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Mountain Horse SX Instructions

Important: Please go to timbersled.com/sbreg.htm to register your kit with us.

Warranty is not valid until registration has been received.

Before you start:

- This instruction sheet is universal for all bike models using the SX Mountain Horse kits
- The SX Mountain Horse kit will only fit the listed bikes on the Fitment Chart
- Read the entire installation instructions before starting.
- See Fitment Chart for engine sprocket size to achieve proper chain tension. This is very important to get right on the SX kits due to the lack of space between the chain and top of track (the SX kit has less chain adjustment than our ST and LT models). After chain break in, the SX kits may require one size larger engine sprocket to maintain proper chain tension and clearance. If the chain is adjusted too much then it may rub the tip of the track paddle; at this point it will easily fit the next size engine gear. It will be smart to have this on hand and ready to use if needed.
- All Fit Kit spacer/reducers are stamped with a number on them or color coded, see Fitment Chart for their proper location.
- Clean and grease all parts as you reassemble so that water does not get in and corrode them.
- All the bolts and nuts on your Motorcycle are Metric. All the bolts and nuts on the snow bike kit are SAE.
- Needed tools and supplies: 21/64" drill bit, DOT 4 brake fluid

Back Tear Down:

1. Place a stand under the bike to hold it up and balance it. An adjustable stand will work best.
2. Remove seat, side panels, exhaust silencer with mid pipe, and rear sub frame with air box and rear fender intact.
3. Remove chain and upper and lower chain rollers from bike (will not be reinstalled).
4. If you plan to use the handbrake, remove the foot-brake master cylinder and lever from the bike frame, do not detach brake line.
5. Remove upper shock bolt from frame (will be reinstalled).
6. Remove suspension linkage bolt from frame (will not be reinstalled).
7. Remove swing arm pivot shaft (will be reinstalled).
8. Remove shock, tire, brake, and swing arm assembly from the bike as a complete unit (will not be reinstalled).
9. Remove front brake line from handlebar master cylinder (master cylinder and banjo bolt will be reinstalled).

Installing Snow Bike Track System:

10. **For proper Fit Kit part placement, see the Fitment Chart that is provided. Each fit kit part is either stamped with a number or has a color code marked on it for identification. Also see the Notes box on the Fitment Chart for important details regarding the installation of this kit**
11. Install strut rod onto snow bike sub frame using the provided bolt and nylock nut that is installed loosely on the snow bike linkage bracket. To do this you will need to first place a spacer/reducer into each side of the rod end on the strut rod.
12. Install the sub frame spacers/reducers. **Note:** be sure to thoroughly grease the inside of the bushing and the outside of the reducer where it fits into the bushing (this is a moving pivot point).
13. Push the snow bike track assembly into bike between engine and frame, with top end of strut rod guided up toward the upper shock mount on bike frame. Visually make sure everything looks correct and is aligned properly.
14. Install swing arm pivot shaft and install nut but do not tighten it yet.
15. Install the top end of the strut rod onto the bike frame in the same hole as the shock was bolted, using the stock shock bolt. To do this you will first need to install a spacer/reducer into the rod end on the strut rod. Note, some bike models use one spacer/reducer and some use 2. The Fitment Chart will specify this. Install nut but do not tighten it yet.
16. Remove stand from under bike so that the weight of the bike is on the ground. Then tighten the upper and lower strut rod nuts and swing arm pivot shaft nut. Replace stand to hold bike up.
17. **If you want to use your handbrake**, route the supplied 5' brake line up to the handle bars and connect to the factory master cylinder using the stock banjo bolt. Secure it with zip ties so it does not touch the exhaust or anything that will damage it. **Note:** the brake line has 2 different bends on the banjo fittings; if the brake line does not fit comfortably to your master cylinder you can flip it around for a better bend angle to fit your bike.
If you want to use your footbrake, attach the stock foot brake line to the snow bike caliper.
18. Bleed the brake system. This can be difficult; we have found that the best way to bleed the brake system on the Mountain Horse is to use a medical style syringe with a hose on the end that fits the bleed screw on the caliper.
 - 1) Suck any remaining fluid out of the master cylinder.
 - 2) Remove bleed screw from caliper.
 - 3) Gently blow compressed air into the caliper bleed hole until you see both pistons push the brake pads out to the brake disk.
 - 4) Reinstall the bleed screw so that you can open and close with our finger tips.

