STONEBOR PUMP

McFarland Pump Group

SERIES C-3A / C-3AS

Chemical Injection Pump

Flow Rate up to 396 GPD | Pressure up to 10,000 PSI

SPECIFICATIONS

- The C-3A / C-3AS CHEMICAL INJECTION PUMP is constructed from stainless steel.
- Designed specifically for use offshore or in the corrosive environments.
- The pump is gas-operated and will deliver from less than 1qt.- 396 GPD
- Operate on a supply pressure off 25-125 psi, utilizing any available gas or liquid.
- The C-3AS “Snap-Out” Check Valves ensure fewer pump failures due to O-ring problems.
- Designed for low maintenance and, when necessary, can be completely Overhauled in the filed less than 15 minutes.
- Power piston size 4”
- Stroke length 1 ½”
- Cycles/Minutes Adjustable 5-60
- Max. Input Pressure 150 PSI
- Power Gas Max. Consumption 11 SCFM
- Temperature limit 0-180 ºF
- Easily portable (Weight only 14 lbs.)
- Considerably fewer parts than most other pumps on the market.
- Work fine on wet gas supply-will even operate on water supply pressure.
- Meets N.A.C.E Standards for H_2S Service.

MATERIALS OF CONSTRUCTION

Item	*Standard*	*Optional*
Fluid End	303 St.St	316 St.St
Plunger	17-4 PH	INCONEL
Packing	Flurocarbon	Teflon, BUNA-N
Power End Seal	Moly-Impregnated Urethane	Teflon, Flurocarbon, BUNA-N
Power Body	303 St.St	316 St.St
Check Valves	303 St.St	316 St.St
Check Valve Balls	316 St.St	Ceramic

PERFORMANCE DATA

Plunger Size (in)	Volume-Gallons@60 cpm			Operating Pressure	Stall Pressure
	Min	Hr	Day	@ 100 psi input	
¼”	0.02	1.03	24.80	10,000	12,250
½”	0.07	4.13	99.10	3,370	4,100
¾”	0.15	9.30	223.10	1,500	1,800
1”	0.28	16.53	396.60	850	1,000

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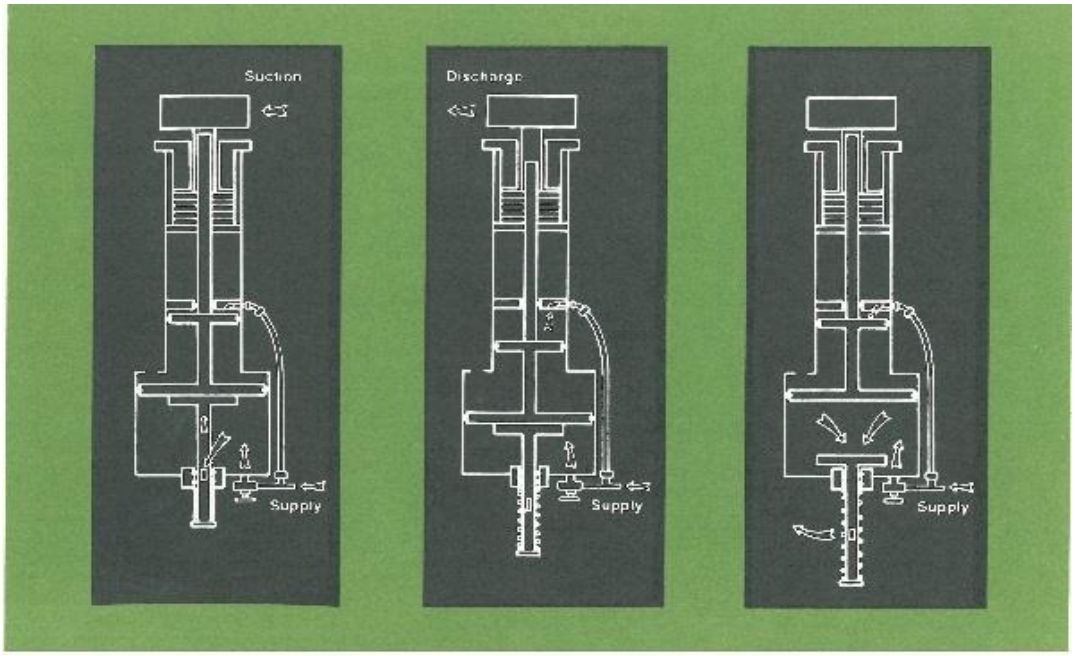
STONEBORE MODEL C-3A / C-3AS CHEMICAL INJECTION PUMP



OPERATION

1- Gas flows into the small chamber, forcing the power piston down. At this condition the valve has been released, and the gas in the large chamber is flowing to atmosphere through a hole in the center of the suction cup, down through the hollow valve stem and out through the hole in the side of the valve stem. The downward motion of the power piston pulls the pump plunger down and causes the liquid being pumped to flow into the suction check valve.

