E3 3" Bolted Metallic Pumps Operating Instructions



Member of: Hydraulic



VM

SPECIFICATIONS AND PERFORMANCE

Versa-Matic Model E3 Bolted 3" Pump

Flow F	Rate
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Adjustable to 0-230 gpm (871 lpm) Port Size
Suction and Discharge 3" ANSI
Air Inlet 0.50" NPTT
Air Exhaust 1.0" NPTT
Suction Lift
Rubber
Teflon 10' (3.0 m) Dry
Max. Particle Size (Dia.) 0.75" (19 mm)
dB(A) Reading 67.1 dB(A)
Shipping Weights
Stainless Steel 250 lbs (113 kg)
Hastelloy 275 lbs (125 kg)
Aluminum 150 lbs (68 kg)

Caution: do not exceed 125 psig (8.5 bar) liquid or air supply pressure.









SAFETY WARNINGS

Read these instructions completely before installation and start-up. It is the responsibility of the purchaser to retain this manual for reference. Failure to comply with the recommendations stated in this manual could result in death, serious bodily injury and/or property damage including damage to the pump and/or voiding the factory warranty.

Correct pump selection is crucial to the pump operation. Please assure pressure, temperature and chemical compatibility before installation. Please consult Versa-Matic Pump, Engineering Specifications, Chemical Compatibility Chart, or your distributor if in doubt about any application.

Operating Limitations for Various Elastomers

Neoprene	0°F (-18°C) to 200°F (93°C)
Buna-N	10°F (-12°C) to180°F (82°C)
Nordel	-60°F (-51°C) to 280°F (138°C)
Viton	-40°F (-40°C) to 350°F (176°C)
Teflon	40°F (4°C) to 220°F (105°C)
Polyurethane	10°F (-12°C) to 170°F (77°C)
XL TPE	-20°F (-29°C) to 300°F (149°C)
FDA Hytrel	-20°F (-29°C) to 220°F (104°C)

Operating Limitations for Plastic Pumps

Kynar (PVDF)	10°F (-12°C) to 225°F (107°C)
Polypropylene	32°F (0°C) to 175°F (79°C)

Maximum temperature limits are based upon mechanical stress only. Certain chemicals and environment conditions significantly reduce maximum safe temperature limits.

Before pump operation, inspect all gasketed fasteners for looseness caused by gasket creep. Re-torque all loose fasteners to prevent leakage. Follow recommended torques stated in this manual. Failure of the sealing components creates the possibility of jetting or forceful discharge of pumped material at a potentially harmful velocity.

Be certain that approved eye protection and protective

clothing are always worn during installation, service, maintenance or when in the vicinity of the pump. Failure to follow these recommendations may result in serious injury or death.

Never allow the piping system to be supported by the pump manifolds or valve housing. The manifolds and valve housing are not designed to support any structural weight and failure of the pump may result.

Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The pump, piping, valves, containers, or other miscellaneous equipment must be grounded.

Noise levels can exceed 85 dBA. Take precautions to prevent personal injury due to excessive pump noise.

Do not exceed pump maximum operating pressure (found on label and/or operating manual.)

Before doing any maintenance or repair on this pump, be certain all pressure is completely vented for the pump, suction, discharge, piping, and all other openings.

In the event of a diaphragm rupture, pumped material may enter the air end of the pump and be discharged into the atmosphere. If pumping a product that is hazardous or toxic, the air exhaust must be piped to an appropriate area for safe disposition.

INSTALLATION, OPERATION AND MAINTENANCE

Installation

The pump should be mounted in a vertical position. In permanent installations, the pump should be attached to plant piping using a flexible coupling on both the intake and discharge connections to reduce vibration to the pump and piping. To further reduce vibration, a surge suppressor next to the pump may be used.



Suction pipe size should be at least the same diameter as the inlet connection size, even larger if highly viscous fluid is to be pumped. If suction hose is used, it must be of a non-collapsible reinforced type. Discharge piping should be of at least the same diameter as the discharge connection. It is critical,

C	Recomm	nnections	
	Pump Size	Minimum Air Line Size	Minimum Suction Line Size
	1/2"	1/2"	1/2"
	1"	1/2"	1"
	1-1/2"	1/2"	1-1/2"
	2"	1/2"	2"
	3"	3/4"	3"

E3 Metallic Pump	Torque Settings
Vanifold Bolts	60 ft-lbs (81N-m)
Nater Chamber Bolts	60 ft-lbs (81N-m)
Diaphragm Plates	60 ft-lbs (81N-m)
Air Chamber Bolts	60 ft-lbs (81N-m)

especially on the suction side of the pump, that all fittings and connections are air tight or pumping efficiency will be reduced and priming will be difficult.

