WRS

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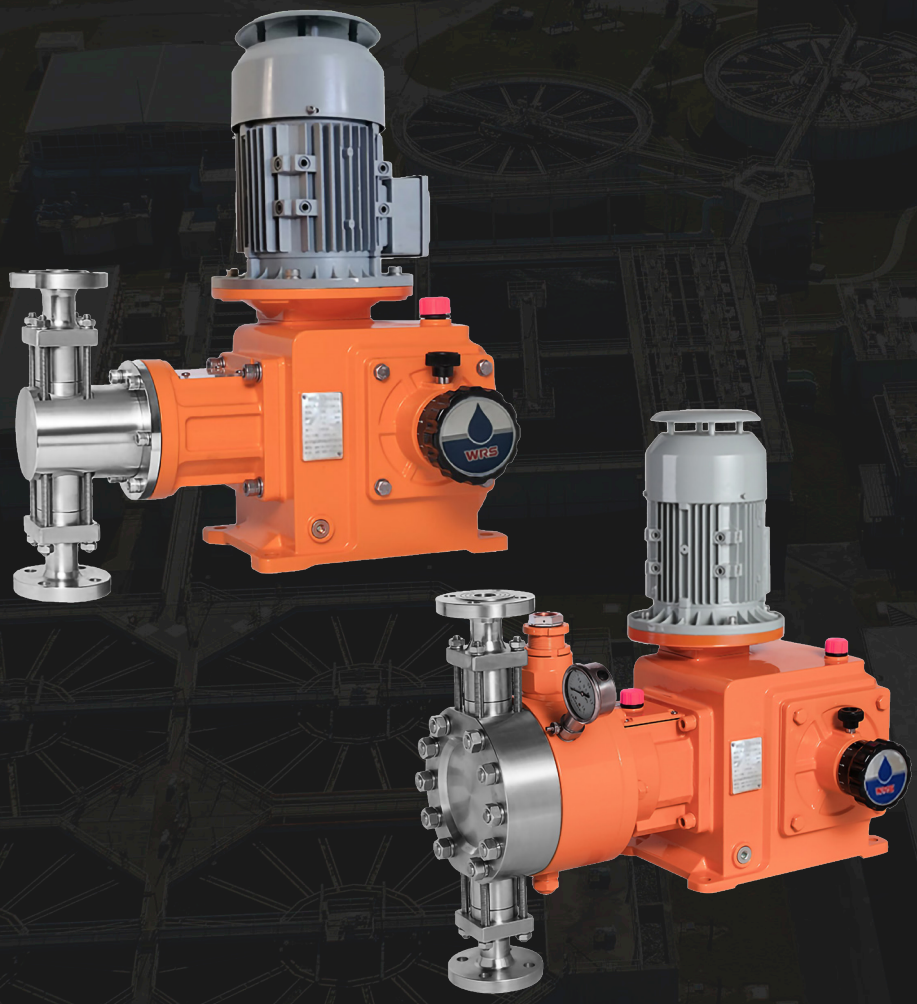


PISTON PUMP
HYDRAULIC DIAPHRAGM PUMP

Manual & Digital Control

V240929

FROM WATER TREATMENT TO ADVANCED PROCESSES

The Piston & Hydraulic Diaphragm Pump series is WRS most robust series. This series provides the highest performance of high accuracy dosing in various industries. The fluid end is fully chemical resistant built, with different choices of material for different application. These series is highly cuztomizable to fit most chemical dosing application.

PISTON
(PS, PM, PL, PD, P*)

- Robust and high efficiency.

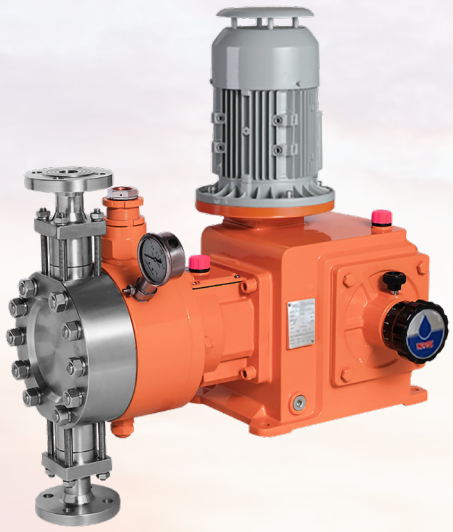
- Can deliver up to 3800 LPH per single pump head. And customizable to 20,000 LPH per single pump head.

-Pressure can pump up to 500 Bar, subject to discharge flowrate.

- Suitable for high viscosity pumping application.

- Optimized to high accuracy dosing.

HYDRAULIC DIAPHRAGM
(HS, HM, HL, HD, H*)



- Zero leakage design.

- Can deliver up to 3500 LPH per single pump head. And customizable to 20,000 LPH per single pump head.

