

Identity code: Basic Version Sigma HM (SIBa)

Series:
SIBa Sigma Basic
Version a

HM	Main Drive/Diaphragm									
		Pump version: 12050* 12090* 12130* 07120 07220 04350 * for PVDF versions, max. 145 psig (10 bar)								
			Liquid end material: PV PVDF SS 316 Stainless steel							
			T	Seal material: PTFE/Viton® seal Viton® is a registered trademark of DuPont Dow Elastomers						
					Diaphragm type: 0 Standard diaphragm 1 With double diaphragm and failure monitor (NC contact opens on fault)					
						Liquid end version: 0 Without pressure relief valve, w/o valve springs 1 Without pressure relief valve, w/ 2 valve springs (Hastelloy C4, 1 psig) 4 With pressure relief valve, w/o valve springs 5 With pressure relief valve, w/ valve springs (Hastelloy C4, 1 psig)				
							Connectors: 4 SS clamping nut & insert for 12050, 12090, 12130 7 PVDF clamping nut & insert for 12050, 12090, 12130, 07120, 07220, 04350 8 SS clamping nut & insert for 07120, 07220, 04350			
								Labeling: 0 Standard with logo		
									Motor mount: 2 Without motor, with NEMA 56C flange	
										Enclosure rating: 0 Standard
										Stroke sensor: 0 Without stroke sensor (Standard) 1 With Pacing relay (7-32 VDC supply required); Dry + Sink/Source/Dry Outputs 2 With Pacing relay (120/240 VAC supply required); Dry + 24 VDC Outputs
										Stroke length adjustment: 0 Manual 1 With 3P stroke positioning motor, 230 V 50/60 Hz 2 With 3P stroke positioning motor, 115 V 50/60 Hz 5 W/ stroke positioning motor 0 - 20 mA, 115 V 50/60 Hz 6 W/ stroke positioning motor 4 - 20 mA, 115 V 50/60 Hz

SIBa HM 12050 PV T 0 1 0 0 2 0 0 0

Specifications: Sigma

General:

<i>Maximum stroke length:</i>	0.2" (5.0 mm)															
<i>Power cord:</i>	6 foot (2 m) 2 wire + ground (single phase motors)															
<i>Stroke frequency control:</i>	SIa: Constant speed or optional DC/SCR drive or AC inverter SICa: Microprocessor control version with start/stop control proportional to set frequency or external control signal.															
<i>Stroke counting:</i>	Available with optional stroke counter, hall-effect sensor.															
<i>Materials of construction</i>																
<i>Inner casing:</i>	Cast aluminum															
<i>Housing:</i>	Glass-filled Luranyl™ (PPE)															
<i>Wetted materials of construction:</i>	<table><tr><td>Liquid End</td><td>Suct./Dis. connectors</td><td>Seals</td><td>Balls</td><td>Integrated Pressure/Relief valves</td></tr><tr><td>PVDF</td><td>PVDF</td><td>PTFE/Viton®</td><td>Ceramic</td><td>PVDF/Viton® O-rings</td></tr><tr><td>316 SS</td><td>316 SS</td><td>PTFE/Viton®</td><td>SS</td><td>SS/Viton® O-rings</td></tr></table>	Liquid End	Suct./Dis. connectors	Seals	Balls	Integrated Pressure/Relief valves	PVDF	PVDF	PTFE/Viton®	Ceramic	PVDF/Viton® O-rings	316 SS	316 SS	PTFE/Viton®	SS	SS/Viton® O-rings
Liquid End	Suct./Dis. connectors	Seals	Balls	Integrated Pressure/Relief valves												
PVDF	PVDF	PTFE/Viton®	Ceramic	PVDF/Viton® O-rings												
316 SS	316 SS	PTFE/Viton®	SS	SS/Viton® O-rings												
<i>Drive:</i>	Cam and spring-follower (lost motion)															
<i>Lubrication:</i>	Oil lubricated															
<i>Recommended oil:</i>	ISO VG 460, such as Mobil Gear Oil 634; ProMinent Part no. 555325.0															
<i>Oil quantity:</i>	Approximately 0.6 quart (550 mL)															
<i>Recommended oil change interval:</i>	5,000 hours															
<i>Warranty:</i>	Two years on drive, one year on liquid end.															
<i>Factory testing:</i>	Each pump is tested for rated flow at maximum pressure.															
<i>Industry Standard:</i>	CSA available (Standard in Canada). CE approved.															

