WS Exacta Series

Hydraulic sandwich diaphgram pumps with spring return mechanism

Standards

ATEX COMPLIANCE

ISO 9001:2000 CERTIFIED COMPANY

seko

innovation > technology > future

Hydraulic sandwich diaphgram pumps with spring return mechanism

Simplicity,reliabilty and easy instakllation are the most evident feature of this line. The new WS serie lies the technical innovation of a double diaphragm sandwich with a spring return operating mechanism.

- Stroke adjustment from 0 to 100% running or at rest. Adjustment locking device
- Electric motors in accordance with European Standards, multi-voltage and multi-frequency, 230-400V/3 50-60Hz, IP55, insulation class F with over-temperature B
- Working temperature
  -20 +80 °C for stainless steel pump head
  -10 +50 °C for plastic pump head

Options: single-phase, flameproof or special type

Hydraulic sandwich diaphragm pump head

Joining the advantages of volumetric pumps with the sealless nature of diaphragms, hydraulic diaphragm pumps offer the solution to many dosing needs, when the pumping conditions and the fluids are hazardous or difficult.

The principle of the double diaphragm sandwich type offers several advantages:

- Double barrier between the pumped and the hydraulic fluids.
- The hydraulic fluid could be chosen to be compatible with the pumped medium.

[EFD] Diaphragm Early Failure Detector

Under normal operating conditions, there is no pressure between the two diaphragms. If one of the two diaphragm leaks, an over-pressure is detected. The detection can be visual on side of remote via pressure switch.

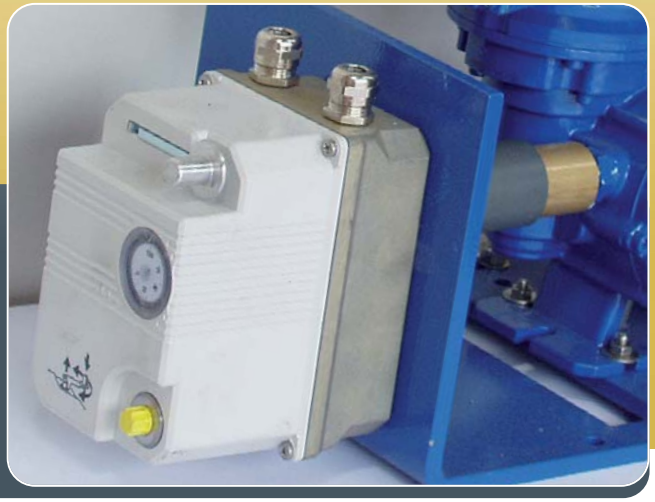
The flow rate of the pump can be adjusted by:

- Manually with grip handle and graded vernier
- Electric servomotor with a 4-20mA signal and manual emergency adjuster
- Inverter, by regulating the speed of the motor, keeping the manual adjustment on the stroke length
- Pneumatic servomotor, especially for classified areas

Electric servomotor

It's used when the pump's flow rate has to be automatically adjusted by analysis instruments such as PLC or DCS.

- Power Supply 115/230V - single phase - 50 Hz - IP65
- Manual emergency adjuster
- Regulation signal 4-20mA with reply signal



WS1 Series

- Aluminium gearbox, compact and rugged
- Flow rate from 0,7 to 111 lt/h, max pressure 60 barg
- Stainless steel and plastic pump head
- Single or double ball valves
- PTFE diaphragm
- Standard connections as BBPF: on request flanged AISI, DIN, UNI

WS2 Series

- Aluminium gearbox, compact and rugged
- Flow rate from 1,5 to 500 lt/h, max pressure 80 barg
- Stainless steel and plastic pump head
- Single or double balls valves
- PTFE diaphragm
- Standard connections as BBPF: on request flanged AISI, DIN, UNI

Accessories

Pressure safety valves are installed to prevent dangerous situations in case of unexpected overpressure that can damage the pump and the pipes. Metering pumps can reach higt pressure in one stroke, therefore they shoud be protected by possible clogging of the pipe caused, for instance, by accidental clousure of valve. Hydraulic sandwich diaphragm pump are protected with a limiting pressure valve built-in in thehydraulic circuit, the pitting shoulb be protected by in-line pressure safety valve. On request PSV may be supplied with PED certificate.