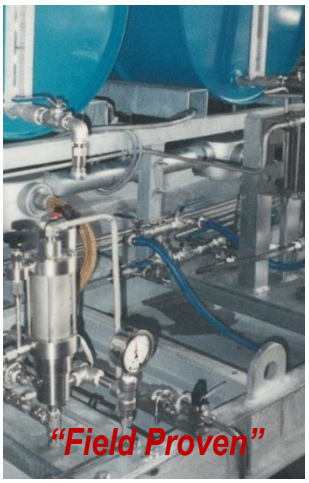
2-The large power piston is forced down by the pressure exerted on the top of the small power piston. When the large piston contacts the suction cup, a seal is accomplished around the rim of the suction cup; and gas can no longer exit through the hole in the valve stem. As soon as enough pressure is built up under the large piston to exert a greater force than that exerted on the small piston, the large piston begins to move upward. The pressure holds the suction cup to the large piston, and it is carried upward with the piston.

3-The end of the upstroke is determined by the location of the hole in the side of the valve stem. The instant that the hole appears above the stem seal, the supply pressure enters the hole and flows upward into the underside of the suction cup. At this instant the pressures of the suction cup are balanced and the cup turns loose. The valve spring returns the valve stem to the down position, and gas pressure in the large chamber exits to atmosphere. The supply pressure on top of the small piston returns the large piston downward, and the pump has completed a cycle.

STONEBOR PUMPS

The Maximum in Efficiency

The Minimum in Maintenance



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STONEBOR PUMP

McFarland Pump Group

SERIES C6 -PR

Pneumatic Chemical & Alcohol Injection Pump

Chemical Delivery up to 49 GPD | Pressure up to 5,500 PSI

SPECIFICATIONS

The following specifications are applicable for continuous Operation condition***

- No flooded suction required
- Maximum delivery – 49 gallons per day (½" plunger size) 60 SPM
- Complete pump – 300 Series stainless steel
- Maximum discharge pressure – 5500 PSI – ¼" plunger
- All connections Male ¼" NPT
- Minimum supply pressure required – 60 PSI
- Maximum supply pressure – 175 PSI
- Delivery rates – Plunger stroke speed is adjustable while pumping
- Weighs only 12 pounds
- Works fine on wet gas supply
- Low maintenance – Only 11 parts required for normal repair
- Available in adjustable packing
- Plunger seals for extended life and easy maintenance.
- Meet N.A.C.E Standards for H_2S Service.

Suitable for Offshore & Corrosive Environments

1 2 3

PUMP MODEL	PLUNGER SIZE (IN.)	MAX. DISCHARGE PRESSURE PSIG.	MAX CHEM. DELIVERY GPD.	SUPPLY PRESSURE REQUIRED TO INJECT CHEMICAL AT SYSTEM PRESSURE (PSIG)										
				Chemical Injector System Pressure										
				0	50	100	200	500	1000	2000	3000	4000	5000	6000
C-6-PR	1/4	5500	12.5	60	60	60	60	60	60	60	68	91	114	5800 max
	3/8	2500	26	60	60	60	60	60	60	100	2500 max			
	1/2	1450	49	60	60	60	60	60	83	1500 max				

(1) CALCULATED AT MAXIMUM RECOMMENDED SUPPLY PRESSURE OF 125 PSIG
(2) BASED ON 60 STROKES/MIN. CONTINUOUS SERVICE AT ¾" STROKE LENGTH @ 85% VOLUMETRIC EFFICIENCY.
(3) FLOW RATE MAY BE SLIGHTLY LOWER AT HIGH PRESSURE.

PERFORMANCE DATA

PUMP MODEL	PLUNGER SIZE (IN.)	GAS CONSUMED TO PUMP ONE GALLON OF CHEMICAL (SCF)*										
		Chemical Injector System Pressure (PSIG)										
		0	50	100	200	500	1000	2000	3000	4000	5000	6000
C-6-PR	1/4	30	31	32	34	36	38	52	72	92	114	121 max@5800 psi
	3/8	12	13	14	15	17	25	45	54max@2500 psi			
	1/2	7	8	8	9	12	21	30 max@1500 psi				

