

# Type-51

## General Purpose Regulators

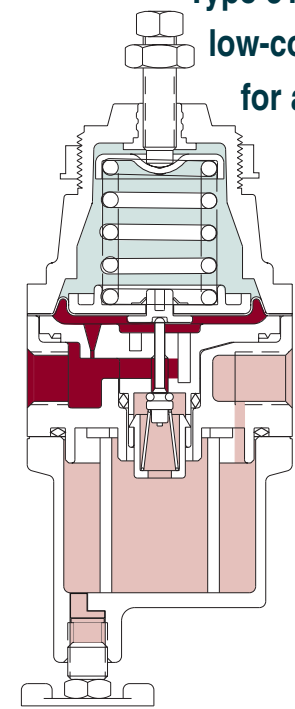
MB T-51 General Purpose Regulators



Precision  
Control  
Devices

ISO 9002  
certified

PRECISION CONTROL DEVICE



**FEATURES**

- Excellent regulation, stability and repeatability
- Corrosion-resistant construction (no brass components, T-51FR & T-51AFR)
- NACE Constructed (T-51FRCT Corrosive Tec)
- Low droop
- Low cost
- Small package size
- Panel, bracket or pipe mounting
- Fluorocarbon pintle seat (T-51FR, T-51AFR & T-51FRCT)
- Auto drain option (T-51AFR)

**DESCRIPTION**

The Bellofram Type 51 Precision Air Regulator series offers a high-performance regulator in a compact, low cost package. It operates in output pressure ranges up to 100 psig / 6.9 BAR (120 psig / 8.3 BAR in T-51FR Corrosive Tec), with a maximum supply pressure of 250 psi (17.3 BAR).

Materials of construction for standard T-51 Series Regulators (Non-Corrosive Tec): Die-cast aluminum for the body and dripwell; glass-reinforced thermoplastic polyester for the bonnet; acetal resin for the internals; BUNA-N for the diaphragm, gaskets and O-ring, fluorocarbon for the pintle seat, and aluminum for the drain valve (plated steel handle).

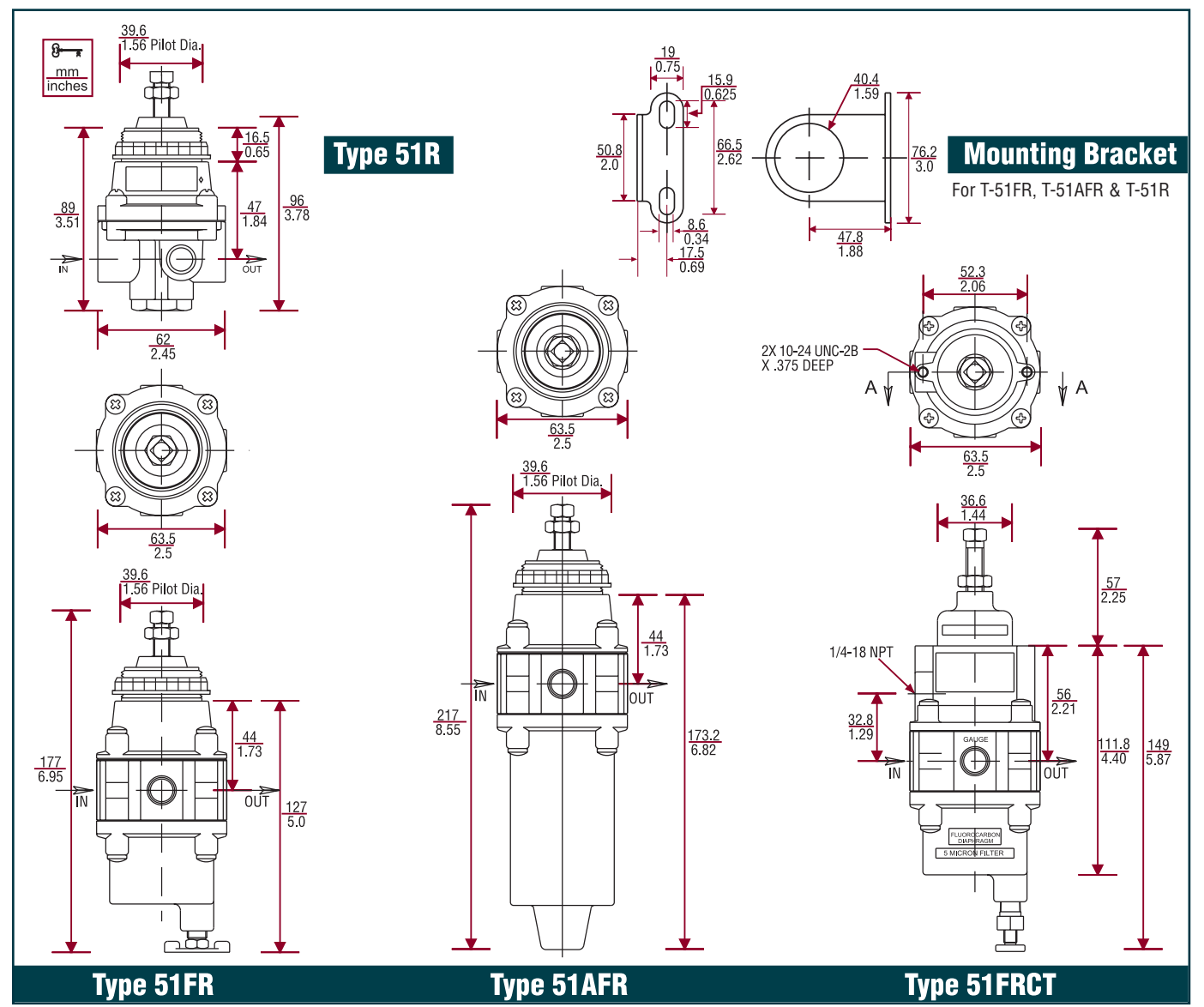
Materials of construction for Corrosive Tec T-51FRCT: Aluminum alloy bonnet, body, and filter bowl, 316 stainless steel internals, Inconel alloy range spring, nitrile diaphragm (fluorocarbon optional), 316 stainless steel valve assembly, and painted with an epoxy finish. All metallic parts for this unit conform to NACE material requirements #MR-01-75 Class III.

