



Original Instructions

TRU-TURF

R52-ELT_{ac} ELECTRIC GOLF ROLLER MANUAL

Contents

Revised 11 Dec. 2013

The products detailed in this manual conform to the following standards:
Machinery Directive 2006/EC Annex VIII,
EMC Directive 2004/108/EC / Article 10.1 & EN ISO 4254-1:2009
CE Declaration is available on the Tru-Turf website.

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Separate Engine Owners Manual Included

CE
Pending



Important

Please read and understand before operating machine.

1. Pre-check all nuts, bolts, grub screws for tightness prior to operating machine.
2. Understand the operating procedures and the controls before operating.
3. Use the machine to roll **18-36 greens** then **check** that all nuts, bolts etc. are tight. If loose and the Loctite seal has been broken, treat item as per Loctite instructions, reseal, then tighten securely.
4. **Loose transmission and drive roller pulleys / sprockets will cause damage to shafts and keyways. Ensure they are correctly tightened at all times.**
5. **Change the transmission oil as per the transmission manufacturers servicing schedule.**

Machine Information Record

Congratulations on your investment in the R52-ELT_{ac} Golf Green Roller and your move to smoother, faster, more consistent putting Greens. The following operation and maintenance manual has been prepared for use with the R52-ELT_{ac} Golf Green Roller. It is intended as a guide and supplemental updates to the manual may take place at a future date, without prior notice.

This machine is engineered to be simple to operate and easy to maintain. If you have any questions or concerns that this manual does not address, please contact your dealer.

To check for updates to this manual please go to the Tru-Turf website www.truturf.com.

Click on OWNERS, then MANUALS, then select the model that matches your machine.

Dealer Information

Name: _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

Machine Information

Model. R52-ELT_{ac} Golf Green Roller

Serial No. _____

Purchase Date No. _____

Safety Information

Safety Information

Safety is of the utmost importance when operating turf equipment.

To ensure safe operation of the R52-ELTac Golf Greens Roller, please follow the safety guidelines below.

- Always make a pre-operation inspection before you operate the machine. If this procedure is not carried out damage to property or personnel may occur.
- Keep children, pets and inexperienced personnel away from the machine. This machine should only be operated by trained and skilled personnel - check with your supervisor if you are unsure.
- Know how to stop the machine when in motion.
- Never permit inexperienced operators to use the machine. This machine requires certain knowledge and expertise to operate it; you must be a trained person to use this machine. Unskilled persons can harm themselves and others if they operate this machine.
- When transporting the roller, ensure the trailer lock down mechanism is secure and the locking pin is correctly inserted to prevent premature release of the catch. If the trailer catch is not correctly engaged while towing and releases accidentally, the front of the roller can drop and dig into the ground, causing the machine to move dangerously in any direction causing bodily injury. When carrying out maintenance ensure the catch is engaged correctly; if it is not the trailer arm could fly up making contact with a person(s) causing serious injury.
- When motor is running, always keep hands and loose clothing away from rotating shafts, chains, belts and

pulley / sprockets in the transmission area. If hair, clothing or loose objects become entangled on a rotating shaft

serious injury could occur. Stop before opening safety cover fitted to the transmission area.

- Never ride on the machine when machine is being towed.

Operator, remember it is your responsibility to be aware of your surroundings. To avoid accidents, think safe and operate safely.

Warranty

Universal Conditions

Tru-Turf Pty. Ltd. (Tru-Turf) will repair or replace any item or part of a Tru-Turf Golf Greens Roller that is defective in workmanship or material for a period of twenty four (24) months or unless otherwise stated, from the date of delivery of the new product to the original end user. Items identified as warrantable will be repaired or replaced by an approved Tru-Turf Dealer.

Products Protected By This Warranty

This Warranty relates to the following products manufactured by Tru-Turf, listed by model series;

- a. GR, RS, RB, R52 Series Golf Greens Rollers.
- b. TR66 Series Triplex Roll 'n' Spike heads and mower attachment hardware.
- c. SR72 Sports ground roller.
- d. MT5000 Series Totes are covered for a period of twelve (12) months.
- e. Fairway Rolling Heads.

Ensure that your Dealer has completed and submitted the Online Warranty Registration and Inspection Report Form applicable to your unit.

This will ensure that it has been sent directly to Tru-Turf for registration.

Parts Warranted by OEM Suppliers to Tru-Turf

Specific component parts supplied to Tru-Turf Pty. Ltd. by OEM suppliers are covered by that supplier's Warranty. These parts and components include Eaton Transmissions, Honda Engines, Sevcon & Curtis Controllers & Foot Pedals, Falk Gearboxes & Electric Motors. **Only Tru-Turf manufactured parts qualify for the twenty four (24) month warranty.**

Normal Wear and Tear

Tru-Turf will not repair or replace parts that are subject to normal wear and tear and or that are subject to regular maintenance intervals as specified in the product Operator's Manual. These parts include, but are not limited to, oils, filters, tyres, shafts, bearings, blades, spikers, slicers, brakes, belts, hoses, spark plugs, drive chains, pulley / sprockets, drive rollers & smoothing rollers.

Other Items Not Covered By This Warranty

Tru-Turf will not repair or replace any item that has been damaged by accident, lack of reasonable care and protection or lack of suitable storage.

Tru-Turf will not warrant parts that have been altered or modified, nor aftermarket parts fitted without written Tru-Turf approval. Tru-Turf will not warrant used parts that are installed in place of failed parts.

Tru-Turf will not warrant parts that have not been installed by an approved Tru-Turf dealer, nor will Tru-Turf warrant parts that have not been maintained per the Operator's Manual.

The product is to be made available for Warranty repairs at the approved Tru-Turf dealer's premises or by arrangement with the approved dealer.

Service calls, overtime-labour rates and freight costs related to the return of the faulty product to Tru-Turf or its agents are not included.

Tru-Turf shall not be liable for any consequential loss, damage or costs incurred by or incidental to the failure of any new part supplied with the original purchase or any new part supplied as a replacement for any failed part.

Ensure that your Dealer completed and submitted the Online Warranty Registration and Inspection Report Form applicable to your unit. This will also ensure that it has been sent directly to Tru-Turf for registration.

This record must be referred to along with the reasons why the purchaser believes that the product or a part is defective in the categories of faulty material or workmanship.

Acceptance or rejection of the Warranty Claim is entirely at the discretion of Tru-Turf or their OEM Suppliers who warrant their own part/s.

The Warranty Registration and Inspection Report Form along with the TRU-TURF Pty. Ltd. Warranty Terms & Conditions statement are available for viewing, download or printing as a ready reference by simply clicking the link provided on our website.

The Warranty Registration and Inspection Report Form must be signed by both the Dealer Rep and the Customer and returned or any warranty claim/s will be denied.

No person or organisation has the authority to modify the terms or conditions or limitations of this Warranty without the written consent of Tru-Turf.

Assembly

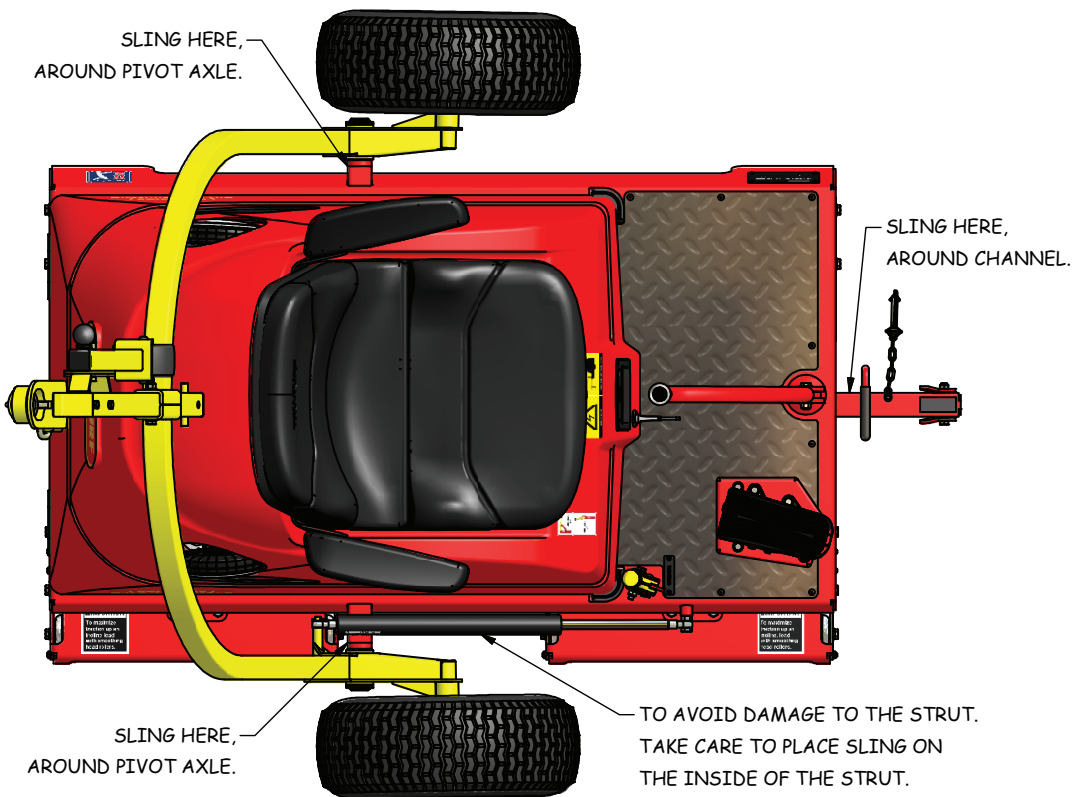
Initial Assembly

When you receive the crate, the machine will be broken down into components ready for assembly. If you run into any problems during assembly, please feel free to call your local dealer or agent.

You must employ safe work practises at all times when performing any assembly or service tasks on the machine. Should there be any need to lift the machine only use the points as detailed below.

List of Components

QTY	Description
1	Operation, Maintenance and Parts Manual
1	Machine Frame/Body
2	Tires mounted on Wheel Rims
1	Left-side Trailer Arm
1	Right-side Trailer Arm
2	30mm External Circlips
1	Drawbar Coupling Assembly
2	$\frac{3}{8}$ " x $2\frac{3}{2}$ " UNF ZP Bolts
2	$\frac{3}{8}$ " UNF Nyloc Nuts



SAFE LIFTING POINTS
LIFTING EQUIPMENT MUST HAVE A
MINIMUM SAFE WORKING LOAD OF 500Kg [1102lb]

Assembly

Assembly Procedure

Step 1: Attaching the left-hand trailer arm to machine body.

- Locate the trailer arm support axle 30mm in diameter (1¼") which extends out on the left side of the machine, remove the circlip from the support axle. Oil machined portion. Slide the left hand side trailer arm, onto the axle, replace the circlip, ensuring the circlip is located in the groove correctly.

Step 2: Attaching strut and right hand trailer arm.

- Locate the trailer arm support axle 30 mm in diameter (1¼") which extends out on the right side of the machine, remove the circlip from the axle. Hold the right side trailer arm in the vertical position and slide it part way onto the axle. Locate strut., Remove packing from the unattached end.
- Place strut onto locating pin and push completely on, insert washer and cotter pin in place to prevent strut from coming off the shaft.
- If necessary use a soft headed hammer and tap the trailer arm onto the axle until the circlip groove is revealed, fit the circlip, ensuring it is located in the groove correctly.

Step 3: Attaching draw bar to trailer arms.

- Locate the draw bar assembly.
- Gather the ends of the right and left trailer arms.
- Place the draw bar assembly between the trailer arms and align the holes.
- Place one 2¾" x ¾" bolt through each hole, fit ¾"

Nyloc nut to each bolt and tighten securely.

- Test to ensure the trailer catch is correctly locking the trailer arms in the down position and the catch locking pin fits correctly when transporting the roller, for safety.

Step 4: Attaching wheels to trailer arms.

- Locate the two wheels for the left and right side trailer arms.
- Check tires for the correct air pressure, approximately 25psi. Do not exceed this pressure. The tires act as the suspension, hence the low P.S.I.
- Remove wheel nuts from both hubs, slide wheels onto hub with air valves facing outwards. Replace wheel nuts and tighten securely.
- Ensure the taper on the nuts, mate into the wheel tapers correctly.

Step 5: Correct strut operation

- When the roller is in the trailing position:
 1. Carefully hold the draw bar assembly,
 2. Lower machine until the front rests on the ground,
 3. Release the locking catch,
 4. Gently with a firm grip begin to raise the draw bar,
 5. When it has travelled sufficiently the dampener strut will take over and prevent the trailer arms rapidly rotating on it's axle, allowing the roller to lower to the surface gently.

Assembly

Step 6: Lubricate smoothing head pivot bearings.

- There is a grease nipple or zirk located on the upper main bearing that supports and carries the 'T' frame and three (3) smoothing head centre ball joint swivels. Apply grease to lubricate fittings.
- Apply grease to the upper main bearing that supports and carries the 'T' frame and three smoothing heads.

Step 7: Apply the Park Brake.

- The park brake lever operates on an over centre principal.
- To engage the park brake, pull the park brake lever fully up and back.
- The park brake lever will remain in this ON position.
- To disengage the park brake, push the park brake lever fully forward and down.
- The park brake lever will remain in this OFF position.
- Always operate the roller with the park brake OFF.

Caution: Do not operate the roller with the park brake engaged as this will damage park brake components.

When stopping and before getting off the machine always apply the Park Brake.

Testing Park Brake

1. Stop the machine safely on level flat ground & engage the park brake.
2. Switch off & dismount from the machine.
3. Try to push the machine manually.

Result: Park brake must prevent machine from moving. If machine moves, parking brake needs to be adjusted.

Adjust park brake by rotating the knob on the end of the lever in a clockwise direction when looking directly at the end of the lever.

Raising / Lowering Transmission Cover

WARNING! The key switch must be turned off before performing the following procedure.

To raise the transmission cover.

- Insert the key supplied with the machine into the latch at the front of the transmission cover.
- Rotate the key counterclockwise (to the left) until it stops, there will be some initial resistance encountered, this is normal.
- Lift the front of the transmission cover up and carefully tip it backwards until the gas struts reach the travel limit.

To lower the transmission cover.

- Pull the cover towards the front and carefully lower the transmission cover onto the rubber corner rests mounted on the body.
Insert the key supplied with the machine into the latch at the front of the transmission cover.
- Rotate the key clockwise (to the right) until it stops, there will be some resistance encountered in the last stage of rotating the key, this is normal.
It is essential that effort is applied to overcome the latch resistance as this is the point at which the latch mechanism pulls the transmission cover down slightly onto the body. This ensures the transmission cover can not become loose.

Adjusting position of Speed Foot Pedal.

- Loosen the 2 bolts located at the rear outer corners of the foot pedal assembly, do not fully remove the bolts.
- Slide the foot pedal assembly towards the front or rear until you find the most comfortable position to suit your leg and foot.
- Tighten the 2 bolts.

Operation procedures

Operation procedures

Pre-operation checks

- Check batteries are fully charged.
- Ensure steering joystick has no looseness.
- Check that foot pedal depresses under normal foot pressure and returns to the neutral position.
- Ensure that the draw bar locking catch mechanism is securely locked to the main draw bar and the safety pin is fitted when trailing the roller.
- Check and tighten grub screws fitted to the end bearing lock rings on the rubber coated drive roller bearings on each smoothing head and main support bearing.
- Grease lightly Bearings fitted to Drive Roller and Smoothing Head pivot bearings. Replace plastic caps if fitted.
- Grease rod ends, sparingly.
- Check tire pressure for proper operating pressure (25psi). Do not over inflate.

Standard operation procedures

- Inspect and check that the roller is serviceable prior to departing from workshop.
- Use a suitable towing vehicle to move roller from green to green.

- Maximum recommended towing speed would be equal to a motorized golf buggy. Approximately 4mph/7kph. Towing at excess speed or across rough terrain may cause damage to the machine and trailer.
- When approaching the green do not tow the roller onto the green to set up, put the roller on the fringe of the green.
 1. Put trailer in the up position,
 2. Switch key to the on position,
 3. Select direction of travel with the switch on top of the steering joystick,
 4. Depress the accelerator pedal to control the speed,
 5. Start rolling and drive onto the green.
- Greens can be rolled in any direction; take care to ensure there are no crease lines produced on the surface.
- When starting to roll the green hold the accelerator pedal down to a predetermined position and use the switch fitted to the top of the joystick to change directions, this can be done on the fly. The roller will gently come to a stop under regenerative braking and then gently take off in the opposite direction until it reaches the chosen speed or full speed, which is 8-10 mph. The other method of operation is to use the accelerator pedal to slow down to a stop, change direction with the switch then accelerate off in the opposite direction. Either method is acceptable. Keep the roller on the greens surface, it is not necessary to roll onto the collars or fringes.
- The gentle take off and stopping is controlled electronically, it is unlikely that spinning on the green should occur; the electronics reduces the chance of this occurring.

Operation procedures

- There is no mechanical in service braking system fitted to the roller, all in service braking is done by the motor which has regenerative braking built in, this is quite safe.

The operator needs to become familiar with the timing required to stop and the distance required to do so at the speed being travelled, remembering the roller is quite heavy.

There is an emergency / Park Brake fitted, this is to be used only in an emergency and when parking or leaving the machine on an incline.

- If rolling up a steep slope, say off the green, ensure the drive roller (rubber coated) is on the lower side to maximize the traction. If you try to roll with the drive roller leading up a steep slope when off the green spinning will occur.
- Roll the green only, turn off the ignition key when transporting between greens and keep overlapping to a minimum as this helps to minimize the battery discharge.
- Extra effort is required to raise the roller off the ground into its towing position. An optional extension bar that pivots over to extend the drawbar length. It is stored in place using the spring clip. This extra length added the drawbar gives the operator more mechanical advantage making it easier to raise the roller into its towing position.
- Be careful were you uncouple the roller at each green as it is difficult to move the roller on the grass, ideally park it on a flat surface or on a slop to make it easier to connect to the towing vehicle.
- The correct procedure for rolling the green is:
 - (a) Select the correct direction to roll the green, remember this roller can roll the greens in all directions.
 - (b) Start on one side of the green and work across the

green in a zigzag fashion, slightly overlapping each lap you roll: keep overlapping to a minimum, this makes sure you miss no part of the green and all of the green is rolled. Avoid coming back across the green to roll missed areas if possible. You should be able to complete the rolling of 18 greens in the same time or quicker than by mowing using a triplex mower.

- When rolling of the green is completed, move the roller onto the fringe, stop, lock the trailer into the trailing position, connect it to the towing vehicle then move off to the next green to be rolled. Do not put the trailer down into the towing position on the green; damage may occur to the green from the roller tires and body.

Points to remember

- Make sure the roller is serviceable before rolling.
- Ensure batteries are fully charged.
- Start rolling from the fringe of the green.
- Pick a point on the other side of the green to roll to.
- Do not look at the green close to the roller; it makes it difficult to steer the roller straight; look well ahead.
- Use $\frac{1}{2}$ power until you become a proficient operator.
- Once you choose your rolling line hold the joystick steady, correcting direction gently as required.
- Move the steering joystick a little at a time to change direction; excessive movement of the joystick makes it difficult to maintain a straight line.
- Move off the green when rolling is complete before putting the trailer in the down position.

Do not put the trailer down into the towing position on the green; damage may occur to the green from the roller tires and body.

Maintenance

Maintenance

- Ensure the batteries are fully charged before going to the greens. When you connect the charger you will notice the needle on the meter will be showing maximum charge input into the batteries, as the batteries become charged the needle will fall away to "0" on the meter, the charger will automatically stop charging. It is only when this occurs that the batteries are fully charged.

Some model chargers have a series of LED lights, these will show red when charging begins and as the batteries are charging the LED lights will change to orange,. When the batteries are fully charged the LED lights will show Green.

To maximise the service life of the batteries it is best practice to charge the batteries before they are totally flat, if you were to continually flatten the batteries and then recharge, the life of the batteries will be reduced. Charging can be done at any stage of use; the batteries do not have a memory.

When charging the machine for the 1st time and if the batteries have been allowed to become considerably discharged, initially there will be a noticeable amount of heat emitted by the charger, mains lead and the battery charging lead , this is normal, do not be alarmed.

Important

1. Use the meter/LED lights on the battery charger to establish the amount of charge remaining in the batteries not the gauge fitted to the roller. The machine gauge is only an indicator and does not show an accurate amount of charge in the batteries.
2. During the winter months or when the roller is not being used for any length of time it is important to keep the batteries connected to the charger and power left on and in the charging position. The battery charger will maintain a full charge by applying a trickle charge. If this is not done the

batteries will Sulphate over time and rolling performance will drop.

Storing

- **Important:** Store this roller in the towing position. This ensures the trailer strut is in the closed position, protecting the shaft from corrosion.
- It reduces the load on the bearings. See page 13 for towing, rolling & store / charge positions.
- **Do not store with machine weight on the drive roller, the internal couplings will distort causing the drive roller to be out of balance. Total drive roller replacement would be required.**

Service of the drive belt system

- Replacement - Some belts look alike, but they are not, use only the belt and pulley / sprockets recommended as per the correct spare parts number. Wrong pitch drive belt fitted will cause excessive pulley / sprocket wear and possible drive failure.
- Tensioning the drive belt - The belt tension only needs to be adjusted if it has been replaced. Once fitted, run & adjusted there is no need for any further tension adjustment as the belt will not stretch during the service life of the belt.

Maintenance

Service of smoothing roller bearings

- Whilst the Roller is suspended by the Trailer, check operational smoothness of the bearings fitted to each smoothing roller by rotating the rollers by hand. If bearing tightness, roughness or excessive looseness is detected, replace the faulty bearings.
- If bearings are faulty

Remove the Smoothing Rollers.

- Remove the complete smoothing head assembly from the machine. Do this by removing the four swivel mount bolts on upper body, steering rod and stabilizer rod, wheel the roller away until the complete smoothing heads assembly is exposed to work on.
- Remove roller shaft bolts from both ends of each smoothing head assembly, remove smoothing rollers from each smoothing head.

Replacing Bearings in the Smoothing Rollers

Refer to pages 35 & 36 for visual identification of parts and detailed instructions for servicing the smoothing rollers.

Re-Assembly of Smoothing Heads Complete Assembly to the machine.

Return the now serviced Smoothing Rollers to each Smoothing Head, this is simply the reverse of the removal process.

When Returning the Complete Smoothing Heads Assembly to the machine be sure to perform the following checks if the connecting rods were removed or lengths altered.

Ensure the Connecting Rods are correctly adjusted so that the three heads are parallel to each other when in the straight ahead position.

Changing transmission oil

- Refer to the manufacturers recommendations. This is located on the next pages.

Contour following drive roller

- Do not disassemble this unit unless you correctly mark the coupling to tube alignment.
- This is important when re-assembling to ensure the correct balance is achieved.
- Damage to either section of this roller means a complete drive roller assembly is required, the supply of individual components is not recommended or available.

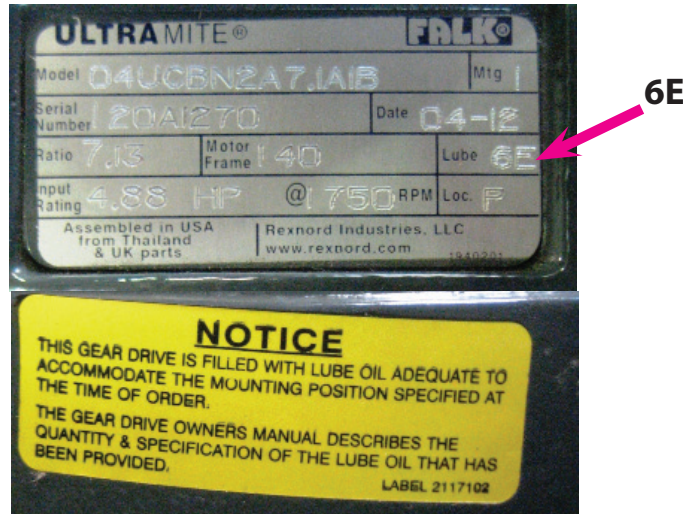
Ongoing Maintenance, Lubricant and Replacement Schedule (below)

Note. Areas indicated with a * need to be changed when defective or as required. This may be before the recommended replacement schedule. Please replace all parts as necessary.

Description	Pre-Delivery	Pre-Operating	12 Monthly
Transmission Oil	As per manufacturers Handbook		
Check Tires Max 25 P.S.I.	√	√	
Check Smoothing Roller Bearing	√	√	
Check Drive Roller Bearings	√	√	
Check for loose Nuts and Bolts	√	√	
Renew Transmission Oil	As per manufacturers Handbook		
Renew Smoothing Roller Bearings	√		√
Renew Drive Roller Bearings	√		√
Renew Drive Belt (If fitted)	√		√
Replace Trailer Strut	√		

Maintenance

This page and the next page are exact copies from the original document that is shipped with each transmission. Below is a photograph of the identification plate that is attached to each transmission box.



Installation & Maintenance Instructions • Falk™ Ultramite®

(Page 4 of 8)

Sizes 03 thru 14 • Types UCBN & UCFN



Lubrication Recommendations

Carefully follow lubrication instructions on warning tags and installation manuals furnished with the gear drive. Nameplates are stamped with a designation for recommended lubricant, standard is 6E.

Lubricants listed in this manual are typical ONLY and should not be construed as exclusive recommendations. Refer to your lubricant supplier for additional lubricants meeting the indicated specifications. Industrial type extreme pressure (EP) gear lubricants are the recommended lubricants for ambient temperatures of 15°F to 125°F (-9°C to +52°C).

For drives operating outside the above temperature range refer to "Synthetic Lubricants" paragraphs. Synthetic lubricants can also be used in normal climates.

VISCOSITY (IMPORTANT) — The proper grades of EP Mineral lubricants and EP Synthetic lubricants are found in Table 3. For cold climates refer to "EP Synthetic Lubricant" paragraphs. Select a lubricant which has a pour point at least 10°F (5.5°C) below the expected minimum ambient starting temperature. Usable temperature ranges can sometimes be widened if specific application conditions are known.

Extreme Pressure (EP) Mineral Lubricants

Mineral (EP) Lubricants (Table 3) — Industrial type petroleum based extreme pressure lubricants are preferred. The EP lubricants currently recommended are of the sulfur-phosphorus type.

WARNING: EP LUBRICANTS IN FOOD PROCESSING INDUSTRY — EP lubricants may contain toxic substances and should not be used in the food processing industry without the lubricant manufacturers' approval. Lubricants which meet USDA "H1" classification are suitable for food processing applications.

Extreme Pressure (EP) Synthetic Lubricants

Synthetic (EP) Lubricants (Table 3) — Polyalphaolefin type extreme pressure lubricants are recommended for cold climate operation, high temperature applications, extended temperature range (all season) operation and/or extended lubricant change intervals.

