Comprehensive alarm facilities
- provides early warning of plant failure

Economically priced on-line analyzer
- low capital costs

Choice of testing frequency
- extends the life of the reagents

Easy to maintain
- minimum maintenance costs

Wide choice of alarm set points
- satisfies an extensive range of applications

Testomat
- a robust design with minimum maintenance for reliable results
General Information
The Testomat is a wall-mount instrument which tests softened water for residual hardness. An indicator which changes colour at a predetermined level of hardness is added to the sample of water. This colour reaction is monitored photoelectrically and is also visible through a window on the front of the instrument. In the event of a colour change signifying an unsatisfactory result, an alarm is initiated. The testing interval and a second alarm are switch selectable and facilities for plant control and remote control are standard features.

The robust design of the Testomat, combined with minimal maintenance requirements, and extensive alarm and control facilities, make it ideal for control and monitoring of water softening plants.

Operation
Testing Cycle
Water is passed continuously through the instrument and, between analyses, it serves to flush out the measuring cell. On initiation of a testing cycle the cam-driven dosing plunger drops, simultaneously closing the exit of the cell and delivering a measured dose of indicator reagent. The cell fills with water, excess water then bypasses the cell and is diverted to drain. A period of two minutes is allowed for a reaction to take place, then the colour of the reaction is measured for a further two minutes by photocell. If the result is satisfactory, i.e. no colour change signifying that the residual hardness is below the predetermined alarm level, a green LED on the front panel of the instrument is illuminated.

However, in the case of a colour change, a red LED on the front panel of the instrument is illuminated and an alarm contact is activated for one minute. The colour reaction in the cell remains visible through a window on the front panel of the instrument for approximately four-fifths of the sampling interval, then a white flickering light is seen as the cell is flushed out in preparation for the next test cycle.

Amplifier Function
The instrument controls are located on the amplifier. Two switches inside the amplifier housing control the frequency of the sampling interval and the state of the programmable alarm. Sampling intervals of 5, 10, 20 or 30 minutes can be programmed in the following ways:

i) continuous alarm condition after one unsatisfactory result until the next satisfactory result is obtained;
ii) continuous alarm condition after two consecutive unsatisfactory results until the next satisfactory result is obtained;
iii) continuous alarm condition after one unsatisfactory result and further analyses stopped until alarm cancelled manually;
iv) continuous alarm condition after two consecutive unsatisfactory results and further analyses stopped until alarm cancelled manually;
v) one minute alarm condition after one unsatisfactory result.

Reagents
The type of reagent determines the level of hardness at which a colour change occurs.

The reagent is supplied in 100ml and 0.5l bottles, which have a shelf life of 2 years. Each instrument is supplied with one 100ml bottle, sufficient for 1300 analyses, which screws into a swivel socket on the testing chamber of the instrument. Please specify reagent required when ordering (see adjacent table).

When the volume of reagent remaining is sufficient for only 25 analyses an indicator on the front panel of the instrument illuminates. A set of contacts is provided for remote indication of lack of reagent.
Specification

Sample Conditions
pH range
7 to 10
Pressure
1 to 10 bar (14.5 to 145 lb/in²)
Temperature
45°C (113°F) max.
Max. permissible impurity concentrations
0.5 ppm iron
0.1 ppm each of copper and aluminium
20 ppm carbon dioxide
(above this level a Testomat aerator must be installed)

Ambient Conditions
Temperature
50°C (122°F) max.

Power Requirements
Supply
115/220/240V, 50/60Hz (please specify when ordering)
Consumption
25VA
Electrical connections
Via cable glands to a terminal strip (page 6)
cable gland size Pg11

Pipe Connections
Inlet
Flexible pressure tubing of 6mm (0.24 in.) internal diameter
(a stopcock must be installed in the inlet prior to the instrument)
Outlet
Flexible hose of 14mm (0.55 in.) internal diameter

Degree of protection
IP54
Weight
5kg (11 lb)
Overall dimensions
310mm high x 360mm width x 130mm depth
(12.2 in. high x 14.17 in. width x 5.12 in. depth)

Installation Information

Ranges
Determined by reagent
Reagent consumption
0.07ml per test
Alarm contacts
All contacts are voltage-free and rated at 2A 250V
High concentration alarm normally open contacts one minute duration
Programmable alarm changeover contacts (see text for operation)
Lack of reagent alarm normally open contacts

Front panel indicators
Program in operation
Analysis stopped
Lack of reagent
Satisfactory result
Unsatisfactory result
Viewing window

Event recorder output
0 to 20mA isolated load 50Ω
Event Signal
Supply connected 3.5mA
Satisfactory result 7.5mA
Unsatisfactory result 12.5mA
Lack of reagent 16.5mA

Remote control facilities
Voltage-free normally closed contacts max. load 20mA 10V
(closed with link when not in use) :
1) remote operation of cancel button
2) remote switch to stand-by
Electrical Connections

Overall Dimensions

Dimensions in mm (in.)

Overall dimensions with cover in place 310 x 360 x 130 (12\(\frac{3}{16}\) x 14\(\frac{3}{8}\) x 5\(\frac{1}{2}\))

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