These regulators are available standard (T-51R) or as filter-regulators (T-51FR & T-51FRCT) and are even available with an automatic drain, for automated flushing out of contaminants, (T-51 AFR). These versatile regulators provide excellent regulation for a wide range of applications, including pneumatic instruments, controllers, chucks, and actuators. They can be through-panel mounted with the supplied mounting nut, bracket-mounted with the optional bracket or, due to their light weight, mounted by their ports. The Corrosive Tec is supplied with a tapped bonnet vent, to allow for the capture of exhaust air.

From industry to industry, Marsh Bellofram's Type 51 Series of Regulators offer a low-cost, high performance option for a wide range of applications.

| OPTIONS                                    | • = option is available      s = option is standard |           |            |             |
|--|---|-----------|------------|-------------|
|  | TYPE 51R  | TYPE 51FR | TYPE 51AFR | TYPE 51FRCT |
| 1 Fluorocarbon Pintle                      | •   | s         | s          | s           |
| 2 Non-Relieving                            | •   | •         | •          | •           |
| 3 Knob Sq. head Adj. Screw                 | •   | •         | •          | s           |
| 4 5 Micron Filter                          | •   | •         | •          | •           |
| 5 Epoxy Coating                            | •   | •         | •          | s           |
| 6 Tapped Vent Coalescing filter            |   |           | •          | s           |
| 7 Mounting Bracket                         | •   | •         | •          | •           |
| 8 Pressure Gauge                           | •   | •         | •          | •           |
| 9 Tamper - Resistant Cover Panel Nut Mount | s   | s         | s          |             |
| 10 Soft Relief Seat Low Bleed              |   |           |            | •           |
| 11 Fluorocarbon Diaphragm                  | •   | •         | •          | •           |

