# 9400 Series

0 to 3000 psig Miniature Shutoff Valves



## Features

- Leak-proof shutoff
- No stem leakage
- Minimum pressure drop
- Color-coded handles
- Effortless opening & closing
- Knob or toggle handle
- Panel mount
- Metering stem
- Compact size
- Pipe and instrument tube fittings

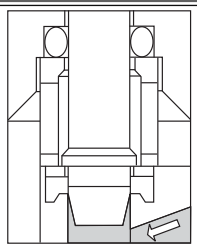
## Technical Data

| | |
|---|---|
| **Body Construction Materials** | Brass or 316 stainless steel |
| **Seat Materials** | Buna N, Neoprene, PTFE or Viton® |
| **Operating Pressure** | 0 to 3000 psig (207 bar) |
| **Proof Pressure** | 0 to 4500 psig (310 bar) |
| **Burst Pressure** | Over 12,000 psig (828 bar) |
| **Temperature Range** | –80° F to +350° F (–62° C to +177° C)<br>*Based on o-ring material, see "How to Order".* |
| **Connection Sizes** | 1/8"–3/8" |

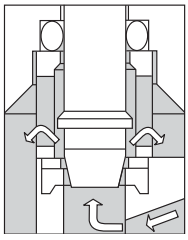
*Note: Proper filtration is recommended to prevent damage to sealing surfaces.*

# 9400 Series

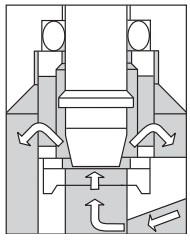
## How it Works



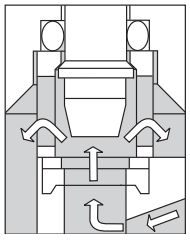
**Closed**
Leakproof sealing is achieved by engaging a precision-machined stem into a captive nylon seat. The seat cannot be damaged by back pressure. The shoulder, on a stainless steel stem, seats on a metal washer, which in turn is forced against a resilient, non-galling nylon seat to affect a leak-tight seal against the stem.



**Fine Flow Control**
No flow occurs during the first fractional turn of the handle. Precise flow control begins as the stem is withdrawn and continues across the 2° tapered portion of the stem until the handle has been rotated approximately two turns in the opening direction.

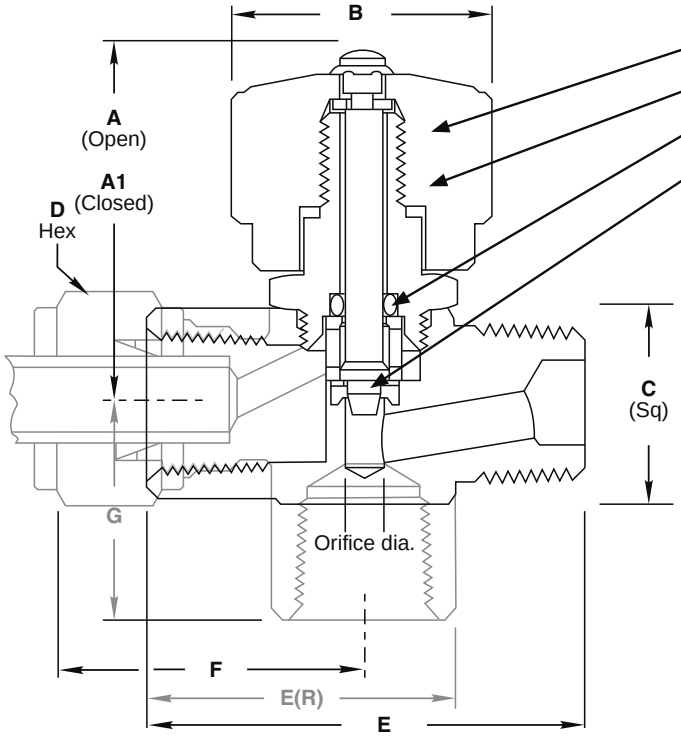


**Non-critical Flow Control**
As the stem is withdrawn further, flow continues across the 10° taper of the stem until full opening is reached.



**Full Open**
Stem travel past full open position is prevented by a solid, positive metal stop. The handle cannot inadvertently be unscrewed. The o-ring surrounding the stem prevents external leakage. Stem threads are isolated from the flow path to permit lifetime lubrication and to avoid contamination of the fluid.

