



2006 Arctic Cat Race School Seminar



October 29th, 2005

Presented By: Kirk Hibbert



2006 Arctic Cat 440 Sno Pro

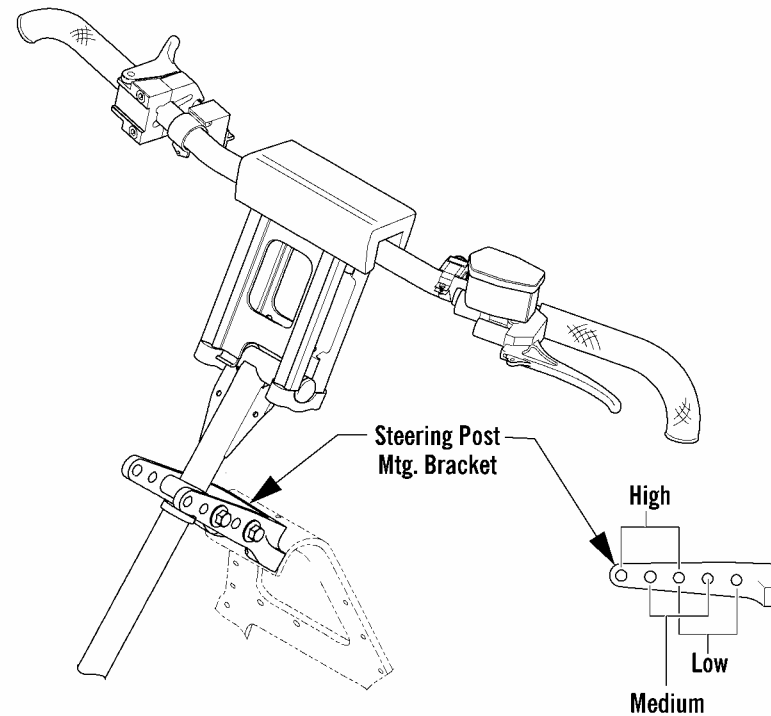


New and Improvements for 2006

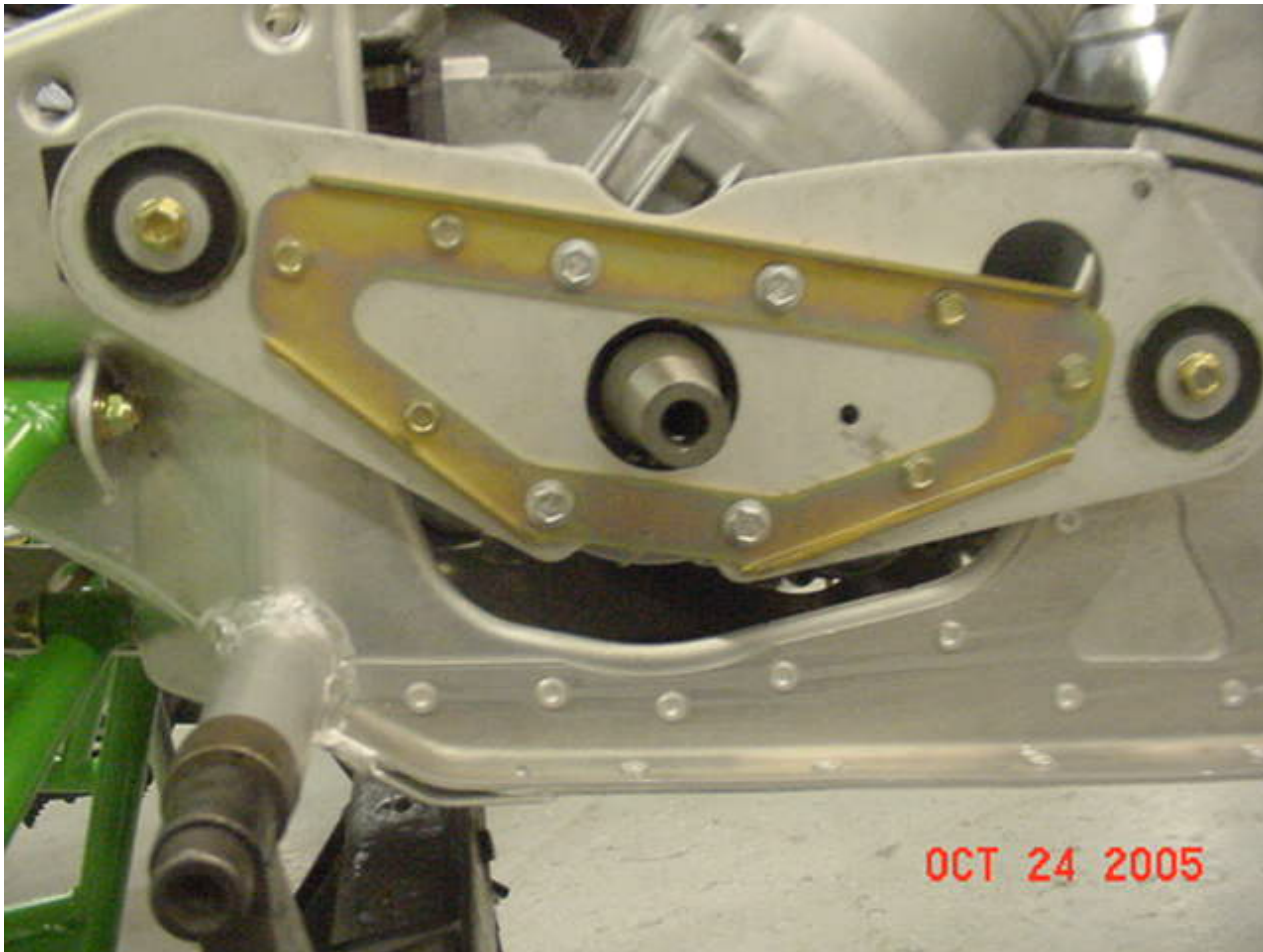
Boost bottle, V-Force reeds. Smoother running, increased torque and power. 2006 carburetor calibration has a new jet needle that is richer.



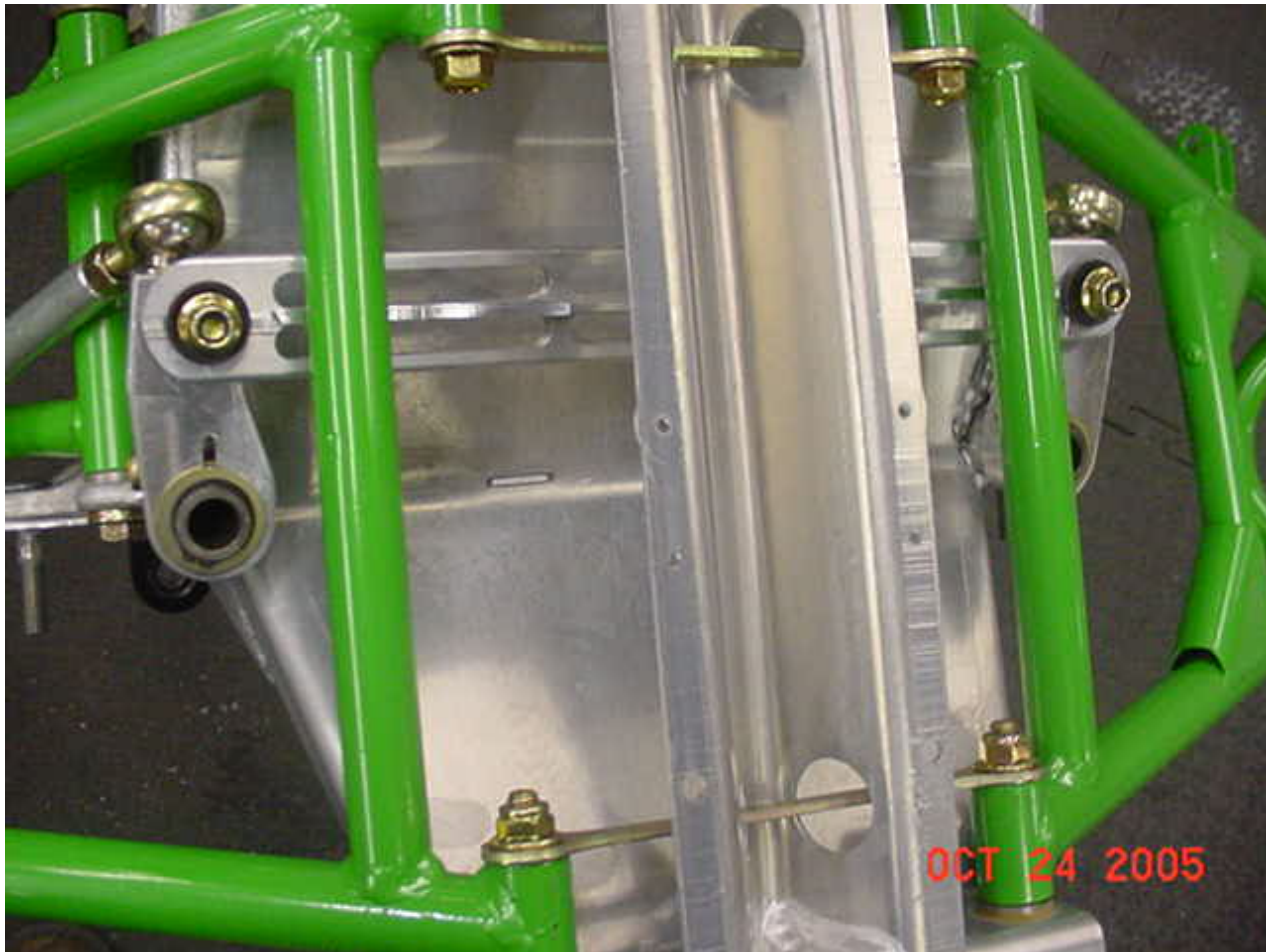
3 Position adjustable steering post. The lowest position is the same as the 05' position. Also, 1" taller, 1" shorter riser blocks are available.



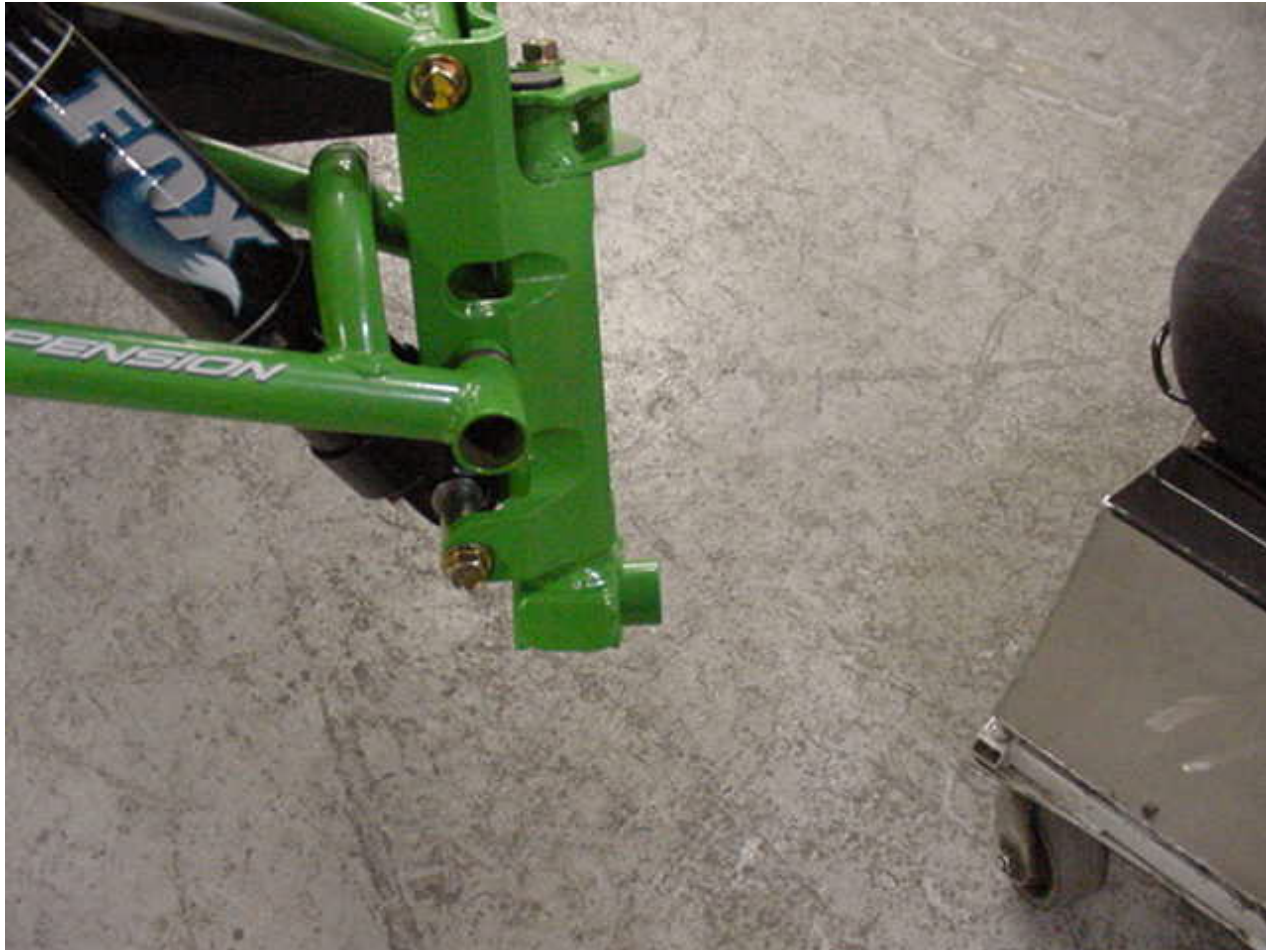
Left engine plate brace to control side to side movement of engine can be used on 05' by drilling (6) .221" holes in the engine plate for the self-tapping screws.



