

# Techcon Systems TS5440 Microshot Needle Valve

## User Guide

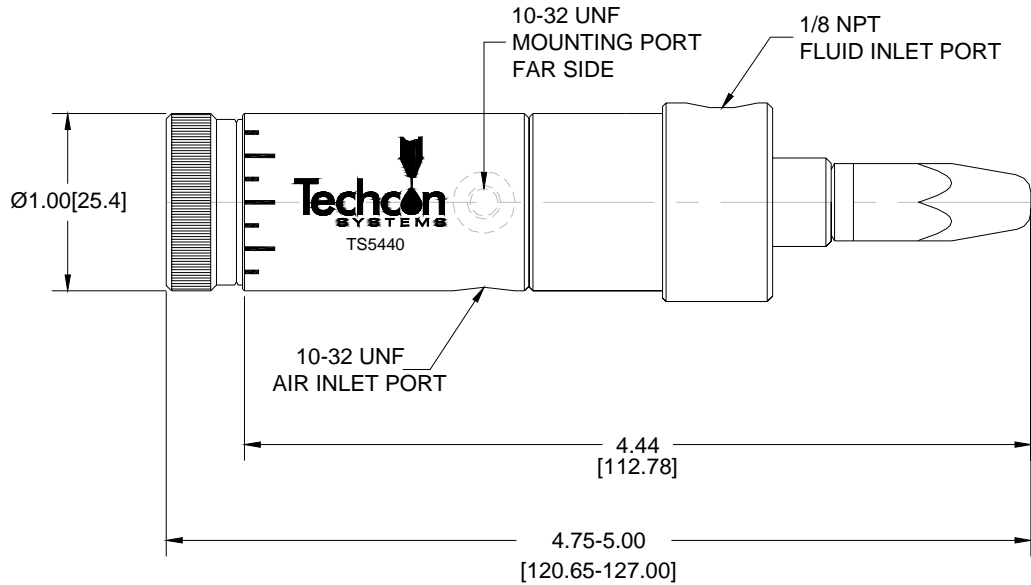


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# 1. SPECIFICATIONS

Size:	5.0" (127mm) long; 1.1"(28.5mm) diameter
Weight:	0.5 lb (227g)
Fluid inlet port:	1/8" NPT female
Fluid outlet port:	Male luer lock
Air inlet port:	10-32 UNF
Mounting port:	10-32 UNF
Maximum fluid pressure:	100 psi (6.9 bars)
Minimum air pressure required:	70 psi (4.8 bars)
Wetted parts:	303 stainless steel, Teflon®
Operating frequency:	Exceeds 400 cycles/min.
Flow rate at 100 psi (water):	900 ml/min.
Material viscosity range:	Up to 100,000 Cps.



Dimensions are in inches [mm]

Figure 1.0

## 2. UNPACKING AND INSPECTION

Carefully unpack the valve and examine the items contained in the carton.

These will include:

- Valve Assembly
- Valve bracket
- Sample Needle Kit and fluid line
- Valve Air Hose
- User guide

## 3. DESCRIPTION

The TS5440 Microshot Needle valve is designed to dispense low to medium viscosity material with very precise deposits over a wide range of shot and bead sizes down to a fraction of a micro liter. An internal spring return makes the valve fully adaptable for use with Techcon Systems time/pressure controllers. A short opening stroke provides extremely fast, positive shut-off. An external stroke control adjustment makes it easy for the operator to fine tune shot sizes. The TS5440's compact design allows for mounting flexibility and easy integration into automated applications.

## 4. THEORY OF OPERATION

The TS5440 is a normally closed, adjustable opening, needle and seat valve. Inlet air pressure through port (1) retracts the needle assembly (2) from the seat inside the dispensing tip (3) allowing material to flow from the valve material inlet (4) to the dispensing tip (5). Relieving the input air pressure allows the spring (6) to return the needle back to its position to close the material path.