Sigma HM:

<i>Diaphragm materials:</i>	PTFE faced EPDM with Nylon reinforcement and steel core		
<i>Liquid end options:</i>	Polyvinylidene Fluoride (PVDF) or 316 SS, with PTFE faced Viton® seals		
<i>Check valves:</i>	Single ball, aluminum oxide ceramic (PVDF version); stainless steel (SS version); optional springs (Hastelloy C4).		
<i>Repeatability:</i>	When used according to the operating instructions, better than ±2%		
<i>Max. fluid operating temperatures:</i>	<u>Material</u>	<u>Constant</u>	<u>Short Term</u>
	PVDF	149°F (65°C)	212°F (100°C)
	316 SS	194°F (90°C)	248°F (120°C)
<i>Diaphragm failure indication:</i>	Optional, see accessories. Switch is N.C., opens to indicate failure. Switch rated 250 V, 0.3 A inductive or 0.5 A resistive. Requires minimum 21 psig (1.5 bar) backpressure on pump. N.O. switch available upon request. Includes double diaphragm leak prevention.		
<i>Separation of drive from liquid end:</i>	An air gap with secondary safety diaphragm separates the drive from the liquid end to prevent cross contamination of oil and process fluid (with or without optional diaphragm failure indication).		
<i>Max. solids size in fluid:</i>	0.3 mm		
<i>Stroke length adjustment:</i>	Manual, in increments of 0.5%. Motorized stroke length control optional.		

Sigma HK:

<i>Piston materials:</i>	Ceramic oxide; packing rings of PTFE, packing spring of 316 SS.		
<i>Liquid end options:</i>	316 SS with PTFE seals		
<i>Check valves:</i>	Double ball, stainless steel; optional springs (Hastelloy C4).		
<i>Repeatability:</i>	When used according to the operating instructions, better than ±0.5%		
<i>Max. fluid operating temperatures:</i>	<u>Material</u>	<u>Constant</u>	<u>Short Term</u>
	316 SS	392°F (200°C)	428°F (220°C)
<i>Stroke length adjustment:</i>	Manual, in increments of 0.2%. Motorized stroke length control optional.		

Specifications cont.

Basic Version HM & HK:

Motor mounting flange:

Fits all NEMA 56C frame motors (motor not included with pump)

*Gear ratios and stroke frequencies
(with 1725 RPM motor):*

20:1 = 87 SPM, 11:1 = 156 SPM, 7.25:1 = 232 SPM at 60 Hz

Motor coupling:

Flexible coupling included with pump.

Required Motor HP:

1/3 HP (0.25 kW)

Full load RPM:

1750 RPM (60 Hz), 1450 RPM (50 Hz)

(Note: different performance with 60 and 50 Hz power)

Stroke sensor (optional):

Hall effect - requires 5 VDC

Control Version HM & HK:

Control Function:

A.C. motor starts and stops according to control algorithm for set stroke frequency or to pump in proportion to external analog signal.

Enclosure rating:

NEMA 3 (IP 55)

Motor data:

Totally enclosed, fan cooled (IP55); class F insulation; Manufacturer ATB; 0.24 HP (3.1 A @ 115V), 1 phase, metric B14 flange, size 71.

Thermal overload protection:

On single-phase AC motors, thermal cutout switches off at 284°F (140°C).

Relay cable (optional):

6 foot (2 m) 3 wire (SPDT) 250 VAC, 2 A

Allowable motor start/stops:

3900/hour

*Pulse contact/
Remote pause contact:*

With voltage-free contact, or semiconductor sink logic control (not source logic) with a residual voltage of <700 mV. The contact load is approximately 0.5 mA at + 5 VDC. (Note: Semiconductor contacts that require >700 mV across a closed contact should not be used).

