

JERGUSON®

A Division Of The Clark-Reliance Corporation

Specialists in Liquid Level Indication

Installation, Operation and Maintenance for

Series 200 Vibrating Tuning Fork

Liquid Level Switch

Section: JS100
Bulletin: JS100.21
Date: 10/1/04



OPERATION

The Jerguson Series 200 is a single point level switch which may be installed in any position in a pipe or vessel to detect the presence of a liquid.

The Series 200 has a tuning fork style probe which vibrates at its natural frequency when in air. A piezoelectric crystal-system is used to create a 1100 Hz vibration in the tuning fork. As the tuning fork is covered by a liquid or slurry, a corresponding shift occurs in the vibrating frequency of the tuning fork. This shift is being monitored continuously and once a present threshold is exceeded, the output changes status.

The electronics can be provided with the following options.
24 - 264 Vac, 24 - 60 Vdc SPST output wired in series with a load,
IS NAMUR (Intrinsically safe)
24 - 264 Vac, 24 - 60 Vdc 5 AMP SPDT relay output,
24 - 60 Vdc (3 wire) PNP/PLC wiring or,
2 wire 23 - 25 Vdc step change output, 4.5 to 6.5 mA Dry,
15 to 18 mA wet.

FEATURES

- Field Selectable Time Delay
- Magnetic Test Point
- Fully Potted Electronics
- 1480 Pressure Rating
- 300 Deg. F Temperature Rating
- Cl. 1, Div. 1, GRP, A, B, C, & D Version
- Resistant to Vibration
- Fail-Safe Design
- Hygienic Fittings

SPECIAL FEATURES

The Series 200 includes a status indicating LED which may be viewed through a lens in the NEMA 4X enclosure cover or with the cover removed, on the explosion proof model. The LED will flash approximately once per second when the switch is "off" and will remain constantly lit when the switch is "on".

The LED gives an indication that the switch is functioning correctly and gives a visual indication of the state of the relay.

A fail-safe switch on the circuit board is provided for the user to select either "make" when dry-the normal condition-or "make" when wet, as would be selected for low level duties.

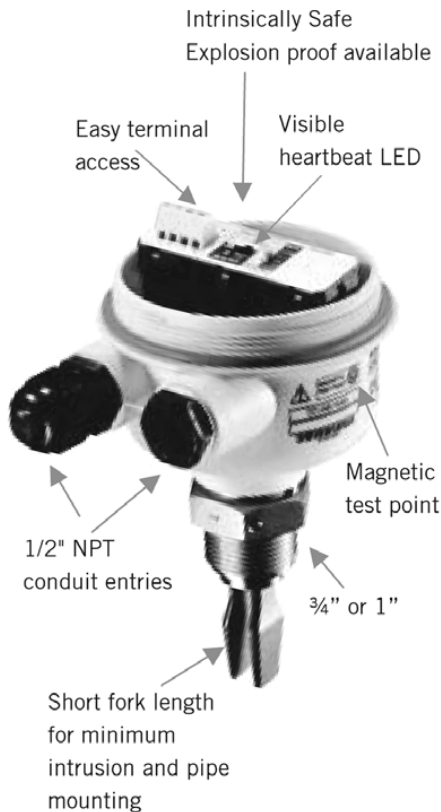
Fail-Safe High Level Duty

The fact that this device is vibrating normally when dry makes it ideal for use in high level detection applications.



JERGUSON® GAGE AND VALVE

A Division of The Clark • Reliance® Corporation
16633 Foltz Industrial Parkway • Strongsville, OH 44149 USA
Telephone: (440) 572-1500 • Fax: (440) 238-8828



OPERATION

The 200 Series is a liquid point level switch designed using the principle of a tuning fork. The 200 Series continuously monitors changes in its vibrating fork's natural resonant frequency. When the 200 Series is used as a low alarm, the liquid in the vessel drains down past the fork resulting in a change of its frequency; this is detected by the electronics which switches the output state. Or when used as a high alarm, the liquid rises in the vessel, contacts with the forks and again the output switches.