|  | TYPE 51R<br>Regulator  | TYPE 51FR<br>Filter Regulator  | TYPE 51AFR<br>Auto Filter Regulator  | TYPE 51FRCT<br>Corrosive Tec  |
|--|--|--|--|---|
| Maximum Supply Pressure  | 250 psig (17.3 BAR)  | 250 psig (17.3 BAR)  | 250 psig (17.3 BAR)  | 250 psig (17.3 BAR)   |
| Output Pressure Range  | 0-30 psig (0-2.1 BAR)<br>0-60 psig (0-4.1 BAR)<br>0-100 psig (0-6.9 BAR)   | 0-30 psig (0-2.1 BAR)<br>0-60 psig (0-4.1 BAR)<br>0-100 psig (0-6.9 BAR)           | 0-30 psig (0-2.1 BAR)<br>0-60 psig (0-4.1 BAR)<br>0-100 psig (0-6.9 BAR)           | 0-30 psig (0-2.1 BAR)<br>0-60 psig (0-4.1 BAR)<br>0-120 psig (0-8.3 BAR)                            |
| Supply Pressure Sensitivity @ 25 psig / 170 kPa change in supply | 0.20 psig (0.01 BAR) output change   | 0.45 psig (0.03 BAR) output change   | 0.45 psig (0.03 BAR) output change   | 0.45 psig (0.03 BAR) output change  |
| Sensitivity  | 1" (2.5 cm) of water   | 1" (2.5 cm) of water   | 1" (2.5 cm) of water   | 1" (2.5 cm) of water  |
| Repeatability  | 0.1 psig (0.01 BAR)  | 0.1 psig (0.01 BAR)  | 0.1 psig (0.01 BAR)  | 0.1 psig (0.01 BAR)   |
| Flow @ 100 psig (6.9 BAR) Supply 20 psig (1.4 BAR) outlet        | 15 SCFM (425 LPM)  | 20 SCFM (566 LPM)  | 20 SCFM (566 LPM)  | 20 SCFM (566 LPM)   |
| Exhaust Capacity @ 5 psig (0.4 BAR) above setpoint               | 0.1 SCFM (2.8 LPM)   | 0.1 SCFM (2.8 LPM)   | 0.1 SCFM (2.8 LPM)   | 0.1 SCFM (2.8 LPM)  |
| Temperature Limits   | 0 to 125°F (-18 to 52°C)   | 0 to 125°F (-18 to 52°C)   | 0 to 125°F (-18 to 52°C)   | 0 to 180°F (-18 to 82°C)  |
| Air Consumption  | 6 SCFH (2.84 LPM) Maximum  | 6 SCFH (2.84 LPM) Maximum  | 6 SCFH (2.84 LPM) Maximum  | 6 SCFH (2.84 LPM) Maximum   |
| Port Size  | 1/4" NPT   | 1/4" NPT   | 1/4" NPT   | 1/4" NPT  |
| Materials of Construction  | Aluminum, plated steel, brass, acetal resin, Buna-N /polyester, music wire | Aluminum, plated steel, acetal resin, Buna-N / polyester, music wire, Fluorocarbon | Aluminum, plated steel, acetal resin, Buna-N / polyester, music wire, Fluorocarbon | Aluminum, Stainless Steel, Inconel, Buna-N / polyester, Fluorocarbon, acetal, polyphenylene sulfide |



T-51 SPECIFICATIONS & DIMENSIONS

**ORDERING INFORMATION**

**PART NUMBER:**

| TYPE    | Part        | Control Range |       |
|---------|-------------|---------------|-------|
|         | Number      | psig          | BAR   |
| 51R     | 960-222-000 | 0-30          | 0-2.1 |
|         | 960-223-000 | 0-60          | 0-4.1 |
|         | 960-224-000 | 0-100         | 0-6.9 |
| 51FR    | 960-175-000 | 0-30          | 0-2.1 |
|         | 960-176-000 | 0-60          | 0-4.1 |
|         | 960-177-000 | 0-100         | 0-6.9 |
| 51AFR   | 960-284-000 | 0-30          | 0-2.1 |
|         | 960-285-000 | 0-60          | 0-4.1 |
|         | 960-286-000 | 0-100         | 0-6.9 |
| 51 FRCT | 960-303-000 | 0-30          | 0-2.1 |
|         | 960-304-000 | 0-60          | 0-4.1 |
|         | 960-305-000 | 0-120         | 0-8.3 |

**REGULATOR OPTIONS & ACCESSORIES**  
**NON RELIEVING**

Used in applications where it is desirable to relieve pressure downstream and not at the regulator. Non-relieving regulators should not be used for low or no flow applications.

