INSTRUCTION MANUAL

BEAM OPERATED PLUNGER

LINC82 Series Chemical Metering Pump
Beam Operated Plunger

LINC
MILTON ROY

To Order, Call 800.455.LINC

Or FAX your order anytime to **215.293.0498**

For the Nearest Authorized Representative:

By Telephone: **800.455.LINC** for the US & Canada, **215.293.0465 or 215.441.0800** for International customers
By Fax: 215.293.0498
E-mail:
LINCORDERS@MILTONROY.com

Technical Support

By Telephone: **800.455.LINC or 215.293.0498**
By E-mail:
INFO@LINCPUMPS.com

Convenient Hours

Our phone lines are open Monday – Friday 8:00 AM – 4:45 PM (EST)

LINC Warranty

Three year limited warranty on all our products against defects in materials.

LINC Technical Support

Technical service and support begins with an easy toll-free call. Many times, our experienced customer service reps can isolate and resolve problems over the phone or provide a referral to our authorized representatives nationwide. We also offer factory repair services with facilities in Ivyland, PA. if a warranty issue that cannot be resolved locally.

Purchase Orders

All mail-in purchase orders must be signed by an authorized person. When ordering please list:

- Quantity
- Description of Items
- Shipping Address
- Billing Address
- Purchase Order Number

Request for Quotation – RFQ's

Please send RFQ's to:
By Mail:
Linc Milton Roy
Attn: Customer Service
201 Ivyland Road
Ivyland, PA 18974
USA
By Fax:
1.215.293.0498
By E-mail:
Lincorders@miltonroy.com

Freight Charges

All shipments are F.O.B., Ivyland, PA, USA. Shipping and handling are included on the invoice, prepay and add.

Terms

With credit approval, net 30 days.

Contents – 82 Pump Manual ..... Page

Assembly Drawings & Parts Lists

METERING PUMPS

BEAM OPERATED PLUNGER

General Specifications: 82 Series Beam-Operated Plunger Pumps

Wetted Parts:		**Plunger Sizes:**	1/4" & 1/2" plunger diameters
Pump Body:	316 Stainless Steel	**Pressure:**	To 3,000 psi, maximum
Plunger:	17-4 PH Stainless Steel	**Optional Materials:**	316 Stainless Steel, Hastelloy, Monel, & Titanium
Plunger Seal:	Refer to Ordering Chart		
Check Valves :			
Body:	316 Stainless Steel		
Ball:	316 Stainless Steel		
Spring - Discharge:	316 Stainless Steel		
Seat:	TFE, Standard		

The LINC 82 Series: Beam-Operated Plunger Pump Selection Chart

Model Number	Plunger Diameter	Maximum Rate Gal/24Hr	Maximum Rate Liter/24Hr	Minimum Rate Gal/24Hr	Minimum Rate Liter/24Hr	Maximum Pressure PSI	Maximum Pressure Bar	Volume Per Stroke	Stroke Length
82-11	1/4"	5.00	19.0	0.25	1.0	3,000	207	0.8 cc	1"
82-12	1/2"	20.0	76.0	1.00	4.0	1,500	103	3.2 cc	1"

Notes:

1. Pump rate is dependent on beam actuation frequency.
2. One beam turnbuckle is included as standard 82 Series equipment.

Ordering Chart: LINC 82 Series Beam Operated Plunger Pump

Series:

82 - Pneumatic, plunger-type metering pump

Plunger:

11 - 1/4" plunger diameter
12 - 1/2" plunger diameter

Seal Materials:

4 - Packing mechanical seal - TFE/Graphite, wetted o-rings - TFE
5 - Specify your requirements
6 - Packing mechanical seal - Ultra High Molecular Weight Polyethylene, wetted o-rings - TFE
7 - O-rings packing seal - Fluorocarbon, wetted o-rings - Fluorocarbon
8 - O-rings packing seal - Nitrile, wetted o-rings - Nitrile
9 - O-rings packing seal - Kalrez, wetted o-rings - Kalrez

Option Number:

0 - Standard unit
5 - Specify your requirements
6 - 316 ss wetted parts
7 - Mounting Kit

LINC ___-____-____ ( )

Example: LINC 82-11-40 Beam-Operated Injection Pump

Scope Of This Manual:

This manual describes the LINC82 Chemical Metering Pump, which is a beam-operated plunger pump.