*SCF- Standard Cubic Feet Measured at 14.7 PSIA at 60 F

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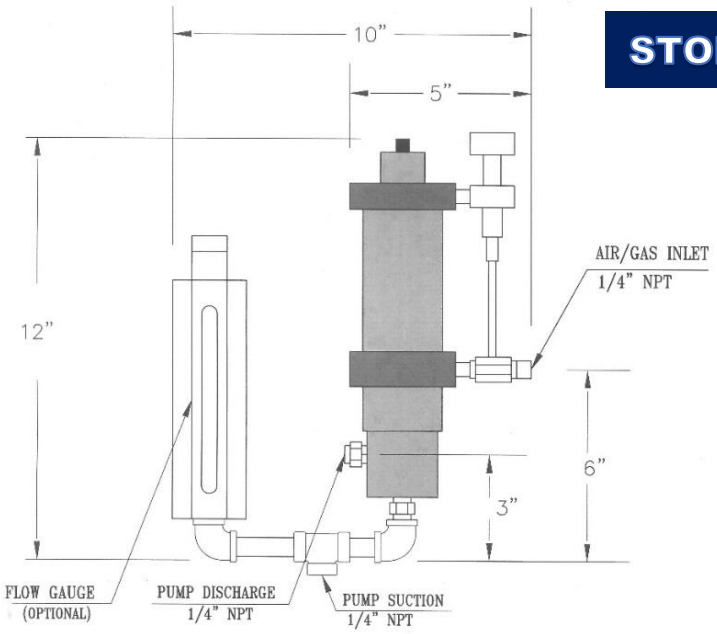
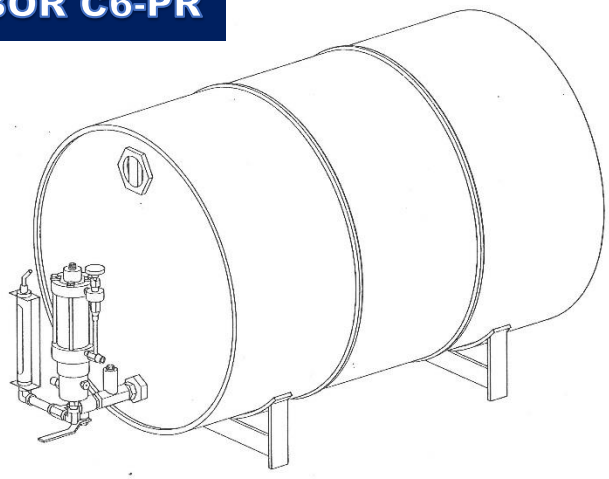
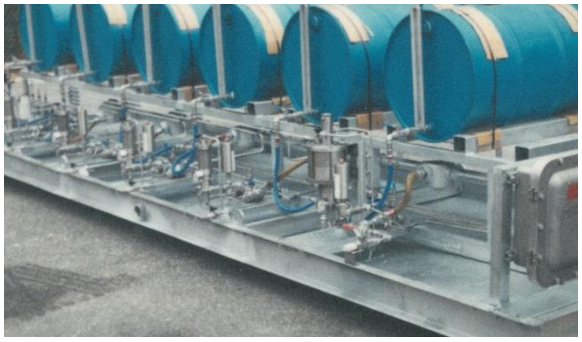
STONEBOR C6-PR





Material of Construction	Standard	Optional
Fluid End / Power End Components	303 SS	316 St.St, Inconel, K-Monel, Aluminum*
Fluid End Seals	Fluorocarbon	Teflon, Buna –n
Power End Seals	Moly-impregnated urethane	Teflon, Fluorocarbon, Buna-n
Check Valve Body	303 SS	316 Stainless Steel
Check Valve Balls	Ceramic	316 Stainless Steel

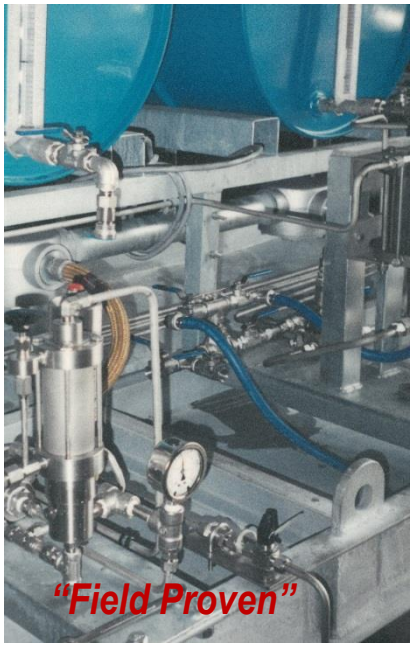
* Not recommended for fluid end



FEATURES

- Pump must be mounted vertically with the fluid end down. Pump may be supported by piping or may be mounted on STONEBOR bases or mounting brackets.
- Complete chemical Injection packages built to customer requirements.
- Typical with methanol, effective temperature range will depend on the injection chemical.
- Typical, actual consumption will vary from pump to pump.
- Typical with water at 72ºF (22ºC); actual flow rate will vary with chemical viscosity and temperature.
- Ensure that the injection chemical and supply gas are compatible with pump material selected

NOTE: For intermittent services requiring larger fluid volumes, higher supply pressures, higher discharge pressures than recommended above, please contact McFarland Pump Group.



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STONEBOR PUMP

McFarland Pump Group

SERIES C7-PR

Pneumatic Chemical & Alcohol Injection Pump

Pressure up to 20,000 PSI | Chemical Delivery up to 49 GPD

SPECIFICATIONS

The following specifications are applicable for continuous Operation condition***

- No flooded suction required
- Minimum delivery –12 gal. per day – ¼" plunger
- Maximum delivery – 49 gallons per day (½" plunger size) 60 SPM
- Complete pump – 300 Series stainless steel
- Maximum discharge pressure – 20,000 PSI – ¼" plunger
- Minimum supply pressure required – 40 PSI (Break Away)
- Maximum supply pressure – 175 PSI
- Delivery rates – Plunger stroke speed is adjustable while pumping
- Weighs only 18 pounds
- Works fine on wet gas supply - will even operate on water supply pressure
- Low maintenance – only 9 parts required for normal repair

* Stroke Length 0.75"

* Meet N.A.C.E Standards for H2S Service.

