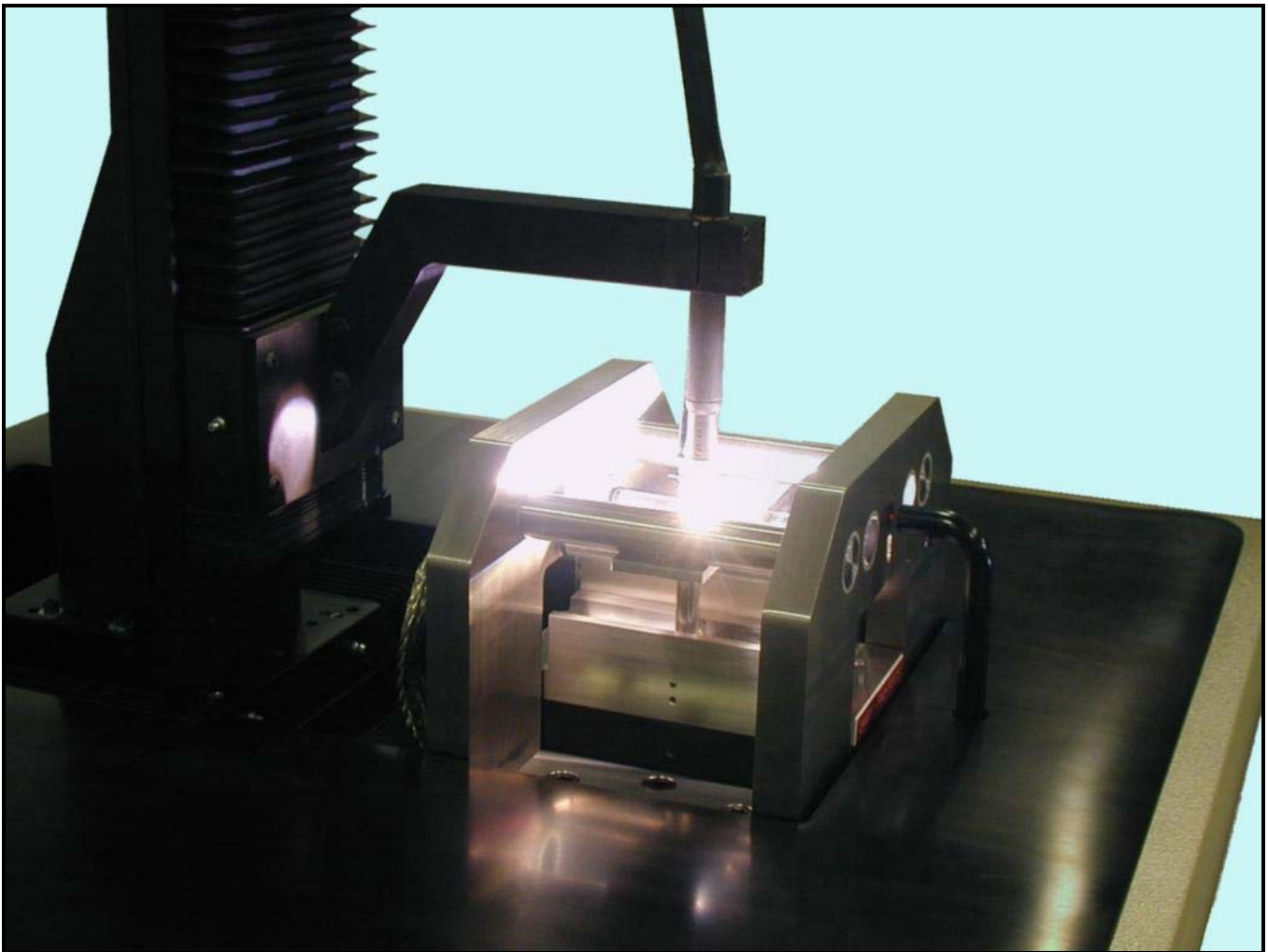




D. L. WRIGHT, INC.

MULTI-TASK VARESTRAINT * MTV 2500

WELDABILITY TESTING SYSTEM



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GENERAL DESCRIPTION

The Multi-Task Vareststraint (MTV) Weldability Testing System is used to evaluate the solidification, liquidation, and heat-affected-zone (HAZ) cracking susceptibility of materials. This system can perform both conventional (i.e. consecutive) and simultaneous Vareststraint tests for three types of welds: spot, transverse, and longitudinal. In the conventional or consecutive test method, strain is applied to the sample after the weld is completed. In the simultaneous test method, strain is applied to the sample as the weld is being produced.

The graphical user-interface allows the user to easily establish test parameters, which are controlled through a closed-loop system. The parameters include: welding torch position and speed (X,Y,Z), Bend Rate, Bend Delay Time, and Bend Holding Time within the MTV 2500's performance range (see performance specifications).

The unique design of the Bend Head Mechanism (shown in the cover page figure) provides the strain to the sample with two load rollers. This eliminates the need to drill holes in the sample, which reduces sample preparation costs. The load rollers bend the sample around a stationary die block providing a three point bending load. The load rollers can be adjusted between two settings to accommodate various sample lengths (see weld sample capacities). The load rollers are free to rotate during the bend sequence minimizing the amount of tensile stress on the sample. The load rollers and die block are made of non-magnetic stainless steel reducing magnetic permeability near the weld area.

Strain levels applied to the sample are determined by the radius of the die block and precise control of the stroke length. Die blocks are easily interchangeable and are available for strain levels ranging from 0.5% to 7.0% depending on die block radius and material thickness (see performance specifications).

The MTV 2500 offers the user control of all welding parameters such as current, up-slope, down-slope, welding travel speed, gas pre-flow, and gas post-flow. During the setup routine the MTV 2500 is capable of finding the user specified Arc Gap (the distance between the tungsten and the sample). The MTV 2500 has an optional Arc Voltage Control (AVC) in which the torch compensates throughout the test to maintain the user specified voltage thus maintaining the constant Arc Gap.

The MTV 2500 software runs on the MicroSoft[®] Windows/NT^{®1} operating system providing a standard windows type user-interface. In addition to the data input previously mentioned, the system also provides many data acquisition options. The default configuration automatically captures the welding current command, the actual current and voltage, and ram position as a function of time. Five additional analog channels are available for the user to set up measuring devices such as strain gauges and thermocouples. Test results are stored in a file using a "*.vdf" file extension. When opened, these "*.vdf" files automatically appear in the MTV 2500 graphing program or the files can be imported into popular spreadsheets such as Microsoft Excel[®] and Lotus.

¹ MicroSoft and Windows/NT are trademarks of MicroSoft, Corporation.

SYSTEM COMPONENTS

The three main components of the Multi-Task Vastrestraint are:

The **Main Testing Console** houses the torch positioning system (i.e., X, Y, & Z), the hydraulic system and the bend head mechanism.

The **Electronics Control Console** houses the computer, monitor, keyboard and other electronics.

The **Power Console** houses the welding power source, and transformers.



PERFORMANCE SPECIFICATIONS

Rate of Bend	0 to 300 mm/sec.
Force Capacity	50,000 N
Torch Travel Speed	0 to 500 mm/min.
Max. Bend Stroke	40.00 mm
Bend Delay Time	0 to 99 sec.
Bend Holding Time	0 to 999 sec.
Strain Level	0.5% to 7.0%

WELD SAMPLE CAPACITIES

Test Sample Size:

Length:	100 mm to 300 mm. (180 mm typical)
Width:	25 to 150 mm
Thickness:	2.0 to 10.0 mm