Installation:

This pump requires a flooded suction and must be located lower than the chemical supply tank. Vertical installation of the pump body is required.

1. *Bolt or weld the pump mounting bracket from the mounting kit to the steel base of the pumping unit. It is recommended that the chemical pump is mounted so that the cable (wire rope) is as close to vertical as possible.*
2. *Attach the cable assembly from the mounting kit to the walking beam near the fulcrum point of the pumping unit with the beam clamp provided. Ensure that the cable does not interfere with the walking beam supports. Refer to Figures 4 or 5 of this manual for desired stroke length.*
3. *Attach the cable to the turnbuckle of the chemical pump using the cable clamp provided (fig. 1, item 23).*
4. *Adjust the cable length to obtain desired approximate plunger stroke length. Final adjustment of the stroke may be obtained with the turnbuckle.*
5. *Secure the turnbuckle position with locknuts (fig. 1, items 22 & 24).*

***Caution**: Care must be exercised to assure that the cable is of sufficient length and is attached to the walking beam at a point so that the plunger stroke does not exceed 1".*

6. *Connect the suction line from the chemical drum through a filter or strainer to the suction check valve (fig. 1, item 14).*
7. *Connect the discharge line from the discharge check valve to the desired location (fig. 1, item 15).*

***Note:** An inline check valve at the point of injection is recommended to prevent back flow to the pump during shutdown or servicing.*

Start-Up:

1. *To prime the pump, loosen the bleed screw to vent the trapped air allowing the liquid (chemical) to flow into the pump chamber (fig. 1, item 12). Tighten the bleed screw.*
2. *Start the pump and run for a minimum of one minute. Then, open the bleed screw again to evacuate all the remaining air or gas from the pump chamber.*

Refer to Figures 4 or 5 for desired injection rate. Determine the stroke length by adjusting the cable and turnbuckle. Stroke length must be adjusted when changes are made to the pumping unit cycles per minute to maintain a fixed rate of flow.

If a drum gauge has been installed, depress test level on drum gauge to cause the pump suction to be drawn from the gauge glass. With a stop watch, note the change of liquid level on drum gauge glass for one minute. Most drum gauge scales are calibrated directly in quarts per day for one minute of operation. The liquid level remaining in the drum is displayed on the gauge with the test level released.

Maintenance:

Pump parts are subject to normal wear and must be inspected and replaced as necessary. Inspection and maintenance frequency depends on severity of service conditions. Instructions are given in this section for maintaining the pump as units; i.e. suction check valve, discharge check valve and plunger packing.

Suction Check Valve,

Figure 1, item 14 & Figure 3:

1. *Assure that the pump is isolated from the rest of the system.*
2. *Disconnect the piping from the check valve.*
3. *Unscrew the check valve body (fig. 3, item 1) from the pump lower housing (fig. 1, item 13).*
4. *Remove and discard the o-rings (fig. 3, items 3 & 4).*
5. *Inspect the ball for damage (fig. 3, item 2). Replace if necessary. Reassemble the check valve using new o-rings. If the seat o-ring is Teflon, install it into the check valve*

body (fig. 3, item 1) and "peen" the ball onto the seat to ensure proper sealing.
6. Install the repaired suction check valve into the pump body. Tighten securely.
7. Reconnect the suction piping.

Discharge Check Valve,

Figure 1, item 15 & Figure 2:

1. Assure that the pump is isolated from the rest of the system.
2. Disconnect the piping from the check valve.
3. Unscrew the check valve body (fig. 2, item 1) from the pump lower housing (fig. 1, item 13).
4. Remove and discard the o-rings (fig. 2, items 4 & 5).
5. Inspect the ball and spring (fig. 2, items 2 & 3) for damage. Replace if necessary. Reassemble the check valve using new o-rings. If the seat o-ring is Teflon, install in into the pump lower housing (fig. 1, item 13) and "peen" the ball onto the seat to ensure proper sealing.
6. Install the repaired discharge check valve into the pump lower housing. Place the ball on the o-ring seat followed by the spring (small end of the spring toward the ball) and screw the discharge check valve body into the pump lower housing. Tighten securely.
7. Reconnect the discharge piping.