**KNOB**

Replaces the standard square head adjusting screw. (except T-51FRCT)

**5 MICRON FILTER**

Replaces the 40 micron filter for more complete air filtration. (Except T-51R)

**EPOXY FINISH**

An epoxy paint applied to the body and dripwell of the regulator exterior surfaces to provide increased corrosion resistance. (Standard for T-51FRCT)

**MOUNTING BRACKET**

Plated steel bracket for side mounting. (316 SS for T-51FRCT)

**COALESCING FILTER**

Replaces the 40 micron filter for both moisture and particulate filtration. (T-51AFR only)

**OPTION ORDERING MATRIX:**

Add three digits from table below to end of part number.

| OPTION                                      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 Fluorocarbon Pintle                       | 001 | 021 | 031 | 041 | 051 | 061 | 071 | 081 | 091 | 101 | 111 |
| 2 Non-Relieving                             |     | 002 | 032 | 042 | 052 | 062 | 072 | 082 | 092 |     | 112 |
| 3 Knob                                      |     |     | 003 | 043 | 053 | 063 | 073 | 083 |     | 103 | 113 |
| 4 5 Micron Filter                           |     |     |     | 004 | 054 | 064 | 074 | 084 | 094 | 104 | 114 |
| 5 Epoxy Coating                             |     |     |     |     | 005 | 065 | 075 | 085 | 095 | 105 | 115 |
| 6 Coalescing Filter (T-51AFR only)          |     |     |     |     |     | 006 | 076 | 086 | 096 | 106 | 116 |
| 7 Mounting Bracket                          |     |     |     |     |     |     | 007 | 087 | 097 | 107 | 117 |
| 8 Pressure Gauge                            |     |     |     |     |     |     |     | 008 | 098 | 108 | 118 |
| 9 Tamper-Resistant Cover Panel mounting Nut |     |     |     |     |     |     |     |     | 009 | 109 | 119 |
| 10 Soft Relief Seat Low Bleed               |     |     |     |     |     |     |     |     |     | 010 | 110 |
| 11 Fluorocarbon Diaphragm                   |     |     |     |     |     |     |     |     |     |     | 011 |

**PRESSURE GAUGE**

Dual scale (psi/kPa) 2" (50mm) gauges. Ranges include 0-60 psi (0-4.1 BAR), 0-100 psi (0-6.9 BAR) and 0-120 psi (0-8.3 BAR). When specified with regulator, the correct range will be supplied.

**FLUOROCARBON ELASTOMERS**

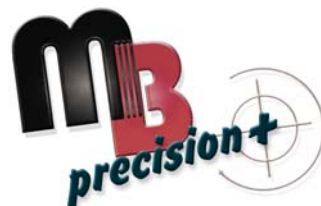
Diaphragm, as well as gaskets and O-rings, are made with a special elastomer to prevent deterioration from elements in the air supply, such as flame retardant synthetic lubricants normally destructive to the standard BUNA-N material.

**TAMPER PROOF COVER**

A 316 stainless steel hexagonal cover placed over the adjusting screw and threaded onto the bonnet of the regulator with a wrench, prevents ordinary hand adjustments. Supplied with an O-ring that is designed to seal the adjusting screws threads in captured bleed applications. (T-51FRCT Only)

**LOW BLEED DIAPHRAGM**

(Soft Relief Seat): Used in applications where it is desirable to minimize the standard bleed rate of the regulator while maintaining the ability to relieve excess pressure at the regulator. Bleed rate is reduced from less than 6 SCFH (2.8 LPM) to less than 0.1 SCFH (0.05 LPM). (T-51FRCT only)



**IMPORTANT NOTICE**

Our recommendations, if any, for the use of this product are based on tests believed to be reliable. The greatest care is exercised in the selection of our raw materials and in our manufacturer, no guarantee or warranty, express or implied is made as to such use or effects incidental to such use, handling or possession or the results to be obtained, whether in accordance with the directions or claimed so to be. The manufacturer expressly disclaims responsibility therefor. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing laws and/or patents covering any material use.

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