Suitable for Offshore & Corrosive Environments

PUMP MODEL	Plunger Size (in)	GAS CONSUMED TO PUMP ONE GALLON DF CHEMICAL (SCF) *													
		Chemical Injector System Pressure (PSIG)													
		0	50	100	200	500	1000	2000	3000	4000	5000	6000	7000	8000	10000
C7-250-PR	1/4	90	91	92	93	99	108	127	146	164	183	202	221	239	227
C7-375-PR	3/8	40	41	42	44	49	59	77	96	115	133	152	171	189	227
C7-500-PR	1/2	22	23	24	26	32	41	60	79	116	135	153			

* SCF – STANDARD CUBIC FEET MEASURED AT 14.7 PSIA AT 60F

PERFORMANCE DATA

(1) (2)

Pump Model	Plunger Size IN.	Max Discharge Pressure PSIG.	Max CHEM. DELIVERY (GPD)	SUPPLY PRESSURE REQUIRED TO INJECT CHEMICAL AT SYSTEM PRESSURE (PSIG)													
				Chemical Injection System Pressure													
				0	50	100	200	500	1000	2000	3000	4000	5000	6000	7000	8000	10000
C7-250-PR	1/4	20.000	12	40	40	40	40	40	40	40	40	40	40	40	40	40	44
C7-375-PR	3/8	15.000	27	40	40	40	40	40	40	40	40	40	48	57	65	74	92
C7-500-PR	1/2	8.000	49	40	40	40	40	40	40	40	51	67	82	98	113		

*SCF- Standard Cubic Feet Measured at 14.7 PSIA at 60 F

(1) CALCULATED AT MAXIMUM RECOMMENDED SUPPLY PRESSURE OF 175 PSIG
(2) BASED UPON 60 STROKES /MIN. CONTINUOUS SERVICE @ 90% VOLUMETRIC EFFICIENCY.
(3) FLOW RATE MAY BE SLIGHTLY LOWER AT HIGH PRESSURE.

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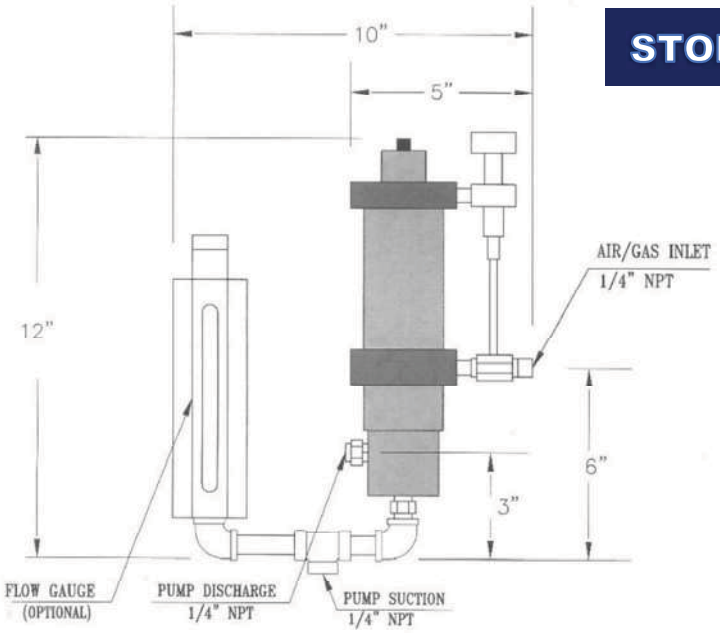
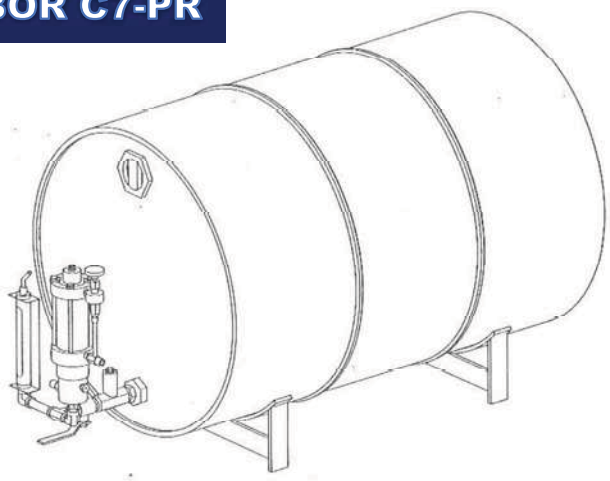
STONEBOR C7-PR





Material of Construction	Standard	Optional
Fluid End / Power End Components	303 SS	316 St.St, Inconel, K-Monel, Aluminum*
Fluid End Seals	Fluorocarbon	Teflon, Buna –n
Power End Seals	Moly-impregnated urethane	Teflon, Fluorocarbon, Buna-n
Check Valve Body	303 SS	316 Stainless Steel
Check Valve Balls	316 Stainless Steel	Ceramic

* Not recommended for fluid end

FEATURES

- Pump must be mounted vertically with the fluid end down. Pump may be supported by piping or may be mounted on STONEBOR bases or mounting brackets.
- Complete chemical Injection packages built to customer requirements.
- Typical with methanol, effective temperature range will depend on the injection chemical.
- Typical, actual consumption will vary from pump to pump.
- Typical with water at 72ºF (22ºC); actual flow rate will vary with chemical viscosity and temperature.
- Ensure that the injection chemical and supply gas are compatible with pump material selected

NOTE: For intermittent services requiring larger fluid volumes, higher supply pressures, higher discharge pressures than recommended above, please contact McFarland Pump Group.