Max. pulse frequency:

25 pulses/sec

Contact impedance:

10 kOhm

Max. pulse memory:

65,535 pulses

Necessary contact duration:

20ms

Analog - current input burden:

Approximately 70 Ohm

Max. allowable input current:

50 mA

Technical Data: Sigma HM Diaphragm Pumps

Technical data:	60 Hz (1750 RPM) operation* Capacity at Maximum Pressure				Max. Stroke Rate	Output per Stroke	Max. Suction Lift (water)	Max. Suction Pressure	Suction/ Discharge Connector		Shipping Weight w/Motor
Pump Version Sigma	psig	(bar)	U.S. (L/h) GPH	Stroke/ min.	mL/ stroke	ft. (m)	psig (bar)	DN	in.	lbs. (kg.)	
12050 PVT	145	(10)	15.9 (60)	87	11.4	23 (7)	44 (3)	15	1/2 MNPT	33 (15)	
12050 SST	174	(12)	15.2 (57)	87	11.4	23 (7)	44 (3)	15	1/2 FNPT	44 (20)	
12090 PVT	145	(10)	28.6 (108)	156	11.4	23 (7)	44 (3)	15	3/4 MNPT	33 (15)	
12090 SST	174	(12)	27 (103)	156	11.4	23 (7)	44 (3)	15	1/2 FNPT	44 (20)	
12130 PVT	145	(10)	41 (156)	232	10.9	23 (7)	44 (3)	15	3/4 MNPT	33 (15)	
12130 SST	174	(12)	39.6 (150)	232	10.9	23 (7)	44 (3)	15	1/2 FNPT	44 (20)	
07120 PVT	100	(7)	38 (144)	87	27.4	16 (5)	15 (1)	25	3/4 MNPT	35 (16)	
07120 SST	100	(7)	38 (144)	87	27.4	16 (5)	15 (1)	25	3/4 MNPT	53 (24)	
07220 PVT	100	(7)	69.7 (264)	156	27.7	16 (5)	15 (1)	25	3/4 MNPT	35 (16)	
07220 SST	100	(7)	69.7 (264)	156	27.7	16 (5)	15 (1)	25	3/4 MNPT	53 (24)	
04350 PVT	58	(4)	111 (420)	232	29.4	16 (5)	15 (1)	25	1 MNPT	35 (16)	
04350 SST	58	(4)	111 (420)	232	29.4	16 (5)	15 (1)	25	1 MNPT	53 (24)	

* For performance at 50 Hz, multiply rated capacity and stroke rate by 5/6.

Wetted Materials of Construction

Material Code	Liquid end	Suction/Discharge Connectors	Seals	Balls	Integrated Pressure Relief Valves
PVT	PVDF (Polyvinylidene fluoride)	PVDF (Polyvinylidene fluoride)	PTFE/ Viton®	Alumina Ceramic/glass*	PVDF/Viton® O-rings**
SST	316 Stainless steel	316 Stainless steel	PTFE/ Viton®	SS	SS/Viton® O-rings

Note: * For versions 07120, 07220, 04350; ** EPDM also available

Options

Diaphragm Failure Monitor (A)

As an option, the liquid end can be equipped with diaphragm failure monitor. This consists of a PVDF spacer with leak detector positioned between the primary (fluid side) diaphragm and an hermetically sealed backer diaphragm. A normally closed diaphragm-isolated pressure switch (A) opens upon the increase of pressure resulting from main diaphragm failure, based on minimum backpressure of 21 psig (1.5 bar). This offers the distinct advantage that the metered fluid cannot flow uncontrolled out of the pump. The diaphragm failure is signalled on an LCD display and the pump is stopped on SiCa models, and triggers the optional fault indicating relay. A contact is opened on SiBa HM models to allow fault annunciation or to stop the pump.

