

# PERMAGREEN SUPREME INC.

## Triumph Repair/Parts Manual

For Models: A1A (serial numbers 10500 - 11250) and B1B (beginning with serial number 11251)



**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 SHALL 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.



**Periodically check [permagreen.com](http://permagreen.com) for available Triumph updates.**

**For Technical Support:**

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

Perma-Green Supreme, Inc.  
December 6, 2010  
Triumph Repair/Parts Manual (v1)  
North American Version

Copyright © 2010, Perma-Green Supreme, Inc.

All rights reserved. No part of this book covered by the copyright hereon may be reproduced or copied in any form or by any means, except as permitted by the proprietary data statement for use with Perma-Green Supreme equipment, without the written permission of Perma-Green Supreme, Inc.

Triumph is protected by US Patent 6.336,600 and patents pending.

# Table of Contents

## REPAIR SECTION

### **POWER TRANSMISSION GROUP**

Carburetor Replace.....	4-5
Clutch Spring Replace.....	6-7
Drive Belt Replace.....	8-9
Engine Removal and Installation.....	10-11
Engine Vibration Damper Replace.....	12-13
Gearbox Replace.....	14-15
Pump Spinner Belt Replace.....	16-17
Recoil Starter Replace.....	18-19
Transaxle Replace.....	20-25

### **CABLE AND LEVER GROUP**

Fert Control Assembly Replace.....	26-27
Front Brake Cable Replace.....	28-29
Hopper Cable Replace.....	30-31
Service Brake Cable Replace.....	32-33
Shift Cable Replace.....	34-35
Steering Cable Replace.....	36-37
Spray-Brake Lever Replace.....	38-39
Spray Cable Replace.....	40-41
Sulky Brake Cable Replace.....	42-43
Throttle Cable Replacement.....	44-45
Throttle Lever Replace.....	46-47

### **ELECTRICAL GROUP**

Wire Harness Replace.....	48-49
---------------------------	-------

### **SULKY GROUP**

Sulky Rod-End Replace.....	50-51
----------------------------	-------

### **SPRAYER GROUP**

Spray Manifold Replace.....	52-53
Spray Valve Replace.....	54-55
Tank Replace.....	56-57

### **SPREADER GROUP**

Shut Off Plate Replace.....	58-59
-----------------------------	-------

## SCHEMATIC SECTION

### **POWER TRANSMISSION SCHEMATIC GROUP**

Power train Schematic.....	60
----------------------------	----

### **HOPPER SCHEMATIC GROUP**

Hopper Schematic.....	61
-----------------------	----

### **CABLE AND LEVER SCHEMATIC GROUP**

Cable and Lever Schematic.....	62-64
--------------------------------	-------

### **ELECTRICAL SCHEMATIC GROUP**

Electrical Schematic.....	65
---------------------------	----

### **SPRAYER SCHEMATIC GROUP**

Sprayer Schematic.....	66
------------------------	----

Plumbing Schematic.....	67
-------------------------	----

### **SULKY SCHEMATIC GROUP**

Articulating Schematic.....	68
-----------------------------	----

Sulky Schematic.....	69
----------------------	----



**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 SHALL read and understand the Operator's Manual before inspecting, operating or repairing the Triumph. (The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001)
- 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)
  - 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 [tech@permagreen](mailto:tech@permagreen)

## Carburetor Replacement P449215



**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).**



**Section1---Step2**



**Section1---Step3**



**Section1---Step4**



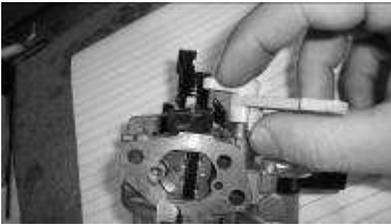
**Section1---Step5**



**Section1---Step6**



**Section1---Step7**



**Section2---Step1**



**Section2---Step4**

## Clutch Spring Replacement T654535



**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

**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).**



Section1---Step1



Section1---Step2



Section1---Step3



Section1---Step4



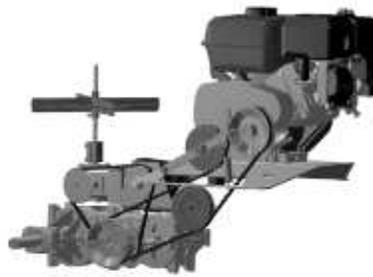
Section1---Step4



Section2---Step1



Section2---Step2



Section2---Step4

## Drive Belt Replacement (T653800)



**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 7/16" wrench and 1/8" Allen wrench or a #3 Philips screwdriver (depending on style of shaft block)
2. Remove hood screws and hood using a 3/8" wrench/socket.
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).**



Section1---Step1



Section1---Step1



Section1---Step2



Section1---Step4



Section1---Step5



Section2---Step1



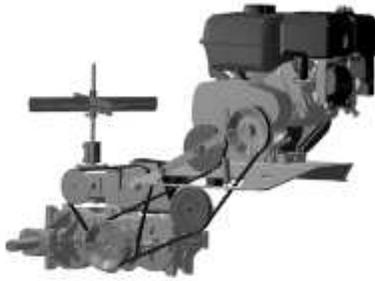
Section2---Step2



Section2---Step2



Section2---Step2



Section2---Step2



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

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

**Parts Included:**

T651255 Engine Damper Kit  
T449403 Engine Kit

**Tools Needed:**

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

**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 7/16 wrench and 1/8 Allen wrench or a #3 Philips screwdriver to remove shaft block, and spinner assembly.
5. Use a 3/8 socket to remove the two screws on the hood. 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).**



Section1---Step1



Section1---Step2



Section1--- Step3



Section1---Step3



Section1---Step3



Section1--- Step3



Section1---Step4



Section1---Step4



Section1--- Step5



Section1---Step6



Section1--- Step7



Section1--- Step7



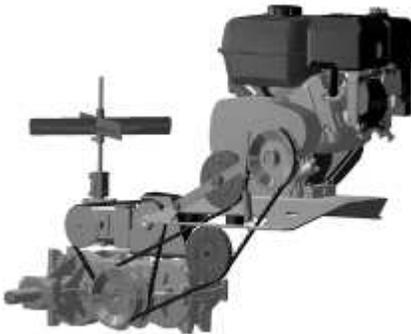
Section1--- Step10



Section2---Step1



Section2--- Step2



Section2--- Step4



Section2---Step5



Section2--- Step5



**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

**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 7/16 wrench and 1/8 Allen wrench or a #3 Philips screwdriver to remove shaft block.
5. Use a 3/8 socket to remove the two screws on the hood. 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).



Section1---Step1



Section1---Step2



Section1--- Step3



Section1---Step3



Section1---Step3



Section1--- Step3



Section1---Step4



Section1---Step4



Section1--- Step5



Section1---Step6



Section1--- Step7



Section1--- Step7



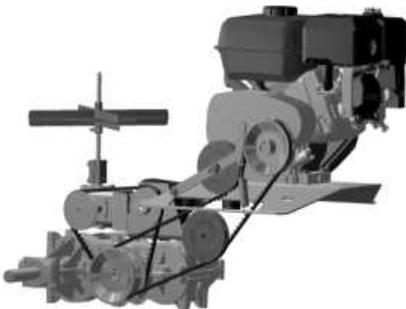
Section1--- Step10



Section2---Step1



Section2--- Step3



Section2--- Step7



Section2---Step8



Section2--- Step10

## Gearbox Replacement T422350



**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  
2-P651660 – ¼ -20 5/8” bolts  
2-P651480 – ¼ -Lock washers

### Tools Needed:

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

### Section1: Removal

1. Remove shaft block and spinner assembly using a 7/16” wrench and 1/8” Allen wrench or a #3 Philips screw driver (depending on style of shaft block)
2. Remove hood screws and hood using a 3/8” wrench/socket.
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 re moved 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 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).**