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STONEBOR PUMP

McFarland Pump Group

SERIES C - 10 PR

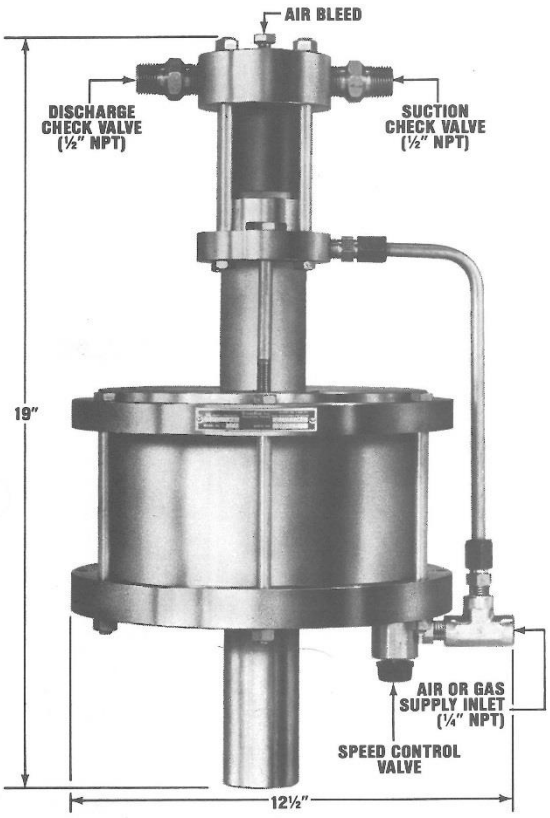
Pneumatic Chemical Injection Pump

Chemical Delivery up to 1,058 GPD | Pressure up to 5,470 PSI

SPECIFICATIONS

The following specifications are applicable for continuous operation conditions:

- No flooded suction required
- Minimum delivery – 203 gal. per day – 7/8” plunger @30 cpm
- Maximum delivery – 1,058 gallons per day - 2” plunger size @ 30 cpm
- Minimum supply pressure 50 psi
- Maximum supply pressure 150 psi.
- Complete pump – 300 Series stainless steel
- Suction & discharge connections Male ½” NPT
- Air / Gas Inlet connection ¼” NPT
- Delivery rates – Plunger stroke speed is adjustable while pumping
- Weight 76 pounds
- Works fine on wet gas supply
- Low maintenance – Only 11 parts required for normal repair
- Meet N.A.C.E standards for H_2S Service.



STONEBOR C-10 PR

For High Volume Service

CAPACITY & PRESSURE TABLE

Plunger Size (in)	Delivery GPD@30 cpm	Operating Pressure @ 100 psi Input Pressure	Stall Pressure @ 100 psi Input Pressure
7/8”	203	5,470	6,640
1 ¼”	413	2,715	3,295
1 ½”	595	1,910	2,315
2	1,058	1,100	1,340

