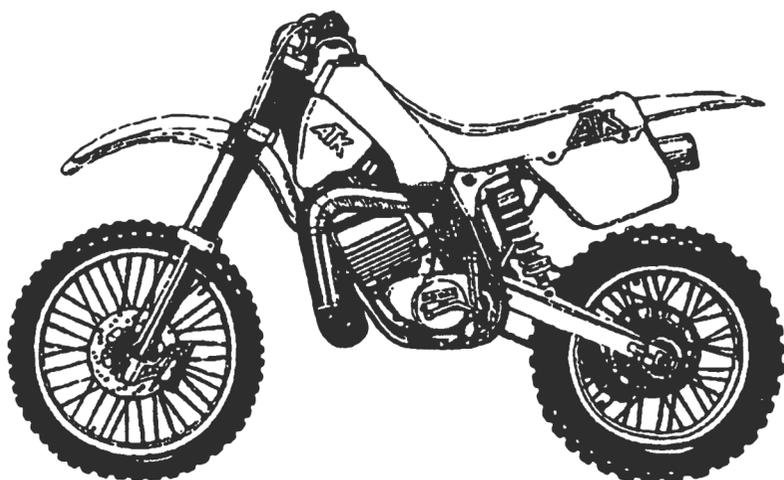




250 / 406



**OWNER'S
MANUAL
1990**

Updated 02/2015

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BEFORE YOU RIDE

Pre-Ride Inspection

Before jumping on your machine and “blasting” around, take caution and check the condition of some important items.

- 1) Be sure the throttle is free-moving and snaps back to a closed position when desired.
- 2) With the engine running, see if the *KILL* button stops the motor.
- 3) Check to see if the brakes stop the wheels.
- 4) Check to see if the chain is correctly adjusted.
- 5) Test the air pressure in the tires – it should be 14 psi in the front tire, and 10 -12 psi in the rear.
- 6) Turn the fuel petcock lever to the *ON* position.
NOTE: Turn this level to the *OFF* position when not in use.
- 7) Read the remainder of this Owners Manual !!!

Break-In Period

Taking a little bit of care in the way you treat your motorcycle during initial operation will reward you with extended life and increased performance.

In the first three hours of operation, the engine should not be subjected to excessive and prolonged RPM or extreme loads. In other words – **Don't lug the motor down or rev for extended periods!**

During the break-in period, adjustments may be necessary to the clutch, throttle, spokes, drive chain, and also nuts and bolts.

Both front and rear brakes require a “seating-in” process of the pads to the disc.

Fuel and Oil

Operate your ATK with the best fuel you can obtain. We recommend unleaded premium (92 octane) at the correct oil mixing ratio.

Never experiment with methanol, naphtha, or similar products. Avoid octane boosters completely. Use instead all or part *Race* or *Aviation* fuel mix.

When selecting an oil to mix with your gase, use a high quality 2-cycle oil. Mix the oil according to manufacturer recommendations on the container. We recommend *Maxima Super-M 2-Cycle* oil, mixed at a ratio of 50 to 1.

WHITE POWER UPSIDE-DOWN FORKS

Routine Maintenance

To achieve optimum performance from your White Power 4054 front forks, follow these maintenance procedures.

After riding sessions, loosen the breather plugs (located on top of the upper fork cap) a few turns to release any air pressure build-up. Also, pull the fork wipers down and clean around the seal area after a build-up of dirt occurs. After every fifty (50) hours of riding, or when damping becomes erratic, change the fork oil.

Oil Replacement

To replace the fork oil, loosen the breather plugs to release any air pressure built up in the fork. Loosen both the upper fork cap and lower fork cap approximately one turn. Remove the front wheel, brake caliper assembly and brake line guides, and lay them aside the machine. Do not remove the brake line from the caliper.