Integrated Pressure Relief/Priming Valve (B)

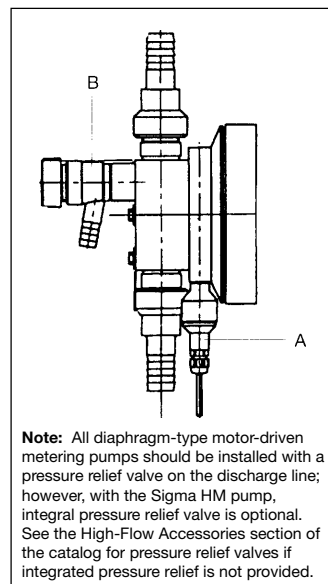
A liquid end is available with integrated pressure relief/priming valve. The metering pump and discharge line are effectively protected against overload and subsequent damage without the need for intricate installation. This represents a considerable cost saving over external pressure relief valves.

The valve features a fixed spring tension sized for the pump's rated pressure, and is not adjustable except to open for priming. Seals are specified as EPDM or Viton® at the time of order.

Diaphragm Failure Kits

For conversion of a standard Sigma pump to one with diaphragm failure indication. Includes safety diaphragm, backplate, secondary containment diaphragm and hub, leak detection spacer, leak detection pressure switch assembly, diaphragm, pump head bolts.

130 SiBa HM (version 12050 - 12130)	792767
130 SiCa HM (version 12050 - 12130)	740332
350 SiBa HM (version 07120 - 04350)	792768
350 SiCa HM (version 07120 - 04350)	740333



Note: All diaphragm-type motor-driven metering pumps should be installed with a pressure relief valve on the discharge line; however, with the Sigma HM pump, integral pressure relief valve is optional. See the High-Flow Accessories section of the catalog for pressure relief valves if integrated pressure relief is not provided.

Technical Data: Sigma HK Plunger Pumps

ProMinent®

Technical data:	60 Hz (1750 RPM) operation					Max. Stroke Rate	Output per Stroke	Max. Suction Lift (water)	Max. Suction Pressure	Suction/ Discharge Connector	Shipping Weight w/Motor
	Capacity at Maximum Pressure										
Pump Version Sigma	psig	(bar)	U.S. (L/h) GPH	Stroke/ min.	mL/ stroke	ft. (m)	psig (bar)	in. FNPT (G)	lbs. (kg.)		
32002 SST	4640	(320)	0.6 (2.3)	84	0.46	16 (5)	2175 (150)	1/4	53 (24)		
23004 SST	3335	(230)	1.2 (4.8)	154	0.52	16 (5)	2175 (150)	1/4	53 (24)		
10006 SST	1450	(100)	2.0 (7.6)	233	0.55	16 (5)	2175 (150)	1/4	53 (24)		
14006 SST	2030	(140)	1.8 (7.1)	84	1.42	13 (4)	870 (60)	1/4	53 (24)		
10011 SST	1450	(100)	3.4 (13.1)	154	1.43	13 (4)	870 (60)	1/4	53 (24)		
05016 SST	725	(50)	5.2 (20)	233	1.43	13 (4)	870 (60)	1/4	53 (24)		
07012 SST	1015	(70)	3.9 (14.8)	84	2.90	13 (4)	435 (30)	1/4	53 (24)		
04522 SST	652	(45)	7.0 (27.6)	154	2.91	13 (4)	435 (30)	1/4	53 (24)		
02534 SST	362	(25)	10.7 (40.8)	233	2.92	13 (4)	435 (30)	1/4	53 (24)		
04022 SST	580	(40)	7.0 (26.5)	84	5.26	13 (4)	218 (15)	3/8	55 (25)		
02541 SST	362	(25)	13.0 (49.2)	154	5.37	13 (4)	218 (15)	3/8	55 (25)		
01264 SST	174	(12)	20.1 (76)	233	5.45	13 (4)	218 (15)	3/8	55 (25)		

Wetted Materials of Construction

Material Code	Liquid end	Suction/Discharge Connectors	Seals	Balls
SST	316 Stainless steel	316 Stainless steel	PTFE	SS

Identity code: Basic Version Sigma HK (SIBa)

