

DDI 222

The digital diaphragm dosing pump for difficult liquids



The Highlights

- Easy input and display of the dosing rate in l/h or gal/h with perfect calibration for optimum operating convenience and unparalleled levels of precision
- Smooth, nearly continuous dosing ensures a high process quality and optimal mixing of liquids
- For especially viscous liquids, there are 2 Slow Mode steps and special valve combinations
- Hotkey for easy query of the dosed quantity allowing optimal control of the consumption of chemicals
- Low energy costs thanks to the EC motor technology with maximum efficiency
- Pump excess pressure control by digital input of the maximum backpressure allowed before the pump stops
- High process reliability thanks to the double diaphragm system
- Radical reduction in variants and spare parts: 1 motor, 1 gearing and 2 dosing head sizes fit the complete pump series
- Adjustment range 1:800
- Various possibilities for individual customer applications, e.g. contact or analogue signal control, batch or timer dosing
- Analogue and digital interfaces without extra charge



DDI model 222-60 D display on the side

Double diaphragm system with diaphragm control for protection of the pump in case of diaphragm leakage



Standard: DDI model 222 with double diaphragm technology

- If there is a working diaphragm defect, the pump continues to dose with the robust protective diaphragm.

Option: with diaphragm control

- For applications where the process must not be interrupted in the event of a diaphragm leakage, a differential pressure sensor is optionally available.
- In the event of a working diaphragm leakage, the sensor immediately sends out a signal, while the pump continues to dose with the protective diaphragm.

DDI model 222-60 D with Flow Monitor for control of the dosing head pressure and the dosing flow



DDI model 222-60 D with Profibus DP

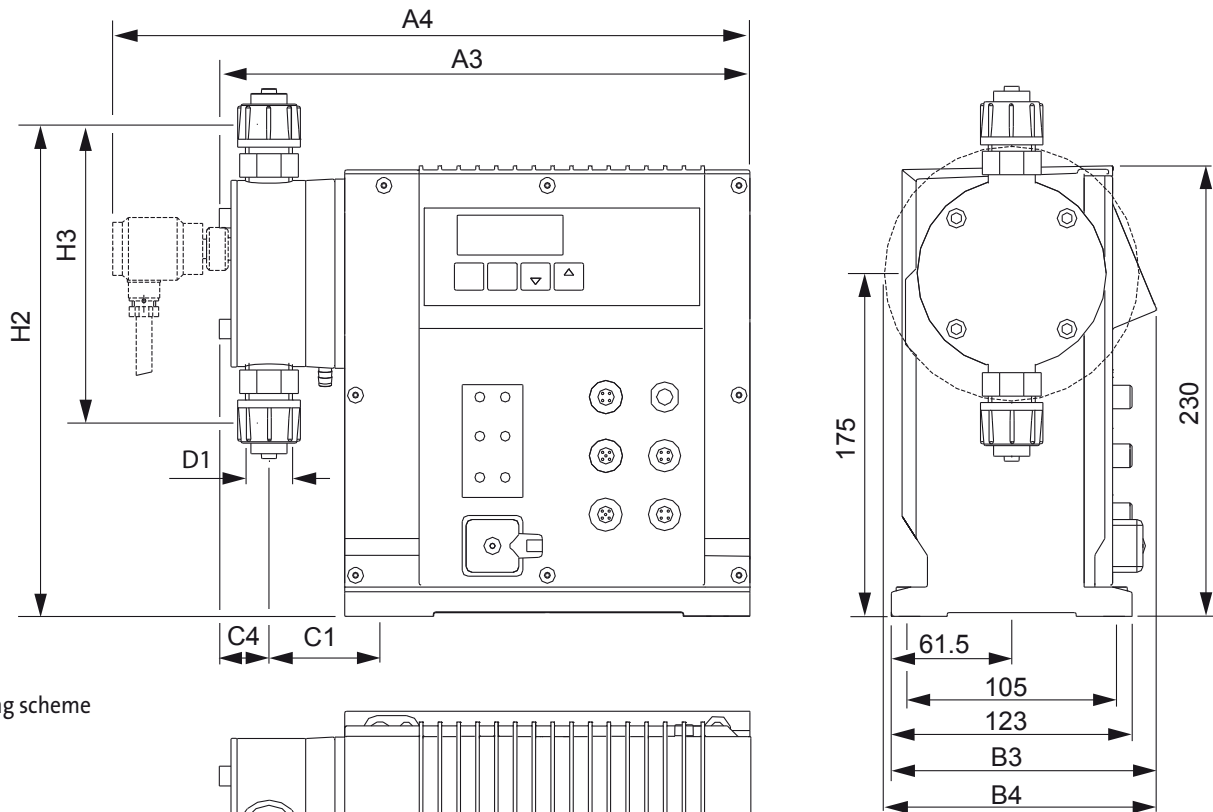


Pump types

- Connections, cable and Euro plug included
- Strokes per minute: maximal 180 in normal operation or maximal 120 in Slow Mode 1 or 74 in Slow Mode 2

