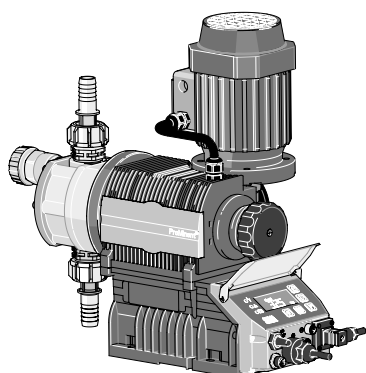


2.2 ProMinent® Sigma/ 1 Diaphragm Metering Pumps

2.2.1 ProMinent® Sigma/ 1 Diaphragm Metering Pumps



S1Ca

The ProMinent® Sigma/ 1 diaphragm metering pump has a high strength metal/plastic lined housing for those components subject to load, and an additional plastic housing to protect against corrosion. It has a capacity range of 17-144 l/h at a max. back pressure of 12-4 bar. The pump capacity is adjusted by varying the stroke length (4 mm) in 1 % steps via a self locking adjusting knob.

The reproducible metering accuracy is better than ± 2 % providing installation has been correctly carried out, and in the stroke length range of 30-100 %. (Instructions in the operating instructions manual must be followed.)

The stable, corrosion resistant metal and plastic housing is rated IP 65. To facilitate adaptation of the pumps to the widest possible range of processing requirements we offer a choice of three gearbox ratios, three liquid end sizes, two liquid end materials and either contact or analogue signal (e.g. 0/4-20 mA) control options in the form of the S1Ca Sigma controller.

For safety reasons, all motor driven metering pumps must be equipped with adequate protection against electrical overload.

ProMinent® Sigma Basic Type (S1Ba)

The ProMinent® Sigma Basic type is a motor driven metering pump with no internal electronic control system. The ProMinent® S1Ba has a number of different drive options, including the 3 ph. standard (standard IP 55) motor, or the single phase AC motor. We also supply metering pumps with ATEX-approval for use in EXe and EXde zones.

Different flanges are always available so that customers can use their own motor to drive the pump.

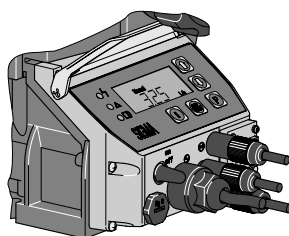
ProMinent® Sigma Control Type (S1Ca)

The ProMinent® Sigma microprocessor version (standard IP 65) allows rapid and reliable adjustment to fluctuating metering requirements.

The controller has the same control panel as the ProMinent® gamma/ L metering pump.

The microprocessor controller of the Sigma pumps, featuring the optimum combination of variable AC frequency combined with digital stroking frequency, ensures exact metering even in the lower minimum range due to individual stroke control.

The individual pump functions are simply adjusted using the five programming keys. A backlit LCD indicates the current operating status, LEDs function as operation or fault indicators and fault indicator or pacing relays monitor the pump function.



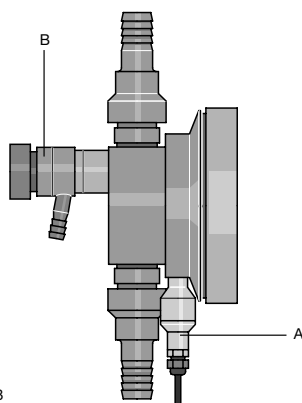
ProMinent® Sigma Controller
pk_2_104

PROFIBUS Central or decentral adjustment is possible with PROFIBUS® and/or an integrated process timer.

Diaphragm Failure Indication (A)

The liquid end may be supplied with an optional safety diaphragm.

A plastic chemical resistant end disc separates the drive housing from the liquid section, and protects the drive against corrosion in case of diaphragm rupture. The new diaphragm rupture system means that the liquid section is hermetically sealed in the event of diaphragm rupture. This has the great advantage that the feed chemicals cannot escape from the pump. In association with the S1Ca, diaphragm rupture is simultaneously indicated via the LCD. At this point it is possible to opt for continuation of the metering, or to stop the metering pump.



pk_2_003

Integrated Relief-/Bleed Valve (B)

A liquid end variant with integrated hydraulic relief valve is optionally available for pressure ratings 4, 7, 10 and 12 bar. It protects the pump against overload and potential damage with no additional installation. This represents a considerable saving to the operator.

