

## Changes to Flex PLI GTR Since Prototype Build

GTR9-1-10

Complied by M Burleigh

|  |  |
|--|--|
|  | No affect from date on calibration       |
|  | Possible affect from date on calibration |
|  | Likely affect from date on calibration   |

| Change Description  | Date of implementation in production | Affect pendulum corridors | Affect on prototypes used for corridor | Comments   |
|---|--------------------------------------|---------------------------|--|--|
| New bone material, more durable this is a little darker than original   | Jan 09                               |                           |  | SN01, <del>02</del> and 03 had old bone matl updated in Nov 09, <del>Jan 10</del> and Sept 09 respectively |
| The groove in the bone clamp that allows space for the bone PCB has been made deeper to accommodate its higher profile  | Mar_09                               |                           |  |  |
| Rubber flesh has been extended 146 mm to protect lowest gage area on tibia. This has increased the weight by approximately 150 grams  | May_09                               |                           |  |  |
| 6 pieces of Velcro are now used to attach the rubber flesh (was 5) due to the extension of the rubber. Alignment marks have been changed to suit.   | May_09                               |                           |  |  |
| String potentiometers are now separated into individual units for better servcability. All pull wires are now 61.5 mm long (PCL and ACL were 65)  | Aug_09                               |                           |  |  |
| Radii has been added to knee blocks to help reduce cable damage   | Aug_09                               |                           |  |  |
| The two connector blocks have been removed to allow sensors to plug directly to DAS. This has also made space to accommodate more onboard channels  | Aug 09                               |                           |  |  |
| The rectangular Nano D connectors have been removed. All connectors are now minature Omnetic round connectors with locking latch. These are either 7 pin for single channel and 16 pin for 3 channel. 12 pin connectors are used for system connections | Aug 09                               |                           |  |  |
| Special setting tool blocks have been added to the tool box for setting the string pots, spare double sided tape has also been added.   | Aug_09                               |                           |  |  |
| The PCBs fitted to the leg bones are now protected with shrink wrap not potted. Gage wires replaced with ribbon cable to provide improved durability  | Aug_09                               |                           |  |  |
| Outer flesh skin cover has been made 15 mm wider to ease fitting. The off board wire holes have been removed and replaced with marks should they require cutting  | Aug_09                               |                           |  |  |
| A new optional sensor bracket has been designed for the top of the femur and bottom of the tibia for 3 single axis Kyowa accelerometers. There is also an option to fit 2 Kyowa accelerometers in upper and lower knee with 3x ARS sensors              | Oct_09                               |                           |  |  |
| LCL and MCL string pot bushes made 1mm longer to prevent movement should they come loose from press fit. Corresponding groove in tibia block was made 3 mm deep from 2 to accommodate pull wire clearance   | May_09                               |                           |  |  |
| Both knee blocks now have thread fixings for 24 channel onboard DAS for SLICE and M=BUS systems   | Nov_09                               |                           |  |  |
| SLICE onboard DAS has been redesigned to incorporate only one BASE SLICE for 12 channels. A bridging PCB links the bridge slices together   | Nov_09                               |                           |  |  |
| The Super capacity that powers the SLICE system after firing is now positioned on the outside of the knee for better access. It has also been uprated to provide power for longer during the test   | Nov_09                               |                           |  |  |

2 of the 4 knee side covers now have small holes in them to clear the SLICE stack screws if installed.  
 SLICE M2.5 mounting holes have been updated to M3 to prevent movement of unit, Helicoils for onboard DAS have been removed  
 Tighten tolerance on impact segment location holes for more accurate location was dia 10.7 now 10.5  
 Bond end of bone buffer in end segment (tibia and femur). To prevent loss and ensure central position  
 2x M8 tapped hole/s made in top femur fitting for easier/quicker pedulum 5 kg ballast weight attachment  
 Metal reinforcement collar to moulded protective end cap holes to prevent crushing of plastic part  
 Optional ARS sensor for M=BUS voltage accomodated in the upper and lower knee as an optional sensor  
 The pendulum certification test is now done without the stopper block, the leg now has the full flesh system fitted. Type 3 pendulum test  
 Bone gage glue was changed and surface preperation was improved  
 Change procedure gage calibration from 325Nm to 400 Nm (incl increased stroke of roller carriages)  
  
 Change procedure tibia and femur assembly calibration from 325Nm to 400 Nm (incl increased stroke of roller carriages)  
  
 Stopper cable setting tool increased from 9 to 10.3 for tibia and from 8 to 9.1 for femur to allow for higher (400 Nm) loading  
 Added 0.1 and 0.2 thick shims to tighten segments to reduce number of 0.05 shims on build  
 Optional Catch rope attachments incorporated top and bottom of leg  
 Raw femur and tibia bones made 10.9 thick (was 10.5) to allow grinding down to ensure GTR force deflection corridor and ensure good finish for gages

|         |  |     |
|---------|--|-----|
| Nov_09  |  |     |
| Dec_09  |  |     |
| Dec_09  |  |     |
| Feb_10  |  |     |
| Feb_10  |  | N/A |
| Mrz_10  |  |     |
| Apr_10  |  |     |
| Apr_10  |  |     |
| May_10  |  |     |
| June_10 |  |     |
| June_10 |  |     |
| Aug_10  |  |     |

Only around 1% for pendulum