WARNING: SYNTHETIC LUBRICANTS IN FOOD PROCESSING INDUSTRY — Synthetic lubricants may contain toxic substances and should not be used in the food processing industry without the lubricant manufacturers' approval. Lubricants which meet USDA "H1" classification are suitable for food processing applications.

Maintenance

Table 3 — Typical Lubricants Recommendations & Specifications

		AGMA Viscosity Grade					
		...	...	5EP	6EP	7EP
		ISO Viscosity Grade					
		...	...	220	320	460
		Nameplate Designation					
Mineral Lubricants Extreme Pressure		...	...	5E	6E	7E
		Ambient Temperature Range °F					
		...	...	+23 to +77	+32 to +104	+50 to +122
		Manufacturer	Lubricant
	
Chevron USA Inc.	Gear Compounds EP	...	...	220	320	460
Exxon Co. USA	Spartan EP	...	...	220	320	460
Mobil Oil Corp.	Mobilgear	...	...	630	632	634
Shell Oil Co.	Omala Oil	...	...	220	320	460

		AGMA Viscosity Grade					
		0S	2S	5S	6S	7S	
		ISO Viscosity Grade					
		32	68	220	320	460	
		Nameplate Designation					
Synthetic Lubricants ‡ Extreme Pressure (Except where noted) †		0H	2H	5H	6H	7H	
		Ambient Temperature Range °F					
		-30 to +10	-15 to +50	+14 to +86	+32 to +113	+50 to +122	
		Manufacturer	Lubricant
	
Conoco Inc.	Syncon	32 †	68	220	...	...
Exxon Co. USA	Spartan Synthetic EP	...	...	220	320	460
Mobil Oil Corp.	Mobilgear SHC	...	...	220	320	460
	Mobil SHC	624 †	626 †	...	...	...
Pennzoil Prod. Co.	Super Maxol "S"	...	68	220	320	460	
Shell Oil Co.	Hyperia S	...	...	220	...	460
Sun Company Inc.	Sunoco Challenge EP	...	...	220	320	...
	Sunoco Challenge AC	32 †	68 †	...	...	...

‡ Consult lubricant supplier/manufacturer for maximum operating temperature.

† Lubricant does not contain EP (extreme pressure) additives. Consult your lubricant supplier for additional lubricant recommendations.

Oil Levels

Sizes 03 and 04 are furnished filled with oil determined by the drive mounting position ordered and require no further lubrication. For inclined mounting, see Page 6 for lubricant quantities. Sizes 06 thru 14 oil levels are determined by drive mounting position. Location of the vent, drain and oil level plugs are determined by the drive mounting position and are shown in Figure 1, Page 2. Refer to Table 4, Page 5 for approximate quantities of oil by drive mounting position. For inclined mounting for Sizes 06 & 07, see Page 7 for lubricant quantities. Sizes 08, 09, 10, 12, & 14 see Page 8 for lubricant quantities.

Lubricant Changes (Sizes 06 – 14)

OIL ANALYSIS REPORT — Checking oil condition at regular intervals is recommended. In the absence of more specific limits, the guidelines listed below may be used to indicate when to change oil:

1. Water content is greater than 0.05% (500 ppm).
2. Iron content exceeds 150 ppm.
3. Silicon (dust/dirt) exceeds 25 ppm.
4. Viscosity changes more than 15%.

Sizes 06, 07, 08, 09, 10, 12, and 14 require an oil change at 2,500 hours for EP mineral lubricants and 10,000 for polyalphaolefin type EP synthetic lubricants.

288-101

January 2007
Supersedes 11-02

Rexnord Industries, LLC, 3001 W. Canal St., Milwaukee, WI 53208-4200
Telephone: 414-342-3131 Fax: 414-937-4359
e-mail: info@rexnord.com web: www.rexnord.com

Fault Finding

Fault Finding

Roller will not move one or either way, check

- Batteries are not flat
- Ignition is on
- Belt is okay
- Pulley / sprockets are not worn or slipping on the shaft
- Foot control is operating correctly
- For Sheared Pulley / sprocket Keys
- Controller for flashing LED error lights.

Roller will not steer, check

- Woodruff Key is in place and not sheared
- Rod ends are connected to smoothing roller head and the steering arm
- Rod ends are not broken or seized
- Centre swivel bearing on top centre of each smoothing roller head has not seized
- Connecting rod are in place and serviceable

Smoothing rollers seized, check

- Bearings are OK and not rough or seized
- Replace if necessary

Rubber drive roller will not rotate, check

- Roller shaft end bearings have not seized
- Broken Belt
- Slipping pulley / sprockets or Belt
- Accumulated dry debris is not locking the smoothing rollers. (Clean properly after use)
- Internal bolts securing the coupling to the roller tube loose or came out

Controller Diagnostics

- Information can be obtained by observing the fault codes issued by the Status LEDs.
- The pair of LEDs built into the controller (one red, one yellow) produce flash codes displaying all the currently set faults in a repeating cycle.
- Each code consists of two digits.
 1. The red LED flashes once to indicate that the first digit of the code will follow;
 2. The yellow LED then flashes the appropriate number of times for the first digit.
 3. The red LED flashes twice to indicate that the second digit of the code will follow;
 4. The yellow LED flashes the appropriate number of times for the second digit.
- The numerical codes used by the yellow LED are listed in the troubleshooting chart, which also lists possible fault causes and describes the conditions that set and clear each fault.
- The troubleshooting chart can be downloaded from the Tru-Turf website, in the bulletins section.

Example: Battery Undervoltage (code 23).

The controller's two LEDs will display this repeating pattern:

RED	YELLOW	RED	YELLOW
*	**	**	***
(first digit)	(2)	(second digit)	(3)

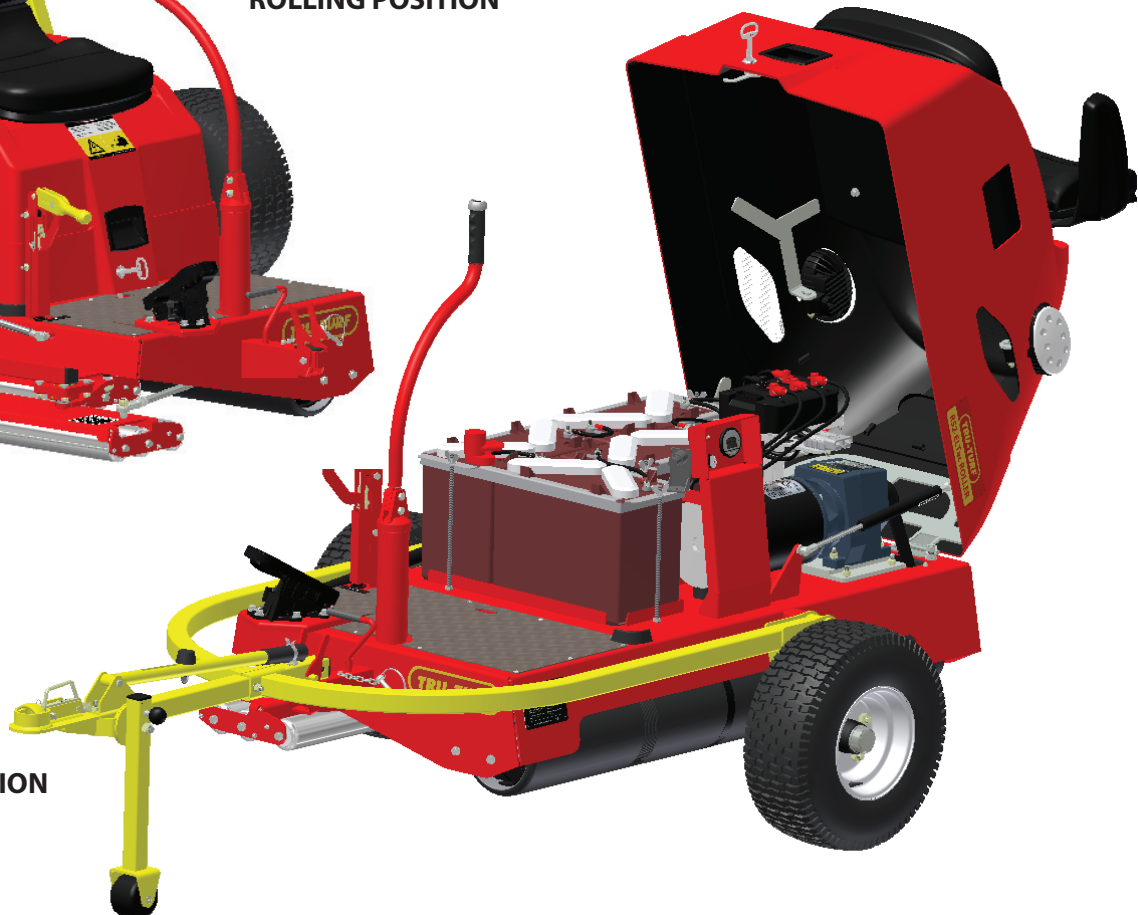
Operating Positions



TOWING POSITION

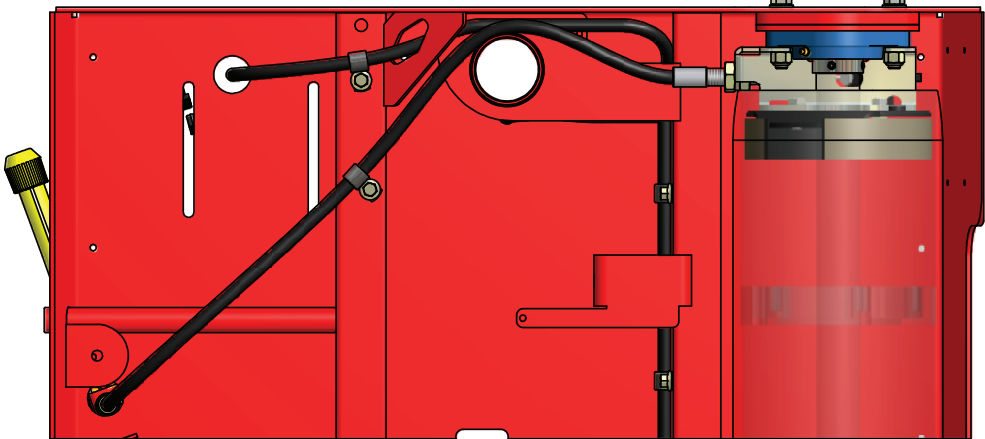
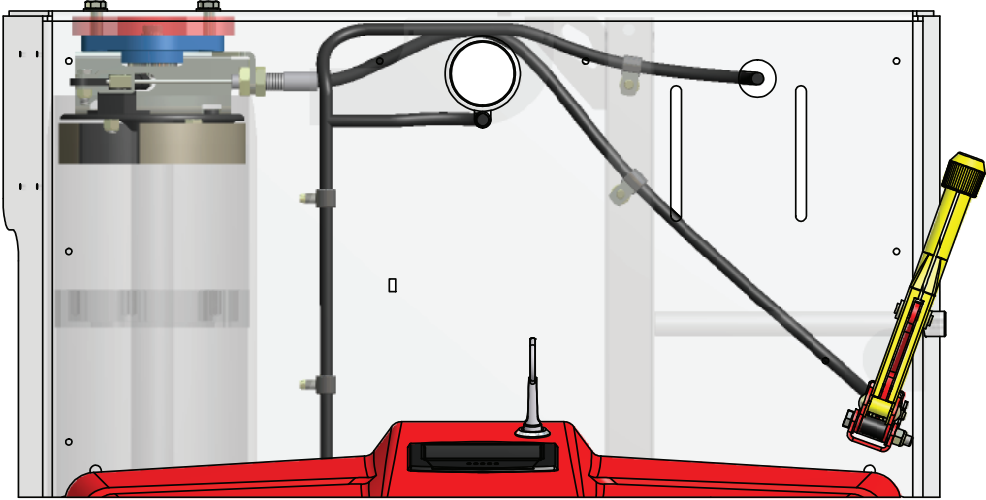
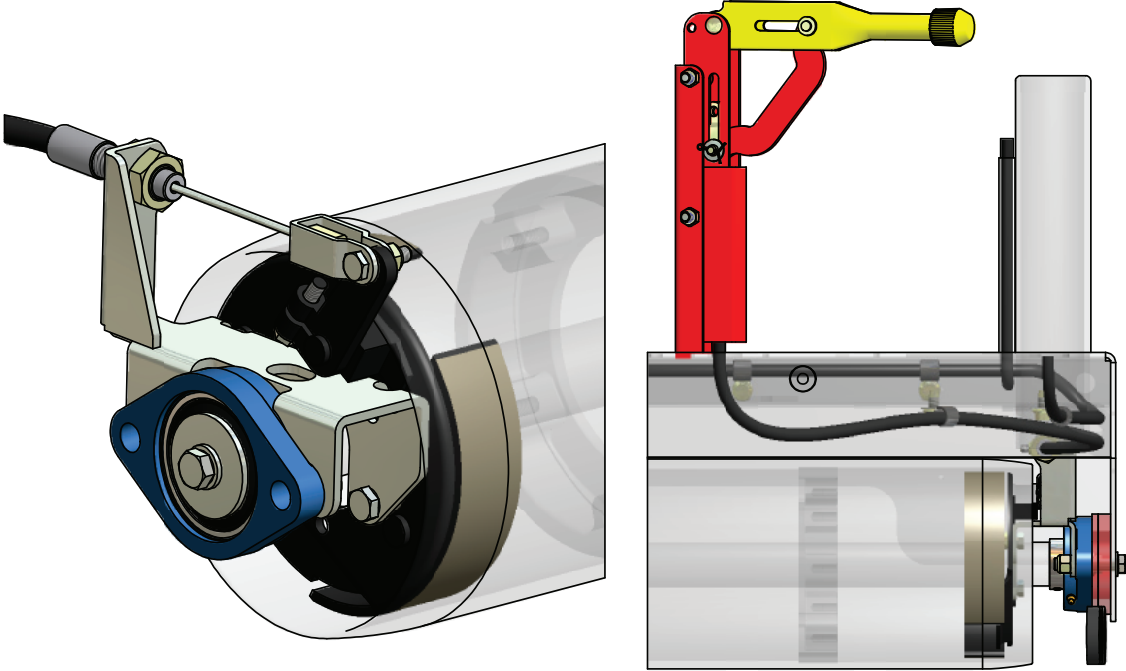


ROLLING POSITION

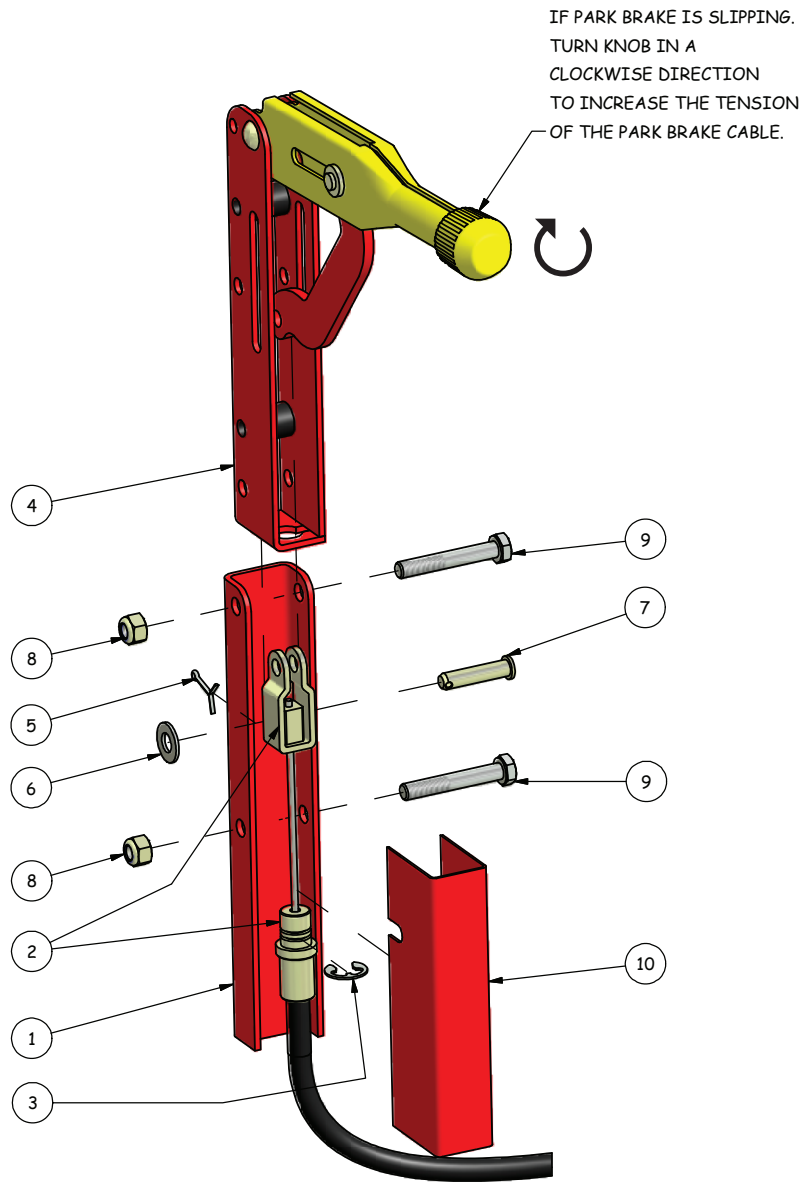


STORE & CHARGE POSITION

Park Brake System

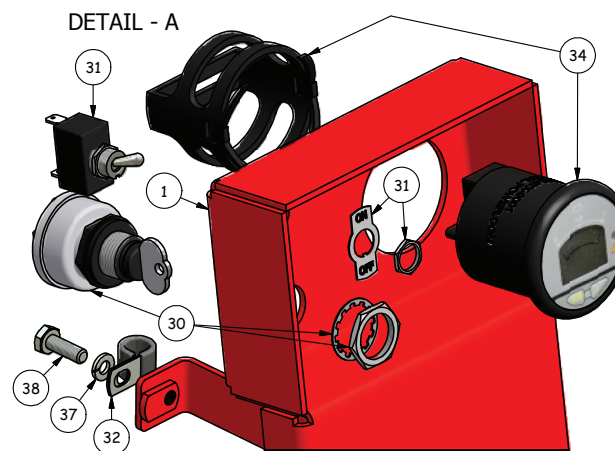
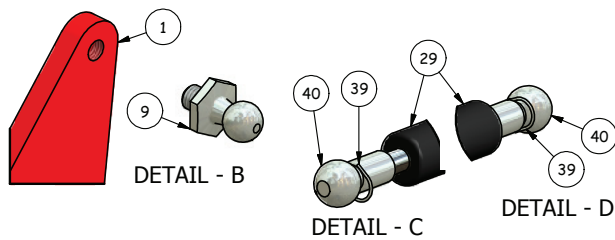
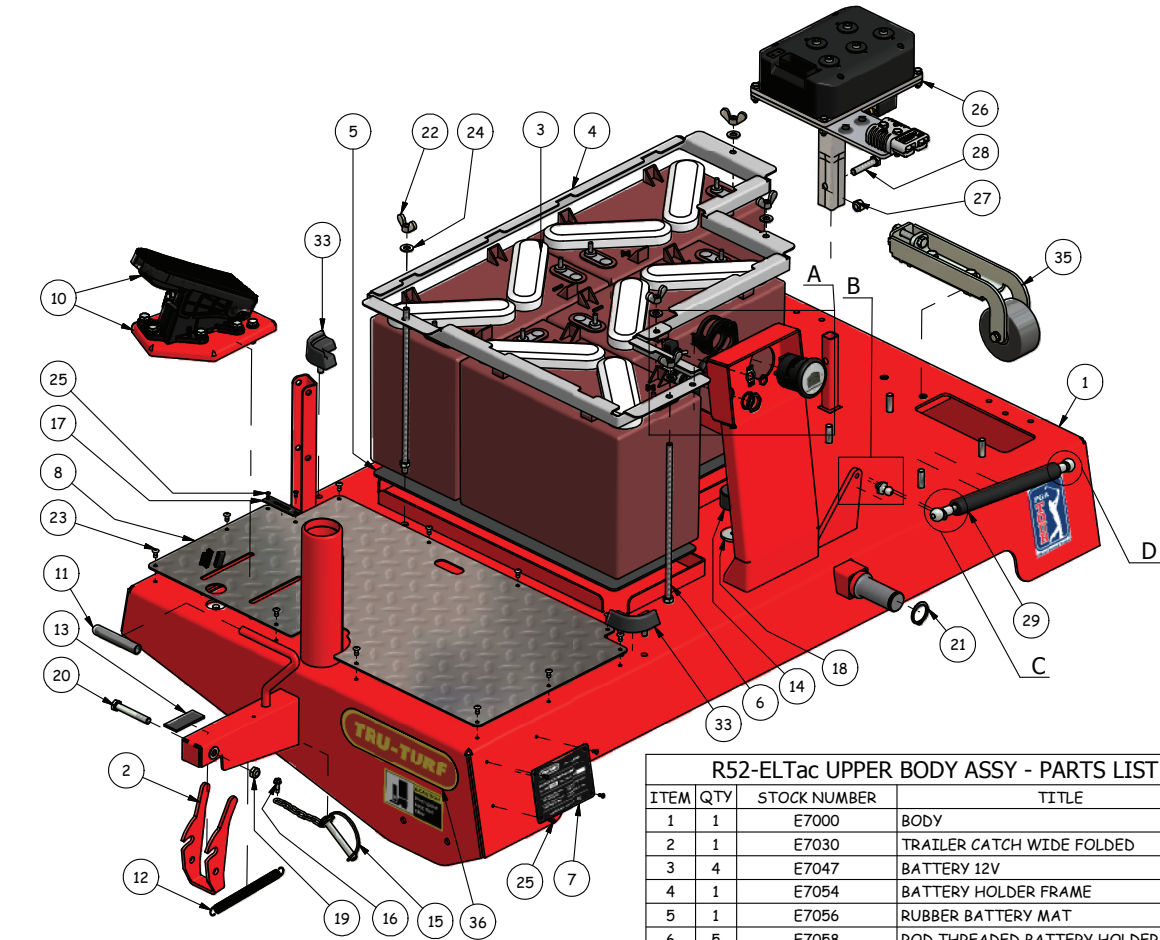


Park Brake Lever



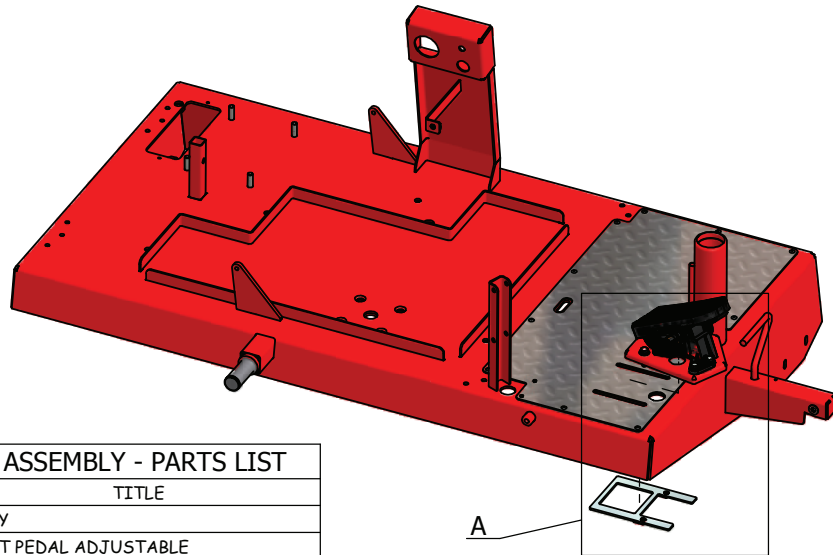
R52-ELTAc PARK BRAKE LEVER INSTALL - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7000	BODY WELDED ASSY
2	1	E7191	CABLE ASSY - DRUM BRAKE R52-ELT
3	1	R8349	CIRCLIP PARK BRAKE CABLE
4	1	R7024	HANDBRAKE LEVER
5	1	R8036	SPLIT PIN M2-5X20 ZP
6	1	R8046	5/16 x 3/4 WASHER ZP
7	1	R8383	SLIDE PIN - HANDBRAKE LEVER
8	2	R8054	5/16 UNF NYLOC NUT
9	2	R8095	5/16 x 2.0 UNF BOLT ZP
10	1	R8359	COVER FOR BRAKE LEVER MOUNT BRACKET

Body Assembly (Upper)