The integrated pressure relief valve offers the further advantage of effective bleeding of the injection valve during intake.

2.2 ProMinent® Sigma/ 1 Diaphragm Metering Pumps

Technical Data S1Ba At 50/60 Hz Operation

Pump type S1BaH	at 50 Hz				at 60 Hz						
	bar	l/h	ml/stroke	strokes/min.	Pump Capacity at Max. Back Freq. Pressure	Stroking rate at max. back-pressure	Suction Lift	Adm. Priming Pressure Suction Side	Connector Suction/ Discharge Side	Shipping Weight	
	bar	l/h	ml/stroke	strokes/min.	psi	l/h/gph	strokes/min.	mWG	bar	G-DN	kg
12017 PVT	12	17	4.0	73	174.0	20/ 5.2	88	7	1	3/4"/10	9
12017 SST	12	17	4.0	73	174.0	20/ 5.2	88	7	1	3/4"/10	12
12035 PVT	12	35	4.0	143	174.0	42/ 11.1	172	7	1	3/4"/10	9
12035 SST	12	35	4.0	143	174.0	42/ 11.1	172	7	1	3/4"/10	12
10050 PVT	10	50	4.0	200	145.0	60/ 15.8	240	7	1	3/4"/10	9
10050 SST	10	50	4.0	200	145.0	60/ 15.8	240	7	1	3/4"/10	12
10022 PVT	10	22	5.1	73	145.0	26/ 6.8	88	6	1	3/4"/10	9
10022 SST	10	22	5.1	73	145.0	26/ 6.8	88	6	1	3/4"/10	12
10044 PVT	10	44	5.1	143	145.0	53/ 14	172	6	1	3/4"/10	9
10044 SST	10	44	5.1	143	145.0	53/ 14	172	6	1	3/4"/10	12
07065 PVT	7	65	5.1	200	100.0	78/ 20.6	240	6	1	3/4"/10	9
07065 SST	7	65	5.1	200	100.0	78/ 20.6	240	6	1	3/4"/10	12
07042 PVT	7	42	9.7	73	100.0	50/ 13.2	88	3	1	1"/15	9.5
07042 SST	7	42	9.7	73	100.0	50/ 13.2	88	3	1	1"/15	13.5
04084 PVT	4	84	9.7	143	58.0	101/ 26.7	172	3	1	1"/15	9.5
04084 SST	4	84	9.7	143	58.0	101/ 26.7	172	3	1	1"/15	13.5
04120 PVT	4	120	9.7	200	58.0	144/ 38	240	3	1	1"/15	9.5
04120 SST	4	120	9.7	200	58.0	144/ 38	240	3	1	1"/15	13.5

The 60 Hz performance data applies to the S1Ca pump types (because internally 60 Hz operation) nevertheless at max. 200 strokes/min.

Materials In Contact With Chemicals

Liquid End	Suction/Discharge connector	Valve	Seals/ ball seat	Balls	Integrated Pressure Relief Valve
PVT	PVDF (Polyvinylidene fluoride)	PVDF (Polyvinylidene fluoride)	PTFE/PTFE	Ceramic	PVDF/FPM
SST	Stainless steel no. 1.4404	Stainless steel no. 1.4581	PTFE/PTFE	Stainless steel no. 1.4401	Stainless steel/FPM

FPM = Fluorine Rubber

Sigma Basic Type Control Functions (S1Ba)

Stroke length actuator/controller

Actuator for automatic stroke length adjustment, actuating period approx. 1 sec for 1 % stroke length, 1 Ω response signal potentiometer, enclosure rating IP 54.

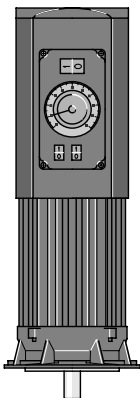
Controller consists of actuator with servomotor and integrated servo control for stroke length adjustment via a standard signal. Standard signal input 0/4-20 mA, corresponds to stroke length 0 - 100 %. Automatic/manual operation selection key for manual stroke adjustment. Mechanical status display of actual stroke length value output 0/4-20 mA for remote display.