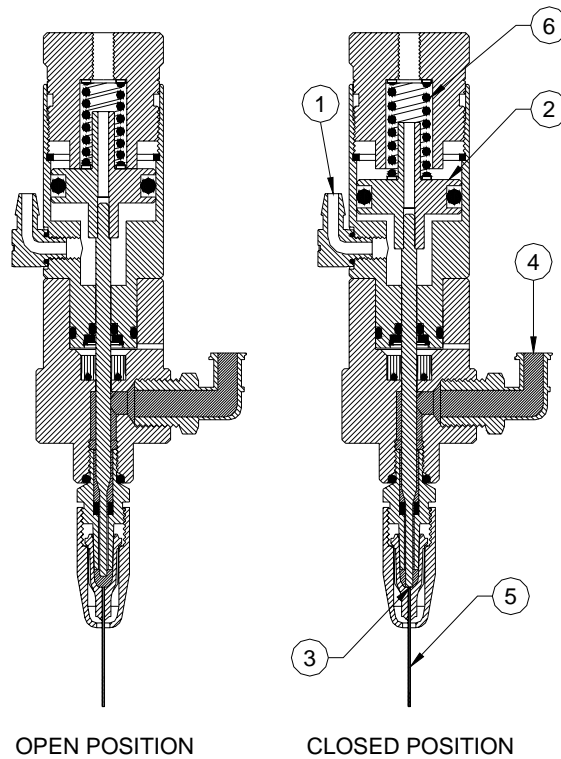


Figure 2.0

## 5. SETUP INSTRUCTIONS

Refer to Figure 3.0

**NOTE: This installation uses luer lock adapters shipped with the valve. Any approved material line with 1/8" NPT connections will work.**

1. If desired, mount the valve to the bracket included (1).
2. Connect fluid feed line to valve inlet port (2).
3. Insert the open end of the air hose to air inlet fitting (3) then connect the other end to an approved valve controller.
4. Set the fluid reservoir pressure. Do not exceed 100 psi (6.9 bars)
5. Install desired dispense tip (4) to the valve outlet and secure it with the retaining ring (5)

**NOTE: Recommended dispense tip size is 22-gauge or smaller. Use larger than 22-gauge dispense tip may results in valve leakage.**

6. Make sure all connections are tight
7. Place container under the valve outlet and activate the valve until the fluid flows steady.

The amount of fluid that flows through the valve is determined by:

- Flow control adjustment - Turn end cap counterclockwise to increase material flow rate.
- Length of actuation, set at controller (Valve open time).
- Fluid reservoir pressure
- Dispensing tip size

