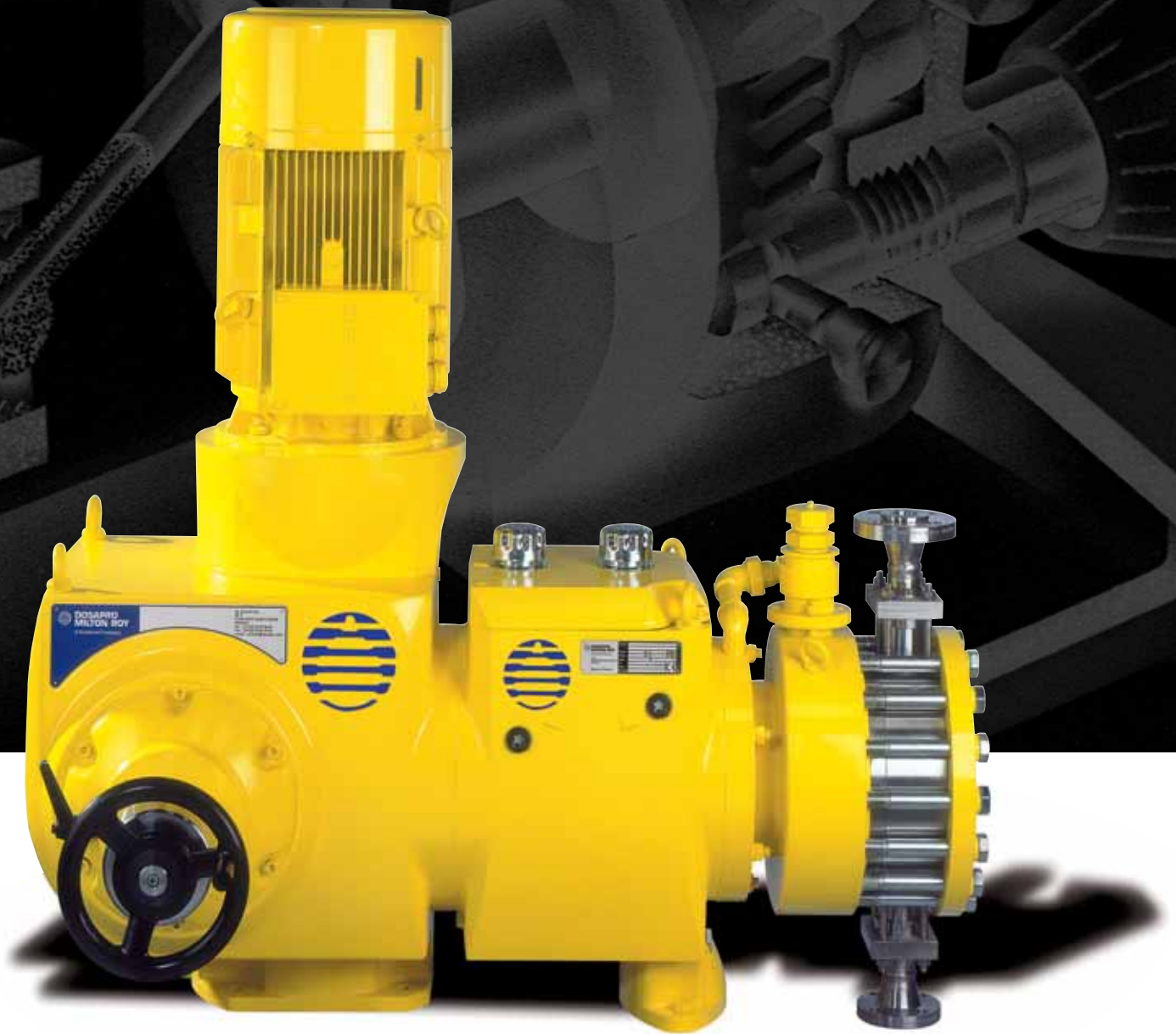


Milroyal
Maxroyal
Primeroyal

Pumping up the power



Dosing pumps

High flow and high pressure

A product designed

for numerous applications

petroleum

food processing

chemicals

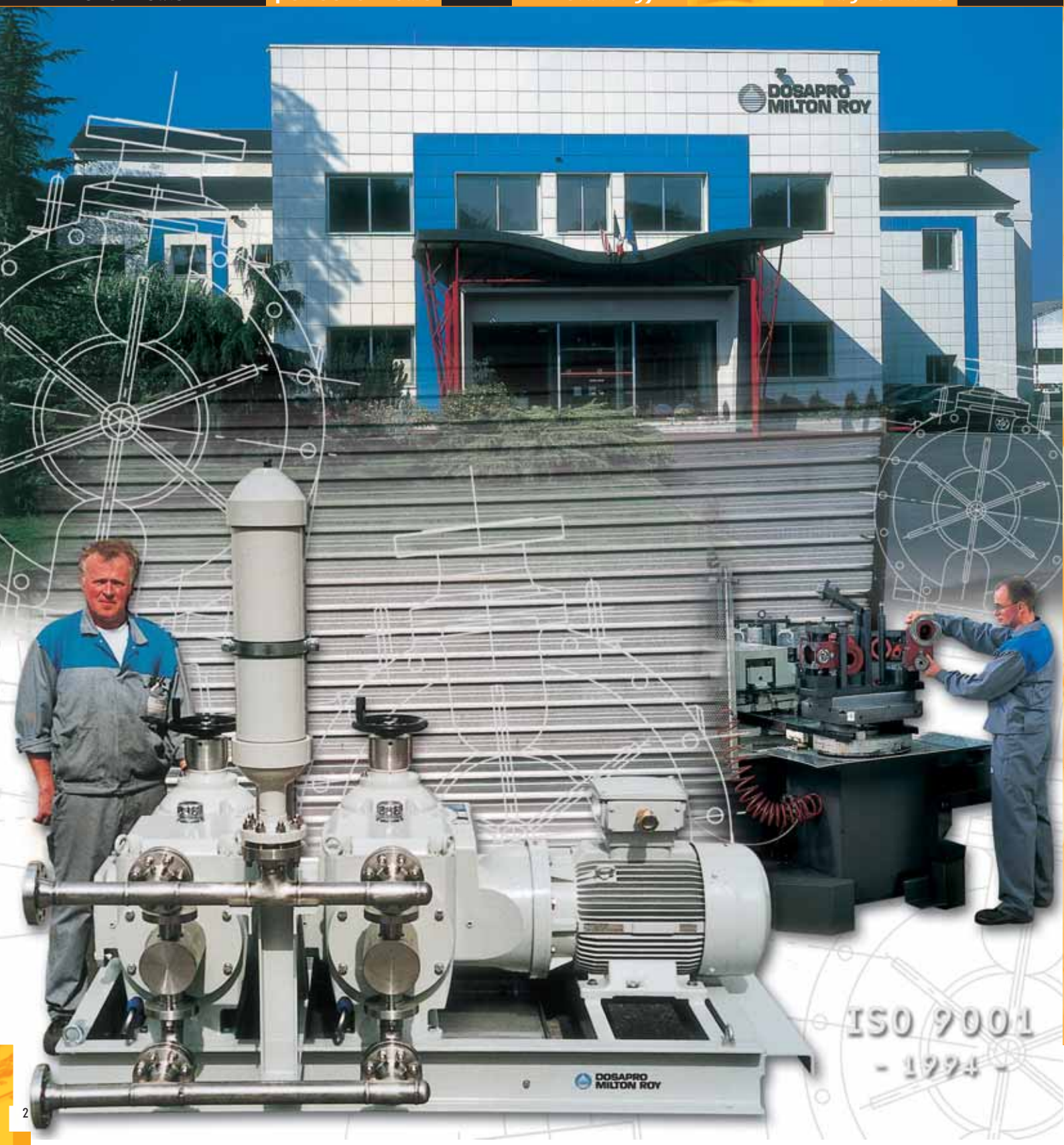
gas

minerals processing

petrochemicals

metallurgy

agriculture



ISO 9001
- 1994

**Milroyal
Maxroyal
Primeroyal**

water treatment

power

nuclear power

pharmaceuticals

Range

3 basic models

pages **4/5**

Dosing pumps

Tried and tested innovations

pages **6/7**

Solutions

In tune with your needs

pages **8/9**

Performance

Range overview

pages **10/11**

SAPRO
LTON ROY



Range

3 basic models

