

Flow rate

- From 0,14 l/h to 10,08 l/h

Pressure

- 70 bar (Stainless Steel liquid end)
- 35 bar (PVDF liquid end)
- 25 bar (PVC liquid end)

Single or Double Diaphragm

Suction lift

- To 6 m WC

Viscosity of the fluid pumped

- To 7000 mPa.s

Complies with API 675,
CE, ATEX, NACE, ASME



Dosing pumps MILROYAL® D

Diaphragm liquid end | **Dynamic Stiffness Diaphragm** Technology

- **Low flow injection of highly concentrated chemicals**
- **Safety and Accuracy in both configurations (single and double diaphragm)**
- **Eco Design and easy maintenance**

TYPICAL APPLICATIONS

- **Gas treatment:** gas odorization, injection of mercaptan or THT
- **Refineries:** injection of additives into fuel, injection of catalysts
- **Boiler water treatment:** treatment of make-up, circuit and discharge water (injection of corrosion inhibitor, biocides, anti-foaming agent, scale inhibitor, etc.)
- **Papermaking pulp coloring:** injection of dye ink

ADVANTAGES

- **Safety and Respect of the Environment:**
 - > Thanks to its technology, the DSD diaphragm guarantees safe operations
 - > No hydraulic cavitation so no risk of mechanical breakage
 - > API 675 compliant in both configurations
- **Designed to reach high hydraulic performances:**
 - > Precise dosage (+/-1%) of highly concentrated chemicals
 - > Possibility to inject viscous products (to 7000 mPa.s)
 - > High suction lift (to 6 m WC)
 - > High rated pressure (35 bar for PVDF, 70 bar for Stainless Steel)
- **Reduced operating and maintenance costs:**
 - > Service life diaphragm > 25 000 hours
 - > Few components in the liquid end
- **Internal 6 function valve:**
 - > Easy to identify and dismount for maintenance purposes
 - > Visual check of the functioning
 - > Reduced consumables costs (only 40 ml of oil in the liquid end)
- **Compact, the MILROYAL®D can operate in the most severe conditions**

Concept of the technology DSD®

The concept of the DSD Technology® is based on the outstanding properties of its **dynamic stiffness diaphragm**. Its **mechanical properties mean that it will never bend forwards, does not leak and boasts a compact design**. The **hydraulic system has been simplified**, and a new multifunction valve has been developed. Thus consumables are reduced as possible and maintenance operations are easier and cheaper.

Technical features

- **Accuracy:** +/-1% over a range of 10% to 100% of nominal flow rate
- **Flow rate adjustment:** while running or stopped: from 0 to 100% of nominal flow rate
- **Thrust** 110 daN, 100% stroke = 25.4 mm
- **API 675 compliant**
- **ATEX zone 1 and 2, T3 or T4 compliant**
- **Internal six-function valve / DSD® Technology**
 1. Safety valve
 2. Intake valve
 3. Air bleed
 4. Oil tank - just 40 ml
 5. Visual overpressure indication
 6. Visual oil level indication
- **Cast iron housing**
- **Standard painting RAL 1018, 100 µ**
- **Multiplexable version up to 10 metering pumps**

Materials in contact with the pumped liquid

LIQUID END	CR		VR		XR/XV	
	Single diaphragm	Double diaphragm	Single diaphragm	Double diaphragm	Single diaphragm	Double diaphragm
Liquid end body	PVC		PVDF		316L	
Check valve cartridge	PVC		PVDF		316L	
Seats	Hastelloy C		Hastelloy C		316L	
Balls	Hastelloy C		Hastelloy C		Hastelloy C	
Diaphragm	PEEK	PTFE	PEEK	PTFE	PEEK	PTFE
Intermediate diaphragm	NA	POM standard*	NA	POM standard*	NA	POM standard*
Seals	PTFE		PTFE		NA	
Temperature of the fluids	+10 °C to +50 °C. Pressure limited to 25 bar under 20 °C / pressure has to be derated: 3 bar / 5 °C		-5 °C to +50 °C. Pressure limited to 35 bar under 20 °C / Pressure has to be derated: 3 bar / 5 °C		-5 °C to +110 °C	-5 °C to +80 °C***
Suction lift	6 m WC	6 m WC**	6 m WC	6 m WC**	6 m WC	6 m WC**

* PETP and PEEK available (option double diaphragm) - check corrosion resistance table

** Nominal flow rate is reduced by 25% at 6 m WC (only with double diaphragm)

*** +110°C available in option (code PK)

Codification | Standard & options

MILROYAL® D	STROKE frequency in strokes/minute	MOTOR POWER	PLUNGER	TYPE OF LIQUID END	OPERATING PRESSURE	MULTIPLEXING
	23-46-93-140	F (0,25 kW) G (0,37 kW) H (0,55 kW) S (pump delivered without motor)	3-4 DSD 51 6-8 DSD 71	XR (316L liquid end) XV (316L liquid end for viscous fluids) VR (PVDF liquid end) CR (PVC liquid end)	Internal safety valve set according to this pressure	- Simplex DX Duplex, TX Triplex - Multiplex
MD	93	F	3	XR	70	-

