



**WHEEL SYSTEMS**  
Service Manual





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**PLEASE NOTE:** The following service information is provided as a guide for the professional mechanic. These instructions are written with the assumption that the mechanic is familiar with bicycle repair principles and has suitable and appropriate tools. Be certain that this manual pertains to the specific model and model year of Rolf Prima wheel in question.

## SECTION ONE:

### INSPECTION – BEFORE EVERY RIDE

Before every ride be sure to inspect every item on this list to ensure your Rolf Prima wheels are in top condition and are properly installed on your bicycle. If you find that your wheel system requires service or further inspection, see [www.rolfprima.com](http://www.rolfprima.com) for our Factory Service Program or contact your dealer.

#### CHECK THAT THE WHEELS RUN TRUE

Spin each wheel and watch the rim where it passes the brake pads. If the rim moves up and down [radially] or side to side [laterally] excessively, or does not spin evenly, have the wheel inspected by your Rolf Prima Wheel System dealer.

#### CHECK THAT THE RIMS ARE CLEAN

Dirty or greasy rims greatly reduce braking effectiveness. Particularly dirty rims can present a significant safety risk. Clean the rim braking surface with a clean shop rag or wash them with soap and water and let them air dry.

#### CHECK THAT BRAKE PADS ARE CLEAN AND PROPERLY ADJUSTED

#### CHECK THAT THE TIRES ARE PROPERLY INFLATED

For Rolf Prima wheels with aluminum clincher rims, inflate tires with a bicycle pump equipped with a pressure gauge to the inflation pressure indicated on the tire sidewall (See Tire Pressure section). Your rims can be damaged by riding with insufficient tire pressure. Inspect the tires for damage or excessive wear. If you have any questions about the condition of your tires, have them inspected by your local bike shop.

For Rolf Prima Carbon tubular wheels, inflate tires to the maximum inflation pressure indicated on the tire sidewall, but at least to a minimum of 110 psi. Please note: Carbon fiber rims can be easily damaged if ridden with insufficient tire pressure. Impact damage to rims is not covered under your Rolf Prima warranty. Many tubular tires tend to lose significant amounts of pressure over a short period of time. It is very important that tubular tires are checked for proper tire pressure before every ride.

#### CHECK THAT THE QUICK RELEASE MECHANISMS ARE PROPERLY CLOSED

Your wheels are equipped with quick release wheel retention mechanisms. The quick release allows the wheel to be removed and installed without tools. For proper and safe operation, read these instructions carefully.

### ⚠ WARNING!

Failure to have wheel quick release retention mechanisms properly adjusted and closed may cause loss of control resulting in personal injury or death. If you have any questions about the operation of this system, consult your dealer.

## OPERATION OF QUICK RELEASE MECHANISMS

**IMPORTANT:** IF YOU DO NOT UNDERSTAND ANY PORTION OF THESE INSTRUCTIONS, HAVE YOUR ROLF PRIMA DEALER SHOW YOU PROPER INSTALLATION OR CONTACT ROLF PRIMA DIRECTLY.

1. Check both wheels before every ride.
2. Move the quick release lever to the OPEN position and set the wheel so it seats firmly in the frame or fork tips. [see fig. 1].

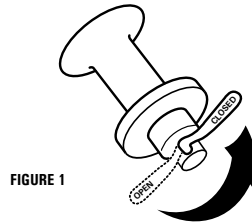


FIGURE 1

3. With the lever about halfway between the OPEN and CLOSED position [see fig. 2], tighten the quick release adjusting nut on the opposite end of the quick release axle until finger tight.

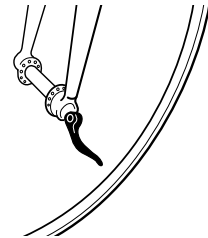


FIGURE 2

4. Place the quick release lever in the palm of your hand and move the lever fully into the CLOSED position. (see figure 3 for front wheels, figure 4 for rear wheels). At the half way closed position you should feel resistance to this motion.

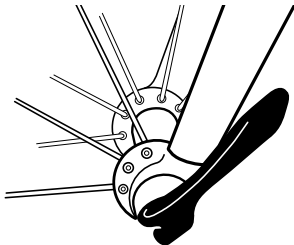


FIGURE 3

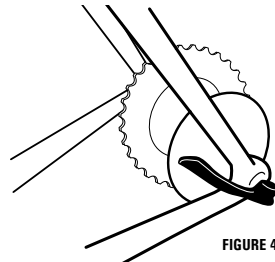


FIGURE 4

5. If the quick release lever is able to be moved to the CLOSED position with little or no resistance, clamping strength is insufficient. Return the lever to the OPEN position and tighten the nut further. Close the lever, testing again for resistance. When the quick release mechanism is properly tightened and clamped in the closed position, the clamping force will be adequate to cause metal into metal engagement [embossing] of the fork or frame tips. It should require effort to close the Quick Release, yet it should not be difficult.

**DO NOT TIGHTEN THE QUICK RELEASE MECHANISM BY USING THE QUICK RELEASE LEVER LIKE A WING NUT [fig 5]. OVERTIGHTENING THE QUICK RELEASE MECHANISM MAY DAMAGE THE QUICK RELEASE ASSEMBLY. FOR FURTHER INFORMATION ON CORRECT ADJUSTMENT OF THE QUICK RELEASE TENSION, SEE ADDITIONAL INFORMATION BELOW:**

**ADDITIONAL INFORMATION:** To properly close the quick release mechanism requires between 15 and 45 pounds of force. [55 to 200 Newton]. If the required closing force is greater than 45 pounds, open the lever and loosen the quick release mechanism adjusting nut. Close the lever again. If it requires less than 15 pounds of force to close the quick release lever, open the lever and tighten the adjusting nut. Repeat adjustment as needed.

6. Orient the quick release levers so they do not interfere with any other part or accessory, such as rack or fenders. Be sure to orient the quick release levers in such a way that they will not become accidentally snagged by obstacles in the path of the bicycle. [fig 3, 4].
7. Perform these two tests to ensure that the quick release mechanisms are properly closed:
  - a. Lift the front of the bicycle and give the top of the tire a sharp downward blow with a closed fist. The wheel should not come out of the fork, be loose, or move from side to side. Repeat this test to the rear wheel. If uncertain, repeat the tightening process, as shown in steps 2–6 above.
  - b. With the quick release lever properly adjusted and closed, it will not be possible to rotate the quick release lever in a circular motion parallel to the wheel as pictured in fig. 5.

FIGURE 5



## INSPECTION – WEEKLY

### **CHECK TO BE SURE THERE ARE NO LOOSE, DAMAGED, OR BROKEN SPOKES.**

If a wheel is not in good condition, the strength of the wheel and the effectiveness of the brakes will be greatly diminished. If you suspect spokes are loose or damaged, the wheel must be removed from service immediately and NOT RIDDEN. Take the wheel to your Rolf Prima dealer for inspection.

### **CHECK TO BE SURE THERE ARE NO CRACKS IN FRONT OR REAR RIMS.**

Aluminum rims are highly stressed components and have a finite fatigue life. As a rim nears the end of its fatigue life, cracks will develop. If cracks are found, do not ride the wheel. Take the wheel to your dealer for inspection.



Carbon fiber rims may become damaged as a result of an accident, impact, or improper handling. Damage to carbon fiber components may be contained internally and the rim may appear outwardly normal and undamaged at a glance. It is very important to thoroughly inspect all the parts on your bicycle after an accident – but it is especially important that you thoroughly inspect your carbon fiber rims for signs of damage. Look closely for cracks, deep scratches or gouges, delamination, loose fibers and other surface flaws. If you suspect the rim has been damaged, take your wheel to your dealer for further inspection.

### ▼ **WARNING!**

Damage to carbon fiber components may be contained internally and appear normal and undamaged at a glance. A damaged carbon fiber part can fail suddenly and possibly cause serious injury or death. Inspect your carbon rims frequently. If you suspect your carbon fiber rims have been damaged, replace them before riding, or take your bicycle to your dealer for inspection and service.

## **INSPECTION – MONTHLY**

### **CHECK TO ENSURE THERE IS NO EXCESSIVE LOOSENESS IN HUB BEARINGS IN BOTH WHEELS.**

Lift the bicycle and attempt to move the rim laterally, left to right. Look, listen, and feel for looseness in the hub bearings. Spin the wheel and listen for any grinding or other unusual noises. If the hub runs noisily or is loose, take the wheel to your Rolf Prima dealer for adjustment or service.

### **CHECK BOTH RIMS FOR WEAR.**

Bicycle rims will wear from the friction of braking and may eventually require replacement. Inspect the rim sidewalls and braking surfaces for heavy grooving or cracks. If you see or suspect excessive wear on the rims, take the wheels to your Rolf Prima dealer for inspection.



