

P3020 pH/RATIO CONTROL

INTRODUCTION

Cussons P3020 pH Control Apparatus is designed to demonstrate the control of the acidity of a water supply by chemical dosing. Control of pH is an important aspect of water treatment in water cooling systems, hot water heating systems and boiler feed water.

Two methods are available to control the addition of the dosing chemical, either slug (on-off) dosing or continuous controlled injection. Both methods can be demonstrated with this apparatus. Optional equipment is available to convert the apparatus into a Ratio Control Apparatus.

PRINCIPLE EXPERIMENTS

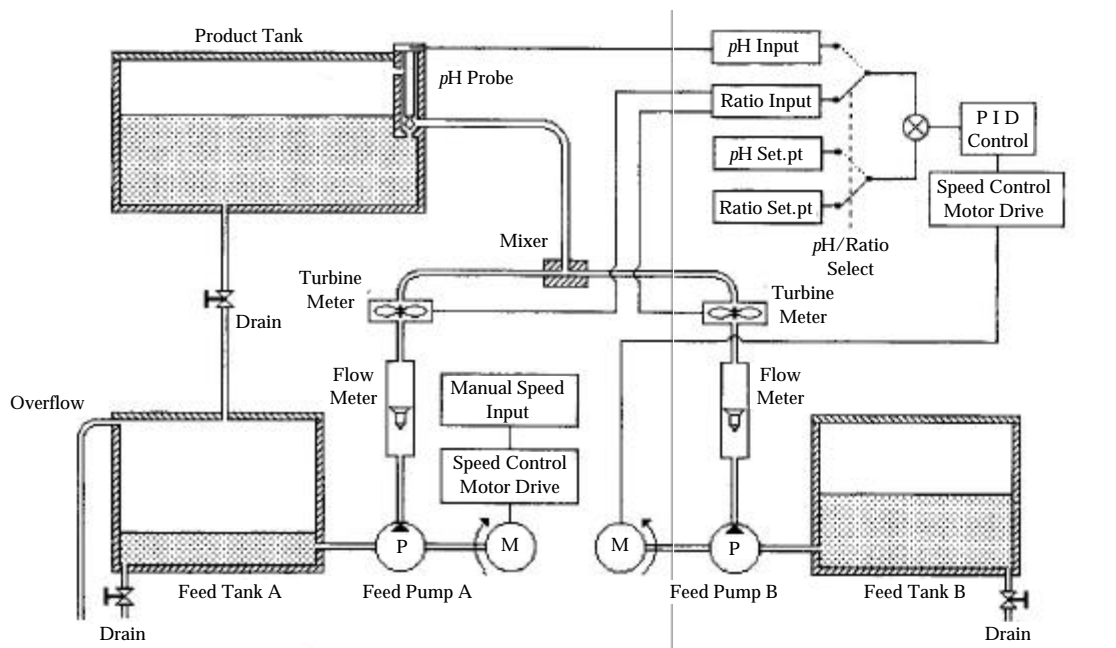
- ◆ Manual ratio control
- ◆ Manual pH control
- ◆ Automatic three term control
- ◆ Automatic three term pH control

DESCRIPTION

This bench top apparatus consists of a feed water system, a chemical additive system and a process mixing vessel mounted on a welded steel frame and back plate. The chemical additive, which may be either a dilute acid solution or dilute alkali solution, is stored in an additive tank and delivered by a peristaltic pump via a variable area flow meter to the mixing vessel. Control of the additive may be achieved by either periodic operation of the pump, or by continuous injection using the variable speed pump to control the flow.

The raw water is fed from a feed tank, pump and flow meter to the mixing vessel via a manual valve and solenoid valve which form a flow disturbance section. If required, the raw water may be manually dosed with dilute acid or alkali solutions to simulate various acidity levels of water supply. Alternatively the raw water may be taken from a mains water supply. A portable pH probe is supplied for measurement of the raw water and the additive.

The acidity of the treated water is measured by a pH probe installed in the mixing vessel and controlled by an advanced microprocessor based programmable three term controller, which provides both an on-off output to the dosage pump and an analogue output to control the speed of the dosage pump, the appropriate output and mode of operation being selected from the front panel.



The controller incorporates an RS232C serial interface link and retransmission of the measured variable and control output signals for data logging. The optional Cussons Programmable Logic Control Module (P3030) can be used to initiate the controller set point program as well as to command the pumps and disturbance solenoid valve. A further option is to use the P3025 Computer Control Software and Data Logging Interface for use with an IBM PC/XT to control the apparatus. An optional multi-speed flat bed with twin channel chart recorder (P3018) is available. Provision is made for converting the apparatus into a Ratio Mixing Control System by the addition of Ratio Mixing Control System (P302 1) and Additional Control Module (P3040).

TECHNICAL SPECIFICATIONS

FLOW RATES

Max feed water flow 500 ml/min.

Max additive flow 212 ml/min.

The speed control provides a speed control ratio of 10:1.

CAPACITIES

Feed water vessel 20 l.

Additive storage vessel 5 l.

Mixing vessel 25 l. with overflow at 25 l. for batch process and valved discharge overflow at 5 l. for flow process.

DOSING SOLUTIONS

Dilute acid: Sulphuric acid 6.5% v/v
 Dilute alkali: Sodium hydroxide (caustic soda).

DIMENSIONS

1075 mm wide x 600 mm deep x 870 mm high

SERVICES

For AC mains supply 50 or 60 Hz. Please state voltage when ordering.

Aqueous solutions of sulphuric acid and sodium hydroxide (**not supplied**).

Connection to a sink with both cold water supply and drain, required for periodic emptying and diluting of waste chemicals.

SHIPPING DETAILS

Case size:- 116 x 70 x 93 cm (approximate).

Weight:- 44 Kg nett
 72 Kg gross

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