Normal operation				Slow Mode step 1				Slow Mode step 2				V _{stroke} [ml] (p = 3 bar)	DDI model
Q [l/h]	p _{max} [bar]	Q [USg/h]	p _{max} [psi]	Q [l/h]	p _{max} [bar]	Q [USg/h]	p _{max} [psi]	Q [l/h]	p _{max} [bar]	Q [USg/h]	p _{max} [psi]		
60	10	15.87	145	40	10	10.58	145	24.7	10	6.53	145	6.63	222-60D
150	4	39.68	58	100	4	26.46	58	62	4	16.40	58	13.9	222-150D

Measurements



All measurements in mm !

DDI models	Version for high-viscosity liquids (HV)													
	A3	A4	B3	B4	C1	C4	D1	H2	H3	C1	C4	D1	H2	H3
222-60D	272	326	137	-	58	26	G 5/8"	252	153	90	39	G 1 1/4"	246	143
222-150D	315	372	137	139	90	39	G 1 1/4"	265	179	90	39	G 1 1/4"	265	179

Technical data

Input of the dosing capacity	Digital – by regulation of the dosing stroke speed adjustment range: from 0.125% to 100% of the maximum dosing capacity			
Connections	Material of connection	DDI model 222-60D (DN 8)		DDI model 222-150D (DN 20)
	PVC	PVC hose 6/12 (pressure side) PE hose 9/12 (suction side ^{*)} or PVC tube 10/12 or PE hose/2" (USA)		PVC hose 13/20 PVC tube 20/25 PVC hose 19/27 PVC tube 3/4" NPT (USA)
	PP	PE hose 9/12 ^{*)} PP tube 12/16		PP tube 20/25
	PVDF	PTFE hose 9/12 PVDF tube 12/16		PVDF tube 20/25
	Stainless steel	Stainless steel tube R 1/4" 1/4" NPT (USA)		Stainless steel tube R 3/4" 3/4" NPT (USA)
Accuracy	Dosing flow < ± 1.5%, linearity < ± 1.5 %			
Noise level	65 ± 5 dB (A), tested according to DIN 45635-01-KL3			
Max. suction height	6 m Water Column <i>for liquids with viscosity similar to water</i>			
Max. viscosity (HV version) at operating temperature	DDI model 222-60D 222-150D	Normal operation 200 mPa s 500 mPa s	Slow Mode 1 1000 mPa s 800 mPa s	Slow Mode 2 2600 mPa s 2000 mPa s
Max. admission pressure	2 bar on the suction side			
Min. backpressure	1 bar (pressure difference with the suction side)			
Max. temperature	<ul style="list-style-type: none"> max. ambient and operating temperature + 40° C storage temperature - 10° C up to + 50° C 			
Max. relative air humidity	up to 92 %, no condensation			
Motor, motor voltage	AC 110 – 240 V ±10%, 50/60 Hz, power consumption 50 W (including all sensors)			
Material of enclosure	Pump and electronics, PPE/PS 20% glass-fiber reinforced Option: flame-proof enclosure			
Protection	IP 65			
Weight	DDI model 222-60D PVC, PP, PVDF: 5 kg / stainless steel: 7 kg DDI model 222-150D PVC, PP, PVDF: 7.5 kg / stainless steel: 12 kg			

(*) max. backpressure 9 bars

Dosing head and valve versions

Material of					Dosing head options				
Dosing head	Valve body	Gasket	Valve seat	Valve ball	Special valves		Integrated control		
					Spring-loaded pressure valve	Valve sets for viscous liquids (**) DN 20	Diaphragm control	Flow Monitor (***)	Diaphragm control + Flow Monitor
PVC	PVC	Viton	Viton	Glass	✓	–	✓	✓	✓
PVC (*)	PVC	EPDM	EPDM	Stainl. steel	✓	✓	✓	✓	✓
PP	PP	Viton	Viton	Glass	✓	–	✓	✓	✓
PP	PP	EPDM	EPDM	PTFE	✓	–	✓	✓	✓
PVDF	PVDF	PTFE	PTFE	PTFE	✓	–	✓	✓	✓
Stainl. steel	Stainl. steel	Viton	Stainl. steel	Stainl. steel	✓	✓	✓	✓	✓
Stainl. steel	Stainl. steel	PTFE	Stainl. steel	Stainl. steel	✓	✓	✓	✓	✓

