

**Tour & Andersson
CBI^{II} Balancing Instrument**

GENERAL INFORMATION

CBI^{II} is a computer programmed balancing instrument. It consists of an electronic differential pressure gauge and a micro computer which has been programmed with the TA valve characteristics which makes possible a direct read-

ing of flow and differential pressures.

The CBI^{II} instrument has two main components:

- An instrument which contains a micro computer,

input touch pad, LCD display and re-chargeable NiMh batteries.

- A sensor unit which contains a piezo-resistive pressure sensor, one measurement valve and connections. The

measurement valve has a safety function which protects the sensor from too high differential pressures.

TECHNICAL DESCRIPTION

MEASUREMENT RANGE

Maximum Pressure: 362.5 PSI (2500 kPa).

Differential Pressure: -1.3 to 29 PSI (-9 to 200 kPa).

Flow: During flow measurements the pressure range is -1.3 to 29 PSI (-9 to 200 kPa).

Temperature: -4°F to +248°F (-20°C to +120°C).

MEASUREMENT DEVIATION

Differential Pressure: .03 PSI (0.2 kPa) or 1% of reading, whichever is the highest.

Flow: As for differential pressure + valve deviation.

Temperature: <+32.4°F (<+0.2°C) + sensors' deviation.

Typical Operating Time: 8 h between charges depending upon application.

AMBIENT TEMPERATURE FOR THE INSTRUMENT

+32°F to +104°F 0°C to +40°C	During operation
-4°F to +140°F -20°C to +60°C	Storage*
+41°F to +104°F +5 to +40°C	Charging

*Do not leave water in the sensor when there is a risk of freezing.

CBI^{II} OPERATING FUNCTIONS

Differential Pressure

Measurement: Sensor for high total pressures and low differential pressures gives quick results and reliable readings.

Temperature Measurement: A Pt 1000 temperature sensor which allows measurement direct in the media is included.

Automatic Calibration: When the sensor is connected and the

instrument switched on, the sensor is automatically calibrated before each measurement sequence.

Automatic Venting: The design of the sensor unit and a short flow-through during calibration eliminate measurement errors caused by insufficient venting of air.

Balancing: The instrument is programmed to calculate pre-setting values for balancing by using the TA Method, TA Balance and Computer Method.

PC Communication: The measured values can be saved in the CBI^{II} instrument and then transferred to a PC for printout as a commissioning report. It is

also possible to prepare the measurements by describing the system in the PC and then download the data to the CBI^{II} Instrument. A PC program is included for this purpose.

CORRECTION FACTORS

Media Correction: CBI^{II} can calculate flows with different contents of glycol or similar anti-freeze additives in the water.

Troubleshooting: CBI^{II} can log differential pressures, flows or temperatures: up to 24,000 measured values can be logged.

With appropriate choice of logging interval, this means that periods from 20 hours to 65 days can be covered.

BALANCING

See the following manuals for descriptions of adjustment methods for various types of systems:

Manual No. 1: Balancing control circuits

Manual No. 2: Balancing distribution systems

Manual No. 3: Balancing radiator system

Manual No. 4: Stabilizing differential pressure

Total hydronic balancing

TA Balance

This method involves balancing the circuits (the modules) separately. Measure each valve at

two settings: the prescribed position, and closed. When all the valves in the module have

been measured, the CBI^{II} calculates the correct settings for the valves within the module.

TA Method

The TA Method is used to calculate the position of a valve, corresponding to a given flow and

differential pressure. The combination of desired flow and pressure differential must result in a

Cv value that the valve chosen can produce.

Computer Method

The Computer Method is used to help adjust the valve to a specific flow. This method is based upon measuring the valve at two

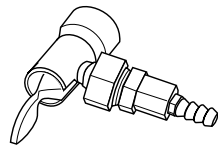
different handwheel positions. One is at least 50% open and the other is closed. From these two measurements the CBI^{II} Instru-

ment calculates the handwheel position that will give the desired flow.

ACCESSORIES

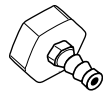
Measuring Nipples

Universal



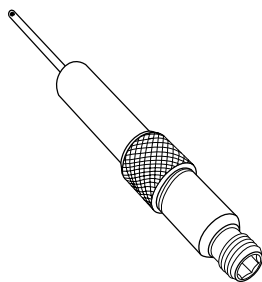
Thread Connections

1/2" and 3/4"



STAD, STADA, STA-DR, STAF, STAF-SG, STAF-R Extension 2.36" (60 mm)

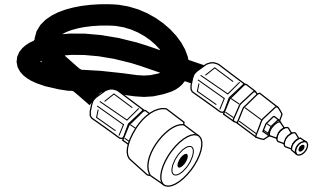
Can be installed without draining the system.



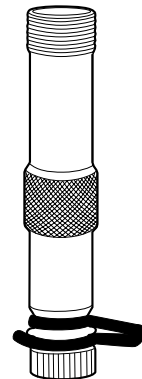
Allen Key



Measuring Hose Extension



Measurement Point



Key for Measurement Point