- 5) Fill the syringe with brake fluid and place the hose on caliper bleed screw while holding it onto the bleed screw with your fingers, slowly open the bleed screw and push fluid into the system with the syringe until you see the master cylinder is full.
- 6) Close the bleed screw and tighten.
- 7) Pull and release brake lever for about 2 min, you should see small bubbles rising out of the master cylinder and feel some brake pressure.
- 8) Push both brake pads back using a flat blade screw driver; be careful to not overflow your master cylinder. Then re-pump up the brake, your brake lever should feel more solid.
- 9) Bleed your brake a couple times the traditional way.



Repeat 8 and 9 if needed. You will know when your brake is bled free of any air because the brake lever will feel solid.

Fill your master cylinder full of fluid so that when you put the cap on it overflows. It is best this way because when you flip your snow bike upside down it will not get air from the reservoir into the line and make your brake go soft.

19. On some bike models in order to fit the wider O-ring engine chain supplied with this kit, the engine sprocket may need to be removed and turned around or will require the use of a supplied spacer placed behind it to provide more clearance between the chain and engine. The Fitment Chart will specify this.
20. Install the engine chain with master link. To do this, wrap the chain around the jack shaft sprocket. Place the master link in from the back side. **Note:** be sure to thoroughly grease the link pins and O-rings with the supplied grease.
 - 1) **Note:** if the chain is slightly too tight use pliers to press the links together to install master link. **See Picture ->**
 - 2) If it is still too tight then push down on the bike to slightly compress the suspension, you should be able to get it on now.
 - 3) Install O-rings and outer link plate by placing it on the pins and pressing it on with channel lock pliers. Install clip so that it is facing backwards.
21. Adjust chain so that it is tight at full suspension extension. **Note:** the chain will always need to be adjusted tight because it will only get looser as the suspension is compressed (it will not get tighter like it does on the stock motorcycle suspension).
22. Install the supplied air filter and pre filter onto the carburetor or throttle body. On EFI bikes the intake sensor will need to be removed from the air box and plugged back into its wire harness on the bike. It will then need to be zip-tied near the air filter in a place where it will not get damaged (if snow gets on it that is okay; it will not hurt anything).
23. Grease the back suspension with quality water-proof synthetic bearing grease. Pump each grease zerk (there are 7 total) full until you see it coming out of both ends.
24. **Important:** Do not grease the bearings. They are extremely full of the best available grease for this application. You will only contaminate them at this point. It is okay to grease them after 4 or 5 rides. See Tuning Page for more details.



Bike Sub Frame and Plastics:

25. To reinstall the bikes sub frame and plastics a few modifications will need to be made for it to all fit back together because you will no longer be using the stock air box.
26. First remove the air box from the sub frame.
27. If the back fender had some bolts threaded into the air box then you will need to reattach the fender to the sub frame with a bolt and nut. This is not supplied with the SX Mountain Horse kit.
28. If the air box has some plastic trim pieces that could be removed and then installed onto the side panels, it is optional to put them back on for looks. You may need to rivet them onto your side panels to reattach them. **Note,** The SXF-KTM will need to have the air box modified, see notes below for doing this.
29. Reinstall the sub frame, exhaust system, side panels and seat.
30. **SXF-KTM air box mod:** On this model bike the air box is also the side panels. This will need to be modified by cutting the entire inside air box section out in order for the SX Mountain Horse shock and strut rod to fit through it. This is not a hard job with the proper tools. Use a Dremel tool with Roto-Zip cutting blade to cut the plastic free hand.