STONEBOR PUMPS

The Maximum in Efficiency

The Minimum in Maintenance

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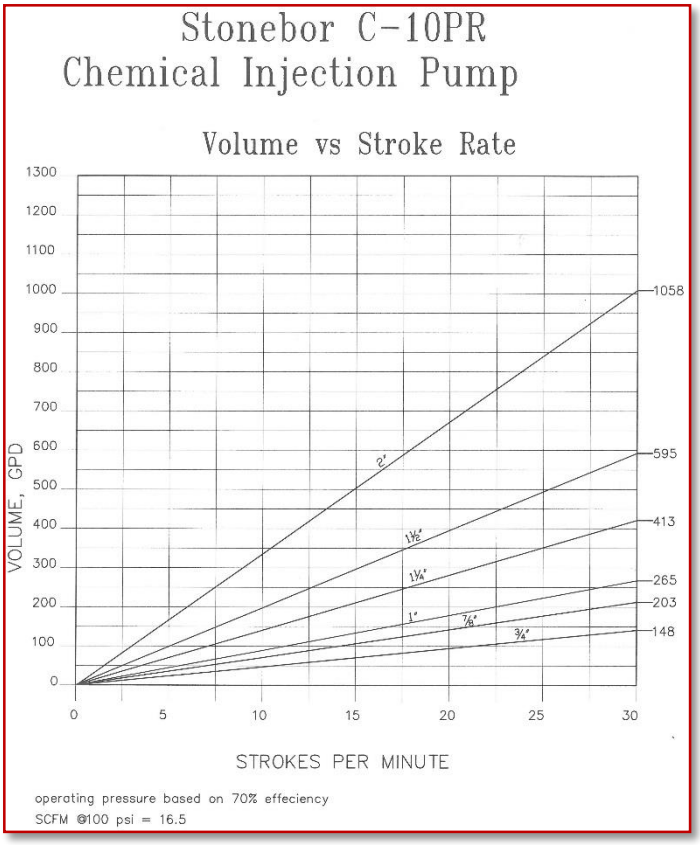
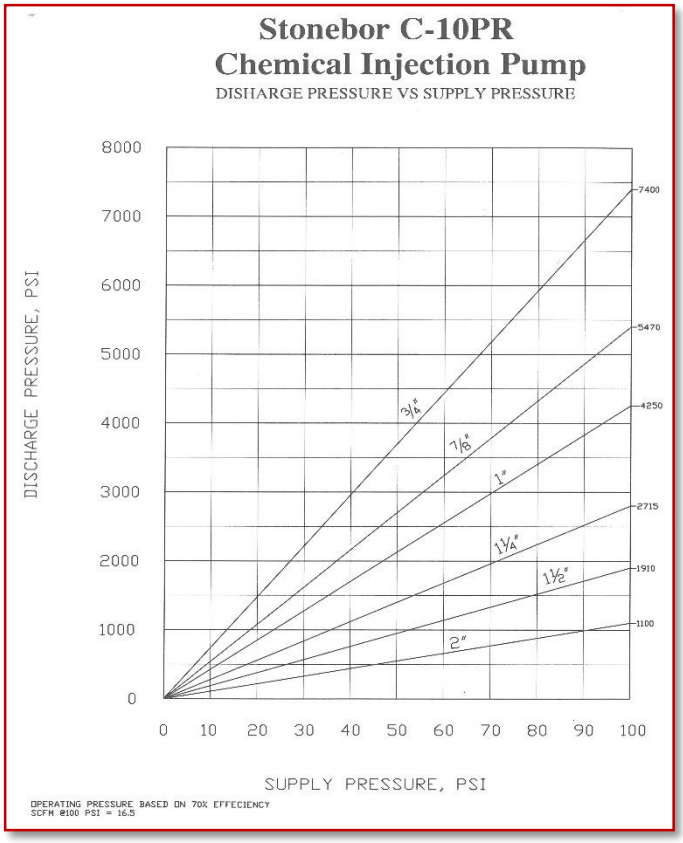
Pneumatic Chemical Injection Pump STONEBOR C-10 PR





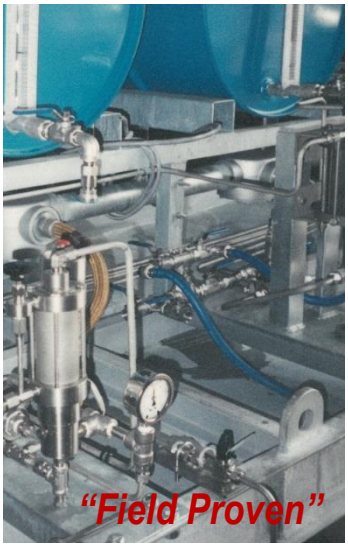
Material of Construction	Standard	Optional
Fluid End / Power End Components	303 SS	316 St.St, Inconel, K-Monel, Aluminum*
Fluid End Seals	Fluorocarbon	Teflon, Buna –n
Power End Seals	Moly-impregnated urethane	Teflon, Fluorocarbon, Buna-n
Check Valve Body	303 SS	316 Stainless Steel
Check Valve Balls	Ceramic	316 Stainless Steel

* Not recommended for fluid end

FEATURES

- Pump must be mounted vertically with the fluid end down. Pump may be supported by piping or may be mounted on STONEBOR bases or mounting brackets.
- Complete chemical Injection packages built to customer requirements.
- Typical with methanol, effective temperature range will depend on the injection chemical.
- Typical, actual consumption will vary from pump to pump.
- Typical with water at 72ºF (22ºC); actual flow rate will vary with chemical viscosity and temperature.
- Ensure that the injection chemical and supply gas are compatible with pump material selected.

NOTE: For intermittent services requiring larger fluid volumes, higher supply pressures, higher discharge pressures than recommended above, please contact McFarland Pump Group.



