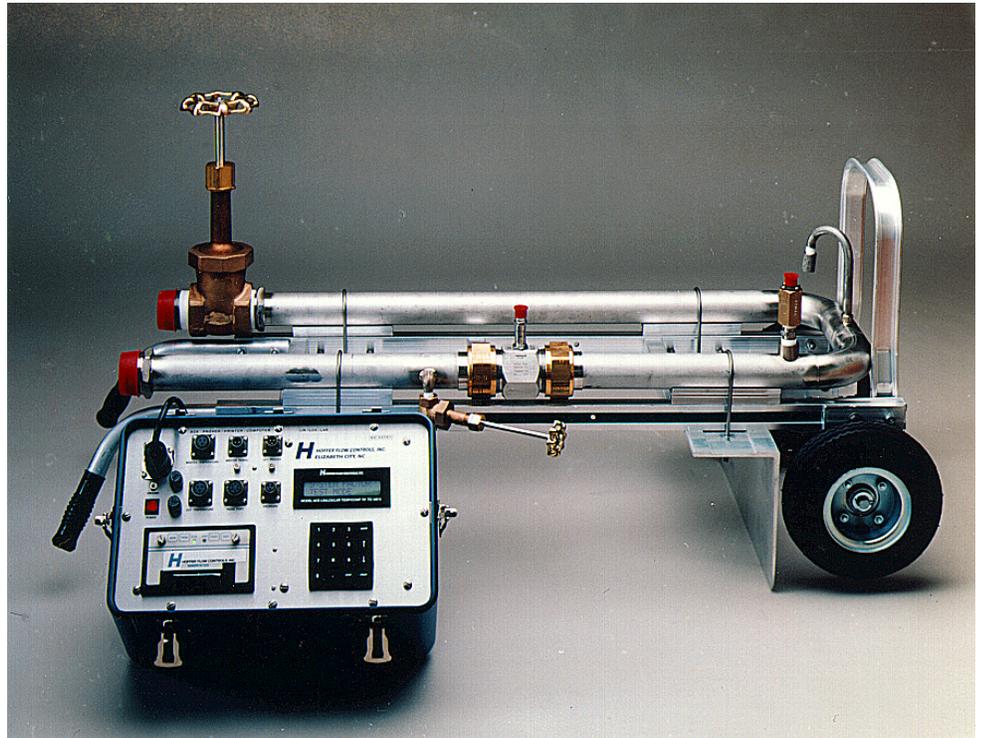


## TECHNICAL DATA SHEET

### CRYOGENIC TRANSFER STANDARD FOR FIELD CALIBRATIONS OF BULK TRANSPORT SYSTEMS

The dream of a quick, simple, and reliable field calibration system for cryogenic flowmetering systems has become a reality with the introduction of the Hoffer SY-14B Cryogenic Transfer Standard. When suitably documented by a NIST traceable laboratory, the system offers users a high accuracy standard of comparison to allow adjustment of bulk transport mounted systems. Maintaining accuracy to the requirements of Handbook 44/OIML was never so easy.

Historically, the accuracy of flowmetering systems for bulk transports has been verified by comparing the metered delivery with the net weight delivered on a certified truck scale. To eliminate road loss errors, the bulk transport had to pump, while on a weigh scale, into a second empty transport off the weigh scale. The low precision resulting from scale inaccuracy and resolution necessitated very large sample sizes and lack of control in pumping rates. In addition, the weight measurements could not be made while pumping. This resulted in a time-consuming process where the pump was started and stopped repeatedly and which tied up the two trailers and the weigh scale for typically four hours per calibration check. In addition, when finished, both trailers had to be filled before going to their next delivery. With the Hoffer SY-14B Cryogenic Transfer Standard these problems are eliminated. First, only the trailer to



be tested need be present in most cases. The discharge from the trailer is pumped from the transport to the SY-14B and back through the top fill connection to the trailer.

The system includes a transfer standard turbine flowmeter and a metering run mounted on a hand truck and an electronics console for portability. The electronic portion of the prover is provided in a small portable electronics enclosure with military style quick disconnect electrical fittings. Instantaneous indication of the flowrate and flowing temperature is provided as well as a total flow indicator, and an accumulative test total indicator. Temperature compensation for LIN, LOX and LAR, and other product types are provided to allow the total display to be in mass or volumetric units.

A prover cable interconnects the transfer standard to the trailer's meter system. A prover switch on the SY-14B simultaneously starts and stops both systems electronically. The integrally mounted control valve allows the operator to simulate the typical flowrates and delivery pressures to be seen in actual service. You do not have to shut the pump down between test runs.

For additional information and representative test procedures on how you can reduce calibration costs while exceeding legal metrology requirements, contact our applications group. Hoffer offers on site liquid cryogenic calibration service, certified traceable to NIST on any cryogenic metering system, inquire for additional information.

## Meter Run Specifications

Calibration Traceability	All systems are provided with a water calibration at no extra charge. Traceability through Hoffer's Cryogenic Field Standards or directly from NIST are available at competitive pricing.
Meter Run	Includes upstream and downstream meter runs and pressure and temperature taps. Standard sizes are 1-1/2" and 2". Stainless steel construction; standard. End fittings per user specification.
Standard Flow Ranges	1 1/2" 8 to 130 GPM 2" 15 to 225 GPM
Service Fluid	Electronic packages are available for LIN/LOX/LAR, CO <sub>2</sub> , Hydrogen, LPG and LNG. Consult factory for others.
Flowmeter Compatibility	Compatible with magnetic pickup coils.
Pressure Rating	300 PSI
Oxygen Compatibility	Cleaning for oxygen service is provided at no charge.
Overrange Compatibility	Gas spinning for 6 months at 300% of liquid design velocity without damage.
Temperature Probe	Two/four wire RTD, 1000/2500 ohm at 0° C, 0.003902 ohm/ohm degree C.
Pressure Transmitter	1- 5 VDC or 4 - 20 mA proportional to 0 to 300 PSIG (Optional)

## Electronics Console Specifications

Compensation Limits	Varies depending on fluid.
Controls (User)	16 key keypad, power pilot light, sensitivity adjustment, fuse.
Display Type	32 Character Alphanumeric, Backlit LCD Display. Display provides indication of flow rate, temperature, test total and pressure, etc.
Enclosure	Portable Instrument Case, Environmental Cable Connectors, Internal Heaters
Environmental	Operating: 0° to +120° F; Storage: -20° to +120° F
Flow Input	Magnetic Pickup Compatible
Operating Modes	Volumetric; Temperature, or Temperature/Pressure; Compensated Prover Total
Power Requirements	115/220 VAC 60/50 Hz, 1 amp fuse
Printer Capability	Provides printed results of calibration data. May be customized on special factory orders.
Serial Port	RS232 electrical specifications; for use with printer.
Scaling and Setup	All setup of the instrument is performed through the front panel in a special mode requiring operator password entry for access. Setup data retained in EEPROM.
Special Features	Five point linearization of master; Two Phase Flow Operating Warning; Low and high flow warning. US units, standard; Metric Units, optional.
Time and Date Clock	Standard
Accessory items	Cable Sets