Front End Tear Down:

31. Remove front brake system from forks (will not be reinstalled).
32. Remove axle nut. Loosen axle bolt fork clamps. Remove axle bolt (will be reinstalled).
33. Remove wheel from bike (will not be reinstalled).
34. Remove fork guards (can be reinstalled).

Spindle Install:

35. Install the spacer/reducer into the left and right side of the spindle cross tube. Some models have a 3 piece setup with a spacer/reducer on the left hand side with a tube style spacer that will fit into the center of the spindle and a washer style spacer on the right hand side. Fitment Chart will specify this.
36. Slide the stock axle bolt in with this assembly in place and install and snug up the nut but do not yet tighten it or the bolt clamps yet.
37. Installing the fork clamps:
 - 1) Place the fork clamps on the fork tubes above the spindle with the fork seal relief groove facing up.
 - 2) Slide the fork clamps down between the spindle and the fork tubes. It may be a loose or snug fit, it will self-align when you tighten everything.



- 3) The spindle is universal for all models of bikes. To make it fit your bike you will have to drill the spindle to install the fork clamps. **(see pictures)**
- 4) For proper placement rotate the spindle until the back of the fork clamp is between flush and $\frac{1}{4}$ " to back edge of the spindle. **Note:** this will determine how much trailing the ski will have in relation to the axle bolt. For better understanding, the farther back the ski is located the better trail ride quality it will have and the farther forward it is, the better off trail handling it will have. It is important that you stay within the given $\frac{1}{4}$ " measurement. **Note:** for a more exact setting a good rule of thumb is to have $\frac{3}{4}$ " to 1" of trailing in the ski. To find this spot, place a square on the floor and center it to the center of the front tire axle bolt. Then measure from the edge of the square at the bottom 1" back to the center of the ski bolt. This is the ideal setting for the Mountain Horse kit for all around riding.



- 5) It is important that the left and right fork clams are sitting as low as possible and are at the same height. Slide the brake side clamp down as low as it will go, then match other side. Once in position drill a $2\frac{1}{64}$ " hole through the spindle, using the fork clamps as a guide. After the holes are drilled thoroughly clean all metal chips away making sure there are no metal fragments between fork tubes and clamps.
- 6) Place the fork clamp cap onto the fork tube with bolts in place. $2\frac{1}{2}$ " Front and $2\frac{3}{4}$ " Rear
- 7) On the back of the fork clamp you will have an included cross shaft that the $2\frac{3}{4}$ " bolt will thread into. This cross shaft will fit in-between the ears of the spindle. **Note:** the purpose of this cross shaft is to keep the fork clamps from rotation and damaging your fork tubes if you were to ever hit something.
- 8) Install the $2\frac{1}{2}$ " bolt and nylok nuts onto the front fork clamp and tighten both front and back evenly. **Note:** be careful not to over tighten the bolt, you can break the clamp.
- 9) Reinstalling fork guards: It is optional to reinstall your fork guards. To do this you will need to modify them to fit around the spindle fork clamps. To do this you will first need to hold the fork guard up into place and free hand draw a line where they will need to be cut. Use tin snips to cut out this portion of the fork guards.



Install them onto the bike using only the two outside screws to hold them on. The inside screws will not be able to be reinstalled due to this portion being cut away.

38. Install ski onto spindle: First make sure that the thick side of the ski rubber is in the front. Adjust bike so that the aluminum ski base is slightly higher than the ski saddle. Place the ski under the ski base and lift up on the front of the ski to pull it up into place. Note, it will be a tight fit between the ears of the ski saddle. If you turn the spindle and wiggle it back and forth it will go on. Push the bolt through and install a lock washer on each side of the saddle. Tighten nylock nut to 45 ft. lbs.