(*) Valve version for caustic soda NaOH

(**) suction side: valve with steel ball, pressure side: spring-loaded valve with steel ball

Options: Profibus, display

Please indicate when ordering the pump:

• Profibus:	Profibus® DP-VO incl. GSD file and address decoder document
• Display:	on the side or on the back of the pump



Display DDI 222

Electronic functions and electronic data

- Continuous operation: Start/Stop, function check, dosing head deaeration
- Memory function saves up to 65 000 pulses
- Two-step tank empty signal: Reed contact for empty signal/pre-alert
- Flow Monitor, as an option
- Diaphragm leakage control, as an option
- Stroke signal (pre-adjusted) or pre-alert (adjustable)
- Code protection against unauthorized access
- Calibrating function (on-site operating conditions)
- Pressure limitation
- Dosing quantity counter, with reset to 0
- Tamper-proof service hours counter
- Remote On/Off
- Profibus DP interface, as an option

Operating modes	Input / Display												
Manual operation	Input / Display of the dosing capacity in l/h or gal/h with calibrating function												
Contact signal control for smooth dosing	<table border="1"> <thead> <tr> <th>Input / Display of the dosing capacity in ml/contact</th> <th>DDI model</th> <th>V_{min} (ml)</th> <th>V_{max} (ml)</th> </tr> </thead> <tbody> <tr> <td></td> <td>222-60D</td> <td>0.111</td> <td>22.2</td> </tr> <tr> <td></td> <td>222-150D</td> <td>0.278</td> <td>55.5</td> </tr> </tbody> </table>	Input / Display of the dosing capacity in ml/contact	DDI model	V _{min} (ml)	V _{max} (ml)		222-60D	0.111	22.2		222-150D	0.278	55.5
Input / Display of the dosing capacity in ml/contact	DDI model	V _{min} (ml)	V _{max} (ml)										
	222-60D	0.111	22.2										
	222-150D	0.278	55.5										
Current signal control 0(4)-20 mA with manual weighting function	Display of dosing capacity in l/h or gal/h <i>(weighting function for the manual assignment of the volume flow in proportion to the current signal values (current input / current output))</i>												
Batch dosing (contact signal/manual)	Input / Display of the dosing capacity in l/h or gal/h (per batch)												
Batch dosing with timer function	<ul style="list-style-type: none"> > Input / Display of the dosing flow (1 ml to 9999 l) > Input / Display of the dosing capacity (l/h or gal/h) > Input starting time of first batch: t₁ = 1 min. up to max. 999 h > Input starting time of subsequent batches: t₂ = 1 min. up to max. 999 h 												
Slow Mode (longer suction stroke) for dosing viscous liquids	Two-step reduction of the suction speed and the maximal dosing capacity down to 66% (Slow Mode 1) or 41% (Slow Mode 2)												

Inputs and outputs

Inputs and outputs	Pre-adjustment	With software adjustable to	Technical data	
In-put	Contact signal	-	-	Load < 12 V, 5 mA, min. pulse length: 10 ms, min. pause time: 25 ms
	Current signal 0(4) - 20 mA	-	-	Load < 22 Ohm
	Remote On/Off	NO	NC	Load < 12 V, 5 mA
	Tank empty signal	NO	NC	Load < 12 V, 5 mA
	Flow Monitor	-	-	-
	Diaphragm leakage signal	-	-	-
Out-put	Current signal 0(4) - 20 mA	-	-	Load < 350 Ohm
	Error signal	NO	NC	ohmic load < 50 V DC / 75 V AC, 0.5 A
	Stroke signal or empty pre-alert	NO	NC, empty pre-alert	Contact time 200 ms/stroke ohmic load < 50 V DC / 75 V AC, 0.5 A