-Pressure can pump up to 700 Bar, subject to discharge flowrate.

- Suitable for toxic and hazardous' medium pumping application.

- Optional to add diaphragm rupture sensor.

CONFIGURATIONS OVERVIEW

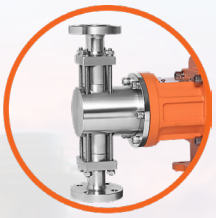
WRS pumps are designed with various configurations, offering different type of solutions to meet all of our client's requirements. From pump head design, motor types to control variants.

*Note: Variable Frequency motor is not required for digital control. Digital control will paired with Servo Motor / Stepper Motor to achieve flowrate control.

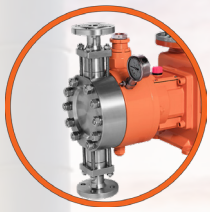
Motors Variants

			
General Purpose Motor	Variable Frequency Motor	Explosion proof Motor	Explosion proof and Variable Frequency Motor

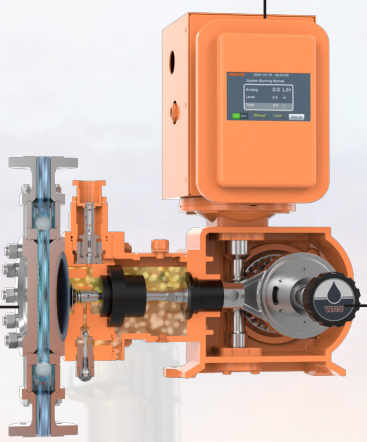
Pump Head Variants



Piston



Hydraulic Diaphragm



Pump Body
(S, M, L, D, Custom Make)

Flowrate Control Variants

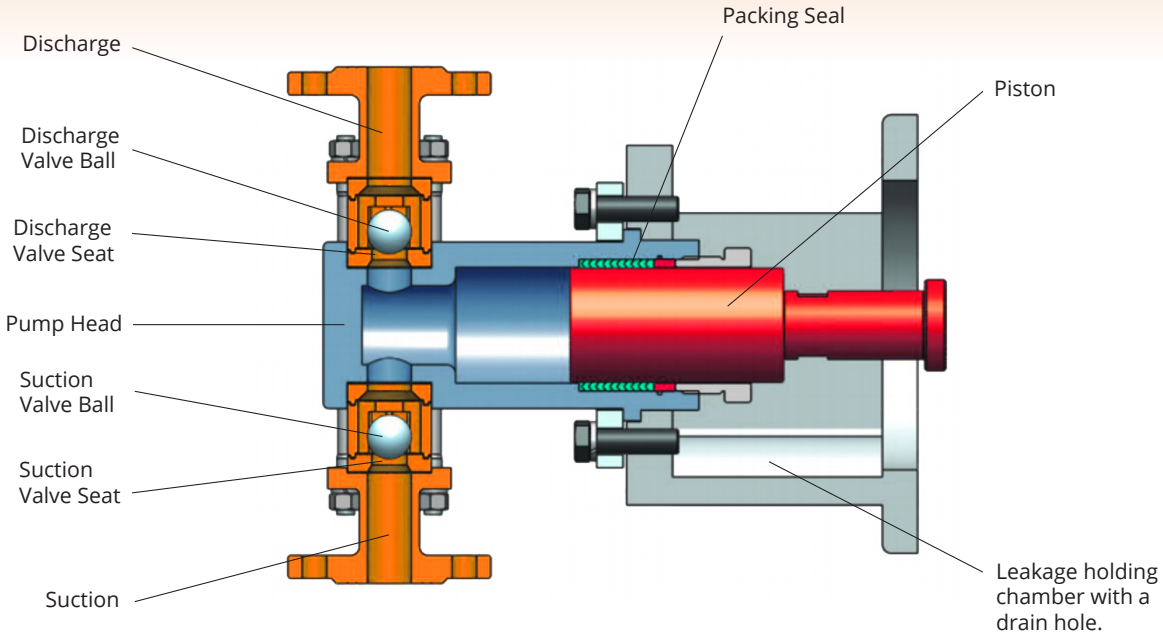
Digital Control

Manual Control

Pump Head Material	Suction and Discharge Connection Method	Pump Head Heating or Cooling	Diaphragm Rupture Sensing	Multiple Pump Head
				
Various choices of pump head material to handle different type of application.	Able to match user's requirment or factory's standard connection.	Optional pump head heating or cooling are available.	Optional extra safety features for hydraulic diaphragm pump head only.	Multiple pump head design, able to drive by 1 motor for 3 pump heads, or 1 motor for each pump head.