Section1---Step1



Section1---Step1



Section1---Step2



Section1---Step3



Section1---Step3



Section1---Step4



Section1---Step5



Section1---Step5



Section1---Step5



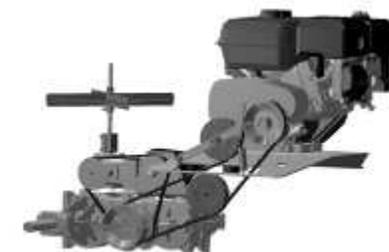
Section2---Step3



Section2---Step3



Section2---Step3



Section2---Step4



Section2---Step4



Section2---Step5



Section2---Step5

## Spinner Belt Replacement T653805



**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 7/16" wrench and 1/8" Allen wrench or a #3 Philips screwdriver (depending on style of shaft block)
2. Remove hood screws and hood using a 3/8" wrench.
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).**



Section1---Step1



Section1---Step-1



Section1--- Step-2



Section1---Step4



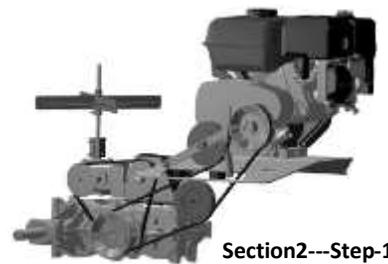
Section1---Step5



Section1---Step-6



Section1---Step7



Section2---Step-1



Section2---Step-2



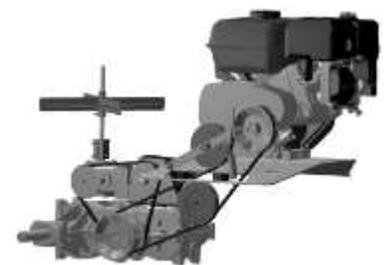
Section2---Step4



Section3---Step1



Section3---Step2



Section3---Step2

## Recoil Starter Replacement T449500



**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-T449500 Recoil Starter

**Tools Needed:**

10 mm Socket

**Section1: 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.

**Section2: 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).**



**Section1---Step1**



**Section1---Step2**

# Transaxle Replacement P210100



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

## PARTS Included:

1-P210100 transaxle  
2-P645100 nylon squares  
1-P645240 ¼-20x1 bolt  
1-R651216 ¾-20 lock nut  
4-T650805 5/16-18x1 zinc bolt  
4-R651482 5/16 lock washer  
1-346276 seal patch 2 1/2"  
1-P210110 ¼-28x1/2 hardened bolt

## Section 1: Removing Transaxle

Remove spinner assembly.

**Style 1: Use a 7/16" wrench/socket and 1/8" Allen wrench to loosen shaft block.**

**Style 2: Use a #3 Philips screwdriver to loosen shaft block. Remove assembly.**

1. Remove hood by taking out two screws with a 3/8" wrench/socket.
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 ½" 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.

## Tools Needed:

2- 7/16 wrench/socket 13/16 socket  
1/8 Allen wrench  
#3 Philips screwdriver  
Needle nose pliers  
2- ½ socket wrench  
Flathead screwdriver  
Floor jack  
2- 2ton jack stands

**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).**



Section1---Step1



Section1---Step1



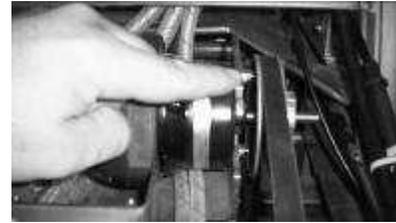
Section1---Step2



Section1---Step3



Section1---Step4



Section1---Step5



Section1---Step6



Section1---Step7



Section1---Step8



Section1---Step8



Section1---Step8



Section1---Step8



Section1---Step9



Section1---Step10



Section1---Step11



Section1---Step12



Section1---Step12



Section1---Step13



Section1---Step13



Section1---Step13



Section1---Step14

## Transaxle Replacement P210100—Continuing from previous page.



**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-P210101 Transaxle  
2-P645100 Nylon Squares  
1-P645240 ¼-20x1 Bolt  
1-R651216 ¼-20 Lock Nut  
4-T650805 5/16-18x1 Zinc Bolt  
4-R651482 5/16 Lock Washer  
1-346276 Seal Patch 2 1/2"  
1-P210110 ¼-28x1/2 Hardened Bolt

#### Tools needed:

2- 7/16 Wrench/Socket  
1/8 Allen Wrench  
#3 Philips Screwdriver  
Needle Nose Pliers  
2- ½ Socket Wrench  
Flathead Screwdriver  
Floor Jack  
13/16 Socket

### 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 Section1 Step15b.)
  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 four bolts holding transaxle to frame using two ½" 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!**)
  19. 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).**



Section1---Step14



Section1---Step14



Section1---Step14



Section1---Step14



Section1---Step14



Section1---Step15a



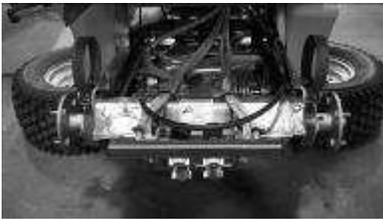
Section1---Step15b



Section1---Step15b



Section1---Step15b



Section1---Step15b



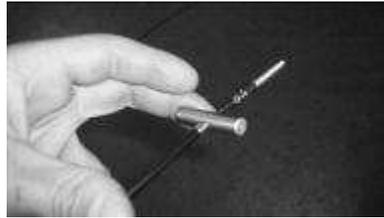
Section1---Step15b



Section1---Step15b



Section1---Step15b



Section1---Step15b



Section1--- Step15b



Section1---Step17



Section1---Step18



Section1--- Step18



Section1---Step18



Section1---Step19

## Section 2-Transaxle Replacement P210100-Continuing from previous page



**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).**



Section2---Step1



Section2---Step2



Section2---Step3



Section2---Step3



Section2---Step4



Section2---Step7



Section2---Step8



Section2---Step8



Section2---Step9



Section2---Step10



Section2---Step11



Section2---Step11



Section2---Step12



Section2---Step13



Section2---Step13



Section2---Step14



Section2---Step17



Section2---Step18

# Fert Control Assembly Replacement T101010



**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

### Section1: 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 fert control assembly.
9. Use an 11/32 socket and ¼ socket to remove fert control assembly from deflector cable.

### Section2: Installation

1. Installation is the reverse of removal. NOTE: When tightening the fert 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).**



Section1---Step2



Section1---Step2



Section1---Step3



Section1---Step3



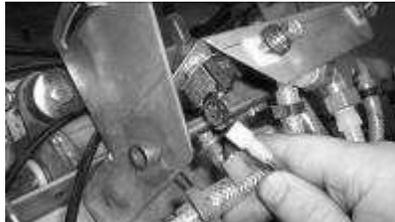
Section1---Step4



Section1---Step5



Section1---Step5



Section1---Step6



Section1---Step7



Section1---Step8



Section1---Step9



Section2---Step1

## Front Service Brake Cable 2 T654050



**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:

T654255 Front Service Brake Cable-2  
T101733 Brake Pin Sheath

### Tools Needed:

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

### 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 7/16" wrench and 1/8" Allen wrench or #3 Philips screw driver.
2. Remove hood screws and hood using a 3/8" wrench or socket.
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).**



Section1---Step1



Section1---Step1



Section1---Step2



Section1---Step3



Section1---Step3



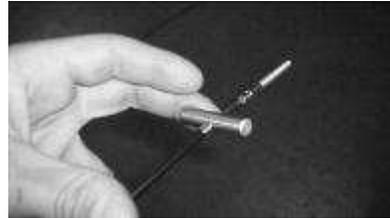
Section1---Step4



Section1---Step6



Section1---Step6



Section1---Step6



Section2---Step1



Section2---Step2

## Hopper Cable Replacement T654020



**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

### Section1: 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.

### Section2: 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 Section1 Step4)
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 Section1---Step5)
4. To adjust hopper control plate, first open hopper plate completely by hand. Push hopper control lever forward all the way in open position.
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).**



Section1---Step1



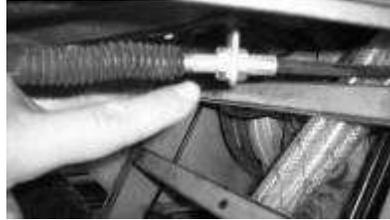
Section1---Step1



Section1---Step2



Section1---Step3



Section1---Step4



Section1---Step5



Section2---Step1



Section2---Step4



Section2---Step4



Section2---Step5



Section2---Step5

## Front Service Brake-1 T654250



**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-T654260 Service Brake Cable

### 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 7/16" wrench/socket and 1/8" Allen wrench or #3 Philips screwdriver.
4. Remove hood screws and hood using a 3/8" wrench.
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 Section1---Step6)
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 Section1---Step7)  
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).**



Section1---Step2



Section1---Step2



Section1---Step3



Section1---Step3



Section1---Step4



Section1---Step5



Section1---Step6



Section1---Step6



Section1---Step6



Section1---Step7



Section2---Step2



Section2---Step2



Section2---Step5

## Shift Cable Replacement T654030



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

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

### PARTS Included:

1-P654240 ¼-20x1 Bolt  
1-R651206 Locknut 10-24  
1-T645875 Cable Clamp, Shift Cable  
2-U650102 Screw 10-24x5/8  
2-R651216 Locknut ¼-20  
2-T652480 Rod End ¼-28  
1-R347041 Wire Tie 8 nylon  
1-T654225 Shift Cable

### 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 7/16" wrench/socket and 1/8" Allen wrench or #3 Philips screwdriver.
4. Remove hood by taking out 2 screws using a 3/8" wrench/socket.
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..