## SECTION TWO:

### INSTALLATION AND RECOMMENDATIONS

Before attempting any installation of components onto this wheel set, make sure the parts are compatible. Tires, tire valves, gear cluster, brakes and the frame and fork spacing must be correct. If you are unsure of the compatibility of any part, consult your dealer.

### BRAKES AND BRAKE PADS

#### PROPER BRAKE PAD ADJUSTMENT

Brake pads should be adjusted so that they sit 1mm to 2mm away from the rim when the brakes are released. Brakes should be properly centered over the rim so that each pad is the same distance from the rim when the brakes are released.

Brake pads should be aligned properly with the braking surface of the rim and should contact only the machined brake surface of your rim. Check to be sure there is adequate clearance between the top of the brake pad and the tire. Some brake pads may be too tall to fit your wheels properly. Improper or misaligned pads can cause premature rim wear or a sudden tire blowout.

#### ⚠ WARNING!

Proper brake pad selection and brake adjustment is crucial to your safety. If you suspect your brakes are not working properly or your brake pads do not properly fit your wheels **DO NOT RIDE YOUR BICYCLE**. Take your bicycle to a qualified technician at a professional bicycle shop for inspection and service. Riding your bicycle with improperly functioning brakes could result in a loss of control and personal injury or death.

### BRAKE PAD SELECTION AND MAINTENANCE

#### RIMS WITH ALUMINUM BRAKING SURFACE: BRAKE PAD SELECTION AND MAINTENANCE

For best braking performance use Rolf Prima brake pads. Your Rolf Prima alloy wheels do not require special brake pads. Brake pads from many manufacturers are available in different compounds. It is important that medium compound pads designed for aluminum rims are used with your Rolf Prima wheels. Soft pads may cause brake stutter or be too "grabby." Hard compound pads are abrasive and will decrease the life of your wheels.

Clean your brake pads frequently. Road grit, small rocks and other items can become imbedded in your brake pads and cause accelerated wear of your brake wall surface. If you hear scratching noises when you brake, check and clean your pads.

Brake pads are not generally marked to identify the compound. If you have any question about the compound of your brake pads or about your brake pads at all, replace them with new pads. It is cheap insurance.

#### RIMS WITH CARBON BRAKING SURFACE

Rolf Prima Carbon wheels with carbon brakewalls feature a specially prepared braking surface but can still be susceptible to heat build-up issues and abrasion. Though these rims do not require special pads, some pads work better than others. We recommend

the use of Rolf Prima brake pads for use on all Rolf Prima carbon rims. We do NOT recommend Campagnolo brake pads. It is important that you test the suitability of any pad before racing or braking hard.

Use only supplied brake pads. Replace with Rolf Prima blue brake pads when supplied brake pads wear out. Use of other brake pads may void warranty. These pads are not for use with wheels with alloy brake tracks.

Wheels with carbon fiber rims will exhibit different braking characteristics than wheels with aluminum rims:

- ▾ Increased pad consumption. Carbon rims can have a higher rate of brake pad wear, especially in wet conditions. Check your brake pad thickness before each ride.
- ▾ Different wet braking performance. Carbon rims are fundamentally different from aluminum rims in wet braking performance. We recommend you ride the wheels in wet conditions prior to racing.
- ▾ Heat build up from prolonged braking. Carbon rims do not dissipate the heat generated by braking at the same rate as aluminum rims. Managing rim temperatures through proper brake application is important. If rims are allowed to overheat, damage to the rim and/or tire can result. During long descents, it is very important that brakes are applied with greater force, more frequently, and for the shortest possible time period. This technique of frequent, hard braking significantly reduces rim temperatures.

### ▾ CAUTION!

Carbon fiber rims have different braking characteristics and performance as compared to aluminum rims. Brake pad thickness must be checked frequently. Use caution when braking in wet weather. Control your speed on long descents with frequent, hard braking applications. It is VERY IMPORTANT that rims are not allowed to overheat. Overheating rims may cause rim and tire damage which can result in loss of control and personal injury or death.

## Brakes and Tandem Wheels

Rolf Prima tandem wheels are compatible with industry standard tandem brakes. The standard front Tandem wheel is compatible with rim brakes while the front Disc Tandem wheel is compatible with either rim or disc brake. Rear tandem wheels are compatible with rim or disc brakes.

Follow the brake manufacturer's instructions for installation and adjustment. If your tandem is equipped with drag brakes, follow the bicycle maker's instructions on the proper use of the brakes. Consult your tandem bicycle owner's manual or your tandem bicycle dealer for assistance.

### MTB disc brakes

Rolf Prima mountain bike wheels are compatible with 6 bolt industry standard disc brake rotors. They are not rim brake compatible. Refer to your bike and/or brake owner's manual for proper installation and setup.

## TIRES: INSTALLATION AND RECOMMENDATIONS

### IMPORTANT INFORMATION ABOUT RIM STRIPS

Each Rolf Prima wheel (with clincher rims) comes with a rim strip installed. We recommend using our rim strip. Before installing tires, make sure an appropriate rim strip is in place which completely covers the rim tire well so that all spoke holes are completely covered. The tire well is the inner wall of the rim, visible when the tire, tube, and rim strip are removed. If the spoke holes in the tire well are not completely covered with a high strength rim strip, a sudden blowout could occur.

### ⚠ WARNING!

Failure to use rim strip designed specifically for high pressure tires, properly installed, and covering all spoke holes in the rim tire well can cause a sudden blowout which could lead to loss of control and result in personal injury or death.

### TIRE SELECTION AND INSTALLATION – CLINCHER TIRES

Follow normal clincher tire installation procedures. If you are not familiar with tire installation, consult your bicycle owner's manual or see your dealer. Do not use metal tire levers to install or remove tires. Metal tire levers can damage the rim.

#### > Road

Rolf Prima clincher road wheels can be used with tire widths ranging from 20mm to 28mm. Follow pressure recommendations on the sidewall of the tire. Do not overinflate tires. Overinflating can cause sudden blowout or damage to your wheels.

#### > Cyclocross

Rolf Prima clincher cyclocross wheels can be used with tires from 20mm to 32mm. Follow pressure recommendations on the sidewall of the tire.

#### > Mountain Bike

**Tubeless:** Rolf Prima mountain bike wheels are tubeless compatible with Stan's NoTubes™ BST Technology and can also be used with standard tire/tube systems. The wheels come with 25mm rim tape and tubeless valve stems. Refer to the detailed instructions and videos at [www.notubes.com](http://www.notubes.com) for tubeless tire application recommendations and mounting instructions. Do not inflate tubeless tires over 40psi.

**Tube:** For use with traditional mountain bike tube and tire combinations follow normal tire mounting procedures. Inspect rim tape before mounting tire to be sure that the nipple access holes in the rim are completely covered. If the rim tape is damaged it can be replaced with 25mm rim tape or similar width standard rim strip. Follow the pressure recommendations on the sidewall of the tire.



## Tire pressure

**Clincher rims.** Do not over-inflate your tires. Tires should not be inflated to a pressure greater than 110 psi for nylon cased tires or 120 psi for cotton or softer material cased tires. Never exceed the maximum pressure marked on the tire. Over inflated tires place greater stress on the rim and may shorten the life of your wheels. Over inflated tires can also cause a sudden blowout, or cause damage to your wheels if a sudden blowout should occur.

**Carbon tubular rims.** Appropriate minimum tire pressure may be dependent upon road conditions, rider weight and tire size. As a general recommendation we recommend a minimum of 110psi to protect your carbon rim from impact damage. Never exceed the maximum tire pressure marked on the tire.

**Carbon clincher rims.** Under inflation of tires may allow rims to make contact with the road surface resulting in damage to the rim. Do not use tires that measure less than 22mm in width. Tires that are less than 22mm in width may not adequately protect the rim from impacts due to road hazards. Do not use latex inner tubes.

### ▼ **WARNING!**

Tires must be installed properly and inflated to the tire manufacturer's recommendation – or 120 psi – whichever is lower. Tires must never be over inflated. Tires which are improperly installed or incorrectly inflated could blow off or cause wheel damage which can lead to loss of control and result in personal injury or death.

## TIRE INSTALLATION – TUBULAR TIRES

Tubular tire installation requires specific experience or training. Correct tire installation is critical to your safety. If you do not know how to install tubular tires, have them installed professionally by your dealer. Have your dealer teach you correct tire installation. It is not difficult, but it is important that it is done correctly. Below are important notes regarding safe installation.

- ▼ Only use tire cement designed specifically for tubular tires and follow the tire cement maker's instructions carefully. Do not use 3M Fast Tack.
- ▼ Thoroughly clean the tire mounting surface of the rim before adding cement. There should be no dirt, oil or grease on the mounting surface. Dirty surfaces will not adhere properly.
- ▼ We do not recommend using tape such as TUFO. While tapes can work well, some are overly adhesive and can damage the rim upon removal.
- ▼ After curing, inflate tires and test the bond by attempting to pull the tire off the rim. For more detailed instructions, see the tire or cement manufacturer's website.
- ▼ Do not use any tools to install or remove a tubular tire from a carbon rim as they may damage the rim.



