

Flow rate

- From 0,11 l/h to 345 l/h

Maximum pressure

- 500 bar

Available liquid ends:

- DSD® technology (patented)
- HPD diaphragm
- Metallic diaphragm
- Plunger

Compliant with API 675,
CE, ATEX, NACE, ASME, GOST



Dosing pump MILROYAL® D

- **Wide performance range and exceptional modularity**
- **Robust, compact and reliable design**
- **API 675 compliant**

Main technical features

MILROYAL® D pumps are renowned for their **robustness** and **longevity**. They are suitable for **sustained intensive use**. Pressurised lubrication optimises the service life of moving parts. Moreover fewer parts mean **reduced maintenance**; in addition the removable cover provides easy access to all pump parts.

- **Thrust:** 110 daN
- **Stroke:** 25.4 mm (100%)
- **Micrometric adjustment** of nominal flow rate from 0 to 100% both running and at a standstill
- **Cast housing, Standard painting RAL 1018, 100 µ**
- **Maximum temperature of pumped fluids:** +110 °C
- **Protection level:** IP65 class F
- **Multiplexable version up to 13 metering pumps**

MILROYAL® D pumps are available in 4 different models:

- DSD® technology
- Plunger liquid end
- Liquid end with metallic diaphragm
- Liquid end with HPD diaphragm

Advantages

A practical answer for the most diverse applications thanks to a high degree of modularity:

- 4 typologies of liquid ends
- Compatibility with the majority of chemicals thanks to a broad selection of materials
- Numerous options available

Compact and robust design

- Ease of integration into all types of plant and/or packages
- Optimum service life for moving parts (oil-immersed)
- Low maintenance and operating cost

Reliability and safety

- Compliance with API 675 as well as CE, ATEX, NACE, ASME, GOST standards
- Precision and repeatability within $\pm 1\%$
- Integral relief valve to cope with any potential pressure surges



Typical applications

Extraction: injecting corrosion inhibitor at wellheads or into pipelines

Gas treatment: gas odorization (injecting mercaptan or THT)

Refineries: injecting additives and catalysts into fuels

Boiler water treatment: treatment of make-up, circuit and discharge water (injecting corrosion inhibitor, biocide, anti-foaming agent, scale inhibitor, lime inhibitor, phosphate, hydrazine, ammonia, etc.)

Paper-making pulp colouring: injecting dyes

Chemicals: injecting bromine, acid or organic solvent





DSD[®] Liquid End Dynamic Stiffness Diaphragm

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.

- Patented technology
- Flow rate from 0.11 l/h to 10 l/h
- Max. pressure: 25 bar (PVC), 35 bar (PVDF) and 70 bar (316L stainless steel)
- Maximum temperature of pumped fluids: 110°C (SS 316L), 50°C (PVC and PVDF)
- Single or double diaphragm (PTFE)
- Injection of viscous fluids up to 7,000 mPa.s
- High suction lift: up to 6 m W C
- Internal 6-function relief valve, patented
 1. Safety valve
 2. Intake valve
 3. Air bleed
 4. Oil tank - just 40 ml
 5. Visual overpressure indication
 6. Visual oil level indication
- Limited consumables (no more than 40 ml of oil in the liquid end)



	Plunger	Flow rate	Max. pressure	Max. flow rate at max. pressure	Connections	Swept volume
	(mm)	(min - max l/h)	(bar)	(l/h)		(cm ³)
XR (316L)	Ø3	0,15 - 1,33	70	0,93	1/4" NPTf (Ø3,17mm-ND) 316 L/ Hastelloy C	0,17
	Ø4	0,30 - 2,41		1,83		0,31
	Ø6	0,79 - 5,67		4,82		0,71
	Ø8	1,41 - 10,08		8,57		1,27
XV (316L for viscous fluids)	Ø3	0,11 - 0,22	70	0,11	1/4" NPTf (Ø3,17mm-NS) 316 L/ Hastelloy C	0,17
	Ø4	0,30 - 0,79		0,60		0,31
	Ø6	0,70 - 1,78		1,41		0,71
	Ø8	1,35 - 3,17		2,70		1,27
VR (PVDF)	Ø3	0,11 - 1,10	35	0,69	1/4" NPTf (Ø3,17mm-ND) Hastelloy C/ Hastelloy C	0,17
	Ø4	0,25 - 2,04		1,53		0,31
	Ø6	0,79 - 5,67		4,82		0,71
	Ø8	1,41 - 10,08		8,57		1,27
CR (PVC)	Ø3	0,14 - 1,10	25	0,85	1/4" NPTf (Ø3,17mm-ND) Hastelloy C/ Hastelloy C	0,17
	Ø4	0,28 - 2,04		1,73		0,31
	Ø6	0,85 - 5,67		5,16		0,71
	Ø8	1,51 - 10,08		9,17		1,27

