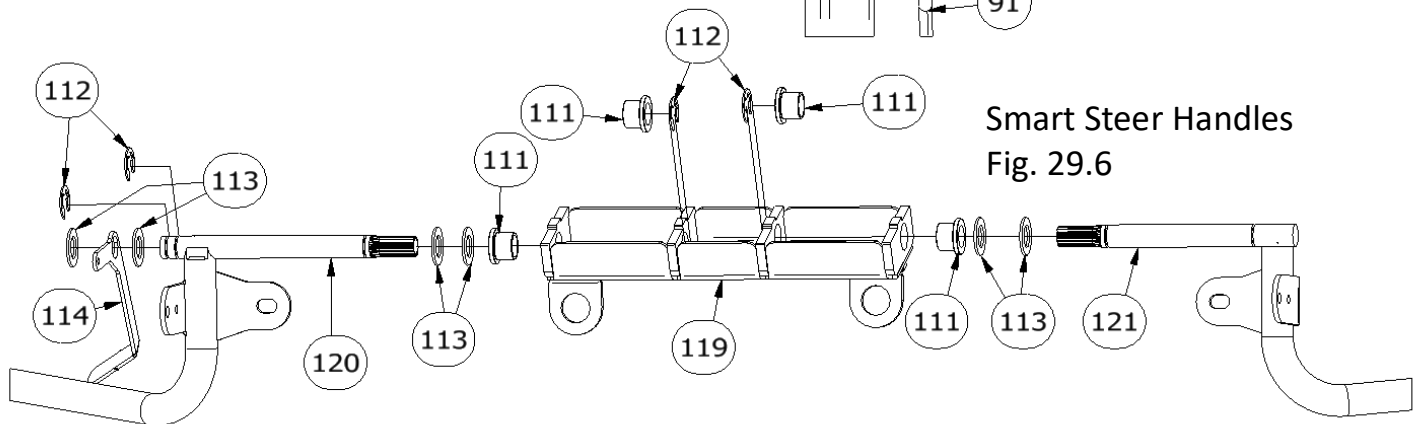
## CABLE AND LEVER SCHEMATIC GROUP

Smart Steer Adjust  
Fig. 29.5

ITEM	QTY	STOCK #	DESCRIPTION
1	1	T101015	Handlebar Support
3	1	T101093	Handle Assembly
8	2	R651206	#10-24 Lock Nut
33	1	650402	#10-24x 1" Phillips MS
35	1	P652465	3/16" Rod End
91	1	T654060	Smart Steer Cable
131	1	651422	5/16" Washer
132	1	R651214	5/16-18 Hex Lock Nut
133	1	T650820	5/16-18 x3/4" Hex Bolt
134	1	R651216	Locknut, 1/4-20
135	1	T650910	1/4-20 x 1/2"
136	1	T654060	Smart Steer Cable



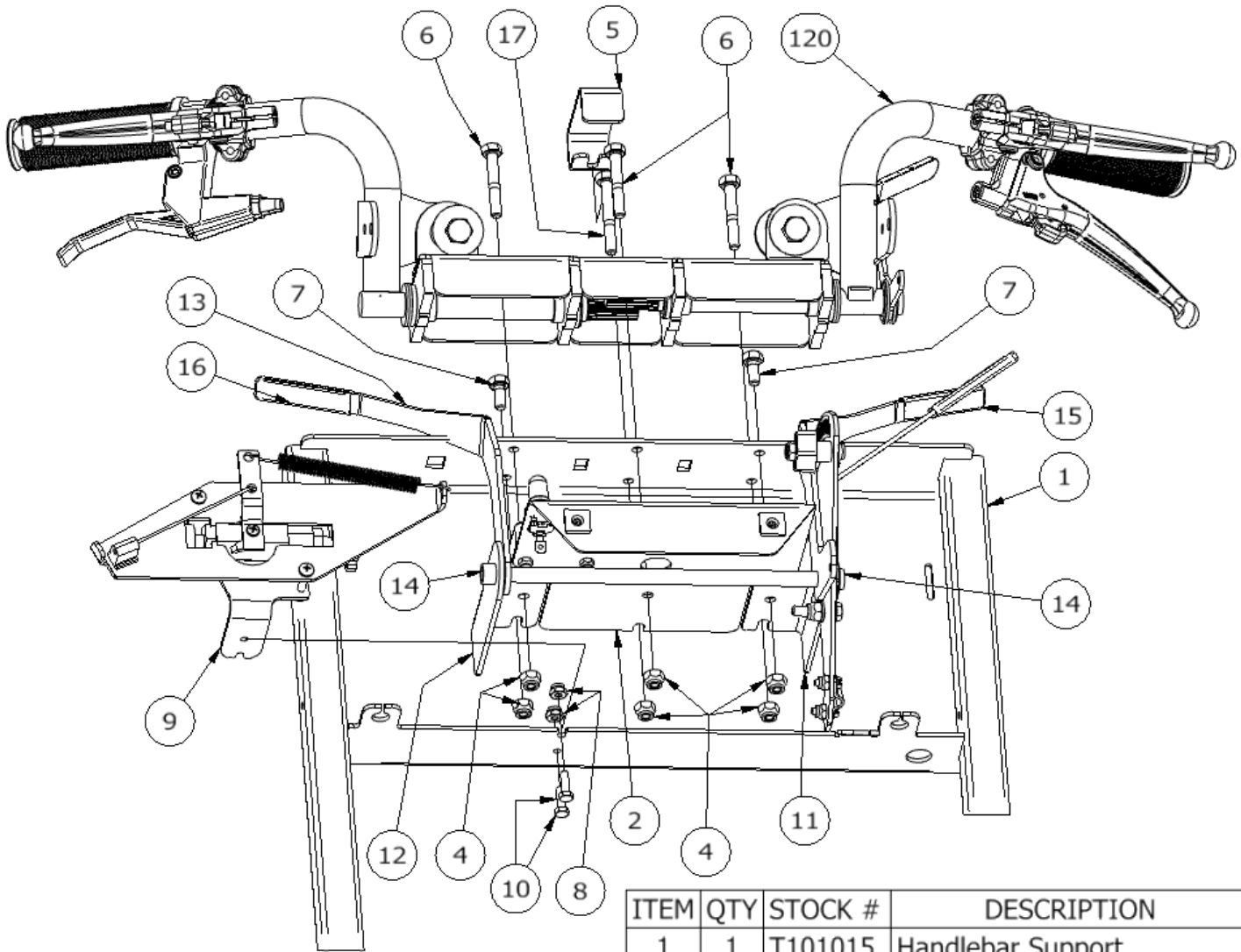
Smart Steer Handles  
Fig. 29.6



ITEM	QTY	STOCK #	DESCRIPTION
111	4	P651975	Flange Bushing 5/8x3/4x5/8
112	5	P645205	5/8" E-Clip
113	6	P651230	5/8 Nylon Washer
114	1	T101500	Handle Release Lever
115	2	R650738	Hex Bolt -3/8-16 x 1.75"
116	2	P645203	Hex Locknut 3/8-16
117	4	P651203	3/8 x1 1/4 Fender Washer
118	2	T654544	Smart Steer Spring
119	1	T101085	Triumph Handlebar Housing
120	1	T101073	2015 Left Handlebar Weldment
121	1	T101077	2015 Right Handlebar Weldment

