| SPIRE | Laboratoire d'Astrophysique de Marseille<br>ENGINEERING CHANGE REQUEST | Ref: LAM.QUA.SPI.ECR.200102<br>Date: 12 July 2001 |
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| **PROJECT**: HERSCHEL SPIRE<br>**SYSTEM**: SMEC and BSM Harness | **Engineering Change Request Number: 2** |
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| **Title of change:** Current and resistance for launch latch(es) harness | |
| **Affected Items/Workpackages:** | MCU/SMECm interface<br>MCU/BSMm interface<br>SPIRE harness |
| **Classification:** | Urgent |
| **Documents affected:** SPIRE harness definition : ref SPIRE-RAL-PRJ-000608 issue 0.3 | |

**Description of Change:**

The control of the launch latch solenoid shall be based on a **DC pulse mode** instead of a on a stall current mode.

The new specification for the launch latch(es) drive 1 and drive 2 (SMECm and BSMm) is:

- current of **400mA during 50 ms**
- harness resistance **5 Ohm (FSPU to CVV 80k feedthrough)+5 Ohm (CVV to 300K)**

| **Related factor:** | Electrical interface |
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**Need/Justification:**

The control of the launch latch solenoid is based on a **DC pulse mode** and not on a stall current mode.

This allows to develop a much greater force to unlock the mecanism during only the needed time.

Note that due to the pulse very small duration, the impact on the wire diameter should ne null or minimal.

Up to now, we have foreseen to re-design an 'off the shelf' latch solenoid and to re-make the winding with a much higher efficiency (ie a great number of ampere-turns). In this configuration, the command of the latch was a limited stall current of 35 mA with a great number of solenoid coil turns to get the request force of 3N to unstick the plunger from the holding magnet.

Indeed, the goal is to stick/unstick the plunger on the magnet on short duration. This way of commanding is more adequate but need a higher current level for a short time.

| **Distribution:** | SPIRE Project Office | | |
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| **Attachments:** | None | | |
| **Originator** | **Name:** D.Ferrand | **SIGNATURE:** D.Ferrand | **DATE:** 12 July 01 |
| **CHANGE APPROVED** | **Name:** | **SIGNATURE:** | **DATE:** |
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