## VALVE EXTENDERS

Rolf Prima carbon wheels are supplied with a valve extender matched to the rim height. The valve extender can be avoided for the TdF38 clincher by using a 60mm valve stem. Below are steps for installing the valve extender.

**NOTE:** Install the valve extender before mounting the tire!

- ▾ Open valve fully and secure tightly in the open position.
- ▾ Wrap Teflon plumber's tape around the narrow valve threads and the wider valve body, taking care not to cover the air opening at the end of the valve.
- ▾ Screw the valve extender onto the valve and tighten carefully.
- ▾ Mount the tire, inflate with a pump and check for leaks. If air leaks you may need to use another wrap of Teflon tape.
- ▾ Release air by inserting a spare spoke (or other small diameter wire) into the valve extender and depress the valve end.

## ▾ WARNING!

Tubular tire installation requires specific experience or training. Improperly installed tires can separate from the rim which can lead to loss of control and result in personal injury or death.

## CASSETTE COG INSTALLATION

Follow normal gear cluster installation procedures using only the appropriate tools. If you are not familiar with those procedures or tools, read your bicycle owner's manual or consult your dealer.

Rolf Prima wheels configured with a Shimano® type freehub body will fit 8, 9, or 10 speed Shimano® or SRAM compatible cassettes.

Rolf Prima wheels configured with a Campagnolo® freehub body will fit 9 or 10 speed Campagnolo® ED compatible cassettes. 2009–2011 Rolf Prima wheels are also 11-speed Campagnolo® compatible. Some 2004–2008 wheels can be retrofitted to work with 11-speed Campagnolo®. See [www.rolfprima.com](http://www.rolfprima.com) to see if your wheel is 11-speed Campagnolo compatible.

Lock rings for Campagnolo® cassettes are not included with Rolf Prima wheels. The required lock ring thread diameter is 27mm. Cassettes with 12T – 16T top gear cog require a lock ring with 38.5 mm flange diameter. Cassettes with 11T top gear cog require a lock ring with 35.2mm flange diameter.

## SECTION THREE:

### MAINTENANCE

#### ▾ CARE AND CLEANING

While acetone or denatured alcohol will not damage either carbon or aluminum rims, they will damage the decals. Use isopropyl alcohol to clean wheels and use care around the decals. Replacement decals can be purchased if necessary, but decal removal can be time consuming. To remove tubular tire glue, use Goof Off or another similar product. For general cleaning, soapy water with a light rinse works well. Do not use high pressure water to clean wheels. The high pressure blast can force water past the bearing seals.

#### ▾ WHEEL TRUING

Wheel truing involves special tools and knowledge and should be performed by a qualified professional wheel builder. Should you suspect your wheels need truing, we recommend that you take them to your Rolf Prima dealer for evaluation.

Before truing a wheel it is important to apply oil between the rim and the nipple, and between the spoke and the nipple. This can be accomplished by dripping oil into the hole where the spoke enters the rim and also through the hole in the tire well. Spin the wheel to help oil penetrate.

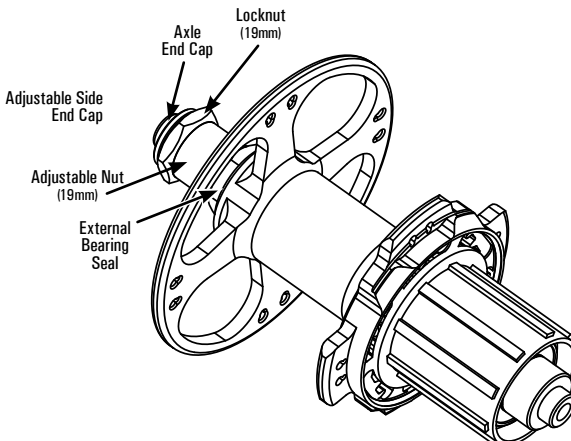
Care is taken during assembly of Rolf Prima wheels to ensure the spokes do not twist, or 'wind up' during tensioning and truing. It is very important that this care is exercised every time the wheel is trued. The spokes must be held with a special tool or small adjustable wrench closed over the bladed section of the spoke while turning the spoke nipple to prevent wind up.

#### ▾ HUB BEARING ADJUSTMENT

##### 2003 MODEL ÉLAN AND VIGOR FRONT HUB

These hubs have no bearing adjustment. Axle end play typically indicates worn bearings or axle. Inspect these parts and replace as needed. See the bearing replacement instructions in this manual.

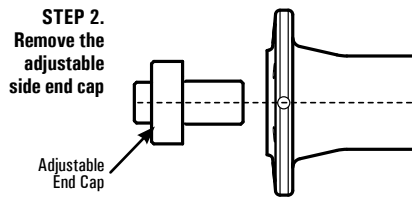
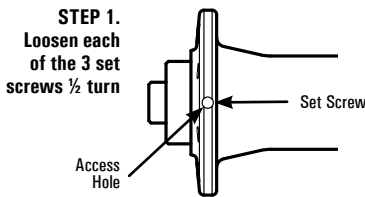
##### 2003 MODEL ÉLAN AND VIGOR REAR HUB *[refer to diagram below]*



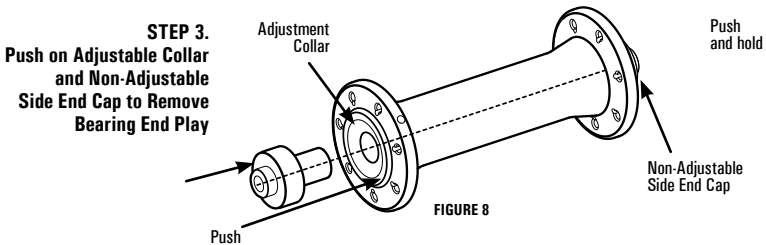


1. Place the hub into an axle vise with free hub body facing downward.
2. Using the two 19mm wrenches, loosen the axle lock nut and adjustable nut so that both move freely.
3. Tighten the adjustable nut until it just contacts the bearing. Using the two 19mm wrenches as before, hold the adjustable nut while turning the lock nut tightly up against it.
4. Rotate the axle to feel for tightness plus axle end play. If too tight, repeat procedure but loosen adjustable nut slightly. If too loose, tighten adjustable nut slightly.

**FRONT HUB : 2004 – 2012 VIGOR, ÉLAN, DAUPHINÉ, VCX, TANDEM, TT, TdF, Ares, 38CX, 58CX; 2004-2007 ASPIN & ECHELON**



1. Loosen the three (3) set screws by inserting a 2mm Hex wrench in the access hole in the hub shell. For 2007 and earlier models, the hub will have one (1) set screw and the access hole may be on the hub shell outboard of the flange (not shown). For 2007 and later models, the access hole will be through the outer diameter of the flange (shown).
2. Remove the adjustable side end cap from the hub. If needed, thread a M6 bolt into the adjustable side end cap and pull on the bolt for a better grip, or drive the end cap out with a drift. Once the adjustable side end cap is removed, the adjustment collar will be visible.

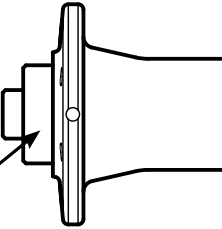


3. Place the wheel on a work surface with the non-adjustable side end cap facing downward. Push downward on the hub to ensure that the non-adjustable end cap is fully seated against the hub bearing. Push the adjustment collar inward, ensuring it is fully seated against its hub bearing.



**STEP 4.  
Replace  
Adjustable  
Side End Cap**

Adjustable Side  
End Cap



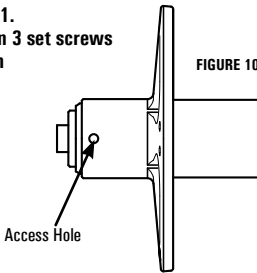
**STEP 5.  
Tighten Set Screws**

4. Replace the adjustable-side end cap carefully, so as not to move the axle or adjustment collar. Hold the non-adjustable-side end cap to prevent movement.
5. Tighten the set screws. Check adjustment. If bearing play remains, repeat the above steps. This can also be performed without removing the adjustable side end cap if you are careful to push on the adjustment collar and not the adjustable side endcap.