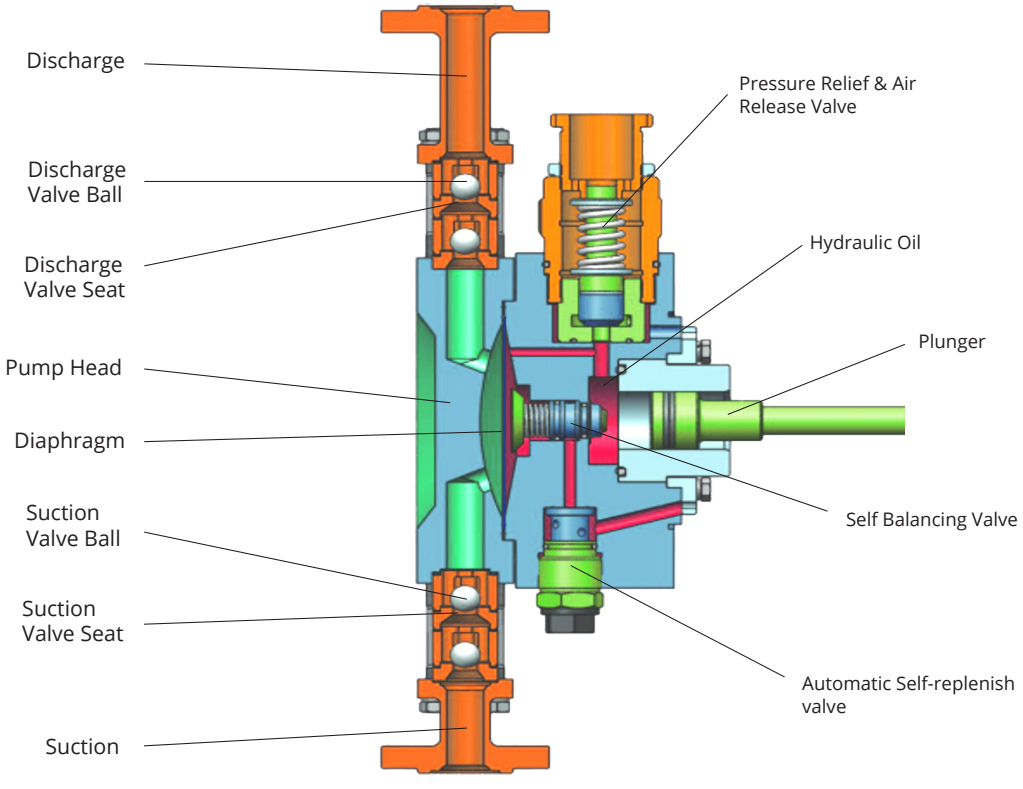
Note:
Above configuratioss covers a general overview of available options for WRS piston & hydraulic diaphragm pump. For detailed selection and customization, please contact with our representative or any WRS branch.

PISTON PUMP HEAD STRUCTURE:



**Above cross-sectional diagram is the standard piston pump design. In this case, is a single valve ball design with flange connection. For acutal pump head structures design shall be subjected to pump size, model, type, and fluid properties.*

HYDRAULIC DIAPHRAGM PUMP HEAD STRUCTURE:



**Above cross-sectional diagram is the standard hydraulic diaphragm pump design. In this case, is a double valve ball design with flange connection. For acutal pump head structures design are subjected to pump size, model, type, and fluid properties.*

COMMON PARAMETERS

Parameters	Unit	Piston Pump	Hydraulic Diaphragm Pump
Flowrate Adjustment Range		0-100% *Note1	
Accuracy	%	Steady State: 1%, Repeatability: <3%, Linearity Accuracy: <3%	
Maximum Suction Pressure	Bar	2	
Minimum Differential Pressure	Bar	1	
Maximum Suction Lift	m	5	3
Maximum Allowable Viscosity	cps	8000 *Note2	3000 *Note2
Maximum Particle Size		Particle Diameter < 0.2mm, Solid Content < 20%	
Standard Material Allowable Fluid Temperature (No Freezing Allowed)	˚C	SS316L: -10 to +110 ˚C	PVC: +5 to +45 ˚C PVDF/SS316L: -10 to +110 ˚C Metal Diaphragm: +170 ˚C
Ambient Temperature	˚C	Operating: 0 to +40, Storage: -10 to +50	
Ingress Protection Rating	IP	55 *Note3	
Multiple Pump Head Application *Note4		Twin Pump Head: Under same motor kW, 2 x Flowrate, Pressure / 1.3 Triple Pump Head: Under same motor kW, 2 x Flowrate, Pressure / 1.7	

**Notes:*
1) It is recommended to operate from 30-100% of the design flowrate to ensure 1% accuracy.
2) For 500 cps and above please consult with our representative.
3) Subject to motor IP rating.
4) This is a rough guide for selection phase. Please consult with our engineers when sizing multiple pump head design.