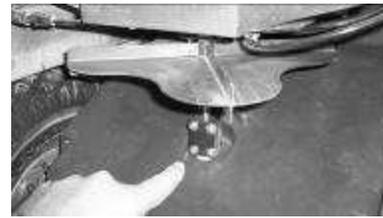
Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).



**Section1---Step1**



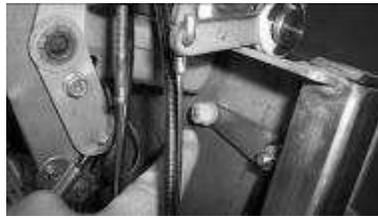
**Section1---Step2**



**Section1---Step3**



**Section1---Step4**



**Section1---Step5**



**Section1---Step6**



**Section1---Step7**



**Section1---Step8**



**Section1---Step9**



**Section1---Step10**



**Section2---Step2**



**Section2---Step3**



**Section2---Step3**



**Section2---Step5**



**Section2---Step6**



**Section2---Step7**

## Steering Cable Replacement T654230



**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:

T654260 Smart Steer Cable  
T101733 Brake pin, Sheath

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 7/16" wrench and 1/8" Allen wrench or #3 Philips screw driver.
4. Remove hood screws and hood using a 3/8" wrench.
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.

### Section2: 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.

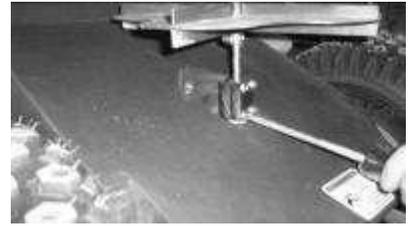
**Referring to page 18 and 19 of Operator's Manual, successfully test ALL Safety Devices prior to placing the Triumph into service.  
(The Operator's Manual is available at [www.permagreen.com](http://www.permagreen.com) or 800.346.2001).**



Section1---Step2



Section1---Step2



Section1---Step3



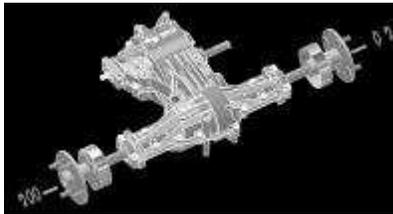
Section1---Step3



Section1---Step4



Section1---Step5



Section1---Step6



Section1---Step7



Section1---Step7



Section1---Step8



Section1---Step9



Section1---Step10



Section2---Step1



Section2---Step4



Section2---Step5



Section2---Step6



Section2---Step7



Section2---Step7



Section2---Step9



Section2---Step9

## Spray/Brake Lever Replacement T654140



**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).



**Section1---Step1**



**Section1---Step2**

## Spray Cable Replacement T654265



**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

### TOOLS Needed:

- Needle Nose Pliers
- Dykes/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. Cut cable ties located on right side of handle column, with dykes/side cutters.
5. Use needle nose pliers and squeeze snap fitting. Pull top of cable to free cable from spray valve bracket mount.
6. 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. Use supplied cable ties to fasten cable to right side handle column. (Refer to picture Section1---Step4).
6. 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).**



Section1---Step2



Section1--- Step2



Section1---Step3



Section1---Step3



Section1---Step4



Section1---Step5



Section2---Step1



Section2---Step2



Section2---Step4



Section2---Step4

## Sulky Brake Cable Replacement T654040



**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  
1-T100733-Brake Pin Sheath

### Tools Needed:

1/8 Allen Wrench  
3/8 Wrench/Socket  
5/16 Wrench/Socket  
7/16 Wrench/Socket  
Needle Nose Pliers  
Dykes/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 on each fender of the sulky. Use dykes or other cutters to remove the stud ties at the front of sulky.
7. Open handlebar cover using 3/8 wrench and remove two screws.
8. Remove shaft block and spinner assembly using a 7/16 wrench/socket and 1/8 Allen wrench or #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).**



Section1—Step1



Section1—Step2



Section1—Step4



Section1—Step5



Section1—Step5



Section1—Step5



Section1—Step5



Section1—Step6



Section1—Step7



Section1—Step7



Section1—Step8



Section1—Step8



Section1—Step9



Section1—Step10



Section1—Step10



Section2—Step1



Section2—Step1



Section2—Step2



Section2—Step3



Section2—Step4



Section2—Step5



Section2—Step6



Section2—Step7



Section2—Step7



Section2---Step9



Section2---Step9

## Throttle Cable Replacement T654270



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

### Parts Included:

1-T654270 Throttle Cable

### Tools Needed:

Pliers  
5mm 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 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 3500rpm 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.

**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).**



Section1---Step1



Section1--- Step1



Section1--- Step2



Section1---Step3



Section1---Step4



Section1---Step5



Section1---Step5



Section1--- Step6



Section2---Step1



Section2---Step3



Section2---Step3

## Throttle Lever Replacement P654136



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

### Parts Included:

1-P654136 Throttle Lever

### Tools Needed:

Pliers  
5mm 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 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 3500rpm 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.

**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).**



**Section1---Step1**



**Section1---Step2**



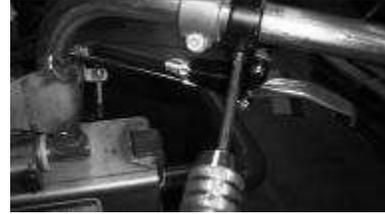
**Section1---Step3**



**Section1---Step4**



**Section1---Step4**



**Section1---Step5**



**Section2---Step1**



**Section2---Step4**

## Wire Harness Replacement T300307-T300305



**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
- Dykes

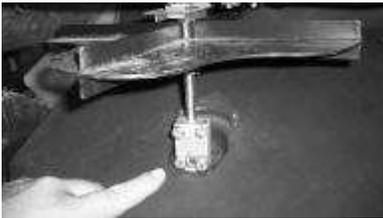
### Additional Parts may need to be ordered:

- 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 7/16" wrench/socket and 1/8" Allen wrench or #3 Philips screwdriver depending on the style of shaft block the machine is equipped with.
2. Remove hood by taking out two screws with a 3/8" wrench/socket.
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).**



Section1---Step1



Section1---Step1



Section1---Step2



Section1---Step3



Section1---Step4



Section1---Step4



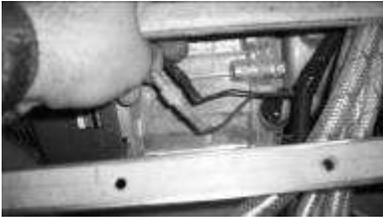
Section1---Step5



Section1---Step5



Section1---Step6



Section1---Step6



Section1---Step7



Section1---Step7



Section1---Step8



Section1---Step9



Section1---Step9

## Sulky Rod End Replacement T652510



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

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

### Parts Included:

3-R652478 Rod End Seal  
1-R652462 Rod End, Female  $\frac{3}{4}$   
1-T652662 TOP Female Rod End  $\frac{3}{4}$   
1-R652472 Rod End, Male  $\frac{3}{4}$