## 9400/R9400 Series Dimensions & Performance Data




**Low handle torque** (only 8 in-lbs required at 3000 psi).

**Handle** color-coded for stem seal materials.

**O-ring** prevents external leakage past stem.

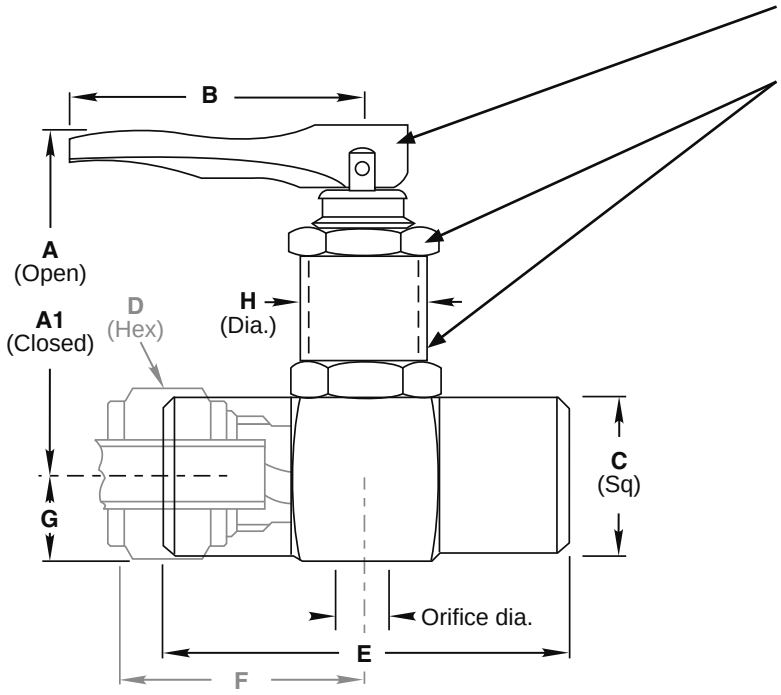
**Leakproof** shutoff against pressure in either direction. Seat of PTFE seals against the stem preventing galling and leakage. (Nylon seat available.)

### 9400/R9400 Series Dimensions (inches)

| Dash No. | Size | Connections | Orifice Dia. | Cv | A | A1 | B | C | E E(R) | D | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **9400 Series** | | | | | | | | | | | | |
| 2MM | ¼″ | Male pipe | .156 | .32 | 1.610 | 1.400 | 1.00 | .75 | 1.68 | — | — | — |
| 2MP | ¼″ | Male/Female pipe | .156 | .32 | 1.675 | 1.465 | 1.00 | .88 | 1.68 | — | — | — |
| 2PP | ¼″ | Female pipe | .156 | .32 | 1.675 | 1.465 | 1.00 | .88 | 1.86 | — | — | — |
| 2CC | ⅛″ | Tube fittings | .156 | .32 | 1.613 | 1.303 | 1.00 | .75 | — | .437 | 1.010 | — |
| 4CC | ¼″ | Tube fittings | .156 | .32 | 1.675 | 1.465 | 1.00 | .88 | — | .562 | 1.040 | — |
| 6CC | ⅜″ | Tube fittings | .156 | .32 | 1.675 | 1.465 | 1.00 | .88 | — | .687 | 1.125 | — |
| **R9400 Series** | | | | | | | | | | | | |
| 2MP | ¼″ | Male/Female pipe | .156 | .32 | 1.590 | 1.380 | 1.00 | .75 | 1.25 | — | — | .88 |
| 2PP | ¼″ | Female pipe | .156 | .32 | 1.590 | 1.380 | 1.00 | .75 | 1.25 | — | — | .88 |

| | |
|---|---|
| **Operating pressure** | • 9400, R9400 Series, PTFE seat: 0–2,200 psig (152 bar)<br>• N9400 Series, nylon seat: 0–3000 psig (207 bar) |
| **Proof Pressure** | • 9400, R9400 Series, PTFE seat: 3,300 psig (228 bar)<br>• N9400 Series, nylon seat: 4500 psig (310 bar) |
| **Burst Pressure** | 12,000 psig (828 bar) minimum |
| **Leakage** | Zero—internal and external |