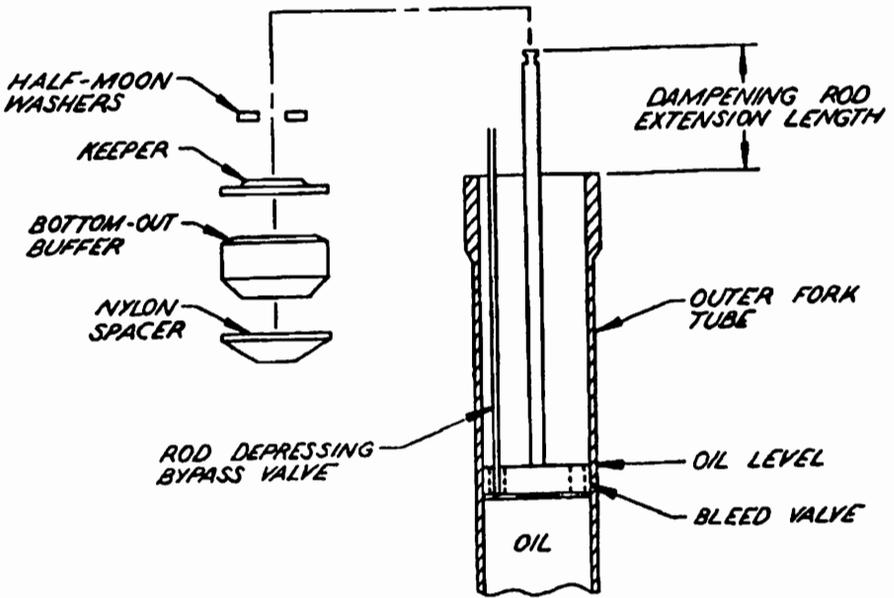
Remove the fork tube from the triple clamps and turn the fork upside down. The bottom fork cap should be facing up. Unscrew the bottom fork cap and remove the preload spacer and fork spring. Drain the fork oil and pump the fork a few times to drain the remaining oil. Replace the fork spring and preload spacer, and screw on the fork cap. Turn the fork over and unscrew the top cap and compress the fork slightly to remove the half-moon washers. Pull out the keeper by pressing on one side and compressing the fork. Remove the bottom-out buffer and nylon spacer. Turn the fork over and drain the remaining oil.

Next, compress the fork so you can see the bypass valve. Take a thin rod (1/8" or less O.D.) and lightly depress in one of the six holes in the valve as shown in *Figure 1* (Page 5). This will allow the oil to drain down to the lower fork leg when poured. The standard oil level measurement location in the White Power 4054 fork is where the oil comes up flush with the distance between the top of the dampening rod to the top of the outer fork top, as shown in *Figure 1*.

We recommend the oil level be flush with the top of the bleed valve when the dampening rod is extended 4-5/8" (120mm) from the fork tube. We recommend *Maxima 10/W* shock and fork oil.

The quantity of oil in the fork – 18 to 21 ounces of 10 weight oil only affects the last fifty per cent of the travel. The more oil in the fork, the less the fork will have a tendency to bottom out. Never exceed an oil level height of 5-1/16" (130mm) and never go below 3-15/16" (100mm).

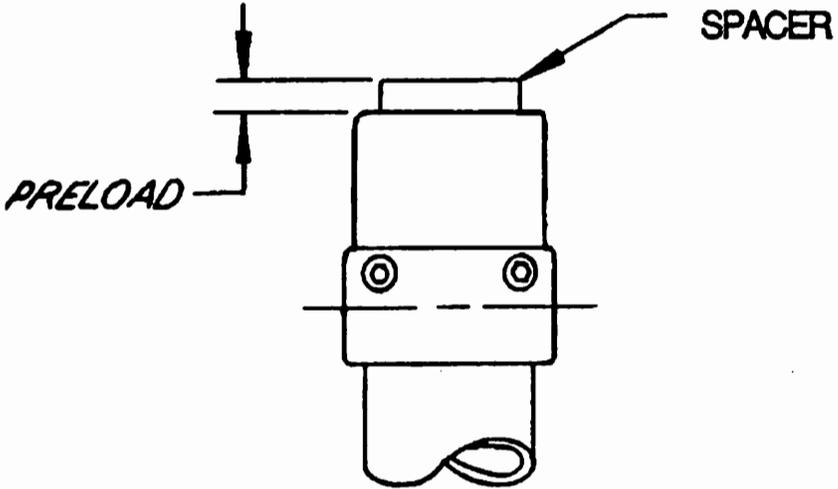
Figure 1



Preload Adjustment

To change the initial stage of travel in the fork, decrease or extend the length of the preload spacer. By decreasing the length of the preload, the initial travel will be softer. See *Figure 2* for preload measurement.

