Blow-by gasses are present with all internal combustion engines. As pistons and cylinders wear, compression decreases and blow-by increases. Allowing our engines to warm up even in hot weather prolongs the life of pistons and cylinders.

Look at this image. Notice the blue color is intake air-fuel mixture; red is exhaust gasses; and yellow is blow-by gasses that slip past piston rings and valve guide seals.

Blow-by gasses are present with all internal combustion engines. As pistons and cylinders wear, compression decreases and blow-by increases. By allowing the engine to warm up even in hot weather prolongs the life of pistons and cylinders.

The same is true about spark plugs. Placing a load on the engine before spark plugs reach their operating temperatures causes fuel and fuel additives to easily glaze plug porcelain insulators, fouling the spark plugs.

Pistons are forged or cast as an oblong shape by design to allow for expansion. Pistons grow round as they reach operating temperatures. Cylinders are bored true round when new, and wear into an oblong shape from front to rear. Placing a load on the engine such as driving off to work while pistons are not up to temperature causes accelerated wear on the cylinders. Worn cylinders means loss of power producing compression and increased blow-by.

Anyways, I wanted you to see what all those rubber hoses around the carbs and air boxes do and how they work. This example is a lesson three-fold; engine longevity, blow-by, and emissions. Good stuff.

Blow-by gasses positively pressurizes the spaces above engine oil in the crank case, and the space above the cams in the cylinder head. Once in a while we get a complaint of oil getting into the airbox. If the motorcycle was on it’s side as if involved in a crash or tip-over, oil may find its way to the airbox. If not, usually the oil is over-filled. Blow-by crankcase pressure can force oil thru the crankcase vent tube resulting with a oil saturated airbox.

Crankcase vent and vent tube are missing from the image below. Crankcase vents are usually located rear of cylinders on top of crankcase, in the area below the carburetors, with a hose between the vent and airbox.

In this engine, (Kaw KZ440 or KZ400) the crankcase gases are vented up through the cylinders to the head via transfer ports and then on to the airbox. This airbox has a drain tube. Some drain tubes are catch tubes others drain fluids to the ground.

Per EPA Clean Air Act, blow-by emissions may not be vented to atmosphere. Rather, reintroduced into the engine for combustion. This affects engine performance as the power producing air-fuel mixtures are displaced by the reintroduced blow-by hydrocarbons.

**Illustration Legend:**
Yellow indicates blow-by gasses  
Blue indicates fresh intake of air-fuel mixture  
Red indicates exhaust gasses  

Image courtesy of www.kz400.com