

Techcon Systems
TS941/TS934
TS941A/TS934A
Spool Valve

User Guide



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1. SPECIFICATIONS

	TS941/TS934	TS941A/TS934A
Size	4.7" length X 1.5" diameter (119.4mm X 38.1 mm)	4.7" length X 1.5" diameter (119.4mm X 38.1 mm)
Weight	TS941 = 1.6lb (0.728kg) TS934 = 1.15lb (0.522kg)	TS941A = 1.61lb (0.731kg) TS934A = 1.16lb (0.526kg)
Fluid Inlet Port	3/8"NPT female	1/4"NPT female
Fluid Outlet Port	1/4" NPT female	1/4" NPT female
Air Inlet Port	1/4" NPT female	1/4" NPT female
Auxiliary Air Inlet Port	1/8" NPT	1/8" NPT
Minimum Air Pressure Required	70 psi (4.8 bars)	70 psi (4.8 bars)
Maximum Fluid Pressure	2,500 psi (172 bars)	2,500 psi (172 bars)
Operating Frequency	Exceed 400 cycles/min.	Exceed 400 cycles/min.
Wetted Parts	Fluid housing = Stainless steel (TS941); Aluminum (TS934) Valve spool= Hard Chrome plated Stainless Steel Upper and Lower Seals =UHMWPE Seal with EPR O-ring	Fluid housing = Stainless steel (TS941); Aluminum (TS934A) Valve spool=Hard Chrome plated Stainless Steel Upper and Lower Seals =UHMWPE Seal with EPR O-ring

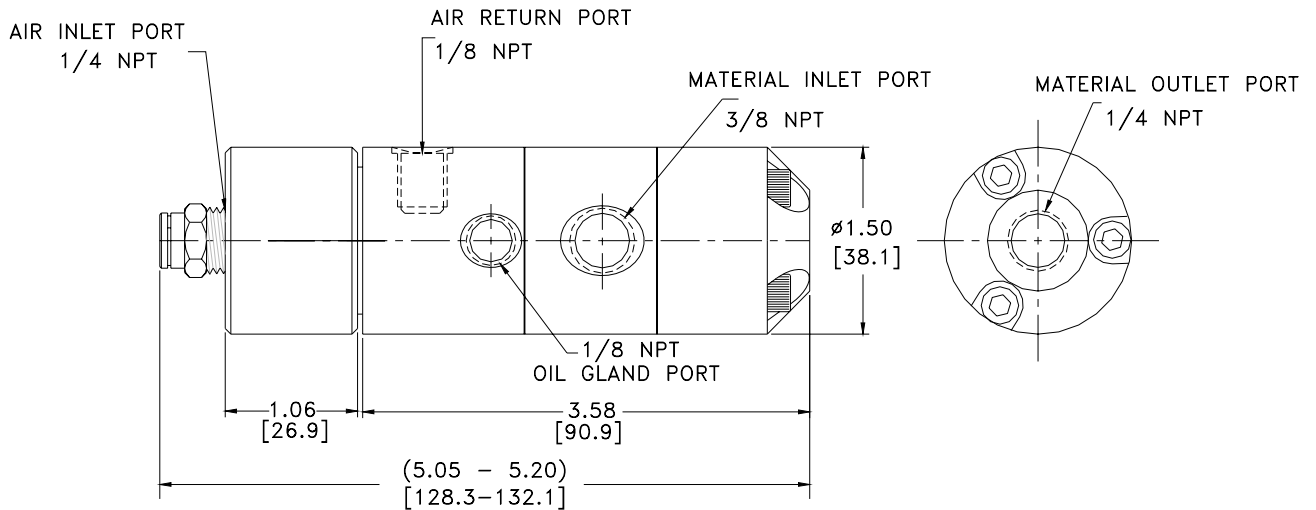


Figure 1.0

2. UNPACKING AND INSPECTION

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

These will include:

- Valve Assembly
- User Guide
- Fitting and Valve Air Hose

Inspect the unit for any damaged which may have occurred in transit. If such damage has occurred, notify the carrier at once. Claim for damage must be made by the consignee to the carrier, and should be reported to the manufacturer.