Figure 2



EXAMPLE:

PRELOAD LENGTH

FORK ACTION

0" (0 mm)
1/8" (3 mm)
1/4" (6 mm)

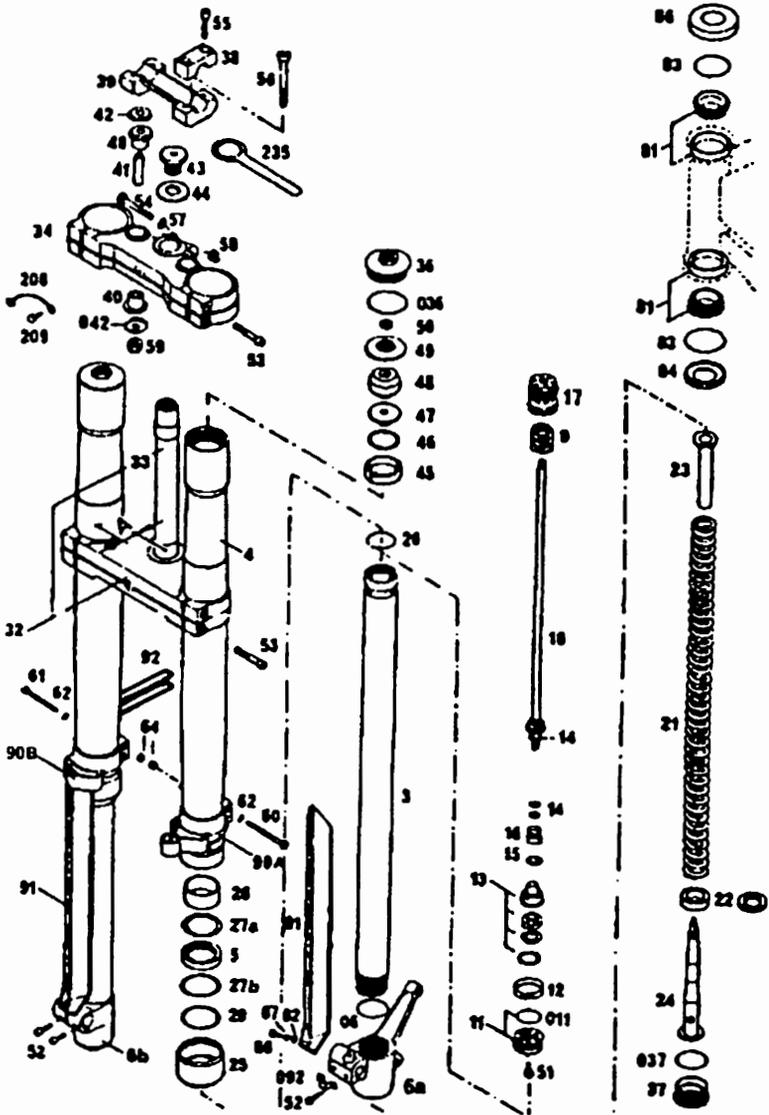
Light
Medium
Heavy

Spring Rate

If increased bottoming is noticed, then the front fork springs are too light. An optional ATK *Multi-Rate Fork Spring Kit* is available in a 23 to 25 lb. range through your ATK dealer.

Figure 3

Front Fork Schematic



REAR SHOCK

Rear Suspension Sag

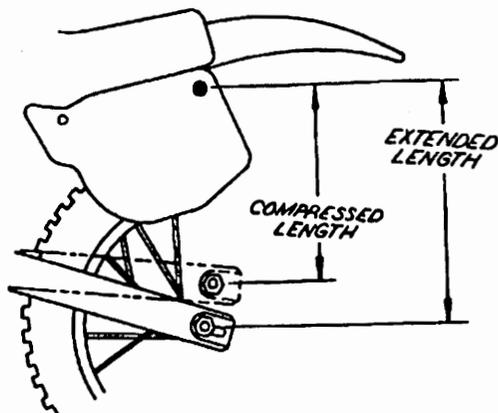
The rear suspension should sag 2" - 3" (51 - 76 mm) when sitting on the bike in normal riding position. This small sag requirement is due to the A-Track Chain Torque Eliminator, which increases the usable rear suspension. From our experience, we recommend that for motocross racing, 2" to 2-1/2" (51 - 64 mm) of sag is best; for trail riding use up to 3" (76 mm).

Prop the bike up on a center stand so the rear wheel is off the ground, thus unloading the rear spring of the bike's weight. Measure the distance between the center of the axle to the center of the left side number plate's rear attachment screw (as shown in *Figure 4*). This distance is the extended travel length.

Take the bike off the stand and sit on it in your normal riding position. Measure the new distance between the center of the axle to the center of the left side number plate's rear attachment screw. The distance is the usable travel length. Subtract the usable travel length from the extended travel length. The difference between the two equals the suspension sag.