Indicative values estimated with a motor 0,25 kW, 50 Hz. +20% at 60 Hz.



Liquid ends with metallic and HPD diaphragms

LIQUID END WITH METALLIC DIAPHRAGM (TYPE M)

Suitable for high pressures

Flow rate from 0,11 l/h to 15 l/h

Max. pressure: 500 bar

Temperature of pumped fluids: -20° C to +110° C

Liquid end 316L stainless steel

Single or double diaphragm 316 L S.S.



LIQUID END WITH HPD DIAPHRAGM

Suitable for high flow rates

Flow rate from 10l/h to 345 l/h

Max. pressure: 35 bar

Metallic liquid end (Type H, 316L stainless steel) or plastic liquid end (Type P, PVC)

HPD diaphragm

Single or double diaphragm

Performances - liquid ends with metallic diaphragms

Plunger (mm)	Flow rate (min - max l/h)		Max. Pressure (bar)		Max. flow rate at max. Pressure (l/h)		Connections	Swept volume cm ³	Diaphragm
	Single	Double	Single	Double	Single	Double			
Ø3	0,11 - 1,40	NA	500	NA	0,92	NA	1/4" VV2 f (Ø3,17mm-ND) 316 L/ Hastelloy C	0,17	52
Ø4	0,29 - 2,47	0,21 - 2,47	500	500	1,74	1,26		0,31	52
Ø6	0,70 - 5,55	0,60 - 5,55	390*	350*	4,28	3,66		0,71	72
Ø8	1,42 - 9,87	1,25 - 4,87	220*	220*	8,62	7,79	1/2" VV1 m (Ø6,35mm-LD) 17,4 PH - 316 L	1,27	92
Ø10	2,34 - 15,42	2,20 - 15,42	140*	140*	14,21	13,41		1,99	92

Indicative values estimated with a motor 0,25 kW, 50 Hz. +20% at 60 Hz.

* 0,37 kW

Performances - liquid ends with HPD diaphragms

Plunger (mm)	Flow rate (min - max l/h)		Max. Pressure (bar)		Max. flow rate at max. Pressure (l/h)		Connections	Swept volume cm ³	Diaphragm
	Type H	Type P	Type H	Type P	Type H	Type P			
Ø20	9,00 - 62,00	10,00 - 62,00	35*	10	56,00	62,00	1/2" VV1 m (Ø9,52 mm-ND)	7,97	106
Ø25	15,00 - 98,00	32,00 - 98,00	22*	10	96,00	98,00		12,46	106
Ø32	25,00 - 108,00	26,00 - 164,00	13*	10*	164,00	164,00	1/2" VV1 m (Ø15,9 mm-NS)	20,42	106
Ø40	41 - 254	41,00 - 254,00	8*	8*	254,00	254,00		31,91	106
Ø45	56 - 345	56,00 - 345,00	6*	6*	345,00	345,00		40,39	106

Indicative values estimated with a motor 0,25 kW, 50 Hz. +20% at 60 Hz.

* 0,37 kW

Plunger liquid ends

Simple and economic

Flow rate from 0,23 l/h to 79 l/h

Max. pressure: 350 bar

Temperature of pumped fluids: -10°C to +110°C

Liquid end 316L stainless steel



	Plunger (mm)	Flow rate (min - max l/h)	Max. Pressure (bar)	Max. flow rate at max. Pressure (l/h)	Connections	Swept volume cm ³
	N	Ø3,2	0,23 - 1,65	350	1,42	1/4" VV2 f (Ø3,17 mm-ND) 316 L/ Hastelloy C
Ø6		0,82 - 5,79	350	5,00	0,71	
Ø8		1,54 - 10,10	200*	9,40	1,27	
U	Ø11,1	3,10 - 19,90	70	19,40	1/2" VV2 m-(Ø6,35mm-ND)	2,45
	Ø15,9	6,30 - 40,00	45*	39,00	1/2" VV2 m-(Ø9,52mm-ND)	5,04
	Ø22,2	79,00	10*	10,00	1/2" VV2 m-(Ø15,9mm-ND)	9,83

Indicative values estimated with a motor 0,25 kW, 50 Hz. +20% at 60 Hz.