FEATURES

- 3/4" and 1" NPT threaded at standard or extended lengths to 10 Ft.
- Choice of international flanges and range of hygienic fittings
- Versatile switch outputs - Relay, Direct load switching, PLC/PNP
- CL. 1, DIV. 1, GRP A,B,C, & D and intrinsically safe applications
- Halar/PFA coating for chemical resistance
- Continuous operating temperature up to 302°F and pressure up to 1480 psig
- No mechanical parts - maintenance free

SPECIAL FEATURES

200 Series has a status indicating 'heart-beat' LED which can be seen at all times through a lens in the cover. The LED will flash (once per second) when the 200 Series is 'off' and will be constantly lit when the 200 Series is 'on'. The LED gives an indication that the 200 Series is functioning correctly and of course gives a local visual indication of the state of the wetside.

A mode switch allows the 200 Series to be set to switch from wet to dry (typically low alarm) or from dry to wet (typically high alarm). You may also select a time delay from 0.3, 1, 3, 10, or 30 seconds.

A magnetic test point is on the side of the housing, allowing the user to perform a functional test of the Squing 2. By touching a magnet on the target the Squing 2 output will change state for as long as the magnet is present.

ELECTRONICS

Standard two core cable with any power supply from 24 to 260V ac (24 to 60Vdc) is used to connect 200 Series in series with the load and achieve direct load switching. The output acts as a simple SPST switch that changes with liquid presence. Alternatively use the switching function of the SPCO relay electronics output. 200 Series also has the option of electronics to be interfaced directly to a PLC using the PNP transistor output model (threewire).

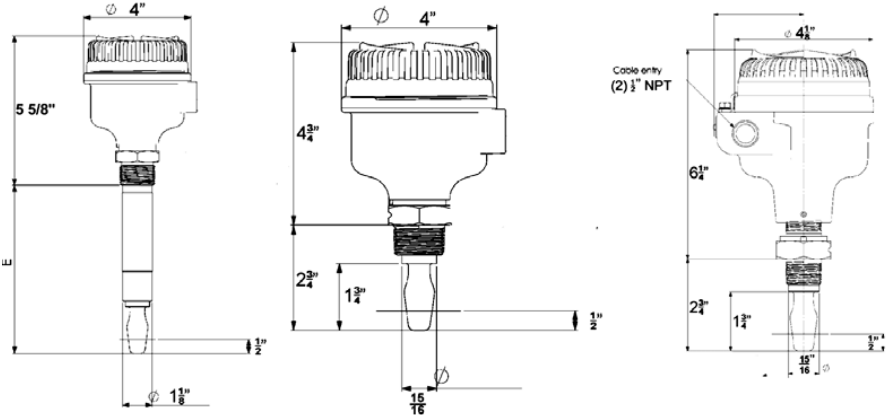
Intrinsically Safe (IS) 200 Series to ATEX EExia approval interfaces directly with standard NAMUR (DIN 19234, IEC 60947-5-6) isolation amplifiers.

Installation, Operation and Maintenance Instructions • Series 200 Vibrating Tuning Fork Liquid Level Switch

MOUNTING OPTIONS

Threaded mounting

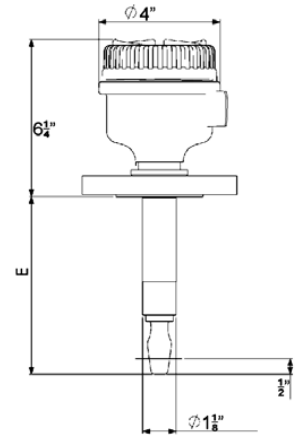
Standard threads 3/4", 1", NPT
 Max. op. press. 1480 psig (-40 to 122°F)
 derates to 1160 psig (AT 302°F)
 Max. op. temp. +302°F wetside
 Min. op. temp. -40°F wetside/dryside
 Max. amb. temp. +176°F (at 140°F wetside)
 Notes: Max. length E = 10 ft.
 Extended models with 3/4" and 1" threads
 3/4" min E = 3.74 In
 1" E = 3.70" In



Accessories: For use with extended length (1" models only), a stainless steel adjustable clamp gland is available. This is threaded 1 1/2" BSPP for connection to the vessel, and allows the extended length 200 Series to be raised or lowered then clamped in position. Note: this limits max, operating pressure to 18 psig (SK304)

