



Model A164C

P.O. Box 80769 • Lafayette, LA 70598-0769 • (337) 235-9838 • FAX (337) 235-9852 • www.sidewinderpumps.com

Pneumatic Powered - Plunger Pumps

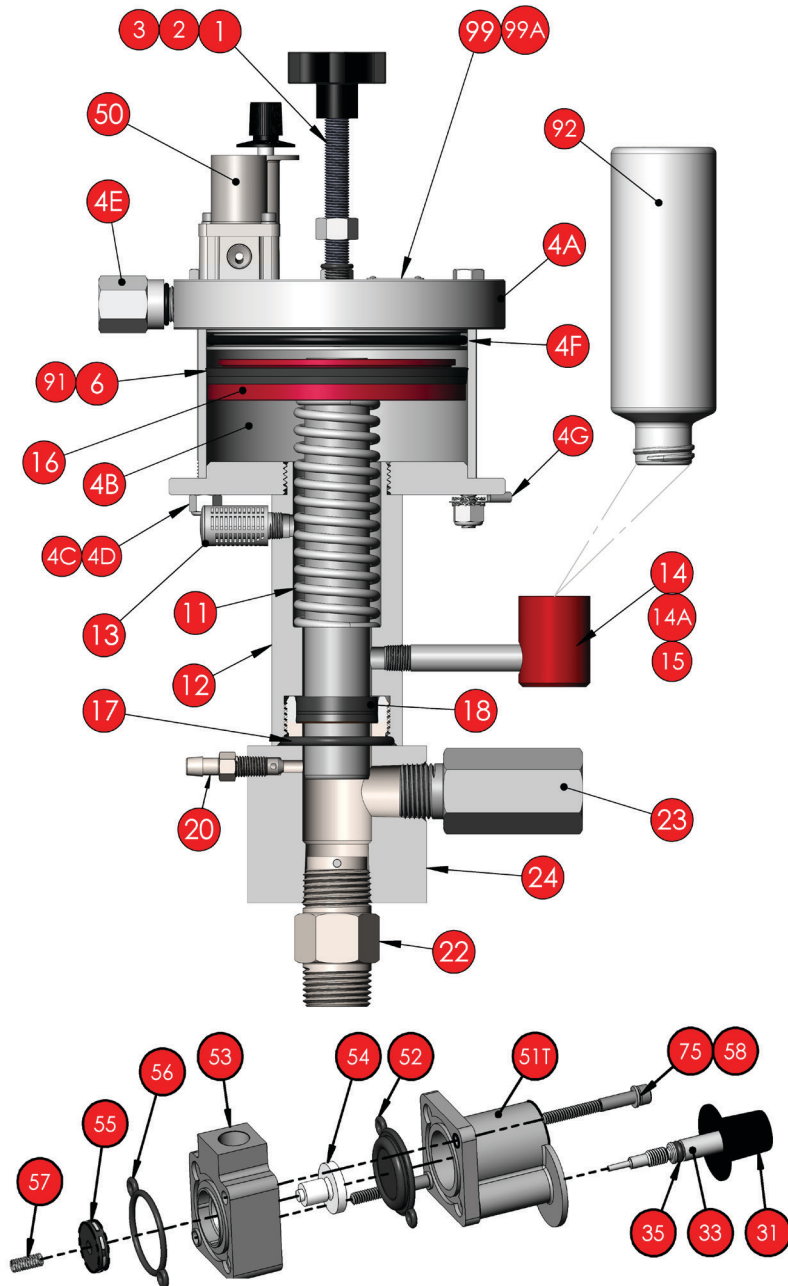
Installation & Operating Instructions for Sidewinder Pumps (See Pages 1 - 3, and Figure "A" on Page 4)