### 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. 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. Start by tightening bolt mounted on the frame. Then line up bolt mounted on sulky. (You may have to move sulky up or down in order to line up sulky properly) Make sure bolt is not cross-threaded and 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  $\frac{3}{4}$ -16 nut. Try to remove rod end without moving threaded stud.
10. Twist new rod end on threaded stud until there are  $\frac{1}{4}$ " 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).**



## Selector Valve Replacement T000530



**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. **(Hint: 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).**



Section1---Step1



Section1---Step2



Section1---Step3



Section1---Step4



Section1---Step5



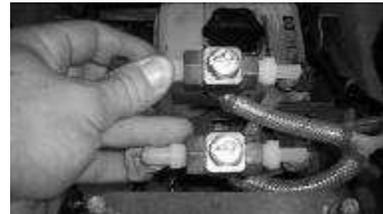
Section1---Step6



Section1---Step7



Section1---Step8



Section2---Step4

## Spray Valve Replacement T500255



**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-T500270 Spray Valve  
1-R347042 Wire Tie, Stud  
2-R347041 8" Wire Ties  
2-R481243 Hose Clamp #38

**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).**



Section1---Step1



Section1---Step2



Section1---Step2



Section1---Step3



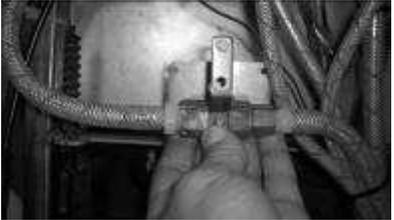
Section1---Step4



Section1---Step5



Section1---Step6



Section2---Step1



Section2---Step2



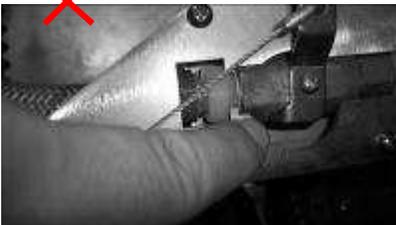
 Section2---Step3



Section2---Step4



Section2---Step5



Section2---Step6



 Section2---Step6

## Tank Replacement T204980 Left, T204985 Right



**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-T204980 Left Tank  
and/or  
1-T204985 Right Tank

### Tools Needed:

7/16 Wrench/Socket  
1/8" Allen Wrench  
#3 Philips Screwdriver  
Needle Nose Pliers  
1/2" Wrench  
1/2" Swivel Head Socket on 8" or 10" Extension  
1/4" 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 1/2" wrench/socket to remove two rear hex bolts. Use a 1/2" swivel head socket on an 8 or 10" extension to remove front hex bolt. Use a 1/4" 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, 1/4 to 1/4 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).**



Section1---Step4



Section1---Step5



Section1---Step5



Section1---Step5



Section1---Step5



Section1---Step5



Section1---Step5



Section1---Step5



Section1---Step5

## Shut off Plate Replacement– T422957



**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

**Tools Needed:**

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

**Section 1: Remove Shut Off Plate**

1. Remove shaft block and spinner assembly using a 7/16" wrench and 1/8" Allen wrench or a #3 Philips screwdriver (depending on style of shaft block)
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).**



Section1---Step1



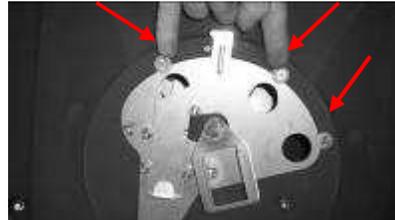
Section1---Step1



Section1---Step2



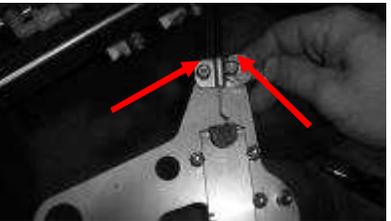
Section1---Step3



Section1---Step4



Section1---Step5



Section1---Step6



Section2---Step2

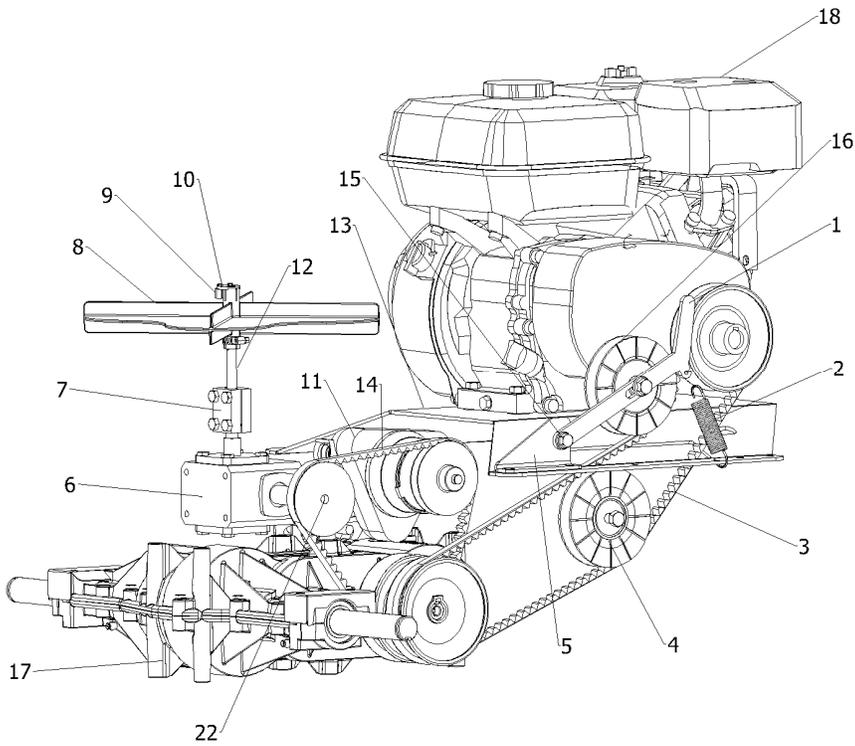


Section2---Step3



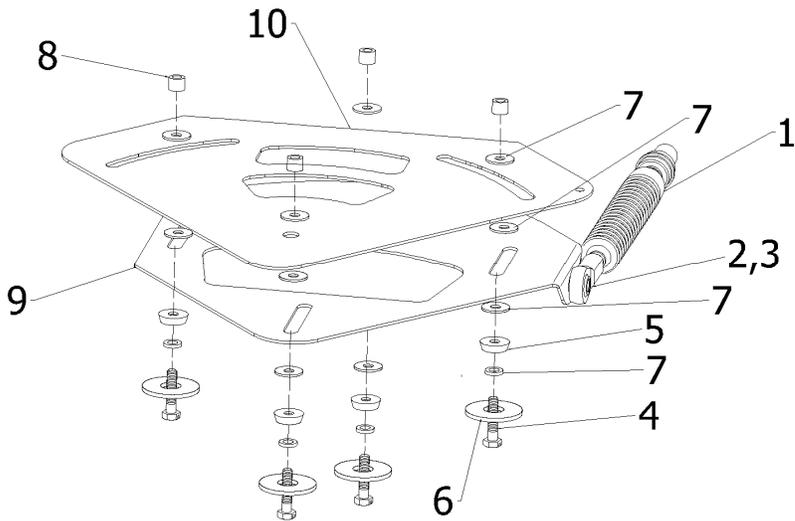
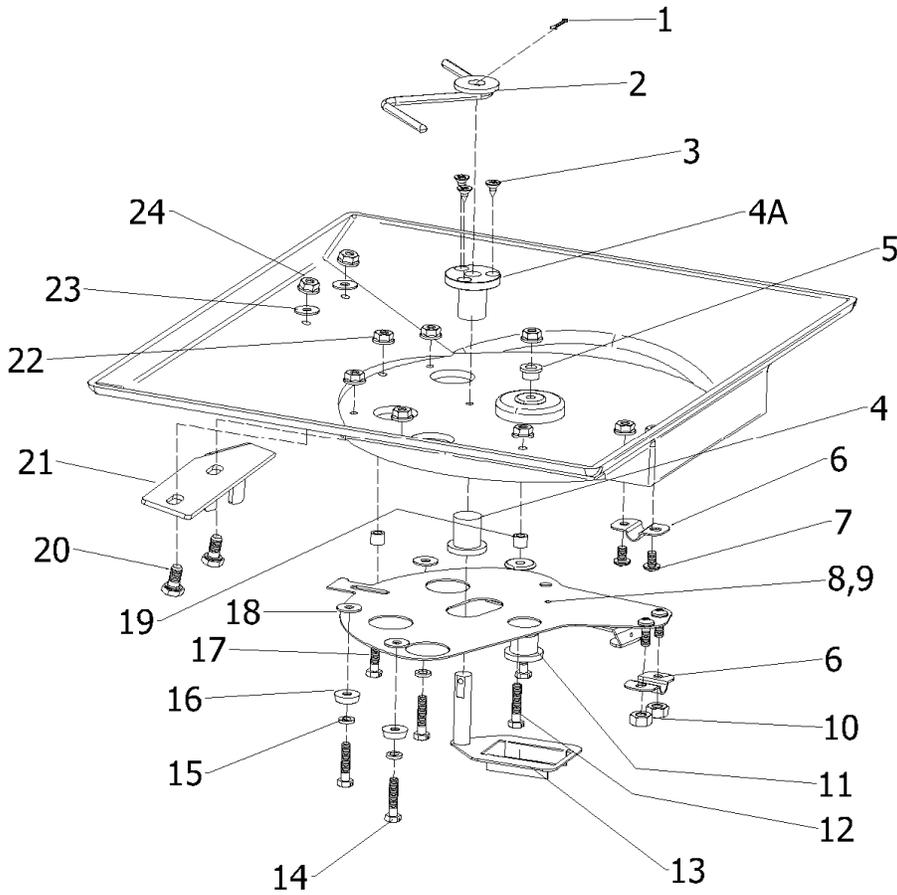
Section2---Step4