* 0,37 kW

Options and Codifications

Options

Motor	For frequency variation, ATEX or in accordance with specification
Servomotor	Electronic or pneumatic, ATEX compliance (Zones 1-2-3) available • 4-20 mA or Profibus controller • 3-15 PSI
Rupture sensing	By pressure gauge, pressure controller or pressure switch
Special valves	To suit your application – High viscosity (single or double ball)
Connections	NPT, GAS or ANSI or DIN flange connection, as per your specifications
Painting	Standard: polyurethane or in accordance with specification
Housing	Optional low temperature casting
Multiplexing	Up to 13 heads

Codification

MILROYAL® D					
MD	Metering pump MILROYAL® D				
	Stroke frequency (strokes/minute)				
	23				
	46				
	93				
	140				
	Motor power				
	F	0,25 KW			
	G	0,37 KW			
	H	0,55 KW*			
	S	Pump delivered without motor			
	Ø plunger		Type of liquid end		
	3		XR - CR - VR - XV - N - M		
	3,2		N		
	4		XR - CR - VR - XV - M		
	6 - 8		XR - CR - VR - XV - N - M		
	10		M		
11,1 - 15,9		U			
20		H - P			
22,2		U			
25 - 32 - 40 - 45		H - P			
Operating pressure					
Internal safety valve set according to the pressure					
Multiplexing					
-		Simplex			
DX-TX		Duplex - Triplex			
-		Multiplex			
MD	93	F	3	M	500

* Duplex = motor power x 1,2/ Triplex = motor power x 1,35

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.



Dimensions and Packing

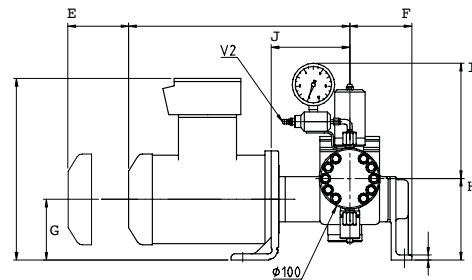
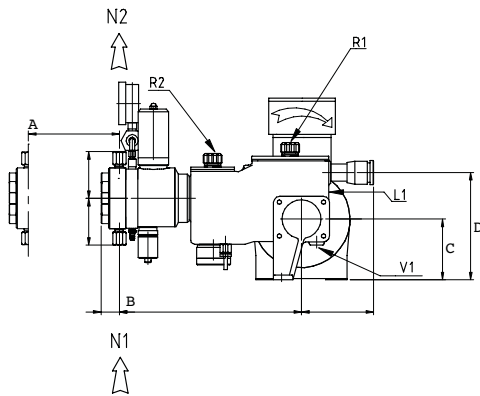


Illustration Milroyal D with M liquid end (Ø52).
Non-binding illustrations.

Dimensions (mm)

	DSD® (XR, XV, CR, VR code)	Plunger (N or U code)	Metallic diaphragm (M code)	HPD diaphragm (H or P code)
A	150	25	32	150
B	278	-	296	363
C	177	177	177	177
D	-	100	100	100
E	100	100	100	100
F	103	103	103	103
G	100	100	100	100
H	134	134	134	134
I	213	92	156	215
J	130	130	129	130

N1: Suction
N2: Discharge
V1: Drain mechanic oil

L1: Mechanic oil level
R1: Mechanic oil drain
R2: Hydraulic oil drain

Weight and Packing

VERSION	STANDARD PACKAGING	NET WEIGHT (kg)	GROSS WEIGHT (kg)	PACKING (l x w x h) (mm)
Simplex	Solid wooden crate	30	47	810 x 560 x 560
Duplex		50	74	800 x 800 x 590
Simplex + actuator		35	59	800 x 800 x 590
Triplex		70	115	1310 x 630 x 690



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