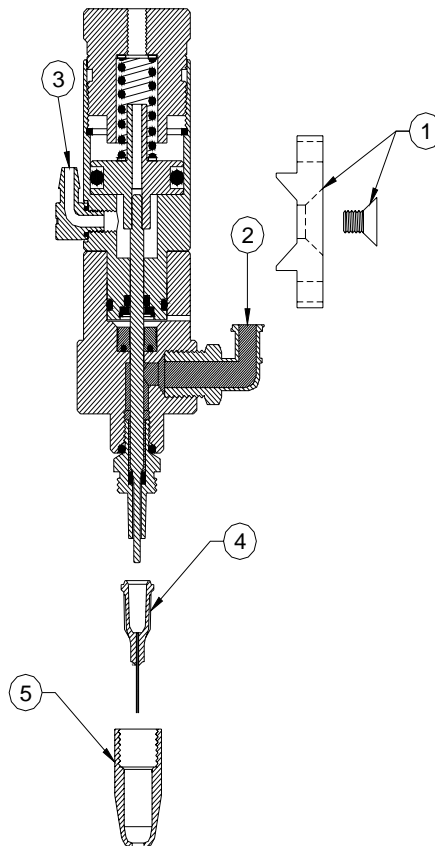


Figure 3.0

## 6. TYPICAL SYSTEM SETUP

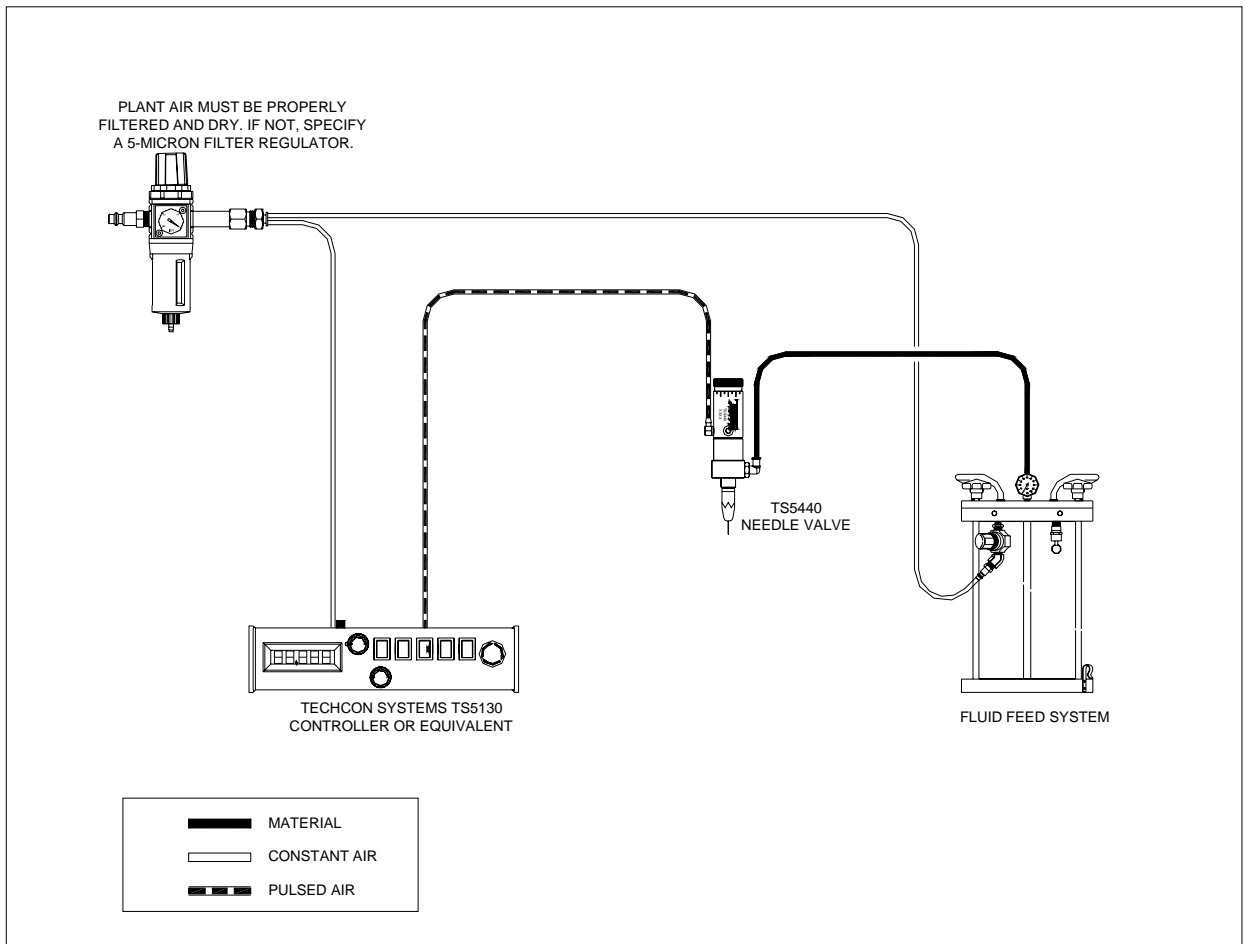


Figure 4.0

## 7. TROUBLESHOOTING

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>CORRECTION</b>
No fluid flow	Fluid pressure too low	Increase fluid pressure
	Operating pressure too low	Increase air pressure to 70 psi (4.8 bars)
	Dispense tip clogged or damaged	Replaced tip
	Fluid cured in valve chamber	Clean valve thoroughly
	The stroke adjustment closed	Open stroke adjustment counterclockwise
Inconsistent fluid flow	Fluid pressure fluctuating	Make sure fluid pressure is constant
	Valve operating pressure is too low	Increased valve pressure to 70 psi (4.8 bars)
	Valve open time is not consistent	Check to make sure the valve controller is providing a consistent output
	Air trapped in fluid housing	Purge valve
Fluid drools after the valve closes, eventually stopping	Air trapped in fluid housing	Purge valve
Fluid leaks at needle hub	Defective dispense needle	Replace needle. Make sure to use TE series needle only

## 8. MAINTENANCE AND CLEANING:

**Tool required:** 7/64" hex wrench; 7/16" open-end wrench; Snap ring pliers, O-ring tool.

Normally, purging the valve with appropriate flush material or solvent after use is sufficient for cleaning. However some material may cause a buildup in the valve chamber, in this case periodic and thorough cleaning will be required.

