



030912

POLARIS IQ 121" & 136" M-20 INSTRUCTIONS

TECH-LINE 218-744-2107

1. Safely lift rear of sled off the floor. Remove stock suspension. Shut fuel valve off and make sure no fuel is leaking to prevent a possible fire hazard. **The attached photos are for reference only. They may not be of the exact make and model as the install. The attached Diagram is specific to the sled you are installing into. Dimensions are specific for that sled.**
2. The attached Diagram shows the proper dimensions to install the 136" M-20 suspension in the Polaris IQ chassis. Starting on the right hand side of sled refer to the Diagram for front arm location. Front and rear arm locations are based off the centerline of drive axle. **This is a custom installation we advise checking to make sure the rear black mount plates clear the front edge of the factory plates before drilling any holes.**
3. Front and rear arm locations will be drilled to accommodate a 7/16" coarse thread bolt.
4. There are two steel support plates (small black plates with six 3/16" holes) included for the front arm. There is one on the outside of the tunnel on each side of the sled. Drill the middle hole in the top row of 3/16" holes out to a 7/16" hole. See Photo #1 for pilot hole location. Place one plate one each side of the tunnel over the 7/16" hole drilled for the front arm location. Once plate is placed over the 7/16" hole, center punch the holes in the four corners of the plate and rivet to the tunnel at the four corners. See Photos #1 and #2.
5. Using the Diagram provided, measure and place the rear black mount plates into the tunnel. Secure in place and center punch the two 3/16" holes in the top of the rear black bracket. Remove bracket and drill punch marks for 3/16" rivets and the 3/8" mounting hardware. See Diagram. **NOTE: You may need to slightly lower the rear black mount plates so that the rear mount bolt is just below the running board. Check this and adjust if needed before drilling holes to mount the rear plates.**
6. Rivet the rear black bracket in place using the two upper holes first. Locate the other rivets and bolt holes and secure to the tunnel as shown in Photo #3. See Diagram.
7. There are three 3/8" bolt holes to locate and drill also. See Photo #3. **Caution to keep bolts and rivets from the path of the outer edge of track so no rubbing occurs.** **NOTE:** For the M-20 the middle bolt will be relocated to not interfere with the lock bracket on the right hand side of sled. See Photo #4, #5. Finish securing the bracket with the nuts and bolts provided. See Diagram.
8. Repeat all steps on the left hand side of sled.

9. **M-20 Lock Bracket.** On the RH side of sled, align the 7/16" hole in the lock bracket with the 7/16" hole drilled in the rear arm mounting plate. Temporarily slip a bolt through to hold in place. Parallel the top of the lock bracket with the top of the tunnel and center punch the 5/16" hole onto the inside of the tunnel. Remove lock bracket and place on the RH side of rear upper shaft. Drill the punch mark out to a 5/16" hole. See Photo #6.
10. **Braided Airline fitting.** Follow the instruction sheet provided in the instruction packet. See Photo #8.
11. Place M-20 Suspension into the track with the front upper shock bolt out, arm lying down and limiter strap not attached. Bolt front arm into place. Bolt rear arm into place. On the RH side secure the lock bracket with 5/16" hardware provided. Torque arm mount bolts need to be torque to **70 ft lbs**. Bolt front upper shock mount to arm tabs. Torque shock bolt to **40 ft lbs** of torque.
12. Under rails at front arm area, set sled down on a 4" x 4" block to assist with limiter strap attachment. Attach limiter strap to the limiter strap hold down. Limiter strap adjusting is done with adjuster bolt on front side of limiter hold down. Adjust limiter strap to a safe handling ski pressure that suits your riding style. Limiter strap settings vary from rider to rider and sled to sled.
13. Adjust track tension to a free hang measurement of 1/2" to 3/4" with no weight hanging from track. Running too tight of a track will cause excessive drag and Hyphax wear.
14. To ensure rider safety and sled reliability make sure all nuts and bolts have proper torque and proper adjustments have been made.