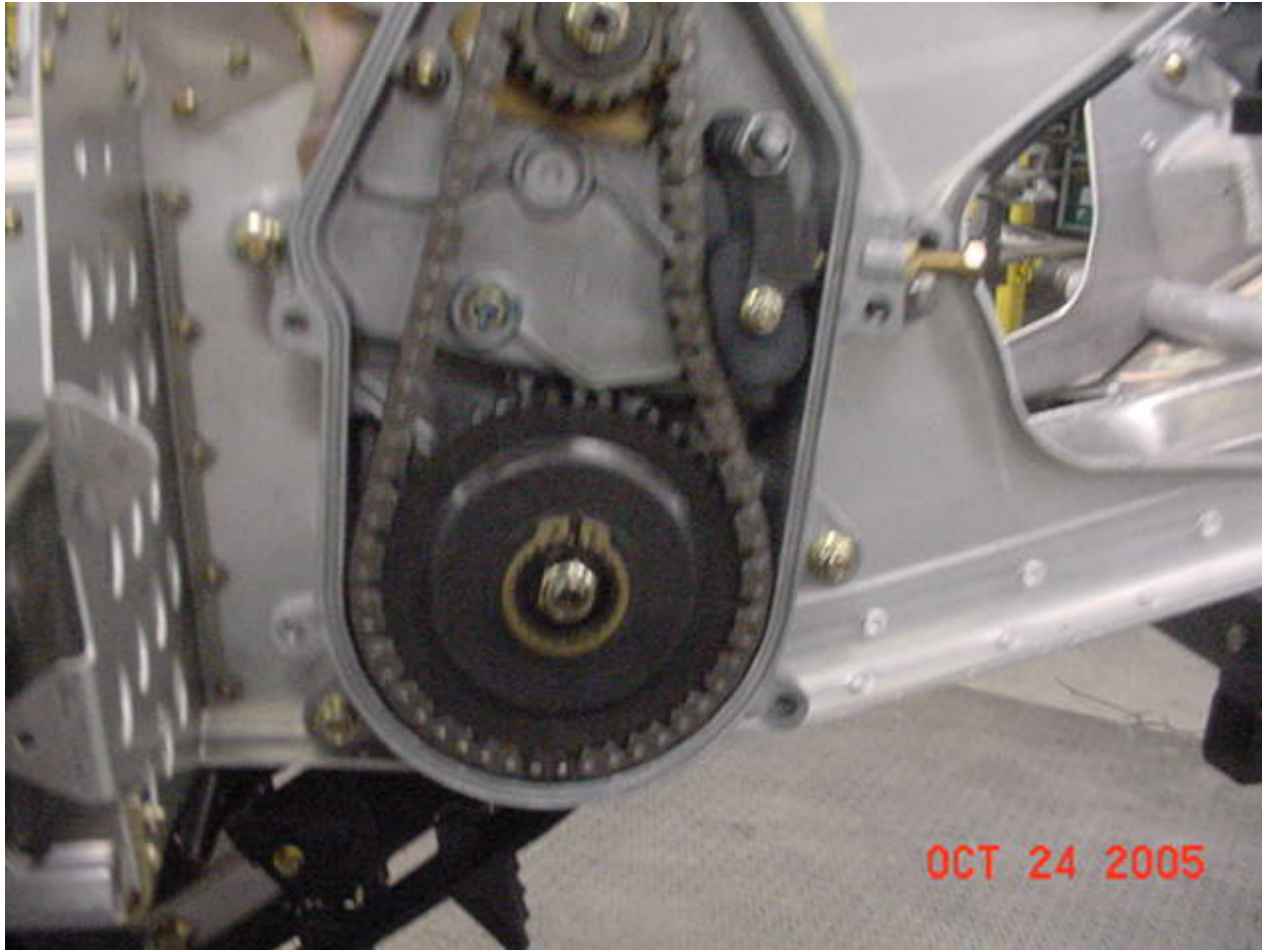
Steering center linkage: Reduces flex in the steering system for improved control and steering



New spindle: stronger, steering arms moved up .060". To change bump steer curve. Can use on 05'



PTL bottom sprocket: To improve drive line durability. 46T will fit on 2004-2006 440 and mods. Illustration in parts book shows the sprocket backwards.



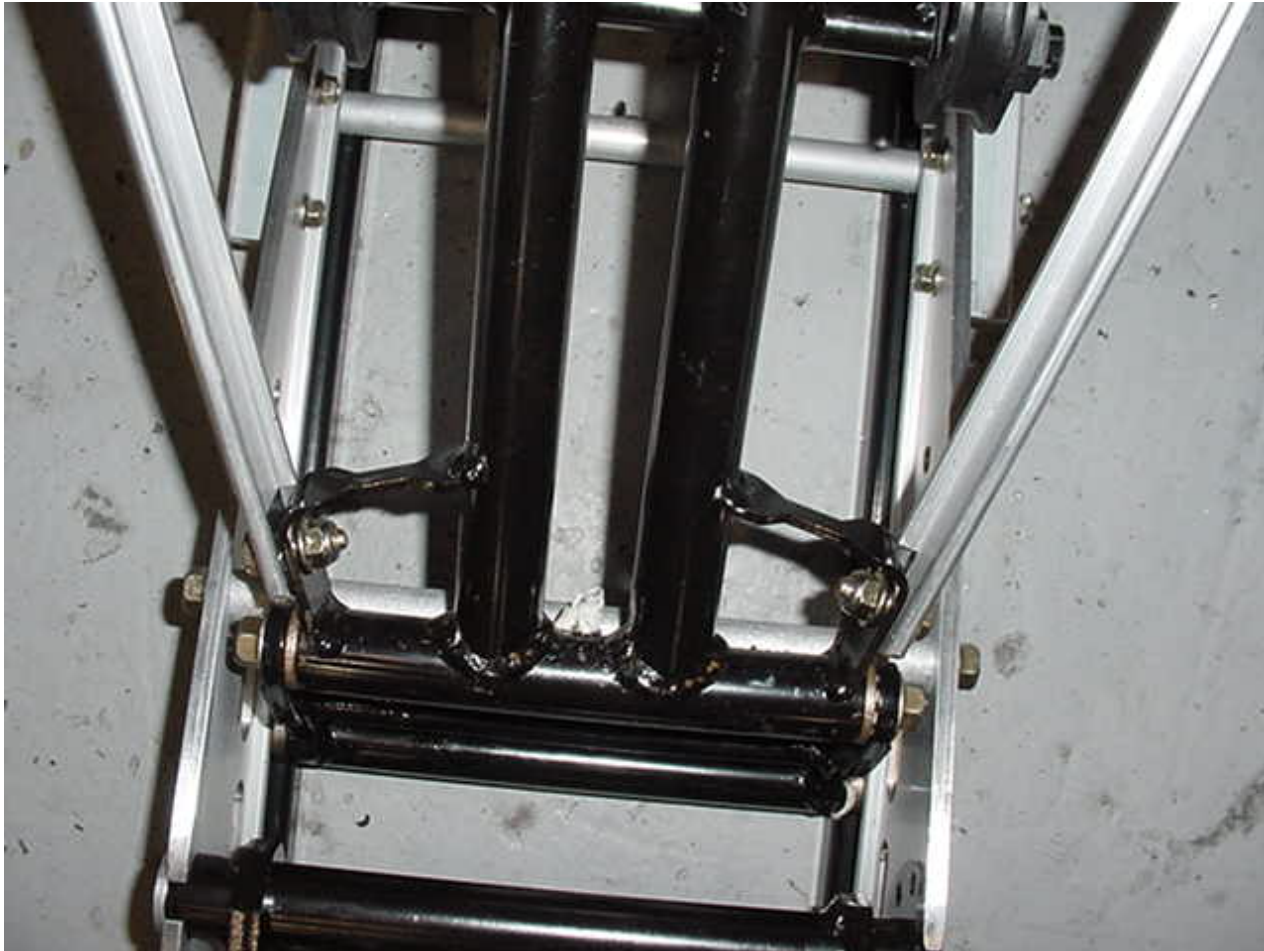
Tunnel protectors: To help keep studs from hitting tunnel during hard bottom outs.



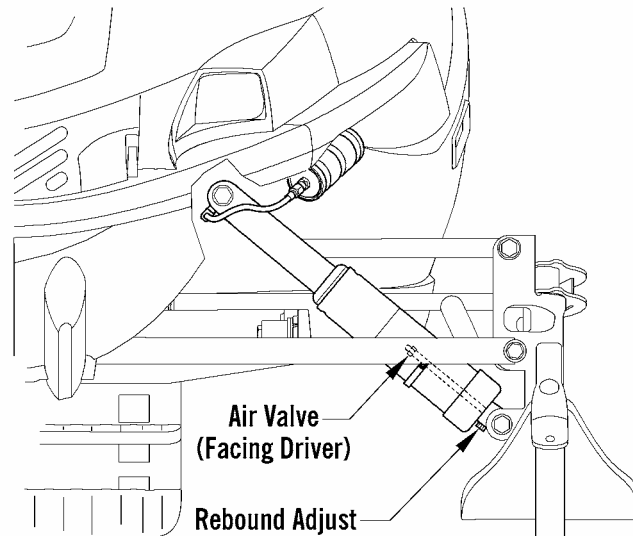
Throttle lever pivot bolt use new nut if removed. Torque to 18 in/lbs. Will fit past years race sleds



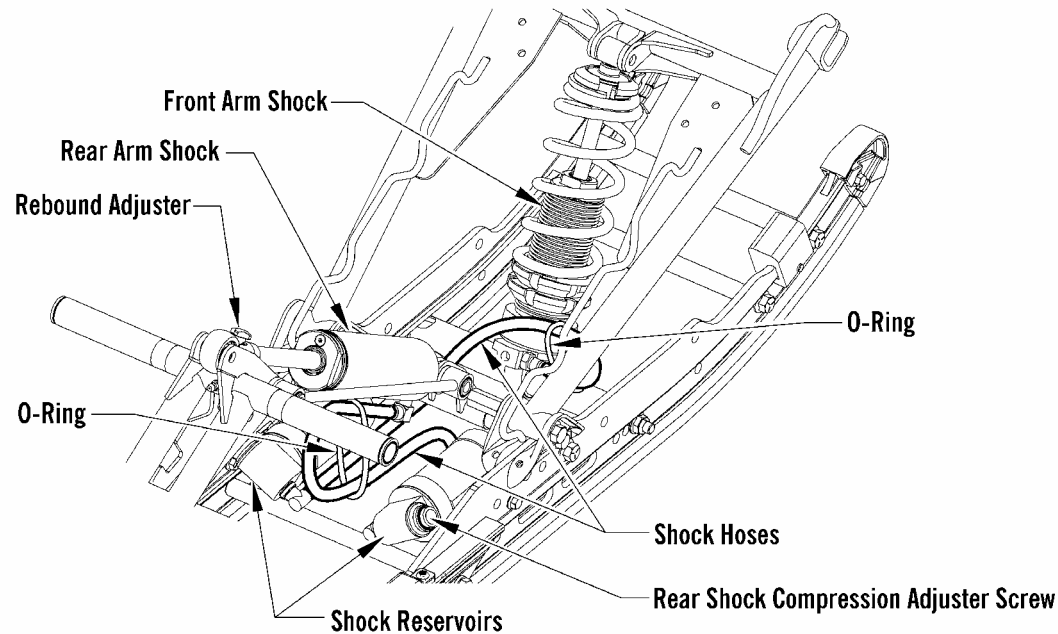
**Idler arm brace mounting tab: Is stronger
and the coupling block is stronger**



Ski shocks: Rebound adjustable, larger air chamber, higher air pressure, stiffer negative spring. Light weight oil and new valving.