(Extended Travel Length - Usable Travel Length) = Suspension Sag

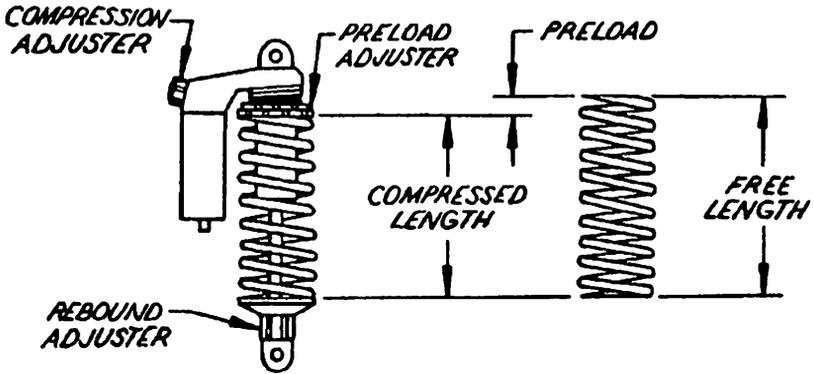
Figure 4



To achieve your desired suspension sag it will be necessary to adjust the rear shock's preload. The preload is equal to the free length of the rear spring minus the compressed length of the spring.

$$(\text{Free Length} - \text{Compressed Length}) = \text{Preload}$$

Figure 5



The standard free length of the rear spring is approximately 8-11/16" (220 mm). This length can vary slightly from spring to spring. The preload should be adjusted between 0" and 1/2". The preload must never exceed 1/2". If the preload falls out of the 0" - 1/2" dimensional boundary while obtaining the 2" - 3" of suspension sag, a heavier or lighter spring rate is necessary.

EXAMPLE:

<u>Sag</u>	<u>Preload</u>	<u>Comments</u>
2" (50 mm)	1/8"	Good
3" (76 mm)	0"	Good
3" (76 mm)	5/8"	Heavier spring rate needed
2" (50 mm)	0"	Lighter spring rate needed

Spring Rates available:

Kg/mm	7.8	8.2	8.7	9.2	9.7
Lb./in.	435	460	485	515	540

Compression Dampening

The compression dampening adjustment knob is shown in Figure 5. There are seven (7) compression settings from which to choose. Turn the knob counterclockwise until it stops; at this position the compression dampening is set at the softest rate. To increase dampening, turn the adjustment knob clockwise one setting (click) at a time.

There is no standard setting for the compression dampening; this is determined by track conditions and each rider's ability . From our racing experience, we recommend you set the compression dampening between one (1) and four (4).

Rebound Dampening

The rebound dampening adjustment wheel is located under the spring retainer as shown in Figure 4. There are eleven (11) rebound settings from which to select. Setting one (1) is the weakest absorption – the shock absorber extends fast after compression. Setting eleven (11) is the strongest absorption – the shock extends slowly after compression. Like the compression dampening, the rebound dampening does not have a standard setting. From our racing experience, we recommend you set the rebound dampening between four (4) and seven (7).

DRIVE CHAIN

Chain Tension

Shift the transmission into neutral. Check the slack in the upper drive chain midway between the A-Trak's top roller and the rear sprocket. Drive chain slack should be adjusted to allow $1-\frac{1}{2}$ " to $1-\frac{3}{4}$ " (29 - 46mm) vertical movement by hand as illustrated in Figure 6. The minimal slack requirement is due to the design characteristics of the A-Trak Chain Torque Eliminator, which keeps the chain at a constant slack throughout the suspension travel.

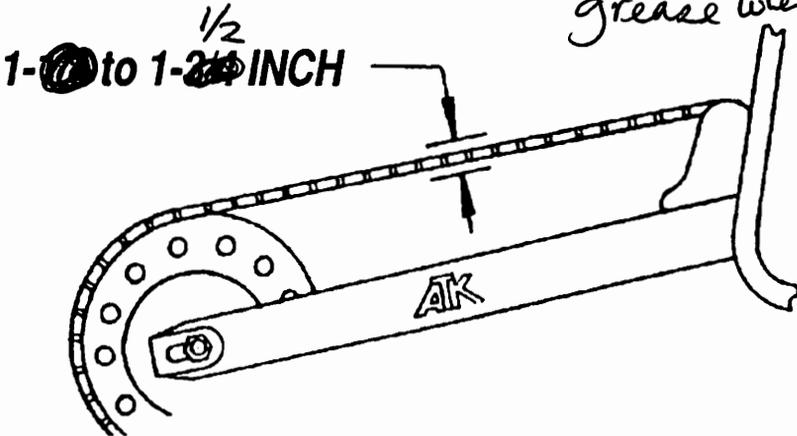
Chain Maintenance

The drive chain should be checked, cleaned and lubricated after every ride. Never use an engine degreaser or solvent on the chain to clean it! This may damage the rubber O rings. When lubricating the chain, always use a lube designed for O ring chains. The A-Trak Chain Torque Eliminator rollers should be inspected every 15 hours of riding

AND BRGS

Race tip → Repack Brgs with grease when new!