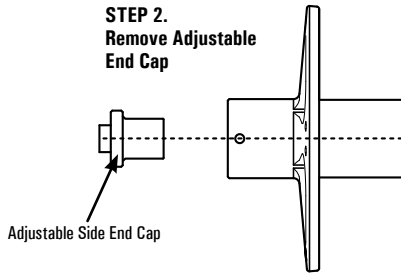
**REAR HUB 2004 – 2012 VIGOR, ÉLAN, DAUPHINÉ, VCX, TANDEM, TT, TdF, Ares, 38CX, 58CX; 2004 –2007 ASPIN & ECHELON**

**STEP 1.  
Loosen 3 set screws  
½ turn**

FIGURE 10



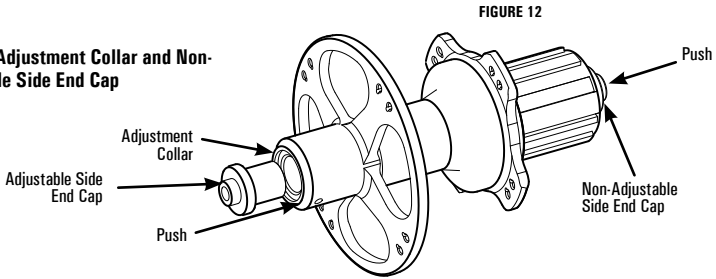
**STEP 2.  
Remove Adjustable  
End Cap**



1. Loosen each of the three set screws ½ turn by inserting a 2mm hex wrench in the access hole in the hub shell.
2. Remove the adjustable side end cap from the hub. If needed, thread a M6 bolt into the adjustable side end cap and pull on the bolt for a better grip, or drive the end cap out with a drift. With the adjustable side end cap removed, the adjustment collar is visible.

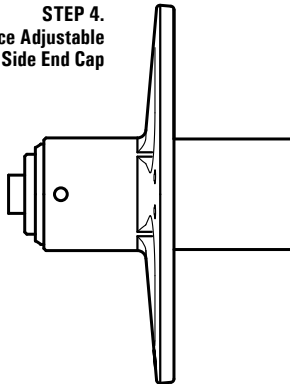


**STEP 3.**  
**Push on Adjustment Collar and Non-Adjustable Side End Cap**



3. Apply inward pressure on the non-adjustable side end cap and the adjustment collar simultaneously; making certain both parts are contacting the hub bearings. It is not necessary to maintain pressure.

**STEP 4.**  
**Replace Adjustable Side End Cap**



4. Replace the adjustable-side end cap carefully, so as not to move the axle or adjustment collar. Hold the non-adjustable-side end cap to prevent movement.
5. Tighten the three set screws. If bearing play remains, repeat the above steps.

**FRONT AND REAR HUBS: 2008 – 2012 ASPIN AND ECHELON (INCLUDING SL MODELS), 58RSC, 38RSC, ECX; 2006 – 2007 APEX & TEMPO**

These hubs have no bearing adjustment. Axle end play typically indicates worn bearings or axle. Inspect these parts and replace as needed. See the bearing replacement instructions in this manual.



## ▼ HUB BEARING INSPECTION, REPLACEMENT & OVERHAUL

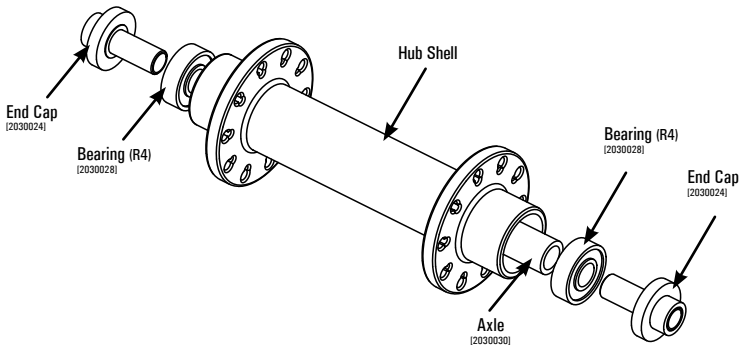
At some point, hub bearings may require replacement. This may be once every other year or more often if the bike is ridden more than average, in wet weather, or off-road. It may also be required less frequently. This requires special tools and knowledge and should be performed by a qualified technician at a bicycle shop.

Refer to Bearing Table below and exploded diagrams to determine which bearing you will need. *\*\*The bearing model is printed on the bearing seal. Double check the bearing to confirm type.*

FRONT			
MODEL	MODEL YEAR	BEARING	
Vigor, Elan	2002–2003	R4 2RS x 2pc	
Vigor, Elan, TT, TdF, Ares, Dauphine, VCX, SSCX, 58CX, 38CX	2004–2012	6801 2RS x 2pc	
Aspin, Echelon	2005–2007	6801 2RS x 2pc	
Aspin, Echelon, RSC, ECX	2008–2012	6900 2RS x 2pc	
Aspin SL, Echelon SL	2010–2012	699 2RS x 2pc	
Apex, Tempo	2006–2007	6900 2RS x 2pc	
Tandem	2004–2005	6903 2RS x 2pc	
Tandem, Tandem Disc	2006–2012	6902 2RS x 2pc	
FX58, Vigor FX	2010–2012	6902 2RS x 2pc	
P-Town	2010–2012	6902 2RS x 2pc	
Ralos	2012	6902 2RS X 2pc	
REAR			
MODEL	MODEL YEAR	SHIMANO	CAMPY
Vigor, Elan	2002–2003	15267 2RS x 4pc	15267 2RS x 4pc
Vigor, Elan, TT, TdF, Ares, Dauphine, VCX, 58CX, 38CX	2004–2012	6802 2RS x 3pc, 6902 2RS x 2 pc	6802 2RS x 5pc, 6902 2RS x 1 pc
Aspin, Echelon	2005–2007	6802 2RS x 3pc, 6902 2RS x 2 pc	6802 2RS x 5pc, 6902 2RS x 1 pc
Aspin, Echelon	2008–2012	6900 x 1 pc, 6000 x 3pc	6900 x 1 pc, 6000 x 3pc
Aspin SL, Echelon SL, RSC, ECX	2010–2012	6901 x 2 pc, 6001 x 2pc	6901 x 2 pc, 6001 x 2pc
Apex, Tempo	2006–2007	6900 x 1 pc, 6000 x 3pc	6900 x 1 pc, 6000 x 3pc
Tandem, Tandem Disc	2005–2012	6902 2RS x 3pc, 6802 2RS x 2 pc	6902 2RS x 2pc, 6802 2RS x 4 pc
FX58, Vigor FX	2010–2012	6902 2RS x 2pc	
P-Town, SSCX	2010–2012	6902 2RS x 2pc	
Disc	2010–2012	6901 x 3 pc, 6001 x 1pc	
Track Disc	2010–2012	61802 x 2	
Ralos	2012	6902 x 3 pc, 6802 x 2pc	



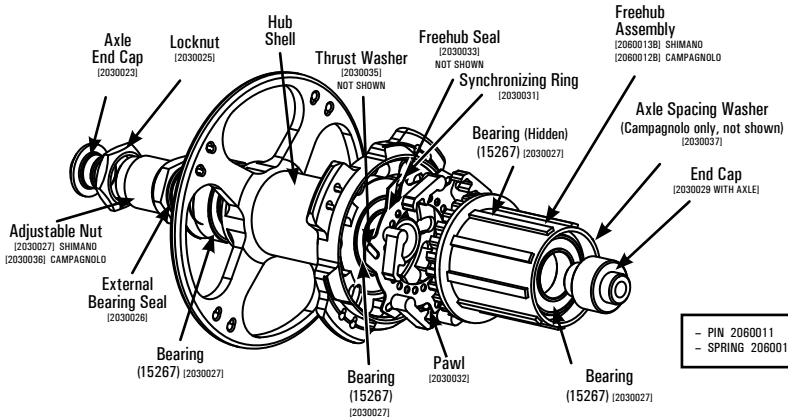
## 2003 MODEL ÉLAN AND VIGOR FRONT HUB



1. Remove the skewer and pull the end caps out of the hub.
2. Check the bearings for smooth running or end play at the inner race and replace as needed. Once removed, bearings should not be reused. Removal will damage the bearing.
3. Using a small screwdriver or drift, push the floating axle askew until the axle end is visible through the bearing. Drive out one bearing by striking the exposed axle end with a drift. Remove the other bearing in the same manner.
4. Bearings should be firmly pressed into their bores. If bearings can be removed or installed with no tools, replacements should be reinstalled with a gap-filling retaining compound such as Loctite® RC/609.
5. To install new bearings, apply a thin film of grease to the bearing bores in the hub shell and press the bearings into their bores using a suitable bearing press or drift. Be sure the press or drift contacts only the outer race of the bearing and not the seal or the inner race. Press or drive the bearing into its bore slowly and carefully. It is very important that the bearing is driven into its bore evenly. **CAUTION:** Forcing a misaligned bearing into the bearing bore can result in damage to the hub shell, bearing, or both.
6. Reinstall the end caps.