No crosslink, front arm shock has compression adjuster, position damping, light weight oil and new valving. Rear arm shock has compression and rebound adjuster, light weight oil and new valving.



More new items 2006

- Upper a-arms (less flex)
- Down support tubes (improves frame durability)
- Rear bumper (thicker wall)
- Rear wheels (stronger)
- Idler wheels (larger)
- Chain tensioner pad (new shape and material)
- Resonator outlet tube (reduce engine bogging on landings)

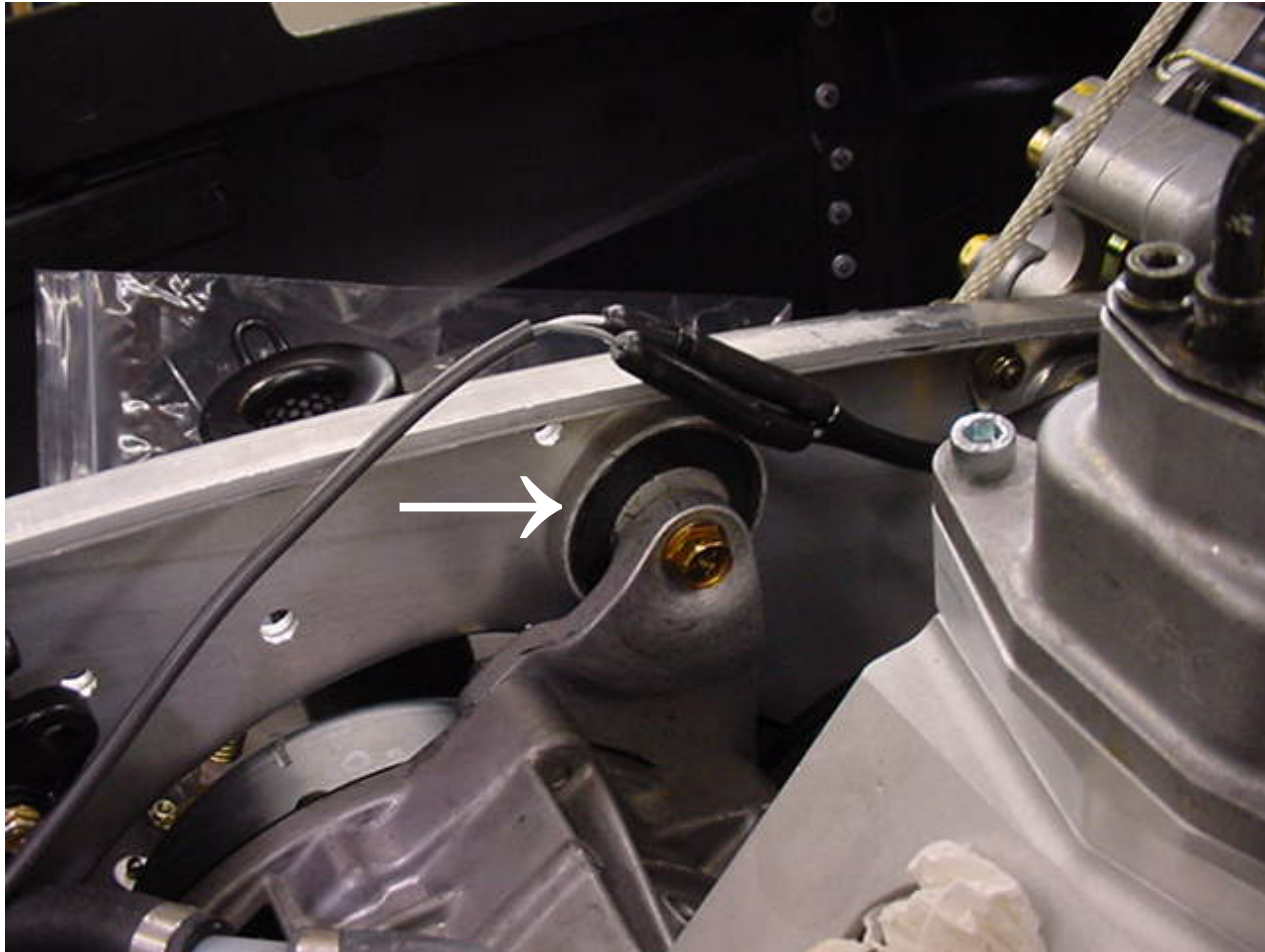
Items to be checked or do
during setup

1. Wire routing
2. Hose routing
3. Brake line connections are tight
4. Install drive belt
5. Read operators manual

440 Throttle cable routing



Some 440's may not have the right hand round rubber engine mount pressed fully into the frame on the inside edge of the mount



To correct use a 1/4 cap screw and nut in hole shown by arrow and clamps to squeeze the inner and outer frame's together around mount. Mount should be flush with rib of frame on both sides.



Check to see that the exhaust valve vent hose's are routed into the channel in pan.



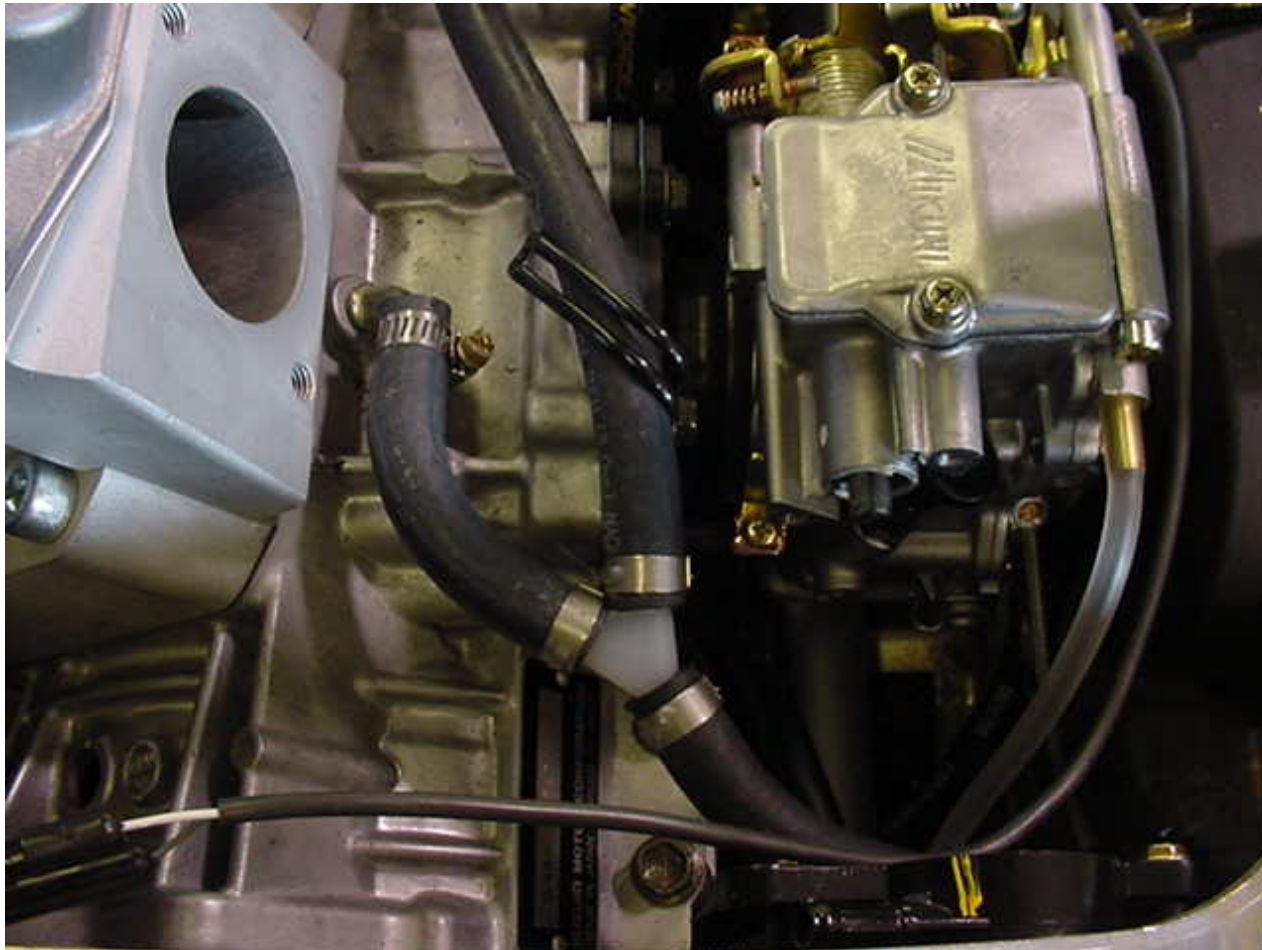
Mod Hood: Trimming 5/8" from front point of hood. Will keep the air box cover in place when the hood is opened and closed.



Mod Hood: The hood will need to be trimmed $\frac{1}{2}$ " to $\frac{3}{4}$ " higher above the steering post. If post is to be used in the highest position.

