



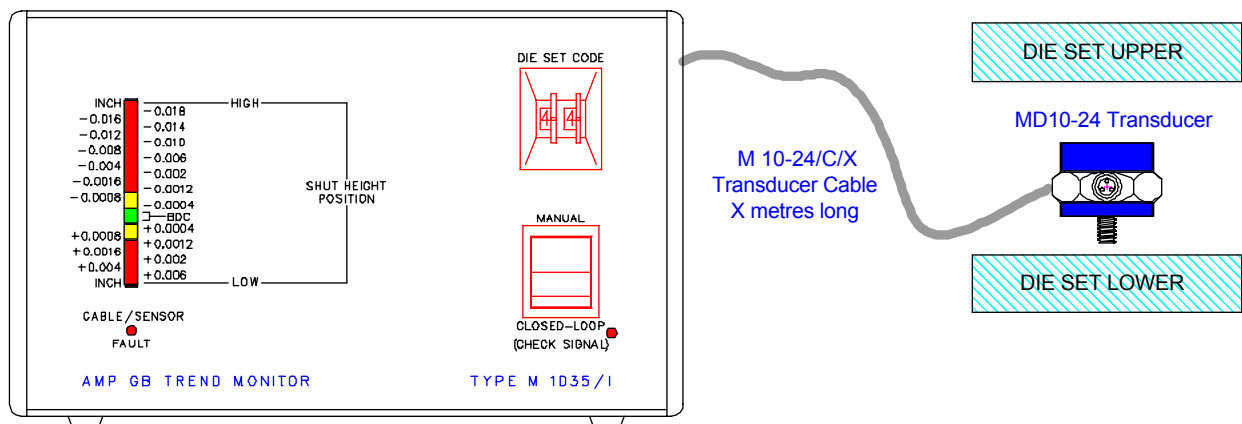
The Micro Movements Press Monitoring Product Range

Proximity Sensor Press Monitoring Products

This product range was originally developed in conjunction with AMP GB and AMP USA in Harrisburg and is designed to function with any stamping press to monitor the trend in bottom dead centre position during operation of the production press.

The basic system is shown below and comprises a highly accurate inductive proximity sensor which is mounted on the lower face of a Die Set.