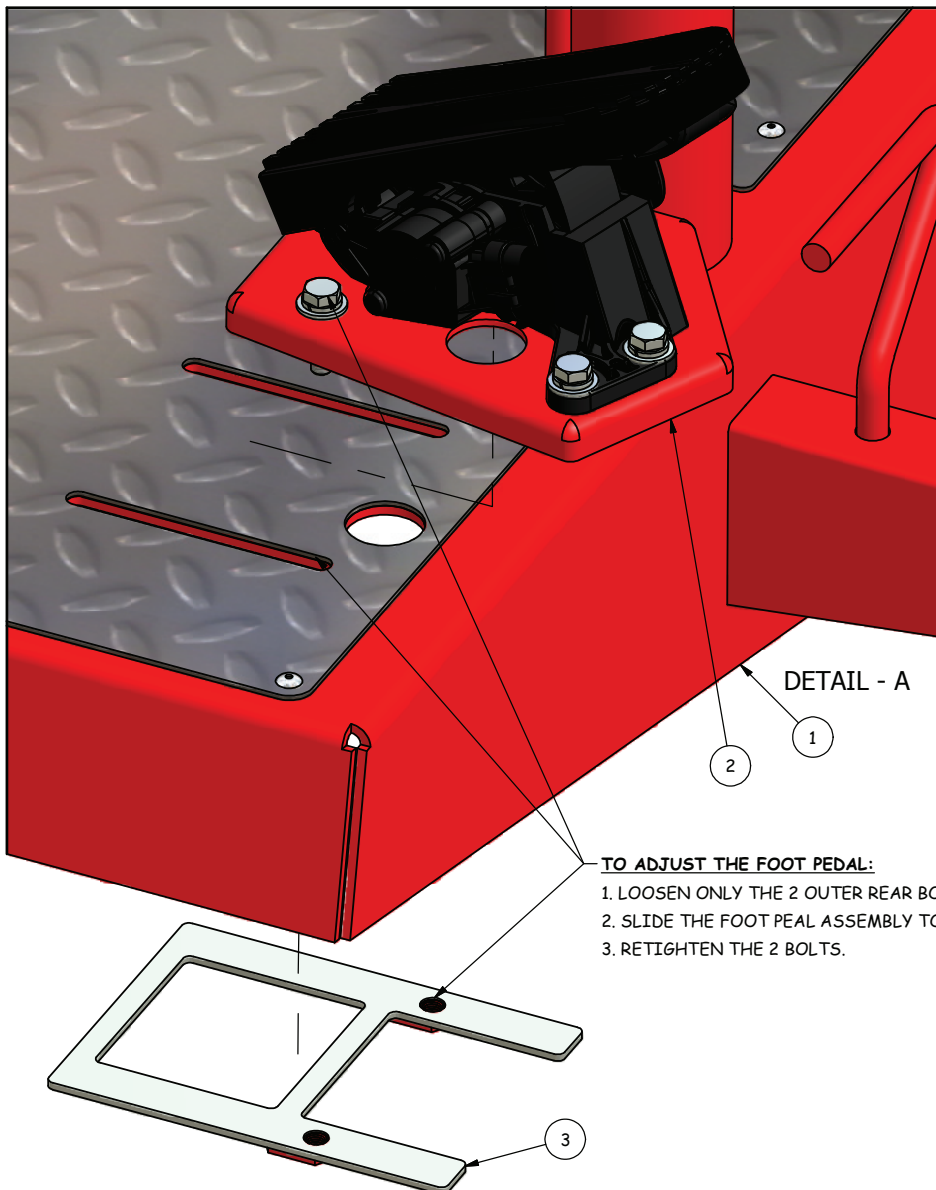


R52-ELTac UPPER BODY ASSY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7000	BODY
2	1	E7030	TRAILER CATCH WIDE FOLDED
3	4	E7047	BATTERY 12V
4	1	E7054	BATTERY HOLDER FRAME
5	1	E7056	RUBBER BATTERY MAT
6	5	E7058	ROD THREADED BATTERY HOLDER
7	1	E7190	PLATE SERIAL NUMBER R52-ELT AC
8	1	E7205	PLATE CHECKER
9	2	E7232	BALL STUD 13mm Ball - M8x9
10	1	FT PDL ADJ ASSY	FOOT PEDAL ADJUSTABLE ASSY
11	1	R5014	GRIP HAND
12	1	R5049	SPRING LATCH & STEER
13	1	R5159	RUBBER TRAILER REST
14	1	R6013	BUFFER STOP
15	1	R6017	DRAWBAR SAFETY PIN & CHAIN
16	1	R8081	10-24x16 TEK SCREW ZP
17	1	R6023	PLATE PARK BRAKE
18	1	R6068	PACKER WASHER ZP
19	1	R8056	3/8 UNF NYLOC T-TYPE NUT
20	1	R8072	3/8" x 2-1/2" UNF BOLT ZP
21	2	R8082	CIRCLIP EXT BLK 30mm
22	5	R8133	M8 WING NUT SS
23	11	R8134	6-6 RIVET
24	5	R8142	5/16 x 3/4 WASHER SS
25	6	R8260	RIVET BLACK
26	1	CONTRL MNT ASSY	R52-ELT AC CONTROLLER & MOUNT ASSY
27	1	R8055	3/8 UNF NYLOC NUT P-TYPE
28	1	R8096	3/8 x 1-3/4 UNF BOLT ZP
29	2	E7037	STRUT BODY ELECTRIC COVER
30	1	E7043	IGNITION SWITCH
31	1	E7067	LIGHT SWITCH
32	1	E7076	P CLIP
33	2	E7128	RUBBER CORNER REST - ENGINE COVER
34	1	E7198	HOUR METER POWER LEVEL
35	1	E7254	TENSIONER ASSEMBLY COMPLETE
36	1	R6057	STICKER TRU-TURF
37	1	R8050	1/4 SPRING WASHER ZP
38	1	R8137	1/4 x 3/4 UNF BOLT ZP
39	4	R8149	RETAINER CLIP GAS STRUT CUP END
40	4	R8154	CUP END FOR 13mm BALL (WAS R5169)

Adjustable Pedal



ADJUSTABLE FOOT PEDAL ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7000	BODY
2	1	FT PDL ADJ ASSY	FOOT PEDAL ADJUSTABLE
3	1	R9101	FOOT PEDAL BOLT PLATE

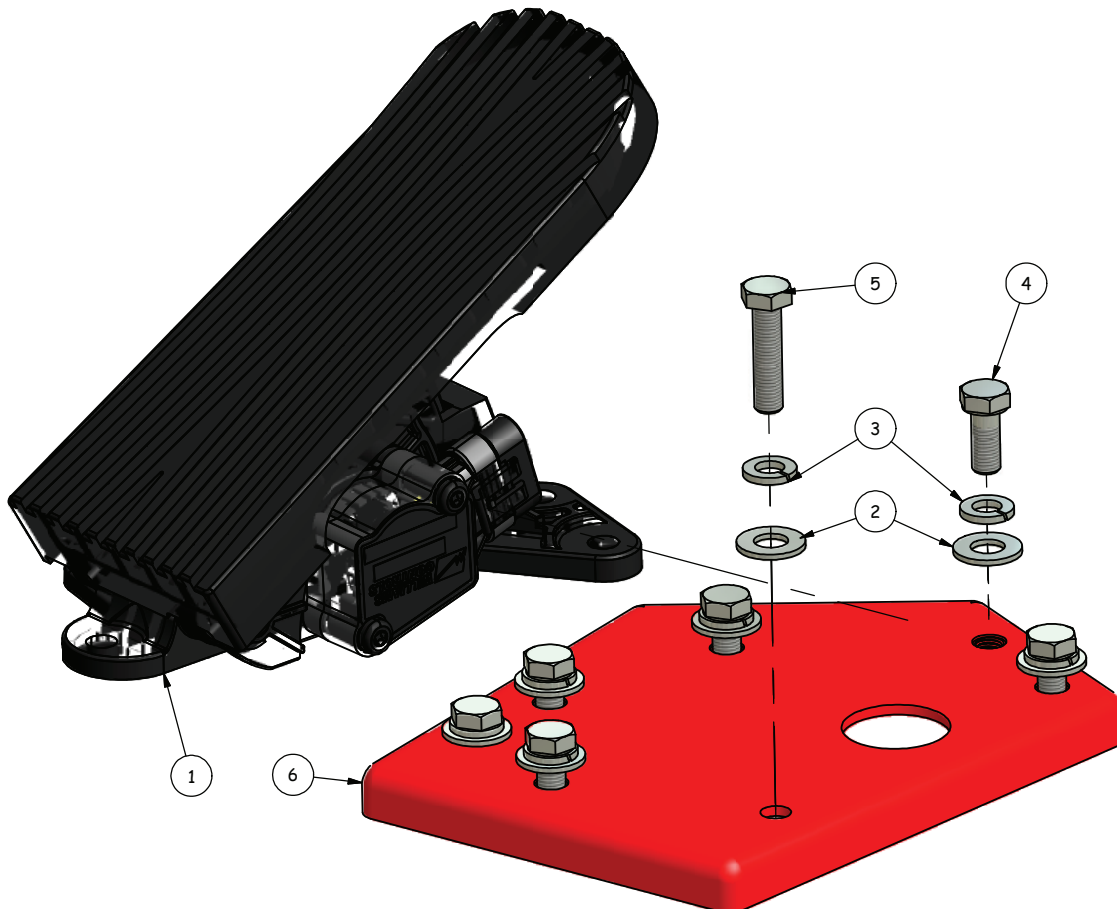


TO ADJUST THE FOOT PEDAL:
 1. LOOSEN ONLY THE 2 OUTER REAR BOLTS,
 2. SLIDE THE FOOT PEAL ASSEMBLY TO THE DESIRED POSITION,
 3. RETIGHTEN THE 2 BOLTS.

Gauge & Switches Mounted, Adjustable Pedal

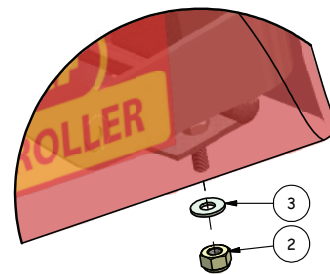
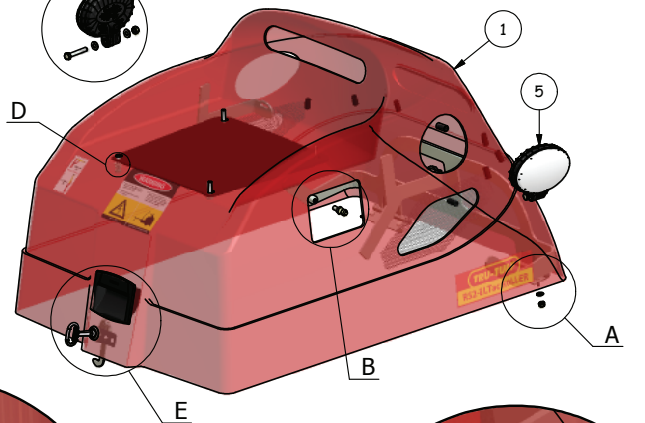
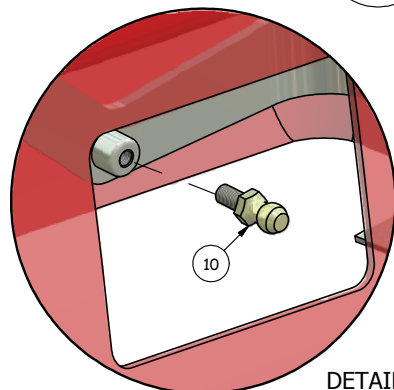
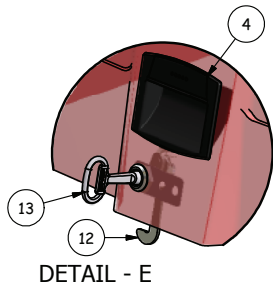
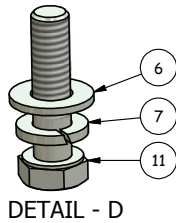
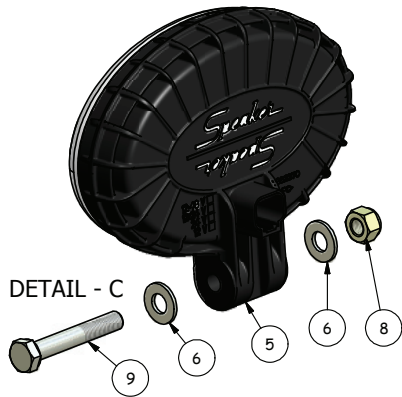


ADJUSTABLE FOOT PEDAL ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7204	PEDAL SPEED CONTROL
2	7	R8046	5/16 x 3/4 WASHER ZP
3	7	R8051	5/16 SPRING WASHER ZP
4	5	R8177	5/16 x 3/4 UNF BOLT ZP
5	2	R8339	5/16 x 1-1/4 UNF BOLT ZP
6	1	R9100	FOOT PEDAL MOUNT PLATE ADJUSTABLE



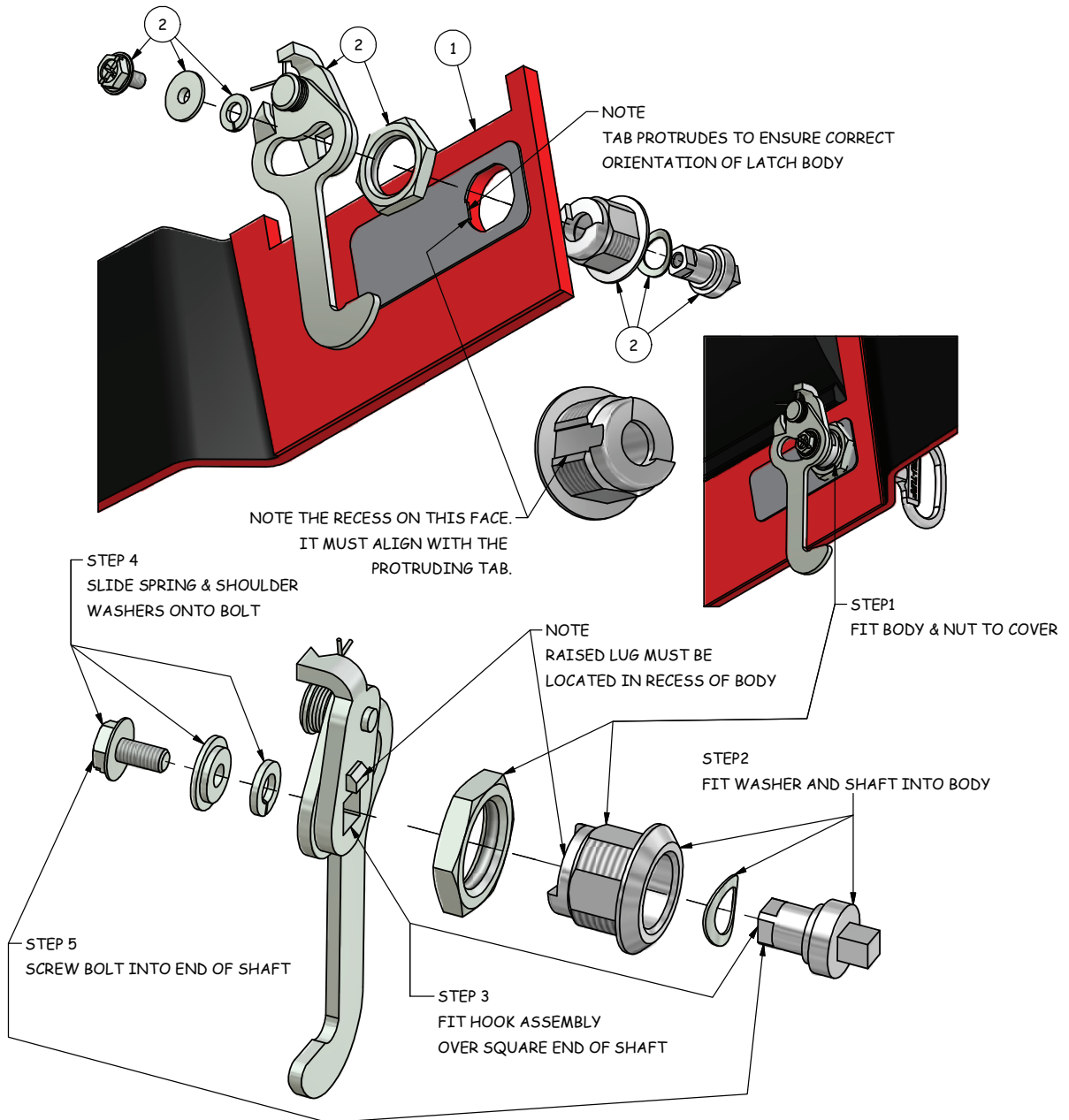
Cover

R52-ELTac COVER ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7001	COVER ELECTRIC ROLLER
2	6	R8053	1/4 UNF NYLOC NUT
3	6	R8140	1/4 x 9/16 WASHER ZP
4	1	E7184	HANDLE
5	2	E7248	WORK LIGHT LED
6	8	R8046	5/16" x 11/16" WASHER ZP
7	4	R8051	5/16 SPRING WASHER ZP
8	2	R8054	5/16 UNF NYLOC NUT
9	2	R8095	5/16 x 2.0 UNF BOLT ZP
10	2	R8132	BALL STUD 13dia ZP M8-THREAD
11	4	R8141	5/16 x 1.1/4 UNC BOLT ZP
12	1	R8343	LATCH - TRANS COVERS
13	1	R8346	KEY LATCH TRANS COVER
14	1	R9091	SEAT ASSY
15	1	R9092	SEAT PAN
16	1	R9098	ARMRESTS ASSY COMPLETE

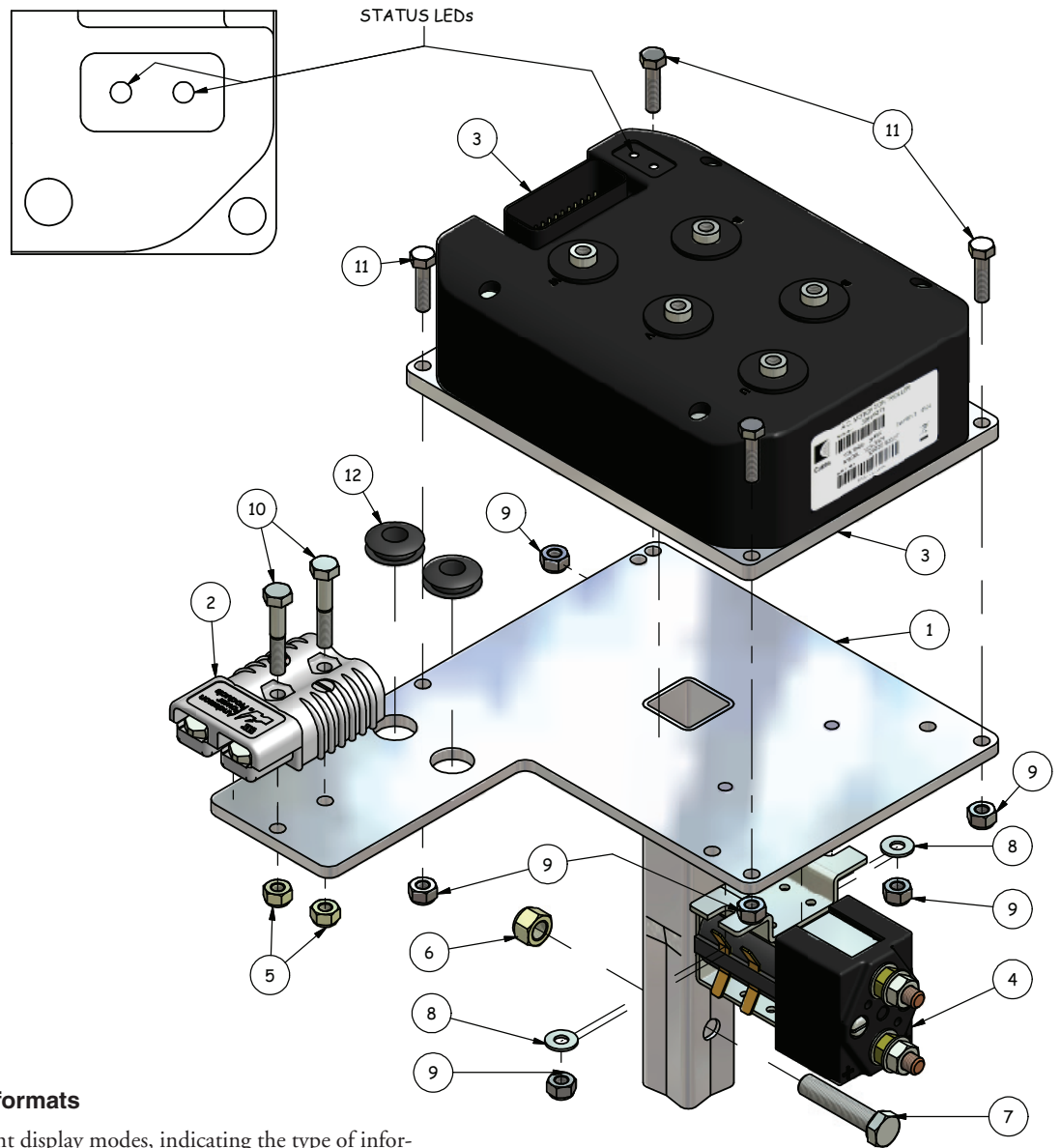


Transmission Cover Latch

R52-ELT TRANSMISSION COVER LATCH DETAIL			
ITEM	QTY	PART NUMBER	TITLE
1	1	E7001	COVER ASSY ELECTRIC ROLLER
2	1	R8343	DIRAK PULL & LOCK HOOK



Controller Assembly



Summary of LED display formats

The two LEDs have four different display modes, indicating the type of information they are providing.

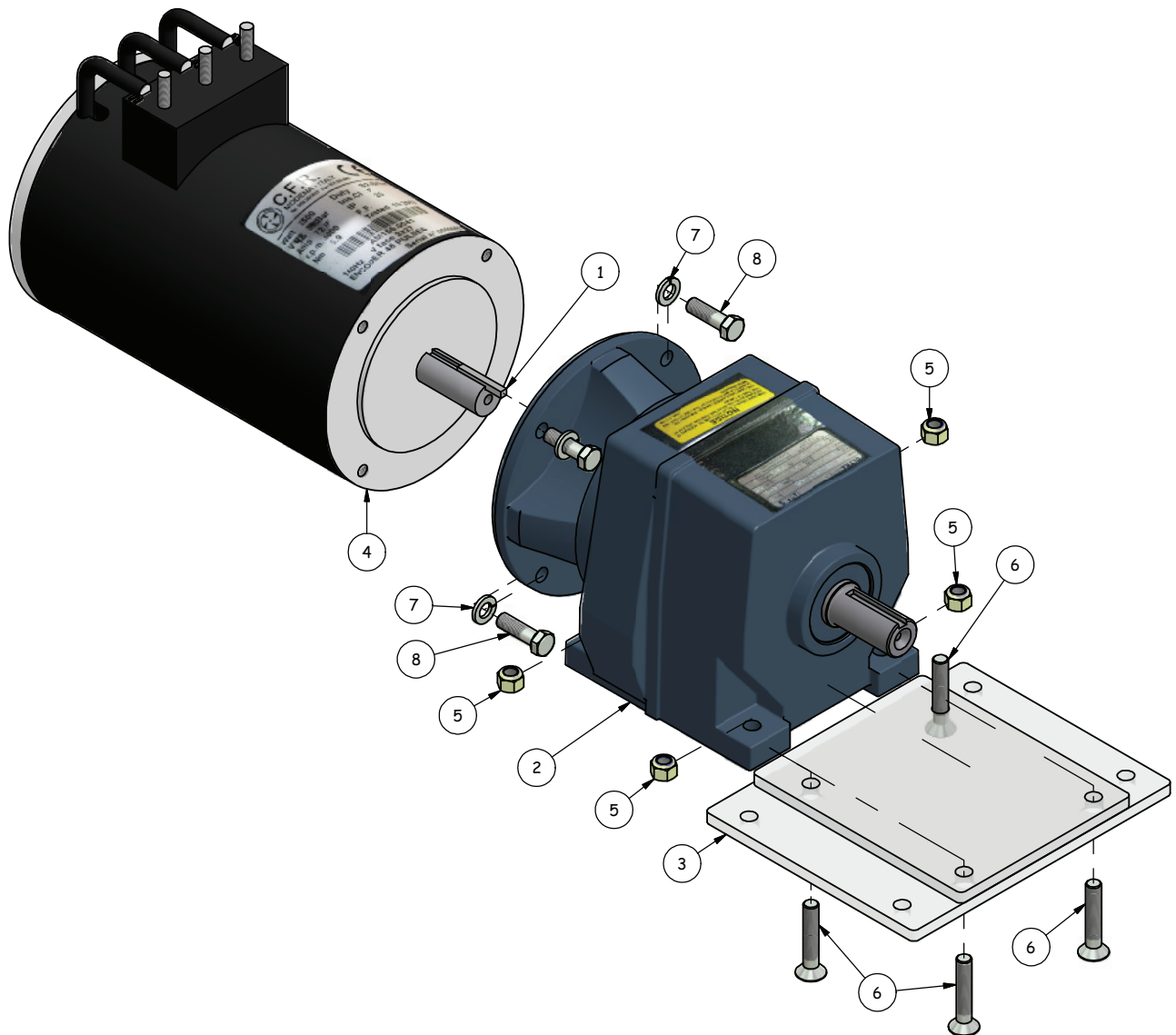
DISPLAY	STATUS
Red LED and yellow LED flashing alternately	Controller has detected a fault. 2-digit code flashed by yellow LED identifies the specific fault; one or two flashes by red LED indicate whether first or second code digit will follow.

See Fault Finding, page 14, in this manual for detailed instructions to read and interpret the flashing LEDs on the controller. The fault/error code table can be downloaded from the Tru-Turf website in the bulletins section.

ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7061	CONTROLLER MOUNT
2	1	E7180	PLUG 175AMP BATT CHARGER
3	1	E7197	CONTROLLER
4	1	E7200	SOLENOID 48V
5	2	R8053	1/4 UNF NYLOC NUT
6	1	R8055	3/8 UNF NYLOC NUT P-TYPE
7	1	R8096	3/8 x 1-3/4 UNF BOLT ZP
8	2	R8140	1/4 x 9/16 WASHER ZP
9	6	R8314	M6 NYLOC NUT SS
10	2	R8334	1/4" X 1-1/2" UNF BOLT ZP
11	4	R8356	M6 x 1 x 25 HEX HEAD BOLT S/S
12	2	R8342	RUBBER GROMMET

Drive Train - Motor & Gearbox

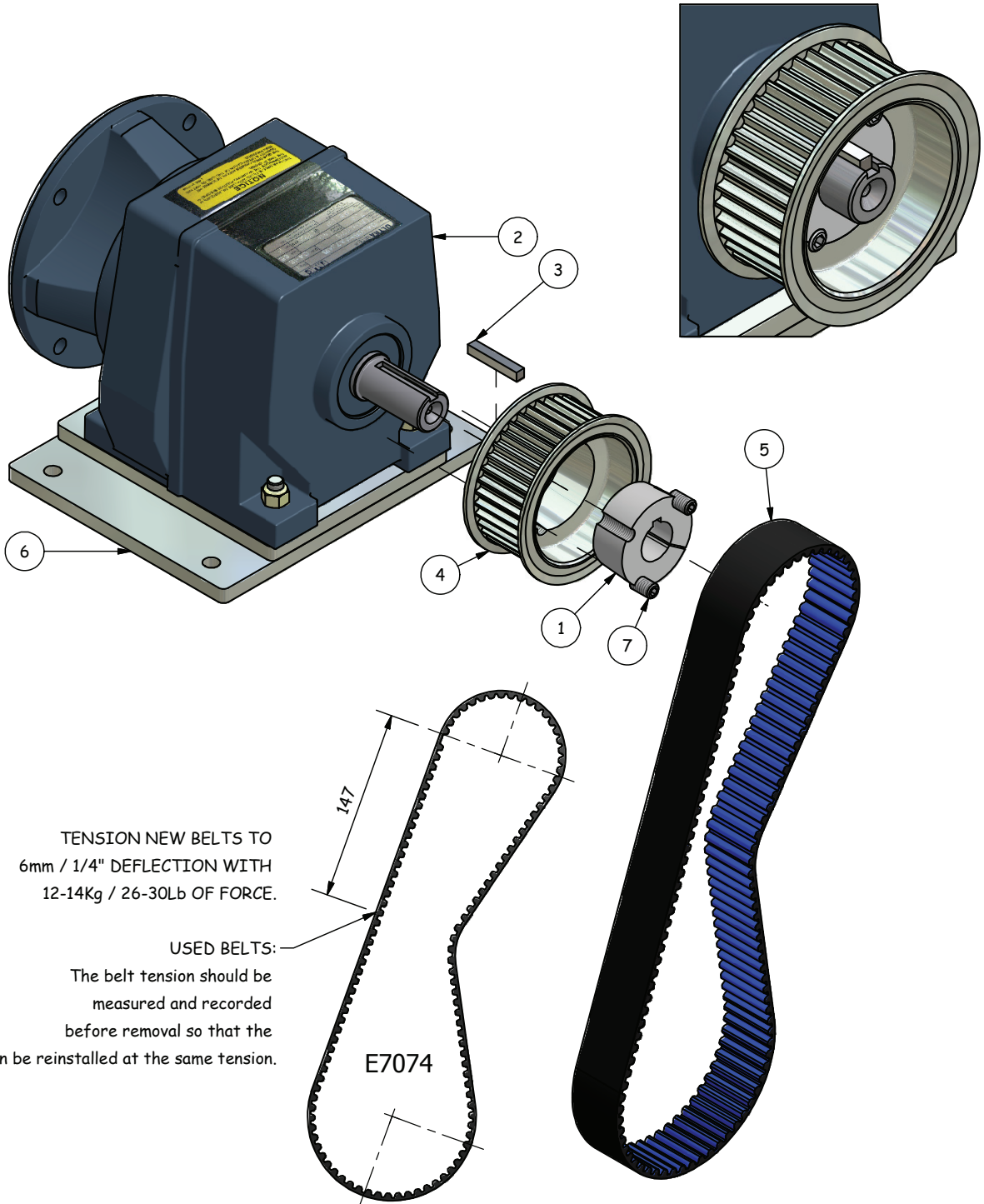
R52-ELTac DRIVE MOTOR & GEARBOX - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7036	KEY ELECTRIC MOTOR
2	1	E7039	REDUCTION GEARBOX
3	1	E7201	BRACKET GEARBOX MOUNT
4	1	E7196	ELECTRIC MOTOR AC
5	4	R8055	3/8 UNF NYLOC NUT P-TYPE
6	4	R8123	3/8 x 2.0 UNF CSK BOLT ZP
7	4	R8127	M10 SPRING WASHER ZP
8	4	R8138	3/8 x 1.25 UNC BOLT ZP



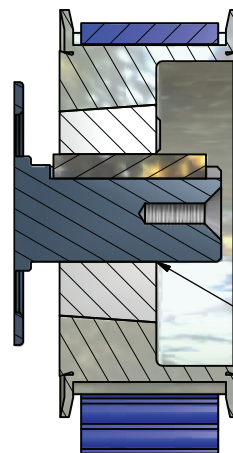
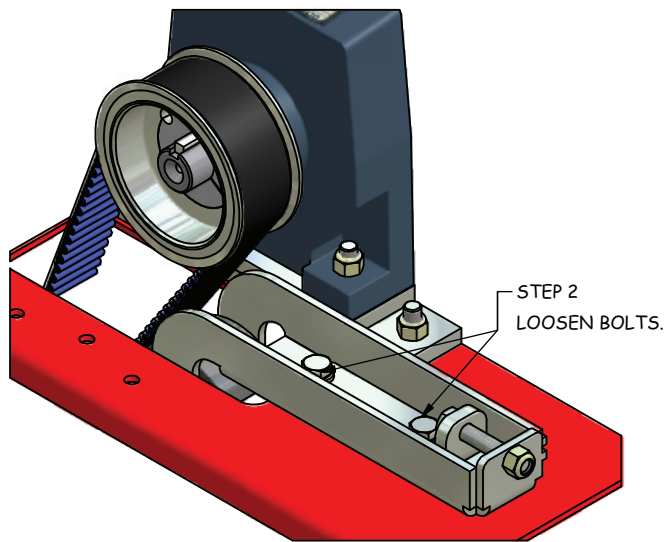
Drive Train - Transmission & Drive Belt

R52-ELTAc GEARBOX, BELT & TOP SPROCKET - PARTS LIST

ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7032	TAPER LOCK BUSH
2	1	E7039	REDUCTION GEARBOX
3	1	E7053	KEY RECTANGULAR
4	1	E7072	SPROCKET
5	1	E7074	DRIVE BELT
6	1	E7201	MOUNT BRACKET AC MOTOR & GEARBOX ASSEMBLY
7	2	R8437	3/8" UNC x 5/8 GRUB SCREW

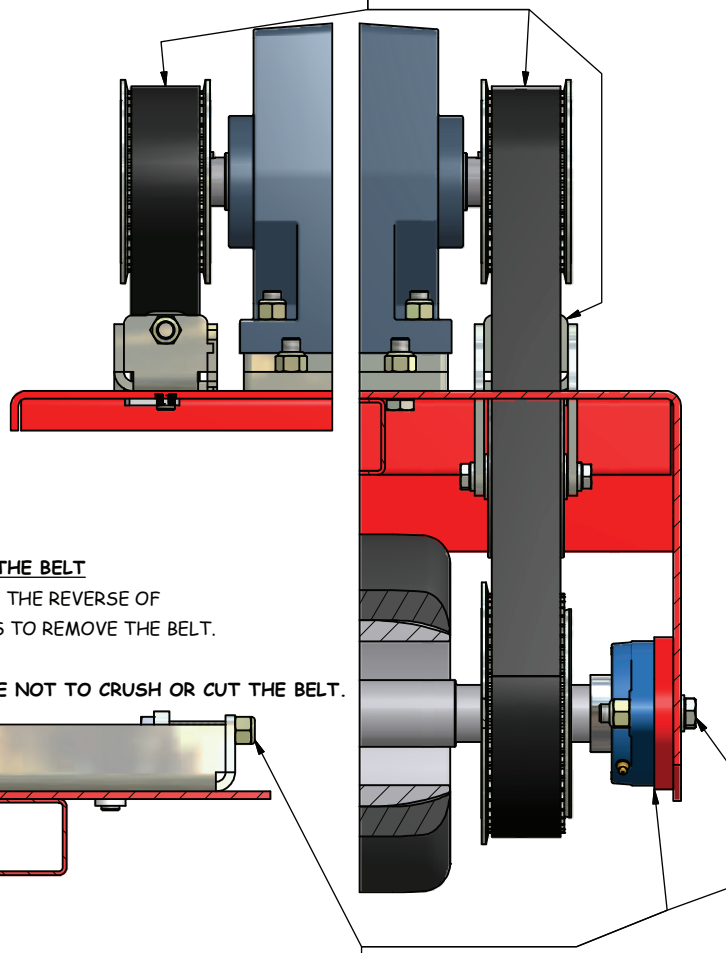


Drive Train - Drive Belt & Tensioner



TENSION NEW BELTS TO:
6mm / 1/4" DEFLECTION WITH
12-14Kg / 26-30Lb OF FORCE.

USED BELTS:
MEASURE & RECORD THE
BELT TENSION BEFORE REMOVAL.
REFIT THE BELT TO THE
SAME TENSION AS RECORDED.



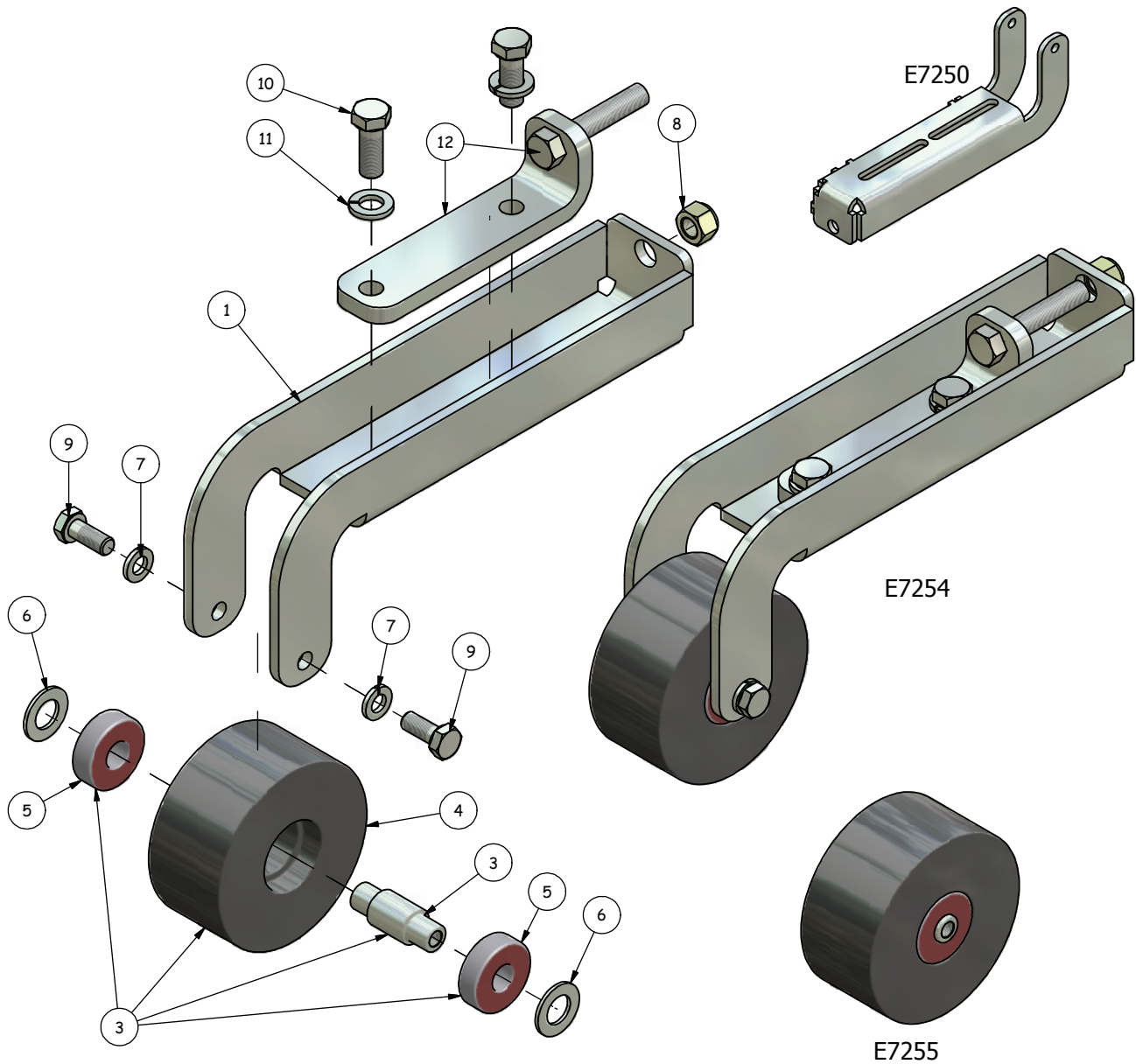
TO REMOVE BELT.

1. REMOVE BOLTS FROM END OF DRIVE ROLLER BEARING.
2. LOOSEN THE 2 CLAMPING BOLTS IN THE TENSIONER.
3. REMOVE TENSIONER NUT FROM BOLT
4. SLIDE TENSIONER AWAY FROM BELT FULLY.
5. SLIDE BELT OVER TOP AND BOTTOM SPROCKETS AT THE SAME TIME.
6. LIFT MACHINE UP OR LOWER DRIVE ROLLER ENOUGH TO PASS BELT BETWEEN BODY AND BEARING HOUSING.

NOTE: IF REFITTING THE BELT, TAKE CARE NOT TO CRUSH OR CUT THE BELT.

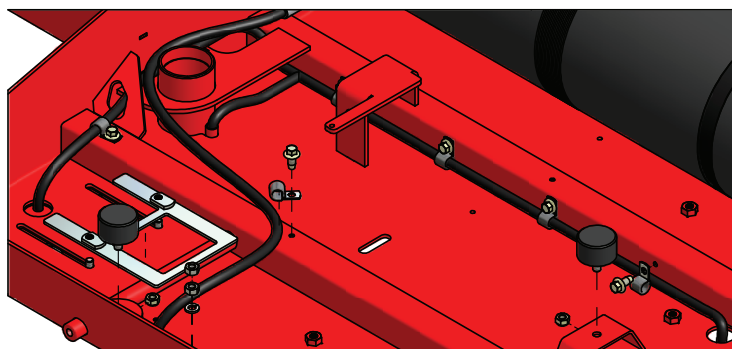
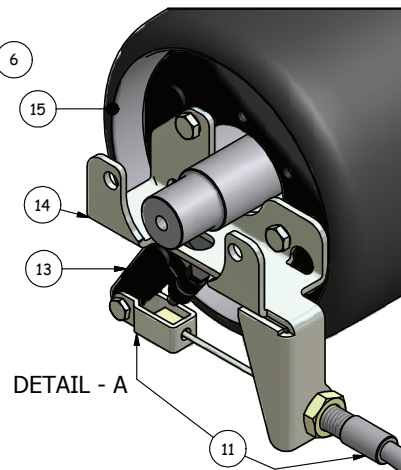
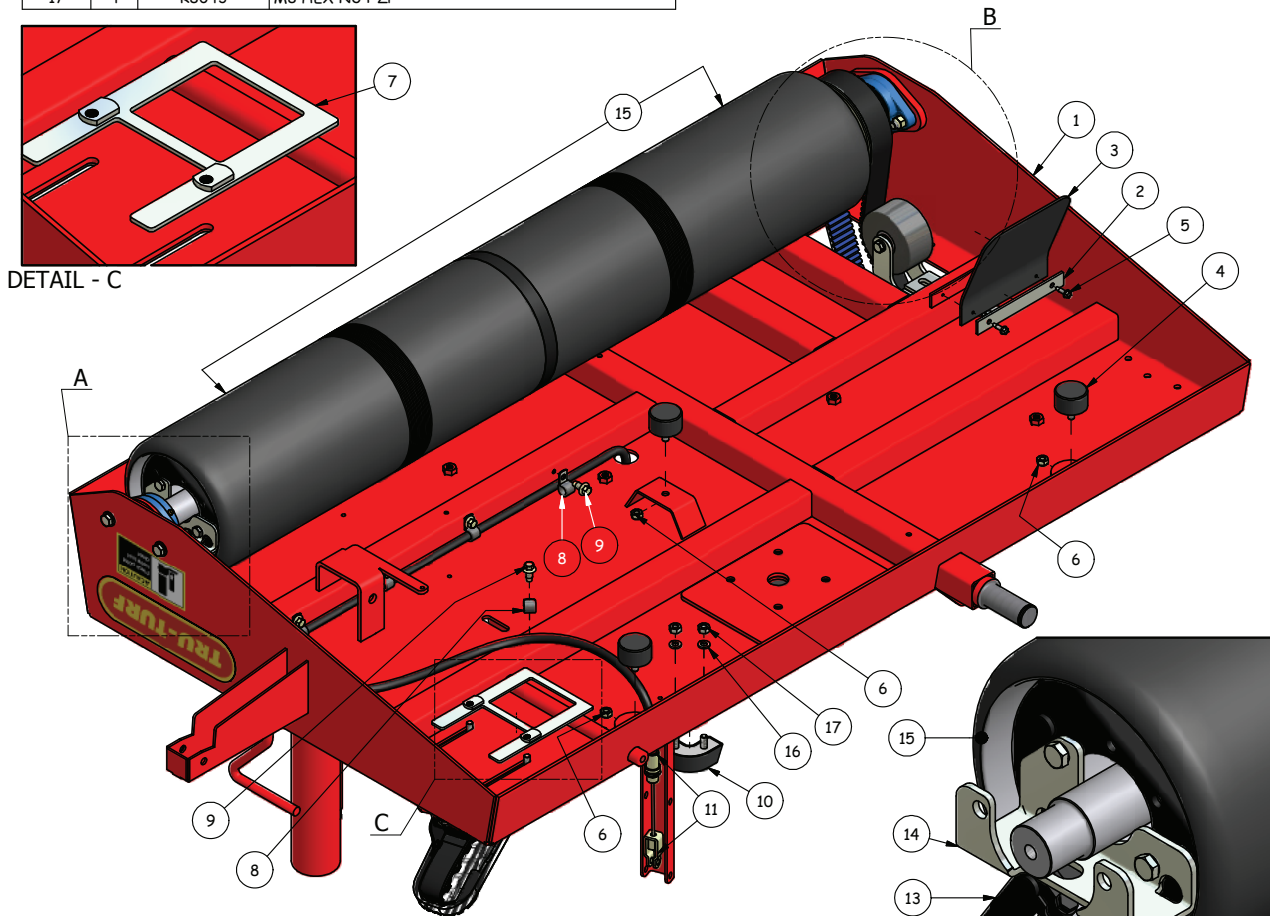
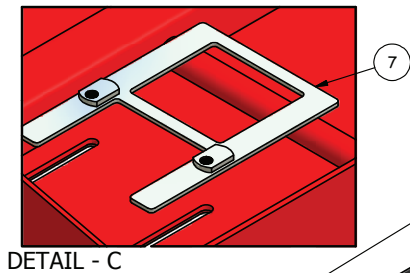
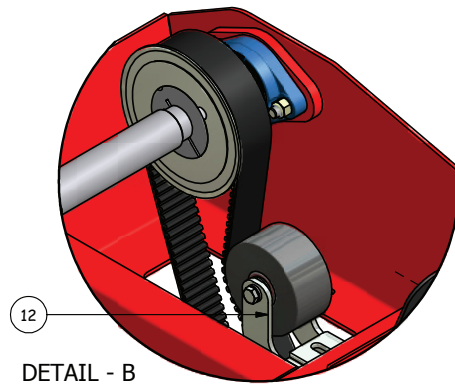
Drive Train - Belt Tensioner

E7254 BELT TENSIONER ASSEMBLY - PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	1	E7250	TENSIONER SLIDE BRACKET
2	1	E7255	TENSIONER IDLER PULLEY ASSEMBLY
3	1	E7252	TENSIONER SHAFT IDLER PULLY
4	1	E7253	TENSIONER IDLER PULLY
5	2	R5055	BEARING 6201-2RS
6	2	R8167	M12 x 24x1.6 WASHER
7	2	R8051	5/16 SPRING WASHER ZP
8	1	R8055	3/8 UNF NYLOC NUT P-TYPE
9	2	R8177	5/16 x 3/4 UNF BOLT ZP
10	2	R8067	3/8 x 1 UNF HEX BOLT ZP
11	2	R8052	3/8 SPRING WASHER ZP
12	1	E7251	TENSIONER FIXED BRACKET BELT DRIVE

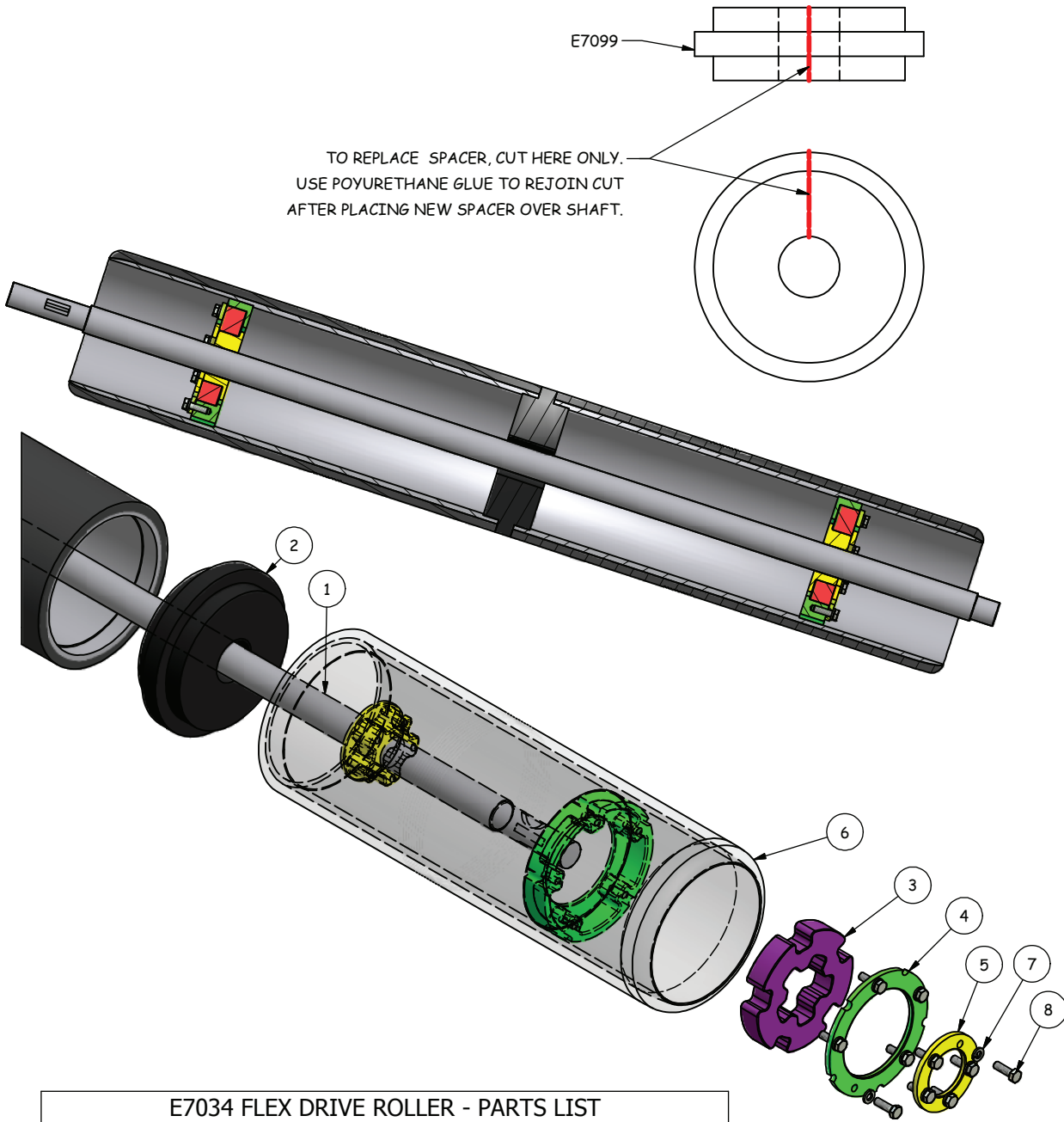


Underbody Assembly (Lower)

R52-ELTac LOWER ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7000	BODY WELDED ASSY
2	1	R5061	STRAP MUDFLAP SCREW ON
3	1	R5071	MUD FLAP
4	3	R6013	BUFFER STOP UNDER BODY
5	2	R8081	10-24x16 TEK SCREW ZP
6	3	R8256	M8 NYLOC NUT ZP
7	1	R9101	FOOT PEDAL BOLT PLATE
8	6	E7076	P CLIP
9	6	R8035	10-12 x16 TEK SCREW ZP
10	2	E7128	RUBBER CORNER REST - ENGINE COVER
11	1	E7191	CABLE ASSY - DRUM BRAKE R52-ELT
12	1	E7254	TENSIONER ASSY COMPLETE
13	1	R7020	BRAKE
14	1	R7021	BRAKE MOUNT BRACKET
15	1	E7034	FLEX TUBE DRIVE ROLLER ASSY
16	4	R8034	M8 SPRING WASHER ZP
17	4	R8043	M8 HEX NUT ZP



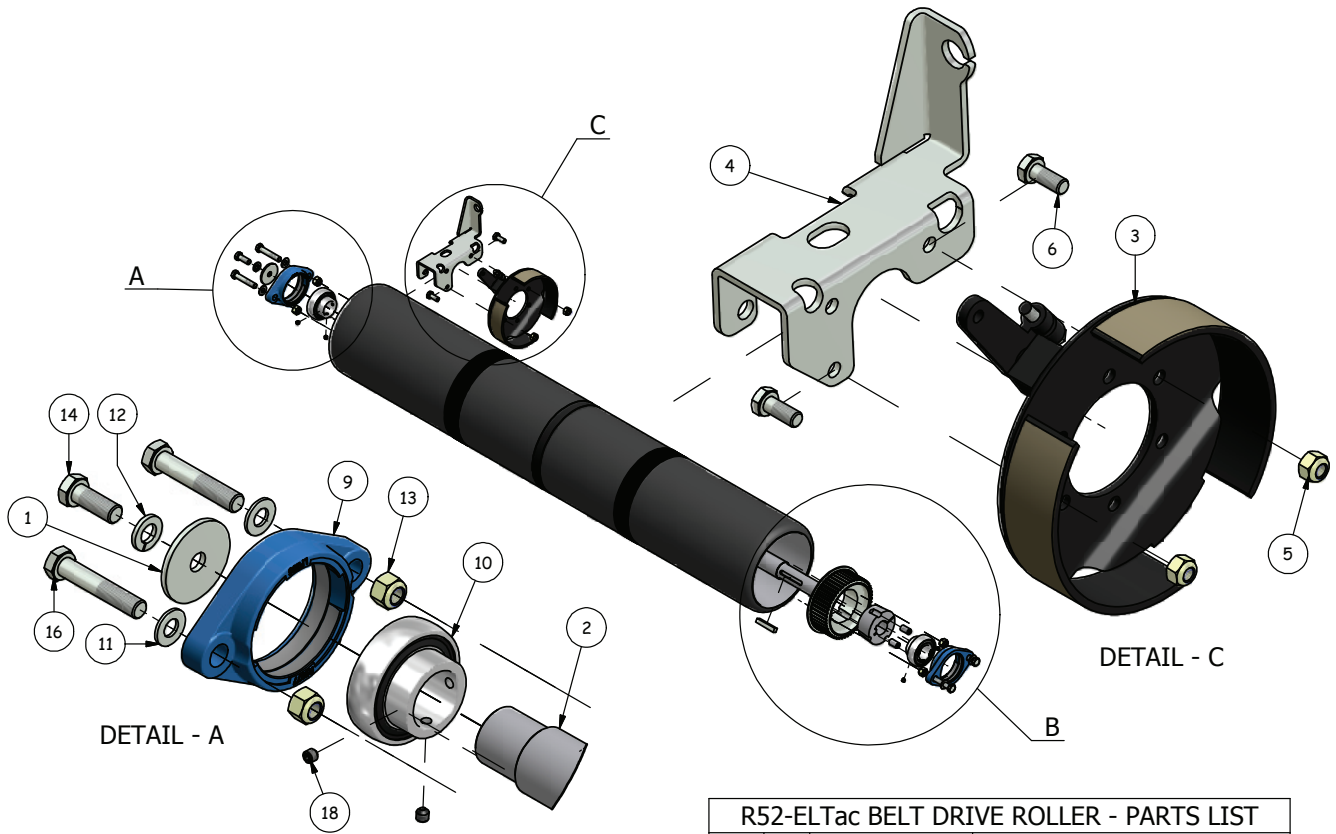
Flex Drive Roller



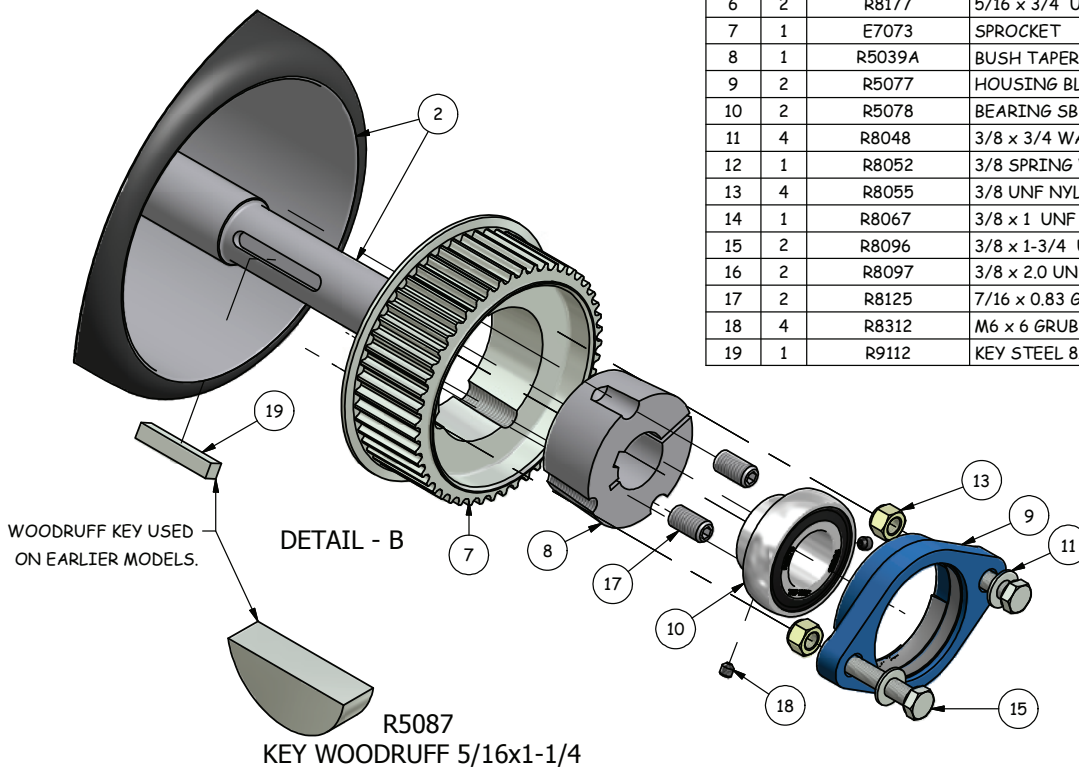
E7034 FLEX DRIVE ROLLER - PARTS LIST

ITEM	QTY	STOCK NUMBER	TITLE
1	1	-	SHAFT
2	1	E7099	FLEX TUBE DRIVE ROLLER CTR SPACER POLYURETHANE
3	2	E7116	DRIVE CENTRE INSERT POLYURETHANE
4	2	E7102	OUTER CLAMP RING ZP
5	2	E7103	INNER CLAMP RING ZP
6	2	-	TUBE RUBBER COATED
7	20	R8051	5/16 SPRING WASHER ZP
8	20	R8064	5/16 x 1.0 UNF BOLT ZP