Variable speed motors with integrated speed controller (identcode characteristic V)

Power supply 1 ph 230 V, 50/60 Hz, 0.18 kW (see 2.6.2)
External control with 0/4-20 mA (see pk_2_103)

Speed controllers in metal housing (identcode characteristic Z)

The speed controller assembly consists of a speed controller and a 0.18 kW variable speed motor (see also 2.6.2)



pk_2_103

2.2 ProMinent® Sigma/ 1 Diaphragm Metering Pumps

2.2.2 Identcode Ordering System Basic Type (S1Ba)

S1Ba	Sigma Basic Type (S1Ba)											
	H	Main drive, diaphragm										
		Pump type: (figures 1+2 = back pressure [bar], figures 3-5 = feed rate [l/h]) 12017 12 bar; 17 l/h 12035 12 bar; 35 l/h 10050 10 bar; 50 l/h 10022 10 bar; 22 l/h 10044 10 bar; 44 l/h 07065 7 bar; 65 l/h 07042 7 bar; 42 l/h 04084 4 bar; 84 l/h 04120 4 bar; 120 l/h										
		PV	Liquid end materials: PVDF SS Stainless steel									
			T	Seal material: PTFE seal								
				0	Diaphragm: Standard diaphragm, PTFE version							
				1	Double diaphragm with diaphragm rupture indicator (retro fit possible)							
					0	Liquid end version: No spring						
					1	With 2 valve springs, Hastelloy C, 0.1 bar						
					4	With pressure relief valve, FPM seal, no valve spring						
					5	With pressure relief valve, FPM seal, and valve spring						
						Hydraulic connection: 0 Standard threaded connector (according to technical data) 1 Union nut and PVC insert 2 Union nut and PP insert 3 Union nut and PVDF insert 4 Union nut and stainless steel insert 7 Union nut and PVDF hose nozzle 8 Union nut and stainless steel hose nozzle						
						Version: 0 With ProMinent® logo (standard) 1 Without ProMinent® logo M Modified						
						Electrical power supply: S 3 ph, 230 V/400 V 50/60 Hz, 0.09 kW M 1 ph, AC, 230 V/50/60 Hz, 0.09 kW N 1 ph, AC 115 V 60 Hz, 0.09 kW L 3 ph, 230 V/400 V, 50 Hz, (Exe, Exde) P 3 ph, 265 V/440 V, 60 Hz, (Exe, Exde) R 3 ph, variable speed motor, 230/400 V, 0.09 kW V (0) Variable speed motor with integrated frequency converter 1 pH, 230 V, 50/60 Hz Z 1 ph, variable speed control set 1 ph, 230/400 V, 50/60 Hz 2 No motor, C 42 flange (NEMA) 3 No motor, B5 Gr. 56 (DN)						
						Enclosure rating: 0 IP 55 (standard) 1 Exe motor version ATEX-T3 2 Exde motor version ATEX-T4 A ATEX power end						
						Stroke sensor: 0 No stroke sensor (standard) 2 Pacing relay (reed relay) 3 Stroke sensor (Namur) for hazardous locations						
						Stroke length adjustment: 0 Manual (standard) 1 With stroke positioning motor, 230 V/50/60 Hz 2 With stroke positioning motor, 115 V/60 Hz 3 With stroke control motor, 0...20 mA 230 V/50/60 Hz 4 With stroke control motor 4...20 mA 230 V/50/60 Hz 5 With stroke control motor 0...20 mA 115 V/60 Hz 6 With stroke control motor 4...20 mA 115 V/60 Hz						
S1Ba	H	10050	PV	T	0	0	0	0	S	0	0	0

