

TOX®-ToolCheck

Pneumatic Testing of Clinching Dies

The die monitoring system TOX®-ToolCheck, together with the process monitoring, checks the condition of the TOX® Clinching dies. This ensures that the joining process is always performed with an intact die. Any potential defects, like missing or by contamination jammed moving elements of the SKB die, as well as ruptures on either the solid TOX® die or on the fixed segments of SKB, are immediately identified.

Functional Principle

Every clinching die has a flow resistance characteristic dependent on its geometry when a jet of compressed air is applied. A defect in the die reduces this flow resistance and thus the back pressure of the air jet. An error signal is generated when a defined back pressure value is not reached. The system's robustness results from the significant drop of the back pressure in the defective die (as shown in the diagrams below).

Optimum Production Reliability

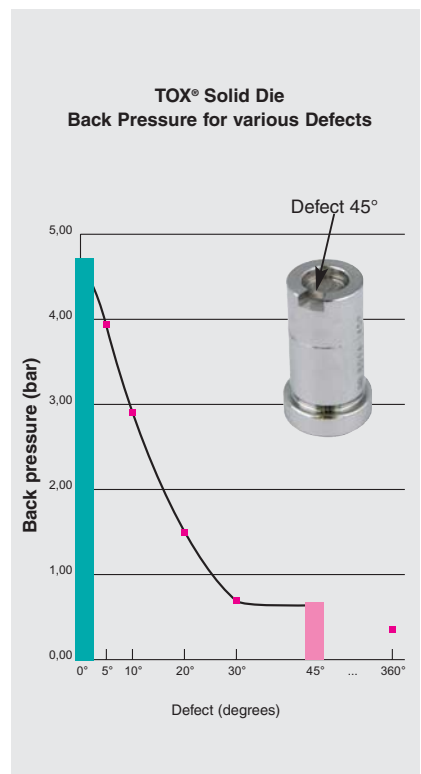
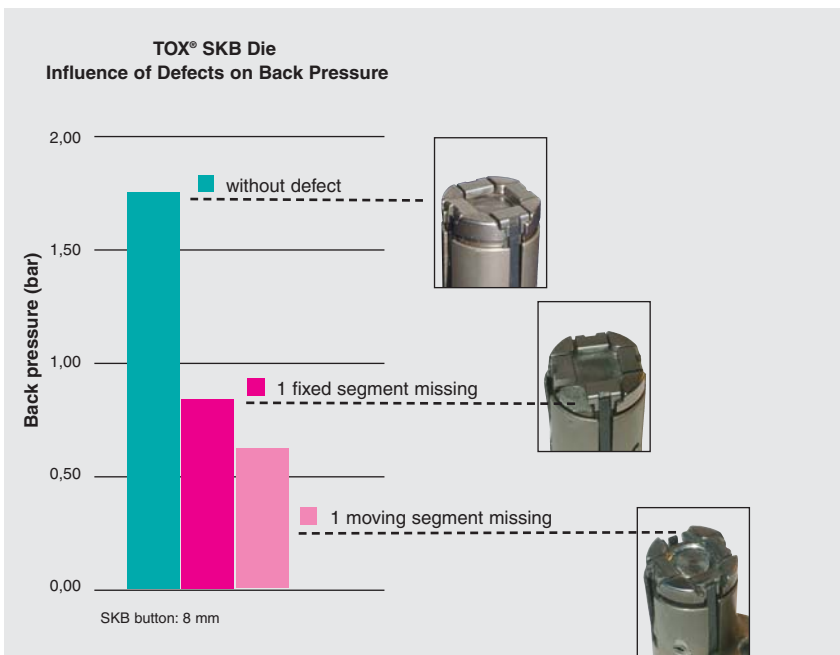
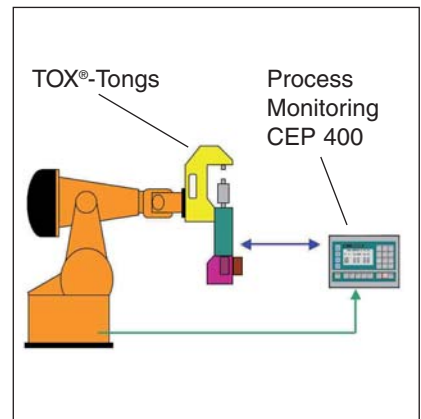
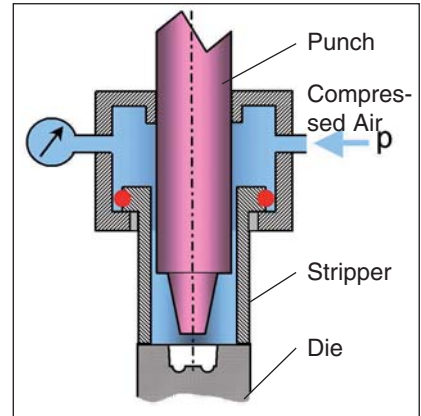
- a cost effective, robust and compact system with a control quality which was previously not possible
- already the first defective part can be identified
- in contrast to trend monitoring, a conclusion can be reached after only one measurement