3. DESCRIPTION

The TS941 spool valve is based on a balanced spool design for a fast “ON/OFF” dispensing action. The hardened spool slides in reinforced UHMWPE seals and it suitable for use with fluids having viscosity of 100 to over 3,000,000 cps at pressure up to 2,500 psi (172 bars). An internal spring return makes the valve fully adaptable for use with Techcon Systems time/pressure controllers.

4. THEORY OF OPERATION

The TS941 valve is a normally closed spool valve. When air pressure is applied at air inlet port (1), the spool assembly (2) moves forward to the open position, allowing the fluid to flow from the fluid inlet port (3) to the fluid outlet port (4). Relieving the input air pressure allows the return spring (5) to pull the spool assembly back in the close position, stopping the fluid flow. During the closing position, the spool movement creates a “suck-back” anti-drip feature.

An Oil chamber (6) is provided above the upper seal to create an additional liquid seal that will prevent moisture from being carried on the spool. The auxiliary air inlet port (7) is provided so that the valve may be connected for air closing with or without the spring.

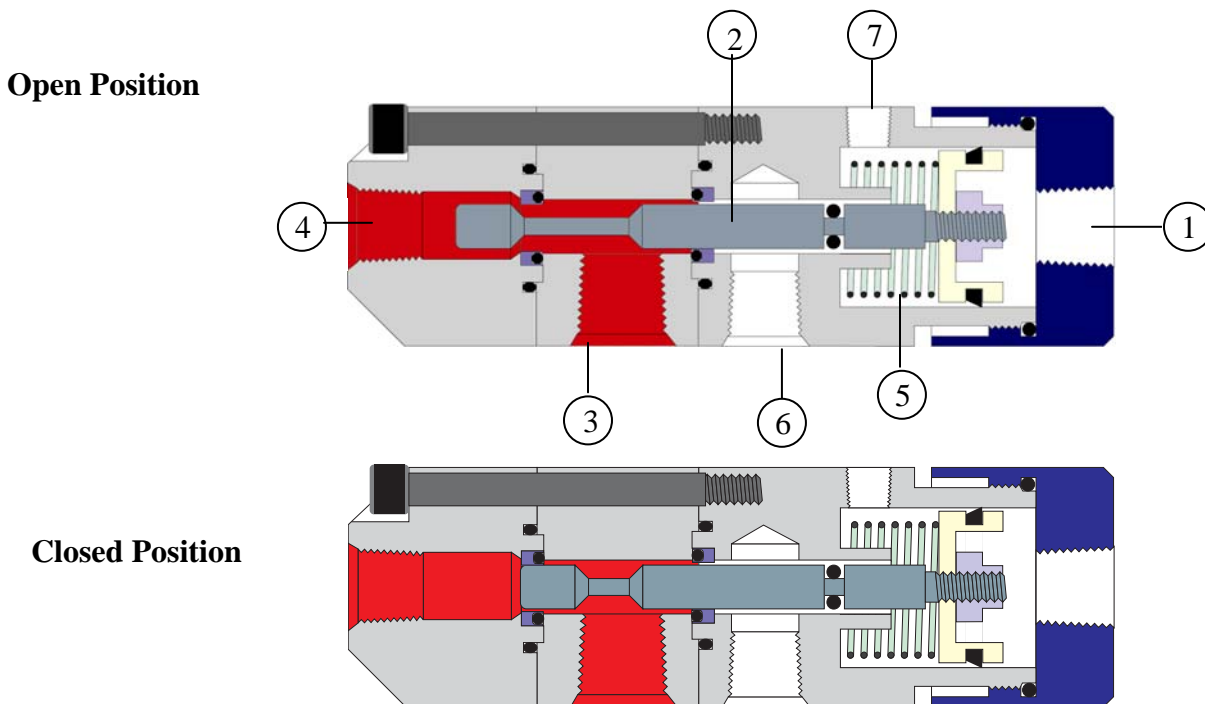


Figure 2.0

5. SETUP INSTRUCTIONS

- Connect the fluid reservoir feed tube (1) to the valve inlet port (2).
- Connect the valve airline (3) to the valve controller or other pneumatic device that is used to control the valve.
- Connect appropriate nozzle or dispensing tip (4) to the fluid outlet port.
- Set the valve controller pressure at 70 psi (4.8 bars)
- Set the fluid reservoir pressure. Do not exceed 2,500 psi (172 bars)
- Make sure all connections are tight
- 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:

- Valve open time
- Fluid reservoir pressure
- Dispensing tip size

NOTE: Techcon makes an available an adjustable “suck-back” cap part number 934-003-000

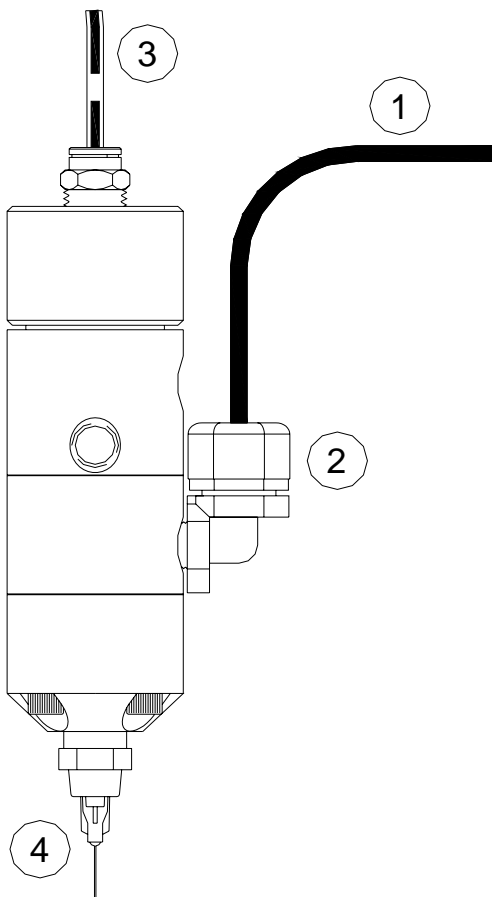


Figure 3.0

6. TYPICAL SYSTEM SETUP

PLANT AIR MUST BE PROPERLY FILTERED AND DRY. IF NOT, SPECIFY A 5-MICRON FILTER REGULATOR.