## T9400 Series Dimensions & Performance Data




**Toggle handle** for quick snap to open or close. Levers lift up approximately 90° to full open position.

**Panel mount nut** and removable collar protect panel mount threads.

**O-ring** prevents external leakage past stem.

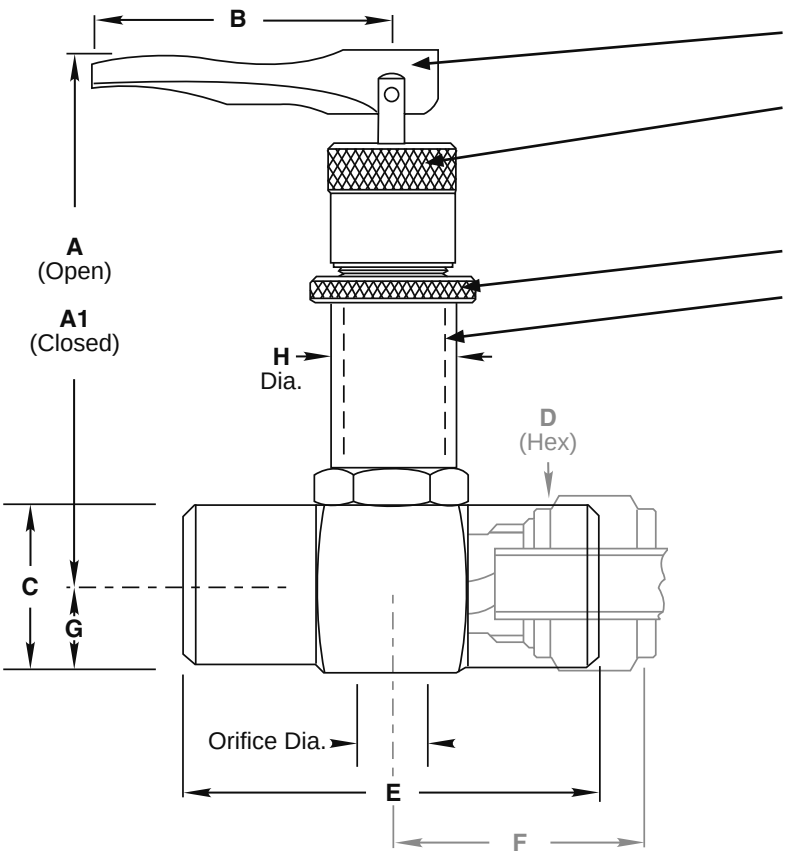
**Leakproof** shutoff against pressure in either direction to 500 psi. Seat of PTFE seals against the stem to prevent galling and leakage.

**T9400 Series Dimensions (inches)**

| Dash No. | Size | Connections | Orifice Dia. | Cv | A | A1 | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2MM | ¼″ | Male pipe | 0.156 | 0.32 | 2.90 | .62 | 1.39 | .75 | — | 1.68 | — | .375 | .438 |
| 2PP | ¼″ | Female pipe | 0.156 | 0.32 | 2.96 | 1.68 | 1.39 | .88 | — | 1.86 | — | .438 | .438 |
| 2CC | ⅛″ | Tube fittings | 0.156 | 0.32 | 2.84 | 1.62 | 1.39 | .75 | .437 | — | 1.010 | .375 | .438 |
| 4CC | ¼″ | Tube fittings | 0.156 | 0.32 | 3.46 | 1.67 | 1.39 | .88 | .562 | — | 1.040 | .438 | .438 |
| 6CC | ⅜″ | Tube fittings | 0.156 | 0.32 | 3.46 | 1.67 | 1.39 | .88 | .687 | — | 1.125 | .438 | .438 |

| | |
|---|---|
| **Operating pressure** | 0–500 psig (34 bar) |
| **Proof Pressure** | 750 psig (52 bar) |
| **Burst Pressure** | 2000 psig (138 bar) minimum |
| **Leakage** | Zero—internal and external |
| **Operating Temperature** | 250° F maximum (plastic handle limitation) |

## TM9400 Series Dimensions & Performance Data




**Toggle handle** for quick snap to open or close. Levers up approximately 90° to full open position.

**Adjustment nut** for metering desired flow. May be set and locked to limit valve opening to any point between closed and full open. Adjustable when valve is open or closed.