Plunger and Plunger Seal,

Figure 1, item 6 & 16:

1. Assure that the pump is isolated from the rest of the system.
2. Remove the pin retainer and pins separating the plunger assembly from the beam (fig. 1, items 4 & 5). Remove the retaining ring and loosen the set screw and separate the swivel ring (fig. 1, items 7, 9 & 8) from the packing block.
3. Grasp the plunger assembly (fig. 1, item 6) and pull up out of the packing block (fig. 1, item 11) to remove. Inspect the plunger for wear, especially longitudinal grooves. Replace the plunger assembly if necessary.
4. With a pipe or strap wrench separate the packing block (fig. 1, item 11) from the lower housing (fig. 1, item 13).
5. Remove the plunger seal and seal back-ups, where used, from the lower housing (fig. 1, items 16 & 13). Carefully remove the seal back-up and seal. Inspect for wear or deterioration from being attacked by the chemical the pump is pumping.
6. Replace the plunger seal and plunger seal back-ups if needed (see parts lists on page 9). If the plunger seal is the o-ring type, it should be installed with a plunger seal back-up on each side of the o-ring. If the plunger seal is of the Uniseal type, it should be installed with the expander ring down toward the lower housing. Extreme care should be taken not to scratch or distort these parts.
7. After the seal has been replaced, lubricate with a light oil to protect against possible damage during assembly.
8. Screw the packing block onto the lower housing and tighten securely. Slide the plunger assembly into the packing block and down into place. Install the swivel ring with the retaining ring and beam with the pin and pin retainer. See step 2 above under this section.
9. If the bleed screw has been removed, install and tighten securely.

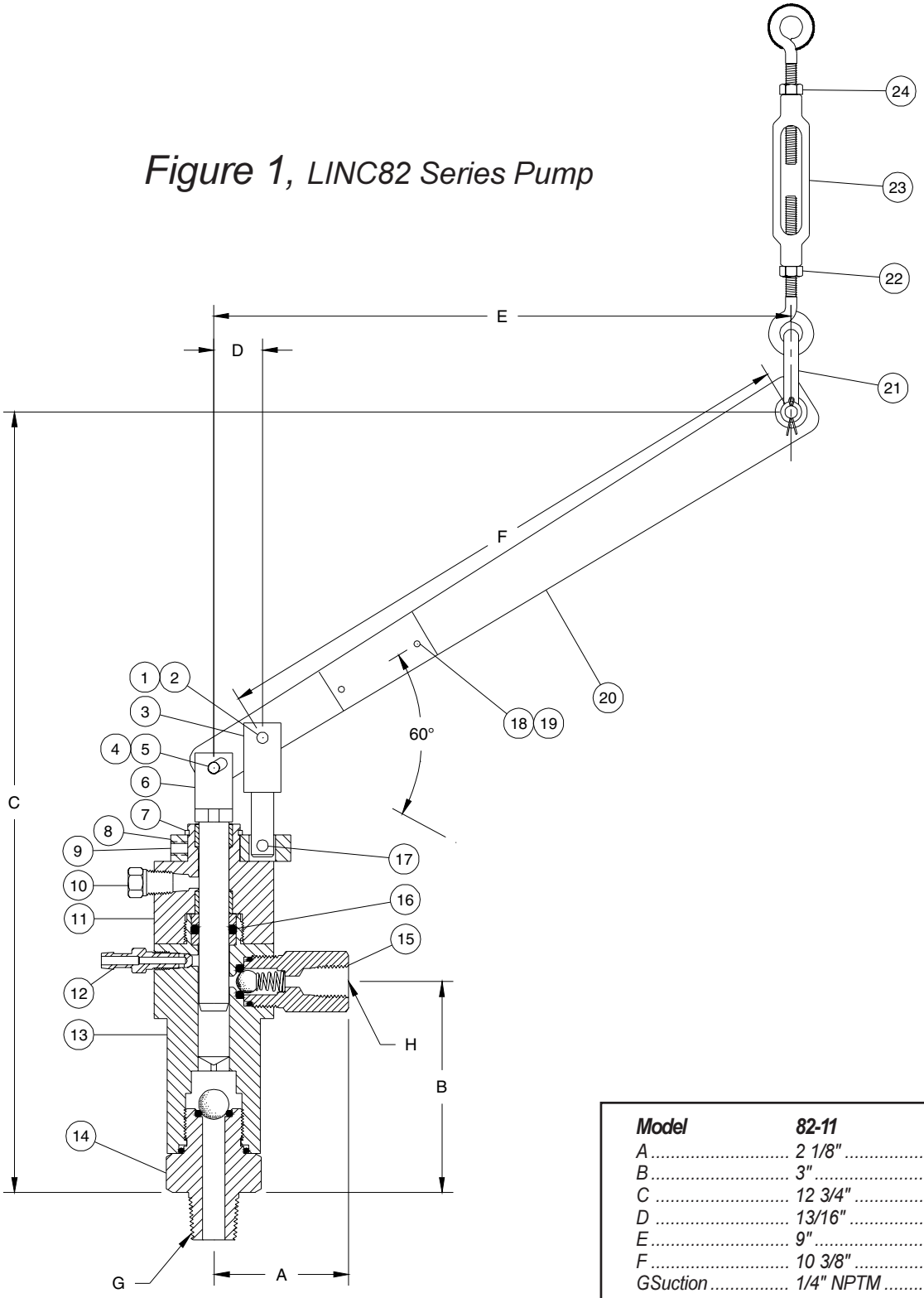
Plunger and Plunger Seal Lubrication:

1. Remove the plug from the pump body (fig. 1, item 10).
2. Add silicone base lubricant (Dow Corning DC-7, part #10354) or equal into the port where the plug was removed. Approximately 0.5cc will be required for each refill. Replace the plug.

Note: Do not use a grease gun or any metal tool to insert the lubricant into the pump to prevent damage to the plunger or plunger seal.

3. Silicone lubricant should be added every 4 - 6 weeks depending upon operation conditions.

Figure 1, LINC82 Series Pump



MODEL 82-12-70

Model	82-11	82-12
A	2 1/8"	2 1/4"
B	3"	3 3/4"
C	12 3/4"	13 1/2"
D	13/16"	13/16"
E	9"	9"
F	10 3/8"	10 3/8"
GSuction	1/4" NPTM	1/2" NPTM
H Discharge	1/4" NPTF	1/4" NPTF

LINC82 Series Parts List

82 Pump Assembly

Model	82-11	82-12
Plunger Size	1/4"	1/2"

Item	Part#	Part#	Description	Material	Qty
1	21891	21891	Pin	303 ss	1
2	10915	10915	Pin Retainer	15-7 PH	1
3	21895	21895	Connecting Rod	303 ss	1
4	21891	21891	Pin	303 ss	1
5	10915	10915	Pin Retainer	15-7 PH	1
6	23307	21979	Plunger Assembly	17-4 PH	1
7	10916	10916	Retaining Ring	15-7 PH	1
8	23465	23465	Swivel Ring	303 ss	1
9	11461	11461	Set Screw	18-8 ss	1
10	10278	10278	Plug	304 ss	1
11	30999	31021	Packing Block	304 ss	1
12	20460	20460	Bleed Screw	316 ss	1
13	30811	30820	Lower Housing	316 ss	1
14	See page 10		Suction Check Valve Assembly	316 ss	
15	See page 9		Discharge Check Valve Assembly	316 ss	
16	See page 9		Seal Assembly		
17	10655	10655	Roll Pin	15-7 PH	1
18	10941	10941	Name Plate	18-8 ss	1
19	10324	10324	Drive Screw	18-8 ss	2
20	31000	31000	Beam	304 ss	1
21	10940	10940	Shackle	Galvanized	1
22	10934	10934	Jam Nut (Left Handed)	Plated	1
23	10936	10936	Turnbuckle	Aluminum	1
24	10555	10555	Jam Nut (Right Handed)	Plated	1
24		22201	Beam Weight (Not Shown)	Steel	1
24		11167	Set Screw (Not Shown)	18-8 ss	2