PHOTO #1



PHOTO #2



PHOTO#3



PHOTO #4

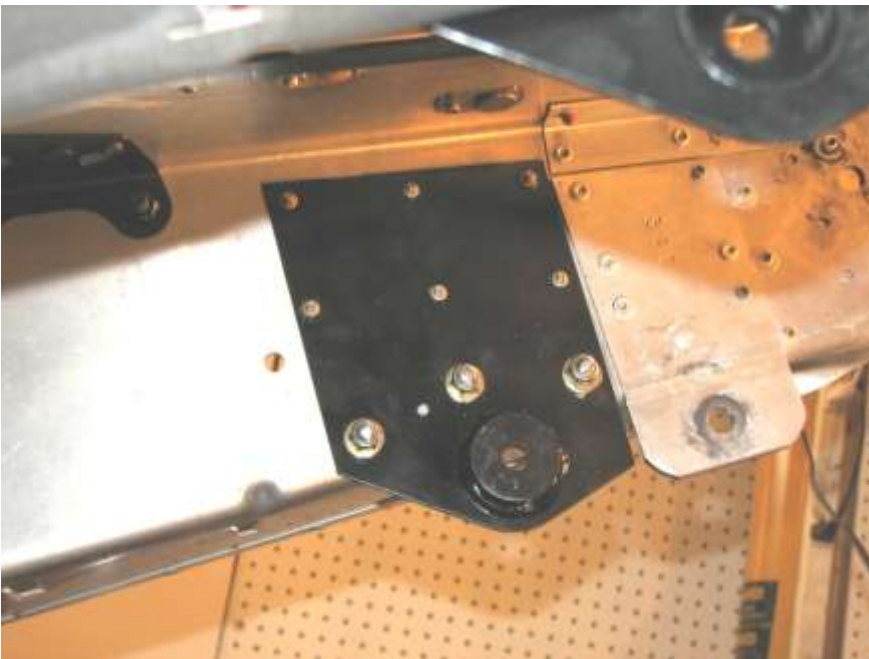


PHOTO #5

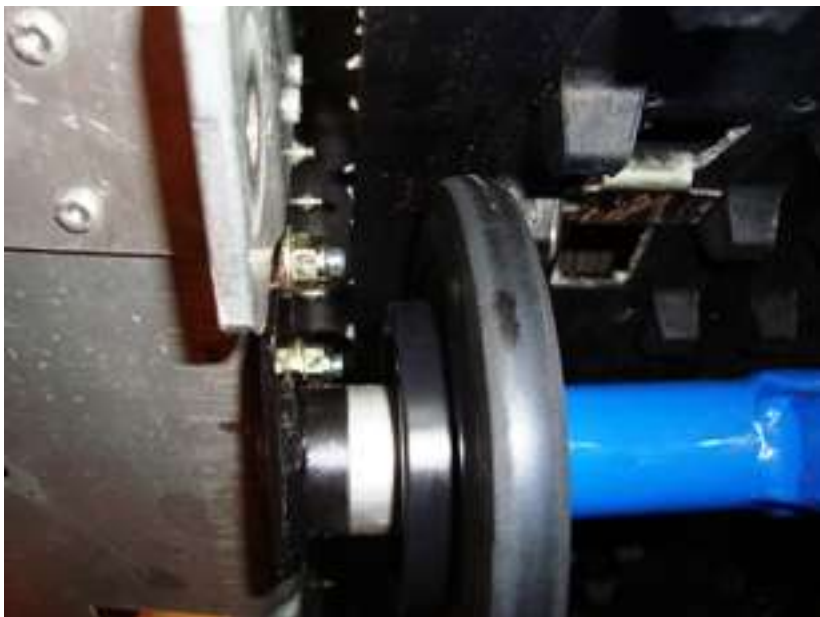


PHOTO #6



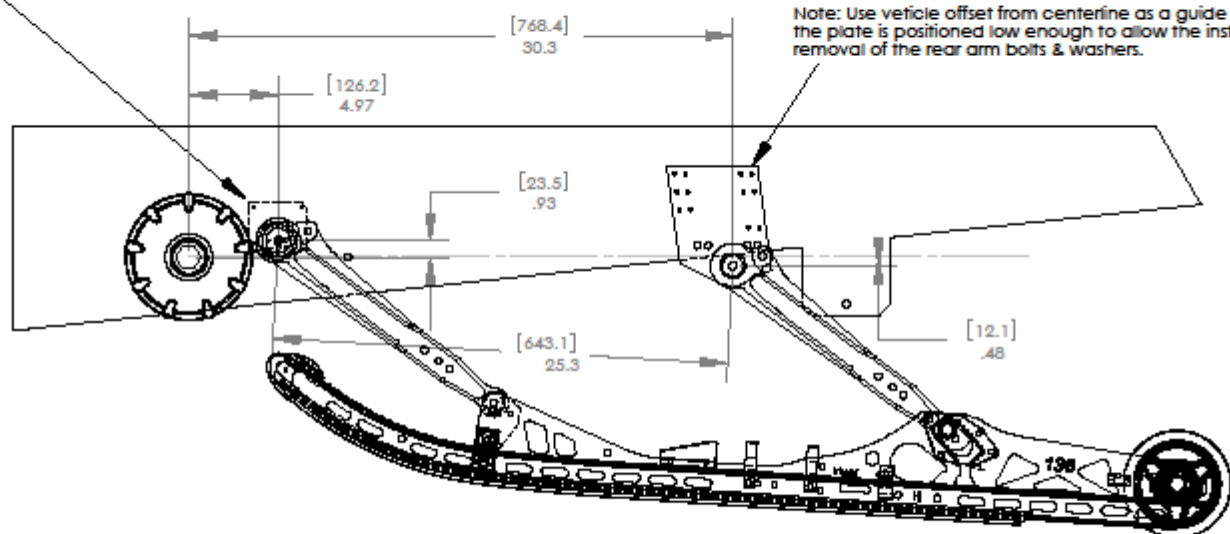
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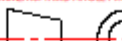
M20 136 in 2012 Polaris 144 Assault

Note: Be certain to reference all height dimension to either the tunnel roof or the bottom edge of the cooling extrusion, but not both

Note: Mount Outside Tunnel Support on outside only



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AIRWAVE INITIAL SET-UP

REV-1 12/07/06

1. Please note that if your suspension is an Airwave Diamond with or without battery the needle on your Air-gauge should be vibrating while compressor operates. If it is not, then the compressor motor isn't turning. On sleds with batteries, please check for correct wiring installation.

On battery-less sleds it may be necessary to rev the sled's motor to just below clutch engagement to energize the compressor on low watt electrical systems. On such systems it may also help to shut the hand and thumb warmers off when making adjustments. If the gauge needle isn't vibrating when thumb input is made at the switch then the compressor isn't turning.

2. Please note that even though your sled's stock suspension may be advertised to have over 10" of rear travel it is likely that it has only 8-9 inches. To balance out the sleds it may be necessary to increase the ski shock preload to raise the front bumper by approximately 1.0 - 1.5 inches

3. Using either the onboard or a shop compressor fill the Air-spring until the suspension is at full extension (the point at which the rear shock tops out). This will require a Static Pressure (SP) setting from 50-70 psi., with the rider off the machine.

4. Take a measure from the ground to top of the rear bumper.

5. Have rider sit on sled (with or without gear) and bounce on the seat, then settle into the seat and take the bumper measurement again.

6. Subtract the second measurement from the first, the numbers for the initial settings should be 4.0" to 4.5". Adjust the Static Pressure (SP) pressure until within this range. Your suspension is now at a setting that will allow you to make your initial ride check.



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ADJUSTING THE AIRWAVE

REV-1 12/07/06

- A. Please note that a critical bit of information when tuning your suspension is the Static Pressure (SP) setting. This setting is checked with the rider off the sled after you have lifted the rear bumper to the top of travel and let the sled settle.
- B. Once the initial Air Pressure has been set to achieve 4.0" to 4.5" of Sag measured at the rear bumper, the rider is ready to take the sled out on a smooth trail and get the feel of the suspension.
- C. The rider can now make some acceleration runs to see if the Static Pressure or SP is sufficient to resist torque induced bottoming (if bottoming does occur an SP increase of approximately 5 psi should correct this).