**Locked ring** locks adjustment nut in position.

**Panel mount** thread protector (removable).

**O-ring** prevents external leakage past stem.

**Nylon seat** provides leakproof shutoff without galling. (PTFE seat available.)

**Tapered stem** offers excellent metering characteristics. (See "Typical Flow Curves", next page.)

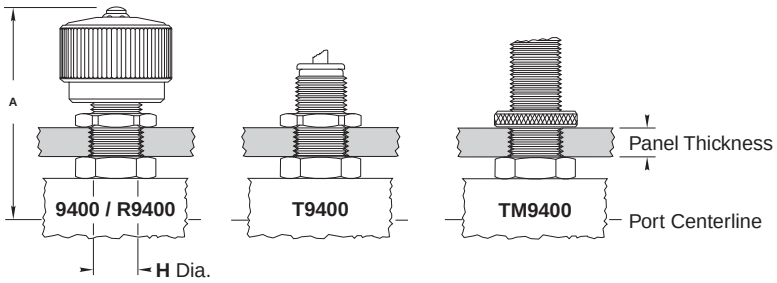
### TM9400 Series Dimensions (inches)

| Dash No. | Size | Connections | Orifice Dia. | Cv | A | A1 | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2MM | ¼″ | Male pipe | 0.156 | 0.32 | 4.00 | 2.67 | 1.39 | .75 | — | 1.68 | — | .375 | .563 |
| 2PP | ¼″ | Female pipe | 0.156 | 0.32 | 4.06 | 2.73 | 1.39 | .88 | — | 1.86 | — | .438 | .563 |
| 2CC | ⅛″ | Tube fittings | 0.156 | 0.32 | 3.45 | 2.61 | 1.39 | .75 | .437 | — | 1.035 | .375 | .563 |
| 4CC | ¼″ | Tube fittings | 0.156 | 0.32 | 4.00 | 2.67 | 1.39 | .88 | .562 | — | 1.040 | .438 | .563 |
| 6CC | ⅜″ | Tube fittings | 0.156 | 0.32 | 4.00 | 2.67 | 1.39 | .88 | .687 | — | 1.045 | .438 | .563 |

| | |
|---|---|
| **Operating pressure** | • Nylon seal: vacuum to 3000 psig (207 bar)<br>• PTFE seal: vacuum to 1000 psig (69 bar) |
| **Proof Pressure** | • Nylon seal: 4500 psig (310 bar)<br>• PTFE seal: 1500 psig (103 bar) |
| **Burst Pressure** | • Nylon seal: 12,000 psig (828 bar) minimum<br>• PTFE seal: 4000 psig (276 bar) minimum |
| **Leakage** | Zero—internal and external |
| **Operating Temperature** | 250° F maximum (plastic handle limitation) |

# 9400 Series

## 9400 Series Panel Mounted




**Panel thickness (inches)**

| | |
|---|---|
| 9400, R9400 Series | 0.060 to 0.340 |
| 9400–CC Series | 0.100 to 0.340 |
| T9400 Series | 0.060 to 0.530 |
| T9400–CC Series | 0.060 to 0.440 |
| TM9400 Series | 0.060 to 0.810 |

