

*process measurement solutions*



# Mobrey Squing 2

vibrating fork point level measurement

IP2024



## Squing 2 vibrating fork level switch



### Operation

The Squing 2 is a liquid point level switch designed using the principle of a tuning fork. The Squing 2 continuously monitors changes in its vibrating fork's natural resonant frequency. When the Squing 2 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" threaded (BSPT, BSPP, NPT) at standard or extended lengths to 3m
- ▶ Choice of international flanges and range of hygienic fittings
- ▶ Versatile switch outputs – Relay, Direct load switching, PLC/PNP
- ▶ ATEX hazardous area approval for explosion proof (EExd) and intrinsically safe (EExia) applications
- ▶ Halar/PFA coating for chemical resistance
- ▶ Continuous operating temperature up to 150°C and pressure up to 100 bar g
- ▶ No mechanical parts – maintenance free

### Special features

Squing 2 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 Squing 2 is 'off' and will be constantly lit when the Squing 2 is 'on'. The LED gives an indication that the Squing 2 is functioning correctly and of course gives a local visual indication of the state of the wet side.

A mode switch allows the Squing 2 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 Squing 2 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. Squing 2 also has the option of electronics to be interfaced directly to a PLC using the PNP transistor output model (three-wire).

Intrinsically Safe (IS) Squing 2 to ATEX EExia approval interfaces directly with standard NAMUR (DIN 19234, IEC 60947-5-6) isolation amplifiers.

### Short Fork Technology

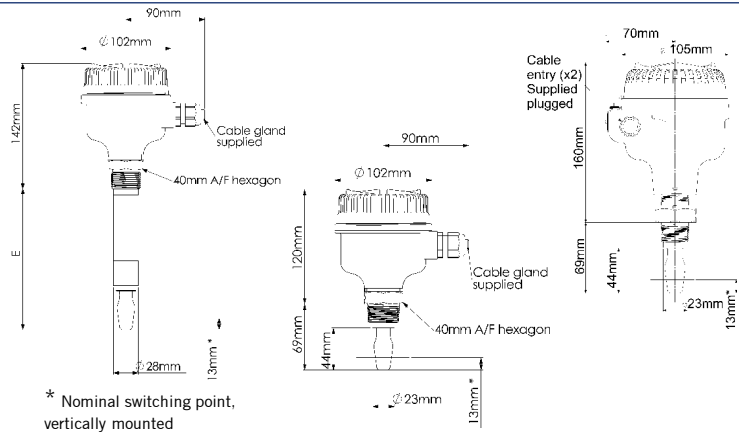
Using Short Fork Technology pioneered by Mobrey and many years of application experience, the Squing 2 is designed for use in virtually all applications. Extensive research has maximised the operational effectiveness of the fork design whilst all the time keeping in mind the practical consideration of a level switch that is suitable for most liquids, including coatings, aerated liquids, and slurries.

## Mounting options

### Threaded mounting

|                  |                                                     |
|------------------|-----------------------------------------------------|
| Standard threads | ¾", 1", BSPT, BSPP, NPT                             |
| Max. op. press.  | 100b (-40 to +50°C)<br>derates to<br>80b (at 150°C) |
| Max. op. temp.   | +150°C wetside                                      |
| Min. op. temp.   | -40°C wetside/dryside                               |
| Max. amb. temp.  | +80°C (at 60°C wetside)                             |

Notes: Max. length E = 3000mm.  
Extended models with ¾" and 1" threads  
¾" min E = 95mm 1" E = 94mm