Model	82-11	82-12	
Assembly	23423	23607	Mounting Kit

Item	Part#	Part#	Description	Material	Qty
1	10846	10486	Beam Clamp	Steel	1
2	10928	10928	Eye-Bolt	Galvanized	1
3	10926	11607	Pump U-Bolts	Galvanized	1
4	10938	10938	Wire Rope (1/3")	Galvanized	1
5	10937	10937	Rope Clips	Galvanized	1
6	21981	21981	Bracket	Steel	1

Figure 2, Discharge Check Valve

Reference fig. 1, item 15
Part # See Below

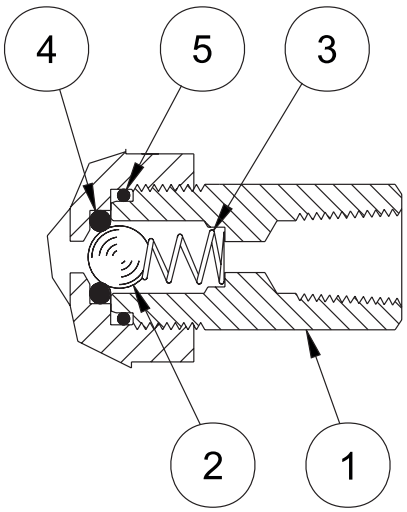
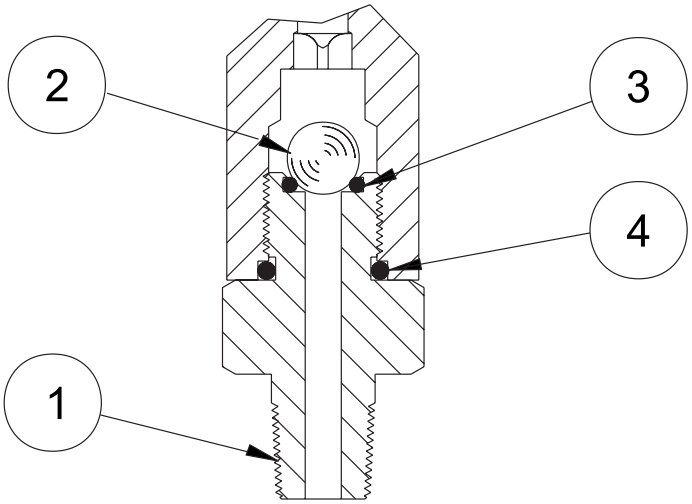


Figure 3, Suction Check Valve,

Reference fig. 1, item 14
Part # See Next Page



Assembly	22624	22625	22626	Discharge Check Valve One Piece Body	Port Size 1/4" NPTF	
Item	Part #	Part #	Part #	Description	Material	Qty
1	20570	20570	20570	Body	316 ss	1
2	10283	10283	10283	Ball	Carbide	1
3	10068	10068	10068	Spring	316 ss	1
4	10312			Seat	Fluorocarbon	1
		10328		Seat	Nitrile	1
			10317	Seat	TFE	1
5	10482			Seal	Fluorocarbon	1
		10124		Seal	Nitrile	1
			10481	Seal	TFE	1

Seal Assembly Model	82-11	82-12	
Item #	Part #	Part #	Material
16	23350	23351	Fluorocarbon
16	23391	23392	Nitrile
16	23390	23393	Kalrez
16	11821	11822	TFE/Graphite
16	13007	13008	UHMWPE

Suction Check Valves - One Piece Body

Part Number 24773 — **Port Size 1/4" NPTM**

Item	Description	Part #	Material	Qty
1	Inlet Body	24789	316 ss	1
2	Ball	10283	Carbide	1
3	Seat	10365	TFE	1
4	Seal	10280	Fluorocarbon	1

Part Number 24774 — **Port Size 1/4" NPTM**

Item	Description	Part #	Material	Qty
1	Inlet Body	24789	316 ss	1
2	Ball	10283	Carbide	1
3	Seat	10282	Fluorocarbon	1
4	Seal	10280	Fluorocarbon	1

Part Number 24775 — **Port Size 1/4" NPTM**

Item	Description	Part #	Material	Qty
1	Inlet Body	24789	316 ss	1
2	Ball	10283	Carbide	1
3	Seat	10365	TFE	1
4	Seal	10122	Nitrile	1