- 1) When installing pump, manufacturer recommends the use of 316SS tubing rated for the maximum discharge pressure of the specific pump model being used. **DO NOT USE poly tubing, copper tubing, or seamed tubing as a discharge line. Use of incorrect material may result in discharge line failure leading to personal injury, death, and/or compromise to the injection objectives. For Safety Purposes and Good Engineering Practice, manufacturer recommends placement of a properly sized Pressure Relief Valve (PRV) / Pressure Safety Valve (PSV) on the pump discharge line at the pump, with the relief line plumbed back to the chemical tank (#7).**
- 2) Install pump setting gauge (#9) onto chemical tank (#7), with an isolation ball valve (#8) between tank and gauge.
- 3) Install pump with suction filter (#11) with isolation ball valve (#8) between pump and pump setting gauge (#9).
- 4) A regulator (#2) must be installed in the air/gas supply line to provide correct supply of air/gas pressure. Connect air/gas supply line from regulator (#2) to the pump supply inlet using 1/4" NPT tee with 0-150 PSI gauge. An isolation ball valve (#5) should be installed between air/gas regulator (#2) and the pump. Use minimum of 3/8 inch diameter tubing (#3) with a maximum distance of 10 feet from regulator to the pump. If longer distance is required or multiple pumps are run off same supply line, a volume bottle (#4) should be installed within 5 feet of the pump(s).
- 5) If the air/gas supply is "wet", a volume bottle (#4) with a drain and filter must be installed in between the regulator (#2) and pump(s) as close as possible to the pump(s). If the air/gas supply is extremely "wet" a scrubber (#1) must be installed on the main flow line with regulator taking its supply from the scrubber.
- 6) Set the regulator (#2) to required pressure. See Pump Selection Guide and Performance Chart
- 7) Connect discharge line to the 1/4 inch NPT discharge check valve. For good safety practice an in-line check valve (Sidewinder part number LC-4S) (#10) must be installed on the discharge line at the injection point.
- 8) If natural gas is used as the supply gas, pump exhaust must be vented via the 1/8" NPT threaded port on the control valve body (#53) to safe disposal area or non pressurized disposal device
- 9) Open bleeder valve (#20 Pump Breakdown) until air removed from pump chamber. Isolate pump setting gauge (#9) from tank. Open air/gas isolation valve (#5) to pump. Run pump following directions on pump setting gauge to determine flow rate.
- 10) Adjust speed of pump by rotating dial (#31 Pump Breakdown), clockwise to decrease number of strokes per minute, counter clockwise to increase number of strokes per minute. Further volume control can be set by varying the length of the piston/plunger stroke with the stroke adjuster (#1 Pump Breakdown).
- 10) Reset isolation ball valves (#8) so pump takes chemical direct from tank (#7).
- 11) **Pump must be properly grounded before use in hazardous locations. See Page 7 of 8 for details on ATEX safety requirements.**

Pump Repair or Emergency Shutdown

- 1) To perform repairs to the pump or to the pump setting gauge, close the air/gas supply isolation ball valve (#5), close both isolation ball valves (#8) between tank (#7) & gauge (#9) and pump & gauge (#9). Remove component(s) to be repaired. After repair, reinstall component(s). Open isolation ball valve (#8) between tank (#7) and gauge (#9), check for leaks. Open isolation ball valve (#8) between pump and gauge (#9), check for leaks. Perform steps 8 thru 10 above.
- 2) **In event of an emergency the following steps are to be done in the following order:**
 - i) **Close air/gas supply isolation ball valve (#5)**
 - ii) **Close isolation ball valve #8 between pump setting gauge (#9) and chemical tank (#7)**
 - iii) **Close isolation ball valve #8 between pump and pump setting gauge (#9)**

Parts List / Model A164 'C'



