Clark·Reliance

WATER COLUMN SAFETY SYSTEMS

PROBE AND FLOAT

PROBE SAFETY SYSTEMS

High Technology Probes Actuate Alarms, Fuel Cut-Out And Other Controls In Systems To 3000 PSI.

Electrical probe safety systems operate a larger number of functions than *mechanical float* safety systems. Probes may be positioned to actuate audible and/or visual alarms, fuel cut-out controls, pump controls or other equipment.

Figure 4
PROBE TYPE FORGED STEEL COLUMN

Control Units Feature One Through Six Relays

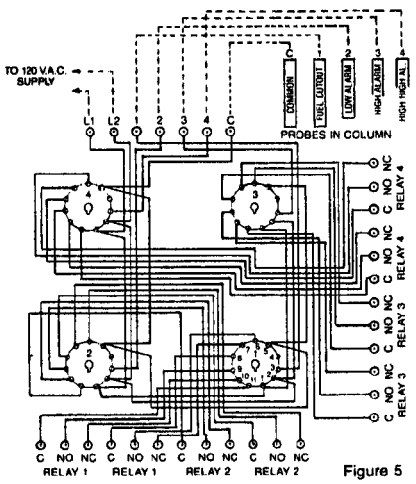

Figure 5
TYPICAL FOUR-RELAY PCB INTERWIRING

Three- and four-relay Control Units feature PCB circuitry with plug-in relays. (A single- or multiple-relay Control Unit, with conventional wiring to relay sockets, is also available.) In all Control Units, relays perform on/off functions by responding to the rise and fall of column water at predetermined levels. Control Units may be located at virtually any distance from the water column.

Clark-Reliance Relays Improve Reliability, Offer Installation Ease And Economy

- Plug-in relays are removed by hand, no tools required.
- Relays supply low voltage (12 VAC) to Probes.
- Relays enhance sensitivity for extremely low water-conductivity applications, to less than 1 MMHO.
- Relays improve switch contact reliability for low load applications such as computer interface, recorders.
- Relays use integral LED indicators to verify status.

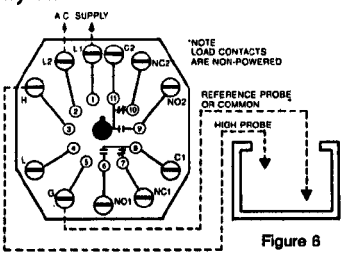

Figure 6
INTERWIRING DIAGRAM, CONTROL UNIT RELAY

Typical Relay, Single Level Service

Direct Mode Operation When water level rises to Terminal 3 Probe, water completes circuit. Circuit signals Relay to change state of load contacts, activating Alarm or other equipment, while illuminating integral LED. Relay is active until water drops below Probe to break circuit, turning off Alarm and LED.

Inverse Mode Operation (Optional) Upon powering Supply Terminals 1 and 2, Relay energizes (LED on). When water rises to Terminal 3 Probe, Probe signals Relay to de-energize (LED off). Relay remains de-energized until water drops below Probe. Even during momentary power failures, Relay remains in "safe" mode in Low Level applications.

Exceptional Probe Sensitivity Increases System Reliability

T PROBE: 0-450 PSI, UP TO 6 FUNCTIONS (shown)
V PROBE: 451-1000 PSI, UP TO 6 FUNCTIONS
ZG PROBE: 1001-1800 PSI, UP TO 6 FUNCTIONS
FG PROBE: 1801-3000 PSI, UP TO 3 FUNCTIONS

Clark-Reliance Water Column probes are the identical probes used in the renowned Clark-Reliance Electro EYE-HYE® Level Gage. *(Continued Next Page)*

PROBE

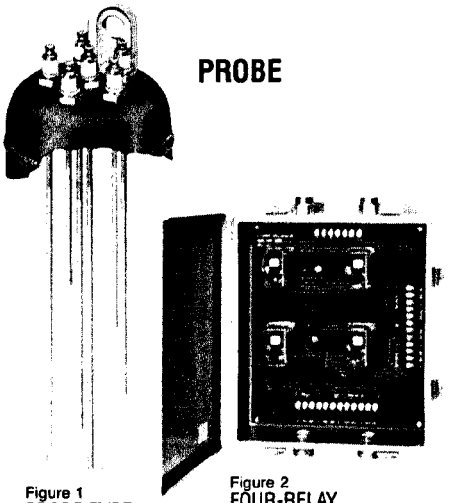

Figure 1
PROBE TYPE SAFETY SYSTEM WITH PROBES POSITIONED INSIDE FORGED STEEL COLUMN

Figure 2
FOUR-RELAY CONTROL UNIT

FLOAT

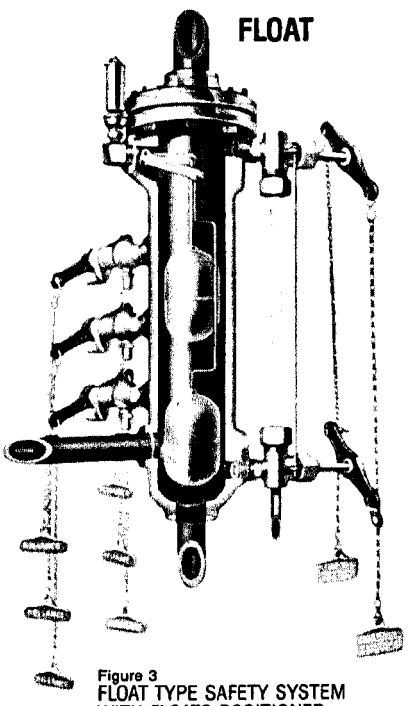

Figure 3
FLOAT TYPE SAFETY SYSTEM WITH FLOATS POSITIONED INSIDE CAST IRON COLUMN

Probe Sensitivity (Continued)

Performing at the forefront of probe technology, each probe model will respond to pure water of ultra-low conductivity (less than 1 micro mho) to complete circuits. FG and ZG Probe service life is extended by using available renewing kits.