## CABLE AND LEVER SCHEMATIC GROUP

Handlebar: Handles Fig. 29.7

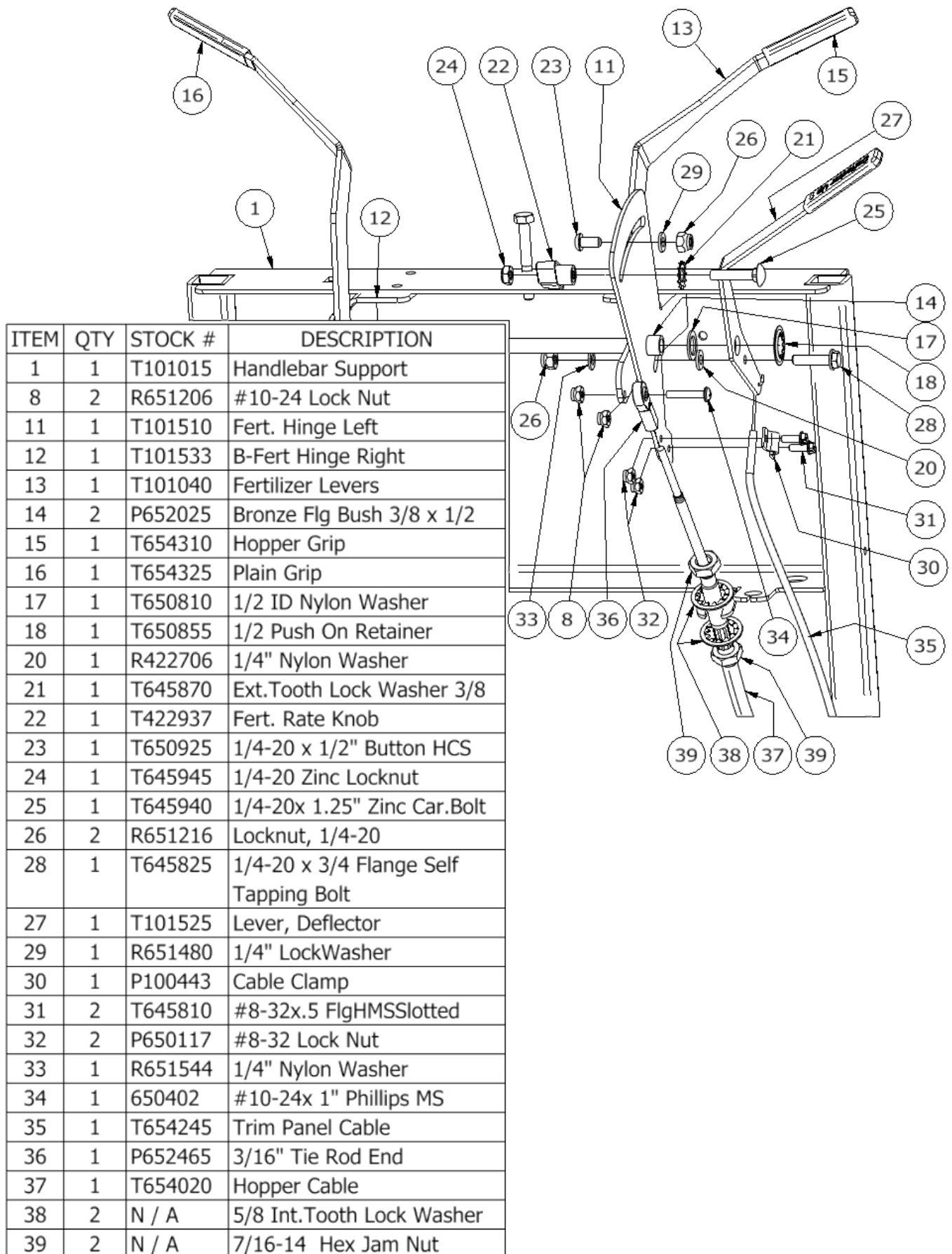


ITEM	QTY	STOCK #	DESCRIPTION
1	1	T101015	Handlebar Support
2	1	T101065	Dashboard Complete
3	1	T101093	Handle Assembly
4	7	R651216	Locknut, 1/4-20
5	1	T101750	Cable Loop
6	3	T645843	5/16-18 x1 3/4 Bolt
7	2	P651660	1/4-20 x 5/8
8	10	R651206	#10-24 Lock Nut
9	1	T500270	Spray Valve
10	2	T645820	#10-24x5/8" Bolt
11	1	T101510	Fert. Hinge Left
12	1	T101533	B-Fert Hinge Right
13	1	T101040	Fertilizer Levers
14	2	P652025	Bronze Flg Bush 3/8 x 1/2
15	1	T654310	Hopper Grip
16	1	T654325	Plain Grip
17	1	P650100	1/4-20 x 2 Bolt