## POWER TRANSMISSION SCHEMATIC GROUP



#	Part#	Description
1	TI01585	Idler Arm
2	T654535	Idler Spring
3	T653800	Drive Belt
4	T653510	V-Idler Pulley
5	TI01580	Idler Bracket
6	T422355	Gearbox W/Pulley
7	T651967	Shaft Coupler
	T651966	Brass Shaft Coupler
8	T422100	Spinner Platter
9	T651935	Cam
10	T654900	#6 X 1/2" Screws
11	T442100	Pump
12	T422310	Spinner Shaft
13	T449410	Motor Plate
14	T653805	Spinner Belt
15	T651940	Sleeve Bearing Thrust Washer
16	T653500	Flat Idler Pulley
17	T210303	Triumph Transaxle
18	T449403	Triumph Engine
19	P653601	Transmission Pulleys (2)
20	R000420	Pump Pulley
21	P653600	Engine Pulley
22	T653710	Gearbox Pulley

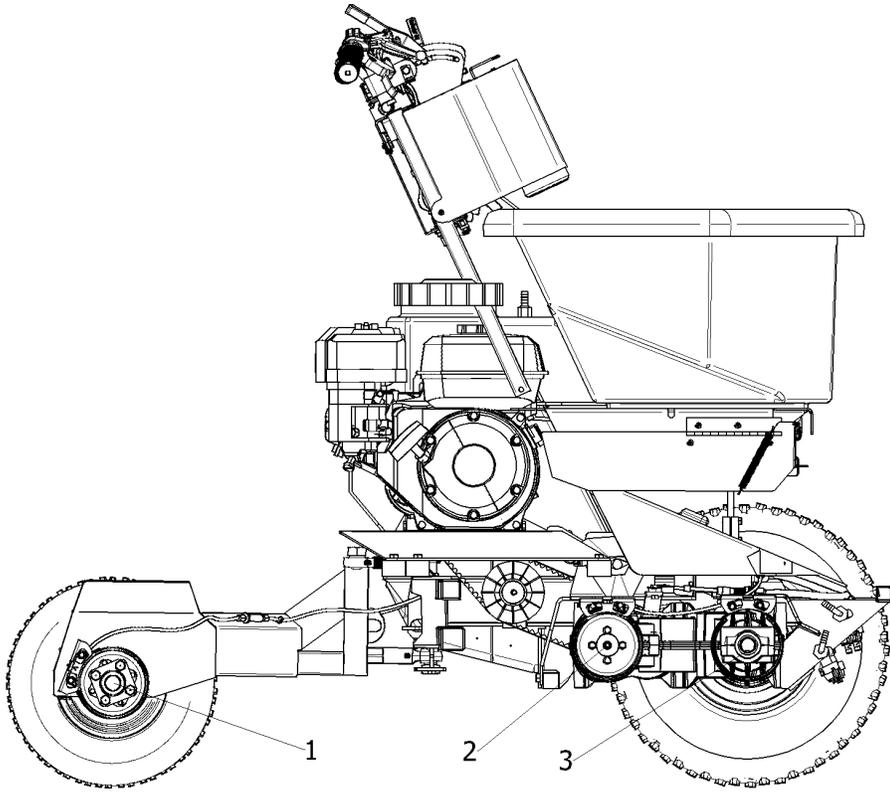
# HOPPER SCHEMATIC GROUP



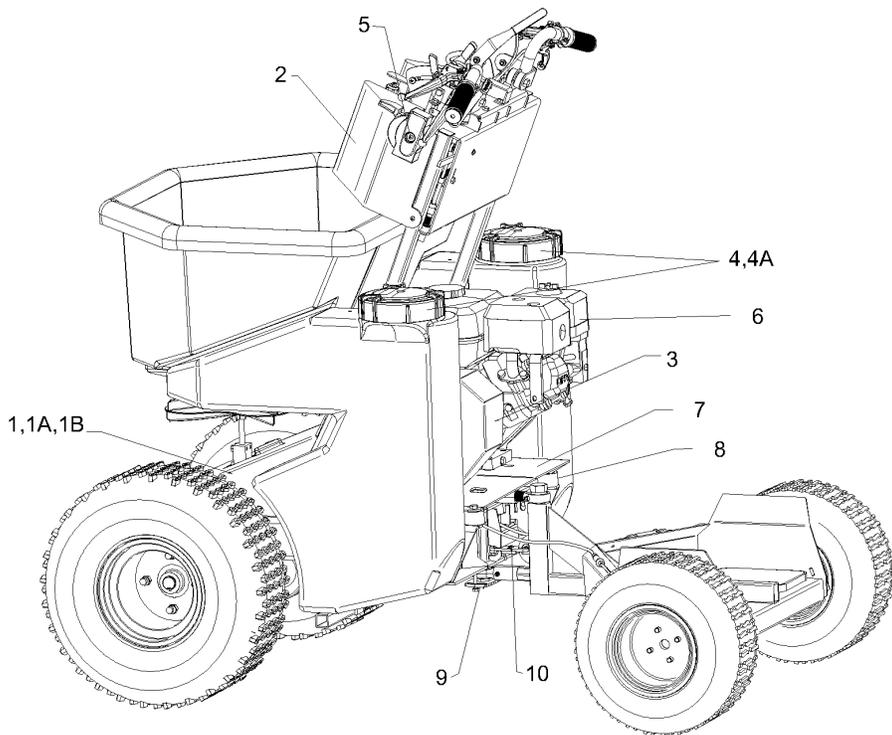
#	Part#	Description
1	R651590	Cotter Pin, 1/8 x 1/2
2	T100105	B-Agitator Arm
3	T654915	#8 x 3/8 ss Flat Screw
4	P651973	Flange Bushing Agitator
4A	T651925	Agitator Bearing 3-holes*
5	P651202	Flange Bushing Bronze
6	P100443	Shut Off Plate Clamp
7	T650870	8-32 x 3/4 Hex Machine Screw
8	T422955	Hopper Plate 5/8" Pivot Hole
9	T422957	Hopper Plate 3/8" Pivot Hole
10	P645204	Lock Nut 10-32
11	T645905	Hopper bearing
12	T645910	1/4—20 x 1 1/4 Flat Screw SS
13	T100100	B-Agitator Cam
14	T645885	10-24 x 7/8 Flat head Screw
15	P645230	Urethane Washer #10
16	P645220	Counter Sink Washer #10
17	U650102	Screw, 10-24 x 5/8
18	P645225	Nylon Washer, #10
19	P422918	Spacer
20	R650620	Bolt, 1/4-20 x 5/8
21	T101610	Hopper Cable Bracket
22	R651210	10 x 24 Thin Nut
23	R651420	Stainless Washer, 1/4
24	R651216	Lock Nut, 1/4-20
25	P650117	#8-32 Lock Nut
26	T422965	Shut Off Plate Kit *