FPM = Fluorine Rubber

2.2 ProMinent® Sigma/ 1 Diaphragm Metering Pumps

2.2.3 Identcode Ordering System Control Type (S1Ca)

S1Ca	Sigma Control Type (S1Ca)										
	H	Main drive, diaphragm									
		Pump typ: (figures 1+2 =back pressure [bar], figures 3-5 =feed rate [l/h])									
		12017	12 bar; 20 l/h	07065	7 bar; 65 l/h	Notice:					
		12035	12 bar; 42 l/h	07042	7 bar; 50 l/h	S1Ca pump types: 60 Hz performance					
		10050	10 bar; 50 l/h	04084	4 bar; 101 l/h	data applies (as 60 Hz operation)					
		10022	10 bar; 26 l/h	04120	4 bar; 120 l/h	but max. 200 strokes/min.					
		10044	10 bar; 53 l/h								
		PV	Liquid end materials:								
		SS	PVDF								
			Stainless steel								
		T	Seal material:								
			PTFE seal								
			Positive displacement element:								
		0	Standard diaphragm								
		1	Double diaphragm with rupture indicator incorporating "Pump stopping" function								
		2	Double diaphragm with rupture indicator incorporating "Pump alarm" function								
			Liquid end version:								
		0	No springs								
		1	With 2 valve springs, Hastelloy C, 0.1 bar								
		4	With relief valve, FPM seal, no valve spring								
		5	With relief valve, FPM seal, with valve spring								
			Hydraulic connection:								
		0	Standard threaded connector (according to technical data)								
		1	Union nut and PVC insert								
		2	Union nut and PP insert								
		3	Union nut and PVDF insert								
		4	Union nut and stainless steel insert								
		7	Union nut and PVDF hose nozzle								
		8	Union nut and stainless steel hose nozzle								
			Version:								
		0	With ProMinent® logo								
		1	Without ProMinent® logo								
			Electrical power supply:								
		U	1 ph, 100-230 V, ±10 %, 50/60 Hz								
			Cable and plug:								
		A	2 m European								
		B	2 m Swiss								
		C	2 m Australian								
		D	2 m USA								
			Relays:								
		0	No relay								
		1	With fault indicating relay (normally energised)								
		3	With fault indicating relay (normally de-energised)								
		4	As 1 with pacing relay								
		5	As 3 with pacing relay								
		A	shut-off and warning relays normally closed								
		C	as 1 + 4-20mA output = stroke length x rate								
		F	Power relay normally closed								
			1 x changeover 230 V – 8 A								
			Control variant:								
		0	Manual + external with pulse control								
		1	Manual + external + pulse control								
		4	+ analogue								
		5	As 0 + process-timer								
		P	As 1 + process-timer								
		R	As 1 + PROFIBUS® DP-interface, D sub 9								
			As 1 + PROFIBUS® DP-interface, M12								
			With the PROFIBUS® option, no relay can be selected								
			Access code:								
		0	No access code								
		1	With access code								
			Metering monitor:								
		0	Input with pulse evaluation								
			Stroke length adjustment:								
		0	Manual								
		C	Manual + calibration								

S1Ca H 10050 PV T 0 0 0 0 0 U A 0 0 0 0 0

FPM = Fluorine Rubber

2.2 ProMinent® Sigma/ 1 Diaphragm Metering Pumps

2.2.4 Spare Parts Kits

The spare part kit generally includes liquid end consumables.

Scope of delivery in the case of PVT material version

- 1 pump diaphragm
- 1 suction valve assembly
- 1 discharge valve assembly
- 2 valve balls
- 1 set of seals (packing rings, ball seat discs, ball seat housings)

Scope of delivery in the case of SST material version

- 1 pump diaphragm
- 2 valve balls
- 1 set of seals (packing rings, ball seat discs)

Spare parts kits Sigma/ 1

(applicable to Identcode: type 12017;12035;10050)

		Order No.
Liquid end FM 50 - DN 10	PVT	1010541
	SST	1010554
	SST (with 2 valve assemblies)	1010555

(applicable to Identcode: type 10022; 10044; 07065)

		Order No.
Liquid end FM 65 - DN 10	PVT	1010542
	SST	1010556
	SST (with 2 valve assemblies)	1010557

(applicable to Identcode: type 07042; 04084; 04120)

		Order No.
Liquid end FM 120 - DN 15	PVT	1010543
	SST	1010558
	SST (with 2 valve assemblies)	1010559