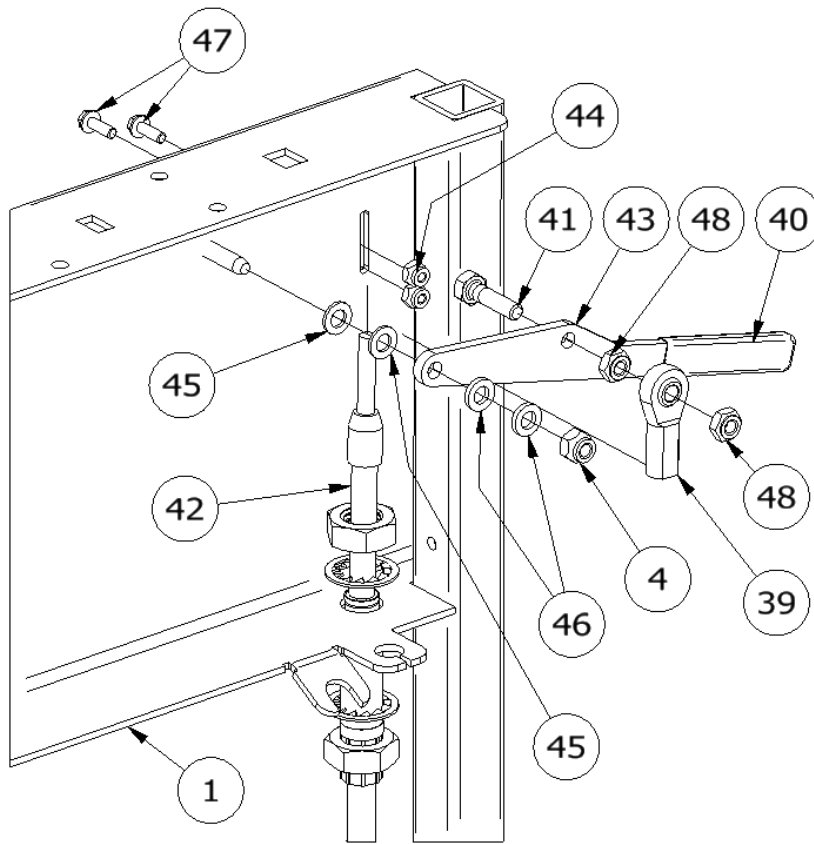
## CABLE AND LEVER SCHEMATIC GROUP

Fertilizer Levers Fig. 29.8



## CABLE AND LEVER SCHEMATIC GROUP

Trans. Shift Fig. 29.9

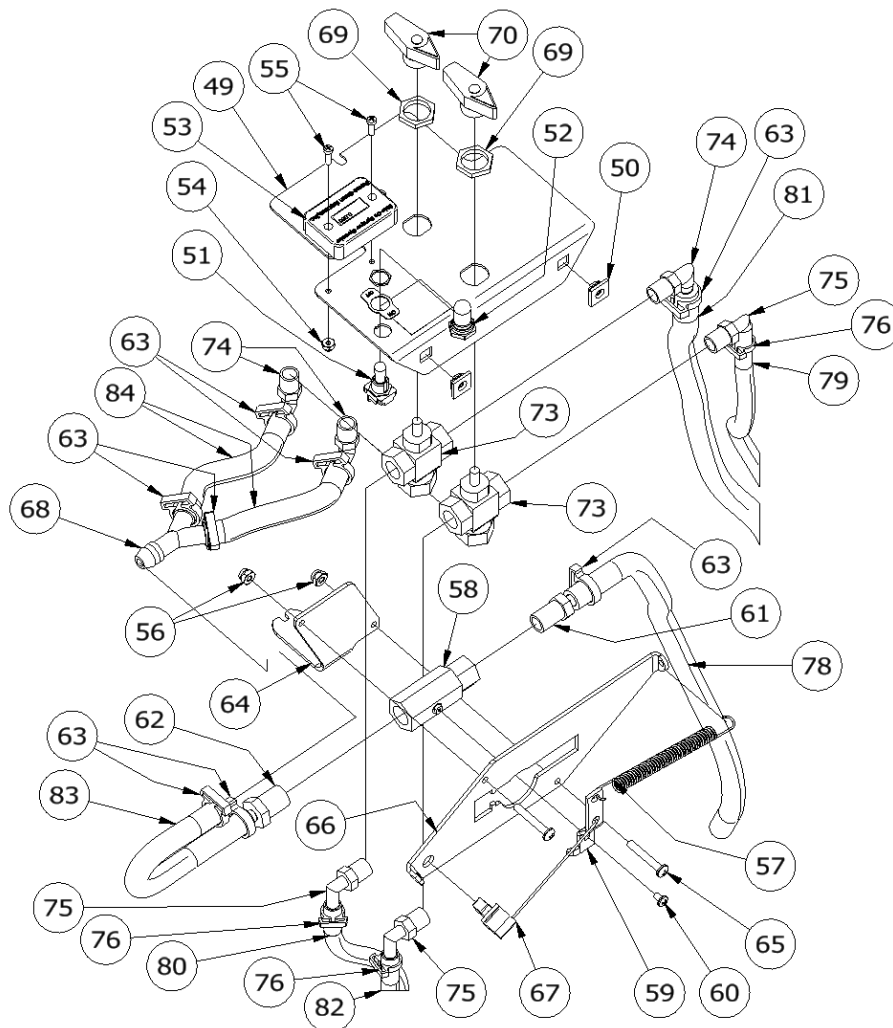


ITEM	QTY	STOCK #	DESCRIPTION
1	1	T101015	Handlebar Support
4	1	R651216	Locknut, 1/4-20
39	1	T652480	Tie Rod 1/4-28
40	1	T654323	Shifter Grip
41	1	P645240	1/4-20x1" Hex Bolt
42	1	T654030	A-B Shift Cable
43	1	T101780	Shift Lever
44	2	P650117	#8-32 Lock Nut
45	2	R651544	1/4" Nylon Washer
46	2	R651560	1/4" Soft Washer
47	2	T645810	#8-32x.5 Flg Slotted
48	2	T645945	1/4-20 Zinc Locknut

## CABLE AND LEVER SCHEMATIC GROUP

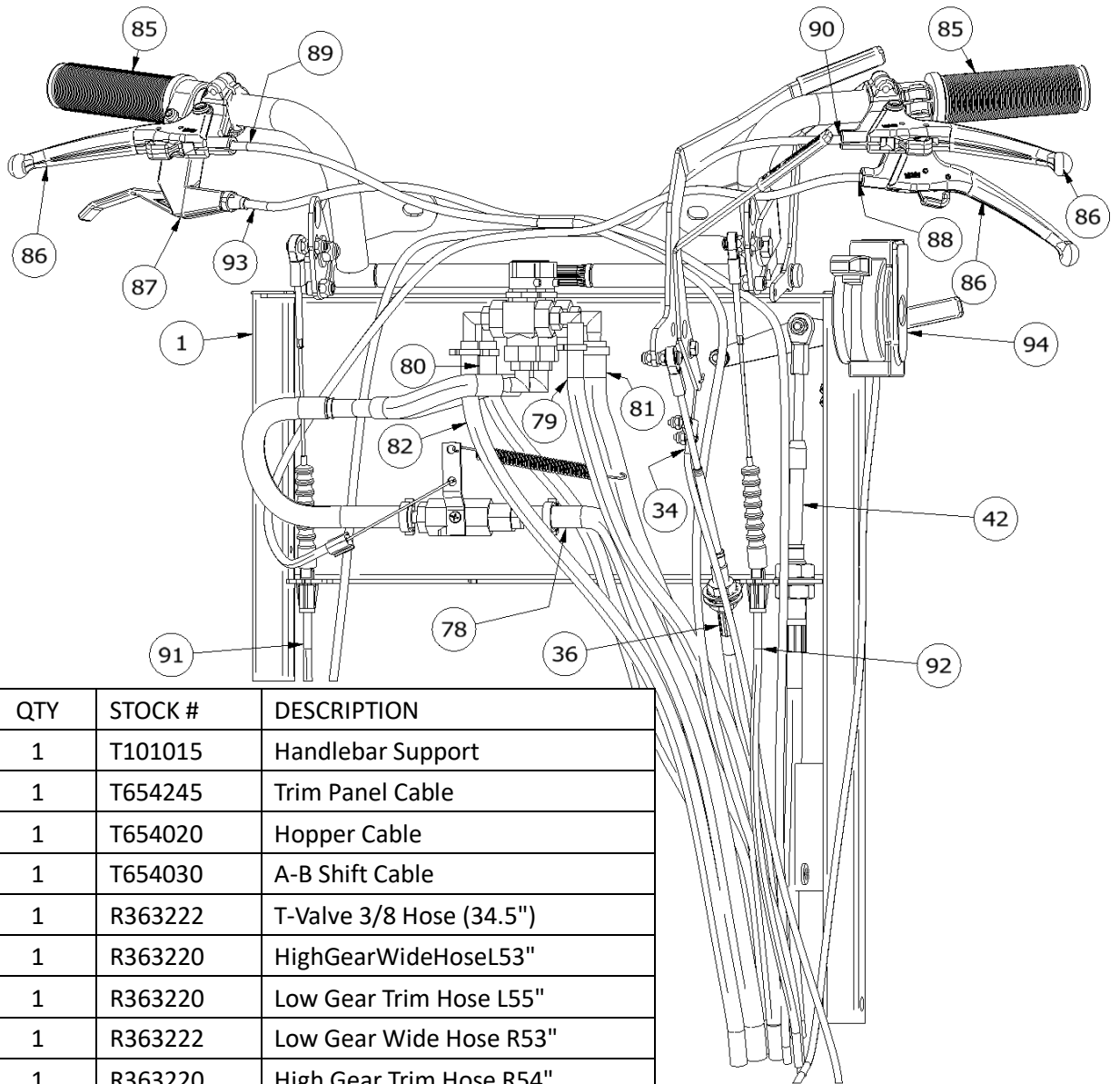
Spray Valves Fig. 29.10

ITEM	QTY	STOCK #	DESCRIPTION	ITEM	QTY	STOCK #	DESCRIPTION
49	1	T101065	Dashboard (w/Labels)	62	1	T454245	Fitting 3/8mpt x 3/8 Hose
50	2	P645100	Nut, Square Nylon	63	8	R481243	Hose Clamp, #38
51	1	R344336	Kill Switch	68	1	T454225	Y 3/8 Fitting
52	1	300125	03' - Boot Seal Toggle	69	2	T454242	Brass Lock Nut
53	1	R654555.1	Hour Meter	70	2	T454241	701 Handle w/Set Screw
54	2	P650115	#6-32 Lock Nut	73	2	T454240	701 Selector Valve
55	2	P650110	#6-32 x 1/2" Phillips MS	74	3	R454023	L-Fitting .25mpt x .38 Hose
56	2	R651206	#10-24 Lock Nut	75	3	R454022	1/4 MPT x 1/4 Hose Barb Elbow
57	1	P205020	Spring, 3"	76	3	R481246	Hose Clamp, #26
64	1	T101800	Valve Bracket, Rear	78	1	R363222	T-Valve 3/8 Hose (34.5")
65	2	T651270	#10-24 x 1 1/4" Phil.MS	79	1	R363220	HighGearWideHoseL53"
66	1	T101795	Valve Bracket Front	80	1	R363220	Low Gear Trim Hose L55"
67	1	T654265	Spray Cable	81	1	R363222	Low Gear Wide Hose R53"
58	1	P205010	Ball Valve X	82	1	R363220	High Gear Trim Hose R54"
59	1	P205010	Ball Valve Handle	83	1	R363222	Valve-Y 3/8" Hose (10.25")
60	1	P205010	#8-36x 1/4" Cross Pan MS	84	2	R363222	Y-Selector 3/8 Hose (4")
61	1	R452222	Fitting 1/4mpt x 3/8 Hose				



