



## MICHIGAN CUSTOM MACHINES, INC.

Product Highlight:  
**CONTROL VALVE TEST**

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The purpose of the MCM cam phaser control valve test or oil control valve tester (OCV) is to validate functional performance at the end of the line. The machine automatically receives the finished product from the assembly line, performs a functional test, laser marks the part and then packs the good products out to shipping trays.



### Background

A typical cam phaser control valve is characterized as a proportional four-way control valve. In the assembly process there are many opportunities for errors that will affect the performance of the valve and in turn affect the operation of the cam phasing function in the engine. This machine sweeps the valve through its range of operation and measures flow rate, current and pressure at each of the ports. The data is quickly analyzed against several features to determine if the part under test is good or bad.

### Machine Features:

- 8 Test heads, robot loaded from an infeed conveyor
- Machine throughput <6 seconds per part
- Vision inspection for bent electrical pins
- Final laser marking on product case
- Robot unload to dunnage tray
- Calibration fluid to is temperature controlled to  $\pm 1$  degree C at 50 Celsius.
- Machine logs all test results to local storage and to network.
- Machine reclaims oil from part after testing
- Rejected parts are quarantine to a reject drawer and sorted in columns by failure type
- Manual loading drawer for introducing rework parts to system
- All filters have two stage differential pressure switches to provide an early warning of filter failure.
- Dunnage trays automatically replenish when full
- Self-contained master nests hold known parts for performing reference checks automatically

### Data Tracking

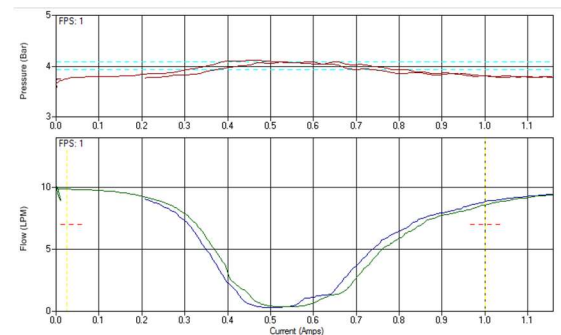
Not only are the test results stored on the machine, but the performance trace too. If a part fails, at a later date an operator can easily look at the detail of the failure to perform a deeper analysis. While parts are in process, the location and status of every part can easily be seen and viewed by the operator. Careful attention was also paid to situations when production is interrupted by a opened door and the opportunity for parts to be manipulated is present. We guarantee that an untested or bad part will never make it to pack-out.

### Flexibility

Our machines are designed so that the fixturing can be easily changed out to run a different product at a later date so that your investment will extend beyond the initial plan. We have also built machines with space for additional heads for future capacity and then latter added them in the field when the time was right.

### Valve Variations

Although this machine example tests cam phaser valves, we have also made similar machines for testing OOV (On-Off-Valves), OCV (Oil-Control-Valves), PPV (Proportional pressure control valve), QPV (Proportional flow control valve) and cylinder cutout valves. Some of these valves also require a setting operation before the testing can be performed and we have designed machines that will automatically set and stake a valve prior to the testing operation.



Please contact us at [sales@mcm1.com](mailto:sales@mcm1.com) for more information.