Pulsation dampers: The reciprocating movement of the piston generates pulsations: during each stroke the liquid contained in the suction and discharge lines is accelerated from zero to the maximum speed and then decelerated to zero again. Pulsation dampers are the accessories suggested to reduce high and not permissible pressure fluctuations or to obtain a linearity of the flow.

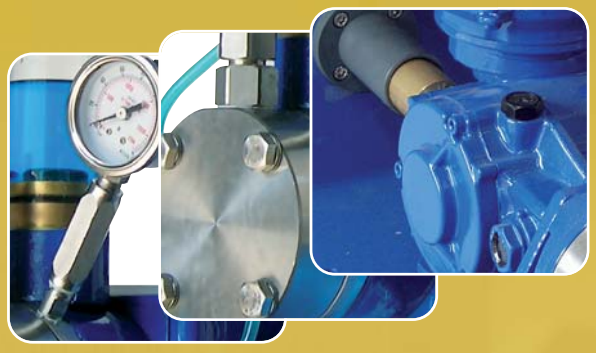
Back pressure valves: To allow the correct operation of a pump and to prevent the flow-through (siphoning) of the process liquid, the discharge pressure should be greater than the suction pressure; when this condition is not respected then a backpressure valve can be the solution.

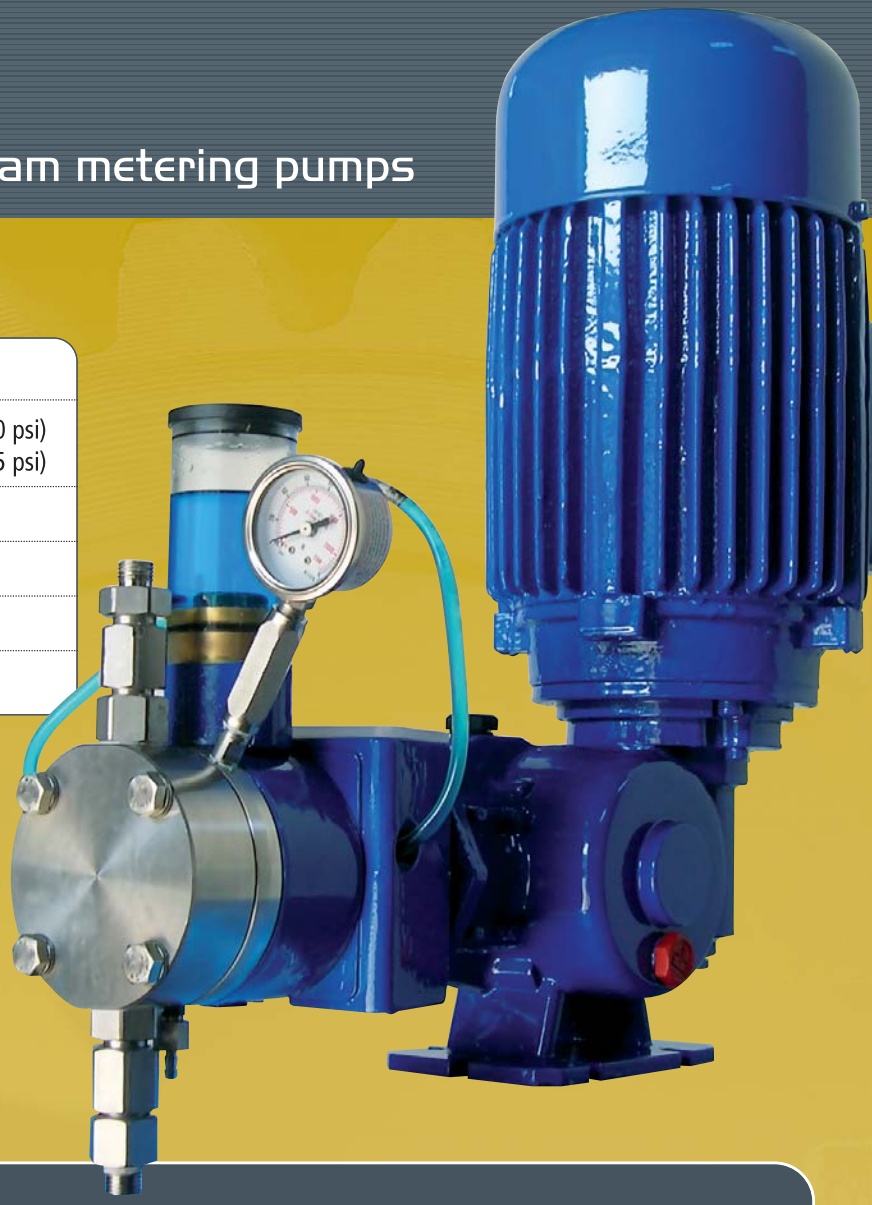
Calibration pots: The calibration pot installed on the suction line gives the possibility to check the actual flow rate of a metering pump in the real operating conditions. The capacity of the calibration pot should be as to permit a measurement during 30 or 60 seconds approx; the calibration pot should be installed in vertical position near the pump and should be fitted with check valve to simplify the use.