MATERIAL TABLE

Material Code		Piston Pump	Hydraulic Diaphragm Pump		
Pump Fluid End:					
Pump Head Material		SS316L	SS316L	PVC	PVDF
Piston / Diaphragm		Ceramic Surface	PTFE		
Inlet & Outlet Valve	Body	SS316L	SS316L	PVC	PVDF
	Seat	SS316L	SS316L	PTFE	PTFE
	Ball	Ceramic			
Seal		PTFE	PTFE	FKM	FKM
Others					
Pump Body		Cast Iron			

**Notes:*
1) Above material table refers to the standard models. Customizable material is available upon request.

DIGITAL CONTROL PISTON / HYDRAULIC DIAPHRAGM PUMP

Plus Series Control

Lite Series Control

*Above images are for illustration purposes only. Actual unit may be different subject to pump size, pump type, explosion proof requirements etc.

		PLUS	LITE
GENERAL			
Display Type	Touch screen HMI	√	-
	Back light LCD	-	√
Operating Method	Touch screen keypad	√	-
	Soft button (Start/stop, Up, Down)	-	√
Information Display	Current flowrate (LPH)	√	√
	Accumulated flowrate (L). Resetable.	√	√
	Current pressure/level value (Bar / m)	√	-
	Current pump status / warnings	√	-
Password Protection	To prevent unauthorized personal to make changes	√	-
CONTROL			
Manual	User may set the flow rate in litres/hour via the control panel on the pump itself (P series = touch screen, L series = soft keys) and the pump automatically adjust to dose user's set flow rate.	√	√
Signal Control	Current analog (4-20-mA). In this operating mode, the pump doses according to an external analog signal, and the flow rate being pumped is proportional to the signal input value (mA), where 4mA = 0% of the design flow rate and 20mA = 100% of the design flow rate.	√	√

		PLUS	LITE
Signal Control	Current analog reversed (20-4-mA). In this operating mode, the pump doses according to an external analog signal, and the flow rate being pumped is proportional to the signal input value (mA), where 4mA = 100% of the design flow rate and 20mA = 0% of the design flow rate.	√	√
	Current analog linear mode (mA). In this operating mode, user set 2 values, P1 & P2 (LPH). The pump doses according to an external analog signal, and the flow rate being pumped is proportional to the signal input value (mA), where 4mA = P1 of the design flow rate and 20mA = P2.	√	√
	Pulse frequency control. In this mode, user set the max. pulse frequency value (Max. 600) The pump can be controlled by receiving a pulse frequency signal from an external source. The pump doses at 100% at max pulse value and 0% at 0 pulse signal.	-	√
Remote On/Off	Dry contact (normally open). By connecting two wires, the pump can be remotely turn on/off via potential-free contacts. Typically used in programmable logic controllers (PLCs) or a level float switch.	√	√
Communication	RS485 RTU Modbus. Pumps can be remotely controlled using an Intelligent Pump Controller (IPC) by connecting to a dedicated RS485 terminal strip using a cable from the remote connection device. Common parameters include device address and baud rate.	√	√
Batch	Doses in batches based on the dosing value (in liters) set in the dosing mode. Can be activated either by receiving a pulse signal or on/off from the pump. If activating via pulse signal, one batch is dosed each time the pump receives an pulse signal.	√	√
Batch + Timer	Doses in batches based on the dosing value (in liters) at specified time. Instead of activated by pulse or pump on/off, it is activated by the timer. Up to three time points can be set in one day.	√	-
Batch Deviation	Fine tuning batch dosing accuracy. In actual application, there are many factors will affect the dosing accuracy. Users can fine tune the error by entering the differential value.	√	√
Cycle	Cycle mode runs based on the “Run Time” and “Stop Time” set by the user. Example: “Run Time” is set to 20 minutes, “Stop Time” is set to 30 minutes. When the pump starts, the pump will be run for 20 minutes, stop for 30 minutes, run for 20 minutes, stop for 30 minutes... and repeat this operation.	√	-
Timer	The timer mode runs based on timer. User to set “Start Time” and “Stop Time” in terms of HH:MM:SS. There are 3 sets of timer able to adjust per day. The timer will be repeat everyday.	√	-
OTHER FEATURES			
Low Level Alarm	Low liquid level alarm. Receive low level signal from an external dry contact.	√	-
Pressure / Level Alarm	Alarm/stop the pump according to the level/pressure set point set by the user. This pump can alarm/stop operation according to the signal from the level sensor. Choose one of the two.	√	-
Calibration Function	It has a built-in program to automatically adjust the flow rate. When the installation is complete, the user only needs to enter the actual flow rate.	√	√
Diaphragm Rupture Sensor	Optional double diaphragm rupture alarm system for safety. (For Hydraulic Diaphram Pump Only)	√	√

PISTON PUMP IDENTIFICATION CODE

Example: ☐ ☐ PS ☐ 020 S 0 P 0 1 S 1 1 - XXX

For multiple pump head use. Empty if it is only single pump head.