Part Number 24776 — **Port Size 1/4" NPTM**

Item	Description	Part #	Material	Qty
1	Inlet Body	24789	316 ss	1
2	Ball	10283	Carbide	1
3	Seat	10110	Nitrile	1
4	Seal	10122	Nitrile	1

Part Number 24778 — **Port Size 1/2" NPTM**

Item	Description	Part #	Material	Qty
1	Inlet Body	24787	316 ss	1
2	Ball	10529	Carbide	1
3	Seat	10469	TFE	1
4	Seal	10467	TFE	1

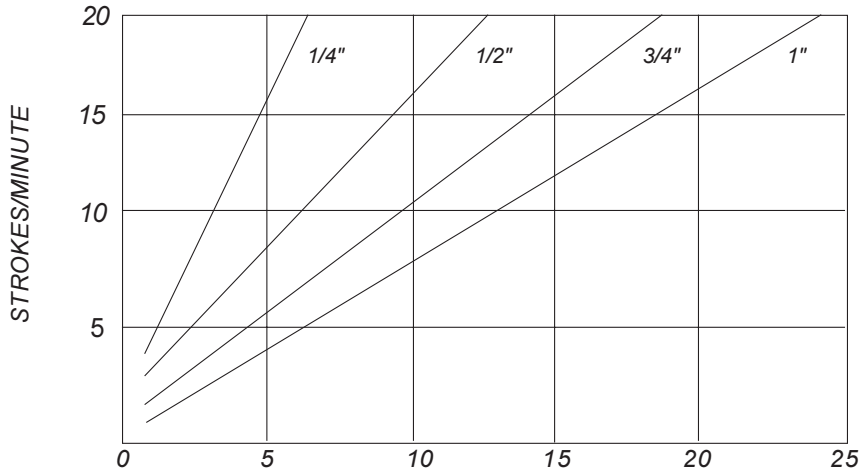
Part Number 24779 — **Port Size 1/2" NPTM**

Item	Description	Part #	Material	Qty
1	Inlet Body	24787	316 ss	1
2	Ball	10529	Carbide	1
3	Seat	10337	Fluorocarbon	1
4	Seal	10466	Fluorocarbon	1

Part Number 24780 — **Port Size 1/2" NPTM**

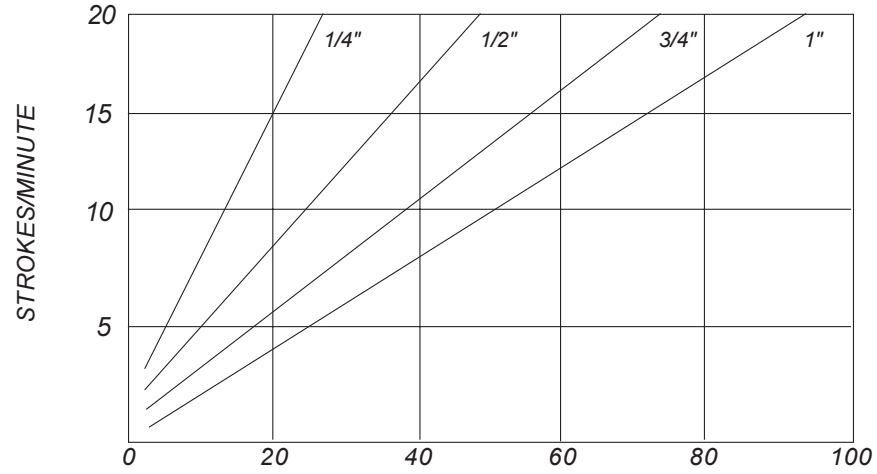
Item	Description	Part #	Material	Qty
1	Inlet Body	24787	316 ss	1
2	Ball	10529	Carbide	1
3	Seat	10121	Nitrile	1
4	Seal	10468	Nitrile	1

Figure 4



Strokes vs. Quarts at Various Stroke Lengths
1/4" Plunger

Figure 5



Strokes vs. Quarts at Various Stroke Lengths
1/2" Plunger

METERING PUMPS

NOTES