Make certain the air supply line and connections and compressor are capable of supplying the required pressure and volume of air to operate the pump at the desired flow rate. The quality of the compressed air source should be considered. Air that is contaminated with moisture and dirt may result in erratic pump performance and increased maintenance cost as well as frequent process "down time" when the pump fails to operate properly.

Pump Operation

The pump is powered by compressed air. Compressed air is directed to the pump air chamber by the main air valve. The compressed air is separated from the fluid by a membrane called a diaphragm. The diaphragm in turn applies pressure on the fluid and forces it out of the pump discharge. While this is occurring, the opposite air chamber is de-pressurized and exhausted to atmosphere and fluid is drawn into the pump suction. The cycle again repeats, thus creating a constant reciprocating action which maintains flow through the pump. The flow is always in through the bottom suction connection and out through the top discharge connection. Since the air pressure acts directly on the diaphragms, the pressure applied to the fluid roughly approximates the air supply pressure supplied to the main air valve.

Elasto	stomer Suffix Codes			
Suffix Code	Material			
A	Acetal			
BN	Buna-N, Nitrile			
N	Neoprene			
ND	Nordel, EPDM			
TF	Teflon			
FG	Hytrel			
XL	XL, Santoprene			
VT	Viton			
ТХ	Bonded Teflon			