Figure 6



FILTERS

Please read these instructions carefully !

Air Filter / Service Instructions

The unique snorkel air intake has been designed to minimize the impact of dust, mud, and water, yet retains an increased ability to receive an abundant amount of lean, cool air. Responsiveness of the Rotax motor has been increased due to the high volume still-air chamber. Due to the K & N's extreme amount of air flow capabilities (# times more surface area), combined with its location on the motorcycle, cleaning the filter is not required as often as was previously necessary.

1) Pre-Cleaning

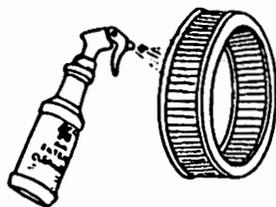
Tap the element to dislodge any large embedded dirt, then gently brush with a soft bristle brush.

NOTE: If complete cleaning is not practical at this time, re-oil the element and re-install in your vehicle.



2) Spray on Cleaner

Spray K & N air filter cleaner liberally onto the entire element and let soak for ten (10) minutes.



3) Pan Cleaning

Large K & N elements can be rolled or soaked in a shallow pan of K & N air filter cleaner. Remove immediately and let soak for approximately ten (10) minutes.



4) Cleaning Hints

Use only **K & N** air filter cleaner.

NO gasoline cleaning.

NO steam cleaning.

NO caustic cleaning solutions.

NO strong detergents.

NO high pressure car wash.

NO parts cleaning solvents.

Any of these can cause harm to the cotton filter media, plus shrink and harden the rubber end caps.

5) Rinse Off

Rinse off the element with low pressure water. Tap water is O.K.. Always flush from the clean side to the dirty side. This removes the dirt and does not drive it into the filter.



6) Drying Hints

Always dry naturally. After rinsing, shake off the excess water and let the element dry naturally.

Do Not Use Compressed Air.

Do Not Use Open Flame.

Do Not Use Heat Dryers.

Excess heat will shrink the cotton filter media.

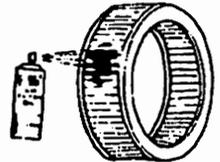
Compressed air will blow holes in the element.

7) Element Oiling

After cleaning, always re-oil the air filter before using.

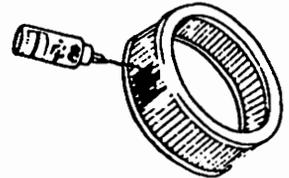
a) Aerosol Oiling

Spray **K & N** air filter oil down into each pleat with one pass per pleat. Wait ten minutes, and re-oil any white spots still showing.



b) Squeeze Bottle Oiling

Squeeze **K & N** air filter oil down into the bottom and along each pleat with one pass per pleat. Wait twenty minutes, and re-oil any white spots still showing.



5) Oiling Hints

Never use a **K & N** air filter without oil. (The filter will not stop the dirt without the oil.) Use only **K & N** formulated air filter oil.

K & N air filter oil is a compound of mineral and animal oil blended with special polymers to form a very efficient tack barrier. Red dye is added to show just where you have applied the oil. Eventually the red color will faded but the oil will remain and filter the air.

Never Use Automatic Transmission Fluid.

Never Use Motor Oil.

Never Use Diesel Fuel.

Never Use WD-40, LPS, or other light weight oils.

Foam Filter Treatment and Cleaning

It is recommended you use *Maxima FFT* – Foam Filter Treatment to prepare your filter for use. If unavailable, 10-W30 or 2-stroke oil can be substituted; however, these will migrate off the filter in a very short period of time. *Maxima* has a non-migrating formula which makes it cling to the filter strands and is also fire retardant. *Maxima* is available in liquid or aerosol spray.

When using the liquid, place a paper plate on a level surface to catch the excess oil for re-use. Pour liberal amounts over the element and massage into and through the foam, making sure the entire element is treated. Now, squeeze out the excess oil until the element is oily to the touch, but not wet. Check to be sure both inner and outer surfaces are evenly covered.

To use the spray, utilize a newspaper to catch overspray and coat both inner and outer surfaces generously. Let set for 3 to 5 minutes and massage into the foam. Repeat if necessary. It is not necessary to remove the spring support. Simply compress the filter to squeeze out the extra oil. For 2-stage filters, it is necessary to treat only the inner foam element. The dry outer foam increases the dust holding capacity when used in severe dust conditions.

Remove the foam element. When cleaning, it is recommended the foam be washed with a good grease cutting detergent and warm water. Laundry detergents containing enzymes should not be used. Let the element dry completely before re-treating. When dry, re-oil the element as per the instructions. Be sure to clean the air box prior to re-installation.