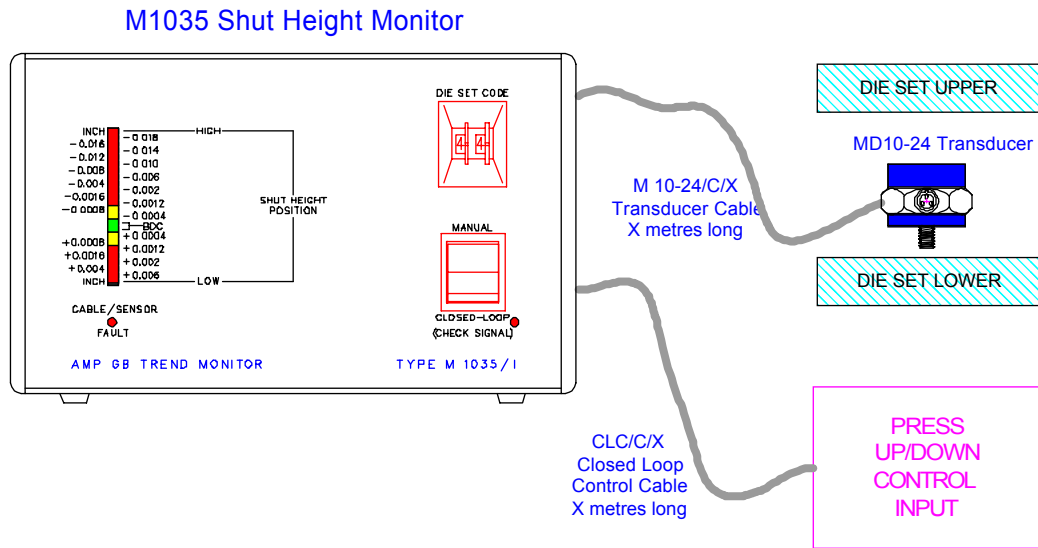
M1035 Shut Height Monitor



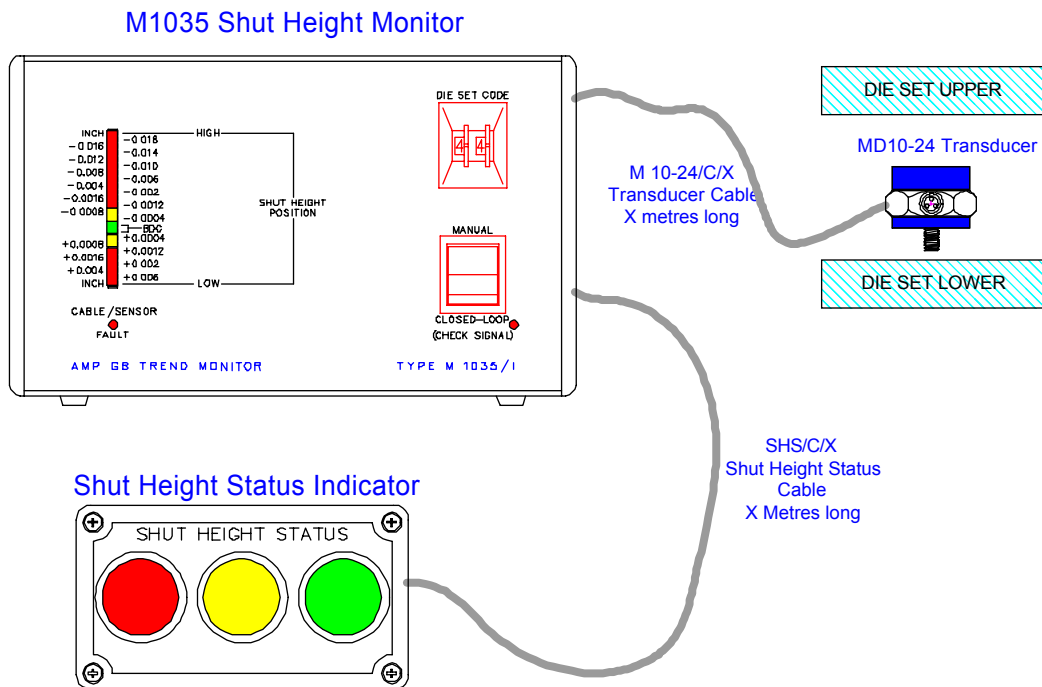
The gap between the surface of the sensor and the upper surface of the Die Set (or metal target on the upper surface of the Die Set) is detected by the electronic Shut Height Monitor. The trend in Bottom Dead Centre position is then displayed on the Shut Height Monitor on a calibrated scale and also in 'easy to see' Red, Orange and Green. The stability of Bottom Dead Centre is crucial to stamping product quality and the Micro Movements' system allows constant monitoring of this parameter thus enhancing quality and significantly reducing scrap.



There are additional facilities to the basic system allowing for closed loop control and distant visual monitoring. These are shown below.



The above schematic shows the basic system with the addition of Closed Loop Control. Some Stamping Presses have the availability of external inputs that permit the incremental raising and lowering of the Ram during operation. The Closed Loop Control facility in the Shut Height Monitor will automatically raise or lower the Ram if it detects any drift away from the original set point.



The above schematic shows the addition of a remote colour coded annunciator display. The colours are repeat of those on the bargraph of a on the Shut Height Monitor. This is used to enable high visibility from a distance of the status of the bottom dead centre of any stamping press. Very useful in locations with multiple presses.



M1035 Shut Height Monitor

This accepts an input from an MD10-24 Transducer via an M1024/C/X connecting cable and contains the sinewave power drive to the transducer. It accepts the return input and converts this into relative position.



