

HIGH POWER systems **Ultrasonic Triangulation**

Process safety in assembly operations

Are you sure your saved tightening data has been generated at the correct tightening points?

AMT

Nutrunning and assembly technology is our core business. The synergy effects to be gained are unique. AMT knows the complex world of tightening like no other. As a long-standing, innovative partner in the automotive industry we know the requirements of our customers. Fascinating new possibilities have led us to develop the second generation ultrasonic triangulation. Ergonomics and the design of the tools could be improved considerably while simultaneously reducing the weight of the tools.

Ultrasonic triangulation offers you the possibility to exactly determine the position of the tightening tool.

By calculating the coordinates **X,Y,Z** you can record tightening points, set processing sequences, monitor positions and allocate tightening results.

Ultrasonic transmitter

X = 1500

Y = 1168

Z = 2348

High-Power Nutrunning Technology



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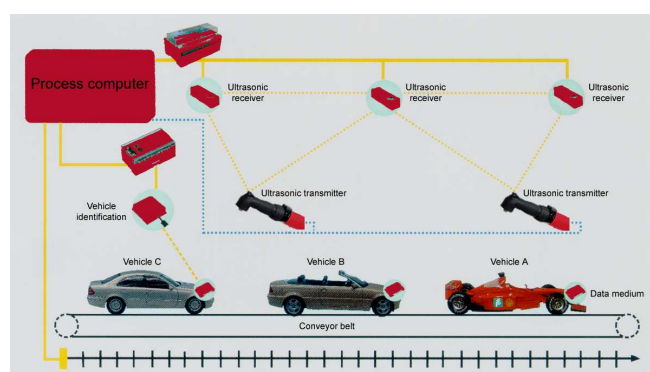
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Ultrasonic Triangulation

General

Due to the modular design the position recording via ultrasonic triangulation can be precisely adapted to your requirements. The position recording enables you to document the process step in relation to the tightening point, the component or the vehicle. So you can effectively counter any problems regarding product liability. You can secure the quality and hence the success of your product.

Schematic diagram



The most important features of this system

- Can be used in line production and in fixed cycle production
- Setting of processing sequences
- Reduction of processing time by automatic parameter selection / change-over
- Increase in process safety by automatic activation of the correct tightening parameters
- Safe allocation of the tightening data to the tightening point, component or vehicle
- No socket selection necessary - therefore cost saving
- Process safety by identifying incorrect tightening operations and by the targeted loosening of the corresponding tightening operation
- Process safety by generating a total OK statement after all tightening operations have been carried out in the correct sequence

Functioning

The operator actuates the start button at the handheld nutrunner, an ultrasonic sender at the angle head of the handheld nutrunner sends acoustic pulses to the ultrasonic receiver. The distance to the receivers is determined by the runtime of the acoustic pulses. The relative position is determined by angle relations in the triangle (triangulation). When the coordinates of the tightening point match the coordinates in the data base, the processing operation will be released. The correct tightening program will be automatically selected and processed. On completion of the tightening operation, the tightening data will be allocated to the particular tightening point and the component or vehicle. The nutrunner control system will issue a total evaluation on completion of the work content.

Our tightening system and the ultrasonic triangulation clearly define the procedure - it is ensured that the correct tightening parameters are used, that no tightening operation will be omitted and that the saved tightening values have been generated at the correct tightening point.

Process safety – Quality – Success