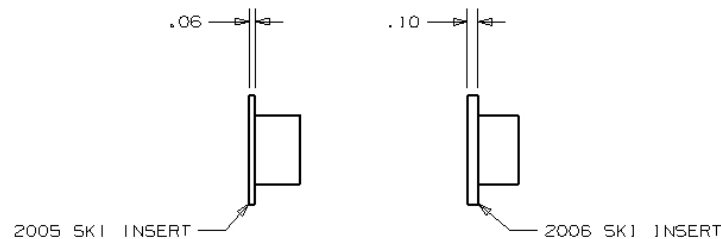


Mod 600: Some of the clamps on the Y fitting on the small cooling lines on the front right side of the engine may be loose. They can be crimped tighter or replaced with a screw clamp p/n 0623-373



Misc. information and tips

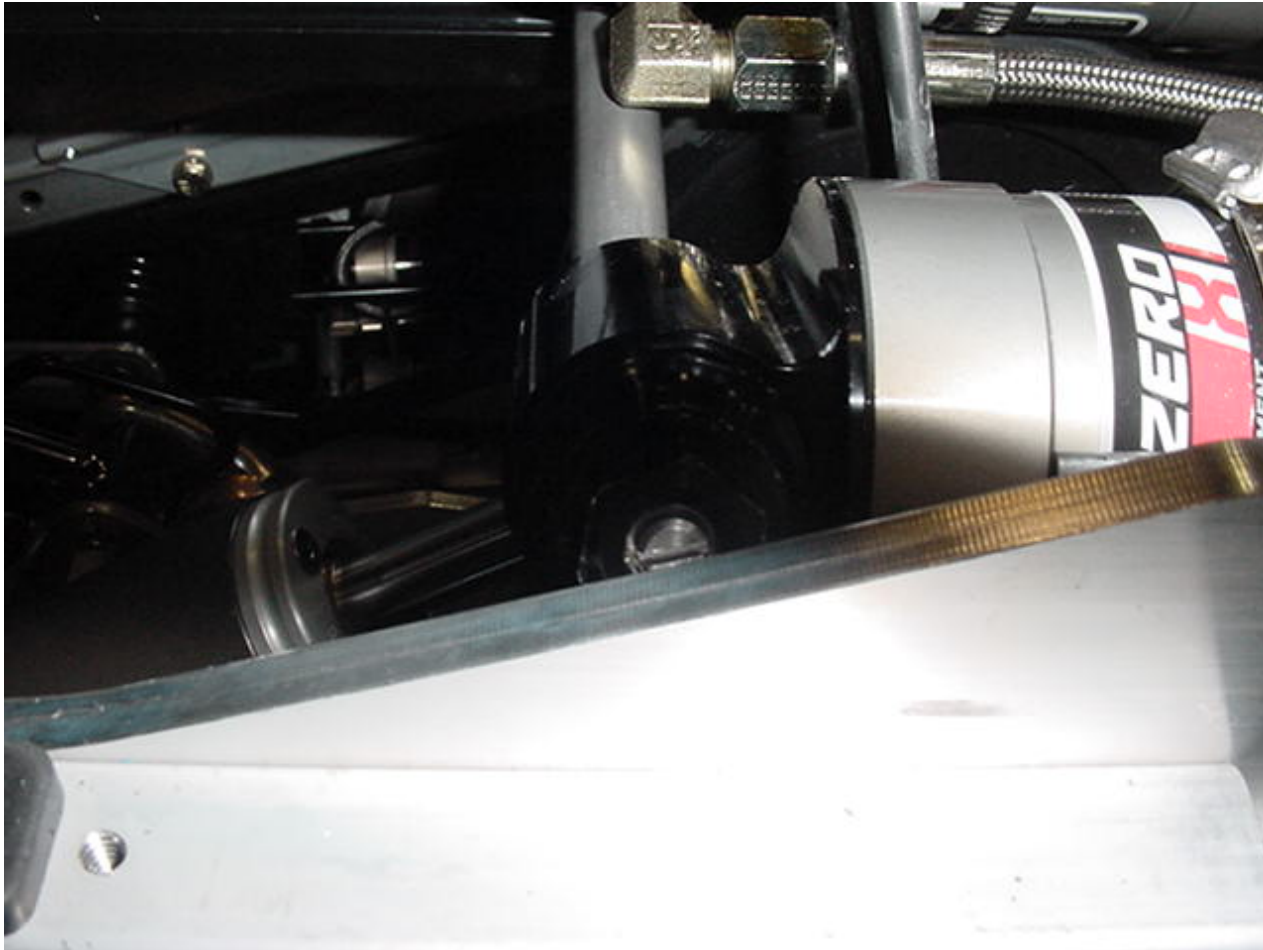
05' and 06" inserts have the same part number. If you order new one's they will have the .10 shoulder and the 05' inserts should be replaced with new ones.



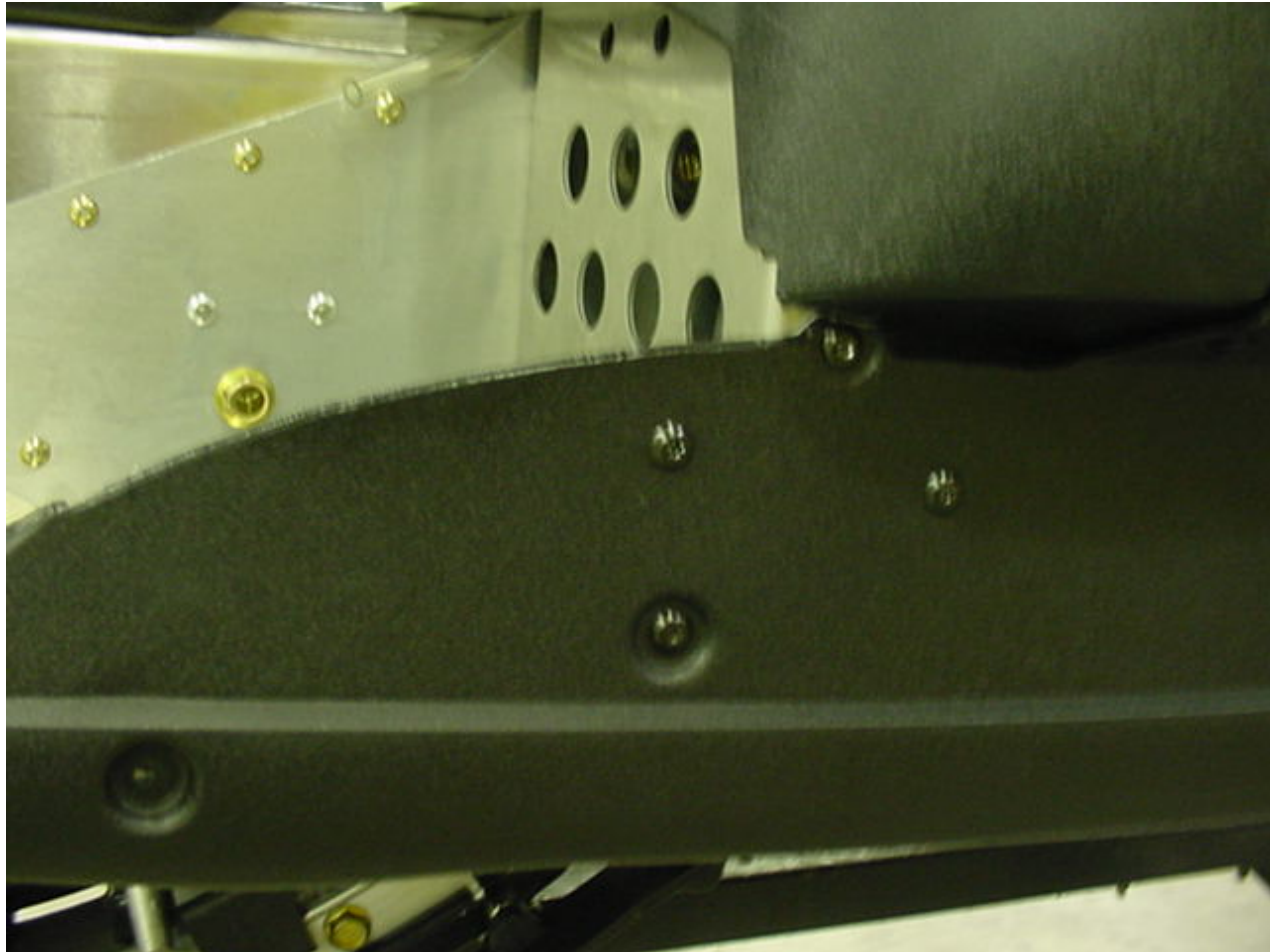
Ski Shock

- Air pressure must only be checked or changed with shocks fully extended and with air gauge supplied with sled. Or one that does not take air volume to operate. Air pressure will change 1 lbs. with a 10 degree temperature change.

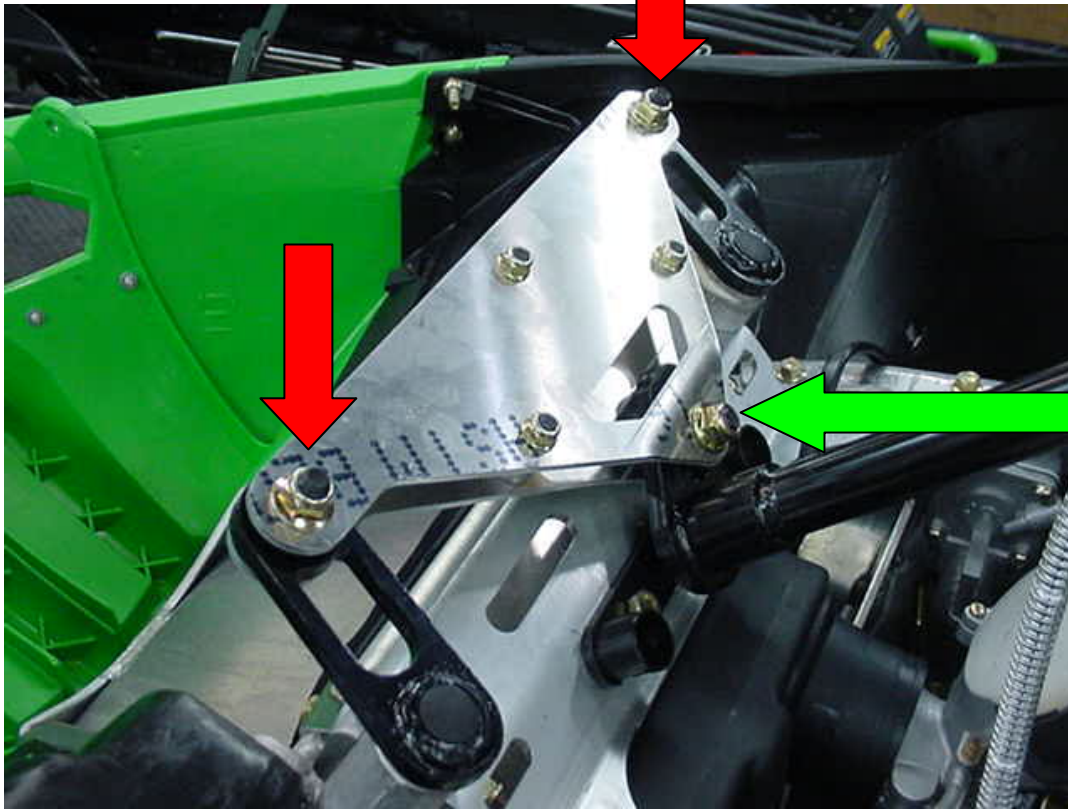
Rear suspension compression adjuster screws can only be operated with a small shank short bladed screw driver. It is not recommended to trim top of rail to gain better access.



The heads of the screws attaching the side pan to the foot rest are small and can pull through the side pan. You may want to put a washer under the head of the screws.

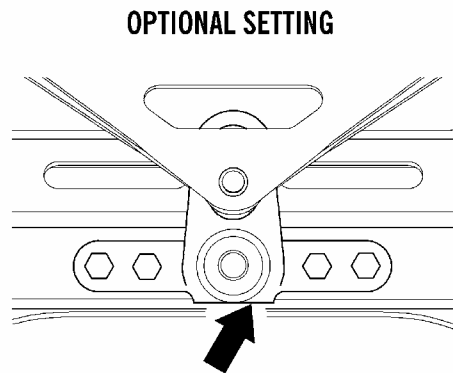


Steering link plates to bellcrank arm cap screw:
440 Sno Pro: Nut goes on top side
600 Mod: Nut goes on bottom side

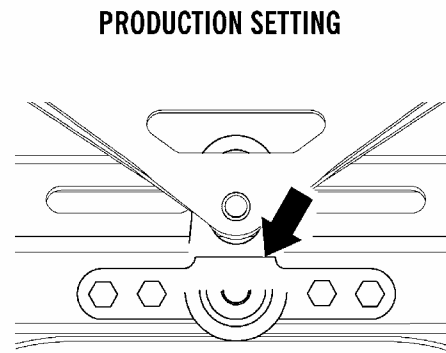


Center steering bearing cap screw: Nut must go on top side on both stock and mod sleds. Torque to 22 ft lbs.