Again, on battery-less sleds it may be necessary to rev the sled's motor to just below clutch engagement to energize the compressor on low watt electrical systems. On such systems it may also help to shut the hand and thumb warmers off when making adjustments. If the gauge needle isn't vibrating when thumb input is made at the switch then the compressor isn't turning.

- D. Next, find some slightly rougher terrain and ride through it and try to sense if the system is too soft or firm. Adjusting the Static Pressure (SP) either with hand pump, onboard compressor or shop compressor in 2 -3 psi increments will sufficiently change the suspensions reaction to the bumps to be noticeable.
- E. Next, find some rougher terrain and ride through it starting slowly and build up speed as knowledge of the suspensions bottoming resistance is accumulated. Ultimately set the suspension maximum resistance to bottoming at a level acceptable to your personal preferences. The higher the resistance to bottoming will also give the least comfort in other situations.

Note: Once you achieve your settings you will find a change of 2-3 psi will make a significant change and 5 psi should be the maximum change made in at one time for a single rider. When adding a second rider of 150 lbs a change of approximately 20 psi is a good starting place, but a low speed check ride should be used to validate correct Static Pressure before traveling at any speed.

WARNING: The Static Pressure or SP should never exceed 100 psi on a rider-less machine.



AIRWAVE INITIAL AIRSPRING FILL

TECHLINE (218)744-2107

1. The rear of sled must be supported when filling system with air.
2. Airspring must be in proper position for initial filling. Airspring must be in a column with bottom of Airspring rolled over the piston. See Photo #1 & #2.
3. Photo #3 & #4 show the improper position of airbag for filling with air. The Airspring **must not** be folded over, compressed or have the ring on bottom of piston exposed. See photo #3 & #4.
4. Proper position of Airspring is important to prevent failures.

PHOTO #1



PHOTO #2



PHOTO #3

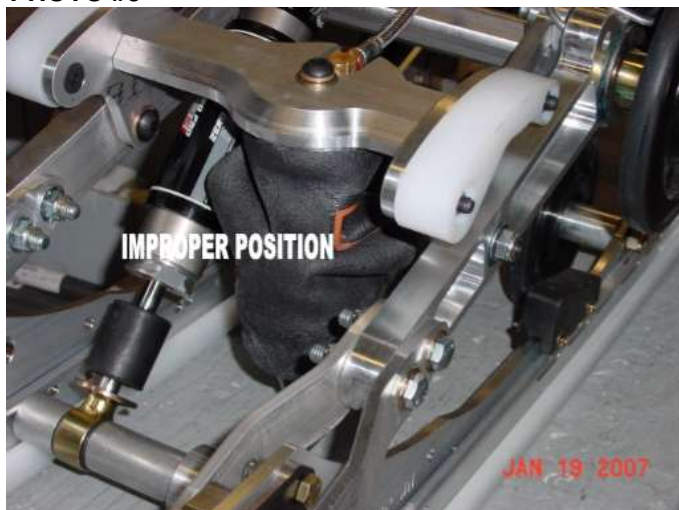
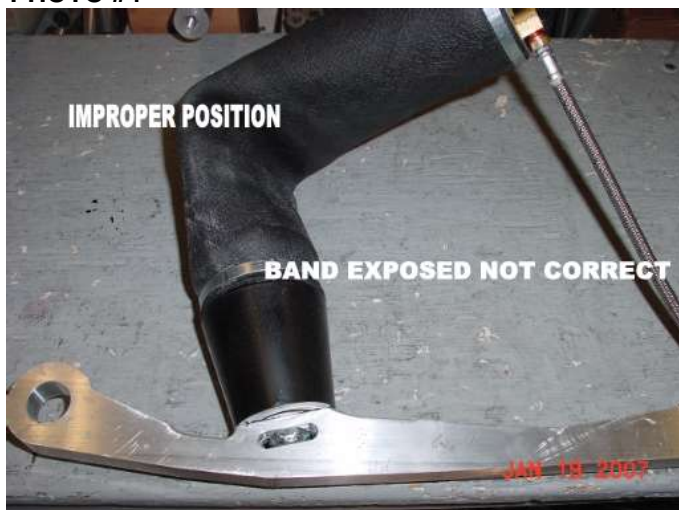