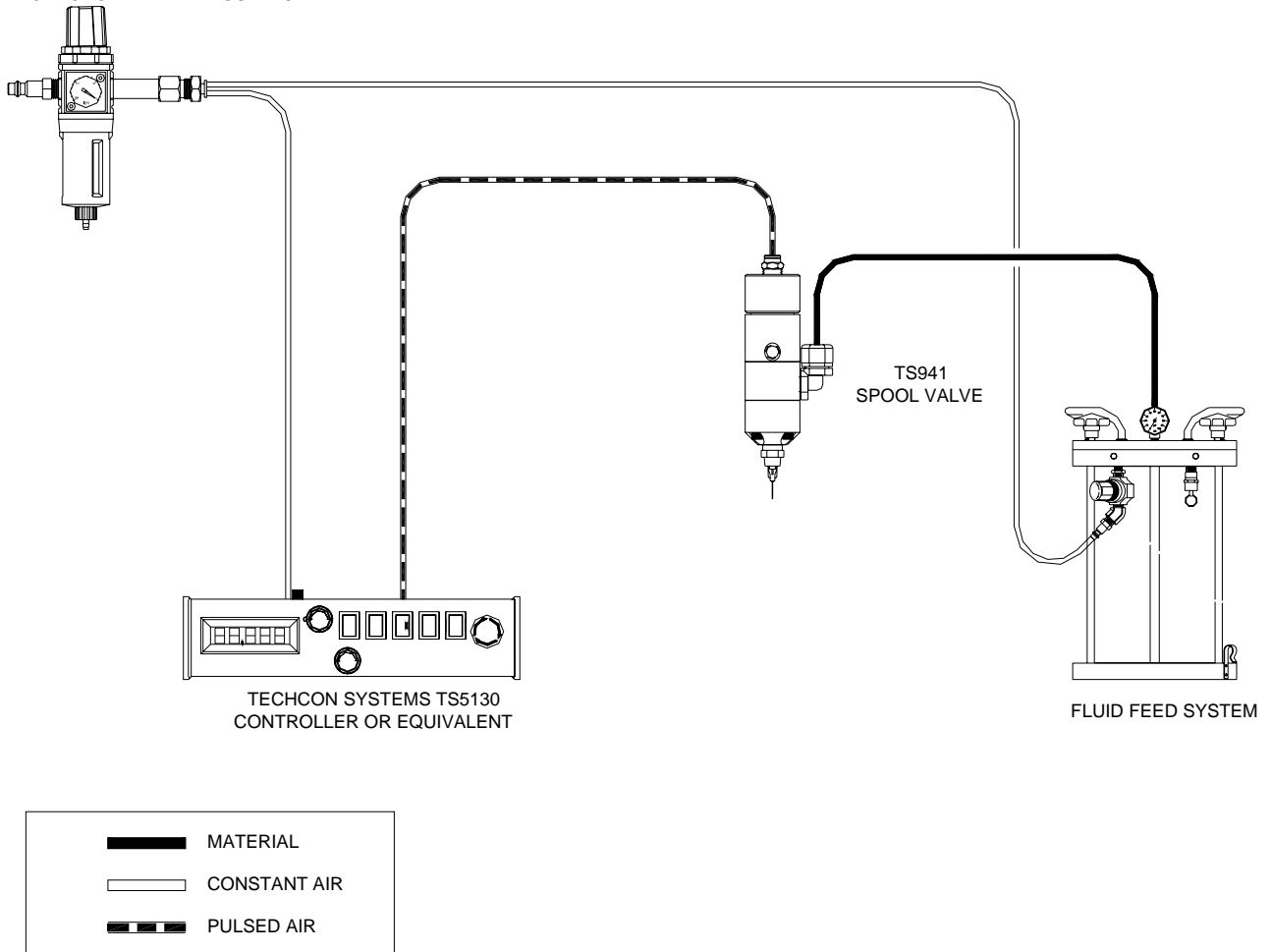


Figure 4.0

7. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTION
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	Replace tip
	Fluid cured in valve chamber	Clean valve thoroughly
Inconsistent fluid flow	Fluid pressure fluctuating	Make sure fluid pressure is constant
	Valve operating pressure is too low	Increase 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
Steady drip	Lower seal damaged or worn	Replace lower seal
	Spool damaged	Replace spool
	Inlet air fitting is too long, pushing the spool open	Replace air fitting
	Valve re-assembled incorrectly	Re-assemble valve follow instructions

8. MAINTENANCE AND CLEANING:

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.

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

- 1) Release fluid pressure
- 2) Disconnect fluid line
- 3) Disconnect valve air line
- 4) Remove end cap (1)
- 5) Pull out Piston/valve spool assembly (4)
- 6) Remove the spring from air cylinder (2)
- 7) Remove socket head cap screws (10)
- 8) Separate material outlet block (9), material inlet block (6) and air cylinder (3). Clean these parts if necessary
- 9) Replace o-rings (13) on the spool shaft, material outlet block (8) and air cylinder (12) if worn or damaged.
- 10) Remove lower seals (7) out of the outlet block and upper seal (5) out of the air cylinder using a small screw driver
- 11) Clean seal seats and carefully install new seals. It is important that seals should be replaced in the same orientation to prevent leaks and accelerated wear.
- 12) Lubricate O-rings with "Parker-o-lube" or similar grease
- 13) Assemble Material outlet block, Material inlet block and Air cylinder.
- 14) Thread Socket head cap screws into assembled valve. Tighten uniformly to ensure proper valve alignment.
- 15) Insert the spring back into the air cylinder.
- 16) Insert Piston/valve spool into valve body.
- 17) Install air fitting to end cap.
- 18) Install End cap to air cylinder. **(HAND TIGHTEN ONLY)**