Fitment Chart for SX Kits:

Kit	Bike	Strut Rod	Strut Rod Reducers				Sub Frame Reducers				Fork	Spindle			Engine Spro	Jack Shaft Spro	Top/Bottom Spro	Engine Chain	Notes
		SH-232 Length	Lower		Upper		Left Side		Right Side			Reducers/Washers							
		Left	Right	Left	Right	Outer	Inner	Inner	Outer	Left		Center	Right						
SB-101	Honda 05-12 CR450	12.625	RE-735	RE-735		RE-746	RE-724	RE-723	RE-725	RE-726	PG-021	RE-680	SP-300	WA-410	13	16	17/17	66	Insert center spindle reducer with fat portion on left. Remove engine sprocket and run it over with flange section on the inside.
SB-201	Kaw 05-14 KX450	11.875	RE-735	RE-735		RE-745	RE-727	RE-728	RE-729	RE-730	PG-020	RE-681		RE-681	12/13	16	17/17	66	Includes engine sprocket spacer to provide clearance for the O-ring chain. After a few rides and the chain has stretched you will need to reinstall a 13t engine sprocket.
SB-202	Kaw 15 KX450	11.875	RE-735	RE-735		RE-745	RE-727	RE-728	RE-729	RE-730	PG-029	RE-681		RE-681	12/13	16	17/17	66	Includes engine sprocket spacer to provide clearance for the O-ring chain. After a few rides and the chain has stretched you will need to reinstall a 13t engine sprocket.
SB-501	KTM 12-15 350-450 SXF/XCF (EFI); Husq 14-15 350-501	11.75	RE-735	RE-735	RE-751	RE-751	RE-752		RE-753	RE-753	PG-020	WA-412		WA-412	12	16	17/17	66	2015 uses Green (RE-770) spacers for front axle
SB-502	KTM 11-12 SXF/XCF (carb model)	11.75	RE-735	RE-735		RE-754	RE-731	RE-732	RE-733	RE-734	PG-020	WA-412		WA-412	14/15	17	16/17	68	
SB-503	KTM 08-15 300XC/XCW	11.75	RE-772	RE-771	RE-751	RE-751	RE-774	RE-773	RE-775	RE-776	PG-020	WA-412		WA-412	14	17	16/17	68	2015 uses Green (RE-770) spacers for front axle
SB-504	KTM 03-15 400-530 XCW/MXC/EXC; Berg 13-14 450-501	12.937	RE-772	RE-771	RE-617	RE-617	RE-752		RE-753	RE-753	PG-020	WA-412		WA-412	12	16	17/17	66	
SB-301	Suz 08-14 RM450	11.875	RE-735	RE-735	RE-747	RE-747	RE-749	RE-748	RE-750		PG-020	RE-763		RE-763	13	16	17/17	66	
SB-302	Suz 15 RM450	11.875	RE-735	RE-735	RE-747	RE-747	RE-749	RE-748	RE-750		PG-029	RE-763		RE-763	13	16	17/17	66	
SB-401	Yam 08 & 09 YZ450 & 250	12.063	RE-735	RE-735	RE-736		RE-742	RE-741	RE-743	RE-744	PG-020	RE-683	SP-302	WA-411	12	16	17/17	66	Insert center spindle reducer with fat portion on left
SB-402	Yam 06-07 YZ450 & 250	12.063	RE-735	RE-735	RE-736		RE-742	RE-741	RE-743	RE-744	PG-020	RE-682		RE-682	12	16	17/17	66	
SB-403	Yamaha 14-15 250-450 YZF, 250 FX	10.937	RE-735	RE-735	RE-736		RE-758	RE-759	RE-760	RE-761	PG-020	RE-762	SH-248	RE-777	12/13	16	17/17	66	

SX Mountain Horse Tuning Information

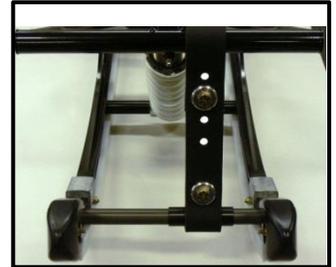
Suspension:

Track Shocks: The only adjustment the track shocks have is the spring pre load. This is measured by the extended length of the spring (8" free length). To measure the pre load, first lift up on the suspension to make sure it is at max extension. Then measure from the top edge of the spring to the bottom edge. The preload of the springs are preset from the factory at ½" pre load (7 ½") for both front and back shocks. **Note: it is recommended that you don't readjust the track shock for any reason. The way it is calibrated, will work good for any weight of rider.**

