

INSPECTION OF MOTORCYCLES AFTER IMPACT

INTRODUCTION

Reconstructing motorcycle crashes is often a very difficult task. That is why collecting detailed quality information on all pieces of the puzzle is important. Due to the unique nature of many motorcycle crashes, it is the motorcycle that often holds the clues about what happened. Many scenes lack marks on the roadway or witnesses who can sometimes aid in putting things back in proper order. It is very likely that a severely injured operator will not be present at the scene to aid in the initial investigation. Furthermore, the operator and/or passenger may have expired at the scene or somewhere else later.

We are then left with the motorcycle to study in order to interpret the actions before impact, at impact and after impact. Often investigators spend a minimum amount of time photographing, diagramming and documenting the evidence that the motorcycle displays. Their examinations are usually not done in a cursory fashion because of indifference but from lack of knowledge about the motorcycle.

The reason for documenting damage to motorcycles is obvious (e.g., reconstructing the crash, determining speeds, determining that the motorcycle struck or was struck by). Where inspection or disassembly may result in a situation in which the post-impact condition of the motorcycle cannot be replicated, a complete photographic or video record should be made of the disassembly process.

It is often the front end assembly that supplies us with the most useful information. For the purposes of this book, the front end of the motorcycle will include everything forward of the operator's seated position.

The rear end of the motorcycle will include everything to the rear of the operator's seated position. The center of the motorcycle will include the seat, the engine, the center and side stands, and the undercarriage. I will discuss tires and body damage separately from the rest of the motorcycle. Much can be learned from a close inspection of these last two items.

This book is dedicated to increasing the knowledge of the investigator so that a more accurate and comprehensive investigation can be carried out in these often hard-to-interpret crashes where the entire motorcycle is important.

PHOTO EVIDENCE

Before you begin the inspection of the motorcycle, you should take a complete set of photos of the motorcycle in a logical sequence. They may be shot either clockwise or counter-clockwise as long as the direction is consistent. You should document on audio tape which photo depicts which view.

For taking photos, the motorcycle should be positioned upright by means of its center stand, if the motorcycle is so equipped and the stand is functional. If not, jack stands or some other means should be used to prop up the motorcycle. Ideally for these photos, the motorcycle should be placed at the true height of the undamaged motorcycle.

A possible sequence for the photos showing the general condition of the motorcycle might be: overall front shot and pull-back shot, right front quarter overall shot and 45 degree pull-back shot, right side overall shot and right side pull-back shot, and so on around the entire motorcycle. I recommend that shots level with the motorcycle also be taken. This can be accomplished by kneeling on one knee. Then overhead shots should be taken (from a single location) – one angled forward, one straight down, and one angled backward. Next the instruments (odometer, speedometer, tachometer, etc.) should be photographed. Be careful to avoid reflections from glass when using flash assist. Also be aware of any backlighting where a fill-in flash might be helpful. I personally tend to use flash even for daylight shots to eliminate lost details due to shadows. Hand-held flash units are better for avoiding reflections and/or flashbacks. If possible, keep any background plain and uncluttered.

Once the general-condition photos have been taken, concentrate on the damage areas. Take close-up shots (macro if necessary) plus a pull-back orientation shot for each of these. Photograph shock and chain adjustments, tire information and switch positions. Also desirable are photos showing tape measures positioned horizontally and vertically on the motorcycle. Pocket rods and magnets will do the job. The numbers on the pocket rods are very large and show up well in the photos. Use the rods scaled in feet

and inches. The use of removable stick-on arrows to show the direction of the damage(s) is valuable in the photos. Directions of scratches or grazing can also be emphasized in this manner.

In regard to damage photos, you should determine if any of the damage existed previous to the crash for which the photos are being taken. A history of the motorcycle may be required so that you will not be misled by such evidence (e.g., how it was stored, where it was stored, how it was removed from the scene).

Other photos you should try to get are with the motorcycle laid down on its contact side or sides. Photograph to points touching the surface. This motorcycle position will also allow you to photograph the undercarriage, side stand and center stand. These photos should be taken at the scene if possible. Use caution, as some of the fluids may escape from the motorcycle. Care should be taken not to contaminate evidence or create new damage.

Photograph any labels showing readable text, color, and damage or scrapes. If possible, take some photos of the motorcycle placed back at the contact angle against the other vehicle or object. Preferably, these should be overhead shots. Wrecker yards will often cooperate in the positioning.

Do not skimp on the number of shots (*a picture is worth a thousand words*). Digital photography makes our job much easier, as a poor shot can be deleted and reshot. Also, each digital chip can hold hundreds of shots. It's better to take too many shots than too few. On adjustable cameras, manually bracketing a shot using different *f* stops is desirable.

FRONT END ASSEMBLY

The front-end assembly is described here as consisting of the following items:

1. Handles bars
2. Gauges and lights
3. Controls for the brake, throttle and clutch
4. Upper and lower triple clamps