Item No.	Quantity Required	Part Description	Part Number
			Model 164 'C'
1	1	Stroke Adjuster	1-42
2	1	Locknut-Stroke Adjuster	2-42
3*#	1	Seal-Stroke Adjuster	3-42
4A	1	4.00" Powerhead	4A-44-2
4B	1	Powerhead Cylinder	4B-44-2
4C	5	Powerhead Tie Bolt	4C-44-2
4D	5	Powerhead Tie Bolt Nut	4D-44-2
4E	1	Powerhead Inlet Connector Fitting	4E-44-2
4F*#	1	Powerhead Cap O-Ring	4F-44
4G	1	Ground Kit (Includes Bolt & Nut)	4-GK-1-B
6*#	1	U-Cup (Viton U-Cup available see note 6 ^a)	6-44
10	1	Mounting Flange	10-164-B
11*#	1	Return Spring (Spring options see not 11 ^a)	11-164
12C	1	Mounting Tube	12-164
13A	1	Vent	13A-42
14	1	Lube Body	14-42
14A	1	Lube Body O-Ring	14A-42
15	1	Lube Tube	15-43
16*	1	Piston-Plunger Assembly Piston-Plunger-316 SS Piston-Plunger-440C SS Piston-Plunger-SS w/ Chrome Plating Piston-Plunger-SS w/ Nickel Plating Customer Specified Special	16-164-2 16-164-3 16-164-7 16-164-8 16-164-9
17*	1	Mounting Tube O-Ring	17-164
18*	1	Plunger Seal Assembly Plunger Seal-Teflon Graphite Uniseal Plunger Seal-Techno Uniseal (Polyimede) Plunger Seal-Viton O-Ring Plunger Seal-Buna-N O-Ring Plunger Seal-Virgin Teflon Uniseal Plunger Seal-Virgin Teflon Uniseal w/ Viton O-Ring Insert Plunger Seal-Virgin Teflon Uniseal w/ Buna-N O-Ring Insert (Seals Continued)	18-164G 18-164G-1 18-164G-2 18-164G-3 18-164G-4 18-164G-4V 18-164G-4B

Sidewinder Pump Model Number Chart

Fill in boxes below to determine
Sidewinder Pump Size & Material Requirements

Pump Size		Materials Required	
A	<input type="text"/>	<input type="text"/>	<input type="text"/>
C	<input type="text"/>	<input type="text"/>	<input type="text"/>
Plunger Size		Check Valve & Body Material	
4 0.250"		316 SS (Standard)	2
6 0.375"		Hastelloy	5
8 0.500"		Titanium	6
16 1.000"			
Piston Size	Production Series*	Plunger Packing	
0 1.25"		0 Teflon Graphite Uniseal	
2 2.25"		1 Techno Uniseal (Polyimede)	
4 4.00"		2 Viton O-Ring	
		3 Buna O-Ring	
		4 Teflon Uniseal	
		4B Teflon Uniseal w/ Buna O-Ring Insert	
		4V Teflon Uniseal w/ Viton O-Ring Insert	
		5 Chemraz O-Ring	
		6 Hitec O-Ring (Aflas)	
		7 Virgin Teflon O-Ring	
		8 Polyblend Uniseal	
		9 Special	
		V Teflon Graphite Uniseal w/ Viton O-Ring Insert	
Plunger Material			
0 17-4 SS (Standard)			
2 316 SS			
3 440C SS			
4 Ceramic			
5 Hastelloy			
6 Titanium			
7 Chrome Plated Stainless Steel			
8 Electroless Nickel Plated Stainless Steel			
Special Options:	2 - Viton Piston U-Cup 4 - Ceramic Check Valve Balls MP - Ni Cobalt Moly Return Spring		

*Production Series-Designates current factory production model.
For explanation of production series, visit our website.

18*#	1	(Seals Continued)	
		Plunger Seal-Chemraz O-Ring Plunger Seal-Hitec O-Ring Plunger Seal-Virgin Teflon O-Ring Plunger Seal-Polyblend Uniseal Customer Specified Material Plunger Seal-Teflon Graphite Uniseal w/ Viton O-Ring Insert	18-164G-5 18-164G-6 C/F 18-164G-8 18-164G-9 18-164G-V
NOTE: O-Ring Seals - Model A164 requires (1) O-Ring and (2) narrow back rings (18D-164). 12C & 24 come as a matched set only and cannot be purchased separately.*			*Item
20	1	Bleeder Valve-316 SS	20-42-2
22*	1	Suction Check Valve-316 SS	22-164-2
23*	1	Discharge Check Valve-316 SS	23-164-2
24	1	Fluid Pump Chamber-316 SS	24-164-2
31	1	Time Knob	31-42
33	1	Timer Stem	33-42C
35**	1	Timer Stem O-Ring	35-42
51	1	Control Valve Cover w/ Timer	51T-42C-2
52**	1	Control Valve Diaphragm	52-42
53	1	Control Valve Body	53-44-2
54**	1	Actuator	54-42
55**	1	Poppet	55-42
56**	1	Body Seal	56-42
57**	1	Spring	57-42
58**	2	Mounting Screw	58-42
75**	2	Mounting Screw Lockwasher	75-42
91*#	1	Piston Grease (not shown)	91-42
92*#	1	Plunger Lube (4 oz.)	92-122