The 2006 operators manual shows the 2005 illustration of the steering ratio



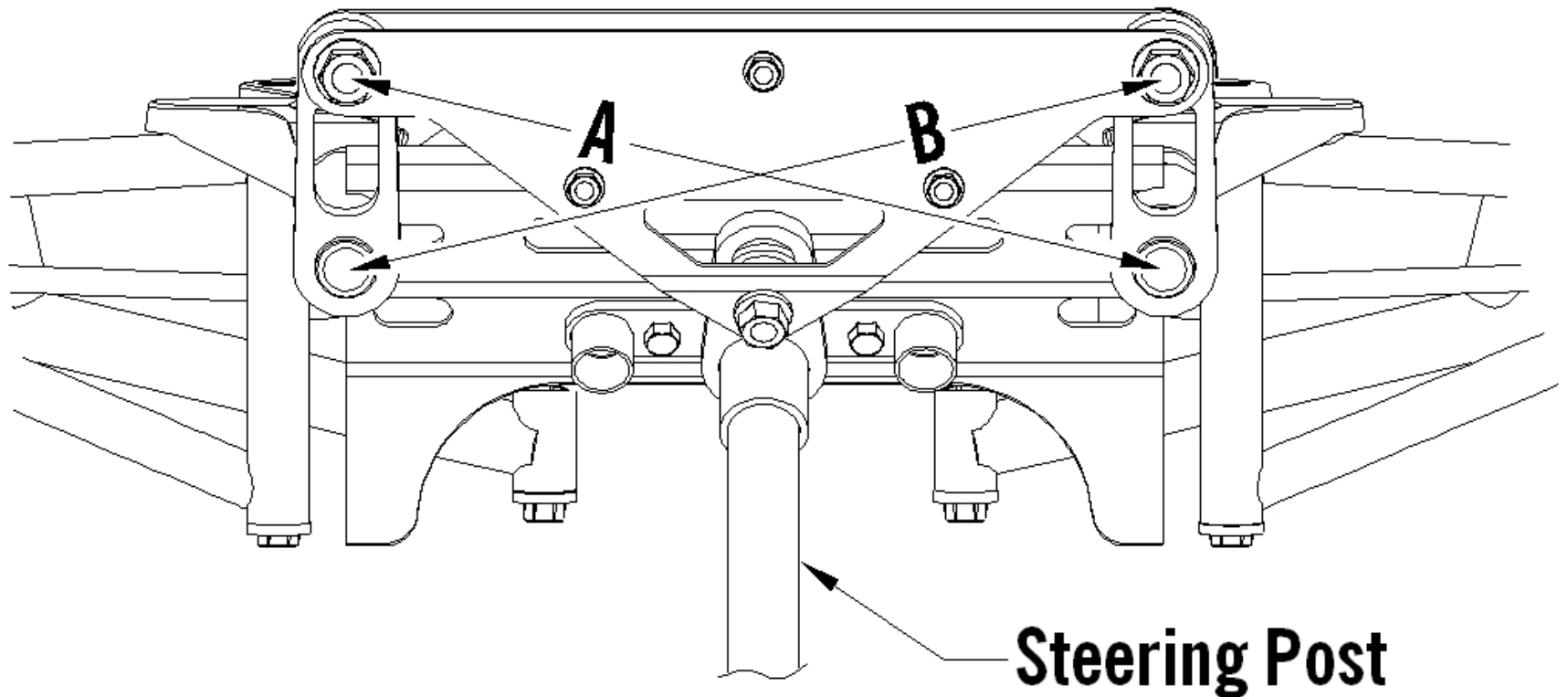
FASTER SPEED/HIGHER RATIO



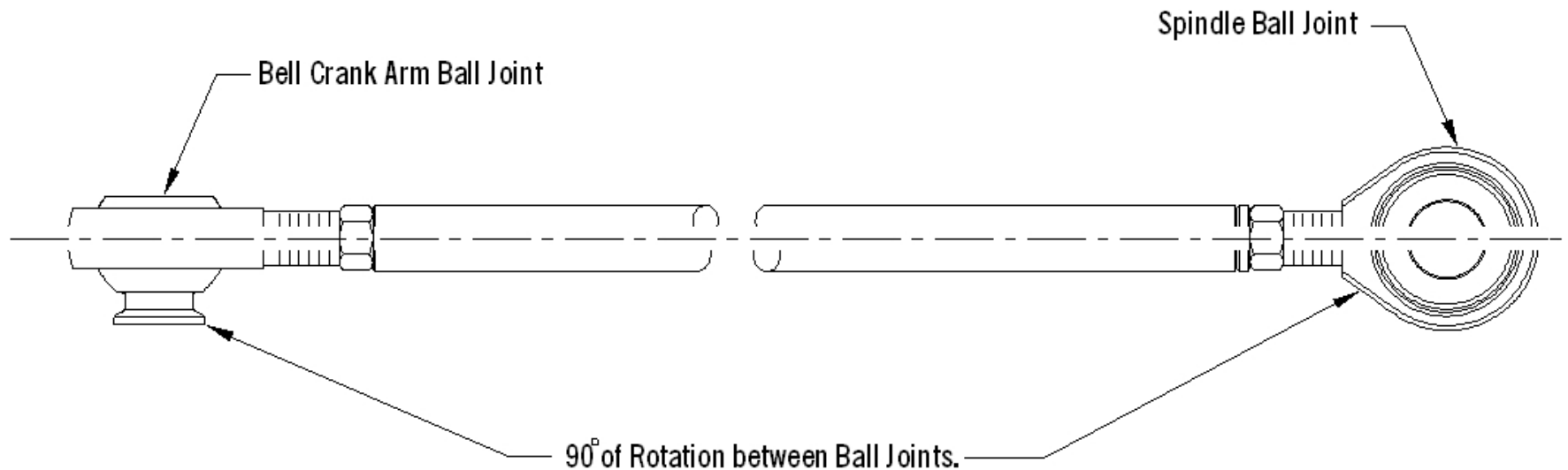
SLOWER SPEED/LOWER RATIO

See operator's manual

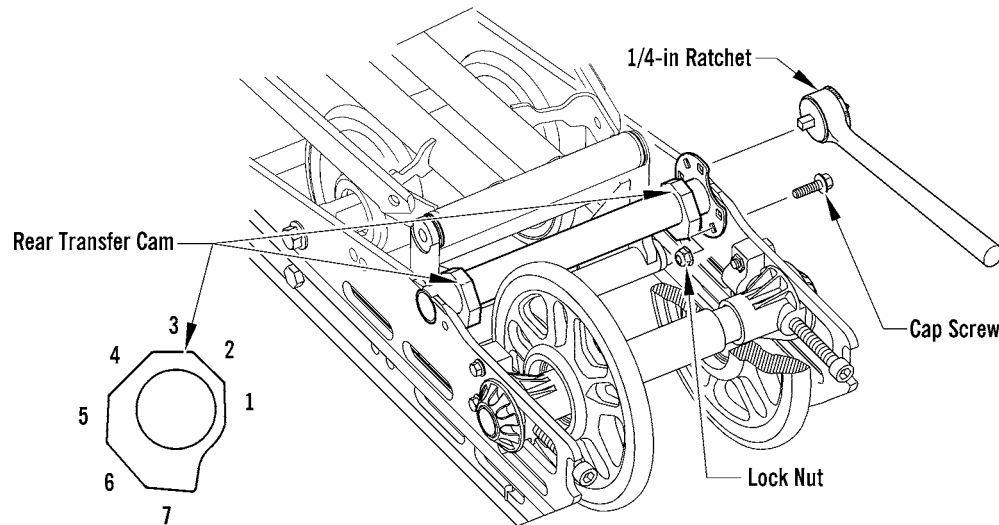
Centering the steering rack



This orientation is necessary to keep ball joints from binding.



The left side axle nut should not be loosened or removed.



Right axle
nut

Torque

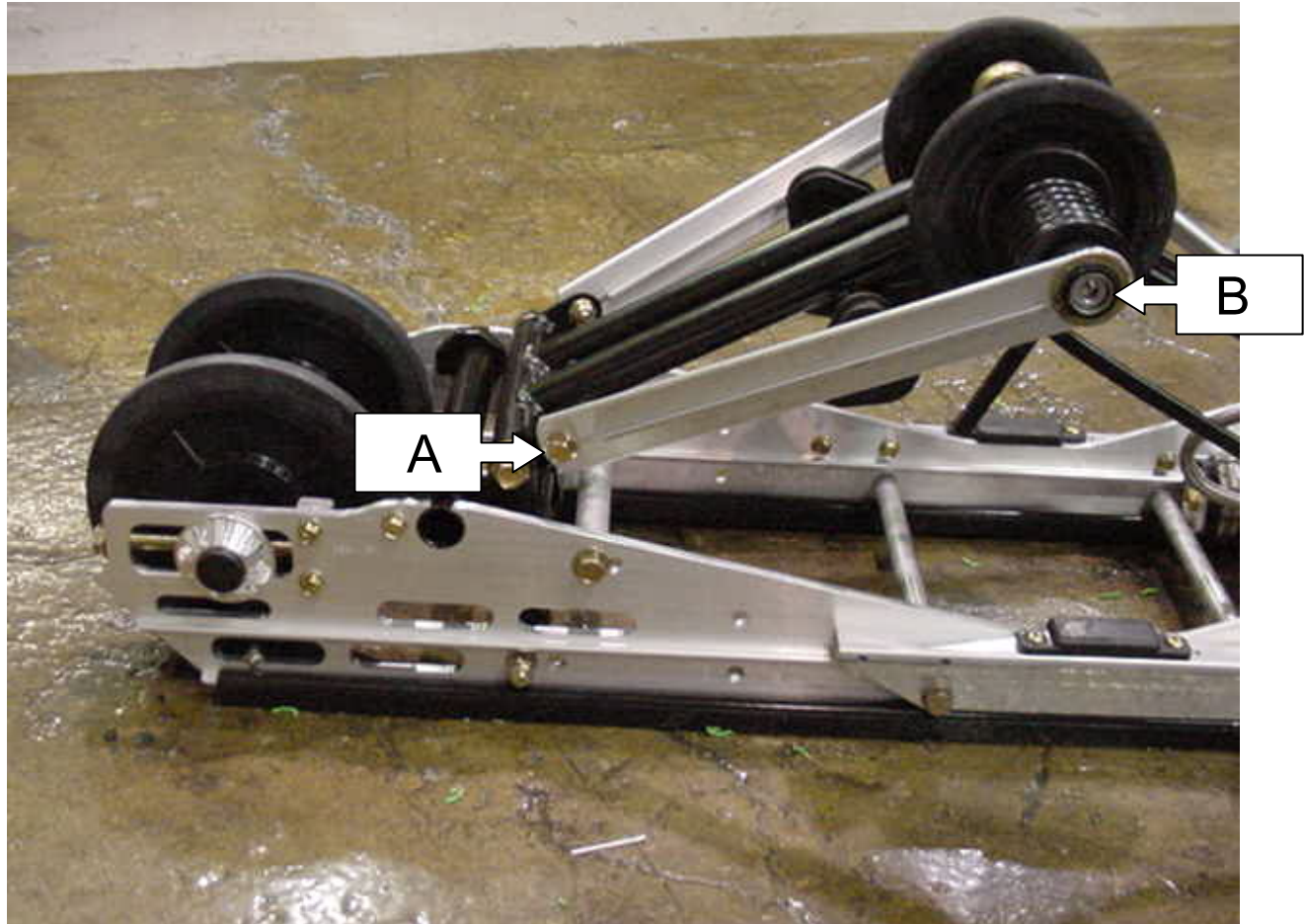
40-45 ft lbs.

IL 0741-295 Use axle nut

Wrench p/n

0644-454

BRACE REMOVAL: Remove cap screw (A) first then remove snap ring (B). **BRACE INSTALLATION:** Spring and spring wear sleeves with angle cut end out and the longer end forward. Put brace in position, install washer and snap ring. Install the cap screw on the lower end of brace last.



Removing Rear Suspension: Remove the rear bolts, swing the rear of the suspension out away from the tunnel. Then pull the suspension back off of the front cross shaft. Let the front arm drop below the cross shaft and push the frame forward. Then lift the rear of frame up and out of track and tunnel. Reverse procedure for installation



IGNITION TIMING AND EXHAUST VALVE OPENING SETTINGS

- Ignition timing and valve openings are the same as the 2005
- 2006 engine parts are the same as 2005 except the reed valves and intake flanges

CLUTCH CALIBRATION CHANGES

- The 2006 440 Sno Pro clutch calibration has again been developed for maximum performance in a sno-cross racing situation.
- The 2006 uses a new light weight driven.
- Note: The driven clutch uses a different style helix and shaft key.