Optional Holding Switch

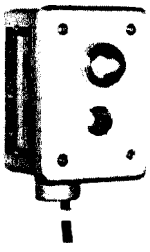

Figure 8
MODEL HS1 HOLDING SWITCH

During probe column blowdown, the Holding Switch provides a bypass around the fuel cut-out relay. The switch maintains circuit continuity momentarily, while being held in the bypass position during blowdown. An indicator light is provided to verify that the relay is functioning properly. Also available without indicator light (Model HS0).

Probe Alarm System Model Selection Guide

Model EA3 Provides on/off actuation of high and low water alarms (typically). Employs 3 probes, including 1 common return probe. Requires two relays.
Model EA4 Provides on/off actuation of high and low water alarms plus fuel cut-out trip. Employs 4 probes. Requires up to 3 relays. PCB control unit.
Model EA5 Provides on/off actuation of high and low water alarms plus high and low fuel cut-out trip. Employs 5 probes. Requires up to 4 relays. PCB control unit.
Model EA6 Provides on/off actuation of high and low water alarms, low fuel cut-out trip, plus pump control. Employs 6 probes. Requires 4 or more relays. PCB control unit.

PROBE SAFETY COLUMNS FUNCTION CHART
For Additional Function Combinations, Contact Factory Or Your Clark-Reliance Representative

MODELS	EA3	EA4	EA5	EA6
PROBES	3	4	5	6
RELAYS	2	3	4	4
HIGH ALARM	•	•	•	•
LOW ALARM	•	•	•	•
LOW FUEL CUT-OUT	–	•	•	•
HIGH FUEL CUT-OUT	–	–	•	–
PUMP ACTUATION	–	–	–	•

FLOAT SAFETY SYSTEMS

Reliable Floats Warn Of High/Low Water Levels In Cast Iron Columns Serving 0 To 250 PSI Or Forged Steel Columns Serving Pressures Up To 900 PSI.

This mechanical, float type alarm system employs lightweight floats that will respond to as little as one-quarter inch level variations. Action is direct and highly reliable, resulting in automatic on/off alarm control at designated water levels.

Alarm components sit high in the column, removed from corrosive agents and scale. Quality materials and design simplicity combine to minimize requirements for periodic adjustment and maintenance.

Mechanical Float Safety Systems are available to indicate high and low, high only, or low only water levels. For additional float operated alarms to actuate electrical switches, refer to Clark-Reliance Levalarms®, Catalog 500, Section D4.1.

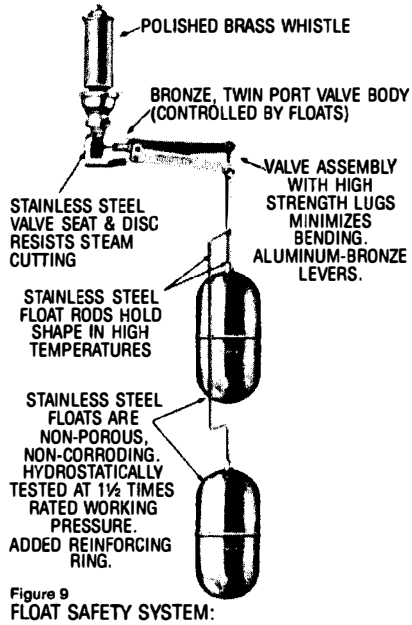

Figure 9
FLOAT SAFETY SYSTEM: COMPONENTS & MATERIALS

MODEL NUMBERING CODES

PROBE & FLOAT WATER COLUMN SAFETY SYSTEMS • CONTROL UNITS AND RELAYS

Below are examples of typical model numbers which accurately specify a specific Clark-Reliance Water Column Safety System and the desired Control Unit. Use these Model Numbering Codes to determine the proper Model Numbers for your application needs.

W 0250-EA4

Water Column	Design Pressure (PSI)	Alarm Choice*	Number of Probes
W	0250 0900 1800 0350 1100 2500 0450 1250 3000 0600 1500	EA – Electric FA – Float NA – No Alarm	(0 Through 6)

R-310L

Control Unit	Number of Relays (1 Through 4)	Control Unit Enclosure	Voltage	Low-Voltage, Plug-In Relay
R	3	0 – Less Enclosure 1 – NEMA I Standard 4 – NEMA IV Weatherproof 7 – NEMA VII Explosionproof	0 – 115V 50/60Hz Primary A – 220V 50/60Hz Primary B – 440V 50/60Hz Primary C – 24V 50/60Hz Primary	L

*Refer to Catalog 500, Section D4.3 for information on audible horns and visual signal units.

For additional information, contact your local Clark-Reliance representative

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NOTE: Clark-Reliance shall not be liable for damages of any kind resulting in part from failure to install its products in accordance with all applicable codes and/or state and local regulations, improper application and/or maintenance.

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