Notes

* Parts included in a pump end repair kit. Also included is 91-42 Silicon Piston Grease. This kit is designated by a "K" preceding the pump model number.

** Parts included in a timer valve repair kit. This part number is KVC-40F for the Model 164 pump. The Series "C" Control Timer Valve does not require part #37-42 O-Ring Seal in the KVC-40 kit.

^a Item 6 Piston U-Cup in Viton - Part #6-44-4.

^b Item 11 Return Spring available in Ni Cobalt Moly - part number #11-164-MP.

Theoretical Fluid Volume Pumped

Numbers are approximate; to insure accurate flow rates Sidewinder Pumps recommends installing a Pump Setting Gauge.

Quarts/Day = 1.5 x Strokes/Min. for 1/4" Plunger

Quarts/Day = 3.0 x Strokes/Min. for 3/8" Plunger

Quarts/Day = 6.0 x Strokes/Min. for 1/2" Plunger

At high pump rates, volume per stroke is reduced slightly.

Rule of Thumb:

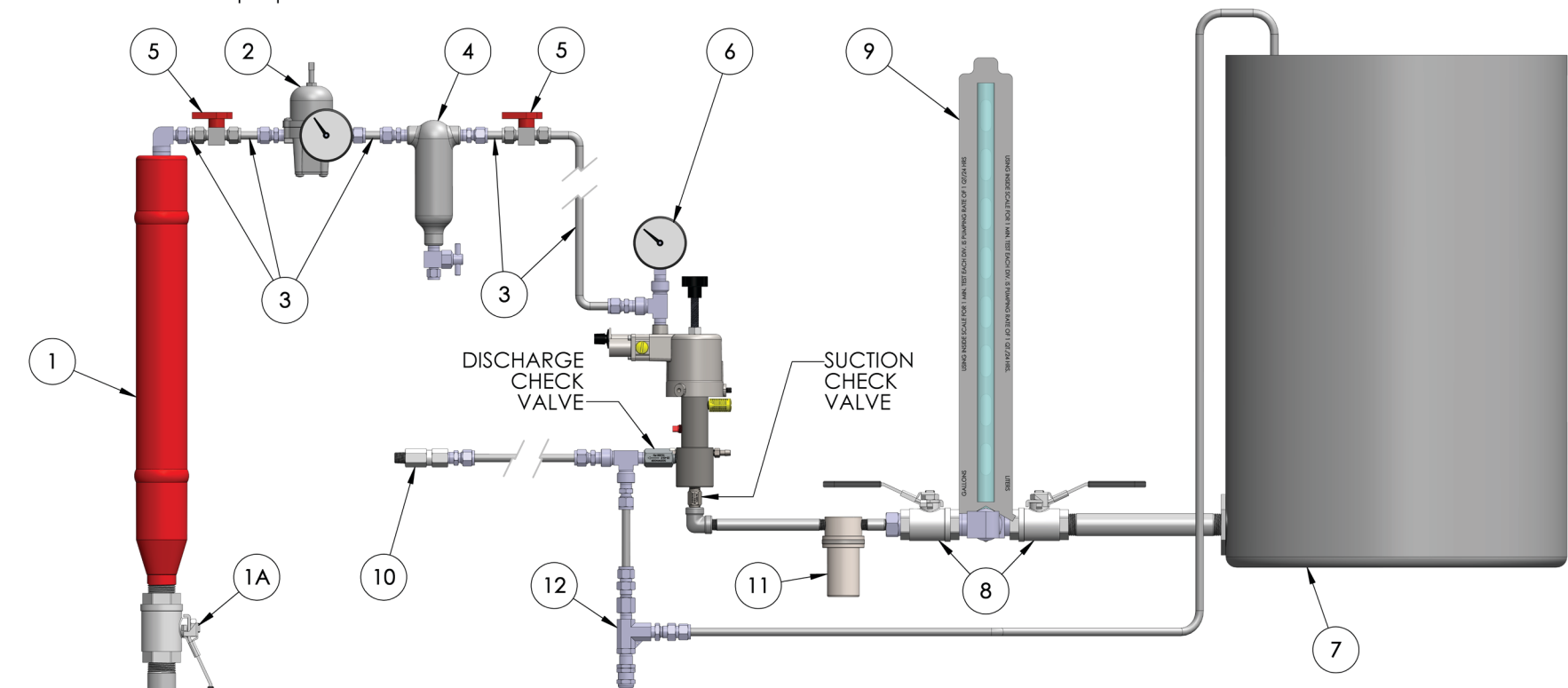
For 1/4" Plunger, 1 spm = 1.5 Qt/Day • For 3/8" Plunger, 1 spm = 3.0 Qt/Day • For 1/2" Plunger, 1 spm = 6 Qt/Day