Flange mounting

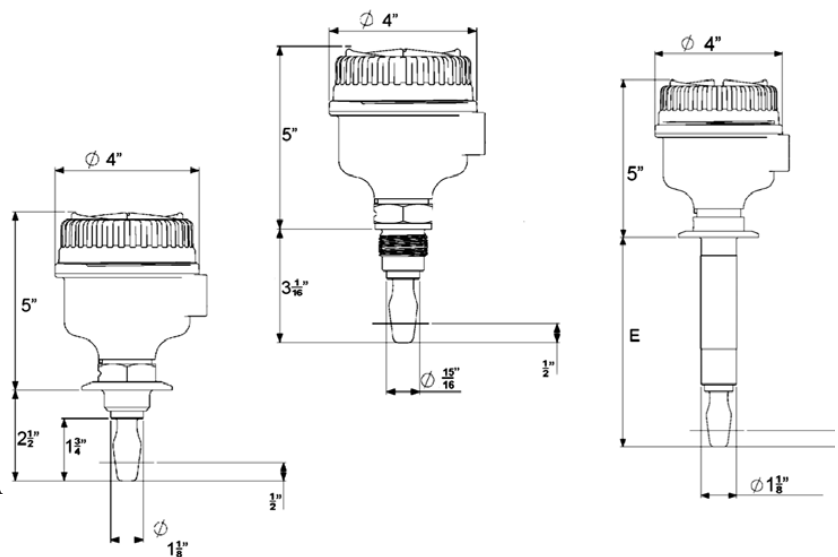
Standard flanges ANSI
 Max. op. press. (see ordering codes overleaf)
 1480 psig (-40 to + 122°F)
 1160 psig (at 302°F) or flange rating, whichever is lower
 Max. op. temp. +150°F wetside
 Min. op. temp. -40°C wetside/dryside
 Max. amb. temp. +176°F (at 140°F wetside)
 Notes: Max. length E = 10 ft.
 Min. E = 3.5 In.
 H = Standard flange length where E = 4.02 In.



Options: For use with corrosive liquids having condensing vapours, flanged Squing can be supplied with the wetside fully Halar/PFA co-polymer coated, maximum extended length E = 40".

Hygienic mounting

Standard fittings Tri-Clover
 SMS
 DIN 11581
 'O' Ring seal (1" BSPP)
 Max. op. press. 435 psig
 Max. op. temp. +302°F wetside
 Min. op. temp. -40°F wetside/dryside
 Max. amb. temp. +176°F (at 140°F wetside)
 Notes: Max. length E = 10 ft.
 Triclover min E = 4.13 In.
 Options: Hand polished wetside to a finish better than 0.8 µm meets the principle design criteria of 3A and EHEDG hygienic approvals
 Accessories: For use with 2" Tri-clover 200 Series, a mounting kit comprising vessel fitting, Nitrile seal and clamp ring is available (SK266)
 For use with 'O' ring seal, a fitting boss with Viton 'O' ring is available (SK267)



MODEL SELECTION GUIDE

CODE	CONNECTION	WETTED MATERIAL
J201TD	3/4" NPT	316L-SST
J205TD	1" NPT	316L-SST
J207TD	2" Triclover	316L-SST polished to 0.8 µm

CODE	ENCLOSURE TYPE
S	Standard NEMA 4X, Glass Filled Nylon
X	CL. 1, DIV. 1, GRP. A, B, C, & D, Cast Aluminum, Epoxy Coated

CODE	SWITCH OUTPUT
0	Direct Load Switching, 500 mA Max. Load
C	Intrinsically safe
R	Relay SPDT 24-260 VAC/24-60 VDC 5 AMP
T	PNP/PLC Low Voltage (3 Wire) 24-60 VDC
W	Step Change Output (2 Wire) 24 VDC

CODE	EXTENSION LENGTHS ONLY
E****	EXTEND TO ORDER, NOTE: 1250 = 12 1/2"

CODE	FLANGE MATERIAL
0	A105 Carbon Steel
5	316-SST

CODE	FLANGE SIZE AND CLASS
1	1 1/2" 150# RF
2	1 1/2" 300# RF
3	1 1/2" 600# RF
4	2" 150# RF
5	2" 300# RF
6	2" 600# RF
7	2 1/2" 150# RF
8	2 1/2" 300# RF
9	2 1/2" 600# RF

↓	↓	↓	↓	↓	↓
J205TD	S	R	E0600	5	4
TYPICAL MODEL NUMBER					