PHOTO #4



****DO NOT USE HIGH PRESSURE SPRAY ON THE AIRWAVE-DAMAGE TO AIRSPRING MAY RESULT.****



Airwave Electrical Battery - 12 Volt DC Systems
Instruction 07/30/07

NOTE: Along with general hand tools and supplies the following procedures, components, tools, supplies and knowledge are required to accomplish this installation:

1. Scotchloks are provided for joint connections (while soldered joints are preferred).
2. Leads have intentionally been left long and installer has the option of custom fitting lead lengths to the sled or to coil up extra lead and tie wrap them into small coil that can be used on other lengthier applications in the future. Tuck and tie wrap coils into secure areas.
3. Ohm/Volt meter and Circuit Tester and the basic skills to use them.
4. Soldering gun, solder and flux (when using soldered joints).

I. Wiring the Air-gauge

- A. It is the owners option as to where they want the Air-gauge (and Air-switch). Whether mounting on the bars, fascia or hood it will be necessary to find a constant 12 volt lead and a ground lead near that area (leads for back handlebar controls or instrument work well). They must be constant power and can not be affected by switch operation (such as Hi/Lo beam).
- B. Mount the Air-gauge and complete the wiring to it at this time using the Scotchloks to tap in.

II. Locate the 12volt DC power output.

- A. Determine where the best access to the 12 volt power supply will be on your sled. The power output can be taken directly from the battery or can be taken from auxiliary power leads if available.
- B. With motor on/off switches in the on position, use a volt meter to identify which is the +12 volts DC battery terminal or +12 volt Lead you will use to access power. The Ground terminal/lead will register 0 volts. Use masking tape to mark each lead accordingly.

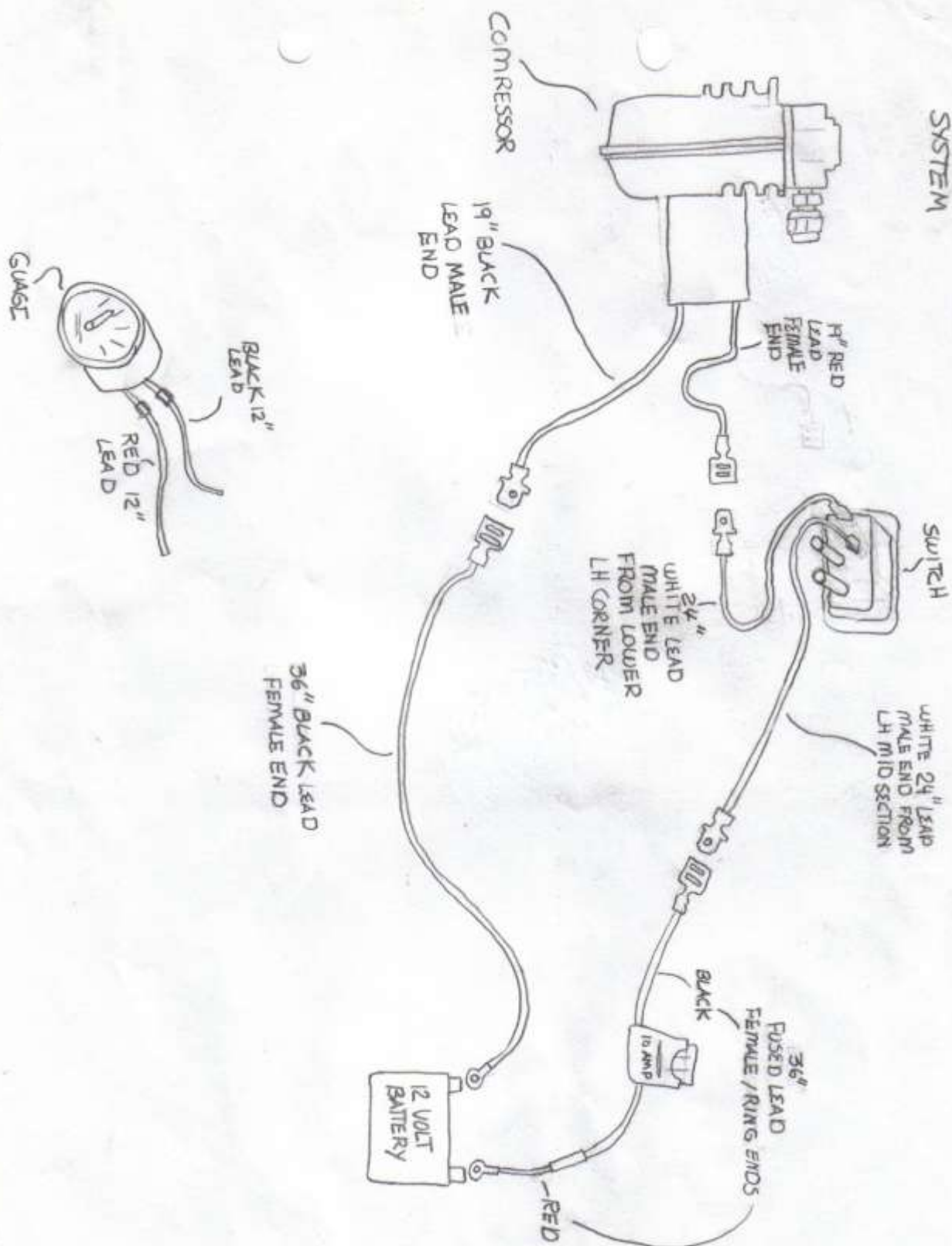
III. Tapping the Airwave into the sleds wire harness.