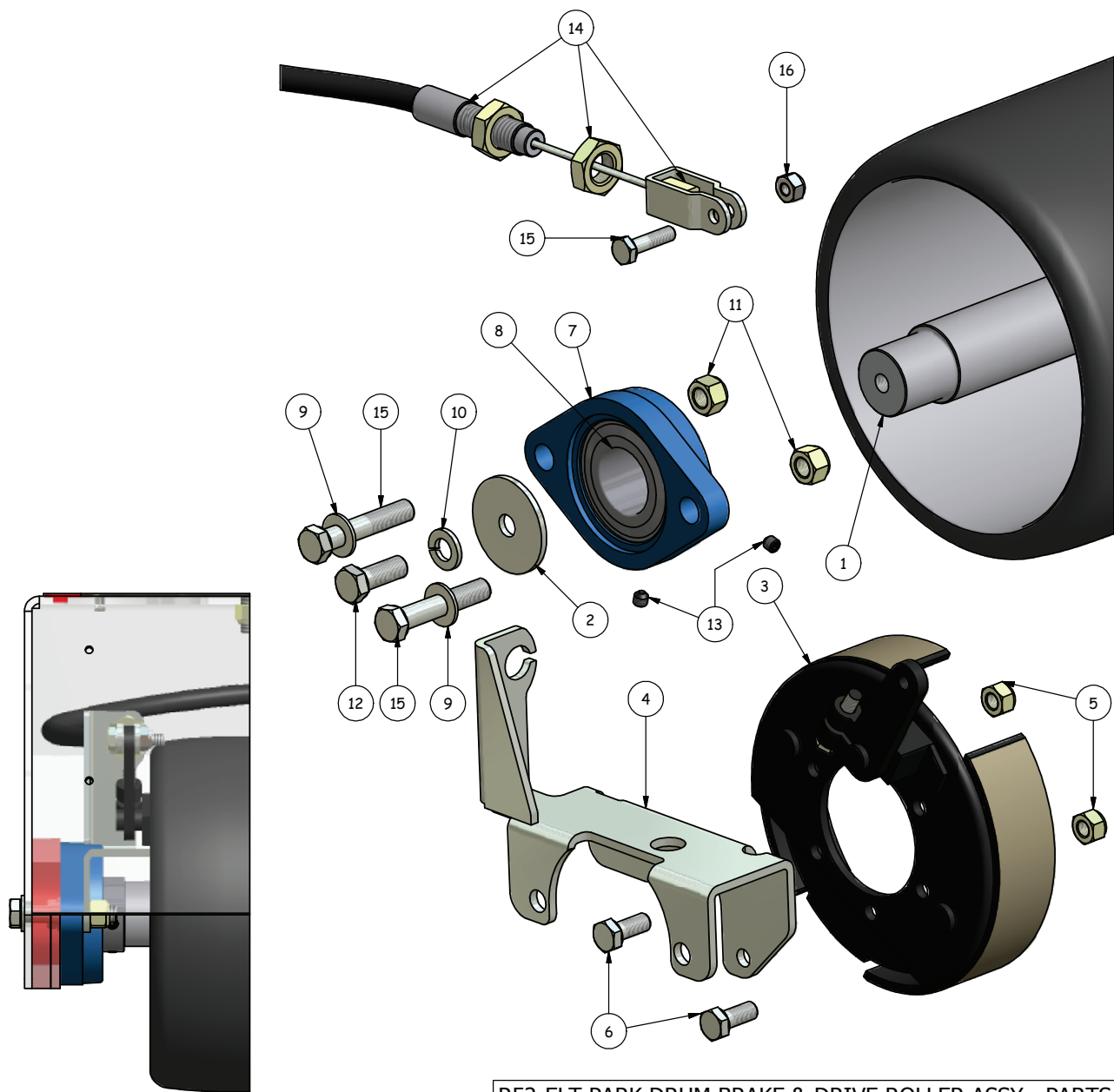
Flex Drive Roller - Bearings & Sprocket



R52-ELTAc BELT DRIVE ROLLER - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7010	WASHER M10x43x3
2	1	E7034	FLEX TUBE DRIVE ROLLER ASSY
3	1	R7020	BRAKE DRUM MECH DRIVE ROLLER
4	1	R7021	DRUM BRAKE MOUNT BRACKET
5	2	R8054	5/16 UNF NYLOC NUT
6	2	R8177	5/16 x 3/4 UNF BOLT ZP
7	1	E7073	SPROCKET
8	1	R5039A	BUSH TAPER LOCK
9	2	R5077	HOUSING BLF206 2 HOLE
10	2	R5078	BEARING SB206
11	4	R8048	3/8 x 3/4 WASHER ZP
12	1	R8052	3/8 SPRING WASHER ZP
13	4	R8055	3/8 UNF NYLOC NUT P-TYPE
14	1	R8067	3/8 x 1 UNF HEX BOLT ZP
15	2	R8096	3/8 x 1-3/4 UNF BOLT ZP
16	2	R8097	3/8 x 2.0 UNF BOLT ZP
17	2	R8125	7/16 x 0.83 GRUB SCREW BLK
18	4	R8312	M6 x 6 GRUB SCREW BLACK
19	1	R9112	KEY STEEL 8X8X47



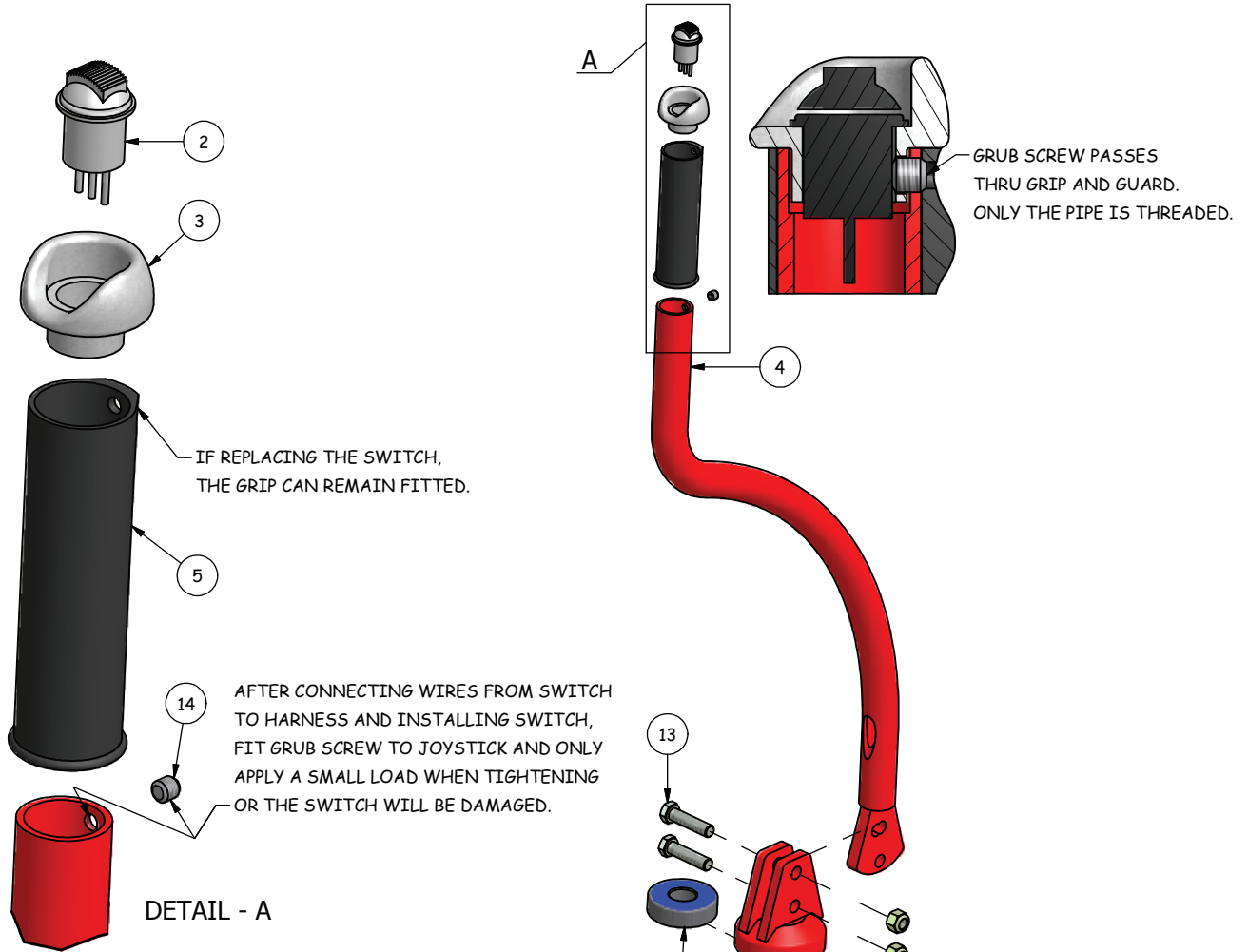
Drive Roller & Drum Brake



R52-ELT PARK DRUM BRAKE & DRIVE ROLLER ASSY - PARTS

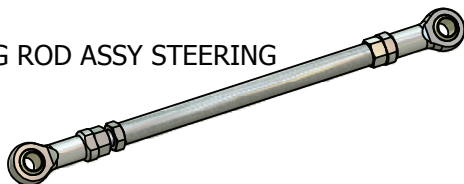
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7034	FLEX TUBE DRIVE ROLLER ASSY
2	1	E7010	WASHER M10x43x3
3	1	R7020	BRAKE DRUM MECH DRIVE ROLLER
4	1	R7021	DRUM BRAKE MOUNT BRACKET
5	2	R8054	5/16 UNF NYLOC NUT
6	2	R8177	5/16 x 3/4 UNF BOLT ZP
7	1	R5077	BEARING HOUSING DRIVE ROLLER
8	1	R5078	BEARING B6
9	2	R8048	3/8 x 3/4 WASHER ZP
10	1	R8052	3/8 SPRING WASHER ZP
11	2	R8055	3/8 UNF NYLOC NUT P-TYPE
12	1	R8067	3/8 x 1 UNF HEX BOLT ZP
13	2	R8312	M6 x 6 GRUB SCREW BLACK
14	1	E7191	CABLE ASSY - DRUM BRAKE R52-ELT
15	1	R8059	1/4 x 1.0 UNC BOLT ZP
16	1	R8116	1/4 UNC NYLOC NUT S/S

Joystick & Steering Shaft



R52-ELTAc JOYSTICK & STEERING - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7029	STEERING ARM
2	1	E7059A	SWITCH DIRECTION CONTROL
3	1	E7218	TOGGLE SWITCH GUARD
4	1	E7219	JOYSTICK
5	1	R5009	GRIP JOYSTICK
6	1	R5049	SPRING LATCH & STEER
7	1	R5156	WOODRUFF KEY 1_8 x 5_8
8	1	R6009	JOYSTICK SHAFT
9	2	R8018	BEARING S6304-2RS
10	1	R8039	M12 NYLOC NUT ZP
11	2	R8055	3/8 UNF NYLOC NUT P-TYPE
12	1	R8060	1/2" UNC NYLOC NUT ZP
13	2	R8070	3/8 x 1.1/2 UNF BOLT ZP
14	1	R8295	1/4 x 1/4 UNF GRUB SCREW BLK

E7018 CONNECTING ROD ASSY STEERING

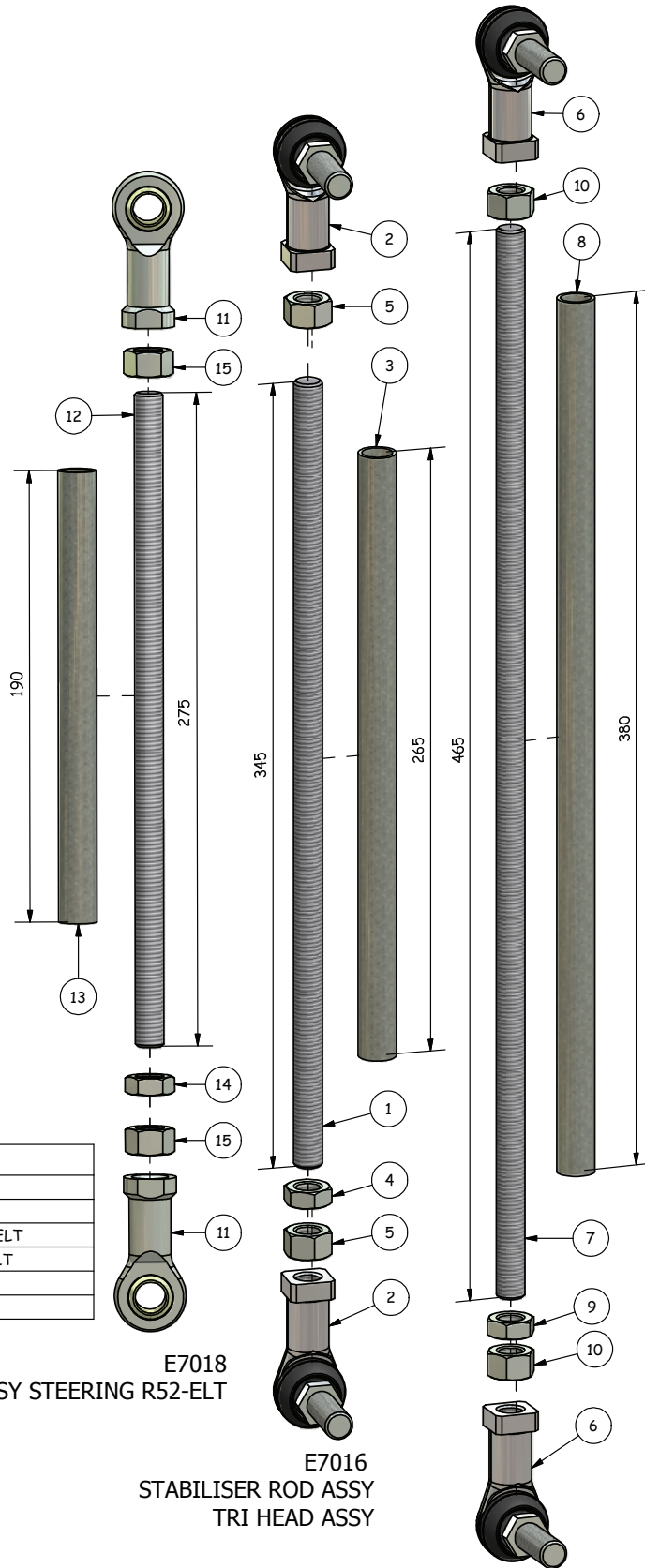


Rod Units

E7016 - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7015	ROD THREADED
2	2	E7019	ROD END FEMALE STUDDED M12X1.75
3	1	E7025	TUBE TIE ROD STABILISER
4	1	R8086	M12 HALF NUT ZP
5	2	R8087	M12 FULL NUT ZP

E7017 - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
6	2	E7019	ROD END FEMALE STUDDED M12X1.75
7	1	E7023	ROD THREADED M12
8	1	E7024	TUBE CONNECTING ROD
9	1	R8086	M12 HALF NUT ZP
10	2	R8087	M12 FULL NUT ZP

E7018 - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
11	2	E7020	ROD END FEMALE M12
12	1	E7021	ROD THREADED STEERING R52-ELT
13	1	E7022	TUBE TIE ROD STEERING R52-ELT
14	1	R8086	M12 HALF NUT ZP
15	2	R8087	M12 FULL NUT ZP



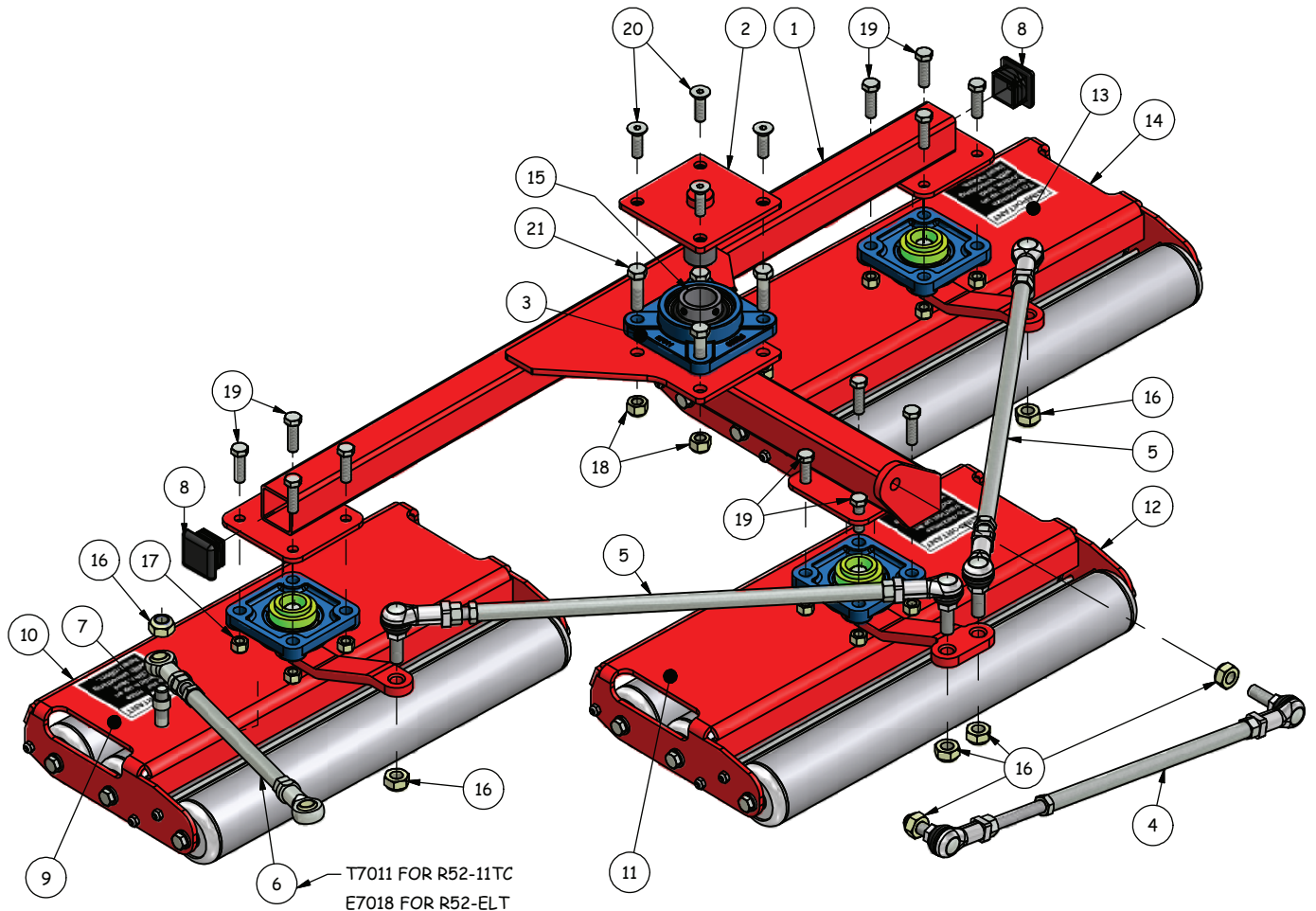
E7018
CONNECTING ROD ASSY STEERING R52-ELT

E7016
STABILISER ROD ASSY
TRI HEAD ASSY

E7017
CONNECTING ROD SMOOTHING HEADS
TRI HEAD ASSY

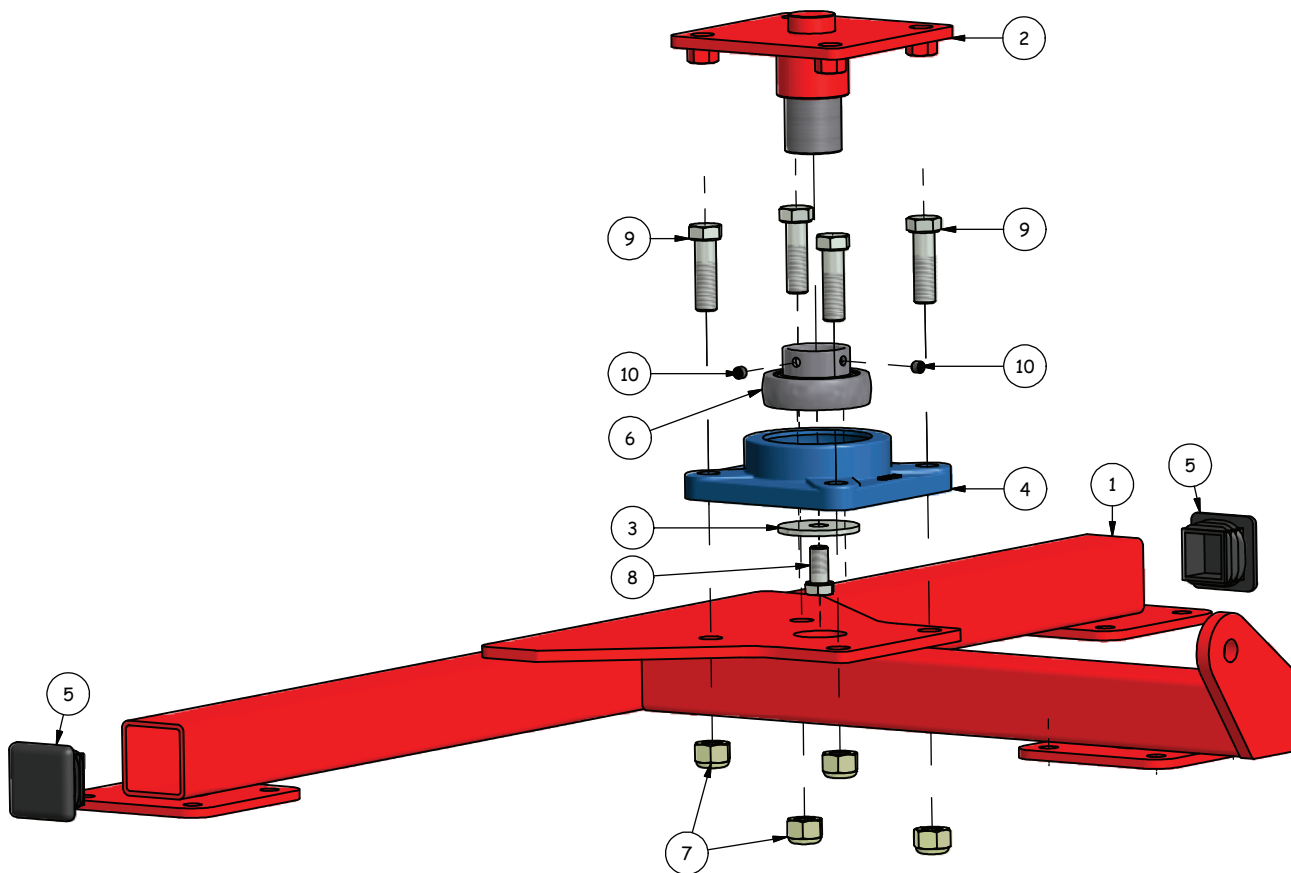
Steering Assembly

E7179 R52-ELT TRI HEAD SMOOTHING ROLLERS - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7008	SMOOTHING HEAD 'T' FRAME
2	1	E7009	SHAFT PIVOT WELDED ASSY
3	1	E7011	HOUSING FS206 4 HOLE
4	1	E7016	STABILISER ROD ASSY
5	2	E7017	CONNECTING ROD SMOOTHING HEADS
6	1	E7018	STEER CONNECTING ROD ASSY FOR R52-ELT
7	1	E7028	SPACER TUBE
8	2	E7033	END CAP PLASTIC - 40x40
9	1	E7166	SMOOTHING TRI HEAD FRONT ASSY
10	1	E7156	SMOOTHING TRI HEAD FRONT COVER
11	1	E7167	SMOOTHING TRI HEAD CENTRE ASSY
12	1	E7157	SMOOTHING TRI HEAD CENTRE COVER
13	1	E7168	SMOOTHING TRI HEAD REAR ASSY
14	1	E7158	SMOOTHING TRI HEAD REAR COVER
15	1	R5078	BEARING SB206
16	7	R8039	M12 NYLOC NUT ZP
17	12	R8055	3/8 UNF NYLOC NUT P-TYPE
18	4	R8057	7/16 UNF NYLOC NUT ZP
19	12	R8069	3/8 x 1-1/4 UNF BOLT ZP
20	4	R8122	3/8 x 1.25 UNF CSK BOLT ZP
21	4	R8172	7/16 x 1.1/2 UNF HEX BOLT ZP