#	Part#	Description
1	T654215	Hopper Cable Assembly
2	R650400	10-24 x 3/4" screw
3	R651206	10-24 Lock Nut
4	R650402	10-24 x 1" screw
5	R651555	Urethane washer
6	R651450	Fender Washer
7	R651550	Nylon Washer
8	P422918	Spacer
9	T422970	Triumph Centri Flow Plate
10	T422973	Triumph Centri Shutter Plate

## CABLE AND LEVER SCHEMATIC GROUP

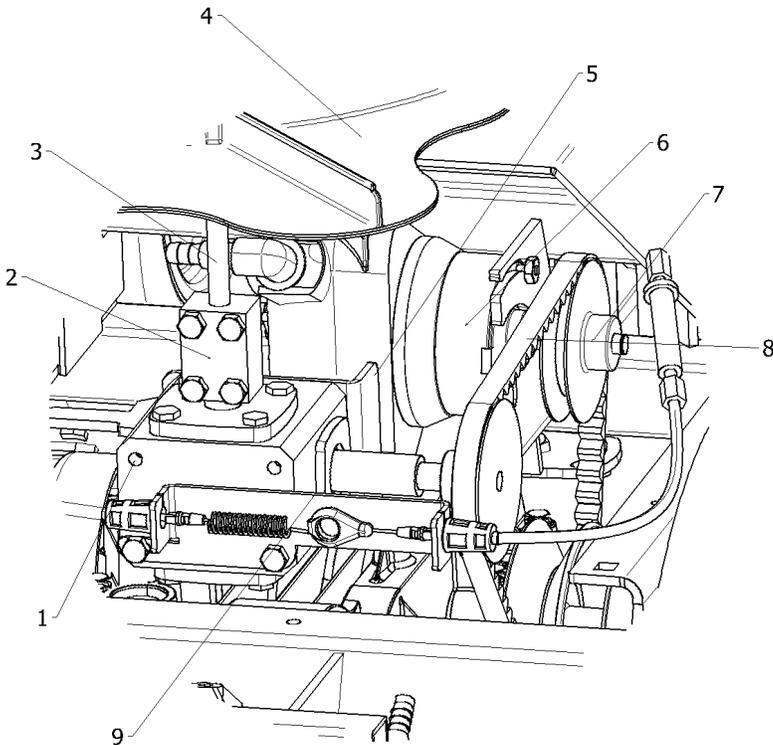


#	Part#	Description
1		Sulky Brake Complete
2		Transmission Brake Complete
3		SS Brake Complete

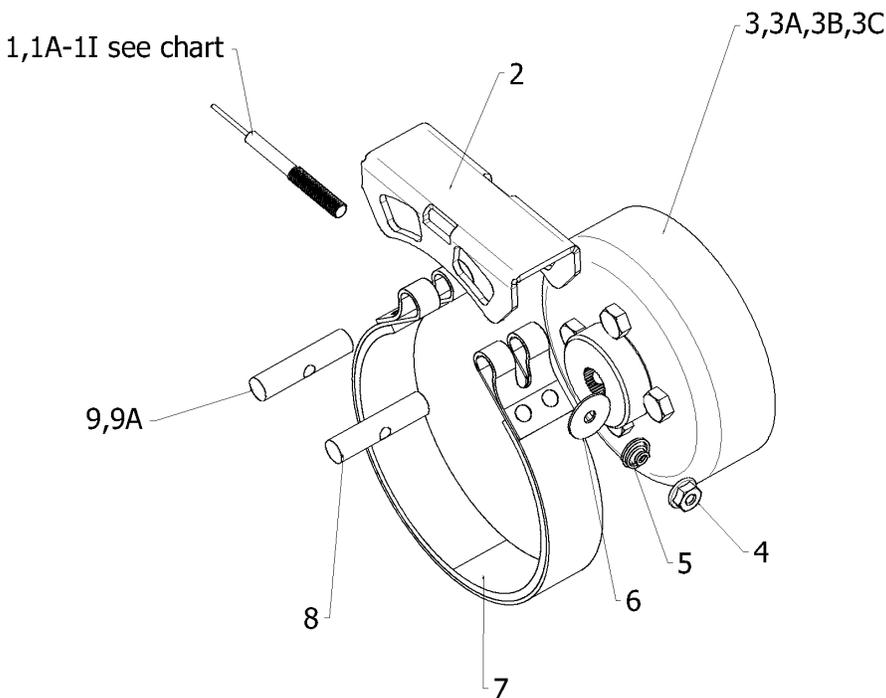


#	Part#	Description
1	T101940	Hood Complete
1A	T651275	Internal Tooth Lock Washer
1B	T651910.1	Hood Bearing
2	T101935	Handlebar Cover Complete
3	T101930	Pulley Guard
4	T204960	Tank Lid w/gasket
4A	T204965	Tank Lid Gasket
5	T654220	3rd Hole Cable
6	P449203	Honda Air Cleaner Element
7	T449410	Motor Plate
8	T449415	Damper
9	T101715	Bolt Lock
10	T651970	Safety Link 1" Axle 2011
	T651975	Safety Link 3/4" Axle 2010

## CABLE AND LEVER SCHEMATIC GROUP

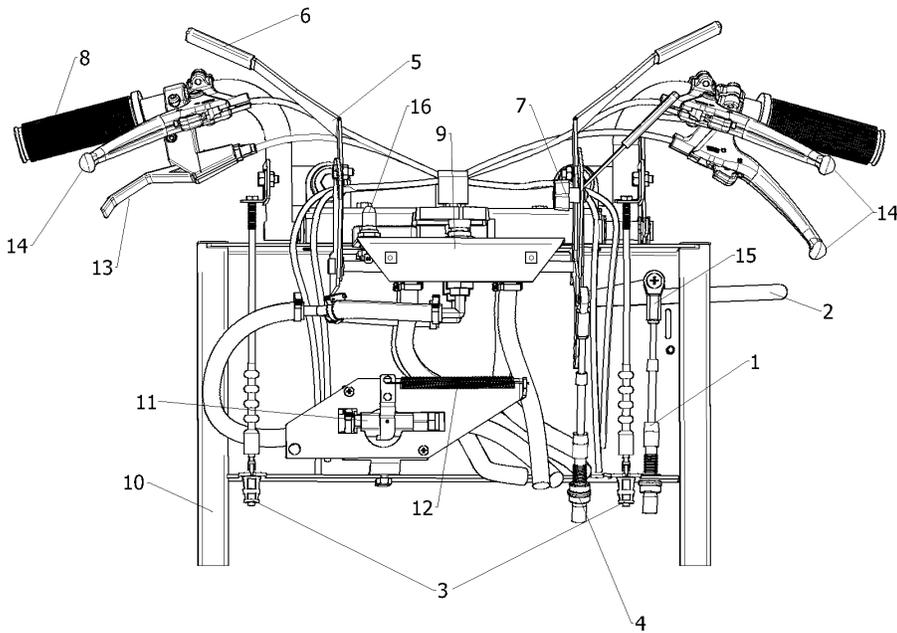
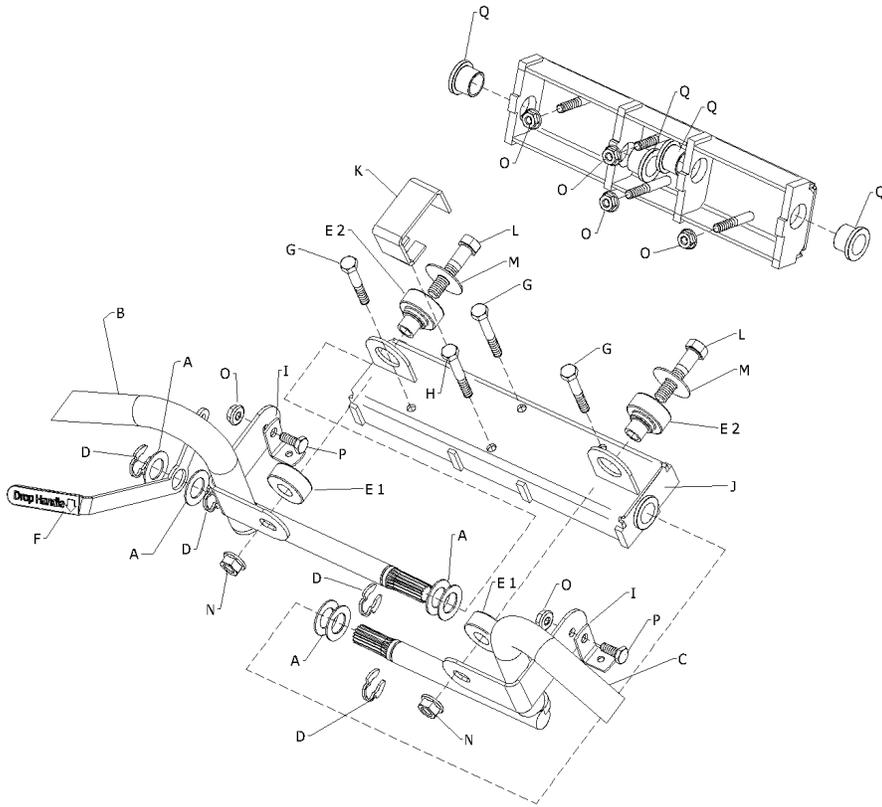


