Techcon
TS5322/TS5322D
Adjustable Mini Spool Valve

User Guide

www.techcon.com

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12. 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.

All returns must be issued with a Returns Authorization number, prior to return.
Send warranty returns to:

Americas and Asia

OK International
10800 Valley View Street
Cypress, CA 90630

Europe

OK International
Eagle Close
Chandler's Ford Ind Est
Eastleigh
Hampshire
SO53 4NF
United Kingdom

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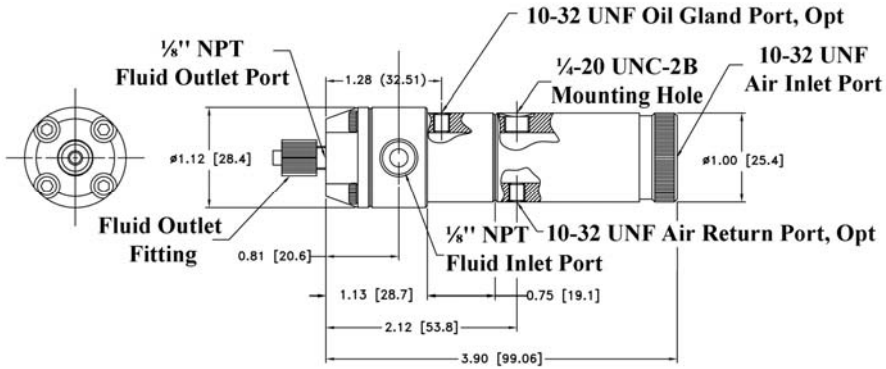
1. SPECIFICATIONS

	TS5322	TS5322D
Size	4.0" length X 1.12" diameter (102mm X 28mm)	4.0" length X 1.12" diameter (102mm X 28mm)
Weight	0.31lb (139g)	0.26lb (119g)
Fluid Inlet Port	⅛" NPT female	⅛" NPT female
Fluid Outlet Port	⅛" NPT female	⅛" NPT female
Air Inlet Port	10-32 UNF	10-32 UNF
Auxiliary Air Inlet Port	10-32 UNF	10-32 UNF
Minimum Air Pressure	70 psi (4.8bar)	70 psi (4.8bar)
Maximum Fluid Pressure	500 psi (34.5bar)	100 psi (6.9bar)
Operating Frequency	Exceeds 500 cycles/min.	Exceeds 500 cycles/min.
Mounting Port	¼-20 UNC-2B	¼-20 UNC-2B
Wetted Parts	Type 303 SS, Al., Teflon®, EPR	Type 303 SS, Delrin®, Teflon®, EPR



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 and air hose
- Sample tip kit and fluid line
- User guide

3. DESCRIPTION

The TS5322 Series Mini Spool Valve is designed to dispense medium to high viscosity fluids with very precise deposits, over a wide range of shot and bead sizes. An internal spring return makes the valve fully adaptable for use with any time/pressure controller. A short opening stroke provides extremely fast, positive shut-off. An external adjustment makes it easy to fine tune "suck-back" level. The TS5322's compact design allows for mounting flexibility and easy integration into automated applications.

4. THEORY OF OPERATION

The TS5322 Series Mini Spool Valve is a normally closed spool valve with adjustable "suck-back". Input air pressure of 70 psi (4.8bar) through port (1) drives the spool assembly (2) forward, opening the material path from the material inlet (3) to the material outlet (4). Relieving the input air pressure allows the spool assembly to travel back to the closing position, ensuring rapid "fail-safe" shut-off of fluid flow

An oil chamber (5) 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 (6) is provided so that the valve may be connected for air closing with or without the spring.