Pump diaphragms Sigma/ 1

	Order No.
Sigma/1 FM 50 (12017; 12035; 10050)	1010279
Sigma/1 FM 65 (10022; 10044; 07065)	1010282
Sigma/1 FM 120 (07042; 04084; 04120)	1010285

Motor Data S1Ba

Identcode characteristic	Power supply	Remarks
S 3 ph, IP 55	220-240 V/380-420 V 50 Hz 0.09 kW	
	250-280 V/440-480 V 60 Hz 0.09 kW	
M 1 ph AC, IP 55	230 V ±5 % 50/60 Hz 0.12 kW	
N 1 ph AC, IP 55	115 V ±5 % 60 Hz 0.12 kW	
L1 3 ph, II2GEEexIIIT3	220-240 V/380-420 V 50 Hz 0.12 kW	
L2 3 ph, II2GEEexIIICT4	220-240 V/380-420 V 50 Hz 0.18 kW	with PTC thermistor, speed adjustment range 1:5
P1 3 ph, II2GEEexIIIT3	250-280 V/440-480 V 60 Hz 0.12 kW	
P2 3 ph, II2GEEexIIICT4	250-280 V/440-480 V 60 Hz 0.18 kW	with PTC thermistor, speed adjustment range 1:5
R 3 ph, IP 55	230 V/400 V 50/60 Hz 0.09 kW	with PTC thermistor, speed adjustment range 1:20 with external fan 1 ph 230 V; 50/60 Hz
V0 1 ph, IP 55	230 V ±10 50/60 Hz 0.18 kW	variable speed motor with integrated frequency converter

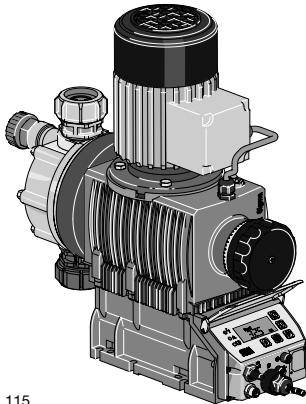
For further information you can request motor data sheets. Custom motors and/or custom motor flanges are available on request.

Notice for use in Ex-zone:

After 01.07.2003, only pumps with the corresponding EC-Ex-RL 94/9 identification can be used in explosion-threatened operating areas. The explosion group, category and enclosure rating indicated in the identification shall comply with or exceed the conditions in the intended place of use.

2.3 ProMinent® Sigma/ 2 Diaphragm Metering Pumps

2.3.1 ProMinent® Sigma/ 2 Diaphragm Metering Pumps



pk_2_115

The ProMinent® Sigma/ 2 diaphragm metering pump has a high strength metal-lined housing for those components subject to load, and an additional plastic housing to protect against corrosion. It has a capacity range of 50-420 l/h at a max. back pressure of 4-16 bar. The pump capacity is adjusted by varying the stroke length (5 mm) in 0.5 % steps via a self locking adjusting knob.

The reproducible metering accuracy is better than ± 2 % providing installation has been correctly carried out, and in the stroke length range of 30-100 %. (instructions in the operating instructions manual must be followed.)

The stable, corrosion resistant metal and plastic housing is rated IP 65. To facilitate adaptation of the pumps to the widest possible range of processing requirements we offer a choice of three gearbox ratios, three liquid end sizes, two liquid end materials and either contact or analogue signal (e.g. 0/4-20 mA) control options in the form of the S2Ca Sigma controller.

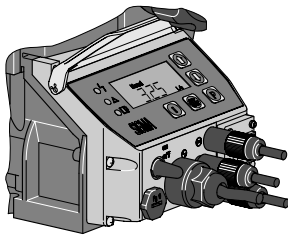
For safety reasons, all motor driven metering pumps must be equipped with adequate protection against electrical overload.

ProMinent® Sigma Basic Type (S2Ba)

The ProMinent® Sigma Basic type is a motor driven metering pump with no internal electronic control system. The ProMinent® S2Ba offers a variety of different drive options in both the three phase standard motor (standard: IP 55) or the single phase AC versions. We also supply metering pumps with ATEX-approval for use in EXe and EXde zones.