2006 Arctic Cat 440 Sno Pro Specifications

• BORE AND STROKE	66.5MM BORE 63MM STROKE
• DISPLACEMENT	437.6CC
• H.P	104~105
• OPERATING RPM	
– Starting line acceleration	8350~8400
– Race condition	8450~8600
• CYLINDER HEAD VOLUME	13.25cc w/BR9EYA plug installed
• COMBUSTION CHAMBER VOLUME	14.99cc (plus 2.41cc to top of plug threads)
• SQUISH GAP	1.3mm
• COMPRESSION RATIO	8.07:1
• IGNITION TIMING	30 DEG BTDC(.207 in. 5.258 mm @ 3000RPM

PRE-MIX GAS AND OIL

- The 2006 model 440 Sno Pro will continue to use a pre mix of 110 race fuel and oil at 32:1 ratio.

2006 Arctic Cat Sno Pro Fuel Requirements

- Listed below is a guideline to help the racer choose a fuel or blend of fuel that may show acceleration improvement in some cases as compared to using 100% Arctic 110 race fuel.
- **PLEASE NOTE.** These are guidelines only and may not apply to all situations. If in doubt, choose 100% Arctic Cat 110 octane race fuel or the next higher percentage blend listed below.

ALTITUDE

FUEL BLEND

- | | |
|---------------------|---|
| • 4000-8000 ft. | Blend of 75% Arctic Race 110
and 25% AMOCO 92 OCTANE |
| • 8000 ft. and over | Blend of 50% Arctic Race 110
and 50% AMOCO 92 OCTANE |

Fuel and Jetting

- The lower the percentage of race fuel mixture, the higher the chance of piston damage.
- The leaner the main jet size, and/or the leaner the jet needle setting, the higher the chance of piston damage. This chance of damage may be reduced with a higher percentage of race fuel
- A safe octane fuel may allow for enough fuel reduction without engine damage (leaner main jet, leaner needle position settings etc) that power and acceleration may be reduced.
- The higher the ignition timing, the higher the chance of piston damage.
- Higher ignition timing and increased fuel octane may not cause engine damage, but may drastically reduce acceleration.

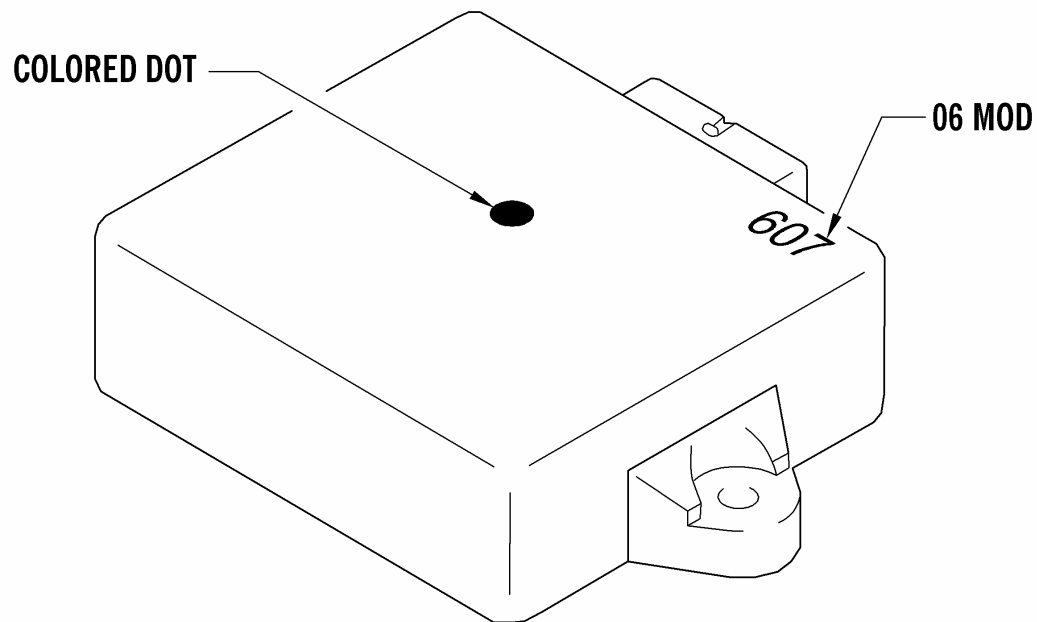
Fuel and Jetting contd.

- Sustained wide open running increases the need for higher octane. The fuel mixture suggestions in this handout are intended for sno-cross race application only.
- The need for higher octane fuel would increase as outside temperatures decrease. Example: 30deg above with a 50/50 mix of Arctic race and Amoco 92 octane may be safe, but -20deg may require a higher percentage of Arctic race fuel to achieve the same safety.
- Straight 100 octane race fuel WILL cause engine damage at lower elevations.
- All race fuels are not the same even if Octane rating is equivalent. Test carefully if using other than Arctic Cat 110 race fuel.
- 10) We recommend not mixing with 92 octane below 4,000 ft alt.
- Use these tips to help decide some setups that will give you the best results for your own application and racing style.

CDI Box Identification

Red 440 2005, 2006
White Mod 2005
White 440 2004
607 Mod 2006

Note: 440 Mod. & 600 Mod. have the same box,
with different timing programs.



SPEEDWERX 600 SX Engine/Pipe Package

- Torque Specifications
 - Head Bolts 18 Ft/lbs.
 - Cylinder Base Bolts 25 Ft/lbs.
 - Power valve Bodies 8 Ft/lbs.
 - Exhaust Flanges 18 Ft/lbs.
- Carburetion
 - Carburetors Mikuni Flat slide 40mm
 - Main Jet 410P / 400M
 - Pilot Jet 60
 - Needle 9EJ1-60 #5 CLIP
 - Slide 3.0
 - Reed Valves V-Force Delta 3 (V3112-883B-2)
- Clutching
 - Clutch Weights N2 (60.0 Grams)
 - Primary Spring CCT-B-165-310 (165/310 - Titanium)
 - Team Driven Clutch 52-42-46 / 52-44-46
 - Driven Spring Team 160/260

SPEEDWERX 600 SX Engine/Pipe Package

- Engine
 - Displacement 600cc
 - Bore 77.85mm
 - Stroke 63mm
 - Fuel Requirement Arctic 114
 - Oil Requirement Arctic APV
 - Mix Ratio 18oz : 5 Gallons
 - Break In 32oz : 5 Gallons
 - Cylinder Head AC606i
 - Squish Clearance (.042"-.045")
 - Piston/Cylinder (Clearance) (.005"-.0055")
 - Piston/Cylinder (Service Limit) (.008"-.0085")
 - Operating RPM 8400-8500
 - 8500-8750 (On Track/Hot Pipes)
- Ignition
 - Ignition Timing Check 30 degrees @ 3,000-5,000 RPM
 - Spark Plugs NGK BR9ES OR BR9EYA
 - Spark Plug Gap .022"-.024"

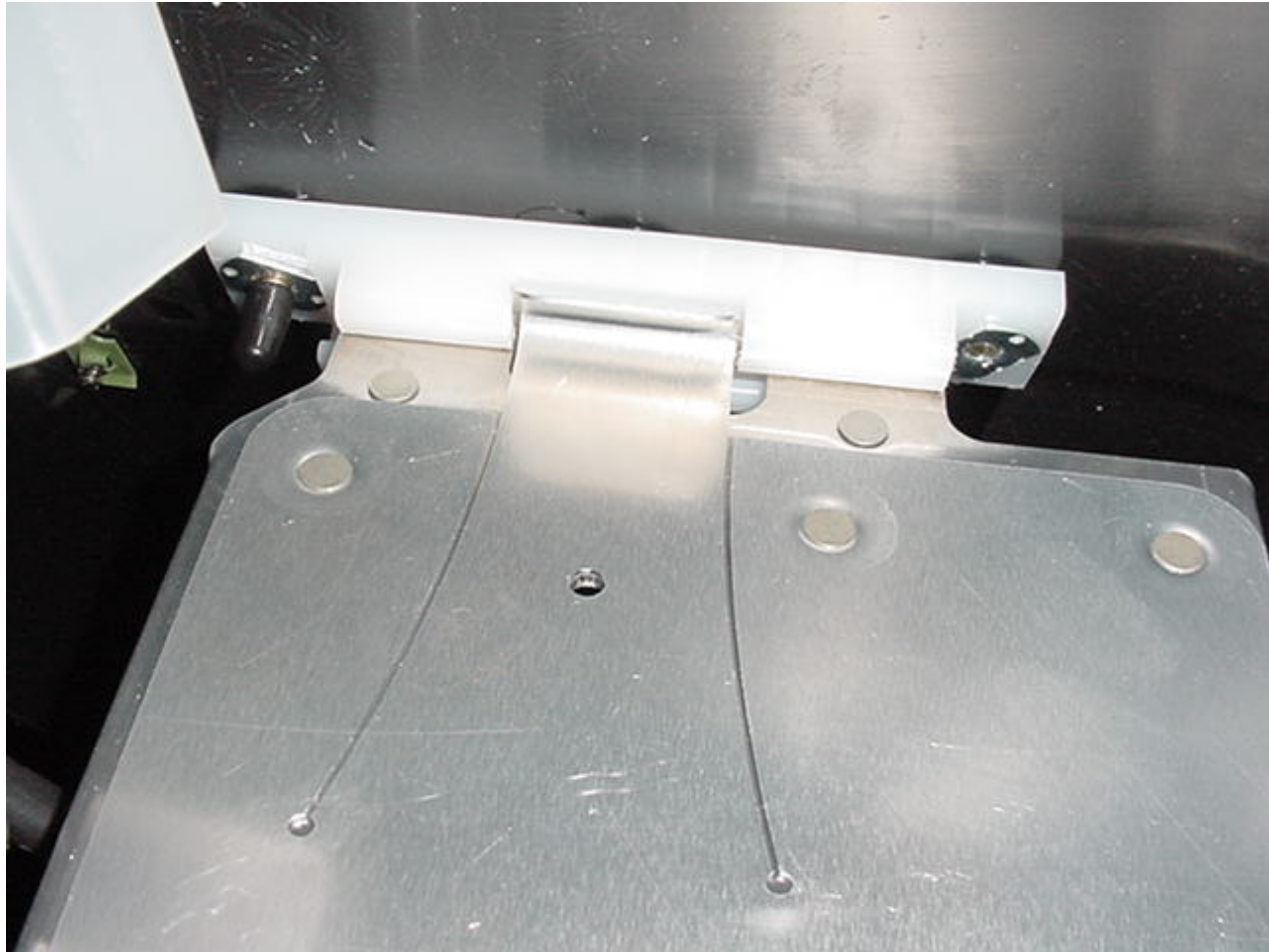
Mod Engine Break-In Procedure

- Mix Fuel @32 oz. oil : 5 Gallons Fuel. Then fill tank.
- Start engine and let idle for 5 minutes. (Make sure engine does not overheat.) Then turn engine off.
- Let engine cool to ambient temperature.
- Restart engine and repeat steps 2 & 3.
- Start and operate machine without extended wide-open throttle operation until 1st tank of break-in fuel mixture has been run through your machine.
- “LET R BUCK”

If wire connectors are positioned properly they can be pushed into the top part of the handlebar riser block and held between the handlebars and the handlebar pad strap. Keep wires of sharp edges.



The 2006 mod sled has a spring latch on the rearward mounting point. Lift on tab and slide the shield inward to release the guard.