## CABLE AND LEVER SCHEMATIC GROUP

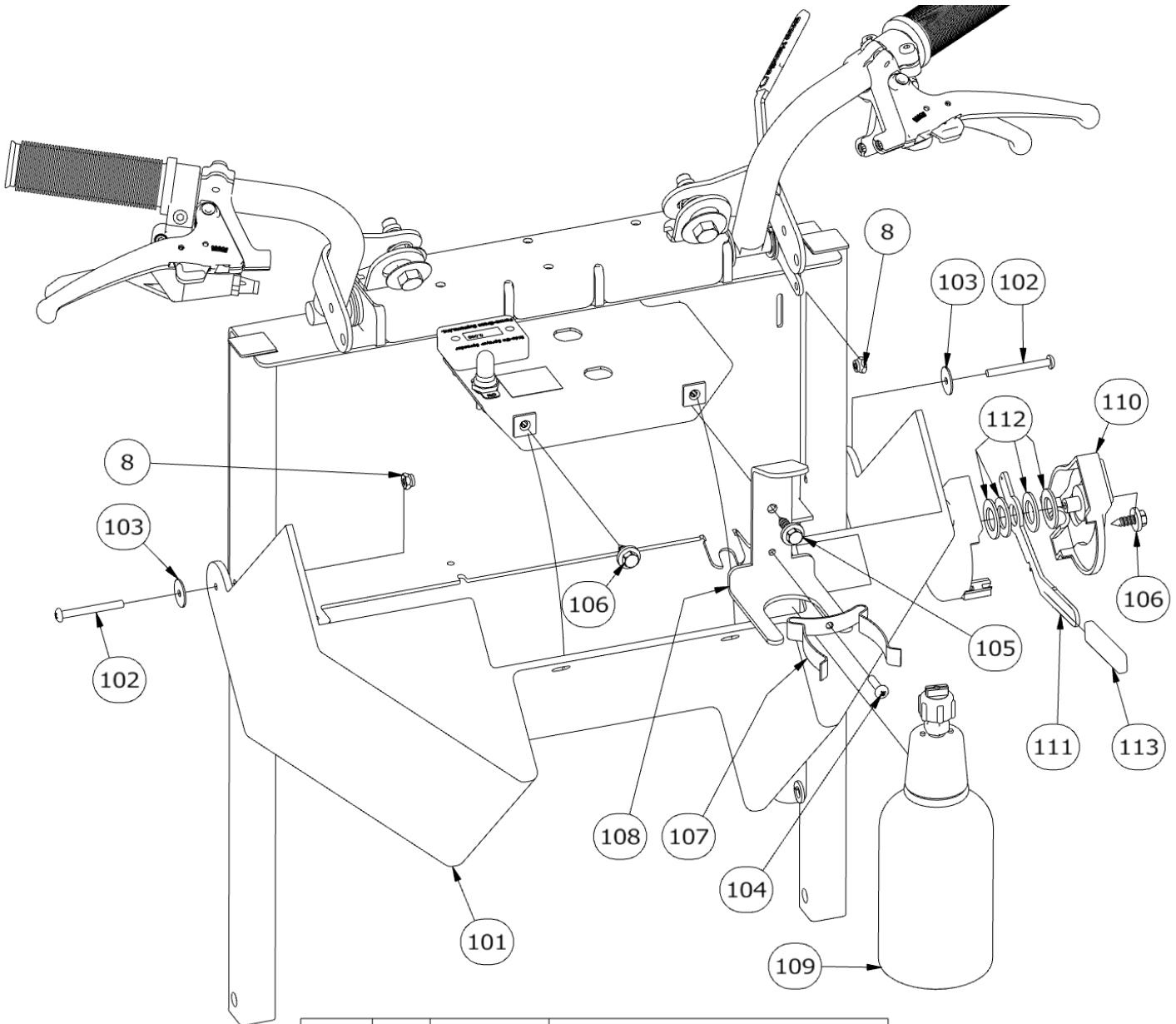
Cable & Hose Fig. 29.11



ITEM	QTY	STOCK #	DESCRIPTION
1	1	T101015	Handlebar Support
34	1	T654245	Trim Panel Cable
36	1	T654020	Hopper Cable
42	1	T654030	A-B Shift Cable
78	1	R363222	T-Valve 3/8 Hose (34.5")
79	1	R363220	HighGearWideHoseL53"
80	1	R363220	Low Gear Trim Hose L55"
81	1	R363222	Low Gear Wide Hose R53"
82	1	R363220	High Gear Trim Hose R54"
85	2	R654190	Handle Grip, 7/8
86	3	T654140	A-B Brake/Spray Lever Triumph
87	1	P654136	Lever, Throttle
88	1	T654265	Spray Valve Cable
89	1	T654250	Cable Trans. Brakes
90	1	T654040	Sulky Brake Cable
91	1	T654060	Smart Steer Cable
92	1	T654060	Smart Steer Cable
93	1	T654270	Throttle Cable
94	1	T654056	3rd Hole Cable