Chemical Metering Pumps

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Suggested Pump Installation and System Setup



LEGEND

- | | |
|--|---|
| 1) SCRUBBER UNIT INSTALLED ON SUPPLY FLOW LINE | 7) CHEMICAL SUPPLY DRUM / TANK |
| 1A) BALL VALVE - FLOW LINE | 8) BALL VALVES - ISOLATION VALVES FOR TANK |
| 2) STEP DOWN REGULATOR WITH PRESSURE GAUGE | 9) PUMP SETTING GAUGE |
| 3) SUPPLY LINE 3/8" TUBING | 10) IN-LINE DISCHARGE CHECK VALVE (AT POINT OF ENTRY) |
| 4) VOLUME BOTTLE / DROP OUT TANK WITH DRAIN | 11) IN-LINE SUCTION FILTER |
| 5) BALL VALVE | 12) RELIEF VALVE (SET AT 10% OVER M.O.P.) |
| 6) 1/4" TEE AT PUMP SUPPLY INLET WITH PRESSURE GAUGE | |

Sidewinder Pumps, Inc. asserts Trademark rights in and to the distinctive appearance of Sidewinder model A40/A60/A80 & A42/A62/A82 pumps.

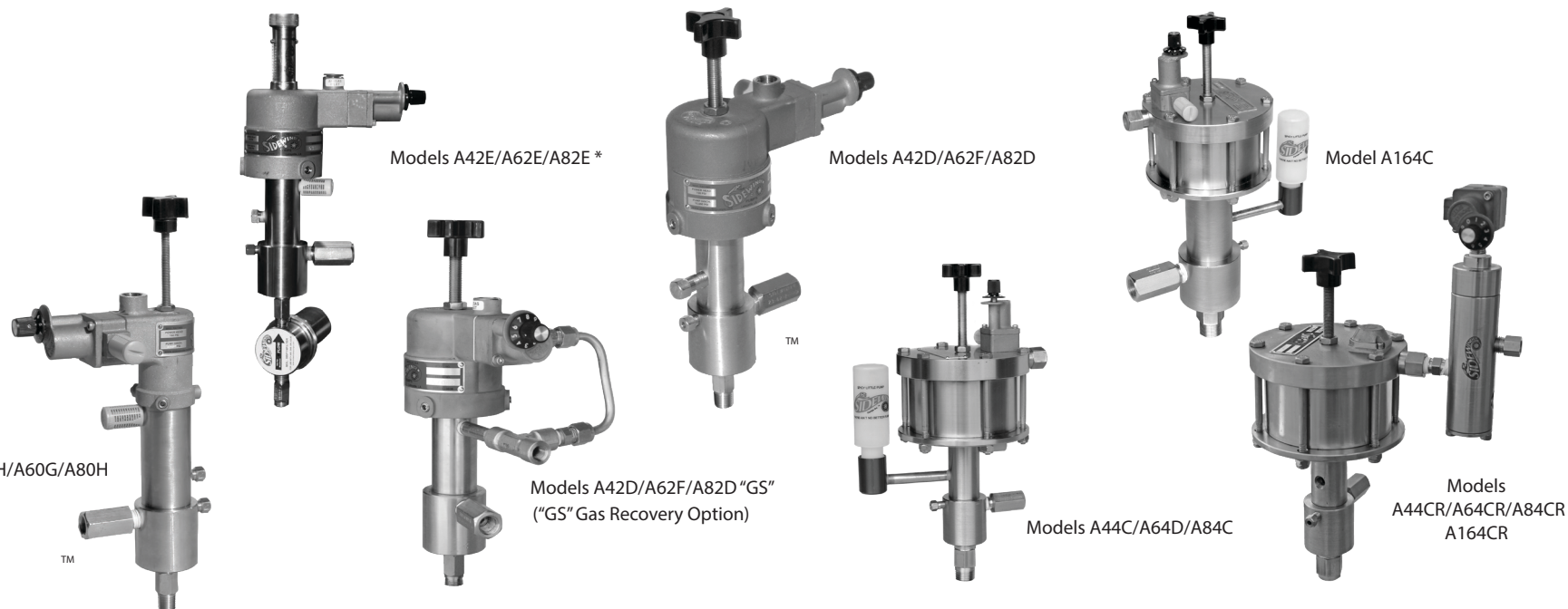
Troubleshooting The Sidewinder Chemical Pump

Problem	Possible Cause	Action
Control valve not cycling	<ul style="list-style-type: none"> No supply pressure Pump speed control closed Leak in control or valve Supply gas blowing through to exhaust due to speed control too wide, trash under valve seat or restriction in air/gas supply 	<ul style="list-style-type: none"> Check gauge on supply line at pump to verify adequate supply pressure... 10 to 150 psi. Rotate dial CCW three turns from full in position and then select desired rate. Rotate CW to slow pump rate Check for leak, pinched or missing seals, broken diaphragm, loose mounting screws, loose lock down nut on stroke adjuster. Rotate control dial CW to decrease setting. Block exhaust momentarily and then release. Verify supply line size minimum of 3/8" diameter, and a maximum distance from regulator to pump of 10 feet . Check for blockage in supply line and Timer Control. For pumps before serial #40755, contact the manufacturer.
Piston not stroking	<ul style="list-style-type: none"> Return spring broken Lack of grease/lube Plunger seal swollen Supply line pressure too low to buck process line pressure Stroke length adjuster screwed too far 	<ul style="list-style-type: none"> Replace spring (#11). Clean and lubricate power head and piston u-cup with Piston Grease #91-42. Clean plunger lube chamber and fill with Sidewinder Lube #92-42 on liquid lube models or with Sidewinder Grease #91-42 on grease lube models. Change piston and plunger seals if needed. Change to different seal material. Divide process line pressure by amplification ratio (see Performance Chart). Supply pressure must exceed this result. (Standard Sidewinder Control operates from 10 to 150 psi). Back out on stroke adjuster to desired setting.