For digital control use. Empty if it is a manual control pump.

For any non standard / custom make use (Factory to provide). Empty if it is according to standard design as shown in this brochure.

Example	Category	Description	
-	Pump Head Quantity	None - Single Pump Head 2 - Twin Head	3 - Triple Head X - Custom Make *2
-	Digital or Manual Control	None - Manual Control	E - With Digital Control
PS	Pump Body	PS PM PL	PD P* - Custom Make Body Size *2
-	Digital Control Method	P - Plus Series L - Lite Series	None - No Digital Control
020	Piston Size	006 - 200	
S	Pump Head Material	S - SS316L C - SS304 D - Duplex 2205	H - Hastelloy C X - Custom Make *2
0	Pump Head Heating/Cooling	0 - None 1 - Liquid/Stem Heating/Cooling	2 - Electric Heating X - Custom Make *2
P	Piston Surface Material	P - Ceramic C - Tungsten Carbide	X - Custom Make *2
0	Valve Spring	0 - No Spring 1 - Inlet Spring	2 - Outlet Spring 3 - Both Inlet & Outlet with Spring
1	Packing Seal	1 - PTFE Packing	X - Custom Make *2
S	Connection Method	S - Bevel End Welding Tube F - Flanged (user to provide flange standard)	P - Inner Thread (user to provide thread standard) X - Custom Make *2
1	Power Required	1 - 380V 50HZ 3Phase 2 - 220V 50Hz 1Phase	X - Custom Make *2
1	Motor Type	0 - No Motor 1 - IEC Motor 2 - Variable Frequency Motor	3 - Explosion Proof Motor (Exd IIB T4) 4 - Variable Frequency and Explosion Proof Motor (Exd IIB T4) X - Custom Make *2
XXX	Custom Make Code	For factory use only. Reserved for custom make selections.	

**Notes:*
1) Identification code are for identifying the pump not for complete selection. If there are any question on selection, please contact with us or our representative.
2) All custom make selection shall make confirmation with factory.

HYDRAULIC DIAPHRAGM PUMP IDENTIFICATION CODE

Example: ☐ ☐ HS ☐ 020 S 0 P 0 1 S 1 1 - XXX

- ☐ (first): For multiple pump head use. Empty if it is only single pump head.
- ☐ (second): For digital control use. Empty if it is a manual control pump.
- XXX: For any non standard / custom make use (Factory to provide). Empty if it is according to standard design as shown in this brochure.

Example	Category	Description	
-	Pump Head Quantity	None - Single Pump Head 2 - Twin Head	3 - Triple Head X - Custom Make *2
-	Digital or Manual Control	None - Manual Control	E - With Digital Control
HS	Pump Body	HS HM HL	HD H* - Custom Make Body Size *2
-	Digital Control Method	P - Plus Series L - Lite Series	None - No Digital Control
020	Piston Size	006 - 200	
S	Pump Head Material	S - SS316L C - SS304 D - Duplex 2205 H - Hastelloy C	P - PVC F - PVDF T-PTFE S* - SS316L + Lined Material X - Custom Make *2
0	Pump Head Heating/Cooling	0 - None 1 - Liquid/Stem Heating/Cooling	2 - Electric Heating X - Custom Make *2
P	Diaphragm Material	P - PTFE M - Metal Diaphragm	X - Custom Make *2
0	Valve Spring	0 - No Spring 1 - Inlet Spring	2 - Outlet Spring 3 - Both Inlet & Outlet with Spring
1	Diaphragm Rupture Detection	1 - None (Single diaphragm) 2 - Double Diaphragm with Pressure Gauge Indication	3 - Double Diaphragm with Pressure Gauge + Open Contact Switch 4 - Custom Make *2
S	Connection Method	S - Bevel End Welding Tube F - Flanged (user to provide flange standard)	P - Inner Thread (user to provide thread standard) X - Custom Make *2
1	Power Required	1 - 380V 50HZ 3Phase 2 - 220V 50Hz 1Phase	X - Custom Make *2
1	Motor Type	0 - No Motor 1 - IEC Motor 2 - Variable Frequency Motor	3 - Explosion Proof Motor (Exd IIB T4) 4 - Variable Frequency and Explosion Proof Motor (Exd IIB T4) X - Custom Make *2
XXX	Custom Make Code	For factory use only. Reserved for custom make selections.	

**Notes:*
1) Identification code are for identifying the pump not for complete selection. If there are any question on selection, please contact with us or our representative.
2) All custom make selection shall make confirmation with factory.

PISTON PUMP TECHNICAL PARAMETERS

All data are tested in an indoor environment, with clean water at ambient temperature. Pumps are connected to a 50Hz power supply.