BRAKES

Rear Brakes

Brake Adjustment

The countershaft rear disc brake is the most effective stopping system ever designed. Applying the rear brake has no effect on the suspension. Therefore, those riders who steer with the rear brake or drag the rear brake will cause the brake fluid to heat up and the pads to wear excessively.

NOTE: Don't drag the brake – use it for *s-l-o-w-i-n-g* only!

Pedal height is important. Adjust the pedal tip low enough below the operators boot so it will not be applied unknowingly.

Free play adjustment between the master cylinder piston and the actuating rod should always exist, from 1/16" to 1/8".

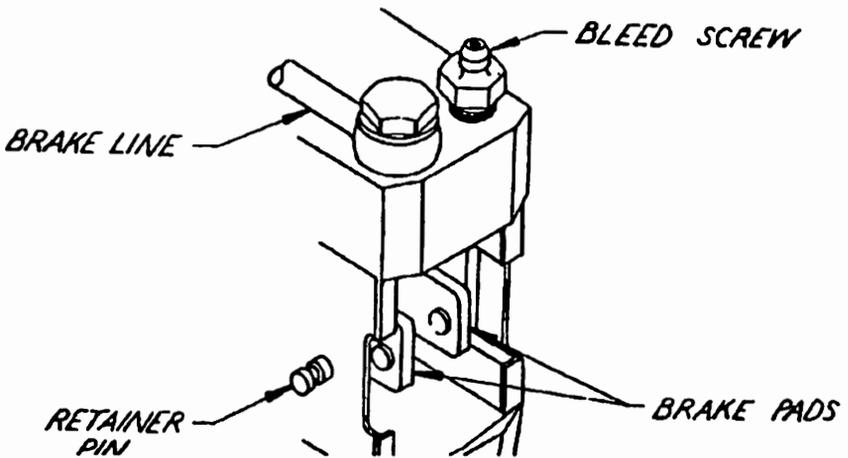
Brake Fluid Level

Fluid level should be approximately 1/8" (3 mm) below the edge of the reservoir when refilling. Never let the fluid level get below the visual indicator.

Brake Pads

The brake pads should be checked after every race or ride. To check the pad thickness, remove the plastic cover shown in Figure 7 by popping off with a small screwdriver. Pad thickness should be no less than 1/16" (1.5 mm). If pad thickness is less than 1/16", replace. Remove the cotter pin from the retainer pin located on the backside of the caliper. Pull the retainer pin. The pad may now be replaced. When re-installing the retainer pin, use a **new** cotter pin and secure properly.

Figure 7



Front Brakes

Brake Fluid Level

Fluid level should be approximately 1/8" (3 mm) below the edge of the reservoir when refilling. Never let the fluid level get below the visual indicator. When refilling, use DOT 3-4 hydraulic brake fluid.

Brake Pads

The brake pads should be checked after every race or ride. To check the pad thickness, remove the plastic cover shown in Figure 5 by popping off with a small screwdriver. Pad thickness should be no less than 1/16" (1.5 mm). If pad thickness is less than 1/16", replace. Remove the cotter pin from the retainer pin located on the backside of the caliper. Pull the retainer pin. The pad may now be replaced. When re-installing the retainer pin, use a **new** cotter pin and secure properly.

Bleeding the Brake

If air is sucked into the hydraulic system due to low fluid level, or a rupture in the brake line occurs, it is necessary to bleed the system in order to purge out the air.

Check the fluid level in the reservoir and "top up" if required. Remove the dust cap from the bleed screw. Attach a rubber hose with an internal diameter of 1/4" (6 mm) and approximately 24" (610 mm) in length to the bleed screw. Place the end of the hose in a glass jar filled with approximately 1" (25 mm) of hydraulic fluid. Make sure the end of the hose stays submerged in the hydraulic fluid throughout the entire bleed process.

Actuate the brake lever several times and hold in the braked position. Open the bleed screw 1/2 turn and depress the brake lever. Close the bleed screw after the brake lever has reached its maximum position. Continue this operation until no air bubbles can be seen coming from the hose immersed in the hydraulic fluid. At intervals, make certain the reservoir is kept topped up, otherwise air will again enter the system.