ProMinent®

Series:
Sigma Basic
Version a

HK	Main drive/Plunger	
	32002 04522 14006 02541 07012 10006 04022 05016 23004 02534 10011 01264	Pump version:
	SS	Liquid end material: 316 Stainless steel
	T	Seal material: PTFE seal
	4	Plunger assembly: Plunger (Ceramic)
	0 1	Liquid end version: Without valve springs With 2 valve springs (Hastelloy C4, 1 psig)
	0	Connectors: Standard (In accordance with technical data)
	0	Labeling: Standard with logo
	2	Motor mount: Without motor, with NEMA 56C flange
	0	Enclosure rating: Standard
	0 1 2	Stroke sensor: Without stroke sensor (Standard) With Pacing relay (7-32 VDC supply required); Dry + Sink/Source/Dry Outputs With Pacing relay (120/240 VAC supply required); Dry + 24 VDC Outputs
	0 1 2 5 6	Stroke length adjustment: Manual With 3P stroke positioning motor, 230 V, 50/60 Hz With 3P stroke positioning motor, 115 V, 50/60 Hz W/ stroke positioning motor 0 - 20 mA, 115 V, 50/60 Hz W/ stroke positioning motor 4 - 20 mA, 115 V, 50/60 Hz

SIBa HK 14006 SS T 4 1 0 0 2 0 0 0

Identity code: Control Version Sigma HM (SICa)

ProMinent®

Series:
Sigma Control
Version a

HM	Main drive/Diaphragm
12050* 12090* 12130* 07120 07220 04350	Pump version: * for PVDF versions, max. 145 psig (10 bar)
PV SS	Liquid end material: PVDF 316 Stainless steel
T	Seal material: PTFE/Viton® seal Viton® is a registered trademark of DuPont Dow Elastomers
0 1 2	Diaphragm type: 0 Standard diaphragm 1 With double diaphragm and failure monitor (NC contact opens on fault) 2 With double diaphragm and failure monitor (alarm & continues to operate)
0 1 4 5	Liquid end version: 0 Without pressure relief valve, w/o valve springs 1 Without pressure relief valve, w/ 2 valve springs (Hastelloy C4, 1 psig) 4 With pressure relief valve, w/o valve springs 5 With pressure relief valve, w/ 2 valve springs (Hastelloy C4, 1 psig)
4 7 8	Connectors: 4 SS clamping nut & insert for 12050, 12090, 12130 7 PVDF clamping nut & insert for 12050, 12090, 12130, 07120, 07220, 04350 8 SS clamping nut & insert for 07120, 07220, 04350
0	Labeling: 0 Standard with logo
A D U	Voltage supply: A 230 V 50 Hz Euro plug D 115 V 60 Hz N. American plug U 230 V 60 Hz N. American plug
0 1	Control type: 0 Manual digital frequency control + pulse control with mult./divider 1 Manual digital frequency + external pulse + external analog (All types of control are supplied with 1 phase AC motor)
0 1 2 3	Switching mode of relay: 0 Without relay (Standard) 1 With fault annunciating relay, drops out (NC contact) 2 With pacing relay, pulls in (NO contact) 3 With fault annunciating realy, pulls in (NO contact)
0	Stroke length adjustment: 0 Manual

SICa HM 12050 PV T 1 4 0 0 D 1 3 0

Identity code: Control Version Sigma HK (SiCa)

Series:
Sigma Control
Version a

HK	Main drive/ Plunger
32002 14006 07012 04022 23004 10011	04522 02541 10006 05016 02534 01264
	Pump version:
SS	Liquid end material: 316 Stainless steel
T	Seal material: PTFE seal
4	Plunger: Plunger (Ceramic)
0 1	Liquid end version: Without valve springs With 2 valve springs (Hastelloy C4, 1 psig)
0	Connectors: Standard (In accordance with technical data)
0	Labeling: Standard with logo
A D U	Voltage supply: 230 V 50 Hz Euro plug 115 V 60 Hz N. American plug 230 V 60 Hz N. American plug
0 1	Control type: Manual digital frequency control + pulse control with mult./divider Manual digital frequency + external pulse + external analog (All types of control are supplied with 1 phase AC motor)
0 1 2 3	Switching mode of relay: Without relay (Standard) With fault annunciating relay, drops out (NC contact) With pacing relay, pulls in (NO contact) With fault annunciating relay, pulls in (NO contact)
0	Stroke length adjustment: Manual

SiCa HK 14006 SS T 4 0 0 0 D 1 1 0