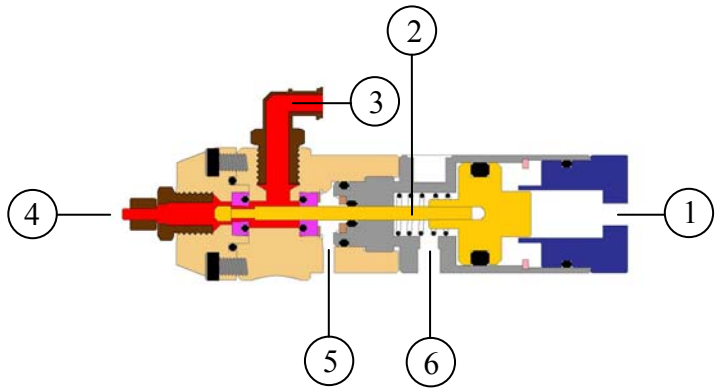


Figure 2.0

11. TROUBLESHOOTING

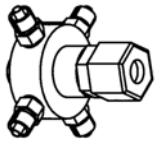
PROBLEM	POSSIBLE CAUSE	CORRECTION
No fluid flow	Fluid pressure too low	Increase fluid pressure
	Operating pressure too low	Increase air pressure to 70 psi (4.8bar)
	Dispense tip clogged or damaged	Replace tip
	Fluid cured in valve chamber	Clean valve thoroughly
Inconsistent fluid flow	Fluid pressure fluctuating	Make sure fluid pressure is constant
	Valve operating pressure is too low	Increased valve pressure to 70 psi (4.8bar)
	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 opened	Replace air fitting
	Valve re-assembled incorrectly	Re-assemble valve, follow re-assembly instructions

10. STANDARD ACCESSORIES

PART NUMBER	DESCRIPTION
TSD700-9	Oiler Cup, 90 Degrees
7305XCON	Cleaning Gel, 30cc Syringe

10.1 OPTIONAL ACCESSORIES

PART NUMBER	DESCRIPTION
TS918-46	4-Way Fluid Manifold
TN00DKIT	Complete Dispensing Tip Kit
9000-000-100	Sample Tip Kit
5322-SIT	Seal Insertion Tool



10.2 FLUID FITTINGS AND TUBING

PART NUMBER	DESCRIPTION
TSD1003-16	⅛" NPT to ¼" O.D. Tube, 90° Elbow
TSD1002-17	⅛" NPT to ⅜" O.D. Tube
TSD1002-18	⅛" NPT to ¼" O.D. Tube
TSD1002-38	¼" NPT to ¼" O.D. Tube
TSD1099-22	⅜" O.D. X ¼" I.D. Tube, Black, Polyethylene
TSD1099-23	⅜" O.D. X ¼" I.D. Tube, Clear, Polyethylene
TSD1099-24	¼" O.D. X ⅛" I.D. Tube, Clear, Polyethylene
TSD1099-25	¼" O.D. X ⅛" I.D. Tube, Black, Polyethylene
TSD1099-45	6mm O.D. X 4mm I.D, Clear, Polyethylene
TSD1099-46	6mm O.D. X 4mm I.D, Black, Polyethylene
TSD126-360BPK	Luer Lock Tubing, 60" (1524mm) , Black

10.3 BRACKETS

PART NUMBER	DESCRIPTION
918-033-000	Productions Master Stand (Base & Support)
918-000-012	Rod Clamp Assembly
1212-000-008	6" (152.4mm) Threaded Mounting Rod

5. SET-UP INSTRUCTIONS

1. Connect the fluid reservoir feed tube (1) to the valve inlet port (2).
2. Connect the valve air hose (3) to the valve controller or other pneumatic device, which is used to control the valve.
3. Connect an appropriate nozzle or dispensing tip (4) to the fluid outlet port.
4. Set the valve controller pressure at 70 psi (4.8bar).
5. Set the fluid reservoir pressure. Do not exceed 500 psi (34.5bar). For TS5322D, do not exceed 100 psi (6.9bar).
6. Ensure 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:

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

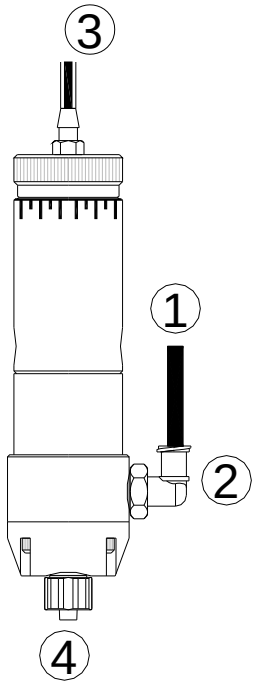


Figure 3.0

6. TYPICAL SYSTEM SET-UP

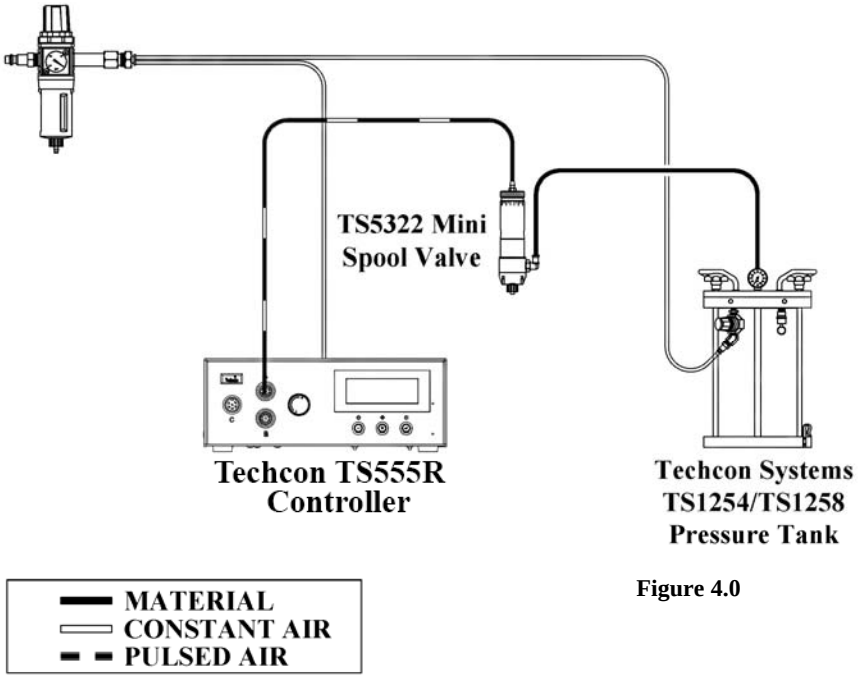
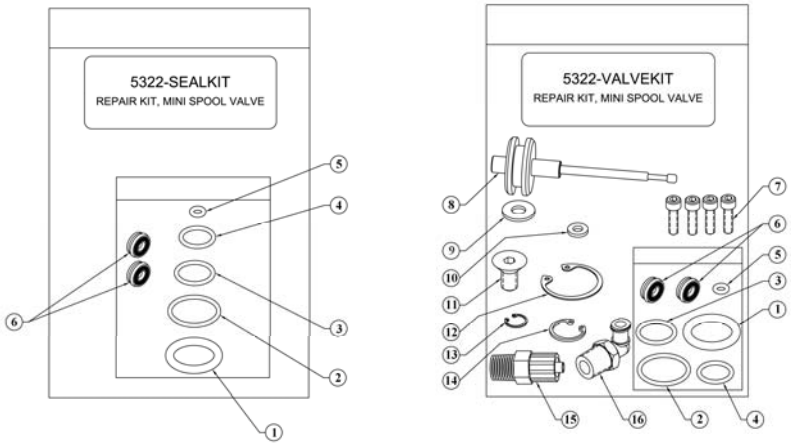


