# CDI 5450

**HOT-TAP FLOWMETER FOR COMPRESSED-AIR SYSTEMS - Rev. 3**

- **No system shutdown required**
- **Installs in minutes**
- **Weather resistant and surge protected**
- **Milliamp output**
- **Pulse output convertible to threshold output**
- **User-configurable scaling, filtering and units of measure**
- **Optional wired or wireless output for networking**
- **Housing rotates to suit vertical or horizontal installation**


The CDI 5450 is a modified version of the 5400 model that allows installation under pressure. It incorporates two valves through which the probes pass and a muffler that collects chips from the drilling process. It takes an equal amount of installation time as our standard meters and requires no shutdown of the compressed-air system.

Like all of our 5000-series meters, it measures flow by maintaining one probe warmer than the other. It determines the mass flow rate from the amount of heat required. The flow rate, in scfm or equivalent units, is shown on a large, four-digit display; a 4-20 mA output and a pulse output permit remote display, totalizing and data collection.

| AVAILABLE SIZES | | | |
|---|---|---|---|
| Nominal Size | Range [a] (scfm) | Model No. for Sch 40 Steel | Model No. for Type L Copper |
| 2 in. | 600 | 5450-20S | 5450-20C |
| 2 ½ in. | 800 | 5450-25S | 5450-25C |
| 3 in. | 1200 | 5450-30S | 5450-30C[a] |
| 4 in. | 2000 | 5450-40S | 5450-40C |
| 6 in. | 5000 | 5450-60S | 5450-60C[a] |
| 8 in. | 6000 | 5450-80S | - |

(a) Range of milliamp output and recommended maximum flow. Flowmeters for copper pipe have smaller ranges. Meters will function at somewhat higher flow rates but at reduced accuracy.

## SPECIFICATIONS

**Accuracy:**
5 percent of reading plus 1 percent of range for flows from 10 percent to 100 percent of indicated range at air temperatures between 20 and 120 degrees Fahrenheit

**Fluids:**
Compressed air and Nitrogen

**Operating pressure:**
130 psig maximum on Sch. 40 steel; consult CDI for other materials and higher pressures.

**Input power:**
250 mA at 24 Vdc

**Output resistance:**
600 Ohms max.

**Materials exposed to measured fluid:**
Stainless steel, gold, thermal epoxy, Teflon, Aluminum and Viton

**Ring material:**
Aluminum

**Display:**
Four-digit LED display

**Response time:**
One second to 63 percent of change in value at flows above 30 percent of range

*US Patent 6,802,217.*

## APPLICATION

The meter is designed for use with compressed air and Nitrogen, and must be installed on a pressurized pipe to ensure chips are cleared. The air must be free of oil, dirt that could foul the probes, and suspended water droplets. In a compressed-air application, the meter should be installed downstream of a dryer. Each meter is calibrated for a specific size and type of pipe. If a meter will be used in a type or size of pipe that is not listed, consult CDI about a special calibration.

The meter is not to be used in safety or life-support applications. It should not be used as a sole means of determining required capacity of air compressors and related equipment. The meter must not be used in hazardous locations.

## INSTALLATION

Drilling the holes to install the meter may release some metal shavings into the pipe. When planning the installation, make sure that all downstream equipment is protected by filters, or take other precautions to ensure that shavings do not reach critical equipment or get blown out in a way that could cause injury.

For best accuracy, the meter should be installed with at least 20 diameters of straight pipe upstream and three diameters downstream. Avoid installing the meter downstream of any item that could distort or concentrate the flow, such as a partially-closed valve, a regulator, a filter or moisture separator, two closely-spaced elbows in different planes, a long-radius elbow or a curved hose. Allow at least 30 diameters of straight pipe between any such item and the meter. If a valve or other restriction will be immediately downstream of the meter, provide at least five diameters downstream. Select a location that meets these requirements and also provides good visibility from the plant floor. If this is not possible, consider using the remote display discussed below.

Depending on the pipe position and flow direction, the display may need to be adjusted. The display and cover can be removed and rotated 180 degrees relative to the meter housing, and the meter housing can be rotated 90 degrees relative to the ring, using screws under the housing.

The following provides a brief outline of how the 5450 flowmeter works. It is not meant as a replacement for the *5450 Installation and Operation Instructions*, which is provided with each meter and must be read and understood prior to installing the meter.

The installation process consists of clamping the base assembly in place, drilling holes through two valves in the base plate using the drill guide and filter assembly, adding the seal plate, snapping the meter assembly into place and finally securing it with two safety screws. It takes about as long as installing one of our 5400 meters and does not require a system shutdown. Because of the potential for inadvertently opening one of the valves at the wrong moment, face protection must be worn.

## MILLIAMP AND PULSE OUTPUTS

The meter has an isolated, unpowered, milliamp output. The meter is shipped with a jumper in place to power the output from the instrument's dc supply. With the jumper in place, the meter will source a dc signal. The pulse output is an open collector, referenced to the instrument ground. For applications in which a contact-closure output is required, the isolated pulse output (CDI 5200-IPO) should be used. It installs inside the meter. The pulse output can be made into a threshold output by using the optional configuration cable.

## DISPLAY CONTROL AND CONFIGURATION

The display can be cycled through rate, daily usage and cumulative usage using a button indicated by a circle on the front of the meter. The same button can be used to select a default display option, reset totals and select units of measure. Please refer to the configuration instructions enclosed with the meter.

## METER CONFIGURATION

Several parameters of the meter's configuration can be changed by the user using an optional configuration cable and software available from CDI. These parameters include milliamp scaling, pulse scaling, conversion from pulse output to threshold output, filtering (smoothing) of the output, pipe inside diameter, and pressure compensation for high-pressure applications. For most applications, none of these parameters need to be changed.

## POWER SUPPLY

Each meter is furnished with a wall-plug dc supply for 110 V to 230 Volt AC main with a 6-foot (1.5 M) cable plus a 14-foot (4.2 M) extension cable. Prongs for Australian, European, UK and US outlets are provided, as appropriate. The meter may alternatively be hard wired to a 24-Volt dc supply. Eighteen-Volt supplies furnished with some earlier CDI flowmeters must not be used.

## DRILL GUIDE

The hot tap drill guide (5450-DG) is supplied with each meter and is the same for each size. Upon request, drill guides can be omitted for customers who already have one.

## LIMITED WARRANTY

CDI warrants solely to the buyer that the Model 5450 Flowmeter shall be free from defects in materials and workmanship, when given normal, proper and intended usage, for three years from the date of purchase. During the warranty period, CDI will repair or replace (at its option) any defective product at no cost to the buyer. The foregoing warranty is in lieu of any other warranty, express or implied, written or oral (including any warranty of merchantability or fitness for a particular purpose). CDI's liability arising out of the manufacture, sale or supplying of the flowmeter, whether based on warranty, contract, tort or otherwise, shall not exceed the actual purchase price paid by the buyer, and in no event shall CDI be liable to anyone for special, incidental or consequential damages.