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INSTRUCTIONS

Motion Pro® 08-0411 SyncPRO™ Carb Tuner

Thank you for purchasing the Motion Pro SyncPRO™ Carb Tuner. This is a precision instrument and in order to insure that it is setup and used properly please read all of the assembly and operation instructions before use.

Warning: All procedures should be performed by an experienced mechanic with proper tools and training. Failure to do so could result in great bodily injury or death. Carburetor or throttle body synchronization should be done in accordance with the factory shop manual for your vehicle. Follow all instructions and specifications in your manual.

Assembly

1. Connect the hang hook to the SyncPRO™ and close the small loop with a pair of channel locks to prevent it from inadvertently coming off when in use (Image 1).

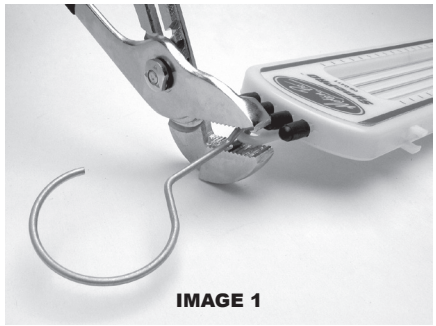

IMAGE 1

2. Cut the long piece of vacuum hose into four equal lengths. Remove the vacuum caps on top of the clear tubes (Image 1) and attach the vacuum hoses onto the clear tubes. If the vacuum hose is difficult to install, moisten the end of the vacuum hose with a drop of water and twist into place

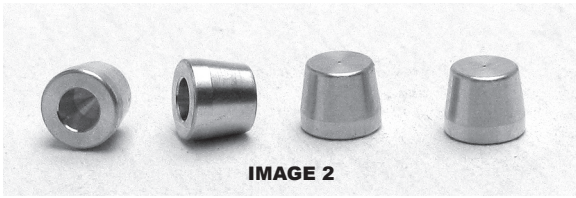

IMAGE 2

Install a restrictor (Image 2) in the other end of each vacuum hose. The tapered end of the restrictor should be inserted into the vacuum hose first (Image 3).

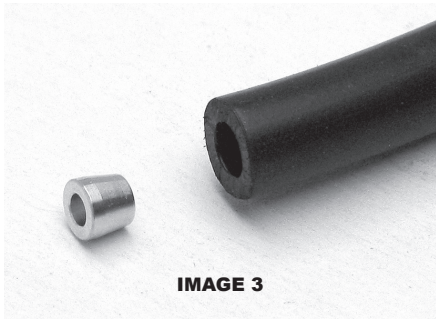

IMAGE 3

Push the restrictor approximately 3/8” into the vacuum hose with one of the barbs on the calibration manifold (Image 4 & 5).

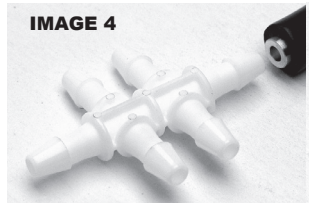

IMAGE 4

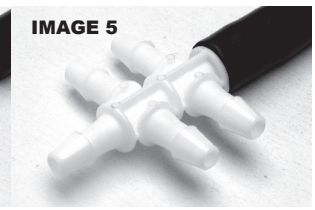

IMAGE 5

The restrictors should now be located on the ends of the vacuum hoses that will be connected to the intake manifold or carburetors.

3. Remove the rubber plugs from the bottom of the SyncPRO™ and store the manifold adapters in the body of the SyncPRO™ (Image 6).

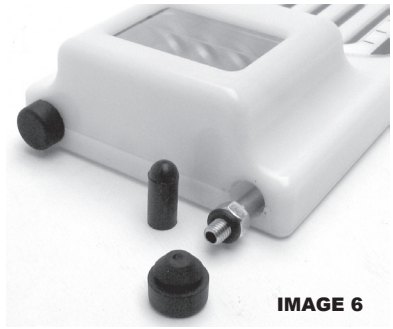

IMAGE 6

4. Cover one of the six ports on the calibration manifold with a vacuum cap. Then plug the calibration manifold into the short vacuum hose and attach it to the side of the SyncPRO™ (Image 7).

IMAGE 7

Calibration and Use:

Calibration must be performed every time the SyncPRO™ is used to achieve proper synchronization. Failure to calibrate the tool at every use can result in the loss of fluid.

Caution: Engine speeds exceeding 3,500 RPM, rapid throttle closure can cause the SyncPRO™ fluid to be sucked into the engine.

The SyncPRO™ has a vacuum limit of 40cm Hg (7.7 psi). Exceeding this limit will result in the loss of fluid from the tool. Consult your service manual for manifold vacuum pressures for your particular engine.