**2003 MODEL ÉLAN AND VIGOR REAR HUB** (Refer to exploded assembly view below)

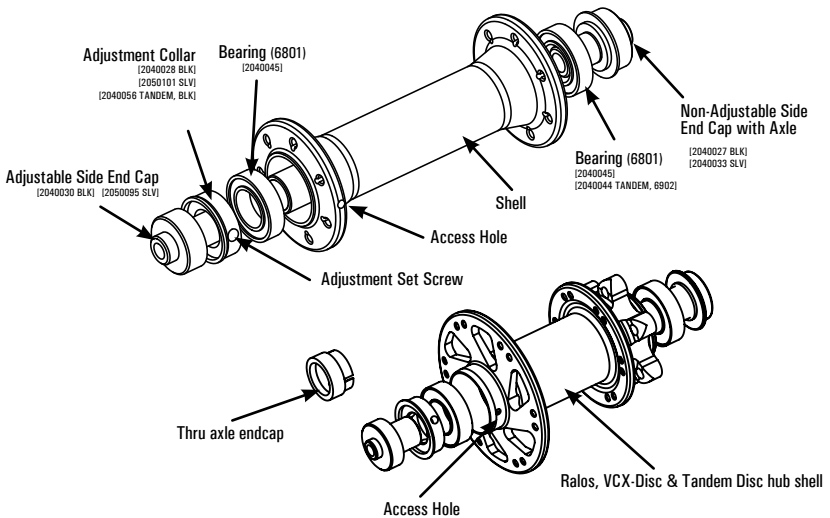


1. Place the hub into an axle vise with free hub body side facing downward.
2. Using two 19mm wrenches loosen the axle lock nut and adjustable nut. Unthread the locknut until it contacts the axle end cap. Continue turning the locknut against the axle end cap, forcing it out of the axle. Thread the locknut back onto the axle just until the locknut threads are fully engaged. Pry the axle end cap out of the axle using a screwdriver or other suitable prying tool. Remove the lock nut and adjustable nut.
3. Pull hub off of axle. Remove the free hub body by pulling it away from the hub shell. Note the location of the washer between the freehub body and hub bearing for proper reassembly.
4. Remove the axle from the freehub body. Note the location of the axle spacing washer (used only on Campagnolo® compatible hubs). Set the washer aside for reassembly.
5. Carefully remove the rubber ring seal from the drive side of the hub shell (not shown) and remove the pawls and synchronizing ring.
6. Check the bearings for smooth running or end play at the inner race and replace as needed. Once removed, bearings should not be reused, as removal will damage the bearing.
7. Remove bearings with a bearing removal tool or drift. If bearings can be removed or installed with no tools, replacements should be installed with a gap-filling retaining compound such as Loctite® RC/609.
8. Apply a thin film of grease to the bearing bores in the hub shell and press the bearings into their bores using a suitable bearing press or drift. Be sure the press or drift contacts only the outer race of the bearing and not the seal or the inner race. Press or drive the bearing in its bore slowly and carefully. It is very important that the bearing is driven into its bore evenly. CAUTION: Forcing a misaligned bearing into the bearing bore can result in damage to the hub shell, bearing, or both.
9. Apply a thin film of grease to the axle, synchronizing ring and pawls. Reinstall the synchronizing ring and pawls.



10. Install the free hub body on the axle. For Campagnolo® compatible hubs, be sure to first reinstall the axle spacing washer.
11. Reinstall the thrust washer onto the axle/freehub assembly and slide the axle into the hub.
12. Turn the free hub body counter clockwise to engage the pawls. Replace the rubber freehub seal, ensuring the inner and outer diameter of the seal seats properly in the seal channels in the hub shell and cassette body.
13. Ensure that the rubber seal is installed properly on the adjustable nut and thread the adjustable nut on the axle finger tight.
14. Follow the bearing adjustment instructions on pg. 11.

**FRONT HUB : 2004 – 2012 VIGOR, ÉLAN, DAUPHINE, VCX, TANDEM, RALOS, TT, TdF, Ares, 38CX, 58CX; 2004 – 2007 ASPIN & ECHELON** *[Refer to exploded assembly view below]*

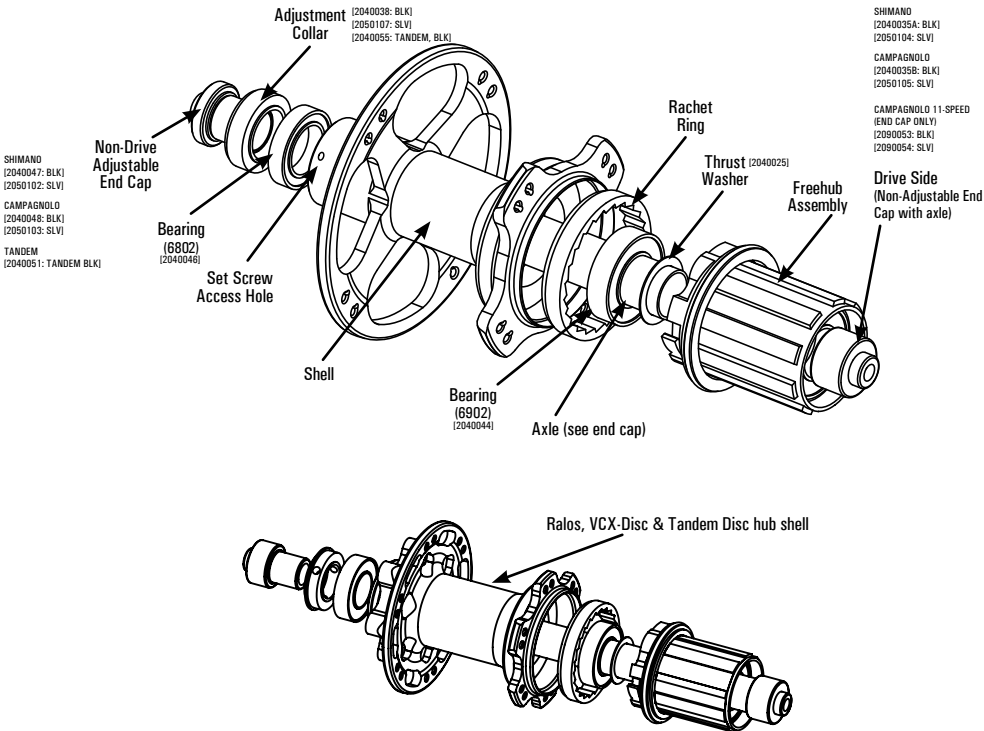


1. Loosen the three (3) set screws by inserting a 2mm Hex wrench in the access hole in the hub shell. For 2007 and earlier models, the hub will have one (1) set screw and the access hole may be on the hub shell outboard of the flange (not shown). For 2007 and later models, the access hole will be through the outer diameter of the flange (shown).
2. Remove the axle end cap from the adjustable side of the hub. If needed, thread a M6 bolt into the axle end and pull on the bolt for a better grip. The end cap may need to be driven out with a drift. Insert a drift into the axle from the non-adjustable side (old QR skewers work well) and tap on the end of the bolt to remove the axle end cap.
3. Remove the axle by pushing it through the non-adjustable side of the hub. If needed, drive the axle out with a suitable drift.



4. Check the bearings for smooth running or end play at the inner race and replace as needed. Remove bearings from the hub with a suitable bearing removal tool or drift. Once removed, bearings should not be reused, as removal will damage the bearing.
5. To install new bearings, apply a thin film of grease to the bearing bores in the hub shell and press the bearings into their bores using a suitable bearing press or drift. Be sure the press or drift contacts only the outer race of the bearing and not the seal or the inner race. Press or drive the bearing in its bore slowly and carefully. It is very important that the bearing is driven into its bore evenly. CAUTION: Forcing a misaligned bearing into the bearing bore can result in damage to the hub shell, bearing, or both.
6. To reassemble, be sure the non-adjustable axle end cap is securely installed on the axle. This part is pressed on the axle end and should not be loose.
7. Insert the axle into the hub shell from the non-adjustable side. Place the hub in an axle vise with the non-adjustable side facing downward.
8. Replace the adjustment collar on the axle, ensuring it is oriented correctly and contacts only the inner race of the bearing.
9. Install the adjustable side axle end cap onto the axle.
10. Follow bearing adjustment directions on pg. 12.