Different flanges are always available so that customers can use their own motor to drive the pump.

ProMinent® Sigma Control Type (S2Ca)




ProMinent® Sigma Controller
pk_2_104

The ProMinent® Sigma microprocessor version (standard IP 65) allows rapid and reliable adjustment to fluctuating metering requirements.

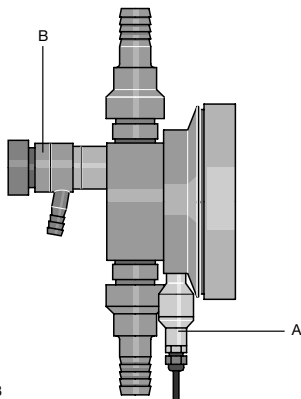
The controller has the same control panel as the ProMinent® gamma/ L metering pump.

The microprocessor controller of the Sigma pumps, featuring the optimum combination of variable AC frequency combined with digital stroking frequency, ensures exact metering even in the lower minimum range due to individual stroke control.

The individual pump functions are simply adjusted using the five programming keys. A backlit LCD indicates the current operating status, LEDs function as operation or fault indicators and fault indicator or pacing relays monitor the pump function.

 Central or decentral adjustment is possible with PROFIBUS® and/or an integrated process timer.

Diaphragm Failure Indication (A)



pk_2_003

The liquid end may be supplied with an optional safety diaphragm.

A plastic chemical resistant end disc separates the drive housing from the liquid section, and protects the drive against corrosion in case of diaphragm rupture. The new diaphragm rupture system means that the liquid section is hermetically sealed in the event of diaphragm rupture. This has the great advantage that the feed chemicals cannot escape from the pump. In association with the S2Ca, diaphragm rupture is simultaneously indicated via the LCD. At this point it is possible to opt for continuation of the metering, or to stop the metering pump.

Integrated Relief-/Bleed Valve (B)

A liquid end variant with integrated hydraulic relief valve is optionally available for pressure ratings 4, 7, 10 and 16 bar. It protects the pump against overload and potential damage with no additional installation. This represents a considerable saving to the operator.

The integrated pressure relief valve offers the further advantage of effective bleeding of the injection valve during intake.

2.3 ProMinent® Sigma/ 2 Diaphragm Metering Pumps

Technical Data

Pump type Sigma HM	at 50 Hz				at 60 Hz							
	bar	l/h	ml/ stroke	strokes/ min.	Pump Capacity at Max. Back Pressure	Max. Stroke Freq.	Pump Capacity at Max. Back Pressure	Stroking rate at max. back- pressure	Suction Lift	Adm. Priming Pressure Suction Side	Connector Suction/ Discharge Side	Shipping Weight
					psi	l/h/gph	strokes/ min.	mWG	bar	G-DN	kg	
16050 PVT	10	50	11.4	73	145	60/ 15.9	87	7	3	1 - 15	15	
16050 SST	16	48	11.4	73	232	57/ 15.2	87	7	3	1 - 15	20	
16090 PVT	10	90	11.4	132	145	108/ 28.5	156	7	3	1 - 15	15	
16090 SST	16	86	11.4	132	232	103/ 27	156	7	3	1 - 15	20	
16130 PVT	10	130	10.9	198	145	156/ 41	232	7	3	1 - 15	15	
16130 SST	16	125	10.9	198	232	150/ 39.6	232	7	3	1 - 15	20	
07120 PVT	7	120	27.4	73	100	144/ 38	87	5	1	1½ - 25/20*	16	
07120 SST	7	120	27.4	73	100	144/ 38	87	5	1	1½ - 25/20*	24	
07220 PVT	7	220	27.7	132	100	264/ 69.7	156	5	1	1½ - 25/20*	16	
07220 SST	7	220	27.7	132	100	264/ 69.7	156	5	1	1½ - 25/20*	24	
04350 PVT	4	350	29.4	198	58	420/111	232	5	1	1½ - 25/20*	16	
04350 SST	4	350	29.4	198	58	420/111	232	5	1	1½ - 25/20*	24	

* **Note:** Sigma types 07120, 07220 and 04350 liquid ends are fitted with DN 25 (G 1 1/2) valves. Since DN 20 is normally large enough for these versions (see technical data, connector suction/discharge line), the connector parts identified in the identity code (e.g. inserts) are already reduced to DN 20, i.e. customers can order standard DN 20 pipe and accessories. For the S2Ca pump types the 60 capacity data (since internal 60 Hz operation) applies, however, max. 200 strokes/min.

