

SECTION 23 05 93

Testing, Adjusting, and Balancing for HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Valves shall be IMI Flow Designs' field-adjustable automatic flow limiter Model ACA or Model ACRA.
- B. Furnish field-adjustable automatic flow limiter with specifications as indicated in the plans.

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1.02 RELATED SECTIONS

- A. Section 23 08 00 – Commissioning of HVAC

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1.03 REFERENCES

- A. ANSI - American National Standards Institute.
- B. ISO - International Standards Organization.

1.04 SUBMITTALS

- A. Submit data sheet.
- B. Dimensional information
- C. Installation, operation & maintenance manual.

1.05 QUALITY ASSURANCE

- A. The Valve manufacturer shall have current ISO 9001 certification.

1.06 MAINTENANCE MATERIAL SUBMITTALS

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with these specifications, the following manufacturers shall be acceptable:
 - 1. Field-adjustable automatic flow limiter
 - a. IMI Flow Designs' field-adjustable automatic flow limiter Model ACA or Model ACRA
 - b. Pre-approved equal

2.02 COMPONENTS

A. Design

- 1. All automatic flow control devices shall be supplied by a single source. The system shall be fully engineered by the fitting supplier.
- 2. The manufacturer shall furnish the valve factory set to the required flow rate.
- 3. The regulation accuracy of the valve shall be +/-5% over 95% of the control valve range.
- 4. The valve shall include field adjustable and lockable knob with the actual gpm values engraved on the handle for quick setting without any special tools.
- 5. The valve shall have shut off capability.

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6. The valve shall contain only static seals for longevity.
7. The valve shall not contain any diaphragm or passageways that could result in possible clogging and failure.
8. The flow cartridge shall be removable from the Y-body housing to provide access for the regulator change-out, inspection and cleaning without breaking the main piping. (Access shall be similar to that provided for removal of a Y or T- strainer screen).
9. The valve shall not add more than 7 ft H₂O of TDH to the pump head at max. flow.
10. Each valve shall have two P/T ports, arranged to provide a reading of the differential pressure across the flow limiting mechanism.
11. Five-year product warranty.

B. Material and Construction

1. Internal wear surfaces of the valve cartridge shall be 303 or 304 stainless steel.
2. The internal flow cartridge body shall have machined threads so the spring free height may be compensated for without the use of fixed shims. A crimped sheet metal design is not acceptable.
3. For 1/2" - 2" pipe size: An assembly shall consist of a Dezincification resistant brass (DZR) or bronze or Ametal Y-body, integral chrome plated brass-body ball valve, and "O" ring type union fitting and shall be IMI Flow Design Model ACA/ACRA or equal.

C. Testing and Ratings

All valves 1/2" to 2" shall be factory leak tested at 100 psi air under water. Minimum Ratings:

1. 1/2" through 2" pipe size: 400 PSIG at 250°F

D. Flow Verification (Select one)

1. The differential pressure across the field-adjustable flow limiter shall be measured for verification and to determine the amount of system over heading (excess pressure) or under pumping.
2. Flow shall be verified by measuring the differential pressure across the coil served or the wide-open control valve and calculating the flow based on the coil or valve CV.
3. A venturi shall be installed on the supply side of the coil to verify flow.

E. ACCESSORIES

Pressure Independent Flow Limiting Valve Accessories:

1. Extended Pressure/Temperature Ports
2. Extended Handle (isolation valve only)

PART 3 EXECUTION

A. Test Kit

To verify flow and measure over heading (excess pressure), IMI Flow Design recommends AutoFlow Dual Hose Meter pressure test kit at an additional charge. The kit consists of a 4 1/2" gauge with three ball valves

calibrated at 150 psi & 1000 kpa, two 10' hoses with shut-off valves and a pair of GA 18 std. P/T adapters.

B. Installation

1. Install automatic flow control valves on the return lines of coils as indicated on the plans. A balancing valve on supply side is not acceptable.
2. The standard ports and handles shall clear 1" thick insulation. Handle and port extensions are required for over 1" thick insulation. Do not insulate flow control valves used on heating coils.
3. Install, on the supply side of coils, a Y or a T-strainer (20 mesh) with brass blow down valve with 3/4" hose-end connection with cap. Inline (basket) strainer is not acceptable.
4. All valves shall be installed in accordance with manufacturer's instructions.

C. Packaging

5. All fittings needed for each individual coil shall be shipped from the factory and labeled to indicate the appropriate terminal.
6. The packages for individual terminals shall further be grouped according to individual floors or regions of the building for easy routing to the appropriate location.

END OF SECTION