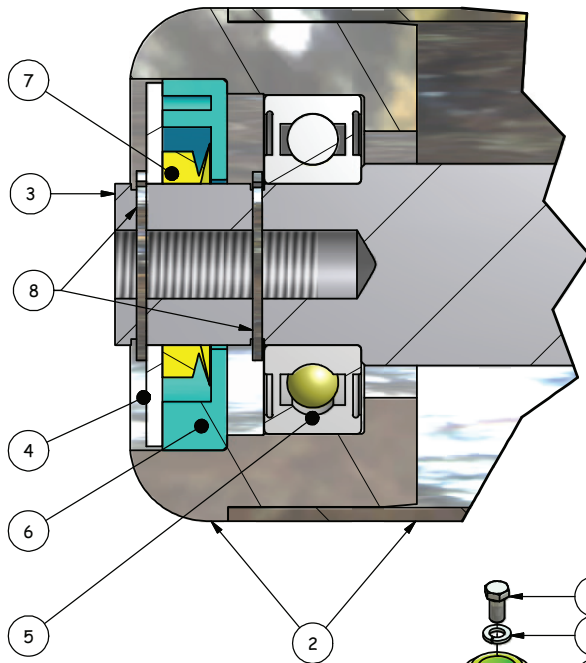
Smoothing Head T-Frame

R52-11TC & ELT 'T' FRAME ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7008	SMOOTHING HEAD 'T' FRAME
2	1	E7009	SHAFT PIVOT WELDED ASSY
3	1	E7010	WASHER M10x43x3
4	1	E7011	BEARING HOUSING F206 4 HOLE
5	2	E7033	END CAP PLASTIC - 40x40
6	1	R5078	BEARING B6
7	4	R8057	7/16 UNF NYLOC NUT ZP
8	4	R8066	3/8 x 3/4 UNF BOLT ZP
9	4	R8172	7/16 x 1.1/2 UNF HEX BOLT ZP
10	2	R8312	M6 x 6 GRUB SCREW BLACK



Smoothing Head

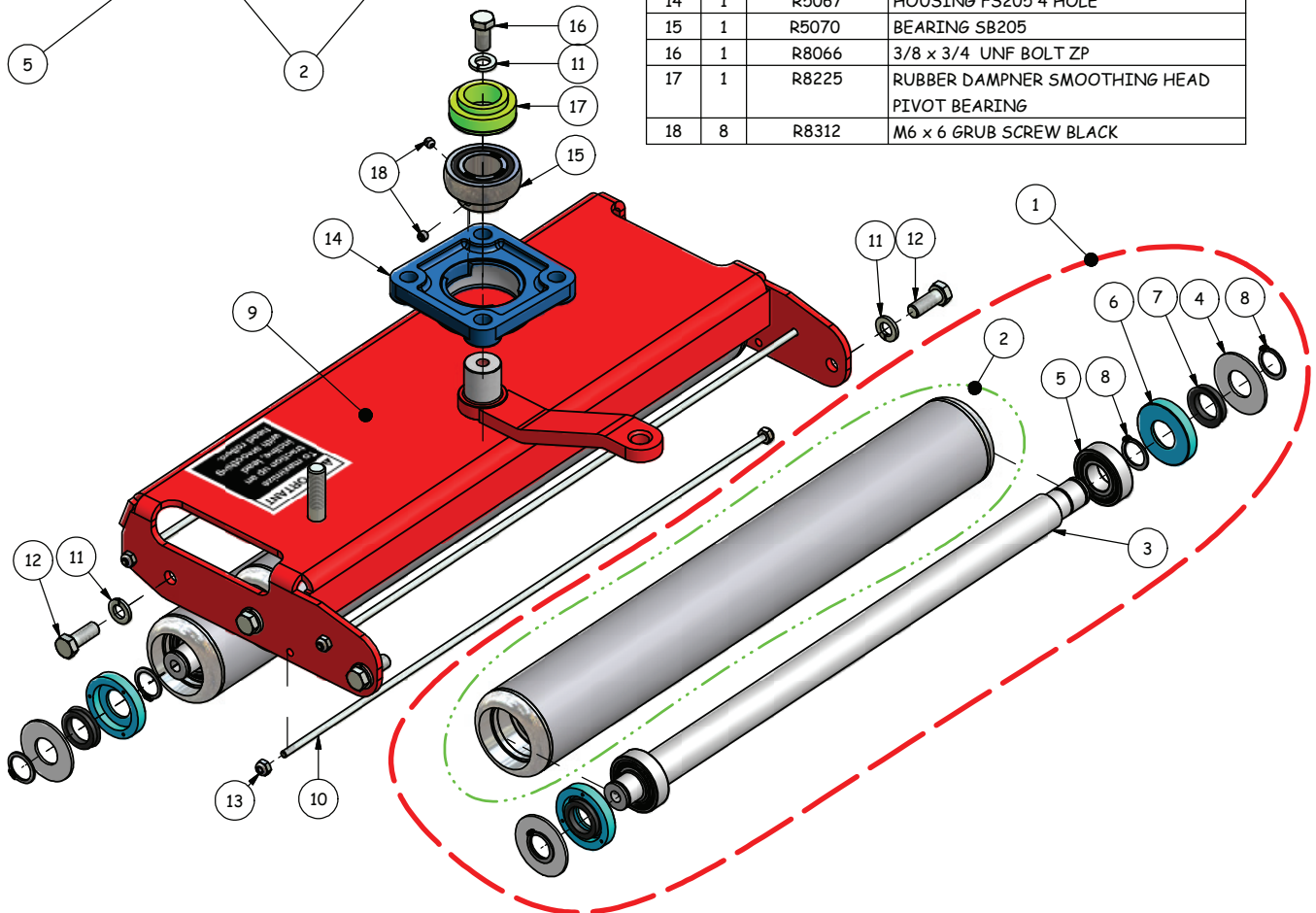
SECTION DETAIL - ITEM 1
(SMOOTHING ROLLER COMPLETE)



E7149 SMOOTHING ROLLER ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
2	1	E7134	TUBE & ENDS SMOOTHING ROLLER TRI HEAD
3	1	E7135	SHAFT SMOOTHING ROLLER TRI HEAD
4	2	R8209	SHIELD - END CAP 63.5 DIA
5	2	R8212	BEARING - END CAP SMOOTHING ROLLERS
6	2	R8213	SEAL INSERT - END CAP
7	2	R8214	SEAL V-RING V20A
8	4	R8215	CIRCLIP EXTERNAL - SHAFT ENDS

E7166 SMOOTHING HEAD FRONT ASSY &
E7167 SMOOTHING HEAD CENTRE ASSY
ARE NOT SHOWN.

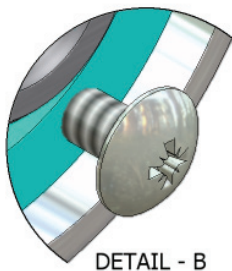
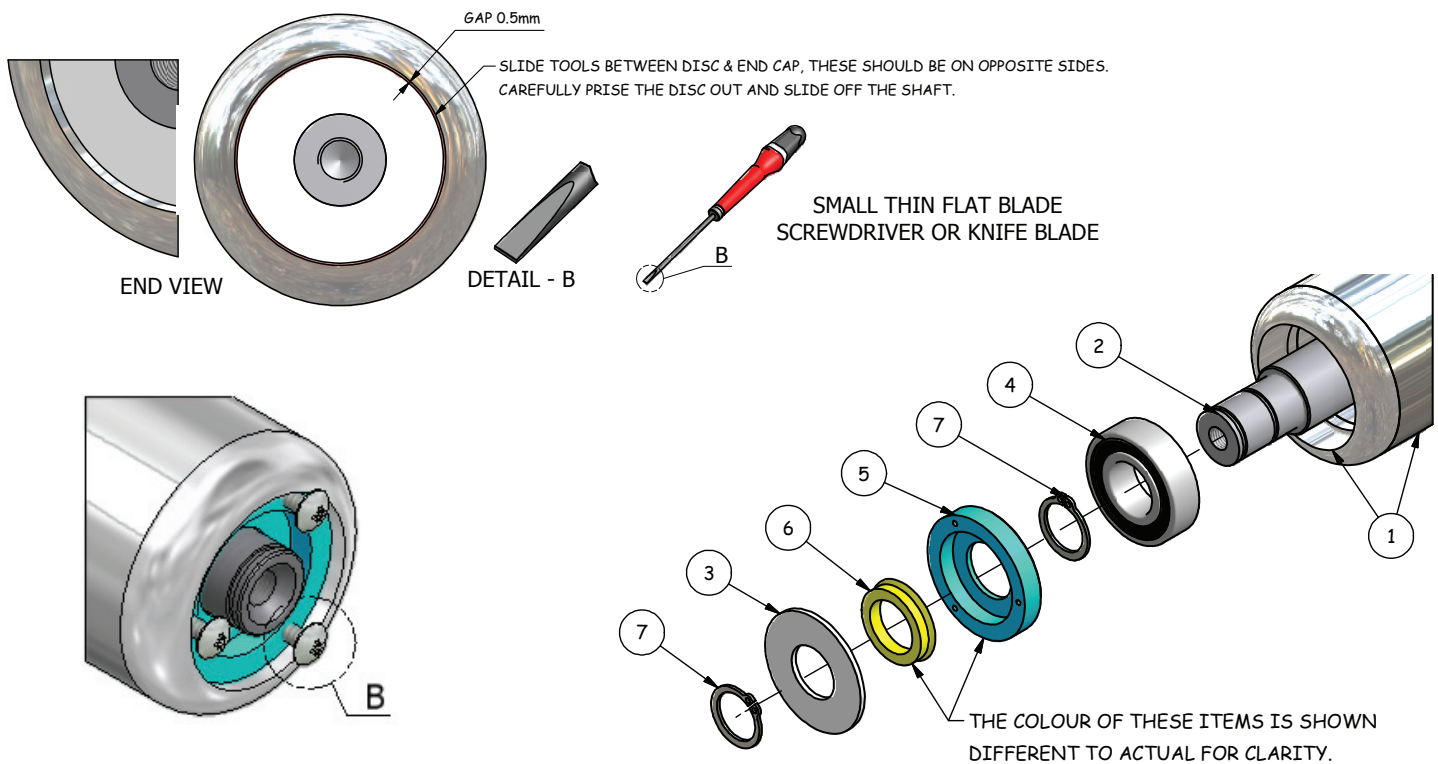
E7166 SMOOTHING HEAD ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	3	E7149	SMOOTHING ROLLER ASSY - TRI HEAD
9	1	E7156	SMOOTHING HEAD STEERING
10	3	E7170	ROD SCRAPER 3/16
11	7	R8052	3/8 SPRING WASHER ZP
12	6	R8067	3/8 x 1 UNF HEX BOLT ZP
13	6	R8250	3/16 UNF NYLOC NUT SS
14	1	R5067	HOUSING FS205 4 HOLE
15	1	R5070	BEARING SB205
16	1	R8066	3/8 x 3/4 UNF BOLT ZP
17	1	R8225	RUBBER DAMPNER SMOOTHING HEAD PIVOT BEARING
18	8	R8312	M6 x 6 GRUB SCREW BLACK



Smoothing Roller Bearings & Seals - Replacing

REMOVE & REPLACE BEARINGS AND SEALS AT BOTH ENDS OF THE ROLLER BY CAREFULLY READING THE FOLLOWING INSTRUCTIONS AND PERFORMING THE STEPS SHOWN.

1. Remove Circlip, Plastic Washer and V Seal (Items 7, 3 & 6) to expose Plastic Insert (Item 5). Repeat for other end.
 2. The exposed Plastic Insert (Item 5) can now be removed by inserting self tapping screws in each of the three (3) holes shown. Using a small pry bar or flat bladed screw driver under the head of the screw, lever the insert out using equal pressure at each point.
 3. Remove the second Circlip (Item 7) at both ends.
 4. Insert a 3/8" bolt into the end of the shaft (item 2), lightly press on the head of the bolt until the bearing (item 4) becomes free from the end of the roller tube (item 1).
- *TAKE CARE NOT TO DAMAGE THE END OF THE SHAFT, AS BEARING MAY NOT FIT CORRECTLY****
5. Remove the shaft from the roller and slide the bearing (item 4) off the shaft.
 6. Slide the shaft back into the roller and thru the bearing (item 4), and repeat step 4.



E7149 - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7134	TUBE & ENDS SMOOTHING ROLLER TRI HEAD
2	1	E7135	SHAFT SMOOTHING ROLLER TRI HEAD
3	2	R8209	SHIELD - END CAP
4	2	R8212	BEARING - END CAP
5	2	R8213	SEAL INSERT - END CAP
6	2	R8214	SEAL V-RING V20A
7	4	R8215	CIRCLIP EXTERNAL - SHAFT ENDS

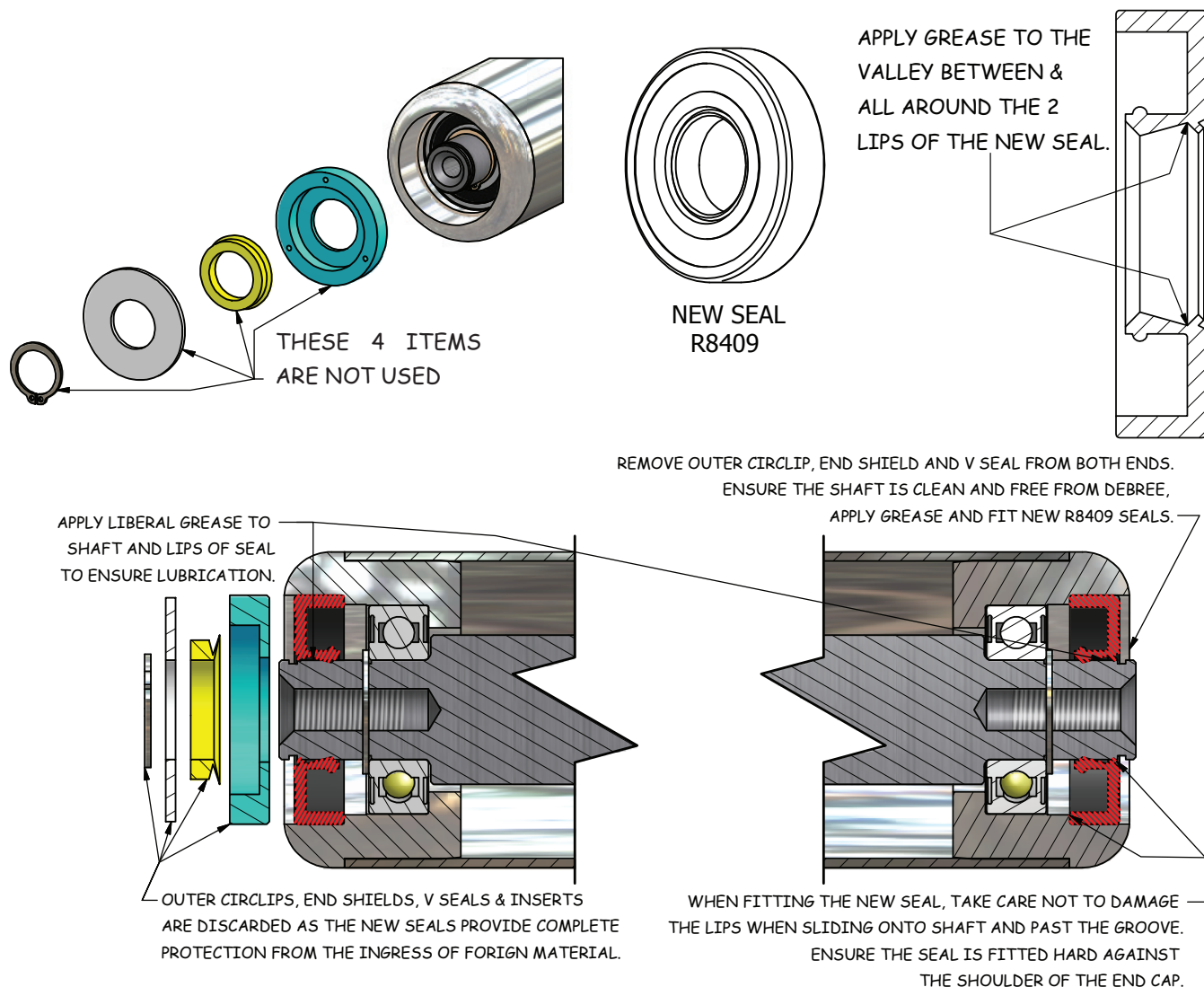
Smoothing Roller Bearings & Seals - Replacing

ROLLER ASSEMBLY INSTRUCTIONS

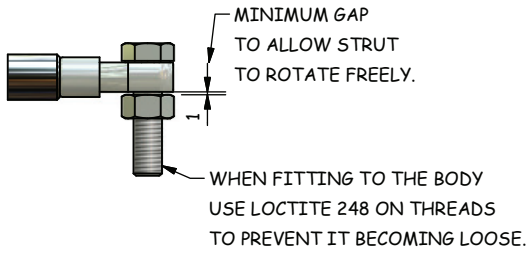
1. Clean any dirt or swarf from the ends of the shaft and remove any rust that may be on the end of the shaft with a fine emery paper.
2. Lightly press one of the supplied new bearings into the one end cap of the roller.
3. Slide the shaft into the roller and thru the bearing.
Install a circlip against the bearing ensuring it is correctly seated in the circlip groove in the end cap.
4. Repeat steps 1 & 2 for the other end.
5. Apply a liberal amount of standard axle or bearing grease to the exposed shaft and the hollow between the lips of the new seals.
6. Fit the supplied new seals (2 per roller supplied) into each end cap, note the seals must face inwards.
Lightly press each seal in making sure it is sitting square, then using a suitable tool press the seals in until seated against the shoulder in the roller tube end cap.
7. Before reinstalling the roller into the smoothing head, check that the roller turns smoothly on the shaft but with a slight resistance.

NOTE - TWO (2) ADDITIONAL CIRCLIPS ARE INCLUDED IN THE KIT IN CASE OF DAMAGE.

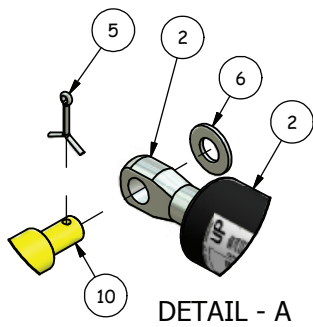
There is an alternative seal available that replaces the V seal, see below for details.



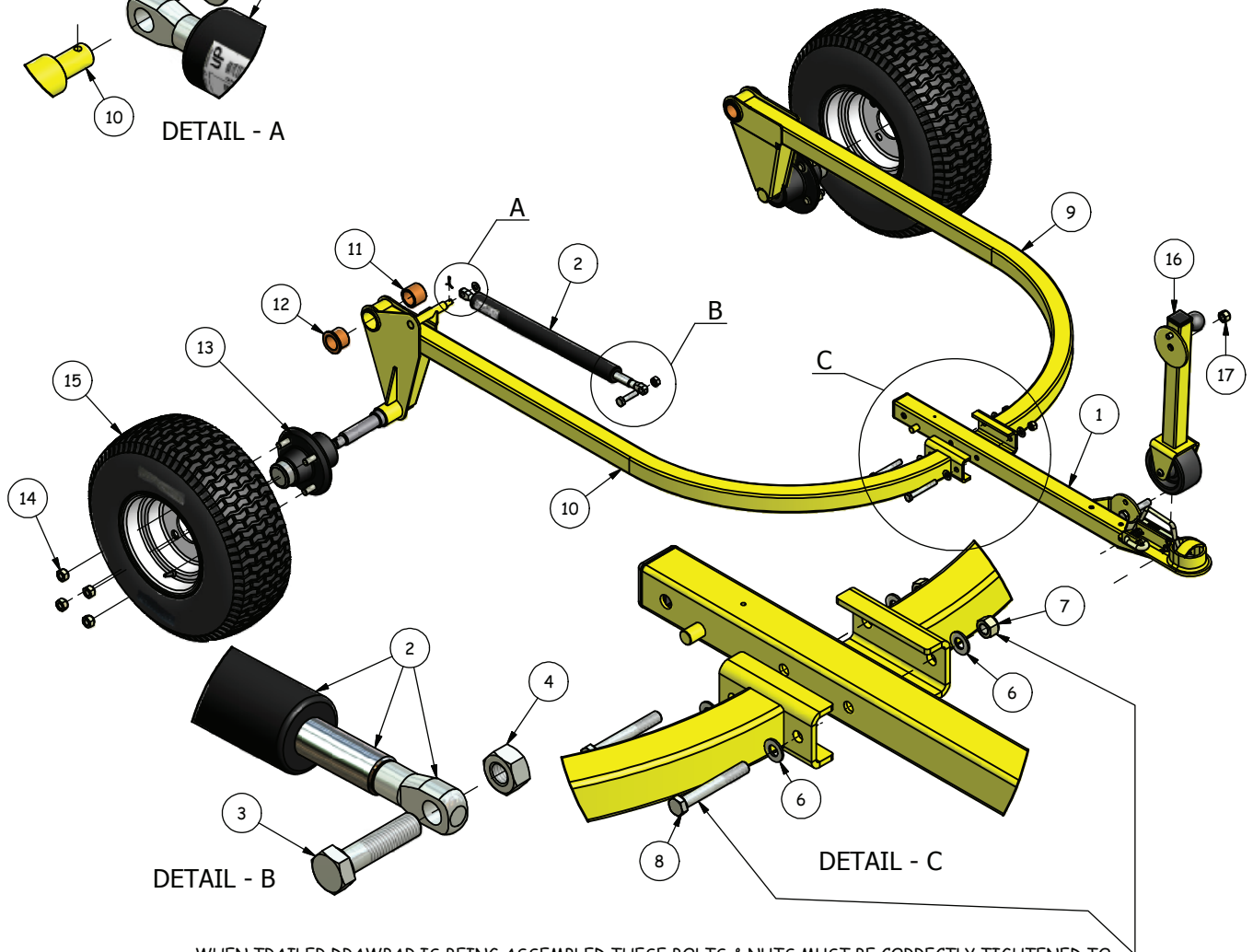
Trailer Frame Assembly



FITTING R5210 TO BODY

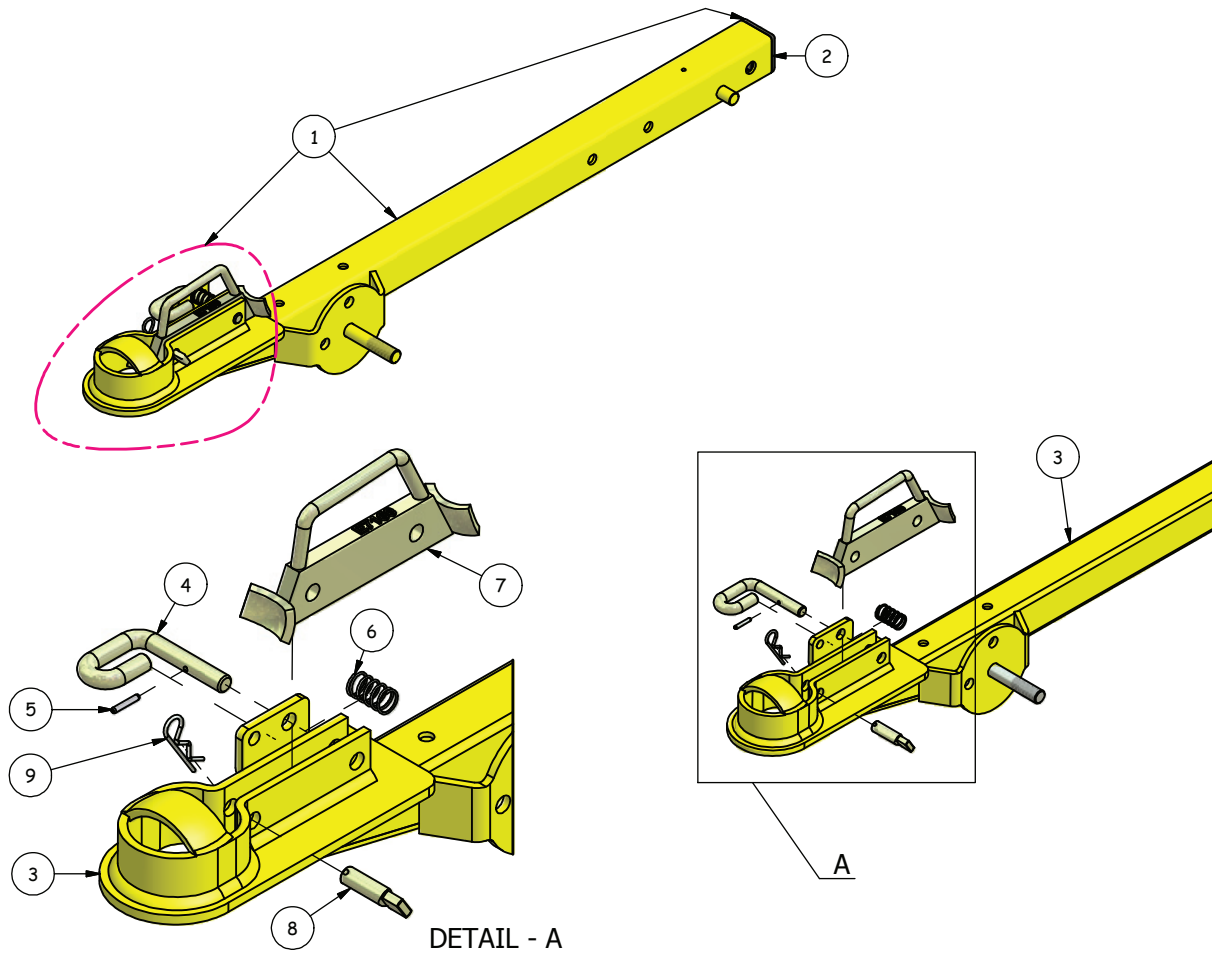


R52-ELTAc PARALLEL AXLE TRAILER ASSEMBLY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7163	DRAWBAR TOWBALL COUPLING ASSY FOR JOCKEY WHEEL
2	1	R5210	GAS STRUT
3	1	R8038	M10 x 40 BOLT ZP
4	1	R8088	M10 NUT ZP
5	1	R8036	SPLIT PIN M2-5X20 ZP
6	5	R8048	3/8 x 3/4 WASHER ZP
7	2	R8055	3/8 UNF NYLOC NUT P-TYPE
8	2	R8190	HEX BOLT 3/8 x 2-3/4 UNF
9	1	R8366	TRAILER ARM 175 PARALLEL AXLE LH WELDED ASSY
10	1	R8367	TRAILER ARM 175 PARALLEL AXLE RH WELDED ASSY
11	2	E7006	BUSH PLAIN BRONZE
12	2	E7007	BUSH FLANGED BRONZE
13	2	R9037	WHEEL HUB COMPLETE PARALLEL AXLE
14	8	R9036	WHEEL NUT 1/2" UNF - USA
15	2	R9074	WHEEL 4 STUD 18" TYRE
16	1	E7221	JOCKEY WHEEL LEG ASSY USA BUILD
17	1	R8101	1/2 UNF NYLOC NUT ZP