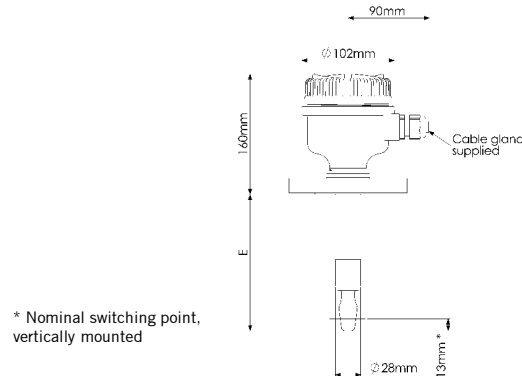


Accessories: For use with extended length Squing (1" models only), a stainless steel adjustable clamp gland is available. This is threaded 1½" BSPP for connection to the vessel, and allows the extended length Squing to be raised or lowered then clamped in position. Note: this limits max. operating pressure to 1.3bar (SK304)

### Flange mounting

|                  |                                                                                   |
|------------------|-----------------------------------------------------------------------------------|
| Standard flanges | ANSI, DIN, Mobrey<br>(see ordering codes overleaf)                                |
| Max. op. press.  | 100b (-40 to +50°C)<br>80b (at 150°C) or flange<br>rating, whichever is the lower |
| Max. op. temp.   | +150°C wetside                                                                    |
| Min. op. temp.   | -40°C wetside/dryside                                                             |
| Max. amb. temp.  | +80°C (at 60°C wetside)                                                           |

Notes: Max. length E = 3000mm.  
Min. E = 89mm  
H = Standard flange length where E = 102mm

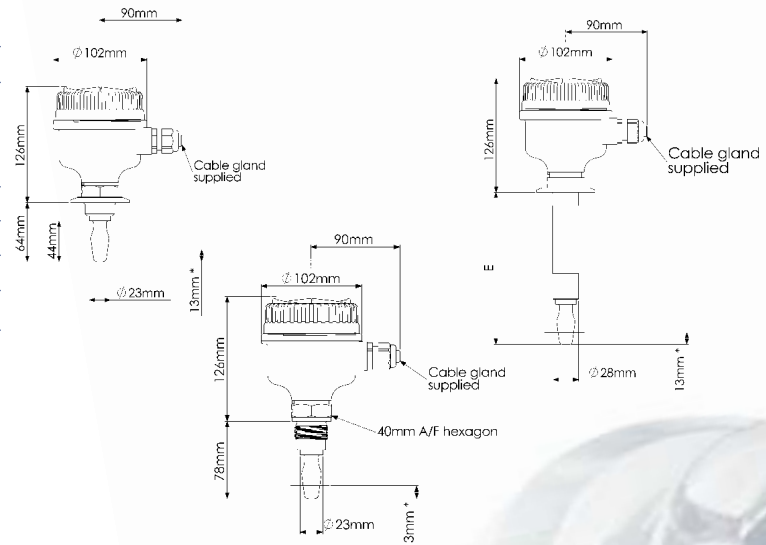


Options: For use with corrosive liquids having condensing vapours, flanged Squing can be supplied with the wetside fully Halar/PFA co-polymer coated. maximum extended length E = 1000mm.

### Hygienic fitting

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| Standard fittings | Tri-Clover<br>SMS<br>DIN 11581<br>'O' Ring seal (1" BSPP) |
| Max. op. press.   | 30 bar                                                    |
| Max. op. temp.    | +150°C wetside                                            |
| Min. op. temp.    | -40°C wetside/dryside                                     |
| Max. amb. temp.   | +80°C (at 60°C wetside)                                   |

Notes: Max. length E = 3000mm.  
Triclover min E = 105mm



Options: Hand polished wetside to a finish better than 0.8µm meets the principle design criteria of 3A and EHEDG hygienic approvals

Accessories: For use with 2"(51mm) Tri-clover Squing 2, a mounting kit comprising vessel fitting, Nitrile seal and clamp ring is available (SK266)  
For use with 'O' ring seal Squing, a fitting boss with Viton 'O' ring is available (SK267)

