STATISTICAL PROCESS CONTROL

"A state of statistical control is not a natural state for a manufacturing process. It is instead an achievement, arrived at by eliminating one by one, by determined effort, the special causes of excessive variation".

W. Edwards Deming

Process control and preliminary process capability must be determined by the supplier prior to PPAP submission for all design characteristics and process control characteristics designated as "key". The purpose of this requirement is to determine if the production process is likely to produce product that will meet Harley-Davidson requirements.

Both Harley-Davidson and the supplier are responsible for agreeing upon Key Product Characteristics (KPC) and Key Control Characteristics (KCC). Harley-Davidson defines KPC's and KCC's as follows:

Key Product Characteristics *are* those product requirements (i.e., features, dimensions, specifications) which, if exceeding the tolerance or specification, could affect ***safe vehicle operation, compliance with government regulations or statutory requirements***.

Key Control Characteristics are process characteristic for which variation must be controlled to some target value to ensure that variation in a process or a special (Key or Significant) product characteristic is maintained to its target value during manufacturing and assembly.

Key product characteristics (KPC) are designated on Harley-Davidson drawings by a diamond.

It is the responsibility of the supplier to ensure process capability for all KPC's and KCC's. Process capability shall be measured using Statistical Process Control (SPC) in accordance with AIAG PPAP and SPC guidelines. Other methods considered more appropriate for certain processes or products may be used with prior approval from Harley-Davidson. For processes with "one-sided specifications" or "non-normal distributions" contact Harley-Davidson. The supplier is responsible for demonstrating compliance of this requirement upon request from Harley-Davidson. **All KPC's and KCC's must exhibit >1.67 Cpk.**

Significant Characteristics (SC) are those product features that ***DO NOT*** affect safety or regulatory requirements but could create an unacceptably high warranty condition or significant Customer dissatisfaction. The symbol for an SC will be in the form of an ellipse with the letter SC inside it. Special statistical controls, as a result of conducting a PFMEA, are normally applied in manufacturing and assembly operations for this designation**. Significant Characteristics (SC) must exhibit >1.33 Cpk.**

While process capability is an indicator of whether products will meet Harley-Davidson quality requirements, it does not automatically ensure that products will meet our quality requirements. Regardless of process capability results, the supplier is always responsible for providing products that meet Harley-Davidson's quality requirements.

For further information see *Statistical Process Control (SPC)*, Automotive Industries Action Group, (248) 358-3003 or at their internet address at www.aiag.org for additional information.