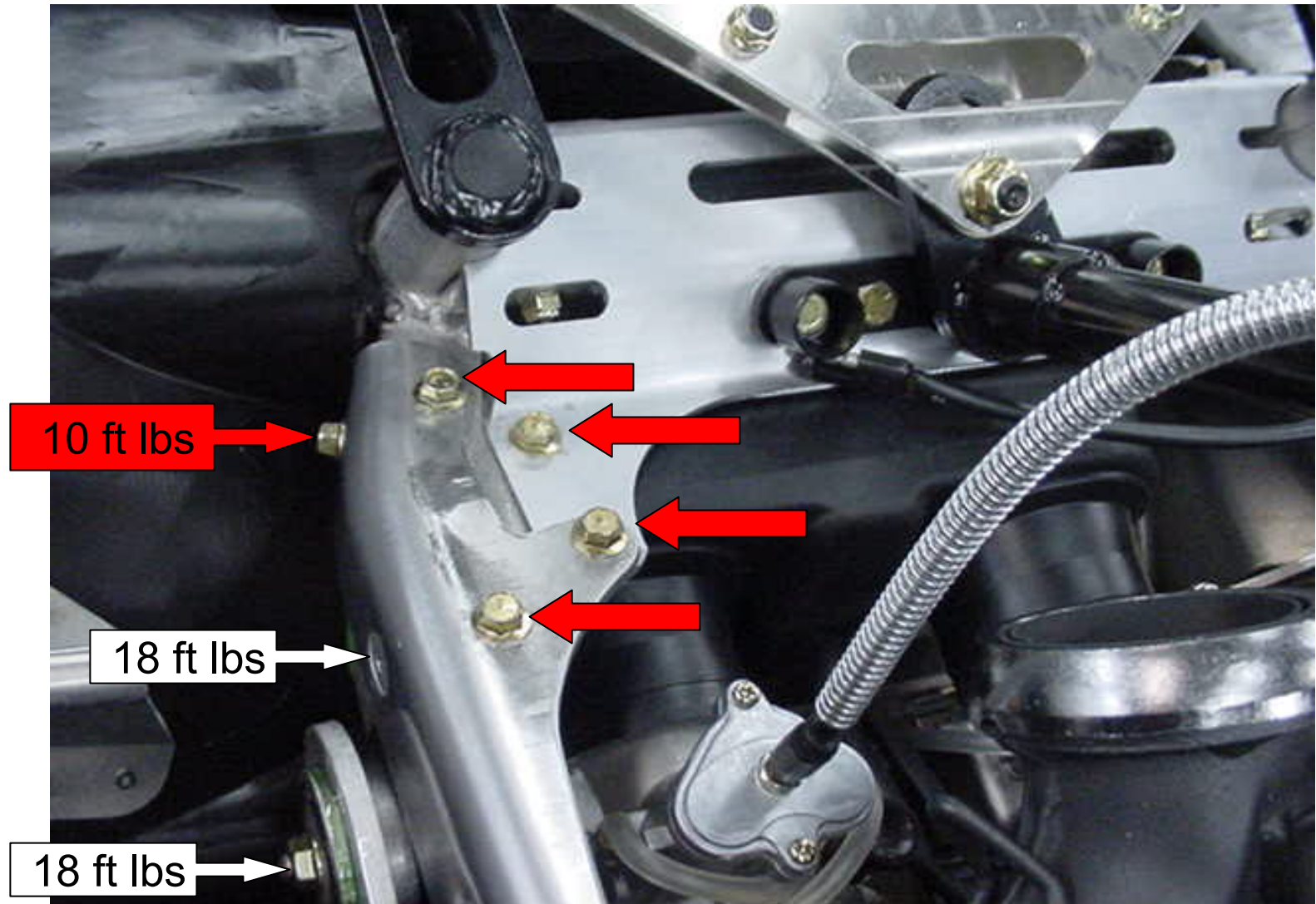
Take care not to lift the tab too far or it will bend and will not latch.



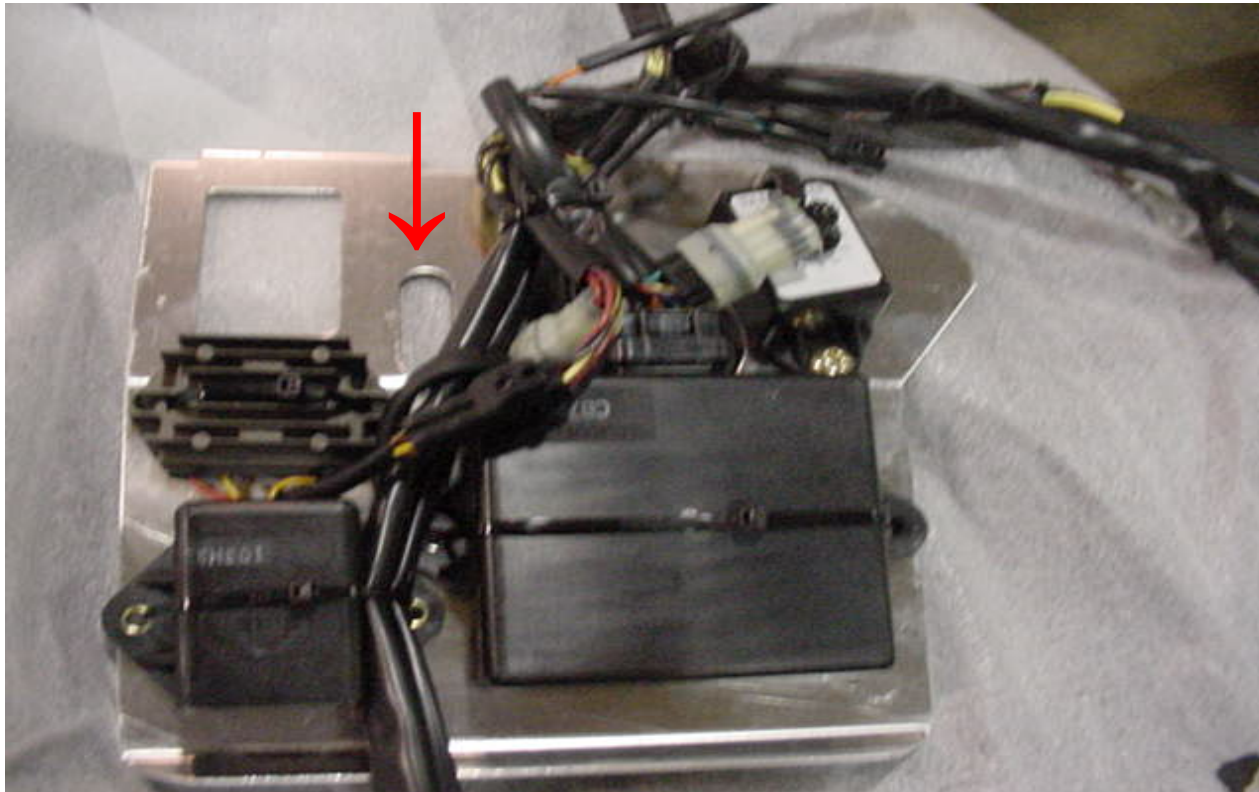
The mod sled has a extra cooler return hose. The engine drain is on the backside of the cooler in line with the coolant hose.



Check these fasteners often.



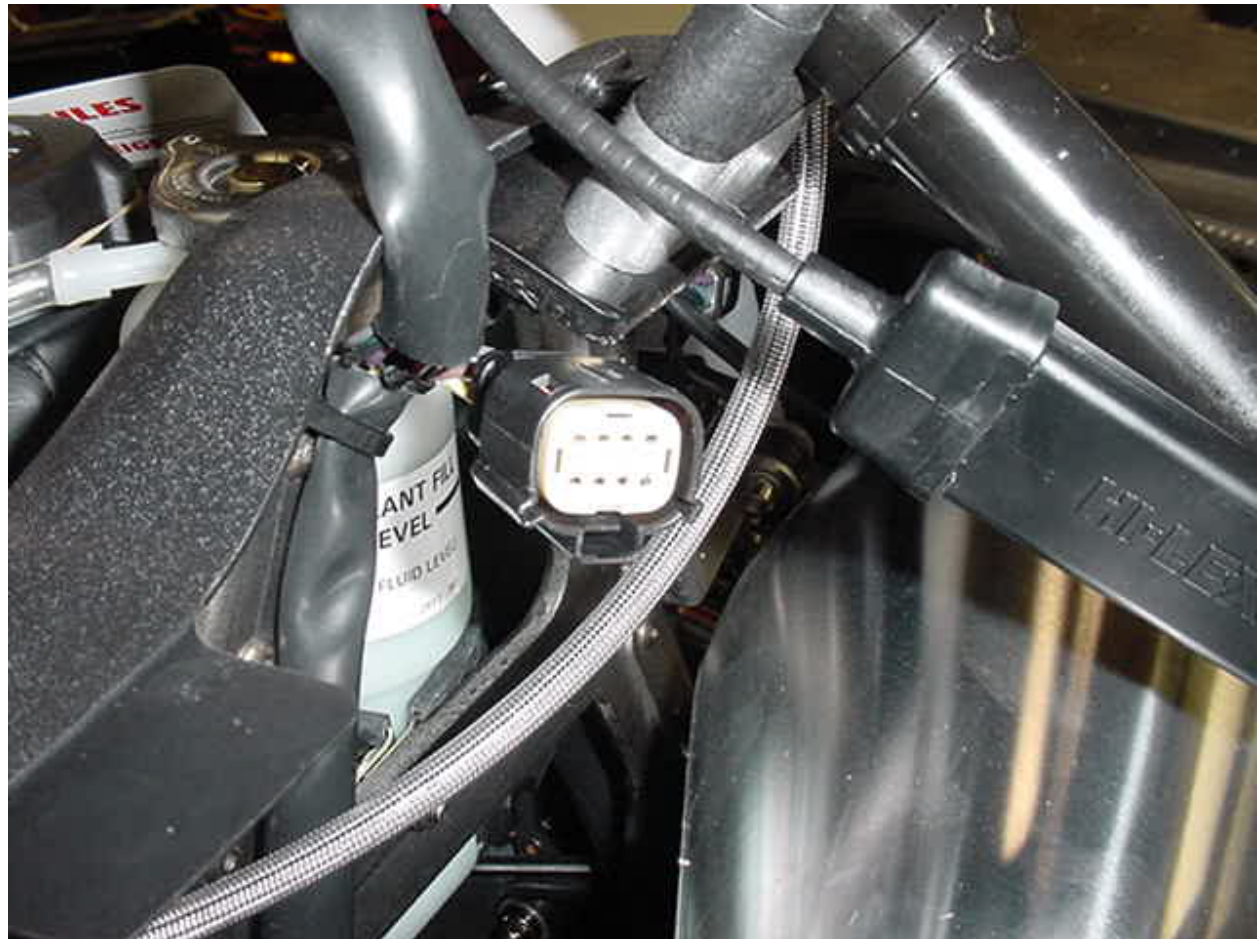
ELECTRICAL PLATE: The CDI, capacitor, rectifier, timing dial and jack shaft RPM pickup sensor are all mounted on the electrical plate which is accessed by removing the seat and fuel tank. Note: The electrical plate must be mounted properly so that the speedometer bracket runs in the center of its slot. The magnet bracket must also be positioned on the jack shaft so it is in the center groove of the tunnel. Care should be take to keep foreign objects and wires from coming in contact with the rotating magnet bracket.