Upper Linkage Shock: The only adjustment the upper linkage shock has is the spring pre load. This is measured the same way as the track shocks. The preload of the spring is preset from the factory at ½" pre load (7 ½"). This adjustment is very affective and is very sensitive to the smallest amount of adjustment. With the ½" pre load that it has from the factory is good for a rider up to 200lbs. When making adjustments, turn it in or out ¼" at a time; this will produce a noticeable difference. It is recommended to play with this to fine-tune the best feel for you. **Note: never adjust less than 1/8 pre load. Always make sure that the shock is at full extension when measuring the spring length.**

Limitier Strap: The limiter strap has 4 adjustment holes in the middle of the strap and is pre adjusted from the factory in the 2nd hole down. By shortening the strap you will add more ski pressure and will also keep the ski more planted when climbing a hill. By lengthening the strap you will get more ski lift when climbing a hill and will allow the bike to pull a higher wheelie on flat ground when you pull back on the handle bars. **Note: if you adjust the limiter straps you will also need to readjust the shock spring pre load back to your desired settings.**

Note: It is recommended that you do not make any adjustment to the suspension until you have first ridden it. Timbersled has tested and fine-tuned the SX Mountain Horse kit to provide the best all-around ride quality and performance possible. If you decide to make further adjustments, keep track of our factory settings because you may need to go back to them.



Back Suspension Maintenance:

- Grease suspension cross shafts every 10 rides.
- Grease back arm slide mechanism every 4 to 5 rides.
- Adjust track only if it starts to skip on drivers. Proper track tension should be ¾" free hang from track to hifax.
- Inspect hifax regularly for wear, replace if they have thin spots. Hifax wear can be prevented by making sure snow is spraying on them. If you are riding down a trail that is hard set it is a good idea to periodically drag your feet to kick up snow. The other option is to install ice scratchers onto the rails. The rails are pre drills for this. Ice Scratchers and hifax can be purchased through Timbersled or from any snowmobile shop. The hifax style is the same as a late model Polaris snowmobile.

Chain Maintenance:

Lubing the chains: Lift the back end of bike up off the ground. Start bike and put it into first or second gear and let the clutch out allowing the drive system to spin. Spray lube directly onto the chain rollers and O-rings, soaking the chain. Spin chain for another 30 seconds after spraying. This will allow for good penetration into the moving chain parts.

Important: Lube chains every 1 to 2 rides. For best results use Maxima Chain Wax. Keeping the chain properly lubed and tensioned will greatly prolong the life of both chains and sprockets.

Adjusting Engine Chain: Always check chain tension before riding. Place a ruler on the top of the chain tensioner pivot point. Measure a total of 5/8" inch up and down free play on the top side of the chain. Do this by pinching the chain with your fingers and lightly pushing and pulling up and down. If the chain needs to be adjusted, loosen the jam nut on the adjuster bolt. Readjust and retighten jam nut and recheck one more time for proper adjustment.

Adjusting Chain Case Chain: Always check chain tension before riding. Remove the 4 bolt that hold the chain case cover on, uses a 7/32" hex key (Allen wrench). Place a ruler against the back side of the idler sprocket with ruler facing back. Measure a total of 5/8" inch front to back free play on the back side of the chain. Do this by pinching the chain with your fingers and lightly pushing it front to back. If the chain needs to be adjusted, loosen the three nuts that hold the tensioner on, uses a 5/8" socket wrench to do this. Readjust and retighten nuts firmly, and then recheck one more time for proper adjustment.



Axle Bearing Maintenance:

The Mountain Horse kit has 4 grease-able axle bearings: 2 on top and 2 inside the tunnel. (see pictures for their location) It is recommended to grease them every 4 to 5 rides with 1 to 2 pumps of grease each from a hand operated grease gun. All bearings have a seal retainer so there is no risk of over greasing and forcing the seals out of the bearing. Use a quality wet condition lithium compatible grease that is a full synthetic.