**Dimensions (inches)**

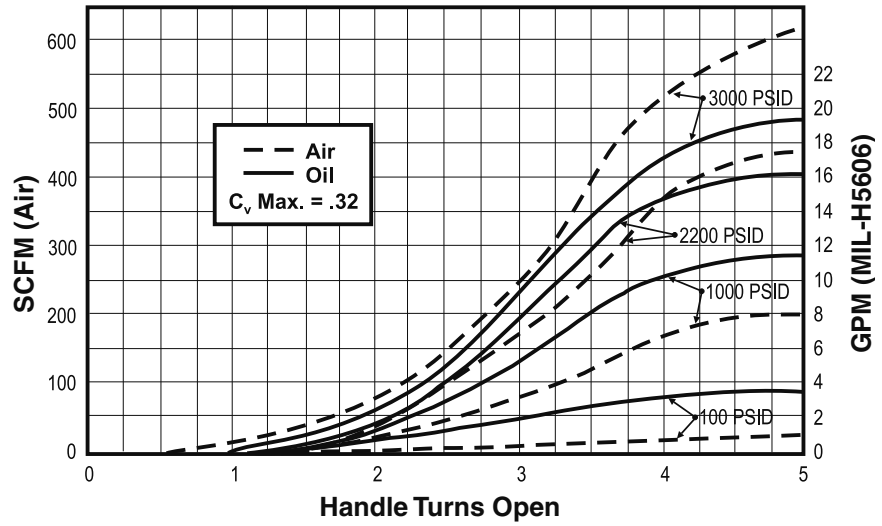
9400 Series

| Type | A Open | A Closed | H |
|---|---|---|---|
| 2MM | 2.07 | 1.86 | .438 |
| 2PP | 2.13 | 1.92 | .438 |
| 2MP | 2.13 | 1.92 | .438 |
| 2CC | 2.07 | 1.86 | .438 |
| 4CC | 2.13 | 1.92 | .438 |
| 6CC | 2.13 | 1.92 | .438 |

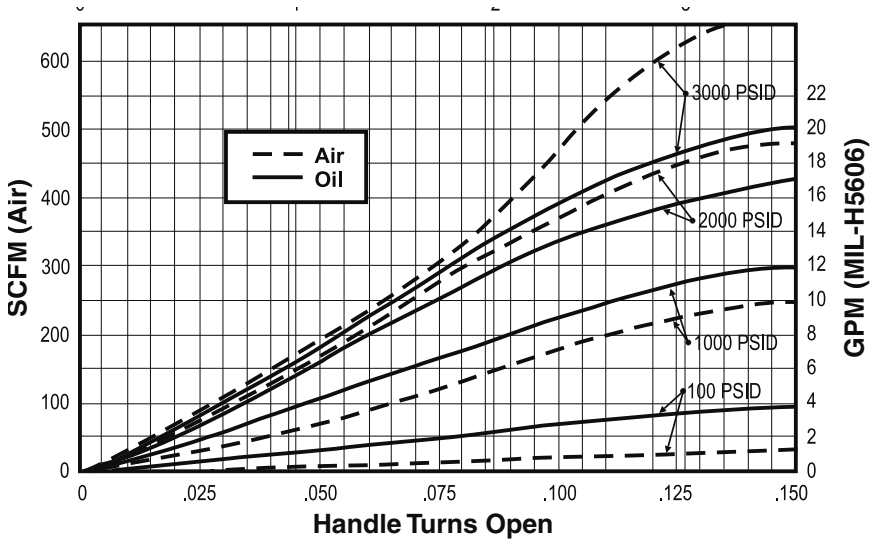
R9400 Series

| Type | A Open | A Closed | H |
|---|---|---|---|
| 2MP | 2.05 | 1.84 | .438 |
| 2PP | 2.05 | 1.84 | .438 |

## Typical Flow Curves




*9400 Series Flow Curves*




*TM9400 Series Flow Curves*

# 9400 Series

## How to Order

**TM 94 59 B – 2 MM (P)**

***VARIATION***
- **N** Nylon seat (not available with T9400 Series)
- **T** Toggle handle
- **TM** Toggle, metering
- **RT** Right angle toggle
- **R** Right angle

***O-RING MATERIAL, TEMPERATURE & HANDLE COLOR***
- **59** Buna N (–20° F to +250° F), blue handle
- **33** Neoprene (–20° F to +300° F), green handle
- **20** PTFE (–80° F to +400° F), black handle
- **32** Viton® (0° F to +400° F), red handle

***BODY MATERIAL***
- **B** Brass
- **T1** 316 stainless steel

***VALVE SIZE***
- **2** ¼″ pipe, ⅛″ tube
- **4** ¼″ tube
- **6** ⅜″ tube

***CONNECTIONS***
- **P** Female pipe
- **M** Male pipe
- **C** GYROLOK® tube fittings

***PANEL MOUNT***
- **P** Panel mount

Please consult your Circle Seal Controls distributor or our factory for information on special connections, materials, larger sizes, o-rings, operating pressures and temperature ranges.

**Repair Kits**
In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "**K/**" in front of the complete part number (i.e. **K/9459B–2MM**).

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