- A. See the attached wiring sketch for 12 volt Battery System. Attach the 10 amp fused lead to the +12 volts DC battery or auxiliary power lead. Use a Ring/Eye terminal, Scotchlok or soldered joint.
- B. Repeat procedure attaching the black Ground Lead from the Air-compressor to the battery ground terminal or auxiliary ground lead.

IV. Wiring the Air-Switch.

- A. After selecting a suitable location, mount the Airwave Switch. Refer to the attached wiring sketch for the 12 volt Battery System and plug the switch into the system.
- B. With all the air lines connected, fire up the sled and while revving the sled to just below engagement push the Air-switch and check if the Air-gauge needle is vibrating which indicates the compressor is functioning.

12 VOLT BATTERY SYSTEM





TEAMFAST M-10, M-20 ADJUSTABLE LIMITER STRAP

1. The new Limiter Strap Kit has the limiter strap wrapping around the top tube on the left hand side of the rear arm and pointing forward, attaching to the limiter strap tie down on the left hand side of the lower tube of the front arm. The aluminum "C" clamp will mount on the left hand side of the grease fitting on the lower front arm tube. On new suspension builds the "C" clamp is already built into the front arm lower tube. New upper shock eye bushings and lower shock shaft are included. The front shock will be centered in the arm at both the top and bottom of shock.
2. Under rails at front arm area, set sled down on a 4" x 4" block to assist with limiter strap attachment. Attach limiter strap to the limiter strap hold down. Limiter strap adjusting is done with adjuster bolt on front side of limiter hold down. Adjust limiter strap to a safe handling ski pressure that suits your riding style. Most settings start at the bottom two holes in the two halves of the limiter strap. Once the limiter strap is bolted to the limiter tie down bracket, tighten the adjuster bolt until it touches the lower arm tube and tighten the lock nut. Adjust with bolt as needed. Limiter strap settings vary from rider to rider and sled to sled. See Photo #1.
3. Adjust track tension to a free hang measurement of $\frac{1}{2}$ " to $\frac{3}{4}$ " with no weight hanging from track. Running too tight of a track will cause excessive drag and Hyphax wear.

PHOTO #1



PHOTO #2