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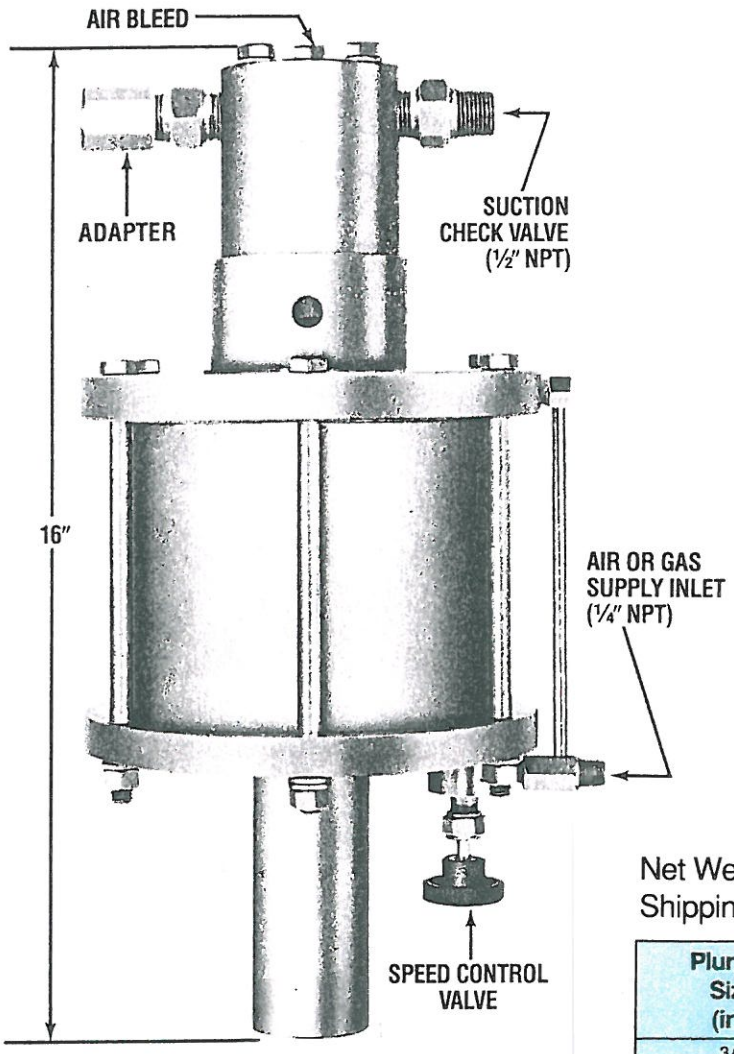
Stonebor Model C19PR
Pneumatic Hydraulic/Chemical Injection Pump for High Pressure Service



FEATURES The following specifications are applicable for continuous operating condition

- No flooded suction required
- Complete pump — 300 Series stainless steel**
- Maximum discharge pressure — 35,000 PSI (⅜" plunger size)
- Minimum supply pressure required — 50 PSI
- Maximum supply pressure — 185 PSI
- Delivery rates — Plunger stroke speed adjustable while pumping
- Weighs 37 lbs.
- Works fine on wet gas supply.
- Meets N.A.C.E. standards for H_2S service

***PRESSURE RETURN**
****Available in 316 stainless steel**

Net Weight: 37 lbs.
Shipping Cube: 1.5 ft.

Plunger Size (in.)	Gal./Day @ 60 cpm	*Operating Pressure @ 100 psi Input	Stall Pressure @ 100 psi Input
3/8	37.2	15,515	18,840
1/2	66.1	8,760	10,630
3/4	148.7	3,930	4,770
1	264.4	2,240	2,720
1 1/4	413.1	1,460	1,770
1 1/2	594.8	1,035	1,250

* Maximum input pressure 175 psi.
Volume based on 90% theoretical maximum.
Stall based on 85% efficiency.
SCFM @ 100 psi = 12.

McFARLAND - TRITAN LLC
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STONEBOR PUMP

McFarland Pump Group

SERIES C-19-PR

Pneumatic Hydraulic Chemical Injection Pump

Chemical Delivery up to 942 GPD | Pressure up to 11,000 PSI

SPECIFICATIONS

The following specifications are applicable for continuous operation condition

- No flooded suction required
- Minimum delivery – 235 gal. per day – ¾" plunger
- Maximum delivery – 942 gal. per day (1 ½" plunger size) 60 SPM
- Complete pump – 300 Series stainless steel
- Maximum discharge pressure – 11,000 PSI – ¾" plunger
- Minimum supply pressure required – 50 PSI
- Maximum supply pressure – 195 PSI
- Stroke Length (Nominal) 1 ½"
- Typical with Methanol injection.
- Operating Temperature minimum/maximum 0ºF / 180 ºF
- Delivery rates – Plunger stroke speed is adjustable while pumping
- Weighs only 37 pounds
- Works fine on wet gas supply
- Low maintenance – Only 11 parts required for normal repair
- Plunger seals for extended life and easy maintenance.
- Meet N.A.C.E Standards for H_2S Service.
- Available in 316 Stainless steel.

For High Volume Service

1 2

Pump Model	Plunger Size (in)	Max. Operating Pressure (PSI)	Max. Chemi Deliver	SUPPLY PRESSURE REQUIRED TO INJECT CHEMICAL AT SYSTEM PRESSURE (PSIG) Chemical Injector System Pressure														
				750	1000	1500	2000	2500	2750	3500	4000	5000	6000	7000	8000	9000	10000	11000
C19-750	3/4	11,000	235	50	50	50	50	50	50	62	71	88	106	124	141	159	176	194
C19-1000	1	6,200	418	50	50	50	63	79	86	110	125	157	188					
C19-1250	1- 1/4	4,000	654	50	50	74	98	123	135	171	195							
C19-1500	1– 1/2	2,750	942	50	71	106	141	176	194									

(1) CALCULATED AT MAXIMUM RECOMMENDED SUPPLY PRESSURE OF 195 PSIG
(2) CALCULATED AT 60 STROKES/MIN. CONTINUOUS SERVICE @ 95% VOLUMETRIC EFFICIENCY AND 1- ½" STROKE LENGTH.