Accessories for electronics and Profibus

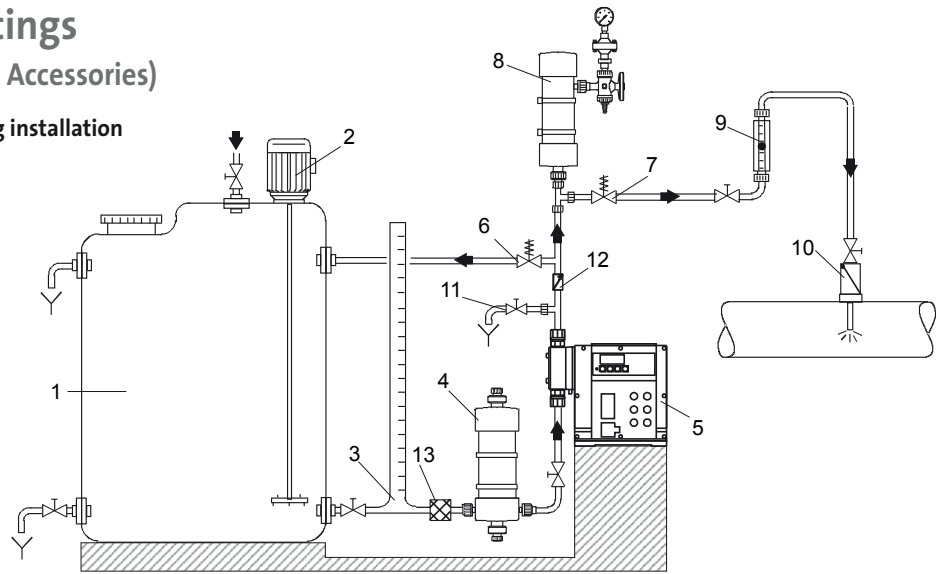
Signal transmission cable including circular connector <i>Please indicate the cable length: 2 or 5 m</i>	Order Number	
	Straight plug	Angled plug
for input: control contact or 0/4-20 mA current input and remote On/Off, 4-wire cable	321-205	321-204
for output: empty pre-alert or individual stroke signal and error signal, 4-wire cable	321-206	321-286
for output: current signal, 5-wire cable	321-215	321-271
Accessories Profibus DP	Order Number	
T-splitter with M 12 connection technology <i>One needed for every pump!</i>	321-225	
Terminating resistor M 12 <i>Necessary for every pump connected at the last position in the bus system!</i>	321-224	

Accessories and fittings

(see separate Data Booklet Accessories)

Flow scheme of a complete dosing installation

- 1 Dosing tank 502
- 2 Electric agitator 509
- 3 Extraction device 521
- 4 Suction pulsation damper 516
- 5 Dosing pump DDI
- 6 Pressure relief valve 525
- 7 Pressure loading valve 525
- 8 Pulsation damper 517
- 9 Calibration tube
- 10 Injection unit 522
- 11 Deaeration and drain valve
- 12 Check back valve
- 13 Filter



Spare parts sets

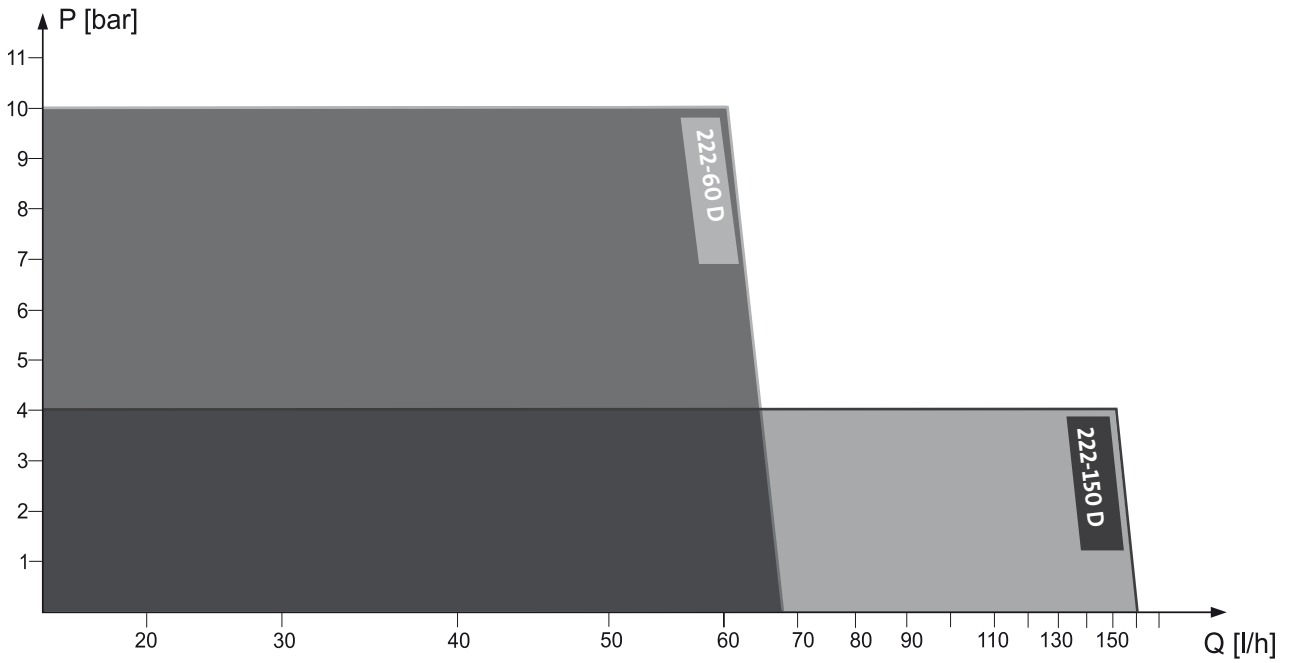
- Gaskets for dosing head, 1 dosing diaphragm
- Complete valves for 222-60D (plastic version)
- Inner valve parts for stainless steel version and for 222-150D (plastic version)