PS	Piston Diameter	Max. Flowrate	Max. Back Pressure		SPM	Stroke Length	Default Connection Method
			0.25 KW	0.37 KW			
006*	6	1	300	400	96	10	DN6 Bevel End Welding Tube
006*	6	2	230	350		20	
008	8	5	210	320			
010	10	8	130	200			
012	12	12	100	150			
016	16	20	50	80			DN10 Bevel End Welding Tube
020	20	35	33	50			
025	25	55	21	32			
032	32	85	13	20			
035	35	100	12	18			
038	38	125	10	16			DN15 Bevel End Wending Tube
042	42	160	7	10			
042	42	240	3	5	144		

**Notes: Please contact with our engineers or local sales representative when choosing these models.*

PM	Piston Diameter	Max. Flowrate	Max. Back Pressure		SPM	Stroke Length	Default Connection Method
			0.55 KW	0.75 KW			
008	8	6	400	500	96	25	DN6 Bevel End Welding Tube
010	10	10	300	400			
012	12	15	220	300			
016	16	25	180	180			
020	20	42	70	100			
025	25	65	50	70			DN10 Bevel End Welding Tube
032	32	110	30	40			
038	38	160	20	28			
045	45	220	15	20			DN15 Bevel End Wending Tube
050	50	250	12	16			
055	55	340	8	12			DN25 Flange
060	60	400	7	10			
070	70	550	6	8			
065	65	700	4	6	144		
070	70	800	3	5			

PL	Piston Diameter	Max. Flowrate	Max. Back Pressure		SPM	Stroke Length	Default Connection Method
			1.1 KW	1.5 KW			
012	12	16	400	500	96	30	DN10 Bevel End Welding Tube
016	16	32	220	300			
020	20	50	130	180			
025	25	80	70	100			
032	32	130	60	80			DN15 Bevel End Wending Tube
038	38	200	35	50			
045	45	260	25	35			
050	50	320	22	30			
060	60	480	16	22			DN25 Flange
070	70	650	12	16			
080	80	850	9	12			DN40 Flange
090	90	1050	6	9			
080	80	1300	6	8	144		
090	90	1600	4	6			

PD	Piston Diameter	Max. Flowrate	Max. Back Pressure			SPM	Stroke Length	Default Connection Method
			2.2 KW	3.0 KW	4.0 KW			
012	12	25	400	500	500	96	50	DN10 Bevel End Welding Tube
016	16	50	300	400	500			
020	20	85	180	250	350			
025	25	130	120	160	220			DN15 Bevel End Wending Tube
032	32	220	65	90	130			
038	38	320	50	68	90			
045	45	450	35	48	70			DN25 Flange
050	50	550	30	40	56			
055	55	680	25	34	47			
060	60	800	20	28	40			
070	70	1100	15	20	28			DN40 Flange
075	75	1250	13	18	25			
085	85	1600	10	14	20			
095	95	2000	8	11	15			
105	105	2500	6	8	10			
095	95	3000	5	7	9	144		DN50 Flange
105	105	3800	4	5	7			

HYDRAULIC DIAPHRAGM PUMP TECHNICAL PARAMETERS

All data are tested in an indoor environment, with clean water at ambient temperature. Pumps are connected to a 50Hz power supply.

HS	Piston Diameter	Max. Flowrate	Max. Back Pressure		SPM	Stroke Length	Default Connection Method
			0.25 KW	0.37 KW			
006*	06	1	300	400	96	20	DN6 Bevel End Welding Tube
008*	08	2	200	300			
010	10	5	170	250			
010	10	8	120	180	144		DN10 Bevel End Welding Tube
012	12	15	80	120			
016	16	30	47	70			
020	20	55	27	40			
025	25	80	17	25			
028	28	100	13	20			
032	32	130	11	16			
035	35	160	8	12			DN15 Bevel End Welding Tube
040	40	220	6	10			