Options

Actuator	Electronic or pneumatic, ATEX zone 1-2-3 or otherwise • 4-20mA/Profibus • 3-15 PSI
Motor	For frequency variation, ATEX, as per your specifications
Rupture detection	By pressure gauge, pressure controller or pressure switch
Special valves	Suitable for your application
Connections	NPT, GAS or ANSI or DIN flange connection, as per your specifications
Paint	As per your specifications
Housing	Low temperature

Performances

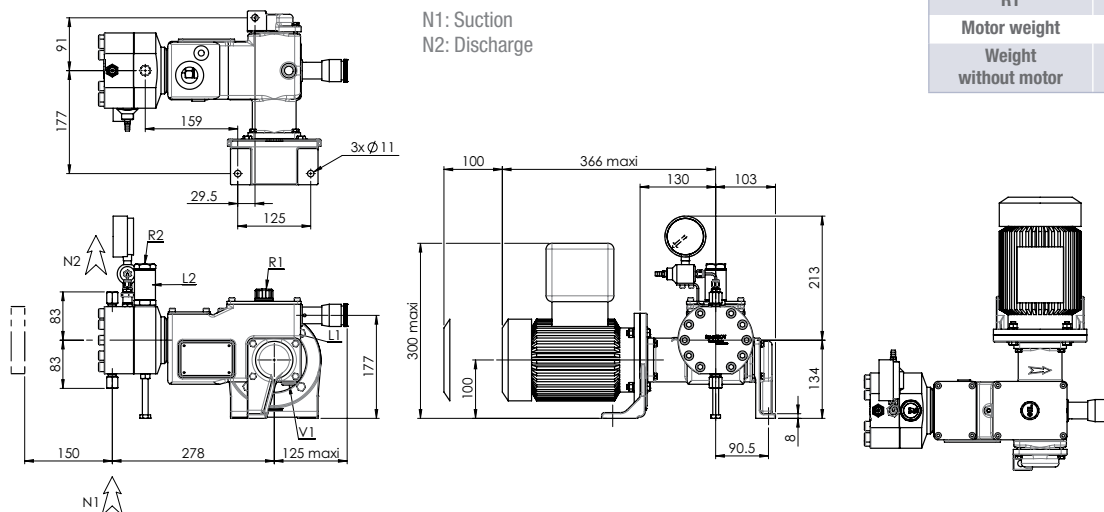
Ø	FLOW RATE (L/H)		PRESSURE	FREQUENCY	P MAX. SUCTION	MAX. VISCOSITY (mPa.s)		CONNECTIONS	
	10 Bar	P max	(bar)	cps/min	(bar)	ND valves Ø3.17 standard		Dimensions seats - balls	
XR - Stainless Steel Liquid end									
3 DSD 51	0,22	0,15	70	23	68	60		1/4" NPTf (Ø3,17 mm-ND) 316L / Hastelloy C	Swept volume: 0,17 cm ³ Diaphragm 51 / Motor 0,25 kW
	0,44	0,31	70	46		50			
	0,88	0,62	70	93		40			
	1,33	0,93	70	140		30			
4 DSD 51	0,40	0,30	70	23	68	60		1/4" NPTf (Ø3,17 mm-ND) 316L / Hastelloy C	Swept volume: 0,31 cm ³ Diaphragm 51 / Motor 0,25 kW
	0,79	0,60	70	46		50			
	1,60	1,22	70	93		40			
	2,41	1,83	70	140		30			
6 DSD 71	0,93	0,79	70	23	68	60		1/4" NPTf (Ø3,17 mm-ND) 316L / Hastelloy C	Swept volume: 0,71 cm ³ Diaphragm 71 / Motor 0,25 kW
	1,86	1,58	70	46		50			
	3,77	3,20	70	93		40			
	5,67	4,82	70	140		30			
8 DSD 71	1,66	1,41	70	23	59	60		1/4" NPTf (Ø3,17 mm-ND) 316L / Hastelloy C	Swept volume: 1,27 cm ³ Diaphragm 71 / Motor 0,25 kW
	3,31	2,82	70	46		50			
	6,70	5,69	70	93		40			
	10,08	8,57	70	140		30			
XV - Stainless Steel Liquid end (Flooded suction and NPSH calculation are mandatory)									
						Ø4 spring loaded ball	Ø6,35 spring loaded ball Option VS1		
3 DSD 51	0,22	0,11	70	23	68	2700	NA	1/4" NPTf (Ø4 mm-NS) 316L / Hastelloy C	Swept volume: 0,17 cm ³ Diaphragm 51 / Motor 0,25 kW
4 DSD 51	0,40	0,30	70	23		1350	NA		Swept volume: 0,31 cm ³ Diaphragm 51 / Motor 0,25 kW
	0,79	0,60	70	46	1050	NA	Swept volume: 0,71 cm ³ Diaphragm 71 / Motor 0,25kW		
6 DSD 71	0,89	0,70	70	23	68	900	7000		Swept volume: 0,71 cm ³ Diaphragm 71 / Motor 0,25kW
	1,78	1,41	70	46		450	3000	Swept volume: 1,27 cm ³ Diaphragm 71 / Motor 0,25kW	
8 DSD 71	1,59	1,35	70	23	59	500	3700	Swept volume: 1,27 cm ³ Diaphragm 71 / Motor 0,25kW	
	3,17	2,70	70	46		250	1600		
CR - Liquid end PVC									
						ND valves Ø3.17 standard			
3 DSD 51	0,18	0,14	25	23	21	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 0,17 cm ³ Diaphragm 51 Motor 0,25 kW
	0,36	0,28	25	46		50			
	0,73	0,57	25	93		40			
	1,10	0,85	25	140		30			
4 DSD 51	0,33	0,28	25	23	21	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 0,31 cm ³ Diaphragm 51 Motor 0,25 kW
	0,67	0,57	25	46		50			
	1,35	1,15	25	93		40			
	2,04	1,73	25	140		30			
6 DSD 71	0,93	0,85	25	23	21	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 0,71 cm ³ Diaphragm 71 Motor 0,25kW
	1,86	1,70	25	46		50			
	3,77	3,43	25	93		40			
	5,67	5,16	25	140		30			
8 DSD 71	1,66	1,51	25	23	21	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 1,27 cm ³ Diaphragm 71 Motor 0,25kW
	3,31	3,01	25	46		50			
	6,70	6,09	25	93		40			
	10,08	9,17	25	140		30			
VR - Liquid end PVDF									
						ND valves Ø3.17 standard			
3 DSD 51	0,18	0,11	35	23	31	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 0,17 cm ³ Diaphragm 51 Motor 0,25 kW
	0,36	0,23	35	46		50			
	0,73	0,46	35	93		40			
	1,10	0,69	35	140		30			
4 DSD 51	0,33	0,25	35	23	31	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 0,31 cm ³ Diaphragm 51 Motor 0,25 kW
	0,67	0,50	35	46		50			
	1,35	1,02	35	93		40			
	2,04	1,53	35	140		30			
6 DSD 71	0,93	0,79	35	23	31	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 0,71 cm ³ Diaphragm 71 Motor 0,25kW
	1,86	1,58	35	46		50			
	3,77	3,20	35	93		40			
	5,67	4,82	35	140		30			
8 DSD 71	1,66	1,41	35	23	31	60		1/4" NPTf (Ø3,17 mm-ND) Hastelloy C / Hastelloy C	Swept volume: 1,27 cm ³ Diaphragm 71 Motor 0,25kW
	3,31	2,82	35	46		50			
	6,70	5,69	35	93		40			
	10,08	8,57	35	140		30			