No fluid discharge with timer control cycling and piston stroking	<ul style="list-style-type: none"> Air or vapor in pump chamber Fluid flow to pump blocked by plugged line, closed valve, extremely high viscosity or lack of fluid supply Suction or discharge check valve leaking Discharge line plugged Chemical filter clogged 	<ul style="list-style-type: none"> Open bleeder valve (#20), purge until steady flow of fluid, then close bleeder valve. If ambient temperature is close to vapor point of chemical, mount or situate pump on slight angle down from tank. Provide free flow of fluid to pump suction. Fluid level in tank must be above level of bleeder valve (#20). Put pump setting gauge in test position to determine which valve is leaking. Fluid falling then rising in gauge indicates suction check valve. Fluid level remaining constant indicates discharge check valve issue. Clear or replace line. Replace or clean filter element.
Premature seal failure	<ul style="list-style-type: none"> Chemical compatibility Abrasive material in chemical No seal lubricant or incorrect lube 	<ul style="list-style-type: none"> Check the plunger first. If plunger is scored, switch to more compatible material such as ceramic, and replace with same seal material. if seal fails, change to a different seal material. if plunger is okay, change seal material. Install suction filter. Use Sidewinder Lube #92-42 in liquid lube models, use Sidewinder Grease #91-42 in grease lube models.
Chemical leakage	<ul style="list-style-type: none"> Damaged or leaking suction line, discharge line or seal failure 	<ul style="list-style-type: none"> Close air/gas supply isolation ball valve (#5). Close isolation ball valve (#8) between pump setting gauge (#9) and chemical tank (#7). Close isolation ball valve (#8) between pump and pump setting gauge (#9). Close isolation ball valve between tee (#4H) and exhaust collection point.
Air/Gas supply leakage	<ul style="list-style-type: none"> Damaged or leaking Air/Gas Supply Line 	<ul style="list-style-type: none"> Close air/gas supply isolation ball valve (#5). Close isolation ball valve (#8) between pump setting gauge (#9) and chemical tank (#7). Close isolation ball valve (#8) between pump and pump setting gauge (#9). Close isolation ball valve between tee (#4H) and exhaust collection point.

