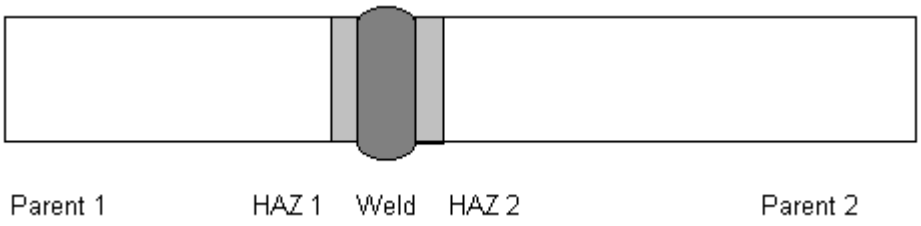
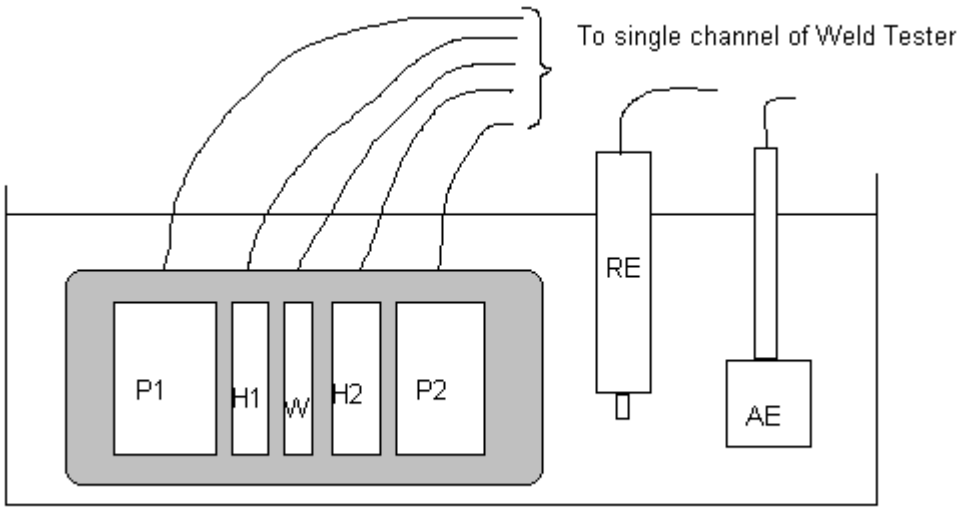
ACM Instruments

Welds

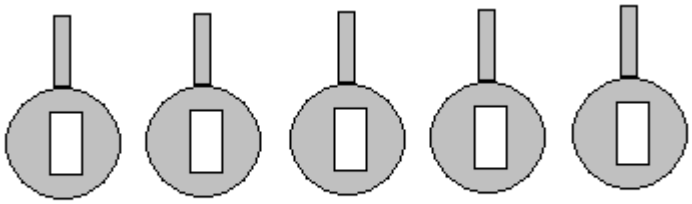
Welds pose a particular problem. Each weld is a complex galvanic couple made up of parent metal (e.g. a pipeline) a weld metal and an area of heat affected metal. Under many circumstances the bulk of the anodic dissolution is within the heat affected zone (haz). This very thin anode and large cathode of parent metal is the worst possible case rapidly leading to failure. Conventional electrochemical testing in which a sample of the weld is immersed and used as the working electrode will only reveal a low overall net rate not the high rate in the heat affected zone. The solution is to segment the sample weld cutting out test electrodes of parent1 haz1 weld haz2 and parent2. These can then be coupled together and the individual response from each section measured. The instrument to do this is called a Weld Tester. This instrument is a Gill 8 or 12 built to accommodate the extra four working electrodes per cell. Once the cell is connected the full range of DC and AC tests are used to determine the susceptibility of each component to corrosion.



This is then segmented epoxy masked and ground flat. All 5 electrodes are added to the test electrolyte and connected to the Weld Tester



Segmented weld held in one block of epoxy



Alternative mounting method using standard samples