## CABLE AND LEVER SCHEMATIC GROUP

Handlebar Cover Fig. 29.12

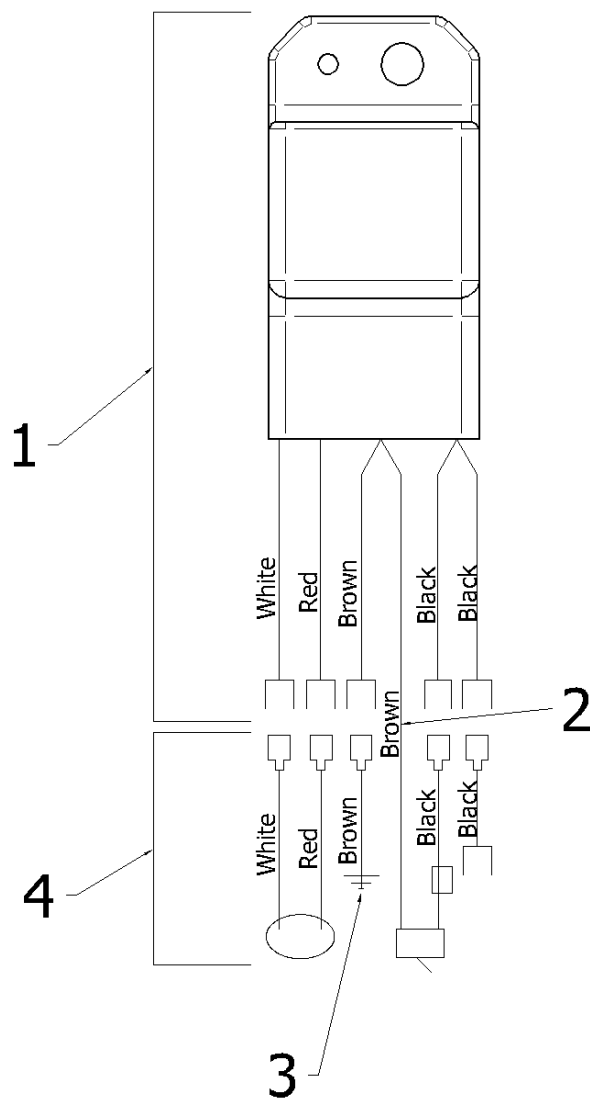


ITEM	QTY	STOCK #	DESCRIPTION
8	2	R651206	#10-24 Lock Nut
101	1	T101935	Handle Bar Cover-Complete
102	2	650404	#10-24x 1 3/4" Phil. MS
103	2	R651450	3/16"x 3/4" FenderWasher
104	1	R650400	#10-24x0.75 Phil Rnd MS
105	1	P645101	#14 Screw 1" w/Seal Washer
106	2	P645103	Screw #14 w/Seal Wash 3/4
107	1	T101820	Tool Holder Squeeze&Spray
108	1	T101785	Squeeze and Spray Holder
109	1	R372034	Squeeze & Spray Bottle
110	1	T654056	3rd Hole Lever Assembly
111	1	T101504	Third Hole Cable Lever
112	4	P651230	5/8 Nylon Washer
113	1	T654325	Plain Grip



# ELECTRICAL SCHEMATIC GROUP

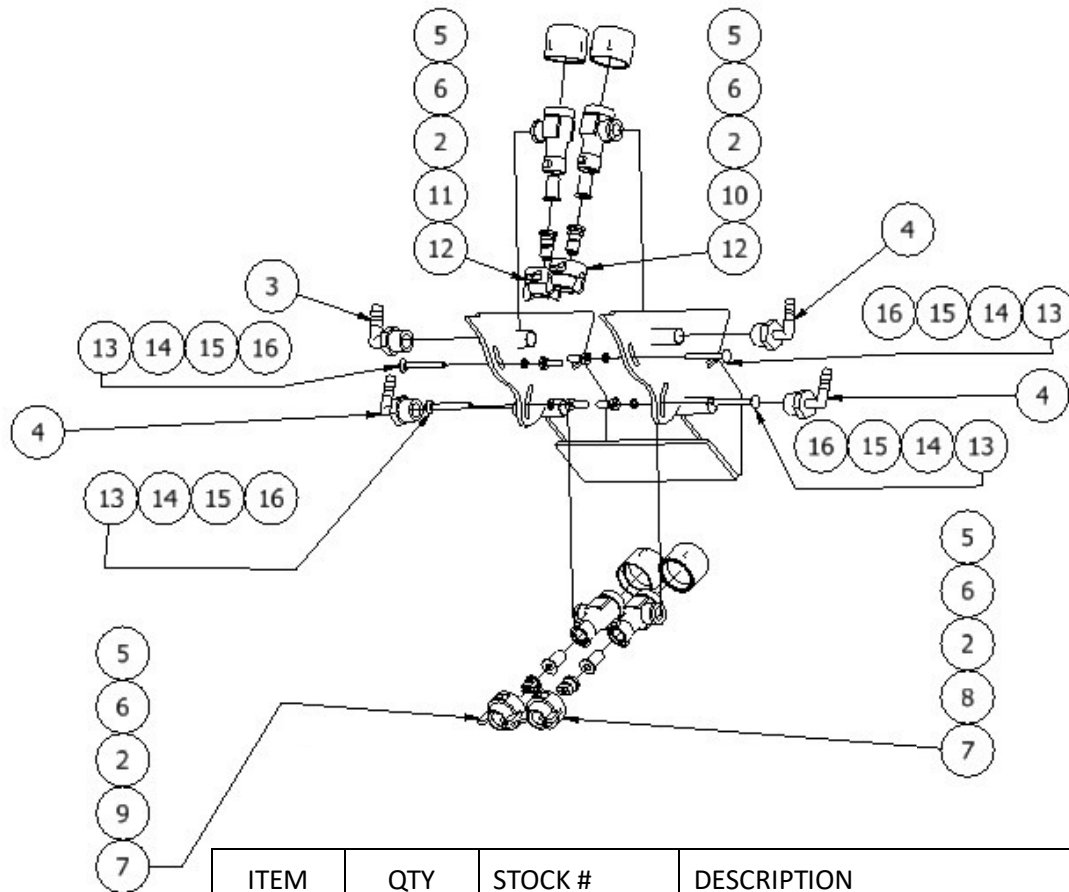
Fig. 30.1



#	Part#	Description
1	T300307	Starting Module
2	T300297	Kill Switch Wire
3	T300300	Ground Wire
4	T300309	Wire Harness-Lead Only