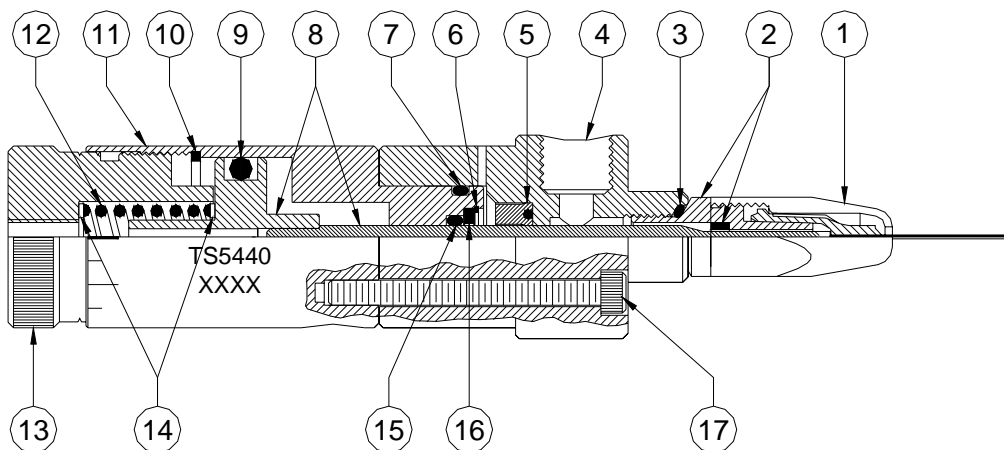
**NOTE:**

- *To replace seals, please order seal kit part number: 5440-SEALKIT*
- *To repair valve, please order valve kit part number: 5440-VALVEKIT*

**CAUTION: Make sure the fluid pressure is released before disassemble the valve.**

Refer to figure 5.0

- 1) Release fluid pressure.
- 2) Disconnect fluid line.
- 3) Disconnect valve air hose.
- 4) Unscrew retaining cap (1) and remove the dispense needle.
- 5) Remove the three mounting screw (17).
- 6) Pull the fluid housing (4) away from the air cylinder (11).
- 7) Remove the luer adapter assembly (2) from the fluid housing (4).
- 8) Clean and inspect the needle assembly (8), luer adapter assembly (2) for wear and damage. Replace parts as necessary.
- 9) Replace O-ring (7) if necessary. Make sure to lubricate new O-ring with approved lubricant.
- 10) Reinstall the luer adapter assembly (2) to the fluid housing (4).
- 11) Align the fluid housing (4) to the air cylinder (11) and reinstall the three mounting screws. (Alternately tighten the screws a little at a time until they are secure.