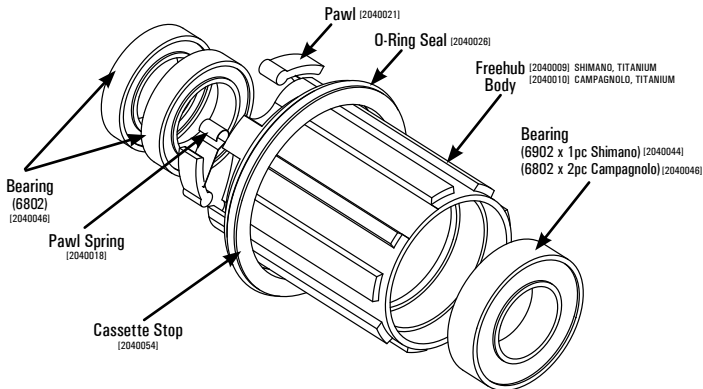
**REAR HUB : 2004 – 2012 VIGOR, ÉLAN, DAUPHINE, VCX, TANDEM, RALOS, TT, TdF, Ares, 38CX, 58CX; 2004–2007 ASPIN & ECHELON** [Refer to exploded assembly view below]





1. Loosen the three set screws on the adjustable (non-drive) side of the hub by inserting a 2mm Hex wrench in the access hole in the hub shell.
2. Remove the non-drive side axle end cap. If needed, thread a M6 bolt into the axle end cap and pull on the bolt for a better grip. The end cap may need to be driven out with a drift. Insert a drift into the axle from the drive side [old QR skewers work well] and tap on the end of the bolt to remove the axle end cap.
3. Working over a workbench or table, remove the axle and freehub body by pulling the freehub body away from the hub. Use a rag to grab the freehub body as edges may be sharp. Orient the wheel freehub side up and watch carefully for pawls and pawl springs, which may fall out. If needed, drive the axle out a short distance with a drift. After moving the axle only a short distance it should be possible to remove the axle and freehub body by hand, as outlined above.
4. Locate the thrust washer, which sits between the bearings of the freehub body and the hub shell. This washer will often adhere to one of the bearings, held in place by a film of grease. Clean the washer and set it aside for reassembly.
5. Check the bearings for smooth running or end play at the inner race and replace as needed. Remove bearings from the hub with a suitable bearing removal tool or drift. Once removed, bearings should not be reused, as removal will damage the bearing.
6. To install new bearings, apply a thin film of grease to the bearing bores in the hub shell and press the bearings into their bores using a suitable bearing press or drift. Be sure the press or drift contacts only the outer race of the bearing and not the seal or the inner race. Press or drive the bearing in its bore slowly and carefully. It is very important that the bearing is driven into its bore evenly. **CAUTION:** Forcing a misaligned bearing into the bearing bore can result in damage to the hub shell, bearing, or both.

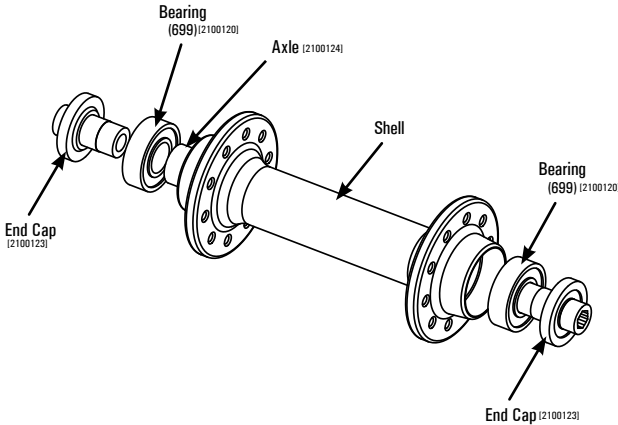
Freehub body exploded assembly view:



7. Remove the pawls and pawl springs by first lifting pawls from their bores, then removing springs. Note the specific location of the pawls and springs in the freehub body. Also note the orientation of the pawl springs in their bores – the open portion of the spring faces outward, away from the axle.

8. Clean the freehub body and reinstall the pawls and pawl springs. Lubricate pawls and pawl springs with oil. Check to be sure each pawl and spring rotates freely.
9. To reassemble, be sure the drive side axle end cap is securely installed on the axle. This part is pressed on the axle end and should not be loose.
10. Apply a thin film of grease on the axle and install the freehub body on the axle, with the outboard freehub body bearing contacting the axle end cap.
11. Place the thrust washer on the axle, against the inboard freehub bearing.  
(2100125)
12. Apply a thin film of grease on the axle and apply grease into hubshell around ratchet ring. Lithium grease cut with chain oil works well. Insert the axle and freehub body assembly into the hub shell from the drive side. Rotate the free hub body counter-clockwise to engage the pawls and ratchet ring.
13. Place the hub in an axle vise with the non-adjustable side facing downward.
14. Replace the adjustment collar on the axle, ensuring it is oriented correctly and contacts only the inner race of the bearing.
15. Install the non-drive side axle end cap onto the axle.
16. Follow bearing adjustment instructions on pg. 13.

**FRONT HUB: 2010 – 2012 ASPIN SL AND ECHELON SL, 2011-2012 58RSC, 38RSC**

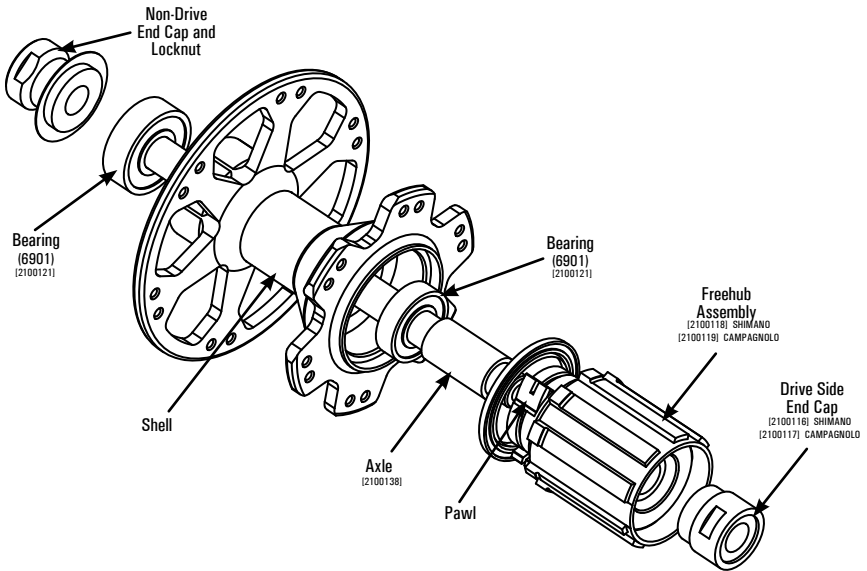


**NOTE:** Spin axle in fingers, feeling for roughness. Removing bearings will damage them so perform these steps only if new bearings will be installed.

1. Using two 5mm hex wrenches, loosen the threaded axle end caps. Remove the end cap which breaks loose first.
2. Slide a suitable drift through the axle contacting the opposing side endcap. Gently strike the drift and drive the axle assembly out of the hub shell toward the side with the end cap still on the axle.
3. Tap out the bearing remaining in the hub shell with the drift.
4. Coat the outer races of the new bearings and bearing surfaces and shoulders on the axle with a thin film of grease to prevent corrosion.

5. Install one bearing on the axle end cap. Thread the endcap into the axle end and tighten to finger-tight.
6. Insert the axle into the hub shell and carefully drive the bearing/axle assembly into the bearing bore by striking the axle gently with a soft faced hammer. Maintain alignment so bearing goes in straight.
7. Place the remaining bearing in the remaining empty bearing bore. Install with a press or a suitable drift. Thread the remaining axle end cap on the axle end. With the bearing fully seated in the hub shell, tighten the axle end cap firmly using two 5mm hex wrenches.

### REAR HUB: 2010 – 2012 ASPIN SL AND ECHELON SL, 2011-2012 58RSC, 38RSC, ECX



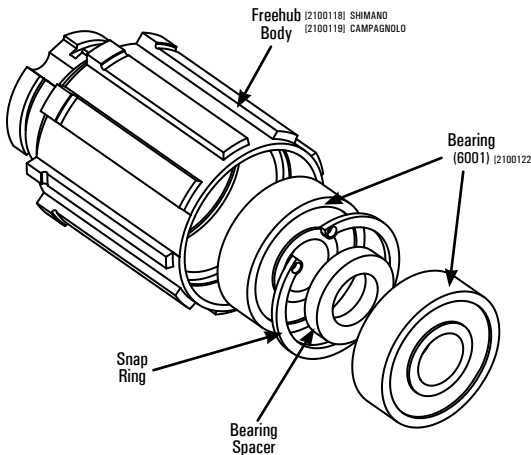
**NOTE:** the orientation of parts for reassembly. It is a good idea to lay the parts out in the order they were removed, resembling the exploded view, above.

1. Insert a 5mm Hex wrench into the hex broach in the non-drive side axle end and loosen the drive side axle lock nut using a 17mm cone wrench. **NOTE:** this lock nut has left-hand threads – turn clock-wise to loosen. Remove the axle lock nut.
2. Remove the free hub body by sliding it off the axle. Set the freehub body aside. For service instructions, refer to the freehub body exploded assembly view below.
3. Using two 17mm cone wrenches, remove the non-drive side endcap and locknut. Pull axle out the drive side. Set aside.
4. Before proceeding, inspect bearings for smooth running. Determine which bearings need replacement, if any, and remove only these bearings, as removal will damage bearings. Once removed, bearings should not be reinstalled.

