

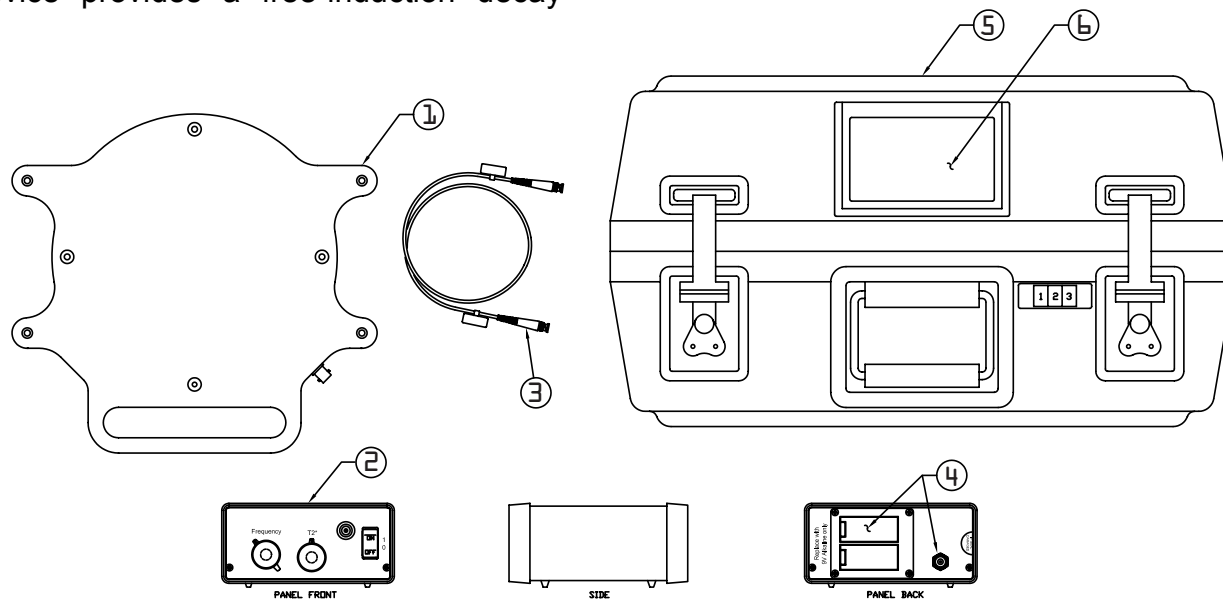
## 2938 Spin Transfer Standard

The Polarean Spin Transfer Standard (STS) is a patented technology that enables rapid, and precise re-calibration of Polarean 2881 polarization measurement stations at the customer site. The STS is designed to simulate a dose of  $^3\text{He}$  or  $^{129}\text{Xe}$  exhibiting a well defined, and permanent polarization level. The device is placed on the polarization measurement station and interrogated as though it were a sample of hyperpolarized  $^3\text{He}$  or  $^{129}\text{Xe}$ . When an acquisition pulse is initiated, the device provides a free-induction decay

signal that can be used to verify or adjust to the measurement station calibration factors for both  $^3\text{He}$  and  $^{129}\text{Xe}$ .

### Traceability

Each STS device is calibrated at the Polarean facility, every 6 months on a system that is fully traceable to a precision, thermally polarized  $^1\text{H}_2\text{O}$  reference standard. By transferring this calibration to the STS, it now allows measurement stations around the world to be recalibrated by shipping this device to customer sites. This avoids a field service call or shipping the much larger measurement station back to Polarean.



### Terms of Use

- Re-calibration using the STS device is included with the Polarean annual preventive maintenance plan.
- Customers not currently under a Polarean maintenance contract may rent the STS for a one (1)-week period to recalibrate their system.

### System Components

1. Precision-wound, tuned receive/emit coil in casing

2. Tuning device to dial in exact resonance frequency and  $T_2^*$  behavior
3. BNC cable for connecting the precision wound cable to the tuning box
4. DC power supply or 2x9V batteries
5. Shipping case
6. Calibration certificate with full traceability to thermal  $\text{H}_2\text{O}$  Calibration
7. Precision mounting posts for reproducible positioning (not shown)
8. Standard Operating Procedure for conducting the calibration



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### Accuracy and Repeatability

<sup>3</sup> He Polarization Repeatability (1%<P<100%)	±1% rel.
<sup>129</sup> Xe Polarization Repeatability (3%<P<100%)	±2% rel.
<sup>3</sup> He Polarization Accuracy (1%<P<100%)	±3% rel.
<sup>129</sup> Xe Polarization Accuracy (3%<P<100%)	±5% rel.

### Physical Properties

- Coil 12" × 11.5" × 1"
- Tuning Box 6" × 6" × 3"
- Carrying case 24" × 20" × 12"
- Shipping weight: 20 lbs.