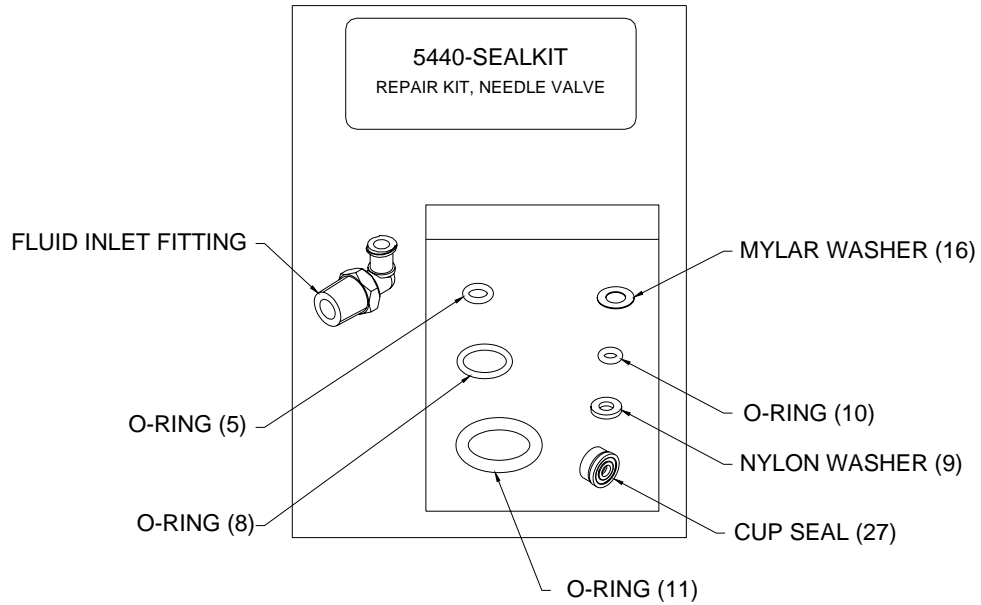
**Figure 5.0**



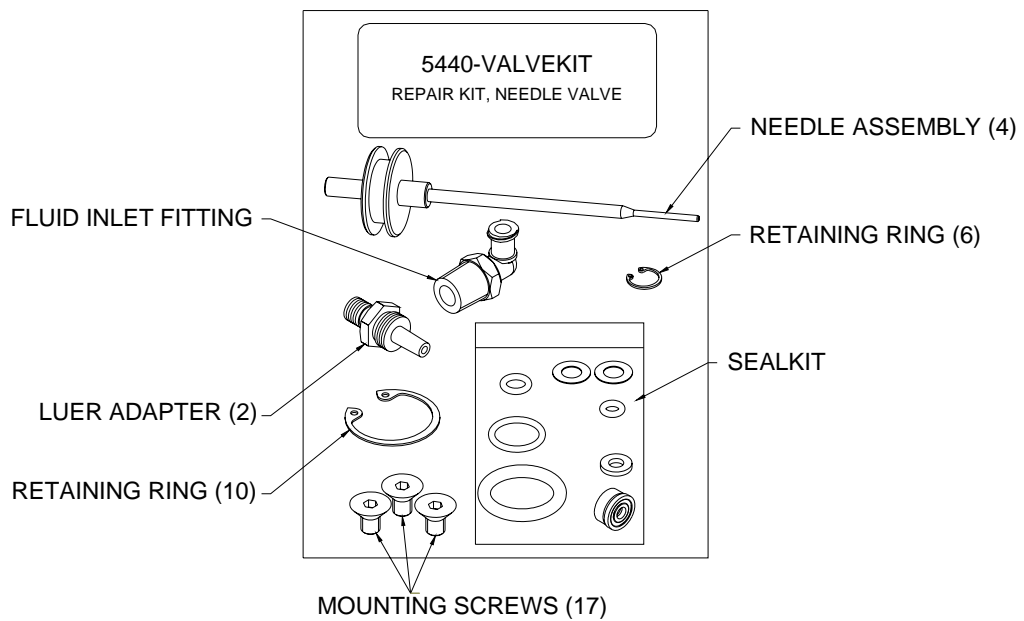
## 9. SPARE PARTS AND ACCESSORIES

### 9.1 Spare Parts:

The seal replacement kit, part number = 5440-SEALKIT, includes:



The valve repair kit, part number = 5440-VALVEKIT, includes:



**Figure 6.0**

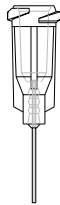
## 9.2 Standard Accessories:

PART NUMBER	DESCRIPTION
918-000-048	Bracket
9000-000-112	Sample needles kit
TSD126-360BK	Black fluid line

## 9.3 Optional Accessories:

The following three components are needed to make a bench mounting stand:

PART NUMBER	DESCRIPTION
918-033-000	Production master stand
918-000-012	Rod Clamp
5620-000-008	Mounting rod



TE SERIES NEEDLE			
PART NUMBER	Gauge	Hub Color	ID(in)
TE722050PK	22	Blue	.016
TE723050PK	23	Orange	.013
TE725050PK	25	Red	.010
TE727050PK	27	Clear	.008
TE730050PK	30	Lavender	.006
TE732025PK	32	Yellow	.004

## 10. LIMITED WARRANTY

Manufacturer warrants this product to the original purchaser for a period of one (1) year from date of purchase to be free from defects in material and workmanship, but not against damages by misuse, negligence, accident, faulty installations and instructions. Manufacturer will repair or replace (at factory's option), free of charge, any component of the equipment thus found to be defective, on return of the component, "PREPAID" to the factory during the warranty period. In no event shall any liability or obligation of the Manufacturer arising from this warranty exceed the purchase price of the equipment. This warranty is only valid if the defective product is returned as a complete assembly without physical damage. The Manufacturer's liability, as stated herein, cannot be altered or enlarged except by a written statement signed by an officer of the company. In no event shall the Manufacturer be liable for consequential or incidental damages. A return authorization is required from Techcon Systems prior to shipping a defective unit to the factory.

Manufacturer reserves the right to make engineering product modifications without notice.

Send warranty returns to:

OK International  
Garden Grove Division  
12151 Monarch Street  
Garden Grove, Ca 92841