

### ATEX Information

Full-Circle products are in compliance with the ATEX Directive, 94/9/EC and comply with the EN 13463-1:2001 Standard, Non-Electrical Equipment for Potentially Explosive Atmospheres.

Full-Circle swivels are categorized for Group II, Category 3 gas environments. Full-Circle swivels are classed according to a maximum surface temperature of 85 C. This is class T6. This temperature should not be exceeded.

Information found on swivel:

03, 04, 05, etc.

CE

II 3 G T6

Serial number

Ambient temperature marking: -20 to +40 C.

Maximum allowable pressure: 25 bar

Maximum surface temperature: 85 C

Liquid swivel designed for

Year of manufacture; stamped in housing  
CE Marking

Marking for Group II, Category 3, Gas,  
T6=surface temp. not to exceed 85C.

Stamped on swivel main housing

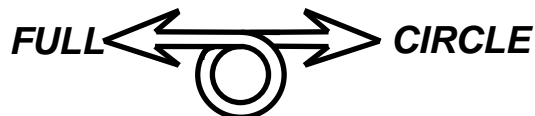
Found on swivel label(s)

Found on swivel label(s)

Found on swivel label(s) coded as T6

Found on swivel label(s)

LPG or LP-GAS is defined as Propane, Butane, and related hydrocarbons



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## Risk Assessment

This Risk Assessment covers the following swivel connectors: **JO-series, SMAC-series**. By definition, “series” is any model number using the aforementioned prefix.

Safe Operating Limits: Swivels for LP-GAS transfer

Maximum allowable pressure: 25 Bar

Production test pressure: 36 Bar

Maximum hydrostatic design pressure: 136 Bar

Design minimum temperature: -40 degrees C.

Design maximum temperature: +40 degrees C.

In keeping with the Safe Operating Limits as stated above, it is understood that this risk assessment assumes the above swivels will be installed and operated as recommended in the Operation Manual accompanying the swivel.

**Hydrostatic Event:** We recommend and code practice dictates the use of hydrostatic relief valves between any shut-off valves or other appurtenances where liquid can be trapped. Such hydrostatic relief valves must be set so that maximum pump differential pressure can be attained (normally, the maximum pump differential pressure is 8.5 bar above tank pressure) without the hydrostatic relief valves discharging to atmosphere. In the event hydrostatic relief valves are not used and liquid is trapped either in the swivel or in the pipe work attached to the swivel, a hydrostatic event may occur and the pressure could rise in excess of the maximum hydrostatic design pressure. In this case, leakage may emanate from the swivel or the swivel may explode.

**Seal Leakage:** The above swivels contain a mechanical seal. This is a mechanical device and leakage will occur when one or more of the seal faces exceed their useful life. Periodic checks should be conducted to determine if leakage is emanating from the mechanical seal. Debris in the liquid being transferred through the swivel may cause mechanical seal failure. Likewise, water or water vapor that is entrained in the swivel may cause mechanical seal corrosion that may cause seal leakage. Seal leakage can cause freeze burns, fire, or explosion.

**Excessive Loading:** A force on the rotating or stationary portion of the swivel in excess of 450 kg., may cause the mechanical seal to leak. Avoid overload conditions. For hose-end type swivels, do not use the swivel as a lever-arm to remove the filler gun from tank connections. In certain circumstances, an overload condition may exist, in this case, which could damage the mechanical seal. Do not use a smaller tank as a lever-arm to remove the filler gun. An over-load condition may exist, in this case, when a hose-end swivel is used. Seal leakage may result.

**Visual Examination:** Vehicle drivers or other responsible entity should make a hose-end swivel inspection as a part of the hose inspection procedure. Noted damage to the hose-end swivel housing or signs of either hose-end swivel retaining ring damage or signs that the retaining ring has been dislodged, should be noted, and the swivel taken out of service. Hose-end swivels should not be dragged along the ground as mechanical seal and retaining ring damage may result in premature product discharge.

**Product Discharge:** If product is discharging from the above named swivels, the swivel must be taken out of service. Do not come in contact with liquid or vapor that is discharging from a swivel because the temperature of the discharge may be quite low. Freeze burns may result.

**Cold Temperature:** Some liquids are transferred at low temperatures. Touching the swivel with bare hands is not recommended.