Follow all instructions and specifications in your factory shop manual. Carburetor or throttle body synchronization should be done in accordance with the factory shop manual for your vehicle.

Always use this tool in a well-ventilated area with plenty of fresh air. Use an exhaust collector or ventilation fan to remove exhaust fumes whenever possible. Utilize a fan to cool the engine when the engine is running.

1. Always use the SyncPRO™ in an upright position. The handle bar end is usually a convenient location.

2. Bring the engine to its normal operating temperature and then shut it off.

3. Remove or raise the fuel tank. For non-fuel injected bikes you can use Motion Pro's Auxiliary Tank (P/N 08-0032) during synchronization. For fuel injected models with external fuel pumps you can use Motion Pro's Deluxe Auxiliary Tank (P/N 08-0189).

4. Attach the short piece of vacuum hose with the calibration manifold to the non-adjustable master carburetor or throttle body. This is generally the carburetor or throttle body that the cables are directly attached to. See your service manual for details. Then attach all 4 vacuum hoses from the SyncPRO™ to the calibration manifold (Image 8).

5. Before starting the engine turn all of the calibration screws (Image 9) on the SyncPRO™ counterclockwise to completely lower the fluid levels. This will give you the maximum vacuum range prior to starting the engine.

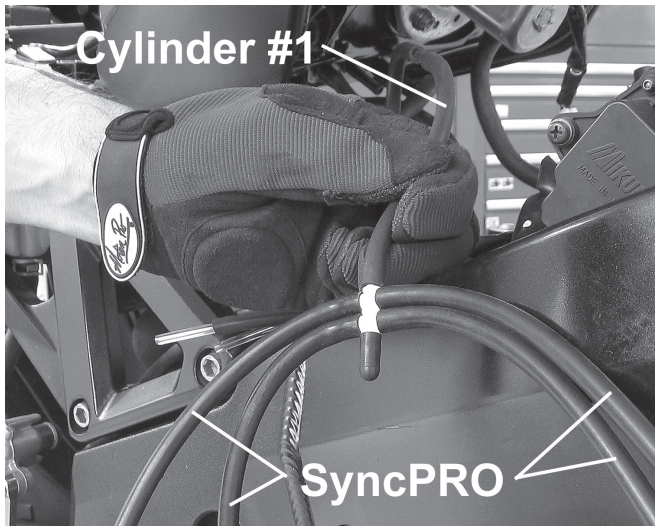

IMAGE 8

Caution: Engine speeds exceeding 3,500 RPM, rapid throttle closure and/or a vacuum of 40cm Hg (7.7 psi) or more can cause the SyncPRO™ fluid to be sucked into the engine.

6. Start the engine and run it at idle.

7. Calibrate the SyncPRO™ (make sure the fluid levels of all four channels are the same height) with the engine running by turning the calibration screws on the SyncPRO™ clockwise to raise the fluid level and counterclockwise to lower the fluid levels (Image 9). Set the levels approximately 1/3 of the way up the scale if possible.

IMAGE 9

8. Turn off the engine and remove the short piece of vacuum hose with the calibration manifold and attach it to the side of the SyncPRO™ for storage (Image 7).

9. Attach the vacuum hoses to each cylinder (vacuum hose No. 1 to cylinder No. 1, vacuum hose No. 2 to cylinder No. 2, etc.). If you are synchronizing a twin, the two extra vacuum hoses can be left unattached and do not need to be plugged. Use the vacuum port adapters on models that require them. Most Honda and Suzuki models use 5mm adapters, while most Yamaha models use 6mm adapters. Some Kawasaki and Yamaha models have spigots molded into the intake manifolds and do not require adapters.

10. Start the engine and bring it back up to its normal operating temperature. With the engine at the proper idle, adjust the carburetor adjustment screws so that the SyncPRO™ fluid columns are approximately the same height. Once this is accomplished you have completed your carburetor synchronization. Motion Pro offers several tools for carb adjustments (P/N 08-0022, 08-0119, 08-0229). If synchronization cannot be achieved, other problems may exist. Some possibilities are low compression, intake manifold leaks, dirty air filters, worn out carburetor bodies, worn throttle slides or possibly a restricted exhaust system.

11. Disconnect the synchronizer, remove the vacuum hose adapters (if applicable) and replace any plugs, caps or hoses that were removed. Reinstall the fuel tank.

Caution: Engine and exhaust systems can get very hot. Care should be taken when connecting and disconnecting fuel lines to prevent gas from spilling onto hot engine and exhaust components.

Tips:

•To check the intake manifolds for air leaks, run the engine at idle and spray a fine mist of water on the manifolds. Any drop in idle speed indicates an intake manifold air leak.
•Troubleshooting guides are also available in manuals from Clymer Publications for your specific model.