Pump Model	STROKE PER MINUTE								
	10	20	30	40	50	60	70	80	90
C19-750	39	78	117	157	196	235	274	314	353
C19-1000	70	139	209	279	349	418	488	558	628
C19-1250	109	218	327	436	545	654	763	872	981
C19-1500	157	314	471	628	785	942	1099	1256	1413

Flow Expressed in GPD with 1 ½" Stroke Length at 95% Volumetric Efficiency

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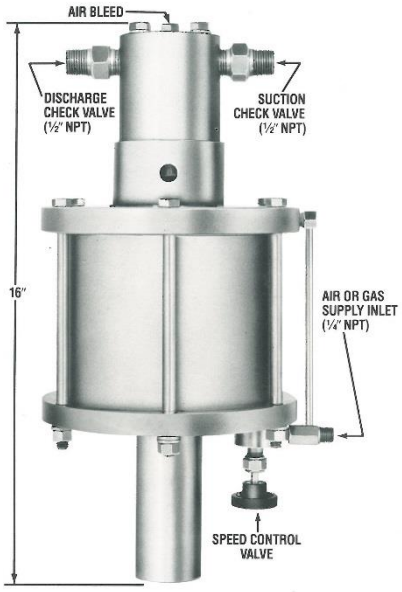
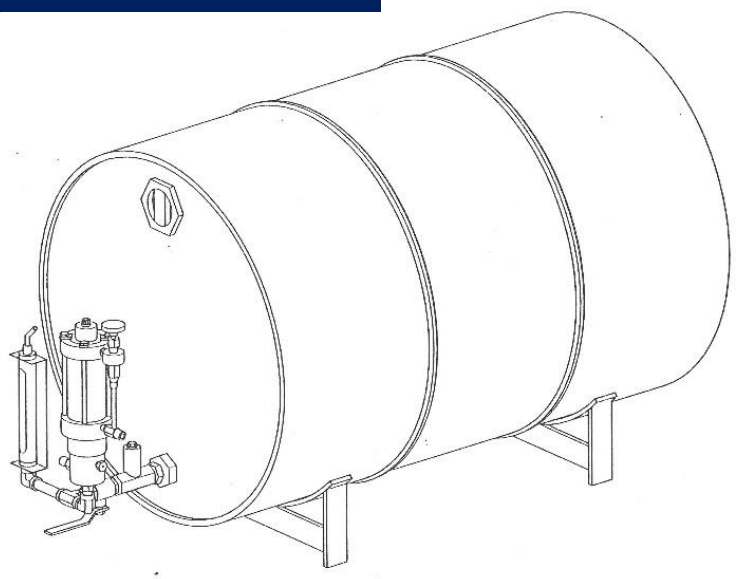
STONEBOR C19-PR





Connections & Dimensions

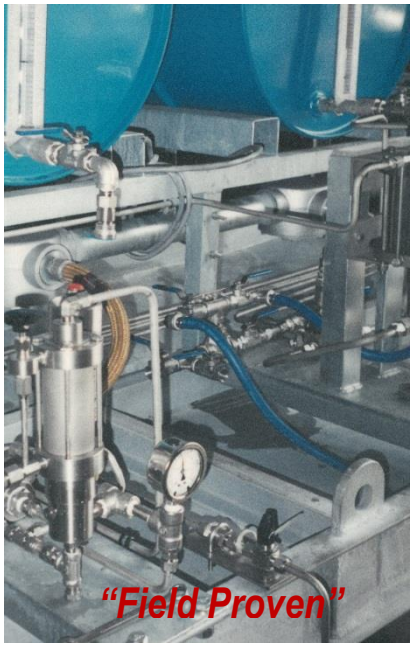
- Liquid Connections — Suction – Male ½" NPT / Discharge- Male ½" NPT
- Gas Connections — ¼" NPT
- Dimensions — Height 16", Width 7.5", Depth 8.6"

Material of Construction	Standard	Optional
Fluid End / Power End Components	303 SS	316 St.St, Inconel, K-Monel, Aluminum*
Fluid End Seals	Fluorocarbon	Teflon, Buna –n
Power End Seals	Moly-impregnated urethane	Teflon, Fluorocarbon, Buna-n
Check Valve Body	303 SS	316 Stainless Steel
Check Valve Balls	Ceramic	316 Stainless Steel

* Not recommended for fluid end

FEATURES

- Pump must be mounted vertically with the fluid end down. Pump may be supported by piping or may be mounted on STONEBOR bases or mounting brackets.
- Complete chemical Injection packages built to customer requirements.
- Typical with methanol, effective temperature range will depend on the injection chemical.
- Typical, actual consumption will vary from pump to pump.
- Typical with water at 72ºF (22ºC); actual flow rate will vary with Chemical viscosity and temperature.
- Ensure that the injection chemical and supply gas are compatible with pump material selected



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