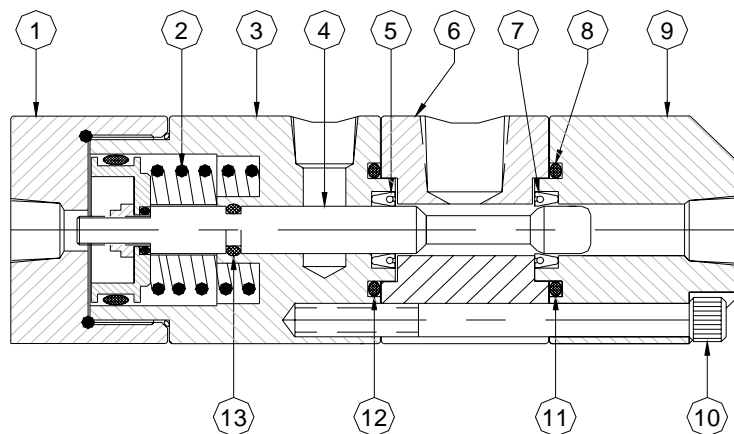


Figure 5.0

9. SPARE PARTS AND ACCESSORIES

9.1 Spare Parts

PART NUMBER	DESCRIPTION
941-SEALKIT	Seal repair kit (include O-rings, upper and lower seal)
941-VALVEKIT	Valve repair kit (include seal repair kit plus valve spool)

9.2 Alternative Seals

Techcon Systems offers other custom seal materials for different applications. The standard seals installed in the valve are made of UHMWPE with EPR o-ring. The following seals are available:

PART NUMBER	DESCRIPTION
TSD400-56	Teflon® seal with EPR expander O-ring
TSD400-58	Teflon® seal with Viton expander O-ring
TSD400-49	Teflon® seal with stainless steel expander spring

9.3 Standard Accessories

PART NUMBER	DESCRIPTION
TSD700-1	Oiler cup, 90 degrees
TSD931-15	1/4" NPT X Female luer lock fitting
TSD918-3	1/4" NPT Male X 1/4" NPT Female Elbow fitting
TSD918-7	Needle adapter
TSD700-1	Oiler cup
TSD912-15	3/8" NPT X 1/4" NPT reducer

9.4 Optional Accessories

PART NUMBER	DESCRIPTION
TSD700-2	Oiler cup, straight
918-006-000	Tip adapter, Metal (Brass and Stainless steel)
T1000268	Bracket
934-003-000	Adjustable suck back cap

T1000268 Bracket

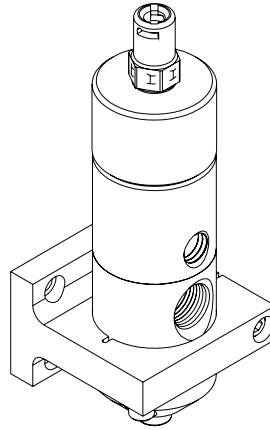
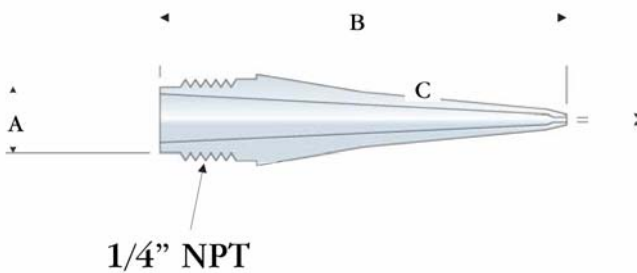


Figure 6.0

Dispensing Nozzles

- All dimensions listed are nominal and for reference only.
- Material: Polyethylene



Part Number	A (O.D.)	B (Length)	C (Orifice)
TS216	.44"	2.6"	.063"
TS218	.44"	2.6"	.125"
TS416	.44"	4.0"	.063"
TS418	.44"	4.0"	.125"
TS432	.44"	4.0"	.031"
TS490	.44"	4.0"	.094"
TS616	.44"	6.0"	.063"
TS618	.44"	6.0"	.125"

Note: TS416 and TS418 nozzles can also be ordered with 30, 45, 80 and 90 degree bends.