NOTE: When performing repairs, follow the suggested procedures as described in Pump Repair or Emergency Shut Down section

NOTE: In the event of an emergency shut down, follow the suggested procedures as described in the Pump Repair or Emergency Shut Down section

NOTE: Item numbers referenced are in the Suggested Pump Installation and System Setup Diagram and Pump Breakdown



Pump Selection Guide & Performance Chart

Model Number	Plunger Size	Piston Size	Amplification Chart	Supply Pressure PSI	Discharge Pressure PSI(a)	Maximum Full Strokes Per Minute	Output Volume Qts./Day(b)
A40	1/4"	1.25"	25:1	15 to 150	0 to 3,500	60	0 to 90
A42	1/4"	2.25"	80:1	10 to 150	0 to 10,000	55	0 to 70
A44	1/4"	4"	240:1	10 to 45	0 to 10,000	35	0 to 30
A44CR	1/4"	4"	240:1	10 to 45	0 to 10,000	55	0 to 50
A60	3/8"	1.25"	11:1	15 to 150	0 to 1,600	60	0 to 200
A62	3/8"	2.25"	36:1	10 to 150	0 to 5,400	55	0 to 155
A64	3/8"	4"	110:1	10 to 95	0 to 10,000	30	0 to 67
A64CR	3/8"	4"	110:1	10 to 95	0 to 10,000	55	0 to 122
A80	1/2"	1.25"	6.25:1	15 to 150	0 to 935	60	0 to 360
A82	1/2"	2.25"	20:1	10 to 150	0 to 3,000	55	0 to 275
A84	1/2"	4"	60:1	10 to 150	0 to 9,000	30	0 to 120
A84CR	1/2"	4"	60:1	10 to 150	0 to 9,000	55	0 to 220
A164	1"	4"	16:1	10 to 150	0 to 2,400	40	0 to 680
A164CR	1"	4"	16:1	10 to 150	0 to 2,400	55	0 to 935

For information on Plunger Material & Plunger Packing Material, see Sidewinder Pump Model Number Chart inside of this brochure.

(a) 1 psig = 0.0703 kg/sq. cm • (b) 1 quart = 0.946 liters

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* "GS" Option available - Models A42E-GS, A62E-GS, A82E-GS

Sidewinder Pumps, Inc. asserts Trademark rights in and to the distinctive appearance of Sidewinder model A40/A60/A80 & A42/A62/A82 pumps.