## Ordering information

| Code | Product                                                              |                         |   |   |   |   |   |       |                     |
|------|----------------------------------------------------------------------|-------------------------|---|---|---|---|---|-------|---------------------|
| T    | Squing 2                                                             |                         |   |   |   |   |   |       |                     |
| Code | Material                                                             |                         |   |   |   |   |   |       |                     |
| D    | 316L Stainless Steel (1.4404)                                        |                         |   |   |   |   |   |       |                     |
| E    | 316L Stainless St.3.1B Certs (1.4404)                                |                         |   |   |   |   |   |       |                     |
| F    | Halar/PFA, 316L St. Steel (1.4404)                                   |                         |   |   |   |   |   |       |                     |
| G    | Halar/PFA, 316L St. Steel 3.1B Certs. (1.4404)                       |                         |   |   |   |   |   |       |                     |
| Code | Size                                                                 |                         |   |   |   |   |   |       |                     |
| 1    | 1"                                                                   | 6 1.5", DN40, 38mm      |   |   |   |   |   |       |                     |
| 2    | 2", DN50, 51mm                                                       | 7 DN65                  |   |   |   |   |   |       |                     |
| 3    | 3", DN80,                                                            | 8 A Flange              |   |   |   |   |   |       |                     |
| 4    | 4", DN100                                                            | 9 G Flange              |   |   |   |   |   |       |                     |
| 5    | ¾"                                                                   |                         |   |   |   |   |   |       |                     |
| Code | Fitting                                                              |                         |   |   |   |   |   |       |                     |
| A    | BSPT (R)                                                             | N PN100                 |   |   |   |   |   |       |                     |
| B    | BSPP (G)                                                             | P BSPP Hygienic fitting |   |   |   |   |   |       |                     |
| D    | NPT                                                                  | Q Mobrey                |   |   |   |   |   |       |                     |
| G    | #150 RF                                                              | R Tri-Clover clamp      |   |   |   |   |   |       |                     |
| H    | #300 RF                                                              | S SMS hygienic fitting  |   |   |   |   |   |       |                     |
| J    | #600 RF                                                              | T Tuchenhagen           |   |   |   |   |   |       |                     |
| K    | PN10/16                                                              | V DIN 11851             |   |   |   |   |   |       |                     |
| L    | PN25/40                                                              | W Adjustable            |   |   |   |   |   |       |                     |
| M    | PN64                                                                 |                         |   |   |   |   |   |       |                     |
| Code | Electronic type                                                      |                         |   |   |   |   |   |       |                     |
| B    | PNP/PLC low voltage (3 wire) 24 to 60V dc                            |                         |   |   |   |   |   |       |                     |
| R    | Relay (SPCO)                                                         |                         |   |   |   |   |   |       |                     |
| S    | Direct load switching(Mains 2 wire)24 to 264Vac 50/60Hz, 24 to 60Vdc |                         |   |   |   |   |   |       |                     |
| C    | IS NAMUR (EExia)                                                     |                         |   |   |   |   |   |       |                     |
| Code | Surface finish                                                       |                         |   |   |   |   |   |       |                     |
| 1    | Standard                                                             |                         |   |   |   |   |   |       |                     |
| 2    | Hand polished (Ra <0.8µm)                                            |                         |   |   |   |   |   |       |                     |
| Code | Approvals                                                            |                         |   |   |   |   |   |       |                     |
| A    | ATEX (IS), FM (IS) (EExia)                                           |                         |   |   |   |   |   |       |                     |
| C    | CSA                                                                  |                         |   |   |   |   |   |       |                     |
| E    | ATEX (EExd)                                                          |                         |   |   |   |   |   |       |                     |
| F    | FM (EExd)                                                            |                         |   |   |   |   |   |       |                     |
| N    | Standard                                                             |                         |   |   |   |   |   |       |                     |
| Code | Enclosures                                                           |                         |   |   |   |   |   |       |                     |
| A    | Glass Nylon, M20                                                     |                         |   |   |   |   |   |       |                     |
| D    | Glass Nylon, ½"NPT                                                   |                         |   |   |   |   |   |       |                     |
| X    | Al, M20 (for EExd)                                                   |                         |   |   |   |   |   |       |                     |
| Y    | Al, ¾"NPT (for EExd)                                                 |                         |   |   |   |   |   |       |                     |
| Code | Length                                                               |                         |   |   |   |   |   |       |                     |
| A    | Standard length                                                      |                         |   |   |   |   |   |       |                     |
| H    | Standard length flange                                               |                         |   |   |   |   |   |       |                     |
| B    | Ext 150mm                                                            |                         |   |   |   |   |   |       |                     |
| C    | Ext 300mm                                                            |                         |   |   |   |   |   |       |                     |
| D    | Ext 500mm                                                            |                         |   |   |   |   |   |       |                     |
| E    | Ext customer defined                                                 |                         |   |   |   |   |   |       |                     |
| L    | Semi-ext                                                             |                         |   |   |   |   |   |       |                     |
| T    | D                                                                    | 1                       | A | S | 1 | N | A | E2000 | Typical part number |