WS1 Exacta Series
Hydraulic sandwich diaphgram metering pumps

Technical Features

Flow Rate	from 0,7 to 111 lt/h (0,2 to 29,3 gph)
Pressure Max.	**SS 316L Version** 60 bar (870 psi) **PP Version** 10 bar (145 psi)
Stroke rate	58 • 78 • 116 stokes/minutes
Piston ø	from 6 to 47 mm
Motor Powers	Standard 0,18 kW (IP55)
Stroke Length	10 mm





WS1 Exacta Series

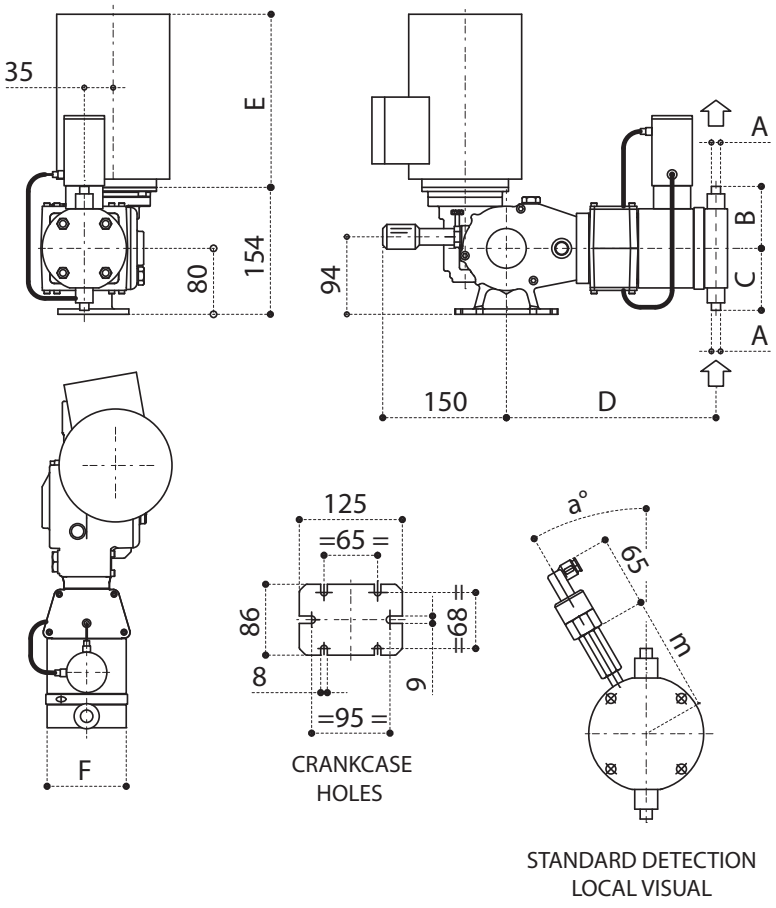
Model	Piston ø	Stroke Lenght	50 Hz			60 Hz			Max. Pressure				Electric Motor	Suc/Dis. Connec.	
									SS 316L		PP			SS 316L	PP
	mm	mm	Strokes /min.	Max. Flow Rate lt/h	Max. Flow Rate gph	Strokes /min.	Max. Flow Rate lt/h	Max. Flow Rate gph	bar	p.s.i.	bar	p.s.i.	kW	Ø BSP	
W S1 F 006 A	6	10	58	0,7	0,2	70	0,84	0,2	60	870	10	145	0,18	1/4" M	3/8" M
W S1 F 006 B			78	1,0	0,3	94	0,9	0,2							
W S1 F 006 C			116	1,5	0,4	139	1,8	0,5							
W S1 F 012 A	12	10	58	3,0	0,8	70	3,6	1,0	60	870	10	145	0,18	1/4" M	3/8" M
W S1 F 012 B			78	5,0	1,3	94	6	1,6							
W S1 F 012 C			116	6,0	1,6	139	7,2	1,9							
W S1 F 020 A	20	10	58	10,0	2,6	70	12	3,2	60	870	10	145	0,18	1/4" M	3/8" M
W S1 F 020 B			78	12,5	3,3	94	15	4,0							
W S1 F 020 C			116	19,0	5,0	139	22,8	6,0							
W S1 F 028 A	28	10	58	18,0	4,8	70	21,6	5,7	40	580	10	145	0,18	1/4" M	3/8" M
W S1 F 028 B			78	25,0	6,6	94	30	7,9							
W S1 F 028 C			116	36,0	9,5	139	43,2	11,4							
W S1 F 047 A	47	10	58	56,0	14,8	70	67,2	17,8	14	203	10	145	0,18	1/4" F	3/8" F
W S1 F 047 B			78	75,0	19,8	94	90	23,8							
W S1 F 047 C			116	111,0	29,4	139	133,2	35,2							