CAUTIONS & WARNINGS



1) **WARNING - (Risk of fluid injection and/or death)** When installing the pump, do not use poly tubing, copper tubing, or seamed tubing as a discharge line. Manufacturer recommends using 316 SS seamless tubing rated for maximum discharge pressure of the specific pump model being used. Use of incorrect material may result in discharge line failure leading to personal injury, death, and/or a compromise of the intended injection objectives.



2) **Safe operation of the pump requires appropriately rated pressure limiting devices on both the air or drive inlet, and on the pump discharge. Gas and fluid circuits must insure that no part of the pump is operated above its rated pressure. All pressure relief devices must be safety rated.**



3) **WARNING (Risk of Explosion)** Operation of the pump could buildup a static charge, potentially triggering an explosion. The pump must be grounded to prevent buildup of static. If metal tubing attached to the pump does not adequately provide grounding, the pump must be grounded with a suitable ground wire per NEC and local ordinances. **(Use a minimum 12 AWG copper wire)** Connect the wire to earth ground and insure that connecting equipment and air, suction, and discharge lines are likewise proven grounded.

a) For Models A(40, 60, 80, 42, 62, and 82), a ground lug assembly (As shown in Figure B) replaces one of the 1/4-20 set screws holding the piston chamber to the mounting tube. Use the provided ground lug assembly to securely connect your ground wire to the pump.



Figure B

b) For Models A(44, 64, 84, & 164), use the provided 1/4-20 x 3.75 tie bolt, external tooth washer, and ring terminal to securely connect your ground wire to the pump. (See Figure C)

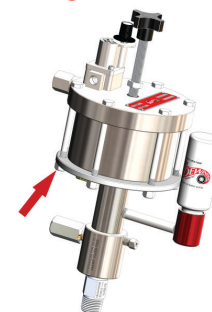


Figure C

4) Storage Instructions

- a) Store the pump in a clean and dry location.
- b) Do not remove the protective plugs or covers from the plumbing ports. They are provided to insure the internal parts of the pump remain clean.
- c) Wipe/Clean the outside of the pump thoroughly prior to removing the protective plugs and covers from the plumbing ports. This reduces the risk of internal contamination from dirt or debris.

5) Installation shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-14

6) Inspection and maintenance shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-17

7) Repair shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-19



8) If the pump is likely to come into contact with aggressive substances or chemical/gas/solvents that are incompatible with the materials the pump is made of, the pump will wear out rapidly, will leak, and could rupture. The user must take suitable precautions to prevent adverse effects, thus ensuring that the pump construction is not compromised. Suitable precautions include regular checks, such as an initial inspection after one week of operation, then monthly checks thereafter, if it can not be established from the material data sheets that the chemical/gas/solvent will not impact adversely, the pump. If in doubt, contact Sidewinder Pumps.

9) For use with chemicals other than those originally specified at the time of purchase, please contact Sidewinder Pumps.



EC DECLARATION OF CONFORMITY

We: **Sidewinder Pumps Inc.**
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declare under our sole responsibility that the products,

Pneumatic Metering Pumps
Models A40, A60, & A80; Models A42, A62, & A82; Models A44, A64, & A84; Model A164

and their various configurations, to which this document relates, are in conformity with the following documents:

Directive: **ATEX Directive 2014/34/EU**
According to Annex VIII, "Internal Control of Production"

Standards: **EN 13463-1:2009**
Non-Electrical Apparatus for Potentially Explosive Atmospheres
EN 13463-5:2003
Part 5: Protection by constructional safety "c"



The technical files are maintained at:
Sidewinder Pumps Inc.
107 Commission Blvd.
Lafayette, LA 70508

Paul George
President, Sidewinder Pumps Inc.

Statement Relating to Pressure Equipment Directive - 2014/68/EU:

Under exclusion of Article 1, Section 2(j); Dimensioning, choice of material and manufacturing rules are based primarily on requirements for sufficient strength, rigidity and stability to meet the static and dynamic operational effects or other operational characteristics and for which pressure is not a significant design factor.

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