Note: The existence of a part number does not imply the combination is available. Please consult factory for options.



## Applications



- ▶ Failsafe
- ▶ Manual test facility
- ▶ 'Heartbeat' LED

### Overfill protection

Spillage caused by overfilling can be hazardous to the environment and people, results in lost product and incurring costs of clean up operations.

Squiring 2 is a failsafe limit level switch with built-in highly visible 'heartbeat LED' to reassure you that it is always ready to detect and signal overfill at any time.

Provided as standard, the magnetic test point on the unit allows for simple on-site functional test providing re-assurance of operation without removing the unit from your tank.

- ▶ Time delay switching option
- ▶ Resistance to false switching
- ▶ Choice of electronic outputs



### Limit detection

Often batch processing tanks contain stirrers/agitators to ensure the mixing and product 'fluidity'. With the standard user selectable time delay from 0.3 to 30 seconds, there is no chance of false switching due to splashing caused by stirrers/agitators.

A choice from a range of different electronics provides the benefit of trouble-free integration into your existing system especially as existing wiring can be utilised.



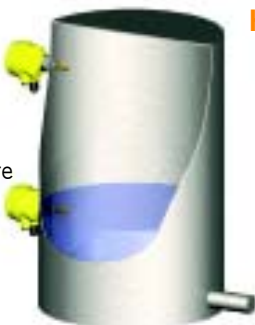
- ▶ Small forks
- ▶ Low cost
- ▶ Reliable
- ▶ IP66/67

### Pipe installation (pump protection)

Short forks for minimum intrusion wetside allows simple low cost installation at any angle into your pipes or vessels. With the fork's projecting in only 69mm, the Squiring 2 can be installed in small diameter pipes. By selecting the option of direct load switching electronics, Squiring 2 is ideal for reliable pump control and can be used to protect against pump dry running.

With a range of housings types rated IP66/67 the Squiring 2 can be installed in almost any environment.

- ▶ Range of process connections
- ▶ High temperature
- ▶ High pressure
- ▶ Plastic or Aluminium housing



### High and low level alarm

Maximum and minimum detection in tanks containing many types of liquid is measured using Squiring 2. The robust Squiring 2 operates continuously at temperatures up to 150°C and operating pressure to 100 bar g making it perfect for use as a high or low level alarm. Available with industry standard flanges to ANSI and BS standards from stock, or other international standards to order and with forks constructed in various materials such as stainless steel, Hastelloy C, or with ECTFE (halar)/PFA coatings.



- ▶ Hygienic surface finish
- ▶ Extended forks
- ▶ Install anywhere



### Hygienic applications

With the option of highly polished forks with a surface finish (Ra) better than 0.8µm, the Squiring 2 meets the principle design criteria of 3A and EHEDG for equipment used in the manufacture of hygienic applications like food, beverage, and pharmaceutical. Manufactured in Stainless Steel the Squiring 2 is robust enough to withstand steam cleaning (CIP) routines at temperatures up to 150°C.

Working in viscous liquids and liquids with high solids content, the Squiring 2 will ignore low/medium density foams and aeration.