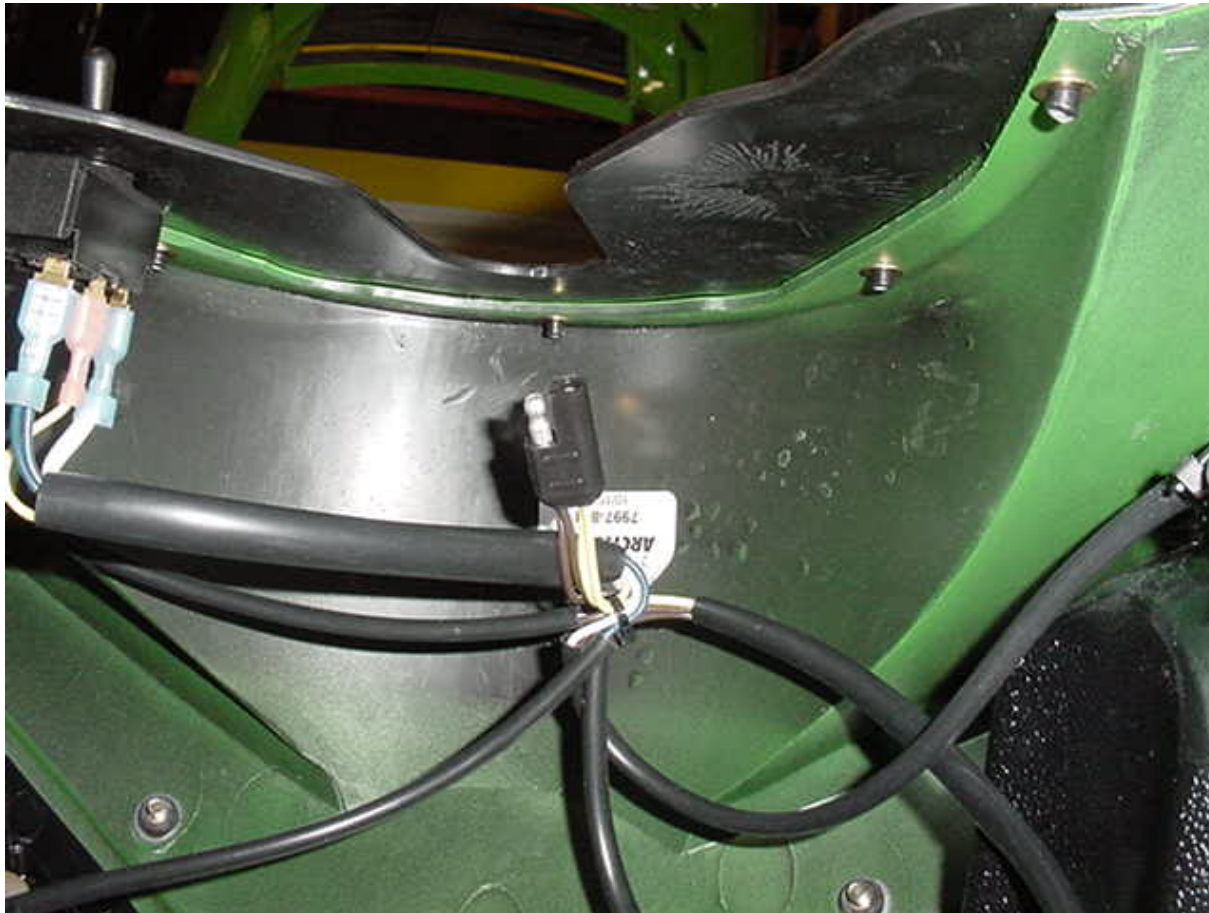
ELECTRICAL CONNECTOR FOR SPEEDOMETER, TACHOMETER, AND DATA RECORDER: This connector has wires that are connected to the exhaust temperature timing probe. Unapproved equipment attached to this connector could cause poor engine performance and electrical component damage. This connector is located under the upper steering post support.

3636-651 speedo mtg kit

0620-289 speedo/tach.



There is a yellow and brown wire accessory connector near the headlights in the hood that can be used for aftermarket tachometer hook up. The mod sleds have the brown/yellow accessory connector positioned on the top left hand side of the steering support.



Drive clutch sanding: Breaking the glaze on the drive clutch by lightly sanding with a 80 or 100 grit paper or cloth.



Driven clutch sanding: Breaking the glaze on the driven clutch by lightly sanding with a 80 or 100 grip paper or cloth

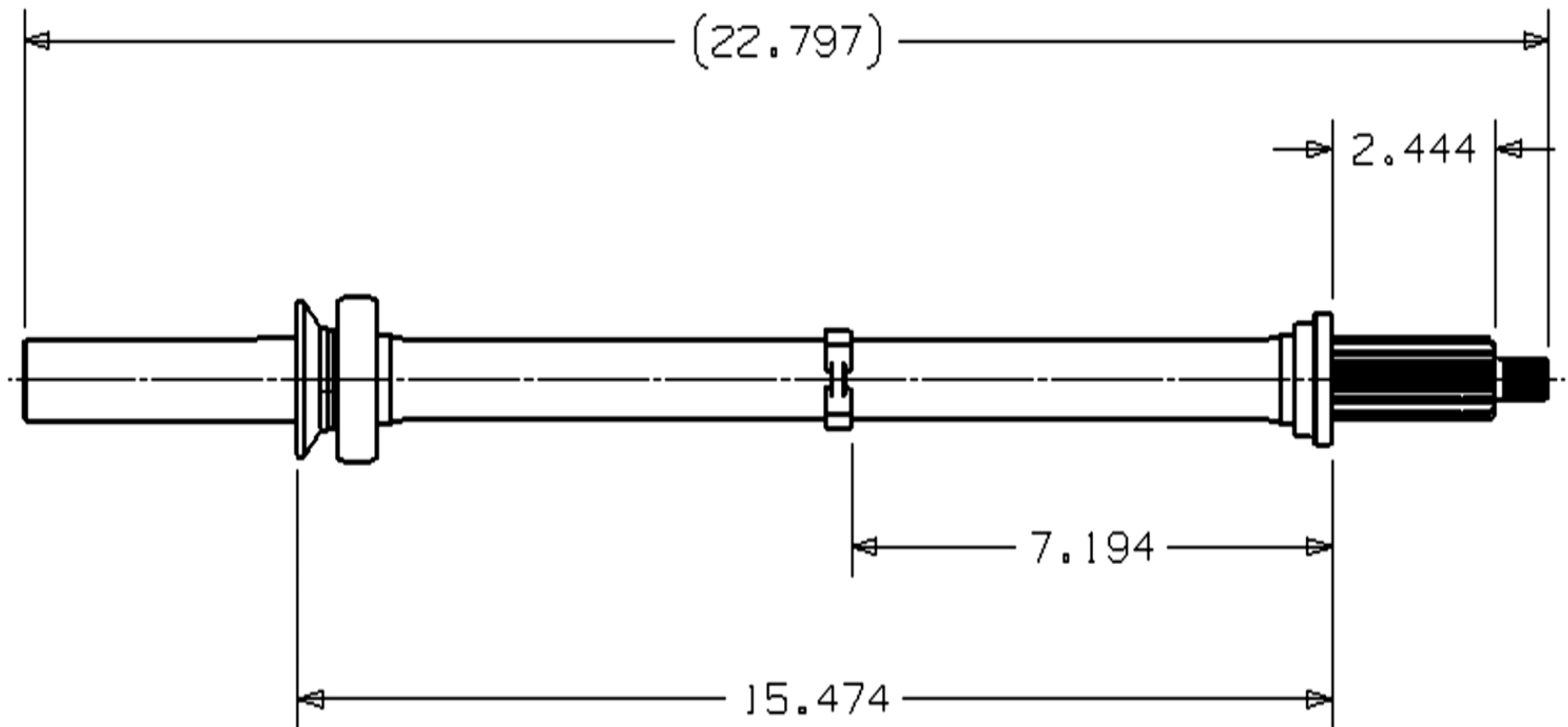


When removing rotor/slide wheel, make sure puller bolts do not extend beyond the inside surface of the rotor. If they are threaded in too deep they will contact and damage the stator assembly

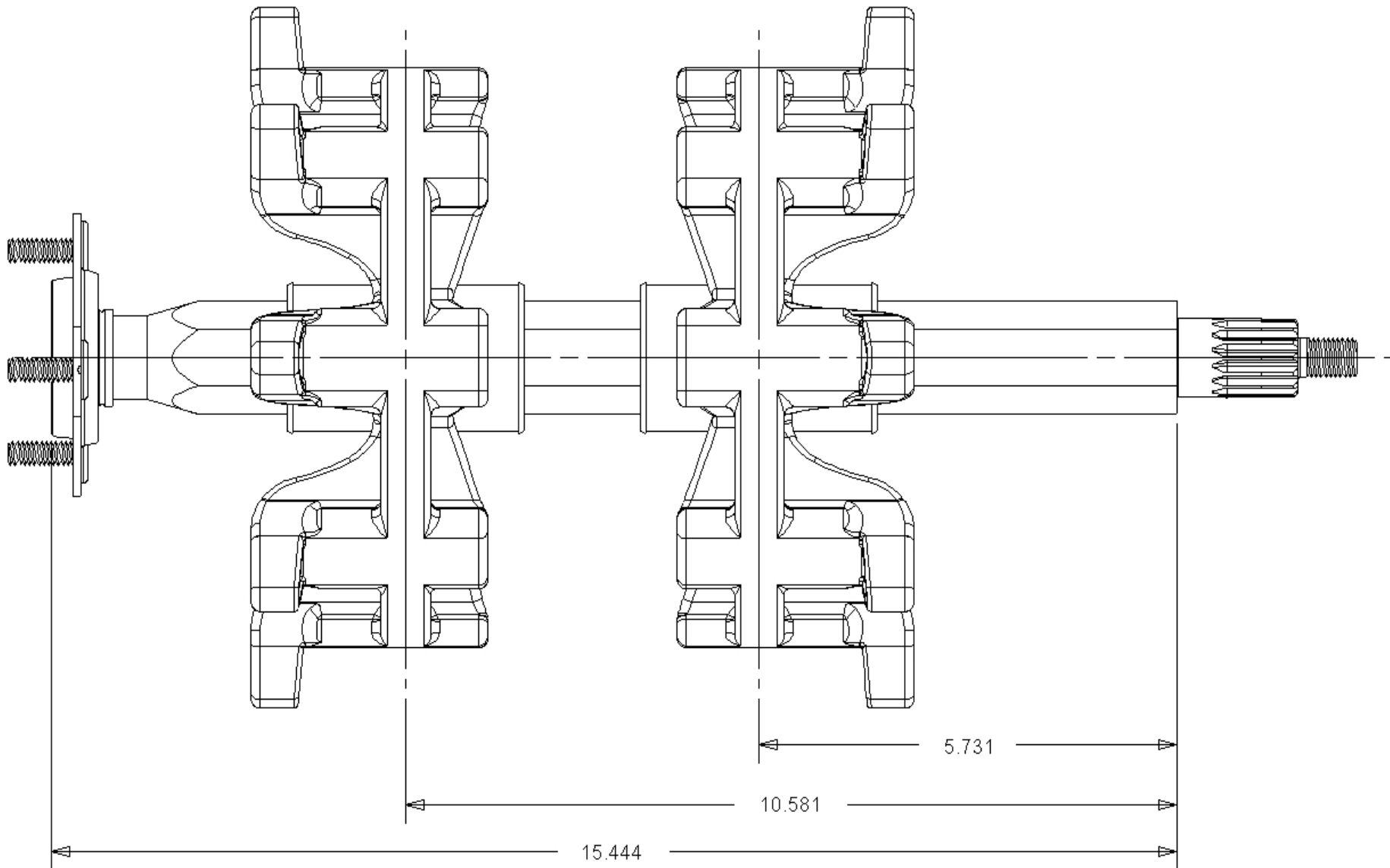


DRIVEN CLUTCH ALIGNMENT: Driven clutch should have .060" to .100" side free float. To check driven alignment place sled on track stand, run engine and track up to a third to one half speed. Turn engine off then remove clutch shield. Driven should be near center of free float on shaft. If not remove or add washers and repeat. Some clutches are a little tight to the shaft, they will free up with break in.

**DRIVENSHAFT: Driven clutch key is different dimensions than 2004-2005.
The 2006 Model uses the standard Arctic Cat driven key.**



Track shaft is 1 ¼" hex, 1 1/16th bearings and spline, .750" gun drilled.



DRIVE CLUTCH: Drive clutch is the same as 2005.

•	<u>Year</u>	<u>p/n</u>	<u>grams</u>
•	2000	0746-612	46.65
•	2001	0746-619	47.00
•	2002	0746-638	47.50
•	2003	0746-658	49.00
•	2004-2006	0746-704	50.70

Additional information

- Stronger handlebar p/n 1705-155. Same size and bend, made from thicker wall 4130. Can be purchased out of Service Parts.
- The rivets in tunnel to the tunnel edge, rear suspension brackets, running board supports do require inspection and replacement after some hours of use.
- Do not put track studs under or too close to the center rib of tunnel.

Servo cables have been know to come unhooked. A dot of silicone on top of cable head will help prevent coming unhooked. See operators manual for cable adjustment