Valve material for DN 8 : body / seat / gasket / ball	Order number		
	without DLS	with DLS	
PVC / Viton / Viton / glass	553-1684-01	553-1684-10	
PVC / EPDM / EPDM / stainl. steel	553-1684-02	553-1684-12	
PP / Viton / Viton / glass	553-1686-01	553-1686-10	
PP / EPDM / EPDM / PTFE	553-1686-02	553-1686-12	
PVDF / PTFE / PTFE / PTFE	553-1687-05	553-1687-15	
Stainl. steel / PTFE / PTFE / st. steel	553-1685-05	553-1685-15	
for DN 20: valve seat / gasket / ball	without DLS	with DLS	
for PVC and PP:	Viton / Viton / glass	553-1688-01	553-1688-10
	EPDM / EPDM / st. steel	553-1688-02	553-1688-12
for PVDF:	PTFE / PTFE / PTFE	553-1691-05	553-1691-15
for st. steel:	PTFE / PTFE / st. steel	553-1689-05	553-1689-15

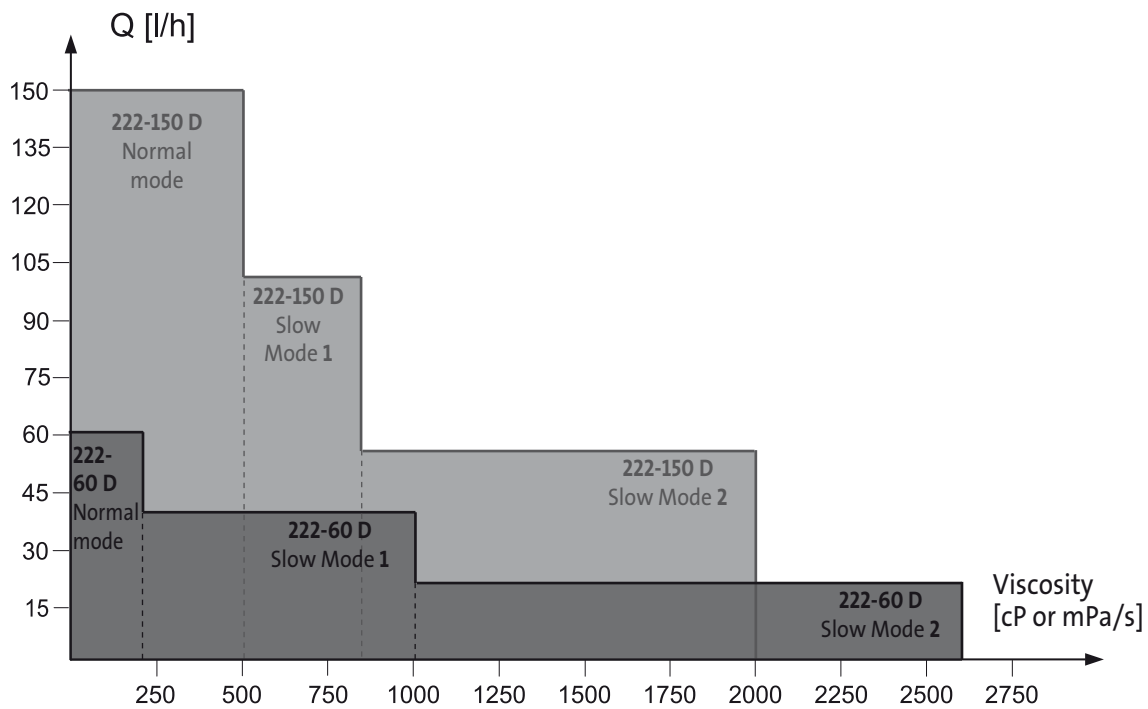
Console

Description	Order No.
Wall console for DDI model 222, PP, with fastening material	539-029

Capacity diagram



Viscosity diagram



91834793 0307	EN
15.820052 V3.0	

Subject to change.