Materials In Contact With Chemicals

Liquid End	Suction/Discharge connector	Valve	Seals/ ball seat	Balls	Integrated Pressure Relief Valve
PVT	PVDF (Polyvinylidene fluoride)	PVDF (Polyvinylidene fluoride)	PTFE/PTFE	Ceramic/Glass*	PVDF/FPM
SST	Stainless steel no. 1.4571/1.4404	Stainless steel no. 1.4581	PTFE/PTFE	Stainless steel no. 1.4401	Stainless steel/FPM

*at 07120, 07220, 04350.

FPM = Fluorine Rubber

Sigma Basic Type Control Functions (S2Ba)

Stroke length actuator/controller

Actuator for automatic stroke length adjustment, actuating period approx. 1 sec for 1 % stroke length, 1 Ω response signal potentiometer, enclosure rating IP 54.

Controller consists of actuator with servomotor and integrated servo control for stroke length adjustment via a standard signal. Standard signal input 0/4-20 mA, corresponds to stroke length 0 - 100 %. Automatic/manual operation selection key for manual stroke adjustment. Mechanical status display of actual stroke length value output 0/4-20 mA for remote display.

Variable speed motors with integrated speed controller (identcode characteristic V)

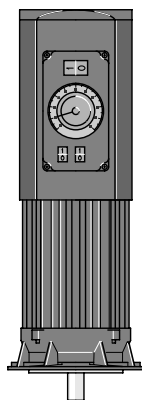
Power supply 1 ph 230 V, 50/60 Hz, 0.37 kW (see 2.6.2)

External control with 0/4-20 mA (see pk_2_103)

Speed controllers in metal housing (identcode characteristic Z)

(See 2.6.2).

The speed controller assembly consists of a speed controller and a 0.37 kW variable speed motor (see also 2.6.2)



pk_2_103

2.3 ProMinent® Sigma/ 2 Diaphragm Metering Pumps

2.3.2 Identcode Ordering System Basic Type (S2Ba)

S2Ba	Sigma Basic Type (S2Ba)													
	HM	Main drive, diaphragm												
		Pump type: (figures 1+2 = back pressure [bar], figures 3-5 = feed rate [l/h]) 16050* 16 bar; 50 l/h 16090* 16 bar; 90 l/h 16130* 16 bar; 130 l/h 07120 7 bar; 120 l/h 07220 7 bar; 220 l/h 04350 4 bar; 350 l/h * for PVDF versions, max. 10 bar												
		Liquid end materials: PV PVDF SS Stainless steel												
		Seal material: T PTFE seal												
		Diaphragm: 0 Standard diaphragm, PTFE version 1 Double diaphragm with diaphragm rupture indicator (retro fit possible)												
		Liquid end version: 0 No spring 1 With 2 valve springs, Hastelloy C4, 0.1 bar 4 With pressure relief valve, FPM seal, no valve spring 5 With pressure relief valve, FPM seal, and valve spring												
		Hydraulic connection: 0 Standard threaded connector (according to technical data) 1 Union nut and PVC insert 2 Union nut and PP insert 3 Union nut and PVDF insert 4 Union nut and stainless steel insert 7 Union nut and PVDF hose nozzle 8 Union nut and stainless steel hose nozzle												
		Version: 0 With ProMinent® logo (standard) 1 Without ProMinent® logo M Modified												
		Electrical power supply: S 3 ph, 230 V/400 V 50/60 Hz M 1 ph, AC, 230 V/50/60 Hz N 1 ph, AC 115 V 60 Hz L 3 ph, 230 V/400 V, 50 Hz, (Exe, Exde) P 3 ph, 265 V/440 V, 60 Hz, (Exe, Exde) R 3 ph, variable speed motor, 230/400 V V (0) Variable speed motor with integrated frequency converter 1 pH, 230 V, 50/60 Hz Z 1 ph, variable speed control set 1 ph, 230 V, 50/60 Hz 1 No motor, with B14 flange (Gr. 71 (DIN)) 2 No motor, C 56 flange (NEMA) 3 No motor, B5 Gr. 63 (DN)												
		Enclosure rating: 0 IP 55 (standard) 1 Exe motor version ATEX-T3 2 Exde motor version ATEX-T4 A ATEX power end												
		Stroke sensor: 0 No stroke sensor (standard) 2 Pacing relay (reed relay) 3 Stroke sensor (Namur) for hazardous locations												
		Stroke length adjustment: 0 Manual (standard) 1 With stroke positioning motor, 230 V/50/60 Hz 2 With stroke positioning motor, 115 V/50/60 Hz 3 With stroke control motor, 0...20 mA 230 V/50/60 Hz 4 With stroke control motor 4...20 mA 230 V/50/60 Hz 5 With stroke control motor 0...20 mA 115 V/50/60 Hz 6 With stroke control motor 4...20 mA 115 V/50/60 Hz												
		S2Ba	HM	07120	PV	T	0	0	0	0	S	0	0	0