Piston Ø [mm]	Connec. [BSP]	SS 316L Dimension [mm]						
	A	B	C	D	E	F	m	a°
6	1/4" M (DV)	104	104	245	Height depends on motor type	Ø89	96	30°
12	1/4" M (DV)	101,5	101,5	227		Ø89	96	30°
20	1/4" M (DV)	109	109	228		Ø99	97	30°
28	1/4" M (SV)	83,5	83,5	238,5		Ø99	92	30°
47	1/4" F (SV)	100	105	266		Ø129	111,5	39°

Piston Ø [mm]	Connec. [BSP]	PP Dimension [mm]						
	A	B	C	D	E	F	m	a°
6	3/8" M (DV)	104	104	245	Height depends on motor type	Ø89	96	30°
12	3/8" M (DV)	101,5	101,5	227		Ø89	96	30°
20	3/8" M (DV)	109	109	228		Ø99	97	30°
28	3/8" M (DV)	83,5	83,5	238,5		Ø99	92	30°
47	3/8" F (SV)	100	105	266		Ø129	111,5	39°

SV - Single check valves

DV - Double check valves



Pump Head Materials	standard		specials		
	21	55	35	45	61
Pump head	SS 316 L	PP	PVC	PVDF	ALLOY 20
Process Diaphgram	PTFE	PTFE	PTFE	PTFE	PTFE
Valves	SS 316L	CERAMIC	CERAMIC	CERAMIC	CERAMIC
Valve Seats	PTFE	PTFE	PTFE	PTFE	ALLOY 20

Model number (Key to symbols)	
W	Pump Type
S1	Mechanism Type
F	Stroke Length (**F= 10 mm**)
047	Piston Diameter
A	Strokes/Minutes (**A**= 58 • **B**=78 • **C**=116)
21	Pump Head Materials (see table)
A4	Motor Power
000	Optional

Liquid End
SS 316L or PP pump head (standard). The material in contact with the liquid to be dosed are listed in the "pump head materials" table (special materials may be supplied on request)

Flow Rate Adjustment
Metring accuracy better than 1% througth the normal operating range of 10 to 100% of capacity. Every pumps can be equipped standard by manual knob. Automatic capacity control as for 4-20mA, 3-15p.s.i. or inverter on request.

Max. Suction Height: 2 mt

WS2 Exacta Series
Hydraulic sandwich diaphgram metering pumps

Cast iron body available: WH2
motor power (K4) 0,55 kW

Technical Features

Flow Rate	from 1,5 to 500 lt/h (0,4 to 132,3 gph)
Pressure Max.	**SS 316L Version** 80 bar (1160 psi) **PP Version** 10 bar (145 psi)
Stroke rate	58 • 78 • 116 stokes/minutes
Piston ø	from 6 to 86 mm
Motor Powers	Standard 0,25 • 0,37 kW (IP55)
Stroke Length	20 mm

Model number (Key to symbols)

W	Pump Type
S2	Mechanism Type
G	Stroke Length (**G= 20 mm**)
086	Piston Diameter
A	Strokes/Minutes (**A**= 58 • **B**=78 • **C**=116)
21	Pump Head Materials (see table)
C4	Motor Power
000	Optional