#	Part#	Description
1	T422355	Gearbox
2	T651967	B-Shaft Block Assembly
3	T422310	Spinner Shaft
4	T422100	Spinner Platter
5	TI01045	Pump/Gearbox Brkt-Welded
6	T442100	Pump
7	T653710	Pump Pulley
8	T653805	Pump/Spinner Belt
9	TI01745	Cable Holder Front



#	Part#	Description
1	T654230	SS Cable
1A	T654235	Sulky Brake Cable
1B	T654205	Front Brake Cable-2
1C	T654015	SS Cable Assembly
1D	T654025	Front Brake Cable-2 Assembly
1E	T654275	BIB SS Cable
1F	T654260	BIB Rear Sulky Brake Cable
1G	T654255	BIB Front Brake-2 Cable
1H	T654045	BIB-SS Cable Assembly
1I	T654050	BIB Front Brake Cable-2 Assy
2	TI01703	Form Brake Holder
3	T654930	Trans-Drum Hub Assy.
3A	T654725	Front Hub W/Drum
3B	R654723	Rear 3/4" Hub Drum Assy
3C	T654750	Rear 1" Hub Drum Assy.
4	R651206	10-24 Lock Nut
5	T654525	Brake Band Tension Spring
6	R651450	3/16" x 3/4" Washer
7	R422055	Brake Bands
8	TI01740	Brake Pin Rod
9	TI01730	Brake Pin-Sheath
9A	TI01733	BIB Brake Pin-Sheath

# CABLE AND LEVER SCHEMATIC GROUP

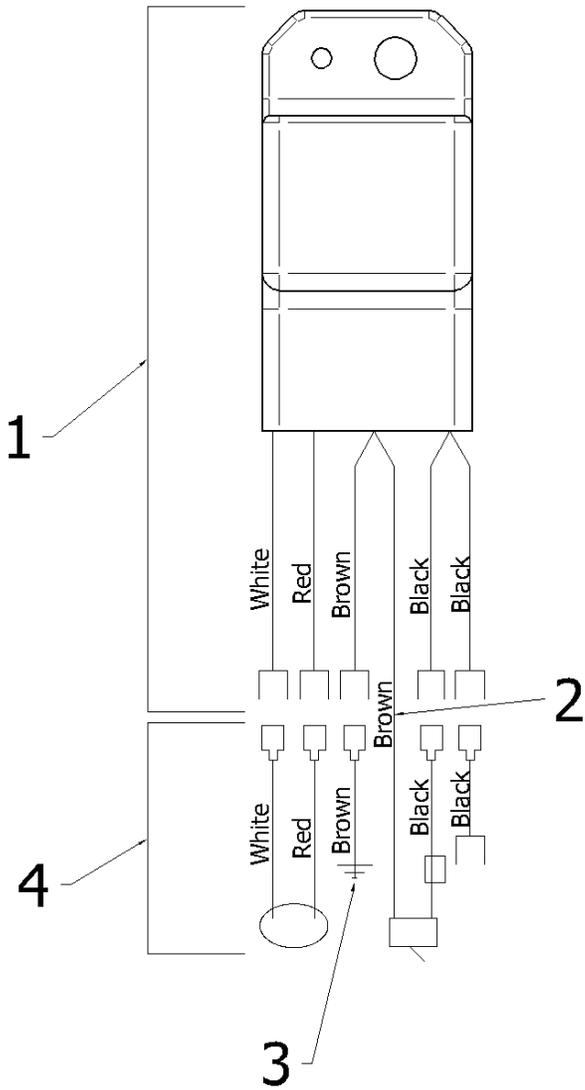


#	Part#	Description
A	P651230	5/8 Nylon Washer
B	T101070	Left Handlebar
C	T101075	Right Handlebar
D	P645205	5/8 E-Clip
E1	P651210	Snubber Assembly-1 *
E2	P651210	Snubber Assembly-2 *
F	T654320	Handle Release Grip/Lever
G	T654840	1/4 x 1 3/4" Bolt
H	P650100	1/4 x 2" Bolt
I	T101710	L-Bracket
J	T101085	Housing
K	T101750	Cable Loop
L	R650738	3/8 x 1 3/4" Bolt
M	P651203	3/8 Fender Washer
N	P645203	3/8 Locknut
O	R651216	1/4 Locknut
P	P651660	1/4 x 5/8 Bolt
Q	P651975	5/8 Bushing

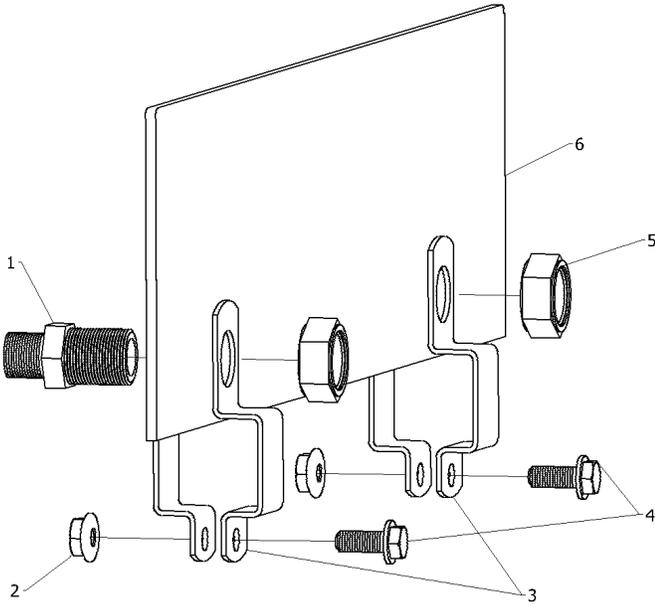
#	Part#	Description
1	T654225	Shift Cable Assembly
2	T101780	Shift Lever
2A	T654323	Grip
3	T654060	Cable Assembly W/Rod
4	T654215	Hopper Cable Assembly
5	T101040	Fertilizer Levers
6	T654310	Printed Hopper Grip
6A	T654325	Plain Grip
7	T422935	Fertilizer Rate Knob
7A	T654865	Carriage Bolt
7B	T645870	External Tooth Lock Washer
8	R654190	Hand Grip
9	T101065	Dashboard Assy.
10	T101015	Handlebar, Lower
11	T500270	Spray Valve Assy.
12	P205020	Spray Valve Spring
13	P654136	Throttle Lever
14	T654140	Brake/Spray Lever
15	T652480	Rod End Shifter
16	R344336	Kill Switch