PARTS LIST

	AIR VALVE ASSEMBLY							
Item	Description	Qty	Standard: Aluminum	Option	1: Stainless Steel	Option 2: Te	flon Coated	Option 3: Nickel Plated
	Air Valve Assembly	1	P34-200		SP34-200	P34-20	0-TC	P34-200-NP
	(Includes items 1-9)							
1	Valve Body	1	P34-211		SP34-211	P34-27	1TC	P34-211NP
2	Valve Spool	1	P34-204		SP34-204	P34-2	204	P34-204
3	Glide Ring	2	P34-204F		P34-204F	P34-2	04F	P34-204F
4	End Cap	2	P34-300		SP34-300	P34-30	DOTC	SP34-300
5	End Cap Gasket	2	P24-205		P24-205	P24-2	205	P24-205
7	Air Valve Screen	1	P24-210		P34-210	P24-2	210	P24-210
9	Valve Gasket	1	P24-202		P24-202	P24-2	202	P24-202
10	Socket Head Cap Screw	13	P24-208		P24-208	P24-2	208	P24-208
	· · · · ·		AIR	END ASS	SEMBLY			
Item	Description	Qty	Standard: Aluminum	Option	1: Stainless Steel	Option 2: Te	flon Coated	Option 3: Nickel Plated
12	Center Block***	1	P34-400		SP34-400	P34-40	DOTC	P34-400NP
13	Air Chamber	2	P34-111		SP34-111	P34-11	1TC	P34-111NP
14	Air Chamber Gasket	2	P79-109		P79-109	P79-	109	P79-109
15	Air Chamber Bolt	8	P34-110		SP34-110	P34-	110	P34-110
16	Bearing Sleeve	1	P34-402		P34-402	P34-4	402	P34-402
17	Bushing	2	P34-105		SP34-105	P34-10)5TC	P34-105
18	Pilot Shaft	1	P34-104		P34-104	P34-	104	P34-104
19	Pilot Shaft Spacer	5	P24-106		P24-106	P24-	106	P24-106
20	Pilot Shaft O-Ring	6	P24-107		P24-107	P24-	107	P24-107
21	Stop Nut	2	P24-108		P24-108	P24-	108	P24-108
33	Muffler	1	VTM-8		VTM-8	VTM	1-8	VTM-8
34	Main Shaft O-Ring	2	P34-403		P34-403	P34-4	403	P34-403
	0		DIAPH	RAGM A	SSEMBLY			
Item	Description	Qtv	TPE Rugged		TPF Dome	Teflon B	onded	Teflon 2-Piece
35	Main Shaft	, 1	P34-103		P34-103	P34-	103	P34-103
37	Inner Dianbragm Plate	2	V302C		V307B	V302		V302TI
0,		-	SV302C		SV307B	SV30	2TI	SV302TI
			V302CTC		V307BTC	V3021	TITC	V302TITC
			V302CNP		V307BNP	V3021	INP	V302TINP
38	Outer Diaphragm Plate	2	V302B		VB307	V302TO		V302TO
		_	SV302B		SVB307	SV30	2TO	SV302TO
			HV30B		HVB307	HV30	2ТО	HV302TO
39	Diaphragm Plate Bolts/	12/	V302G/V302GA		N/A	N//	4	N/A
	Diaphragm Plate Washers	12	SV302G/SV302GA					
40	Diaphragm	2	V305BN V305N	V30	06N V306BN	V305	TX	V305TF-FB
			V305ND V305VT	V30	06ND V306VT			
			V305XL					
		-	V305FG					N/005755
41	Back-up Diaphragm	2	N/A		N/A	N/A		V3051FB
42	Bumper washer	2	P34-501		P34-501	P34-501		P34-501
43	Back-up wasner	Z	V302E		N/R	IN/I	۲	N/R
	.	01	WEI	END AS	SEMBLY			
Item	Description	Qty	Standard: Aluminui	m	Option 1: Stain	Iess Steel	OI OI	Duon 2: Hastelloy
44	Water Chamber	2	V350FB		SV350F	. Б	1/2074	HV3DUFB
40		20	V38/A				V 30/ A	
4/	Water Chamber Washer	20	V38/B				V30/B	
40	Value Seet	∠∪	V30/U	/AEGDNIN		STE MAEGUT V		C.
50		4						
Dort O	Valve Ball 4 V455KN V455ND V455TF V455VT V455KL V455FG							
53	Manifold Dischargo Elbow	2 101 Alu			\/251	E-EB		
54	Manifold Inlet Elbow	2						
55	Manifold Tee	2	V352L-1 D					
56	Manifold Tee O-Ring	4	V330FD V258BN V258ND V258TES V258TEV V258VT V258VI					
63	Manifold Bolt	. 32		. 2000	V38	57D		
64	Manifold Washer	32	\/387B					
65	Manifold Nut	32	22 V387C					
Port O	Part Ontion 2: One-Piece Manifolds for Stainless and Hastellov:							
	Stainless Steel Components Hastellov Components							
60	Discharge Manifold	1	SV3	351FB			HV3	51FB
61	Inlet Manifold	1	SV352FB HV352FB			52FB		
62	Stand	2			SP55	-390		
63	Manifold Bolt	16	SV387A					
64	Manifold Washer	16	SV387B					
65	Manifold Nut	16	5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					
	Within the System							

***These part numbers include (1) center Block, (1) P34-402 Bearing Sleeve, and (2) P34-403 Main shaft O-Rings.



EXPLODED VIEWS



E3 BOLTED METALLIC KITS

Item	Description	Qty	Part Number
	AIR VALVE KIT		E2/E3 A AV
			KIT
3	Glide Ring	2	P34-204F
5	End Cap Gasket	2	P24-205
9	Valve Gasket	1	P24-202
	PILOT VALVE KIT		E3A PV KIT
19	Pilot Shaft Spacer	5	P24-106
20	Pilot Shaft O-Ring	6	P24-107
21	Stop Nut	2	P24-108
34	Main Shaft O-Ring	2	P34-403
	ELASTOMER KITS		See Factory
40	Diaphragm	2	
50	Valve Seat	4	
52	Valve Ball	4	

Item	Description	Qty	Part Number
	COMPREHENSIVE		E3-CMK-OE-RMB
	MAINTENANCE KIT		
2	Valve Spool	1	P34-204
5	End Cap Gasket	2	P24-205
7	Air Valve Screen	1	P24-210
9	Valve Gasket	1	P24-202
14	Air Chamber Gasket	2	P79-109
17	Bushing	2	P34-105
18	Pilot Shaft	1	P34-104
19	Pilot Shaft Spacer	5	P24-106
20	Pilot Shaft O-Ring	6	P24-107
21	Stop Nut	2	P24-108
33	Muffler	1	VTM-6
34	Main Shaft O-Ring	2	P34-403
35	Main Shaft	1	P34-103
42	Bumper Washer	2	P34-501



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