WS2 Exacta Series

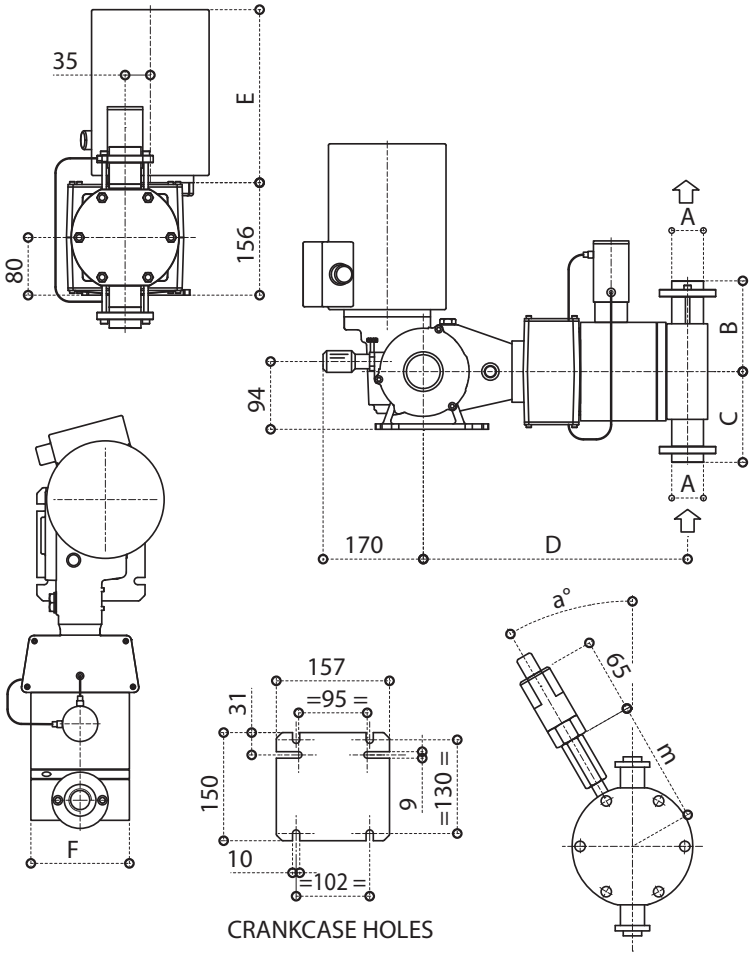
Model	Piston Ø	Stroke Lenght	50 Hz			60 Hz			Max. Pressure				Electric Motor	Suc/Dis. Connec.	
									SS 316L		PP			SS 316L	PP
	mm	mm	Strokes /min.	Max. Flow Rate lt/h	Max. Flow Rate gph	Strokes /min.	Max. Flow Rate lt/h	Max. Flow Rate gph	bar	p.s.i.	bar	p.s.i.	kW	Ø BSP	
W S2 G 006 A	**6**	**20**	**58**	**1,5**	0,4	**70**	**1,8**	0,5	**80**	1160	**10**	145	**0,25**	**1/4" M**	**3/8" M**
W S2 G 006 B			**78**	**2,0**	0,5	**94**	**2,4**	0,6							
W S2 G 006 C			**116**	**2,8**	0,7	**139**	**3,4**	0,9							
W S2 G 008 A	**8**	**20**	**58**	**3,0**	0,8	**70**	**3,6**	1,0	**80**	1160	**10**	145	**0,25**	**1/4" M**	**3/8" M**
W S2 G 008 B			**78**	**4,0**	1,1	**94**	**4,8**	1,3							
W S2 G 008 C			**116**	**5,7**	1,5	**139**	**6,8**	1,8							
W S2 G 012 A	**12**	**20**	**58**	**7,0**	1,9	**70**	**8,4**	2,2	**80**	1160	**10**	145	**0,25**	**1/4" M**	**3/8" M**
W S2 G 012 B			**78**	**10,0**	2,6	**94**	**12,0**	3,2							
W S2 G 012 C			**116**	**14,0**	3,7	**139**	**16,8**	4,4							
W S2 G 015 A	**15**	**20**	**58**	**10,0**	2,6	**70**	**12,0**	3,2	**80**	1160	**10**	145	**0,25**	**1/4" M**	**3/8" M**
W S2 G 015 B			**78**	**15,0**	4,0	**94**	**18,0**	4,8							
W S2 G 015 C			**116**	**20,0**	5,3	**139**	**24,0**	6,3							
W S2 G 025 A	**25**	**20**	**58**	**30,0**	7,9	**70**	**36,0**	9,5	**71**	1029,5	**10**	145	**0,37** (SS 316L)	**1/4" F**	**3/8" F**
W S2 G 025 B			**78**	**41,0**	10,8	**94**	**49,2**	13,0	**71**	1029,5			**0,25** (PP)		
W S2 G 025 C			**116**	**60,0**	15,9	**139**	**72,0**	19,0	**55**	797,5					
W S2 G 035 A	**35**	**20**	**58**	**60,0**	15,9	**70**	**72,0**	19,0	**36**	522	**10**	145	**0,37** (SS 316L)	**1/2" F**	**3/8" F**
W S2 G 035 B			**78**	**80,0**	21,2	**94**	**96,0**	25,4	**36**	522			**0,25** (PP)		
W S2 G 035 C			**116**	**120,0**	31,7	**139**	**144,0**	38,1	**28**	406					
W S2 G 051 A	**51**	**20**	**58**	**130,0**	34,4	**70**	**156,0**	41,3	**17**	246,5	**10**	145	**0,37** (SS 316L)	**1/2" F**	**1/2" F**
W S2 G 051 B			**78**	**172,0**	45,5	**94**	**206,4**	54,6					**0,25** (PP)		
W S2 G 070 A	**70**	**20**	**58**	**245,0**	64,8	**70**	**294,0**	77,8	**9**	130,5	**9**	130,5	**0,37**	**3/4" F**	**1/2" F**
W S2 G 070 B			**78**	**330,0**	87,3	**94**	**396,0**	104,8							
W S2 G 086 A	**86**	**20**	**58**	**370,0**	64,8	**70**	**444,0**	117,5	**6**	87	**6**	87	**0,37**	**1" F**	**1" F**
W S2 G 086 B			**78**	**500,0**	87,3	**94**	**600,0**	158,7							