The peaks are then rolling averaged over 15 seconds and displayed on a vertical bargraph. This allows fast response to changes but maintains jitter free measurement over a wide range of speeds (30 strokes per minute to 10,000 strokes per minute). The bargraph display is color coded with the 'normal' operating region shown in Green and measured with an accuracy of 0.0001 inch (2.5microns). All transducer signal conditioning is performed in the Shut Height Monitor and there is detection of open circuit transducer with a visual display indicating Transducer Fault. The Closed Loop Control

Circuitry is also included in the standard unit. In the event of a Transducer Fault, the Closed Loop Control Signals are disabled to prevent the Ram from being automatically re-positioned as the result of a false measurement. The M1035 is also available with a Metric scale.

MD10-24 Transducer

This an inductive proximity sensor with a half bridge configuration. Internally there is a reference inductor, with the sensing inductor at the front face. The half bridge configuration together with an internal temperature compensating circuit allow accurate and stable measurements over a 14 °F (-10°C) to 194 °F (90°C) temperature range. All the internal components are potted and vacuum impregnated. The potting compounds were selected after extensive testing at Tower City in all of the stamping oils, lubricants and cleaning agents used to ensure no degradation of sealing integrity as a result of the acid content of some lubricants. The 3 pin connector is also of sealed construction. This permits the Transducer to be directly splashed by lubricant during stamping and immersed in cleaning agents, ensuring that the Transducer need not be removed from the Die Set.



M1024/C/X Transducer Cable

This is a premade and tested cable for connecting a M1035 Shut Height Monitor to an MD10-24 Transducer. The cable is multicore screened and is fitted with the correct connectors for mating with the above products. The cable is available in any length. The standard is 3 Metres (10 feet) and is designated M1024/C/3. However any length up to 9 metres (30 feet) is available. Over this length some degradation in signal may occur. These cables may be ordered by length code, for example, a 13 ft cable (4 metres) may be ordered as M1024/C/4, or a 16 ft cable (5 metres) as M1024/C/5. For particularly demanding environments this cable is available in PTFE.





M1035/TL Shut Height Status Indicator



The M1035/TL Shut Height Status Indicator connects directly in to an M1035 Shut Height Monitor and provide an annunciator style display which mimics the color presented on the LED bar graph on the M1035. The Status Indicator is self contained and connects via a cable which is supplied with the Indicator. The standard cable is 3 metres (10 ft) long but any other length is available at no extra cost. The M1035/TL can be fitted to any M1035 without modification.

CLC/C/X Closed Loop Control Cable



This is a premade and tested cable for connecting from the Closed Loop Control output of an M1035 Shut Height Monitor to the control input of a stamping press. The cable is available in any length. The standard is 3 Metres (10 feet) and is designated CLC/C/3. These cables may be ordered by length code, for example, a 13 ft cable (4 metres) may be ordered as CLC/C/4.

M1135 Calibration Reference Transducer Simulator



This is a highly accurate calibration reference which simulates an MD10-24 transducer. It has 4 settings at BDC, +4 thou(0.1mm), -8 thou(-0.20mm) and -18 thou(-0.45mm), accurate to 0.1 thou(2.5 microns). This device enables the precise calibration of the M1035 Shut Height Monitor.

OTHER PRODUCTS FROM MICRO MOVEMENTS LTD.

Micro Movements specializes in Measurement Technology and Data Gathering using Data Acquisition and recording systems for Production monitoring and Research. We manufacture and supply a wide range of products for industrial and military applications. These products are robust and designed to operate in industrial environments. The range of products enables high quality data to be gathered on the functions of structures and moving parts allowing immediate real-time analysis. This permits performance measurement of machinery in cost effective flexible packages. For details of individual products, please visit our website at www.micromovements.co.uk or contacts us by e-mail atsales@micromovements.co.uk , telephone on 001 44 118 973 0200, or fax us on 001 44 118 932 8872. We will be happy to assist and are always available to discuss your application.