ENGINE MAINTENANCE

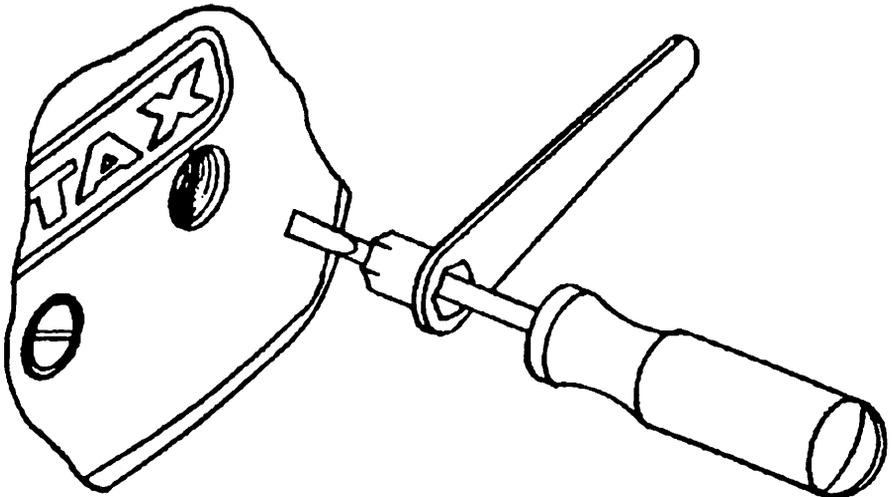
Clutch Adjustment

If you feel major adjustment is required, loosen the clutch adjustor at the handlebar to provide maximum slack to the cable.

Remove the clutch adjustment access plug on the left sidecover. There is an 11mm lock nut and a slotted adjusting screw. Note that a special wrench is provided in the tool kit for this lock nut, as detailed in Figure 8.

Turn the slotted adjusting screw in, until contact is made with the release bearing. Then turn out $1/8$ to $1/4$ turn from the contact point. Carefully re-tighten the 11mm lock nut to secure the clutch adjustment. Replace the access plug.

Figure 8



Transmission Oil Change

Start the engine and allow it to warm up briefly. Remove the 6mm Allen Head bolt from the bottom of the engine and completely drain the oil. **Do Not Remove** the 17mm bolt head kickstart spring retaining bolt (Refer to Figure 9). The drain plug tip is magnetized and should be cleaned of metal particles before installing the drain plug. Remove the filler/vent plug and refill the transmission with 1000cc (32 U.S. ounces) of *Maxima MTL* transmission lubricant until the oil reaches the oil level inspection hole (at the 6mm Allen bolt). The level plug is located behind the gear change lever.

Figure 9



Ignition Timing

Your motorcycle is equipped with a capacitor discharge ignition which consists of a magneto, an electrical control unit, and a *Kill* button.

Check the electrical connections for dirt or corrosion on a regular basis. Apply a dielectric grease to all connectors and the high tension lead, when necessary.

Timing of the engine can only be done with a stroboscopic lamp. Although timing marks can be verified by using a dial indicator. Static timing figures are marked as follows:

<u>ATK model</u>	<u>Timing Figure</u>
250	14° +/- 1, 1.07mm (0.042 in.)
406	18° +/- 1, 2.26mm (0.089 in.)

On all machines, remove the timing inspection plug from the magneto cover and connect the timing light pickup to the high tension lead. Point the light beam straight into the inspection hole and rev the engine to 2500 RPM for a brief instant. If the timing is correct, the magento cover mark and the flywheel mark will align with each other.

If the timing was incorrect, remove the magneto cover. Loosen the stator retaining screws then move the stator plate in the "advance" or "retard" direction to correct the misalignment. Tighten the stator plate screws.

Start the engine to recheck the alignment of the timing marks with the timing light.

Spark Plugs

We recommend the following spark plugs for use with your ATK motorcycle.

<u>ATK Model</u>	<u>Manufacturer / Part Number</u>		
	<u>NGK</u>	<u>Bosch</u>	<u>AutoLite</u>
250/406	B8ES	W275T2	4053

Check the condition of your spark plug tips for the following:

A *brownish* tip indicates correct jetting and plug range;

A *black* insulator tip indicates a rich condition; and,

A *grey* tip warns you of too lean an operating temperature.

Advanced ignition timing, engine overheating, too lean a fuel mixture, clogged carburetor jetting, wrong spark plug heat range, or a leaking seal or gasket may be the cause of this condition.

Engine Clearances

Piston Ring End Gap

<u>ATK Model</u>	<u>Standard</u>	<u>Service Limit</u>
250	0.20mm (0.008") to 0.35mm (0.014")	1.0mm (0.040")
406	0.25mm (0.100") to 0.40mm (0.016")	1.2mm (0.047")

Piston to Cylinder Clearance

<u>ATK Model</u>	<u>Standard</u>	<u>Service Limit</u>
250	0.06mm (0.002") to 0.08mm (0.003")	0.14mm (0.005")
406	0.08mm (0.003") to 0.09mm (0.0035")	0.18mm (0.007")

Increased performance can be obtained by changing compression ratios on the 250 and 406 models. The following chart may be used as a guide to your fuel needs.