Figure 4.0

9. REPAIR KITS



ITEM	PART NUMBER	DESCRIPTION	QTY
1	TSD1400-208A	Piston O-Ring, Buna	1
2	TSD1400-017A	End Cap, O-Ring, Buna	1
3	TSD1400-014A	O-Ring, Buna	1
4	TSD1400-013A	O-Ring, Buna	1
5	TD1400-006A	O-Ring, Buna	1
6	TSD400-71	U-Cup Seal	2
7	TSD1103-349	Outlet Screw	4
8	5322-000-001	Spool/Piston Assembly	1
9	TSD1109-52	Flat Washer	1
10	TSD1109-45	Nylon Washer	1
11	TSD1106-36	Mounting Screw	1
12	TSD1120-15	Retaining Ring, Large	1
13	TSD1120-2	Retaining Ring, Small	1
14	TSD1120-6	Retaining Ring, Medium	1
15	TSD931-57	Luer Lock Adaptor	1
16	TSD931-75	Luer Lock Adaptor, Elbow	1

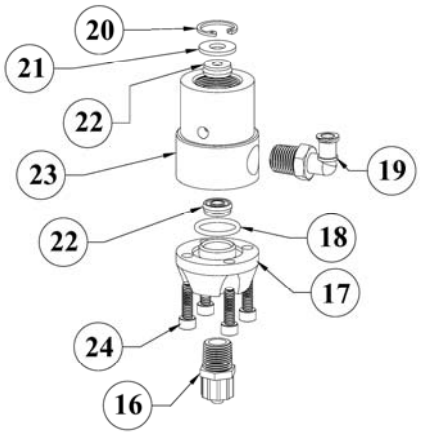
*These kits are for both variations of Techcon Miniature Spool Valve

SPARE PARTS, CONT.

Valve Front Section

Recommended lubricant:

All O-Rings & seals must be lubricated with Bimba HT-99, or equivalent, with the exception of TSD400-71, which must remain dry.



ITEM	PART NUMBER	DESCRIPTION	QTY
16	TSD931-57	Luer Lock Adaptor	1
17	5320-000-001	Outlet Block For TS5322	1
17*	5320D-000-001	Outlet Block For TS5322D	1
18	TSD1400-014A	O-Ring, Buna	1
19	TSD931-75	Luer Lock Adaptor, Elbow	1
20	TSD1120-6	Retaining Ring, Medium	1
21	TSD1109-52	Flat Washer	1
22	TSD400-71	U-Cup Seal	2
23	5320-000-002	Body For TS5322	1
23*	5320D-000-002	Body For TS5322D	1
24	TD1103-349	Outlet Block Screw	4
	TSD700-9	Oiler Cup, Not Shown	1

7. MAINTENANCE AND CLEANING:

Tool required: O-ring removal tool (P/N TSD1597-7), snap ring pliers.

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

NOTE:

- ***Make sure the fluid pressure is released before valve is disassembled.***
- ***To replace seals please order seal kit part number: 5322-SEALKIT.***
- ***To repair valve please order valve kit part number: 5322VALVEKIT.***

7.1 Cleaning and seal replacement for fluid housing: Refer to figure 5.0

1. Release fluid pressure.
2. Disconnect fluid line and remove fluid inlet fitting.
3. Disconnect valve air hose.
4. Hold the fluid housing (6) and rotate the air cylinder (18) counterclockwise. When completely un-threaded, pull the two valve segments straight apart to separate.
5. Inspect o-ring (17), replace if damaged.
6. Remove four socket head cap screws (12) from the outlet block (11).
7. Pull the outlet block (11) away from the fluid housing (6).
8. Inspect o-ring (10), replace if damaged.
9. Using snap ring pliers, remove retaining ring (8).
10. Remove stainless steel washer (9) from fluid housing (6).
11. Remove upper seal (14).
12. Clean the fluid housing (6), outlet block (11), spool assembly (5), upper and lower seal (13) and (14).

NOTE: Avoid using sharp probes for cleaning. Any nicks or scratches on the seal or the surfaces of the spool assembly may cause leakage

13. Inspect both upper (14) and lower seals (13), replace seals if damaged found.
14. Insert upper seal (14) into fluid housing (6) using the seal insertion tool 5322-SIT. Make sure the o-ring side is facing down.
15. Insert stainless steel washer (9) and secure with retaining ring (8) using snap ring pliers.
16. Insert lower seal (13) into outlet block (11). Make sure the o-ring side is facing up.