Dimensions and packing

VERSION	STANDARD PACKAGING	NET WEIGHT (*) kg	GROSS WEIGHT (*) kg	PACKING (mm) (L x l x h)
Simplex		30	47	810 x 560 x 560
Duplex	Full wooden box	50	74	800 x 800 x 590
Simplex + servomotor		35	59	800 x 800 x 590
Triplex		70	115	1,310 x 630 x 690

(*) Approximately
Data for pump MD F130 6-8 XR/C5 SX/ND standard stroke adjustment

CONNECTION	
MATERIAL	STANDARD PACKAGING
N1	1/4" NPT - F
N2	1/4" NPT - F
L2	Hydraulic oil level
R2	Hydraulic oil drain
V1	Drain mechanic oil
L1	Mechanic oil level
R1	Mechanic oil drain
Motor weight	15 kg
Weight without motor	30 kg



Accessories



Milton Roy Europe proposes a wide range of accessories to complete the installation of your pump.



Spare parts

Milton Roy Europe advises you on the essential wear parts to be kept on hand in order to optimize the performance of your equipment.



Packages

Milton Roy Europe can provide turnkey dosing solutions, from a skid-mounted pump to a complex, 100% customized package.



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An outstanding team of engineers and technicians:

- Guides you in selecting the turnkey solution that best suits your needs
- Provides you personalized project management
- Advises you on the optimum installation of your equipment
- Consults with your specialists to develop specific products and anticipate your future requirements

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