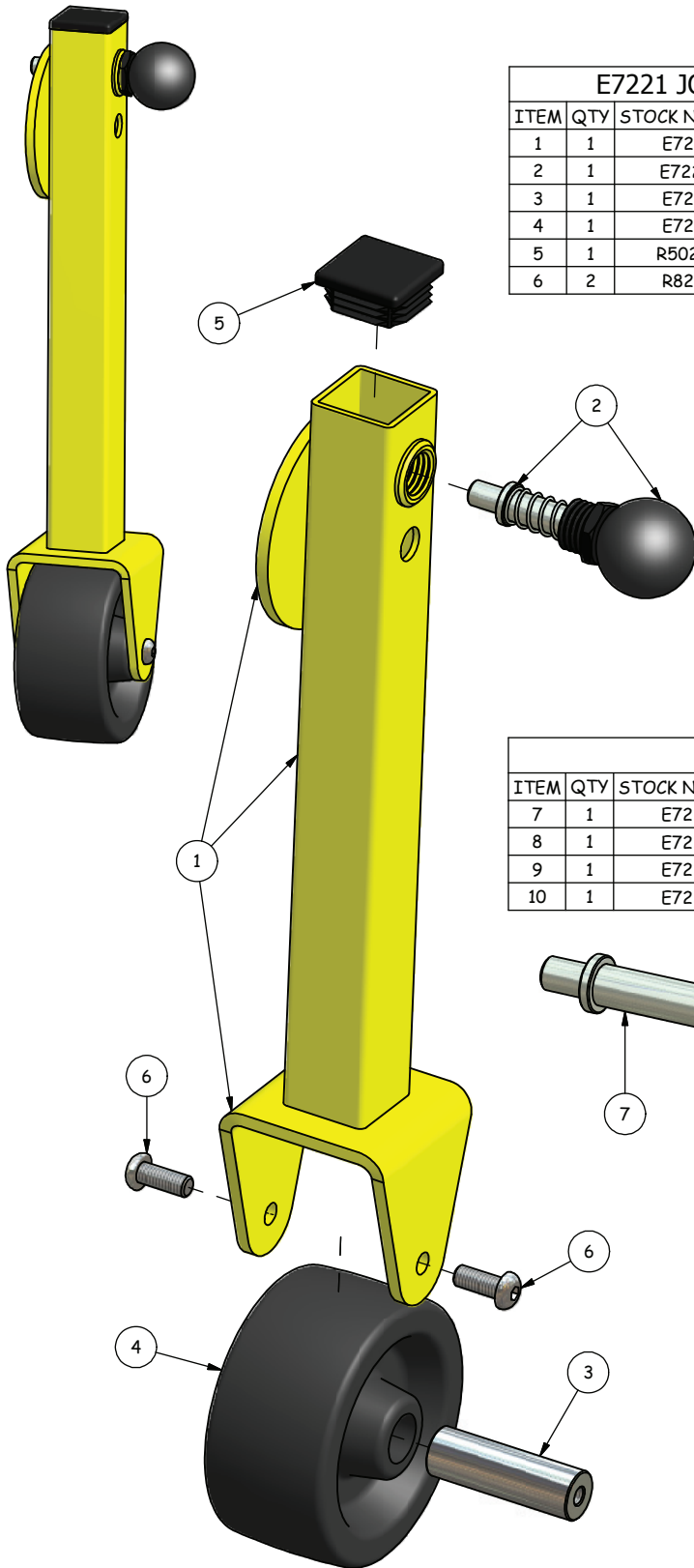
WHEN TRAILER DRAWBAR IS BEING ASSEMBLED THESE BOLTS & NUTS MUST BE CORRECTLY TIGHTENED TO 47 FOOT-POUNDS OR 63.7n-M. IF NOT SUFFICIENTLY TIGHT THE DRAWBAR CAN BECOME LOOSE AND THE HOLES WILL WEAR MAKING IT DANGEROUS WHEN TOWING OR RAISING / LOWERING THE TRAILER.

Drawbar



R52-ELTAc TRAILER DRAWBAR COMPLETE ASSY (E7163) - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7153	DRAWBAR WITH TOWBALL COUPLING ASSY
2	1	E7033	END CAP PLASTIC - 40x40
3	1	E7106	DRAWBAR TOWBALL COUPLING
4	1	E7112	LOCK PIN TOWBALL COUPLING
5	1	E7114	ROLL/SPRING PIN 1/8 x 3/4
6	1	E7113	SPRING LOCKING PIN
7	1	E7160	TOWBALL HITCH HANDLE 50MM-2inch
8	1	E7177	PIVOT PIN TOWBALL COUPLING
9	1	E7178	R CLIP TOW COUPLING

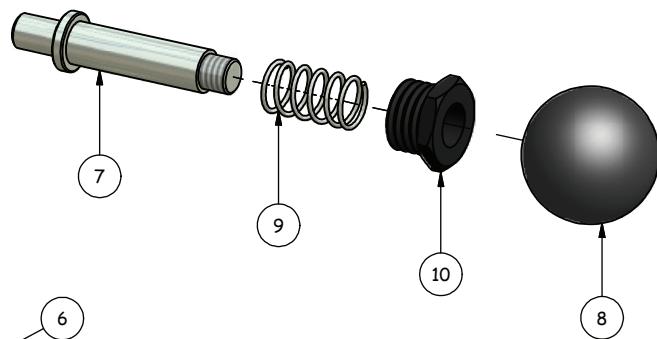
Jockey Wheel



E7221 JOCKEY WHEEL LEG ASSY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7220	JOCKEY WHEEL LEG WELDED ASSY USA BUILD
2	1	E7222	PULL PIN ASSY FOR JOCKEY WHEEL USA BUILD
3	1	E7223	SHAFT JOCKEY WHEEL USA BUILD
4	1	E7224	WHEEL FOR LEG - JOCKEY WHEEL USA BUILD
5	1	R5025B	END CAP BLACK PLASTIC 35x35
6	2	R8272	M8x20 HEX SOCKET RND HD

THIS VERSION IS FITTED TO UNITS FROM SERIAL NUMBER ACE2511 ONWARDS.

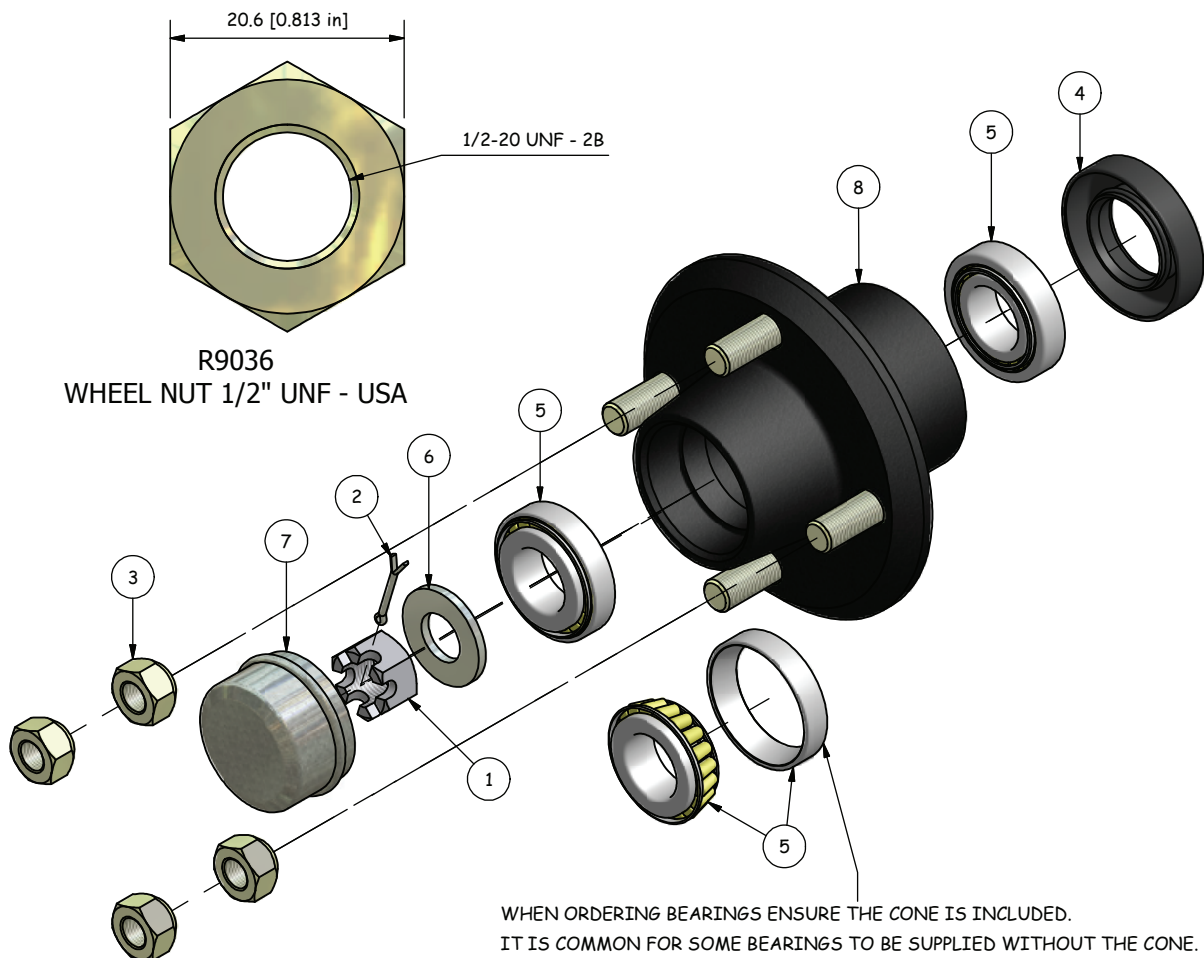
E7222 - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
7	1	E7225	PIN- PULL PIN FOR JOCKEY WHEEL USA BUILD
8	1	E7226	KNOB - PULL PIN FOR JOCKEY WHEEL USA BUILD
9	1	E7227	SPRING LOCKING PIN - JOCKEY WHEEL LEG
10	1	E7228	HEX NUT - PULL PIN FOR JOCKEY WHEEL USA BUILD



Hub (Parallel Axle)

R9037 HUB COMPLETE PARALLEL AXLE - PARTS LIST

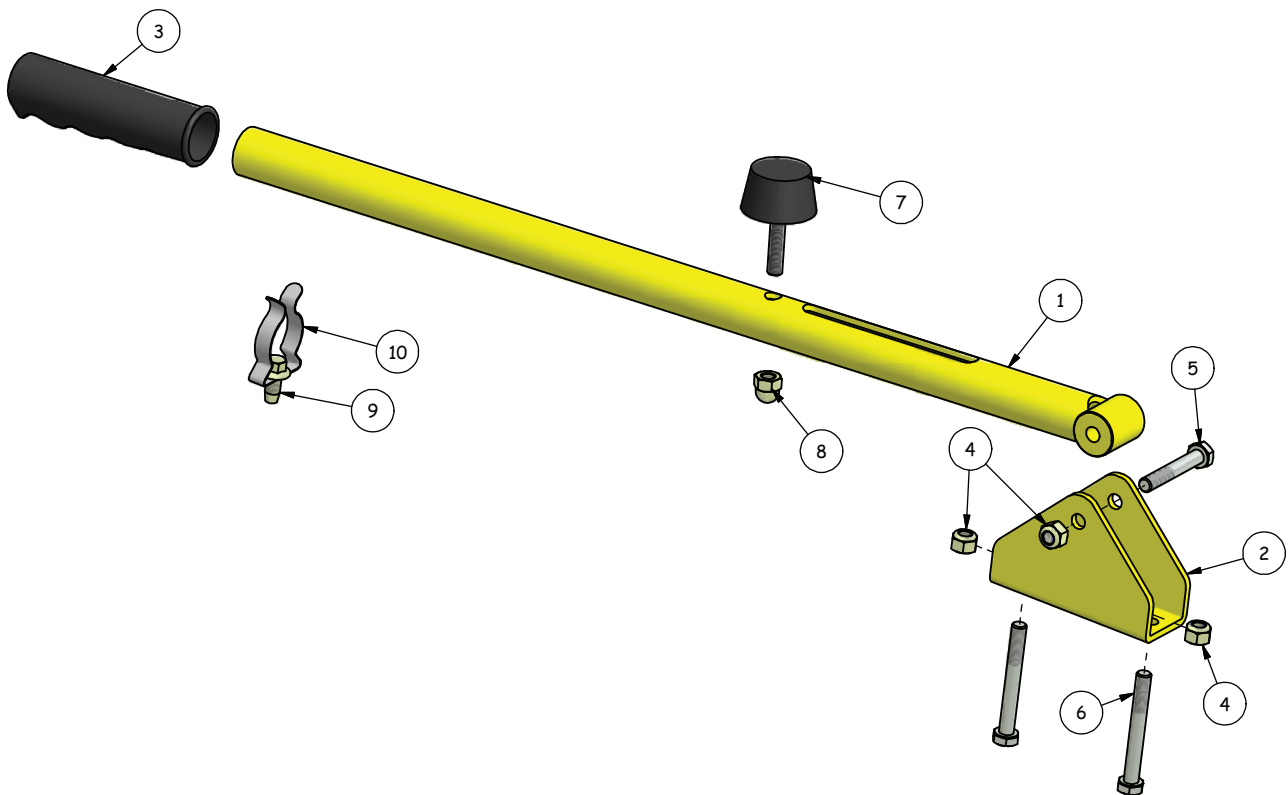
ITEM	QTY	STOCK NUMBER	TITLE
1	1	R9033	CASTLE NUT-STUB AXLE 3/4-16 UNF
2	1	R9034	SPLIT PIN-STUB AXLE
3	4	R9036	WHEEL NUT 1/2" UNF - USA
4	1	R9029	SEAL INNER HUB CR 12610
5	2	R9030	BEARING TAPER ROLLER L44643
6	1	R9032	WASHER-STUB AXLE
7	1	R9035	HUB BEARING CAP
8	1	R9038	HUB TRAILER PARALLEL AXLE



Option - Drawbar Extension Kit

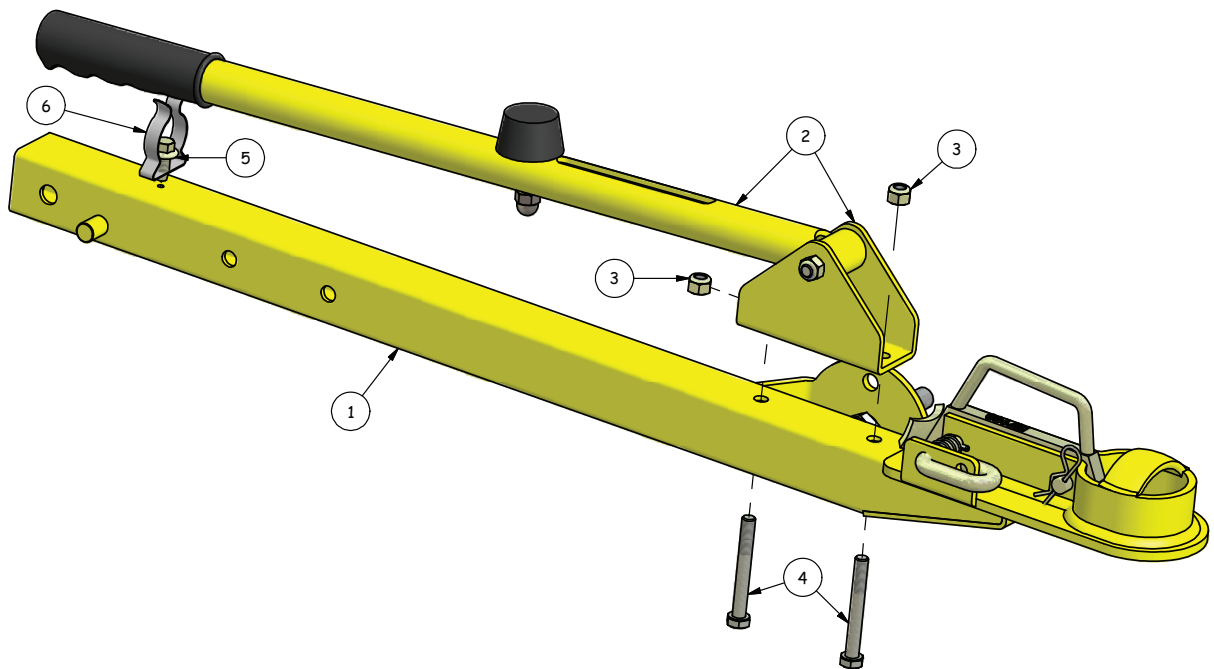
OPTIONAL EXTRA

E7183 DRAWBAR EXTENSION - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7070	DRAWBAR EXTENSION ROUND WELDED ASSY
2	1	EL540	DRAWBAR EXTENSION BASE
3	1	R5009	GRIP JOYSTICK
4	2	R8054	5/16 UNF NYLOC NUT
5	1	R8095	5/16 x 2.0 UNF BOLT ZP
6	2	R8189	5/16 x 2-1/2 UNF HEX BOLT
7	1	R8321	RUBBER BUFFER DRAWBAR EXTN HANDLE
8	1	R8329	M8 DOMED CAP NUT
9	1	R8035	10-12 x16 TEK SCREW ZP
10	1	R8322	CLIP 80-28-3



Option - Fitting Drawbar Extension Kit

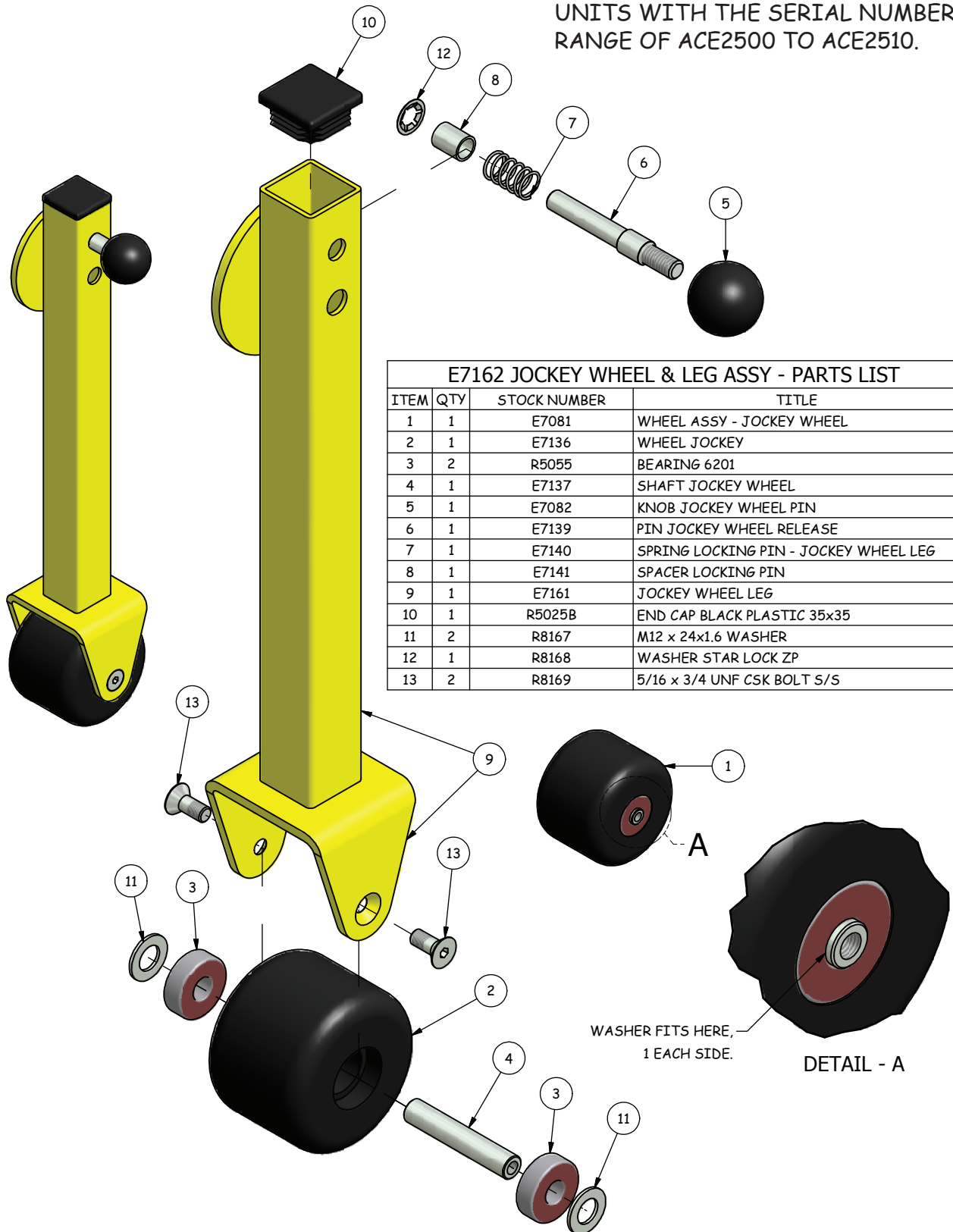
FITTING DETAILS - OPTIONAL EXTRA - E7183 DRAWBAR EXTENSION KIT (R52-ELT)			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7153	DRAWBAR TOWBALL COUPLING ASSY
2	1	E7183	DRAWBAR EXTENSION KIT
3	2	R8054	5/16 UNF NYLOC NUT
4	2	R8189	5/16 x 2-1/2 UNF HEX BOLT
5	1	R8035	10-12 x16 TEK SCREW ZP
6	1	R8322	CLIP 80-28-3



REMOVE THE PLASTIC PLUGS FROM THE HOLES AND FIT THE PARTS TO THE DRAWBAR AS SHOWN.

Jockey Wheel - Old Version

THIS VERSION IS FITTED TO UNITS WITH THE SERIAL NUMBER RANGE OF ACE2500 TO ACE2510.



E7162 JOCKEY WHEEL & LEG ASSY - PARTS LIST			
ITEM	QTY	STOCK NUMBER	TITLE
1	1	E7081	WHEEL ASSY - JOCKEY WHEEL
2	1	E7136	WHEEL JOCKEY
3	2	R5055	BEARING 6201
4	1	E7137	SHAFT JOCKEY WHEEL
5	1	E7082	KNOB JOCKEY WHEEL PIN
6	1	E7139	PIN JOCKEY WHEEL RELEASE
7	1	E7140	SPRING LOCKING PIN - JOCKEY WHEEL LEG
8	1	E7141	SPACER LOCKING PIN
9	1	E7161	JOCKEY WHEEL LEG
10	1	R5025B	END CAP BLACK PLASTIC 35x35
11	2	R8167	M12 x 24x1.6 WASHER
12	1	R8168	WASHER STAR LOCK ZP
13	2	R8169	5/16 x 3/4 UNF CSK BOLT S/S

Labels

E7190

TRU-TURF www.truturf.com

Model: **R52-ELTAc Golf Greens Roller**

Serial No. **ACE2500** Manufactured date

- Read and understand manual before operating roller.
- Check roller bearings regularly, replace if worn.
- Check belt tension or lubricate chain if fitted prior to use.
- Use recommended oil in the transmission.

Designed in Australia. Built in the USA.

R9087

CAUTION
Pinch point
keep feet
clear

R6057



E7195



E7075

WARNING

- KEEP MOTOR DRY (WATER OR OTHER LIQUIDS CONTACTING THE MOTOR WILL VOID MOTOR WARRANTY)
- DO NOT OPERATE MACHINE WITHOUT COVER IN PLACE
- USE THE CHARGER METER TO GAUGE BATTERY LIFE, NOT THE METER ON ROLLER.

RISK OF SHOCK

ROLLER TO BE STORED IN TOWING POSITION

R6059



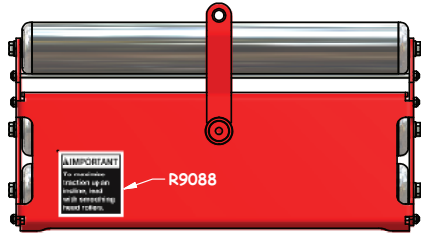
E7248

R9088

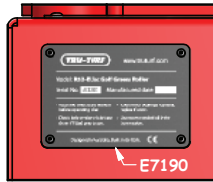
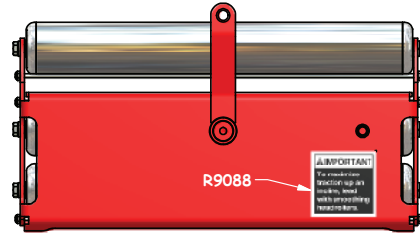
IMPORTANT

To maximize traction up an incline, lead with smoothing head rollers.