# ELECTRICAL SCHEMATIC GROUP

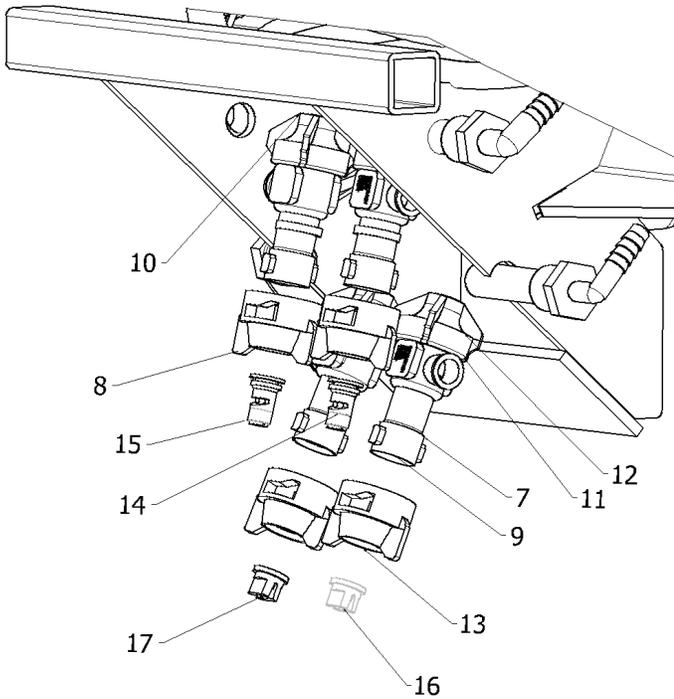
#	Part#	Description
1	T300307	Starting Module
2	T300297	Kill Switch Wire
3	T300300	Ground Wire
4	T300309	Wire Harness-Lead Only



## SPRAYER SCHEMATIC GROUP

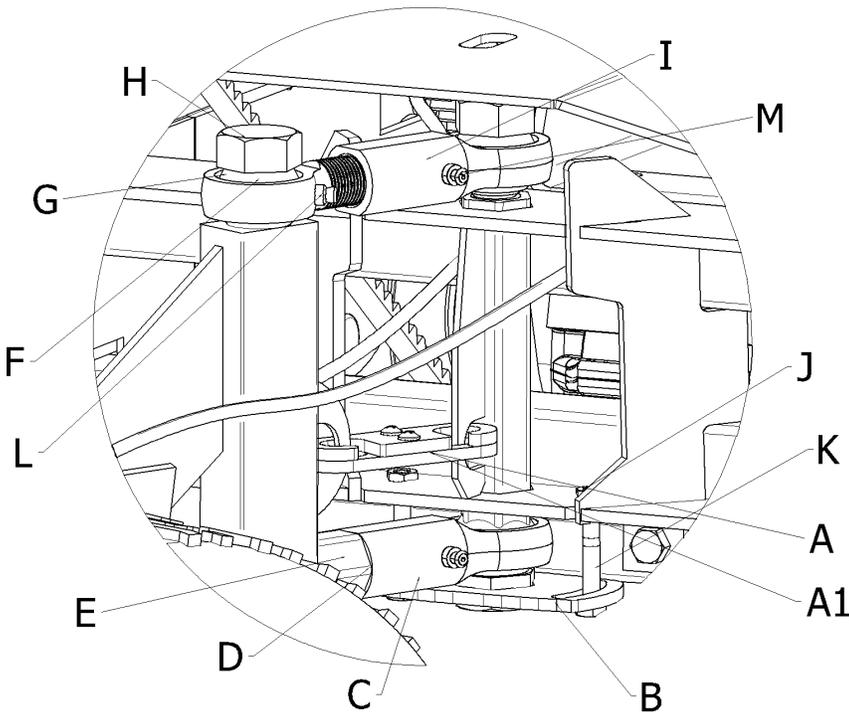


#	Part#	Description
1	T454255	1/4 MNBT Fitting
2	R651216	1/4 x 20 Locknut
3	T454250	Boom Clamp, 1"
4	P651660	1/4-20 x 5/8 Bolt
5	T454260	1/4 Nylon Nut
6	T622105	Sprayshield Complete
7	R466222	Nozzle Body, 8 PSI
8	R466625	Cap & Gasket, White
9	R464724	Nozzle Strainer, 50 Mesh
10	R654250	Cap 1-1/4 x 1 Boot
11	R466448	Diaphragm, Standard
12	R466444	Pressure Cap, 8 PSI
13	R466620	Gasket
14	P000420	Turbo Flood Jet, 7.5
15	P205005	Nozzle, TF5-V5
16	T205010	High Gear Trim
17	T205015	Low Gear Trim



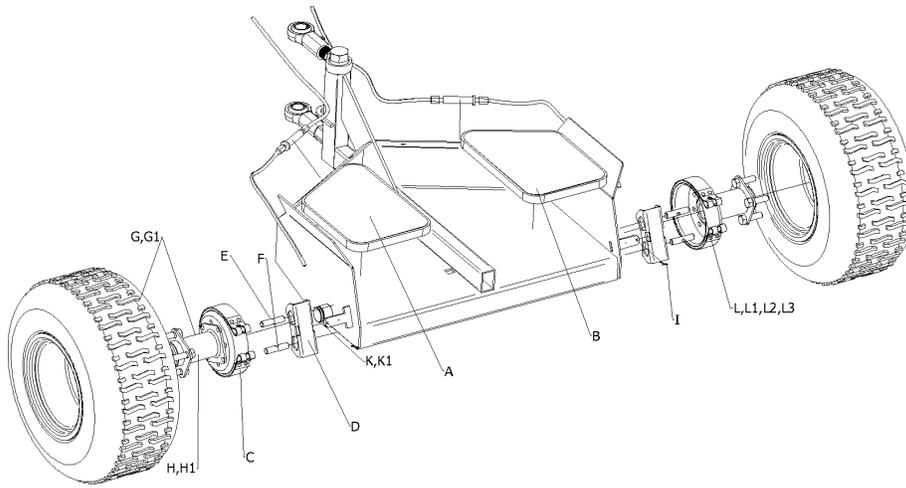


## SULKY SCHEMATIC GROUP



#	Part#	Description
A	T651970	1" Axle Safety Link Kit
AI	T651975	3/4" Axle Safety Link Kit-2
B	T101715	Bolt Lock
C	T652662	Rod End, Female
D	T101463	Stud (not shown) 2011
	T101460	Stud (not shown) 2010
E	R651100	3/4-16 Nut
F	R652478	Rod End Seal
G	R651485	Lockwasher
H	P650948	3/4 Bolt
I	T652500	Sulky Top Link
J	R651216	1/4—20 LockNut
K	R650124	1/4 —20 x 2 1/4 bolt
L	R652460	M-Grease Zerk
M	R652470	F-Grease Zerk

## SULKY SCHEMATIC GROUP



#	Part#	Description
A	P210120	Left Pad
B	P210125	Right Pad
C	R422055	Brake Band
D	T101703	Brake Holder
E	T101733	Brake Pin Sheath/Metal End
F	T101740	Brake Pin/Adjust End
G	T654670	Tire-Wheel-Hub w/1" Bearing
G1	P654637	Tire-Wheel-Hub w/ 3/4" Bearing
H	T654750	Hub w/1" Bearings
H1	R654723	Hub w/ 3/4" Bearings
I	R651570	Hair Pin
J	T654260	Sulky Brake Cable
L	T654750.01	1" Bearing
L1	T654750.02	1" Bearing Retainer
L2	R654722.01	3/4" Bearing
L3	R654722.02	3/4" Bearing Retainer
K	T101055	Sulky 1" Axle Includes
	R651100	Nut, 3/4—16
	R651485	Lock Washer, 3/4
	T652662	Rod End, Female, 3/4
	T000120	Label, Sulky
	PI01460	Stud
	P210120	Left Sulky Pad Assembly
	P210125	Right Sulky Pad Assembly
	T101007	Sulky Weld BIB
K1	T101050	Sulky 3/4" Axle Includes
	T101460	Stud
	R651485	Lock Washer, 3/4
	R651100	Nut, 3/4—16
	T652662	Rod End, Female, 3/4
	P210120	Left Sulky Pad Assembly
	P210125	Right Sulky Pad Assembly
	T101005	Sulky
	T001200	Label, Sulky