5. Using a suitable drift, drive the bearings to be replaced from the hub shell.
6. To install new bearings, apply a thin film of grease to the bearing bores in the hub shell and press the bearings into their bores using a suitable bearing press or drift. Be sure the press or drift contacts only the outer race of the bearing and not the seal or the inner race. Press or drive the bearing in its bore slowly and carefully. It is very important that the bearing is driven into its bore evenly. **CAUTION:** Forcing a misaligned bearing into the bearing bore can result in damage to the hub shell, bearing, or both.
7. Install axle. Grease axle lightly and slide into hub shell from the drive side. It should pass all the way through the shell and through the non-drive side bearing.
8. Install the non-drive side locknut with large flange. Tighten the lock nut firmly against bearing while holding the axle stationary with a 5mm Hex wrench inserted in the hex broach of axle. Install washer.
9. Using two 17mm cone wrenches, install and tighten non-drive endcap against locknut.
10. If bearings in freehub body need to be replaced. Refer to the exploded assembly diagram and instructions below:
11. Slide freehub body onto axle.
12. Install and tighten drive-side endcap using 17mm wrench and 5mm hex wrench.

**NOTE:** Drive side endcap is reverse threaded and tightens by turning counter-clockwise.

Freehub body exploded assembly view :



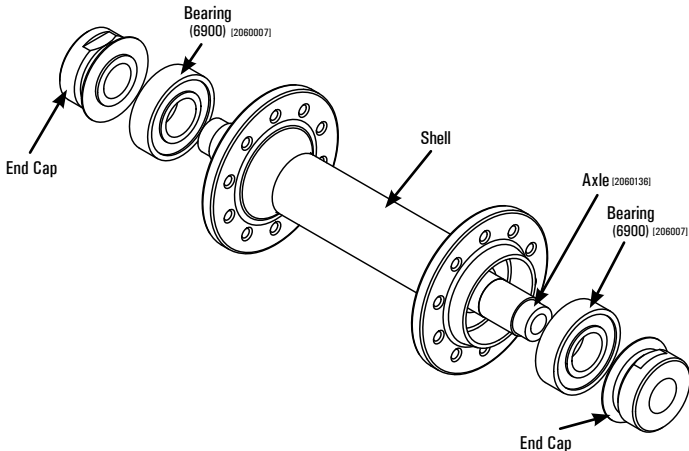
To service freehub body follow these instructions:

1. Inspect pawls for heavy wear or damage and replace as needed. Carefully remove pawl spring by prying upward with a small pick at the end of the spring with a 90 degree bend. Place new pawls in their pockets and install a new pawl spring.



2. Remove the drive side rubber freehub body seal by carefully prying outward with a pick.
3. Inspect freehub bearings before removal, as removal will damage bearings. Place the free hub body on a hard work surface with outboard side facing down. Locate the bearing spacer between freehub bearings and push it aside with a drift. Remove the outboard bearing by carefully striking the inner bearing race with a drift.
4. Locate the bearing spacer and set it aside for reassembly.
5. Remove the snap ring using snap ring pliers.
6. Remove the inboard freehub bearing by striking the inner bearing race with a drift.
7. Lightly coat the outer bearing race of two new freehub bearings. Carefully drive the inboard freehub bearing into its bore by selecting a drift or bearing installation tool which only contacts the bearing outer race. Seat the bearing firmly in its bore.
8. Install the snap ring, making certain that it is properly seated in its groove. Install the bearing spacer.
9. Install a new outboard freehub body bearing.
10. Install the outboard freehub body seal, with the sealing lip facing outward.
11. Oil freehub pawls with two to three drops per pawl.
12. Coat the exposed portion of the axle with a thin film of grease and install the bearing spacer on the axle.
13. Coat the outside diameter of the bearing spacer with a thin film of grease and install the freehub body, rotating it counter-clockwise to engage pawls with the hub shell drive ring.

**FRONT HUB: 2008 – 2012 ASPIN AND ECHELON, ECX, 2006 – 2007 APEX & TEMPO**



**NOTE:** Spin axle in fingers, feeling for roughness. Removing bearings will damage them so perform these steps only if new bearings will be installed.

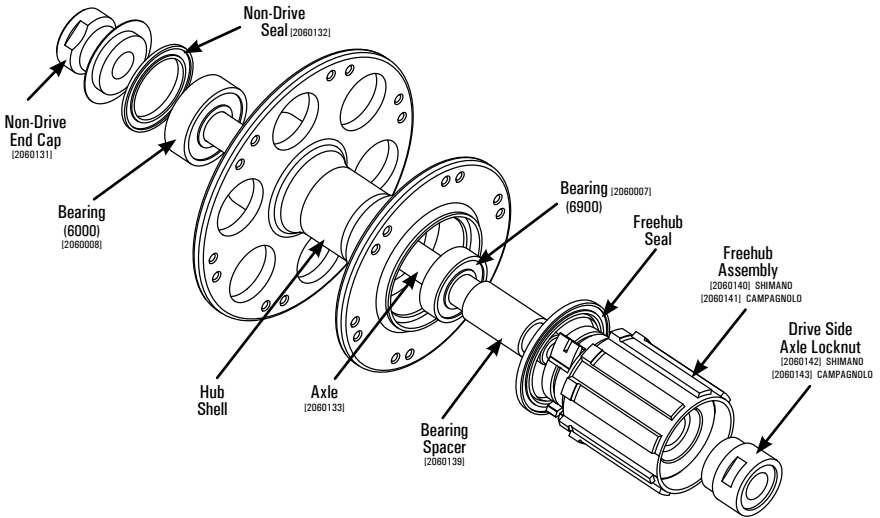
1. Using two 17mm cone wrenches, loosen the threaded axle end caps. Remove the end cap which breaks loose first.



2. Using a soft faced hammer, gently strike the axle end and drive the axle assembly out of the hub shell toward the side with the end cap still on the axle.
3. Locate the wrench flats on the axle. Remove the remaining axle end cap by holding the axle with a 10mm wrench, using a 17mm cone wrench to remove end cap.
4. Using a suitable drift, drive the remaining bearing from the hub shell. The axle works well for this, but strike it gently – only with a soft faced hammer.
5. To reinstall new bearings, apply a thin film of grease to the bearing bores in the hub shell.
6. Install one bearing on the axle end with the wrench flat and tighten the lock nut firmly.
7. Insert the axle into the hub shell and carefully drive the bearing into its bore by striking the axle gently with a soft faced hammer.
8. Place the remaining bearing on the empty axle end. Thread the remaining axle end cap on the axle end. Using two 17mm cone wrenches, drive the bearing into its bore by tightening the axle end cap. With the bearing fully seated in the hub shell, tighten the axle end cap firmly.

**REAR HUB: 2008 – 2012 ASPIN AND ECHELON, 2006 – 2007 APEX & TEMPO**

*[Refer to exploded assembly view below]*



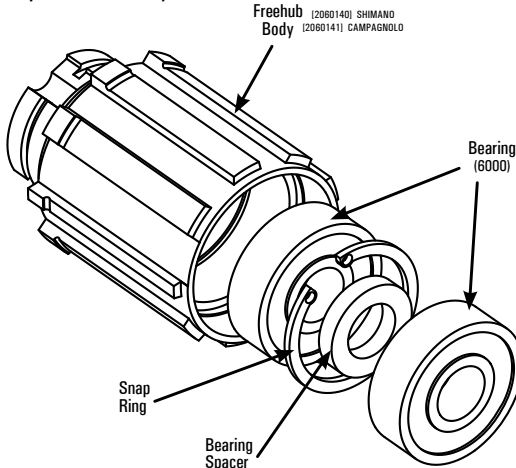
**NOTE:** the orientation of parts for reassembly. It is a good idea to lay the parts out in the order they were removed, resembling the exploded view, above.

1. Insert a 5mm Hex wrench into the hex broach in the non-drive side axle end and loosen the drive side axle lock nut using a 17mm cone wrench. **NOTE:** this lock nut has left-hand threads – turn clock-wise to loosen. Remove the axle lock nut.
2. Remove the free hub body by sliding it off the axle. Set the freehub body aside. For service instructions, refer to the freehub body exploded assembly view below.