Ski Maintenance:

- The TS BackCountry ski is extremely strong and does not need any maintenance, but it does take a beating in the mountains and it is recommended to inspect it for damage on a regular basis to insure that you have the best possible performance.
- Inspect for cuts or pealed up plastic that will cause the ski to handle badly.
- Inspect for bent or broken ski skags. There are 3 skags total.
- Inspect for wear on the center ski skag. Replace if worn out. **Note: if you ride on snow only it will last forever but if you ever ride on the pavement or gravel it can wear out quickly.**

- Inspect ski saddle for bends that might make the ski crooked.
- Inspect the ski rubber to make sure it is not smashed out. If it is, the ski will be floppy and the front end of the bike will push in the deep snow.
- Check ski bolt to make sure it is tight. Torque to 45 ft. lbs.
- **Important:** It is highly recommended to not tie your bike down against the front of the ski. The pressure will permanently bend the plastic ski and your bike will then handle badly. In a trailer we recommend tying it down directly to the side of the handlebar. In a truck bed we recommend lightly tying it down against the ski, then using a third strap on the back to suck the bike back so that the ski is not pressed up against the ski tip.

Spindle Maintenance:

The spindle does not require any maintenance but can take a beating when riding hard. It is very strong and will not bend under normal use. However it is designed to bend if you hit something like a rock or stump with the intention that the spindle will bend and the forks will not (this is not guaranteed). If you do hit something, it is recommended to thoroughly inspect the assembly for bends or cracks before you ride again. The first sign of something bent is that the handlebars are not straight with the ski. A lot of the time it is the handle bar clamps turned in the triple clamp.

Tool List:

We recommended carrying a few tools to work on the snow bike kit when in the backcountry. These tools will pretty much take the entire snow bike kit apart.

- End-Wrenches: 7/16, 1/2, 9/16, & 5/8
- Hex Keys (Allen wrench): 5/32, 7/32 & ¼
- Other Tools: Flat blade screwdriver, Pliers

Safety Info:

Important: By installing a Timbersled Mountain Horse Snow Bike System, you will be using your motorcycle for something it was not originally intended to be used for. Due to the length of the sub frame & track system; it adds a tremendous amount of stress load to the motorcycle frame. The Motorcycle frames have been proven to be strong enough, but may be damaged along with the snow bike kit by doing extreme maneuvers. Jumping too high, landing crooked, crashing, pulling sideways on the ski when the back is stuck down in the snow are just a few things that should not be done. Timbersled Products Inc. is not liable for injury to the rider or damage to the motorcycle caused from riding.

Warning: The Mountain Horse Snow Bike System is a product that converts your dirt bike into an extreme backcountry snow machine that will now have the ability to put you in harm's way. Always be aware of avalanche and mountain terrain dangers. We strongly recommend you and your riding friend to take an avalanche safety course. Carry all proper safety equipment and check reports before you head out riding. Always ride with a partner and never by yourself. Timbersled Products Inc. is not liable for any injuries or death cause from riding a snow bike.

Warranty:

Timbersled Products Inc. warranty's all products of its own manufacture against defects in materials and workmanship for a period of one year from the date of purchase. Replacement and / or repair warranty is valid only if all terms and conditions are met.

1. Timbersled Products Inc. requires notification prior to replacement of any part under this warranty.
2. Replacement and / or repaired parts will be supplied upon receipt of defective parts.
3. Timbersled Products Inc. shall have no obligation under this warranty if:
 - Buyer fails to notify Timbersled Products Inc. of any possible within a year of purchase date.
 - Damage occurs due to product being improperly installed.
 - Product is used in an application other than its original intent.
 - Buyer continues to use product after product malfunction.

The obligation of Timbersled Products Inc. is limited to replacement and / or repair of defective products for the period of time stated above. Timbersled Products Inc. has no other obligation or liability for any other injury or damage resulting there from.

Please go to timbersled.com/sbreg.htm or call to register your kit with us.

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If you have any additional questions, please call (208) 255-5644