17. Insert o-ring (10) into outlet block (11).
18. Re-install outlet block (11) to fluid housing (6).
19. Lubricate o-ring (17) with Bimba HT-99, or equivalent.
20. Thread the air cylinder/spool assembly into fluid housing/outlet block assembly. Make sure not to cross thread both parts.

7.2 Cleaning and seal replacement for air cylinder:

1. Hold the fluid housing (6) and rotate the air cylinder (18) counterclockwise. When completely un-threaded, pull the two valve segments straight apart to separate.
2. Remove end cap (19) by rotating it in counterclockwise direction.
3. Using the snap ring pliers, remove the retaining ring (2).
4. Pull the spool assembly (5) straight out from the air cylinder (18).
5. Remove the compression spring (4).
6. Using the snap ring pliers, remove the retaining ring (7).
7. Remove the nylon washer (15) from the air cylinder.
8. Using o-ring removal tool, remove o-ring (16).
9. Replace all o-rings if necessary.
10. Lubricate all o-rings with Bimba HT-99, or equivalent.
11. Re-install o-ring (16).
12. Re-install nylon washer (15) and secure with retaining ring (7) Re-install compression spring (4) into air cylinder (18).
13. Thread the air cylinder into fluid housing/outlet block assembly making sure not to cross thread both parts.
14. Re-install spool assembly (5) and secure with retaining ring (2).
15. Re-install end cap (19).

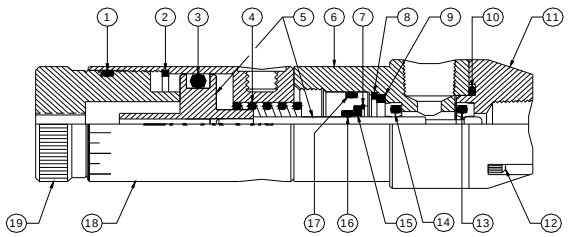


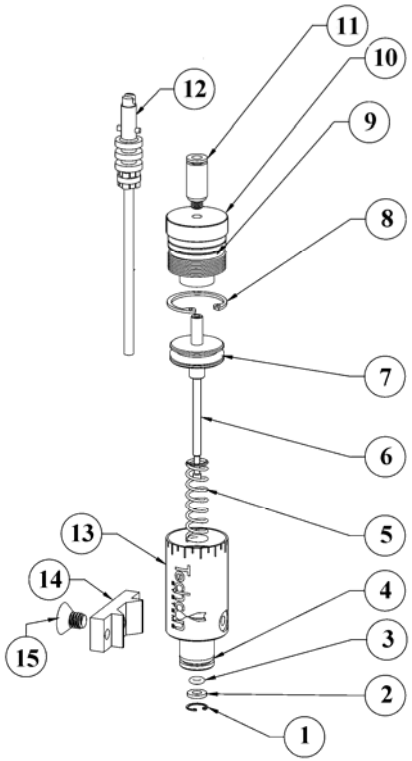
Figure 5.0

8. SPARE PARTS

Valve Rear Section

Recommended lubricant:

All o-rings & seals must be lubricated with Bimba HT-99, or equivalent.



ITEM	PART NUMBER	DESCRIPTION	QTY
1	TSD1120-2	Retaining Ring, Small	1
2	TSD1109-45	Nylon Washer	1
3	TD1400-006A	O-Ring, Buna	1
4	TSD1400-013A	O-Ring, Buna	1
5	TSD1150-5	Spring	1
6	5322-000-001	Spool/Piston Assembly	1
7	TSD1400-208A	Piston O-Ring, Buna	1
8	TSD1120-15	Retaining Ring, Large	1
9	TSD1400-017A	End Cap O-Ring, Buna	1
10	5520-000-007	End Cap	1
11	TSD1002-37	Air Fitting, 4mm	1
12	A0100478	Air Hose/Connector Assembly, 4mm	1
13	5520-000-001	Air Cylinder	1
14	918-000-048	Mounting Bracket	1
15	TSD1106-36	Mounting Screw	1