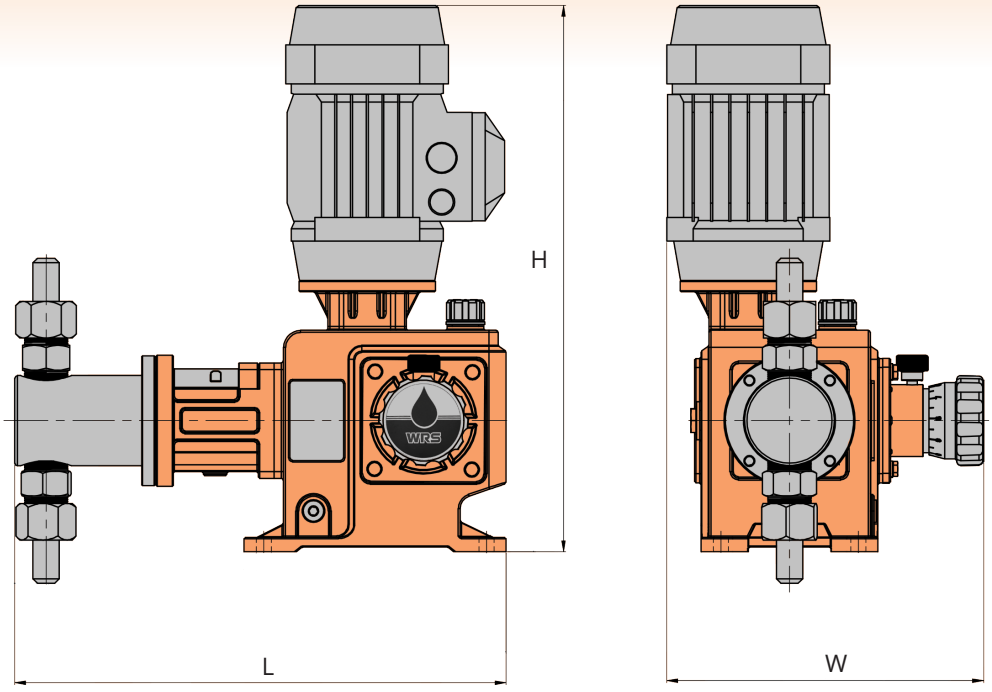
**Notes: Please contact with our engineers or local sales representative when choosing these models.*

HM	Piston Diameter	Max. Flowrate	Max. Back Pressure		SPM	Stroke Length	Default Connection Method
			0.55 KW	0.75 KW			
008	8	4	400	450	96	25	DN6 PN700 Bevel End Welding Tube
010	10	6	350	500			
012	12	10	250	300			
012	12	20	150	200	144		DN10 PN700 Bevel End Welding Tube
016	16	36	90	120			
018	18	48	70	100			
020	20	60	60	80			
025	25	100	35	50			DN15 PN110 Bevel End Wending Tube
032	32	160	22	30			
036	36	210	18	25			
040	40	260	15	20			DN25 Flange
045	45	330	11	15			
050	50	420	9	12			
055	55	500	7	10			
060	60	600	6	8			
070	70	800	3	5			

HL	Piston Diameter	Max. Flowrate	Max. Back Pressure		SPM	Stroke Length	Default Connection Method
			1.1 KW	1.5 KW			
012	12	12	400	450	96	30	DN6 Bevel End Welding Tube
016	16	25	250	300			
016	16	42	160	220	144		DN10 Bevel End Welding Tube
018	18	58	130	180			
020	20	75	110	150			
025	25	120	70	100			DN15 Bevel End Welding Tube
032	32	200	40	60			
036	36	250	33	45			
040	40	320	28	38			
045	45	400	22	30			DN25 Flange
050	50	500	18	25			
055	55	600	15	20			
060	60	720	12	16			
065	65	820	10	14			
070	70	950	9	12			DN40 Flange
080	80	1250	7	10			
085	85	1450	6	8			
090	90	1600	4	6			

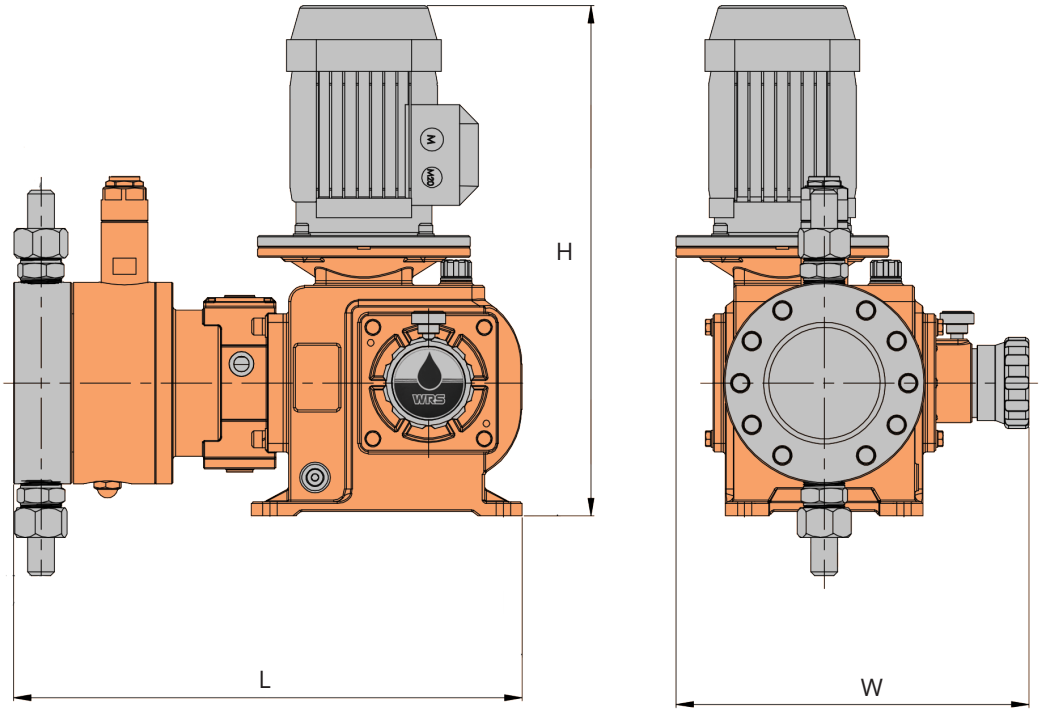
HD	Piston Diameter	Max. Flowrate	Max. Back Pressure			SPM	Stroke Length	Default Connection Method
			2.2 KW	3.0 KW	4.0 KW			
012	12	30	400	500	700	144	50	DN10 Bevel End Welding Tube
016	16	65	250	280	400			
018	18	90	150	220	300			
020	20	125	130	180	250			DN15 Flange
025	25	200	80	100	160			
032	32	320	50	72	100			DN25 Flange
036	36	420	40	58	80			
040	40	520	35	46	65			
045	45	650	26	36	51			
050	50	800	21	29	42			
055	55	1000	17	24	34			DN40 Flange
060	60	1200	15	20	29			
065	65	1400	12	17	24			
070	70	1600	10	15	20			
080	80	2100	8	11	16			
085	85	2400	7	10	14			
090	90	2600	6	8	12			DN50 Flange
095	95	3000	5	7	11			
100	100	3500	4	6	9			