## Specifications

### Construction

|                      |                                                                                                                                 |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Housing/Enclosure    | Al alloy ASTM B26 356-T6 (M20 or ¾" cable entry)<br>Nylon PA66 30% GF (M20 or ½" NPT cable entry)                               |
| Threaded connections | R ¾" and 1" (BSPT); G ¾" and 1" (BSPP); ¾" and 1" NPT                                                                           |
| Hygienic connections | TriClover, SMS, BSPP flush mount, Tuchenhausen, DIN 11851<br>Flanges to ANSI B16.5 (1.5" or larger) and BS4504 (DN40 or larger) |
| Extended lengths     | Available to max 3m.                                                                                                            |
| Coating              | Halar (ECTFE) / PFA co-polymer (1000mm max.).<br>Hand polished to better than 0.8µm in accordance with EHEDG and 3A             |

### Operating conditions

|                               |                                                                          |
|-------------------------------|--------------------------------------------------------------------------|
| Wetside temperature range     | -40°C to +150°C                                                          |
| Ambient temperature range     | -40°C to +80°C (derated to 50°C at 150°C wetside)                        |
| Wetside pressure range        | -0.25 bar g to +100 bar g at 50°C                                        |
| Liquid specific gravity range | 0.6 to 2.0                                                               |
| Liquid viscosity range        | 0.2 to 10,000 cps                                                        |
| Switching point (water)       | 13mm from tip (vertical) / from edge (horizontal) of fork                |
| Hysteresis (water)            | +/- 1mm nom.                                                             |
| Switching delay               | User selectable 0.3, 1, 3, 10, 30 seconds delay dry to wet / wet to dry. |

### Electrical connections

|                        |                                                                                                                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electrical connections | Direct load switching (two wire) 24 to 264V ac 50/60Hz, 24 to 60V dc<br>Solid state PNP output for direct interface to PLC's (three wire) 24 to 60V dc<br>SPCO single relay for voltage free contacts<br>Intrinsically Safe (IS) NAMUR to DIN 19234, IEC 60947-5-6 |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Approvals/certificates

|                  |                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------|
| E.M.C. Directive | EN61326 Emissions to Class B. Immunity to industrial location requirements                                |
| L.V. Directive   | EN61010-1 Pollution degree 2, Category II (264V max)<br>Pollution degree 2, Category III (150V max)       |
| Approvals/Certs  | ATEX II 1 G D, EExia IIC T5<br>ATEX II 1 G D, EExd IIC T5                                                 |
| Pending          | FM Explosion proof (XP), Intrinsically Safety (IS)<br>CSA Explosion proof (XP), Intrinsically Safety (IS) |

Solartron Mobrey will replace a faulty or failed Squing 2 with a new unit provided that the fault or failure is reported either directly or via an accredited Agent, within a period of 1 year from the date of supply, and the product has been installed and used in accordance with Solartron Mobrey instruction manual IP2025. Solartron Mobrey reserves the right to examine such product and to refuse replacement at its discretion if the above conditions are not met.

#### Solartron Mobrey Limited

158 Edinburgh Avenue Slough Berks UK SL1 4UE  
Tel: 01753 756600 Fax: 01753 823589  
e-mail: sales@solartron.com www.solartronmobrey.com



|                        |             |                     |
|------------------------|-------------|---------------------|
| Solartron Mobrey GmbH  | Deutschland | tel: 0211/99 808-0  |
| Solartron Mobrey Ltd   | China       | tel: 021 6353 5652  |
| Mobrey sp z o o        | Polska      | tel: 022 871 7865   |
| Solartron Mobrey AB    | Sverige     | tel: 08-725 01 00   |
| Mobrey SA              | France      | tel: 01.34.30.28.30 |
| Solartron Mobrey SA-NV | Belgium     | tel: 02/465 3879    |
| Solartron Mobrey       | USA         | tel: (281) 398 7890 |



The right is reserved to amend details given in this publication without notice