## SPRAYER SCHEMATIC GROUP

Fig. 31.1

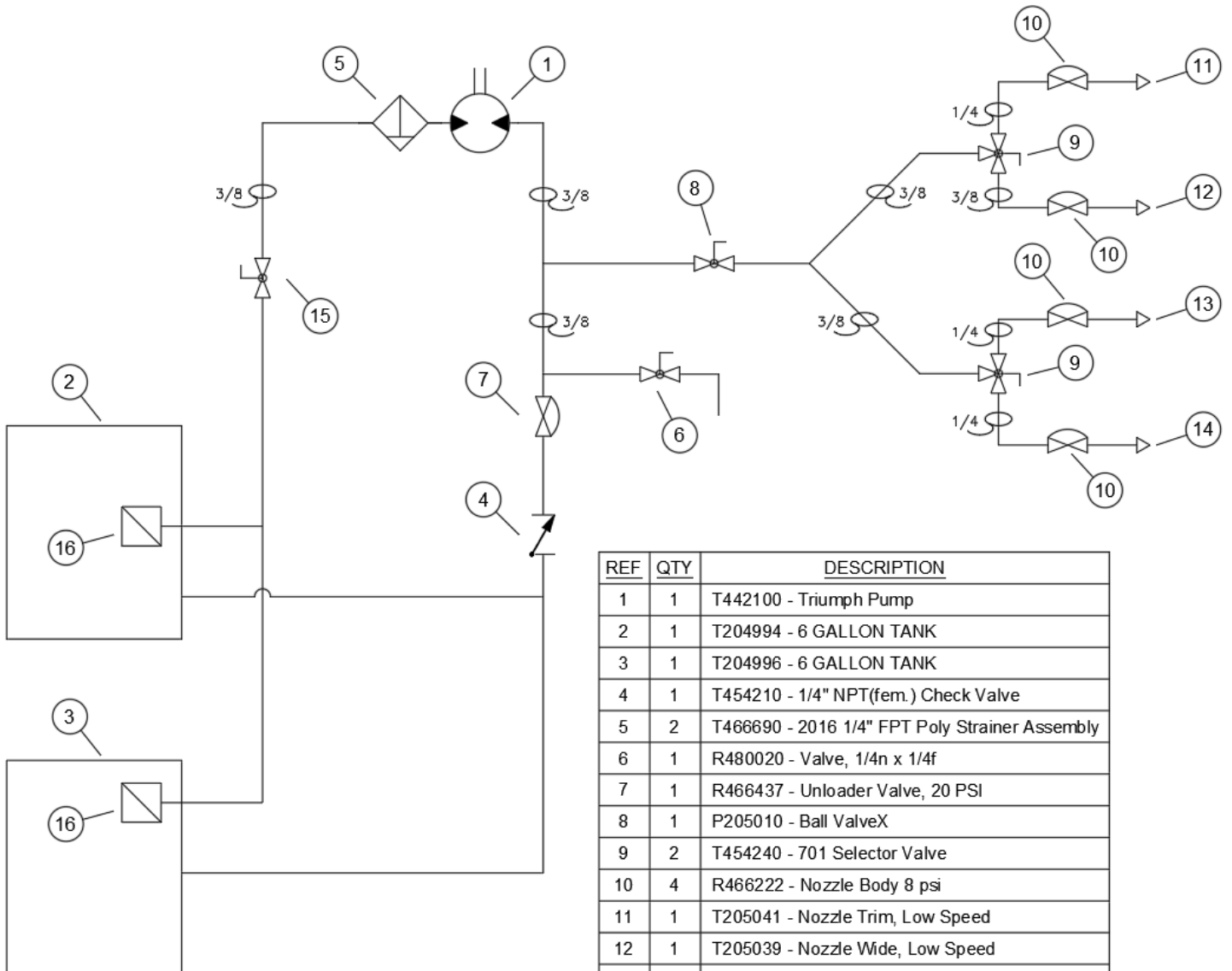


ITEM	QTY	STOCK #	DESCRIPTION
1	1	T101004	E1E Frame
2	4	R464724	Nozzle Strainer, 50 Mesh
3	1	T454235	1/4 ftp x 3/8 hb L
4	3	T454230	1/4 ftp x 1/4 hb L
5	4	R654250	Cap, 1 -1/4 x 1
6	4	R466222	Nozzle Body 8 psi
7	2	T466691	Cap & Gasket Green
8	1	T205043	Nozzle Trim, High Speed Red
9	1	T205041	Nozzle Trim, Low Speed Blue
10	1	T205037	Nozzle Wide, High Speed Green
11	1	T205039	Nozzle Wide, Low Speed White
12	2	T466693	Cap & Gasket Yellow
13	4	T650947	#10-24 x 1-3/4" Square Neck Carriage Bolt
14	4	M701300	#10 Lock washer
15	4	T651243	#10-24 Nut
16	4	T654287	Cap 1/8 - 3/16 x 1/2"

# SPRAYER SCHEMATIC GROUP

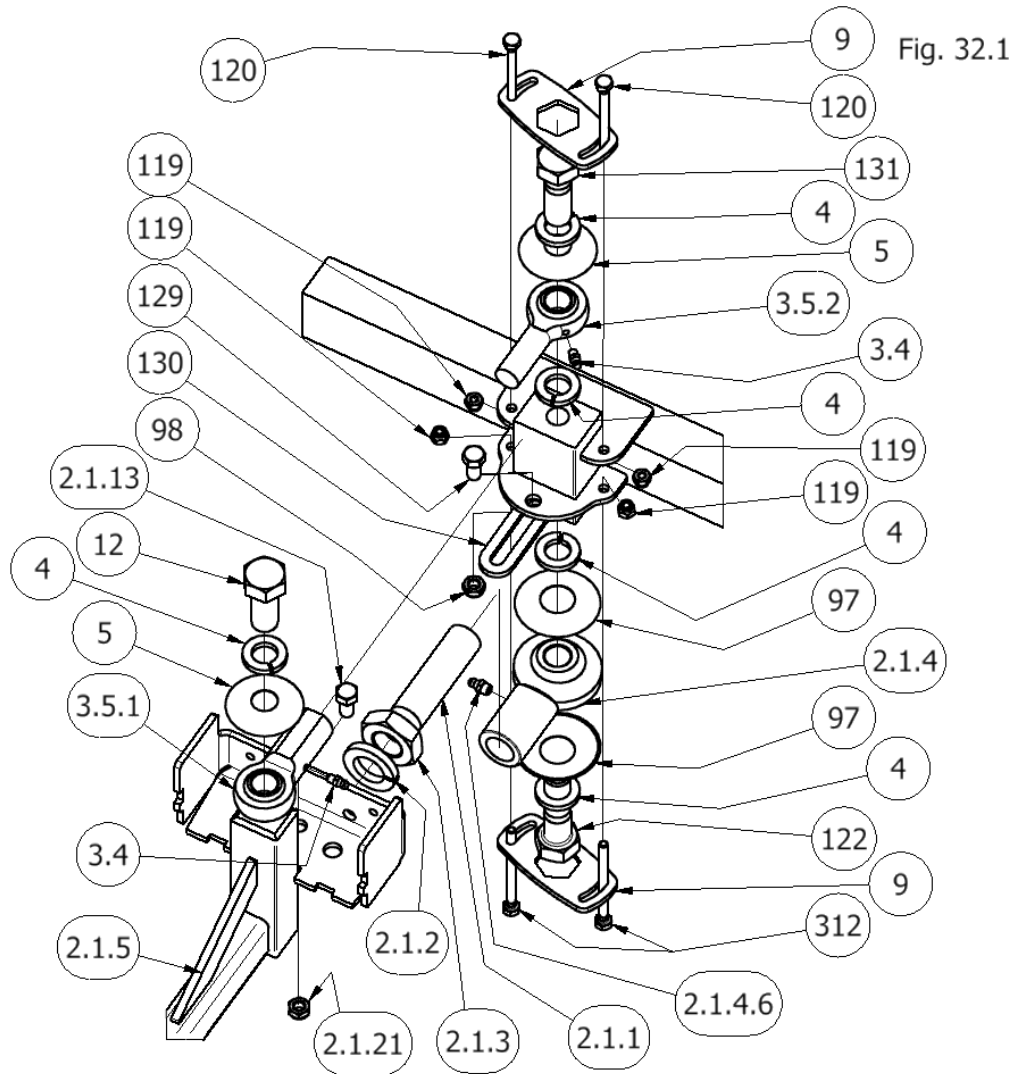
## PLUMBING SCHEMATIC

Fig. 31.2



REF	QTY	DESCRIPTION
1	1	T442100 - Triumph Pump
2	1	T204994 - 6 GALLON TANK
3	1	T204996 - 6 GALLON TANK
4	1	T454210 - 1/4" NPT(fem.) Check Valve
5	2	T466690 - 2016 1/4" FPT Poly Strainer Assembly
6	1	R480020 - Valve, 1/4n x 1/4f
7	1	R466437 - Unloader Valve, 20 PSI
8	1	P205010 - Ball ValveX
9	2	T454240 - 701 Selector Valve
10	4	R466222 - Nozzle Body 8 psi
11	1	T205041 - Nozzle Trim, Low Speed
12	1	T205039 - Nozzle Wide, Low Speed
13	1	T205043 - Nozzle Trim, High Speed
14	1	T205037 - Nozzle Wide, High Speed
15	1	T466666 - Ball Valve, Suction
16	2	T500296 In Tank Strainer Assembly