Piston Ø [mm]	Connec. [BSP]	SS 316L Dimension [mm]						
	A	B	C	D	E	F	m	a°
6	1/4" M (DV)	108	109	309,5	Height depends on motor type	Ø99	100	20°
8	1/4" M (DV)	108	109	309,5		Ø99	100	20°
12	1/4" M (DV)	109	110	309,5		Ø99	101	20°
15	1/4" M (DV)	120	119	310		Ø119	111	20°
25	1/4" F (SV)	133	138	323,5		Ø128	115	23°
35	1/2" F (SV)	116	121	332		Ø128	115	23°
51	1/2" F (SV)	125	130	338		Ø149	125	40°
70	3/4" F (SV)	144	149	346,5		Ø175	138,5	32°
86	1" F (SV)	183	189	405		Ø220	161	30°

Piston Ø [mm]	Connec. [BSP]	PP Dimension [mm]						
	A	B	C	D	E	F	m	a°
6	1/4" M (DV)	108	109	309,5	Height depends on motor type	Ø99	100	20°
8	1/4" M (DV)	108	109	309,5		Ø99	100	20°
12	1/4" M (DV)	109	110	309,5		Ø99	101	20°
15	1/4" M (DV)	120	119	310		Ø119	111	20°
25	1/4" F (SV)	133	138	323,5		Ø128	115	23°
35	3/8" F (SV)	116	121	332		Ø128	115	23°
51	1/2" F (SV)	125	130	338		Ø149	125	40°
70	1/2" F (SV)	144	149	346,5		Ø175	138,5	32°
86	1" F (SV)	183	189	405		Ø220	161	30°

SV - Single check valves

DV - Double check valves



CRANKCASE HOLES

STANDARD DETECTION
LOCAL VISUAL

Liquid End
SS 316L or PP pump head (standard). The material in contact with the liquid to be dosed are listed in the "pump head materials" table (special materials may be supplied on request)

Flow Rate Adjustment
Metring accuracy better than 1% througth the normal operating range of 10 to 100% of capacity. Every pumps can be equipped standard by manual knob. Automatic capacity control as for 4-20mA, 3-15p.s.i. or inverter on request.

Max. Suction Height: 2 mt

Pump Head Materials	standard		specials		
	21	55	35	45	61
Pump head	SS 316 L	PP	PVC	PVDF	ALLOY 20
Process Diaphgram	PTFE	PTFE	PTFE	PTFE	PTFE
Valves	SS 316L	CERAMIC	CERAMIC	CERAMIC	CERAMIC
Valve Seats	PTFE	PTFE	PTFE	PTFE	ALLOY 20

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