PISTON PUMP DIMENSION (mm)



	L	W	H
PS	383	242	417
PM	492	333	480
PL	576	369	574
PD	770	506	720

HYDRAULIC DIAPHRAGM PUMP DIMENSION (mm)



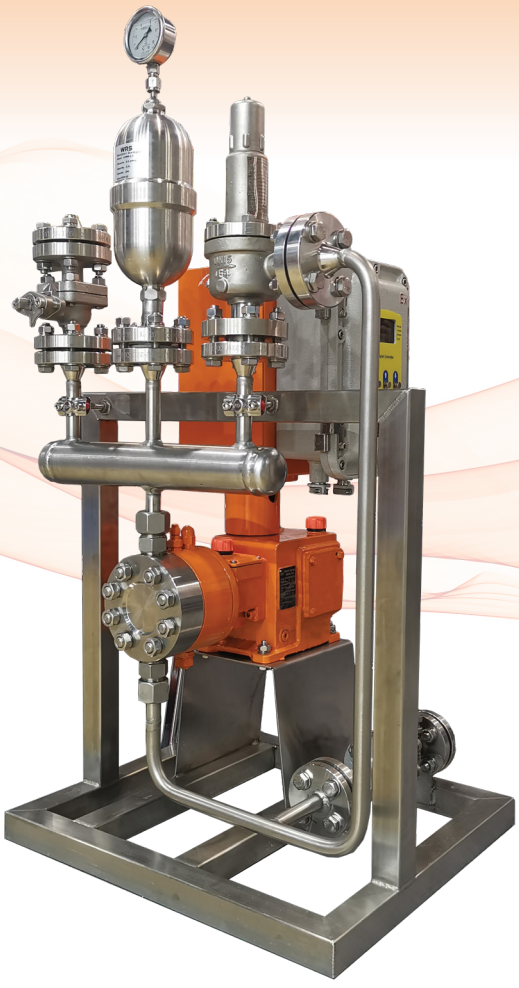
	L	W	H
HS	400	242	417
HM	518	333	481
HL	629	369	574
HD	815	507	720

All dimensions & drawing design are for reference only. Actual dimension & design subject to pump model, size, motor type, connection method, and addons.

COMPLETE DOSING SKID SOLUTIONS

Despite just being a pump manufacturer. WRS supplies a comprehensive selection of chemical dosing systems from small to large-scale applications. Our engineers have expertise in proposals regarding “plug and pump” including complete packages. We manufacture chemical dosing systems with custom-made solutions that are intended to produce available dosing technology in complete packages. Fully customizable chemical dosing systems offer a wide range of capacities to meet various chemical treatment applications.

Large flow digital control hydraulic diaphragm pump



Explosion Proof Dosing System

Process Chemmical Injection Skid

Methanol Injection Skid

Local Representative:

CONTACT:

WRS PTE LTD
60 Paya Lebar Road, #11-37 Paya Lebar Square, Singapore 409051

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501, Building 2 New World Wealth Center, 108 Shixin North Rd, Xiaoshan District, Hangzhou City, Zhejiang Province, China

Website: https://www.wrsdosing.com
Email: international@wrsdosing.com

ISO9001:2015
ISO14001:2015
ISO45001:2018

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

CNAS

LL-C Certification

CE