FPM = Fluorine Rubber

2.3 ProMinent® Sigma/ 2 Diaphragm Metering Pumps

2.3.4 Spare Parts Kits

The spare part kit generally includes liquid end consumables.

Scope of delivery in the case of PVT Versions

- 1 pump diaphragm
- 1 suction valve set
- 1 discharge valve set
- 2 valve balls
- 1 set of seals
(jacket rings, ball seat discs, ball seat housings)

Scope of delivery in the case of SST Version

- 1 pump diaphragm
- 2 valve balls
- 1 set of seals
(jacket rings, ball seat discs)

Spare parts kits Sigma/ 2

(Applies to identcode: Type 16050, 16090, 16130, 12050, 12090, 12130)

	Order No.
Liquid end FM 130 - DN 15 PVT	740324
SST	740326
SST (with 2 valve sets)	740328

(Applies to identcode: Type 07120, 07220, 04350)

	Order No.
Liquid end FM 350 - DN 25 PVT	740325
SST	740327
SST (with 2 valve sets)	740329

Dosing diaphragms

	Order No.
Sigma with FM 130 identcode: Type 12050, 12090, 12130	792495
FM 350 identcode: Type 07120, 07220, 04350	792496

Motor Data S2Ba

Identcode characteristic	Power supply	Remarks
S 3 ph, IP 55	220-240 V/380-420 V 50 Hz 0.25 kW 250-280 V/440-480 V 60 Hz 0.25 kW	
M 1 ph AC, IP 55	230 V ±5 % 50/60 Hz 0.18 kW	
N 1 ph AC, IP 55	115 V ±5 % 60 Hz 0.18 kW	
L1 3 ph, II2GEEexIIIT3	220-240 V/380-420 V 50 Hz 0.18 kW	
L2 3 ph, II2GEEexIIICT4	220-240 V/380-420 V 50 Hz 0.18 kW	with PTC thermistor, speed adjustment range 1:5
P1 3 ph, II2GEEexIIIT3	250-280 V/440-480 V 60 Hz 0.18 kW	
P2 3 ph, II2GEEexIIICT4	250-280 V/440-480 V 60 Hz 0.21 kW	with PTC thermistor, speed adjustment range 1:5
R 3 ph, IP 55	230 V/400 V 50/60 Hz 0.37 kW	with PTC thermistor, speed adjustment range 1:20 with external fan 1 ph 230 V; 50/60 Hz
V0 1 ph, IP 55	230 V ±5 % 50/60 Hz 0.37 kW	variable speed motor with integrated frequency converter

For further information you can request motor data sheets. Custom motors and/or custom motor flanges are available on request.

Notice for use in Ex-zone:

After 01.07.2003, only pumps with the corresponding EC-Ex-RL 94/9 code can be used in explosion-threatened operating areas. The explosion group, category and enclosure rating indicated in the identification shall comply with or exceed the conditions in the intended place of use.