Storage:

•Store in an upright or horizontal position at or above 32º F (0º C).

FAQs:

Q: Does the SyncPRO™ need to be calibrated before each use?
A: Yes, as opposed to a Mercury manometer the SyncPro™ has four separate channels and literally four separate scales, meaning that after calibration if the vacuum is increased substantially the readings on each channel will differ. Because vacuum changes during synchronization at fixed RPM's don't vary much, this error is insignificant when the tool is calibrated at approximately the same vacuum that the tool will be exposed to during synchronization. This is why it is required that the tool be calibrated on one of the cylinders it will be used on prior to starting the synchronization process.

Q: How do I prevent the SyncPRO™ fluid from being sucked into the engine?
A: Before every calibration turn all of the calibration screws on the SyncPRO™ counterclockwise (Image 9). This will give you the maximum vacuum range prior to starting the engine. Also, prevent engine speeds from exceeding 3,500 RPM, avoid rapid throttle closure and/or a vacuum level greater than 40cm Hg (7.7 psi).

Q: Will the fluid harm my motor if it gets sucked inside?
A: No, due to the nature and quantity of fluid it will not cause any harm.

Q: Can the SyncPRO™ fluid be replaced?
A: Replacement SyncPRO™ fluid is available by ordering Motion Pro P/N 08-0581 SyncPRO™ Fluid Refill.

Q: Gaps have formed in the SyncPRO™ fluid columns. What can I do to correct this?
A: Turn all of the calibration screws on the SyncPRO™ clockwise (Image 9) until they are bottomed out. This will move the fluid level up into the clear tubes as far as possible without a vacuum. Now hold the SyncPRO™ near the hang hook and give it a good shake downward like a thermometer. That should condense the fluid column again. Make sure to turn the calibration screws back out prior to calibrating the SyncPRO™ again. If this process does not improve the separation, check the chambers in the bottom of the tool. The chambers should be nearly full of fluid. If the fluid level is low, air has been pulled into the tubes, and the tool will need to be refilled.

Q: Why is the fluid column oscillating so much?
A: Check to make sure the restrictors are installed in the ends of the vacuum hoses. If a restrictor is missing or located near the SyncPRO™ end of the vacuum hose it will cause excessive fluid oscillation.

Q: One or more fluid columns are not responsive.
A: This can be caused by a blocked restrictor. Remove the restrictor from the vacuum hose and use carburetor cleaner and compressed air to clean the small orifice. You should be able to see through the restrictor if you hold it up to a light source.

Q: What do the lines on the scale represent?
A: They are reference lines only, used to facilitate in calibrating the SyncPRO™ and synchronizing the carburetors/throttle bodies. They do not represent specific vacuum values (i.e. cm Hg, in Hg, psi, etc).

Q: Will the synchronizer work on outboard motors and snowmobiles?
A: Yes, it will work on most multi cylinder engines provided the vacuum does not exceed 40cm Hg (7.7 psi).

Q: Do I need to synchronize my fuel injected engine?
A: Virtually all four stroke fuel injected applications with multiple throttle bodies require synchronization. Check your service manual to verify this.

Q: My shop manual gives a specific value or range that the vacuum should be at. Do I adjust the carbs to this value?
A: While some manufacturers specify a value (height of mercury Hg, psi, etc.) for the vacuum at idle, with very few exceptions, the purpose of synchronization is to adjust all intake tracts to equal values in order to achieve a smooth idle. The exception to equal vacuum values at idle occurs when the intake tracts are not of equal length and the manufacturer has specified a specific differential between cylinders to account for the difference in the intake tracts. If this is the case a vacuum gauge set or a digital vacuum synchronizer is recommended.

Q: Is the SyncPro fluid toxic?
A: SyncPro fluid is a proprietary blend of petroleum-based minerals oils.
Eyes: It is not expected to cause prolonged or significant eye irritation. **Skin:** Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin. Contact with the skin is not expected to cause an allergic skin response.
Ingestion: Not expected to be harmful if swallowed.
Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

Q: Does the SyncPRO™ come with vacuum adapters to fit my vehicle?
A: It comes with 5mm adapters which fit most Honda and Suzuki models. Optional 6mm short and long adapters (P/N 08-0168 and 08-0040) are available separately, and most Kawasaki models don't require adapters.

Q: Can the SyncPRO™ fluid be used in place of mercury in the earlier style mercury manometers?
A: No, the SyncPRO™ fluid will not work in place of mercury, or vice-versa. While the SyncPRO™ and older mercury units look similar, they are functionally different, and will not work with alternate manometer fluids.