Optimum Productivity

- maximum tool life usage, since a preventive die change is no longer required

Evaluation

Any changes in back pressure can be easily evaluated either with the stationary or mobile version of the monitoring system. The analysis of the digital values can be done over the robot controls, a PLC or the TOX®-Process-Monitoring CEP 400, which offers additional advantages. If the CEP is applied to control the process sequence, the robot simply gives its position to the CEP and it controls the tongs. The die monitoring is controlled simply in the same manner as the clinch point monitoring, the TOX®-Powerpackage as well as a lube spray system or an equalizing slide. Thus, all tongs functions can precisely be tested already at TOX® and adjusted with the CEP 400.



TOX®-ToolCheck

Mobile or stationary

Mobile Die Check ZCM

Application

Everywhere where TOX® standard stripper can be used: at mobile or stationary C-bows, manual or robotic tongs, presses in single- or multipoint-tooling, with pneumohydraulic, hydraulic or electric drive.

Function

The monitoring system is integrated in the stripper CSRP, which is moved onto the die during the control cycle, then it is pressurized with air. The back pressure in the stripper is measured, and this value is checked in the tongs control, in the TOX®-Process Monitoring CEP 400, the TOX®-ElectricDrive Controller or in the PLC of the assembly line. The controls receive a signal corresponding to the condition of the die.

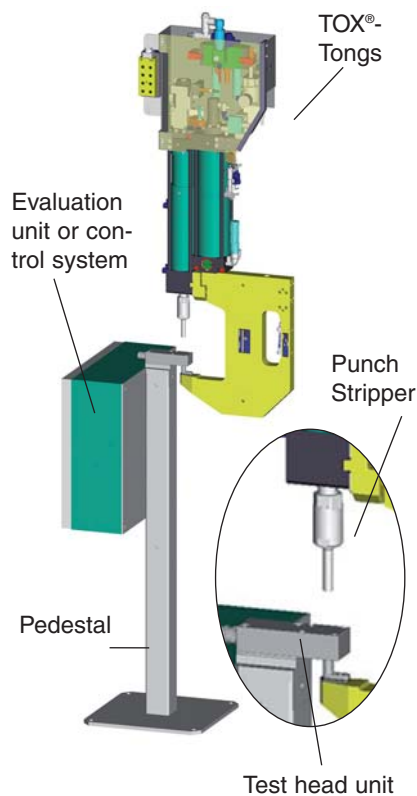
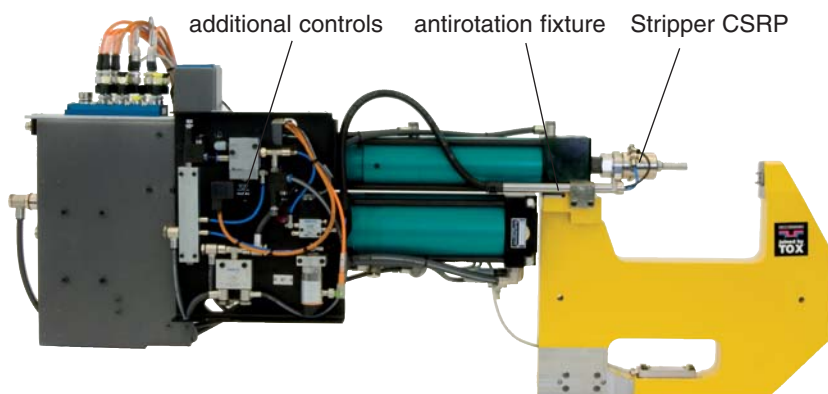


Ordering Description: ZCM
Each check system ZCM includes the antirotation fixture, additional controls and the application defined stripper assembly.

Control system ZCM on TOX®-Tongs

Advantages

- compact, integrated in the assembly
- measuring cycle < 1 sec possible for tongs applications
- can be retrofitted



Stationary Check System ZCT

Stationary Die Check ZCT

Function

The control station is installed within the robot range. The robot brings the TOX®-Tongs to the ToolCheck and positions the die at the check station. The die is pressurized with the air, and the back pressure is processed by the evaluation unit or the integrated controls. The resulting signal is given to the installed controls.

Advantages

- several tools can be checked by one centralized test station
- minimizes any interference with the work-piece in the tool area of the tongs

Ordering Description: ZCT

Each check system ZCT includes the pedestal, evaluation unit or integrated controls and the test head unit.