Labels



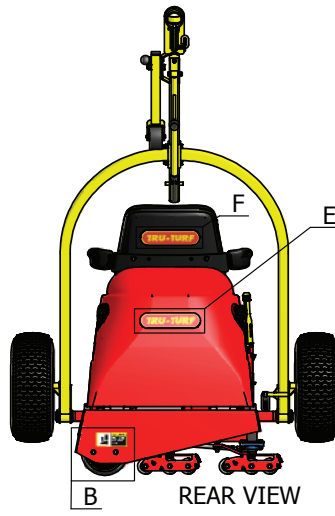
SMOOTHING HEADS



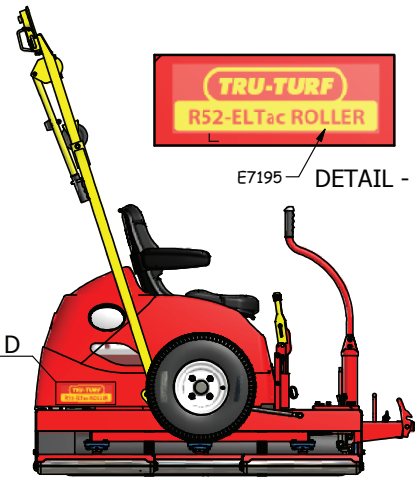
DETAIL - I



LEFT SIDE VIEW



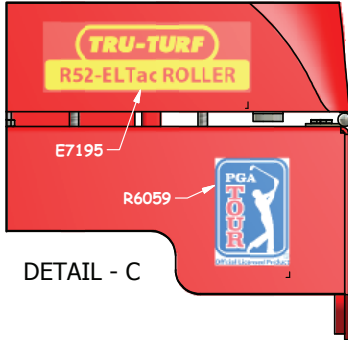
REAR VIEW



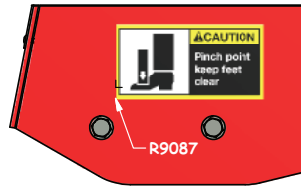
RIGHT SIDE VIEW



DETAIL - D



DETAIL - C



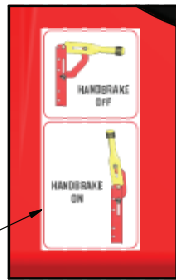
DETAIL - B



DETAIL - E



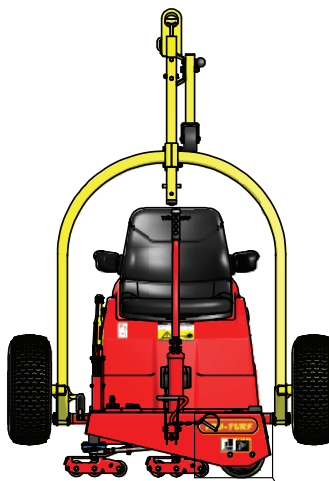
DETAIL - F



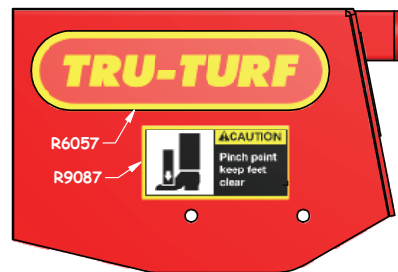
DETAIL - H



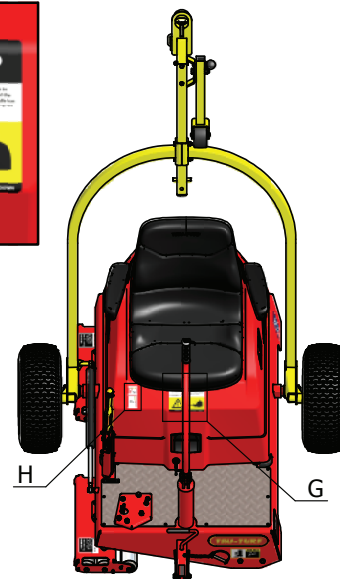
DETAIL - G



FRONT VIEW



DETAIL - A



DETAIL - G

Battery Fitting Instructions

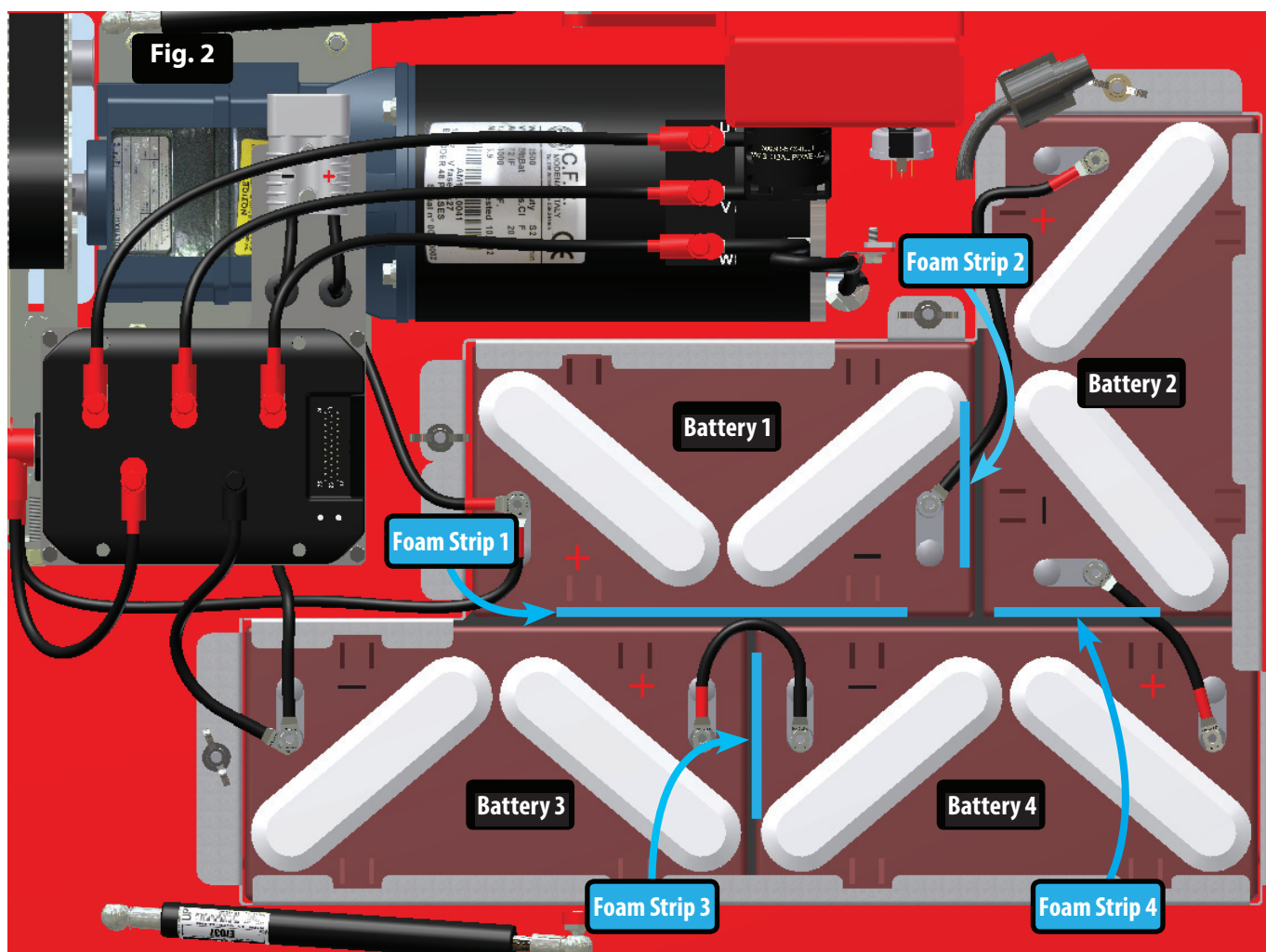
Instructions To Fit Batteries & Foam Strips

Refer to the Fig. 2 below to identify batteries and foam. The foam strips are to be attached to the upper most part and onto the side so that the edge of the foam strip is flush with the top of the battery (see Fig. 1).

1. Place battery 1 onto the machine and locate into position, attach foam rubber strips 1 & 2 to side and end of battery.
2. Place battery 2 onto the machine and locate into position, attach foam strip 3 to end of battery 2.
3. Place battery 3 onto machine and locate into position, attach foam strip 4 to end of battery 3.
4. Place battery 4 onto machine and locate into position.
5. Fit battery clamping frame over batteries and attach the 5 washers and wing nuts, finger tighten only.

To remove the batteries: Reverse the steps from 5 to 1, ignore the instructions regarding the foam strips.

Terminal Covers not shown for clarity of Battery Link Cables

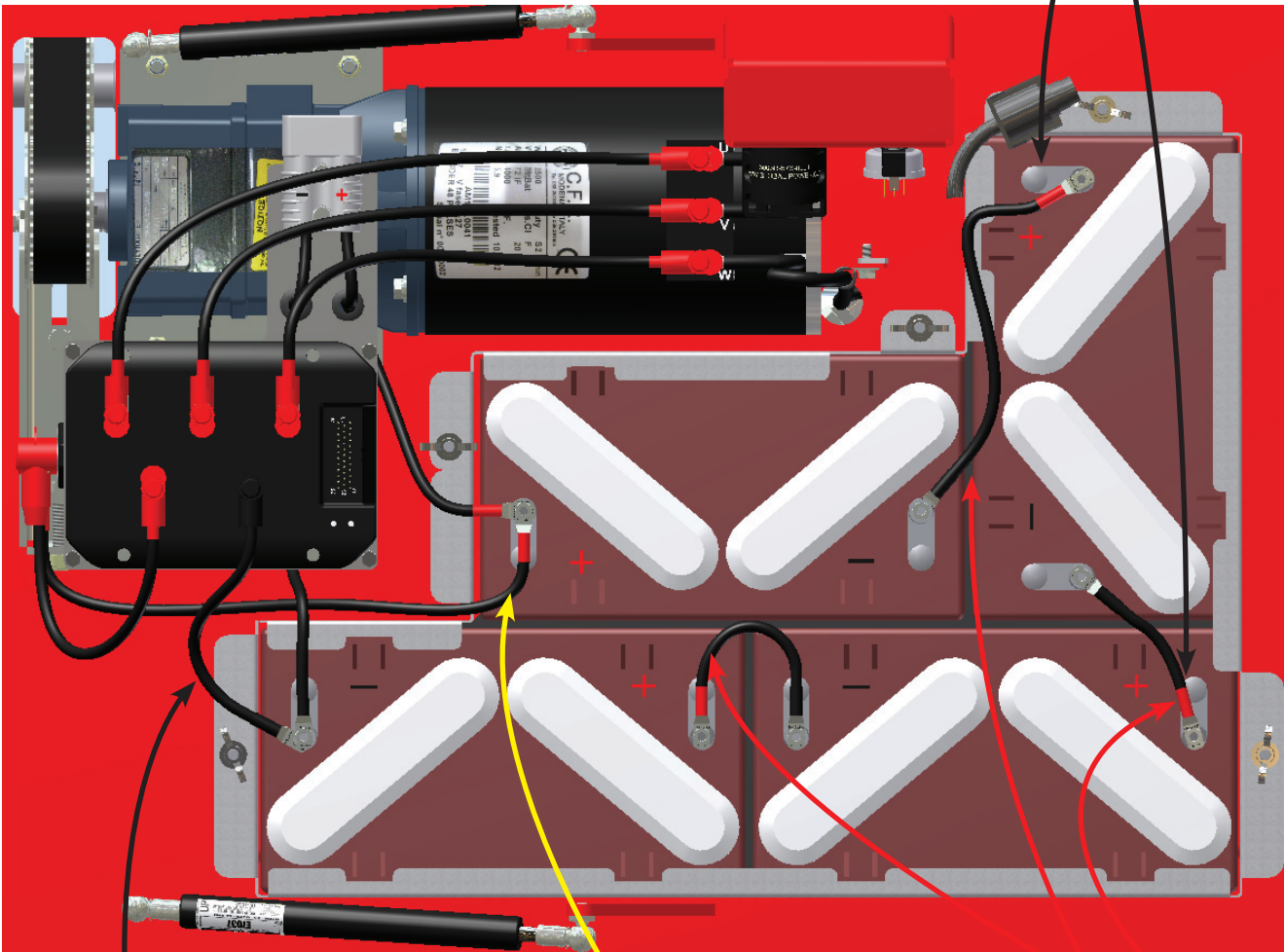


Battery Link Cable Connections

Battery Connection Diagram

- + Positive terminal
- Negative terminal
- ~ Battery link cable
- ~ Controller to negative post cable
- ~ Solenoid to battery positive post cable

Terminal Covers not shown for clarity of Battery Link Cables

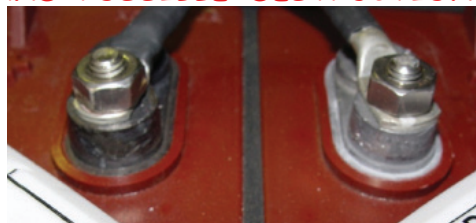


From Controller To
Battery Negative Post

From Solenoid To
Battery Positive Post

Battery Link Cables

ALL BATTERY TERMINAL POST FASTENERS MUST BE TIGHT TO PREVENT POOR CONNECTION, ARCING AND POSSIBLE DESTRUCTION OF THE BATTERY POSTS.



Battery Watering System

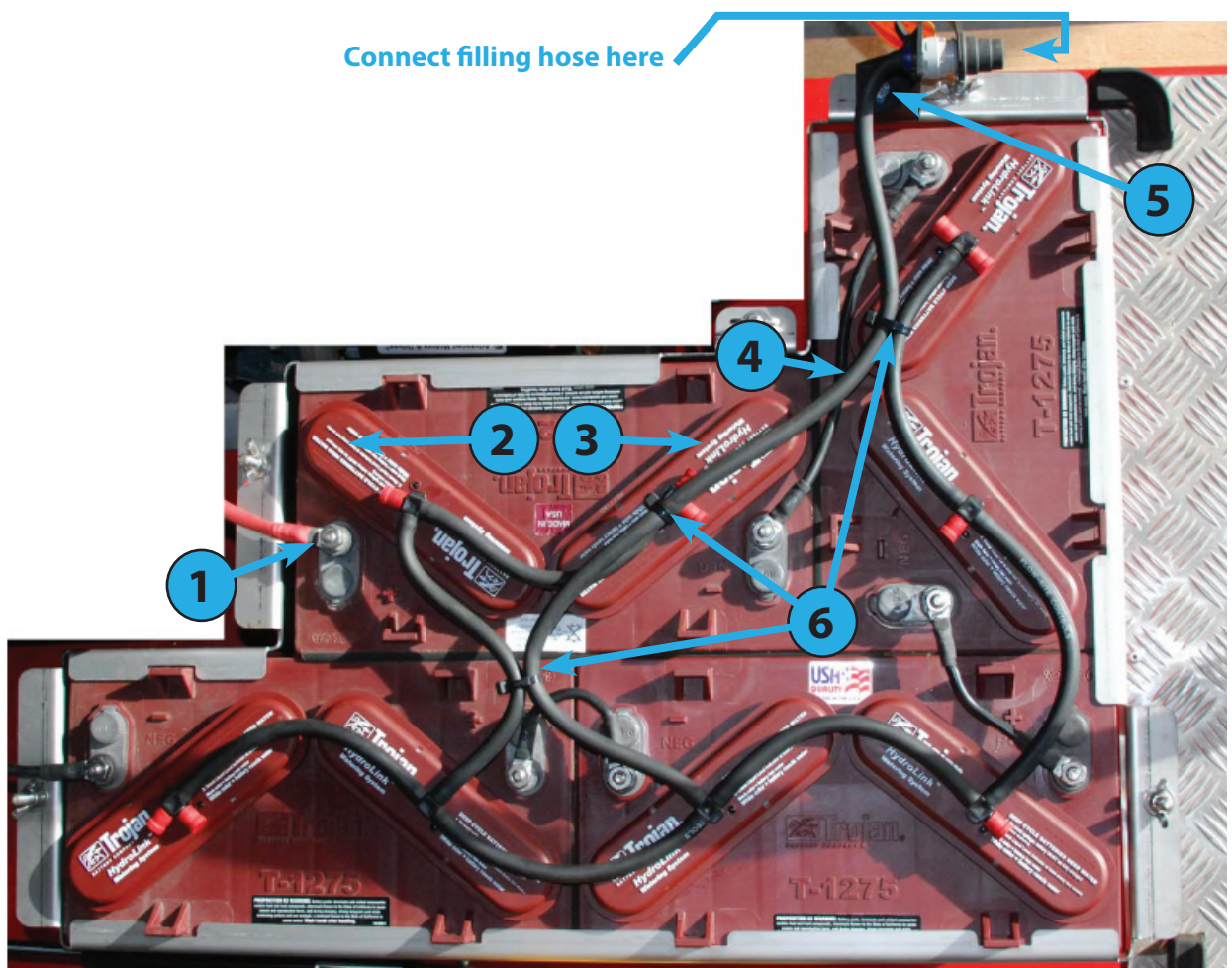
Installing E7118 Pro-Fill Kit (Battery Watering System & bracket)

1. Disconnect the battery positive terminal from the battery.
2. Remove all battery caps.
3. Place Pro-Kit manifolds into the battery holes and lock firmly into place.
4. Before cutting any tubes lay out the Pro-Fill tubes on the batteries as shown below. Ensure there is no kinks in the tube.
5. Undo the battery nut at point 5. Place the plastic bracket on top of the stainless steel battery bracket. Ensure the hose connecting end of the coupling is facing towards the front of the roller. Do not nut up firm, do not over tighten the bracket.

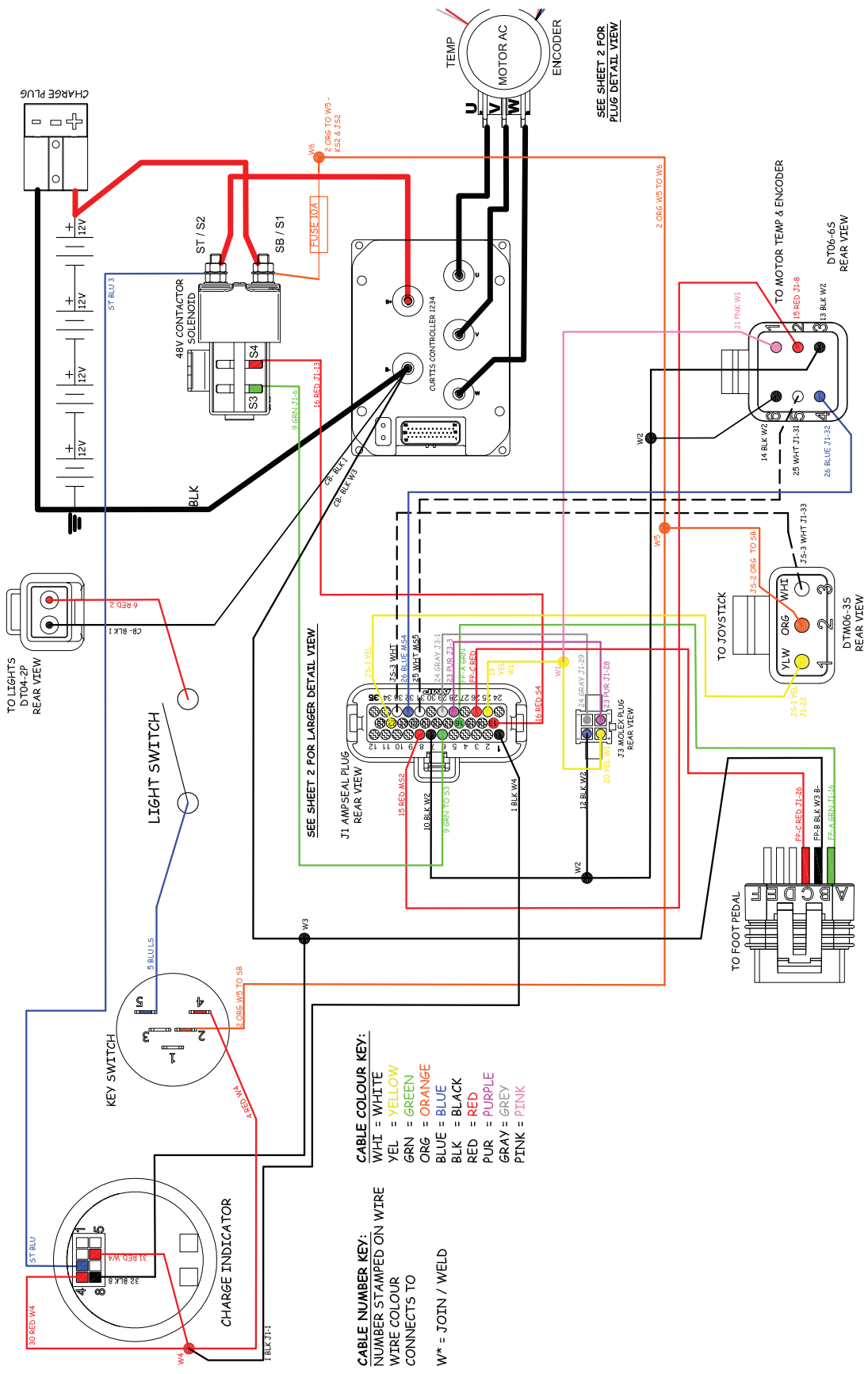
6. Use zip ties to secure tubing as shown.

Topping up battery water (to be done on a regular basis)

1. Using the hose/filter to tap arrangement, connect one end to a tap and the other end to the battery filling point. Turn on the tap and watch the red balls in the in-line container rotate, once the balls have stopped rotating the battery water level is correct. Disconnect the hose and recharge the batteries if necessary. **Never charge the batteries if they are low in water, permanent damage to the batteries will occur.**
2. Using the hand bulb filling arrangement, place the pickup tube into a container of distilled water, connect the outlet fitting to the battery filling point. Squeeze the bulb until it becomes tight to squeeze when this occurs the water level in the batteries is correct. Disconnect the filling device and charge the batteries if necessary as per instructions in "A".



Loom Schematic Diagram - Sheet 1

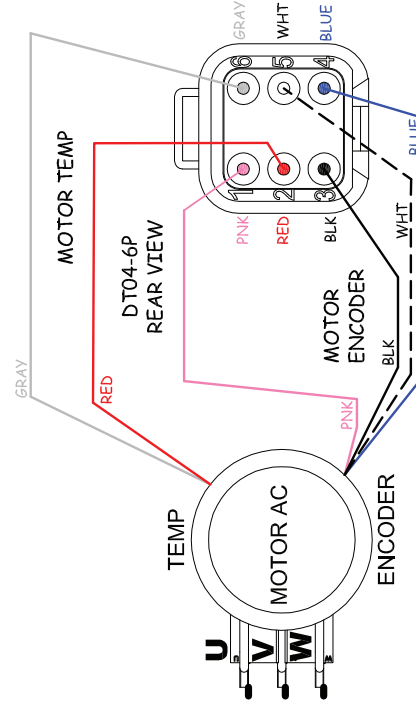
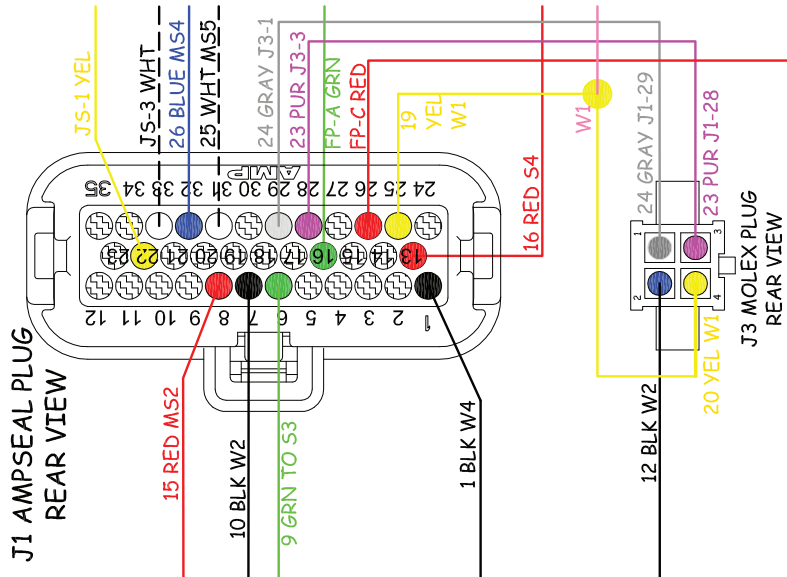


Loom Schematic Diagram - Sheet 2

CABLE NUMBER KEY:
 NUMBER STAMPED ON WIRE
 WIRE COLOUR
 CONNECTS TO

W* = JOIN / WELD

CABLE COLOUR KEY:
 WHI = WHITE
 YEL = YELLOW
 GRN = GREEN
 ORG = ORANGE
 BLUE = BLUE
 BLK = BLACK
 RED = RED
 PUR = PURPLE
 GRAY = GREY
 PINK = PINK



Sample Form

Warranty Registration & Inspection Report

Any units not registered with Tru-Turf Pty. Ltd. are not eligible for warranty claims. This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery. Please email, fax or mail signed and dated copy of the completed form to Tru-Turf Pty. Ltd.

Dealer Information

Dealer ID

Dealer

Contact

Email

Customer Information

Customer

Contact

Address

State

Zip/Postcode

Country

Email

Phone

Mark when completed

- | | |
|---|---|
| <input type="checkbox"/> Red Cap on Oil Tank has been removed and replaced by the Black Breather Cap. | <input type="checkbox"/> Sprockets for Transmission and Drive Roller are tight. |
| <input type="checkbox"/> Transmission Oil checked at correct level. | <input type="checkbox"/> Trailer Arm Pivot Bushes have been greased. |
| <input type="checkbox"/> Engine Oil checked at correct level. | <input type="checkbox"/> "Important Notice" regarding the correct oils to be used in the Transmission has been read and complied with. |
| <input type="checkbox"/> Tire pressures checked to a maximum 18psi (124kPa). | <input type="checkbox"/> All Safety Decals have been installed and are legible. Operating and Safety Instructions have been read and understood. |
| <input type="checkbox"/> Drive Chain lubricated with a water-displacing solvent (WD40, CRC etc.). | <input type="checkbox"/> Transmission Guard is in place and secured. |
| <input type="checkbox"/> Drive Chain tension is correct. | <input type="checkbox"/> Seat, Joystick, Trailer Arms, Dampener Struts, Drawbar, Wheels and Tires are correctly assembled, installed and secured. |
| <input type="checkbox"/> Nuts, Bolts, Grub Screws are tightened. | |
| <input type="checkbox"/> Bearings have been lubricated and rotate freely. | |

Inspection Report & Safety Check

Model No.

Serial No.

Delivery Date

The above equipment and operator's manual have been received by the buyer and they have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Submit Claim Form

Sample Form

Warranty Claim Form

Dealer Information

Dealer ID	Dealer
Contact	Email

Customer Information

Customer	Contact
Address	State
Zip/Postcode	Country
Email	Phone

Machine Information

Model No.	Serial No.	Hour Meter Reading	Job/Repair Order Number
Unit Failure Date	Repair Start Date	Repair Completion Date	Hours spent on repair

Issue Details

Describe the complaint, cause and corrective action

Cause of issue	Type of issue
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Manufacturer's parts used

Quantity	Part No.	Description	Price	Sub-Total
				\$
Add Part				Total \$

Additional Parts and Charge

Quantity	Part No.	Description	Price	Sub-Total
				\$
Add Part				Total \$

Labour Charges

Hours	Description	Rate / Hour	Sub-Total
			\$
Add Item			Total \$
Claim Total \$			

Submit Claim Form

Notes & Bulletins