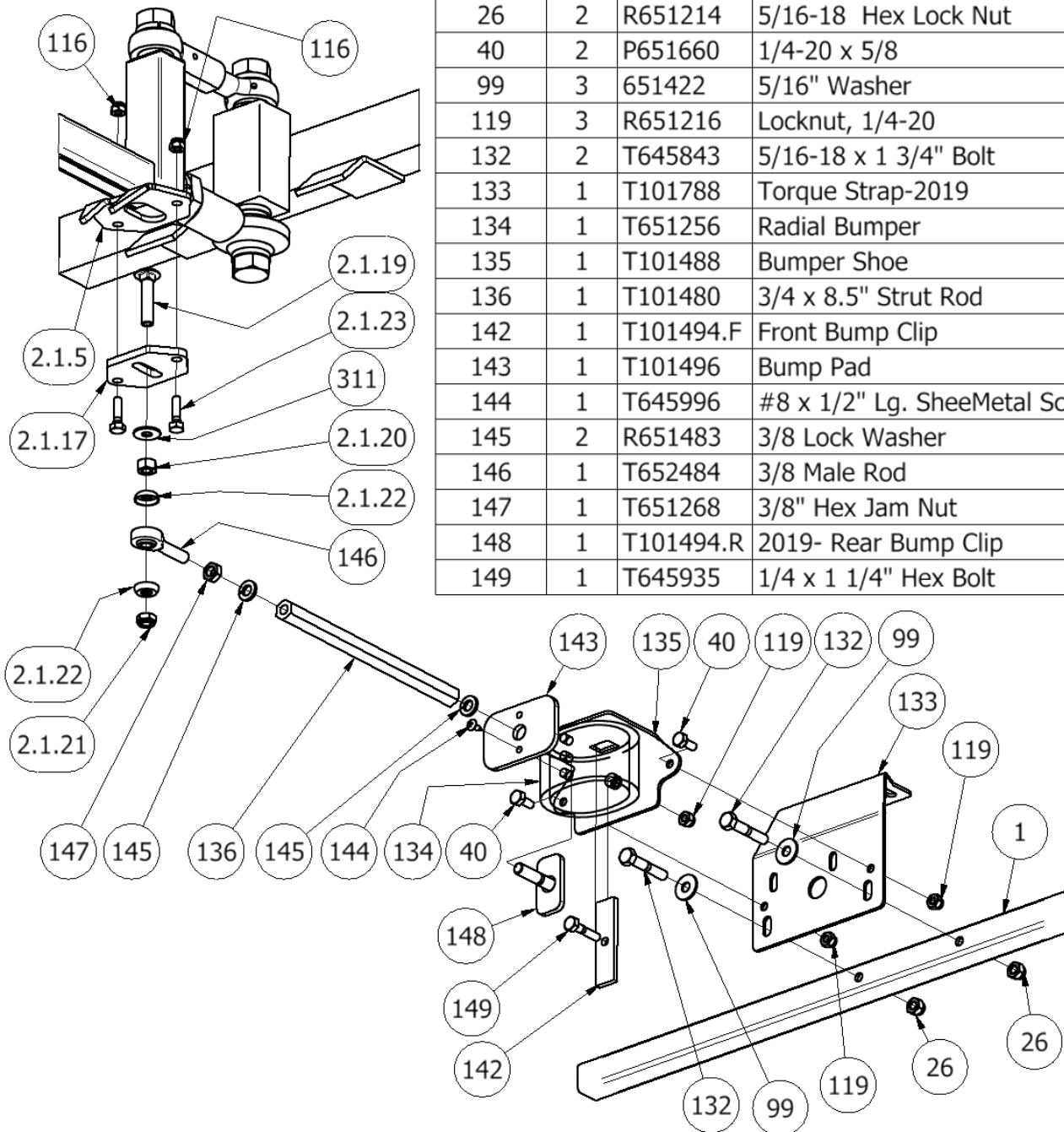
## SULKY SCHEMATIC GROUP—Articulating Schematic



ITEM	QTY	STOCK #	DESCRIPTION	ITEM	QTY	STOCK #	DESCRIPTION
1	1	T101004	Triumph Frame E1E	4	5	R651485	3/4" Lock Washer
2.1.1	1	T101464	2019 Stud	5	2	R652478	Rod End Seal
2.1.2	1	T651476	1" Lockwasher	9	2	T101715	Lower Bolt Lock
2.1.3	1	T651236	1"-12 Thin Hex Nut	12	1	P650948	3/4-10 x 1 3/4" SS Bolt
2.1.4	1	T652526	2019 Tie Rod End Assembly	97	2	T652476	1" Rod End Seal
2.1.4.6	1	T652666	1/4-28 Grease Zerk	98	1	T651213	3/8" Hex Lock Jam Nut
2.1.5	1	T101052	2019 Sulky E1E	119	4	R651216	Locknut, 1/4-20
2.1.13	1	R650718	3/8-16 Hex Bolt, 3/4"lg.	120	2	T645835	1/4-20x3" Hex Head Screw
2.1.21	1	T651213	3/8" Hex Lock Jam Nut	122	1	T650956	3/4-10 x 2 3/4 Hex Bolt
3	1	T652506	2019 Rod End Assembly	129	1	R650718	3/8-16 Hex Bolt, 3/4"lg.
3.4	2	T652668	Grease Zerk	130	1	T101768	2019 Safety Link
3.5.1	1	T652662	3/4" Rod End-Female	131	1	T650958	3/4-10 x 2 1/4" Bolt
3.5.2	1	T652663	Male Tie Rod -Hardened	312	2	T650468	1/4-20x 3 1/2 Hex Bolt

## SULKY SCHEMATIC GROUP-Articulating Schematic

Fig. 32.2



ITEM	QTY	Part No.	DESCRIPTION
1	1	T101004	Triumph Frame E1E
2.1.5	1	T101052	2019 Sulky E1E
2.1.17	1	T101498	Bump Mount Adjust Plate
2.1.19	1	T650664	3/8 x 1 3/4" Carraige Bolt
2.1.20	1	R651228	3/8 Hex Nut
2.1.21	1	T651213	3/8" Hex Lock Jam Nut
2.1.22	2	T652478	3/8 Rod End Seal
2.1.23	2	P645240	1/4-20x1" Hex Bolt
26	2	R651214	5/16-18 Hex Lock Nut
40	2	P651660	1/4-20 x 5/8
99	3	651422	5/16" Washer
119	3	R651216	Locknut, 1/4-20
132	2	T645843	5/16-18 x 1 3/4" Bolt
133	1	T101788	Torque Strap-2019
134	1	T651256	Radial Bumper
135	1	T101488	Bumper Shoe
136	1	T101480	3/4 x 8.5" Strut Rod
142	1	T101494.F	Front Bump Clip
143	1	T101496	Bump Pad
144	1	T645996	#8 x 1/2" Lg. SheeMetal Screw
145	2	R651483	3/8 Lock Washer
146	1	T652484	3/8 Male Rod
147	1	T651268	3/8" Hex Jam Nut
148	1	T101494.R	2019- Rear Bump Clip
149	1	T645935	1/4 x 1 1/4" Hex Bolt