<u>ATK 250</u>	<u>Compression Ratio</u>	<u>Fuel Requirement</u>
2 ea. 0.2mm shims	12.5:1	Stock Unleaded Regular
Remove 1 head shim	13.0:1	Mod. Unleaded Premium
Remove 2 head shims	13.5:1	Mod. 100 LL Aviation

<u>ATK 406</u>	<u>Compression Ratio</u>	<u>Fuel Requirement</u>
4 ea. 0.2mm shims	10.0:1	Stock Unleaded Regular
Remove 3 shims	10.8:1	Mod. Unleaded Premium
Remove 4 shims	11.0:1	Mod. 100 LL Aviation

TORQUE SPECIFICATIONS

<u>Part Description</u>	<u>Torque (Ft. Lbs.)</u>
Front Axle	30
Front Axle Pinch	6 - 8
Rear Axle Nut	65 - 75
Swing Arm Pivot	65 - 75
Triple Clamp Allens	15 - 20
Engine Mount	25 - 30
Flywheel Nut	65 - 75
Clutch Hub Nut	60 - 70
Primary Drive Nut	60 - 70
Countershaft Nut	40 - 50
Cylinder Head Nuts, 8mm	16 - 18
Cylinder Head Nuts, 10mm	26 - 28
Shock Eye Bolts	30 - 35

The table below, which relates tightening torque to thread diameter and pinch, lists the basic torque for the nuts and bolts on ATK motorcycles.

<u>Diameter (mm)</u>	<u>Torque (Ft. Lbs.)</u>
5	2.5 - 3.5
6	4.5 - 5.5
8	10 - 13.5
10	19 - 25
12	30 - 40
14	55 - 75
16	80 - 120
18	120 - 160
20	160 - 240

TECHNICAL DATA

<u>Specification</u>	<u>ATK 250</u>	<u>ATK 406</u>
Displacement	248.4cc	399cc
Bore and Stroke	72 x 61 mm	84 x 72 mm
Gear Ratios:		
1st	3,000:1	2,384:1
2nd	2,070:1	1,769:1
3rd	1,571:1	1,400:1
4th	1,353:1	1,118:1
5th	1,222:1	913:1
6th	1,150:1	
Compression Ratio	12.5:1	10.0:1
C/S Rear Sprocket	15/50	15/50
Ignition	Motoplat	Motoplat
Carburetor	Mikuni	Mikuni
Chain	520	520
Oil Capacity	1 Quart	1 Quart
Air Filter	Uni	Uni
Weight	210 Lbs.	216 Lbs.
Steering Angle	27°	27°
Wheelbase	57"	57"
Seat Height	37"	37"
Ground Clearance	14"	14"
Fuel Capacity	2.8 Gallons	2.8 Gallons
Front Fork	11.8"	11.8"
Rear Shock	12.0	12.0
Front Brake	4-Piston Caliper Disc	Same
Rear Brake	2-Piston Caliper C/S Disc	Same
Front Tire	3.00 - 21 inch	3.00 - 21 inch
Rear Tire	110-100 x 18	110-100 x 18
Fork Capacity	650 cc / SAE 10	650 cc / SAE 10
Shock Pressure	180 Lbs.	180 Lbs.

SPECIAL TOOLS

<p>Seal Insertion Jig (Clutch Cover)</p>	<p>Seal Insertion Jig (Tranny Main Shaft 406)</p>	<p>Seal Insertion Jig (Tranny Main Shaft 250)</p>	<p>Seal Insertion Jig (Crankshaft Clutchside 250)</p>
<p>Plastic Ring Insertion Jig Clutch Side</p>	<p>Plastic Ring Insertion Jig Mag Side</p>	<p>Puller Assembly</p>	<p>Clutch hub Locking Tool (old style)</p>
<p>Protection Cap</p>	<p>Guide Sleeve for oil seal (main shaft)</p>	<p>Crankshaft Locking Bolt</p>	<p>Flywheel Puller</p>
<p>Clutch Hub Locking Tool (new style)</p>			<p>Clutch Adjustment Wrench</p>
<p>Hexagonal Screw Allen Bolts Bearing Puller Ring For Puller Half Ring for Puller</p>	<p>Crankcase Separator Puller w/ Slotted Head Screws</p>		<p>Puller Plate Assembly (Crankshaft)</p>