3. Before proceeding, inspect bearings for smooth running. Determine which bearings need replacement, if any, and remove only these bearings, as removal will damage bearings. Once removed, bearings should not be reinstalled.
4. If only one hub shell bearing is to be replaced, remove the axle in the direction of the bearing slated for replacement. Remove the axle by striking the axle end with a soft faced hammer. Do not use a metal faced hammer – damage to axle threads may result. Removal of the axle will drive one hub shell bearing from its bore. If both bearings are to be replaced, remove the remaining hub shell bearing with a suitable drift. The axle can be used, but be sure to only strike the axle end with a soft faced hammer.
5. If necessary, remove the rubber freehub body seal and/or non drive freehub body seal from the hub shell by carefully prying with a small flat bladed screwdriver or pick.
6. Special care must be taken when installing bearings, as they can be damaged easily. Select drifts or bearing installation tools which will drive bearings by contacting only the outer race. Bearings installed by the inner race – or by the bearing seals will not run smoothly.
7. If only one hub shell bearing is to be replaced, install the axle into the hub shell and existing bearing after first coating the bearing seat and shoulder portions of the axle lightly with grease.
8. If both hub shell bearings are being replaced, install the drive side hub shell bearing first. Insert the axle into the hub shell and then install the non-drive side hub shell bearing.
9. Install the non-drive side rubber seal with the sealing lip facing outward and install the left side axle-end lock nut. Tighten the lock nut firmly while holding the axle stationary with a 5mm Hex wrench inserted in the hex broach.
10. Install the rubber freehub seal in the hub shell, with the sealing lip facing outward.
11. To service the freehub body or to replace freehub body bearings, refer to the exploded assembly diagram and instructions on following page:

Freehub body exploded assembly view :





12. Inspect pawls for heavy wear or damage and replace as needed. Carefully remove pawl spring by prying upward with a small pick at the end of the spring with a 90 degree bend. Place new pawls in their pockets and install a new pawl spring.
13. Remove the drive side rubber freehub body seal by carefully prying outward with a pick.
14. Inspect freehub bearings before removal, as removal will likely damage bearings. Place the free hub body on a hard work surface with outboard side facing down. Locate the bearing spacer between freehub bearings and push it aside with a drift. Remove the outboard bearing by carefully striking the inner bearing race with a drift.
15. Locate the bearing spacer and set it aside for reassembly.
16. Remove the snap ring using snap ring pliers.
17. Remove the inboard freehub bearing by striking the inner bearing race with a drift.
18. Lightly coat the outer bearing race of two new freehub bearings. Carefully drive the inboard freehub bearing into its bore by selecting a drift or bearing installation tool which only contacts the bearing outer race. Seat the bearing firmly in its bore.
19. Install the snap ring, making certain that it is properly seated in its groove. Install the bearing spacer.
20. Install a new outboard freehub body bearing.
21. Install the outboard freehub body seal, with the sealing lip facing outward.
22. Oil freehub pawls with two to three drops per pawl.
23. Coat the exposed portion of the axle with a thin film of grease and install the bearing spacer on the axle.
24. Coat the outside diameter of the bearing spacer with a thin film of grease and install the freehub body, rotating it counter-clockwise to engage pawls with the hub shell drive ring.
25. Install and tighten drive-side end cap using a 17mm cone wrench.

NOTE: Drive-side end cap is reverse threaded and tightens by turning clockwise.

## ▼ FREEHUB BODY CONVERSION

### 2003 VIGOR & ÉLAN MODELS: SHIMANO® TO CAMPAGNOLO®

**Shimano® to Campagnolo®** conversion kit contents:

- 1 Campagnolo® compatible cassette body
- 1 Axle spacing washer
- 1 Axle nut

**Campagnolo® to Shimano®** conversion kit contents:

- 1 Shimano® compatible cassette body
- 1 Rubber Seal
- 1 Axle nut (1mm longer than Campagnolo® axle nut)



1. Follow steps 1 and 2 from bearing replacement instructions on pg. 17.
2. Remove the freehub with cassette body from the hub axle. Observe the location of axle spacers and seals for proper reassembly. Leave the axle in the axle vise.
3. Remove the existing freehub body by gently pulling it away from the hub shell while holding the hub shell with the cassette body facing up. Place the hub shell on a clean surface, with the cassette body end up. Note the location of the washer between the cassette body and hub bearing. You will need this washer.
4.
  - A. **Shimano® to Campagnolo®** Remove the rubber contact seal from the drive side of the axle. Note that this rubber contact seal is not used on a Campagnolo® compatible hub. Install axle spacing washer on axle.
  - B. **Campagnolo® to Shimano®** Remove the axle spacing washer. This is not used on Shimano® compatible hubs. Install rubber seal on drive side end cap.
5. If the hub is silver in color, proceed to step 7. If the hub is black in color, remove the pawls and pawl synchronizing drive plate. Remove the washer, if applicable, which sits beneath the pawl synchronizer plate. This washer may be discarded, as it is not used with 3 Pin drive free hub bodies. Reinstall the synchronizer plate and pawls.
6. Install the new freehub body on the hub shell. Be sure the thin thrust washer is in place between the bearings of the freehub body and hub shell. Turn the cassette body to engage the pawls and cassette body engagement teeth.
7. Install on axle.
8. Ensure that the rubber seal is installed properly on the adjustable nut and thread the adjustable nut on the axle until it just touches the bearing.
9. Replace the lock nut, also finger tight. Follow bearing adjustment instructions, pg. 12.
10. Carefully replace the axle end cap by tapping it back into place with a soft faced hammer.
11. Due to the small difference in axle spacing, the wheel will need to be re-dished. The total dish change needed is small.

**IMPORTANT:** lubricate every spoke nipple by placing one or two drops of penetrating oil on each spoke at the rim hole. Place the wheel in a wheel truing fixture and spin the wheel to force the oil into the spoke and nipple threads.
12. Remove the tire, tube and rim tape. Use a wheel dishing tool to determine the extent to which the rim will need to move to be properly centered. It is important that the average overall tension is not changed. Be sure to make the dish correction with equal amounts of tension increase and tension reduction. Start with ¼ turns

**IMPORTANT:** Each spoke must be held carefully to prevent wind-up while turning the spoke nipple. Hold the spoke with a Spoke Vise or with a small adjustable wrench closed on the flat section of the spoke near the point where the spoke enters the rim.

**2004 – 2012 VIGOR, ÉLAN, DAUPHINE, VCX, TANDEM, TT, TdF, Ares, 38CX, 58CX;  
2004 – 2007 ASPIN & ECHELON**

## Conversion kit contents:

- 1 Shimano® or Campagnolo® compatible cassette body
- 1 Axle and axle end cap for use with Shimano® or Campagnolo® cassette body.

1. Follow steps 1–5 of bearing replacement on pg. 19.
2. To reassemble, be sure the drive side axle end cap is securely installed on the axle. This part is pressed on the axle and should not be loose.
3. Apply a thin film of oil on the new replacement axle and install the new replacement free hub body on the axle, with the outboard freehub body bearing contacting the drive side axle end cap.
4. Follow reassembly steps for bearing replacement and adjustment on pg. 13. Use the new non-drive end cap on the non-drive side.
5. Due to the small difference in axle spacing, the wheel will need to be re-dished.  
**IMPORTANT:** lubricate every spoke nipple by placing one or two drops of penetrating oil on each spoke at the rim hole. Place the wheel in a wheel truing fixture and spin the wheel so as to force the oil into the spoke and nipple threads.
6. Remove the tire [and tube and rim tape for clincher wheels]. Use a wheel dishing gauge to determine the extent to which the rim will need to move to be properly centered. It is important that the average overall tension is not changed. Be sure to make the dish correction with equal amounts of tension increase and tension reduction. Start by loosening each left side [non-drive] spoke nipple 1/4 turn and tightening the right side spoke 1/4 turn. Repeat in smaller rotational increments as needed. **IMPORTANT:** Each spoke must be held carefully to prevent wind-up while turning the spoke nipple. Hold the spoke with a Spoke Vise or with a small adjustable wrench closed on the flat section of the spoke near the point where the spoke enters the rim. Check the dish with a wheel dishing gauge and make corrections if needed.

**REAR HUB: 2008 – 2012 ASPIN AND ECHELON (INCLUDING SL MODELS), 2012 ECX,  
2011-2012 58RSC, 38RSC; 2006 – 2007 APEX & TEMPO**

## Conversion kit contents:

- 1 free hub body (Shimano® to Campagnolo®)
- 1 drive-side axle lock nut

[If needed, refer to exploded assembly view on pg. 22 or pg. 25 (depending on your model) of this manual.]

1. Follow steps to remove freehub body from bearing replacement instructions on pg. 22 or pg. 25 (depending on your model).
2. Remove the free hub body by sliding it off the axle. Keep the lock nut and free hub body together, as there are specific lock nuts for Shimano® and Campagnolo® compatible free hub bodies.



3. Oil freehub pawls of new freehub body with two to three drops per pawl.
4. Coat the exposed portion of the axle with a thin film of grease and install the bearing spacer (does not apply for the SL version) on the axle.
5. Coat the outside diameter of the bearing spacer (does not apply to SL) with a thin film of grease and install the freehub body, rotating it counter-clockwise to engage pawls with the hub shell drive ring.
6. Install the new drive-side axle lock nut and tighten firmly.