## SULKY SCHEMATIC GROUP

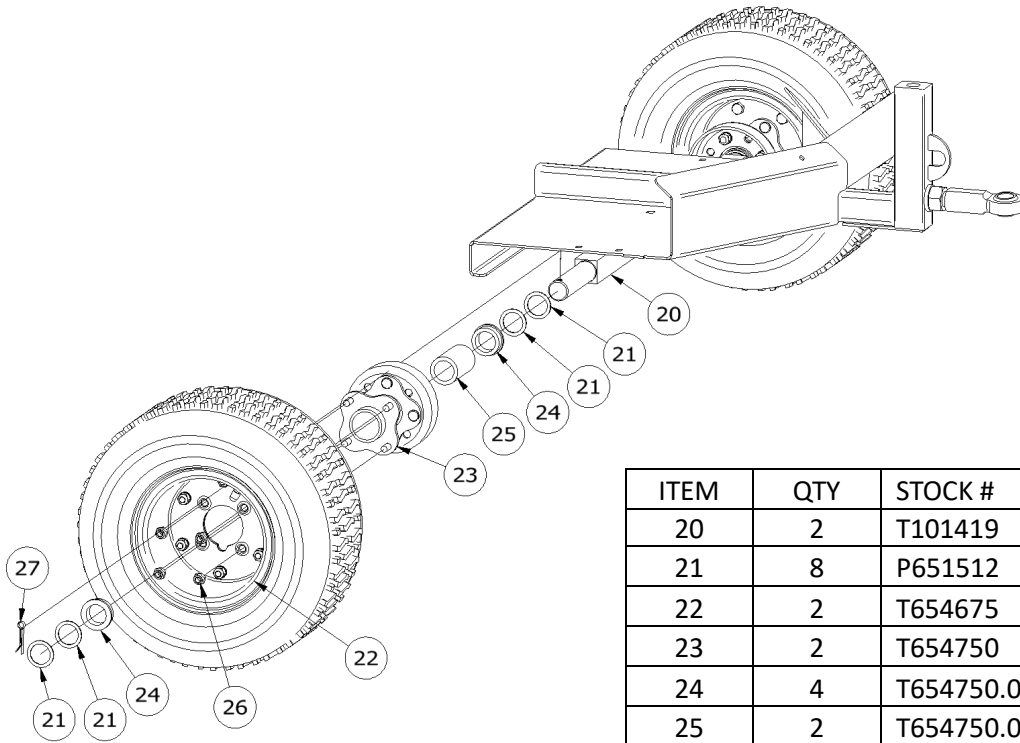


Fig. 32.3

ITEM	QTY	STOCK #	DESCRIPTION
20	2	T101419	Axle 1"
21	8	P651512	Washer 1" x 18 Ga
22	2	T654675	Small 1" Hub Tire Resale
23	2	T654750	1" Hub Drum Assembly
24	4	T654750.02	1" Hub Retainer
25	2	T654750.01	1" Hub Roller bearing
26	8	R651400	5/16 Lug Nut
27	2	T651605	3/16-1 1/4 Cotter Pin

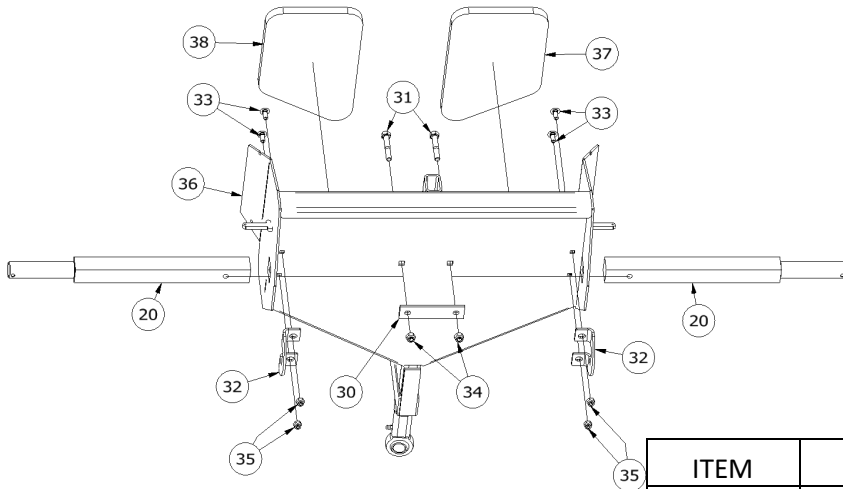


Fig. 32.4

ITEM	QTY	STOCK #	DESCRIPTION
20	2	T101419	Axle 1"
30	1	T101467	Sulky Axle Strap
31	2	R650672	5/16-18x 2" Hex Bolt
32	2	T101457	Axle Strap
33	4	T650935	1/4-20 x 5/8" Carriage Bolt
34	2	R651214	5/16-18 Hex Lock Nut
35	4	R651216	Locknut, 1/4-20
36	1	T101052	Sulky E1E
37	1	P210125	Right Sulky Pad Assembly
38	1	P210120	Left Sulky Pad Assembly

## SULKY SCHEMATIC GROUP

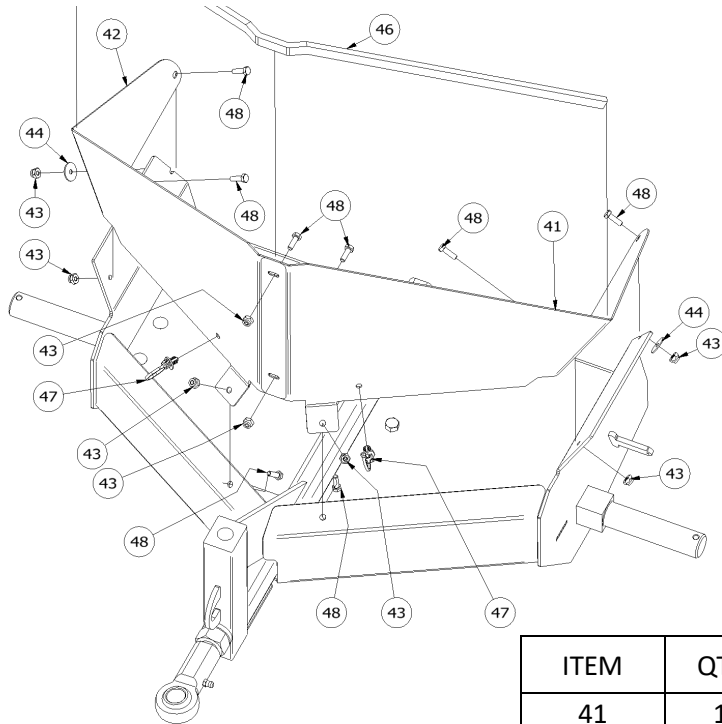


Fig. 32.5

ITEM	QTY	STOCK #	DESCRIPTION
41	1	T101473	2015 Sulky Guard Left
42	1	T101477	2015 Sulky Guard Right
43	8	R651206	#10-24 Lock Nut
44	2	R651450	3/16"x 3/4" Fender Washer
45	1	T000147	Sulky Guard Sticker
46	1	T654450	Sulky Guard Trim
47	2	R347042	Wire Tie, Stud
48	8	T645820	#10-24x 5/8" bolt

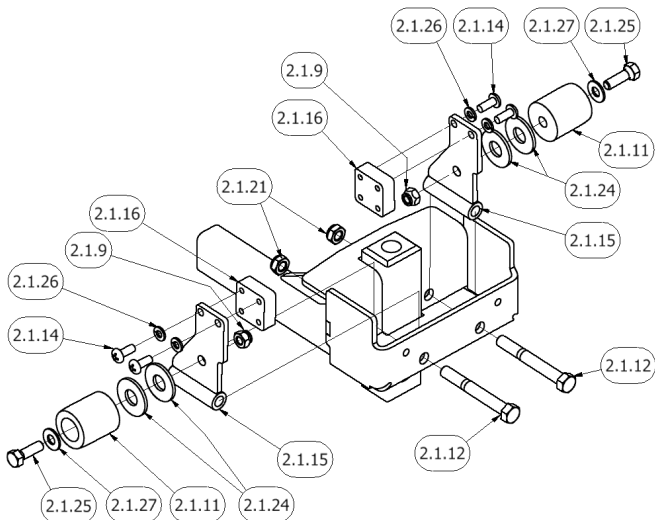


Fig. 32.6

ITEM	QTY	STOCK #	DESCRIPTION	ITEM	QTY	STOCK #	DESCRIPTION
2.1.5	1	T101052	Sulky E1E	2.1.16	2	T651934	Rub Block
2.1.9	2	R651214	5/16-18 Hex Lock Nut	2.1.21	2	T651213	3/8" Hex Lock Jam Nut
2.1.11	2	T651256	Bumper	2.1.24	4	T651466	1/2 Flat Washer
2.1.12	2	T650666	3/8-16 x Bolt SS	2.1.25	2	R650122	Bolt, 5/16-18 x 1
2.1.14	4	T645980	1/4-20 x 5/8" Rd. Head Screw	2.1.26	4	R651480	1/4" Lock Washer
2.1.15	2	T101450	Stabilizer Arm	2.1.27	2	651422	5/16 Washer SS