5 pump sizes in all with installed powers of 0.25 kW to over 55 kW

Milroyal, Maxroyal and Primeroyal dosing pumps are designed to be used in a wide variety of processes and under extreme conditions.

All our dosing pumps are oil-bath lubricated in a sealed crankcase and have a speed reducer within the mechanical system.

Dosapro Milton Roy pumps are versatile. They can be built to meet the specific require-

ments of any industrial process by combining a motor and mechanical assembly from the range with any liquid end technology, connections and controls.

Flow rates can be adjusted automatically or manually while the pumps are running or stopped.

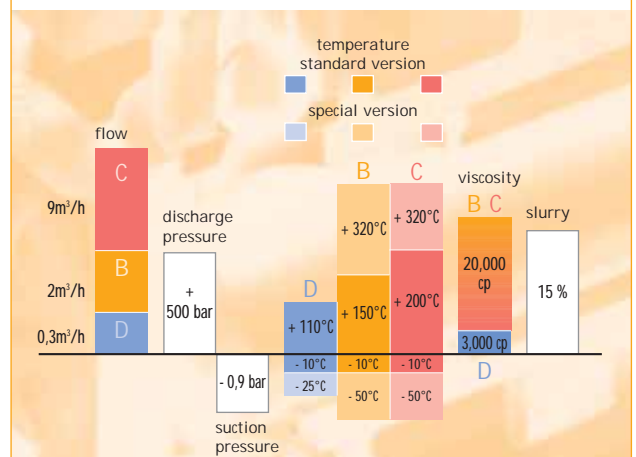
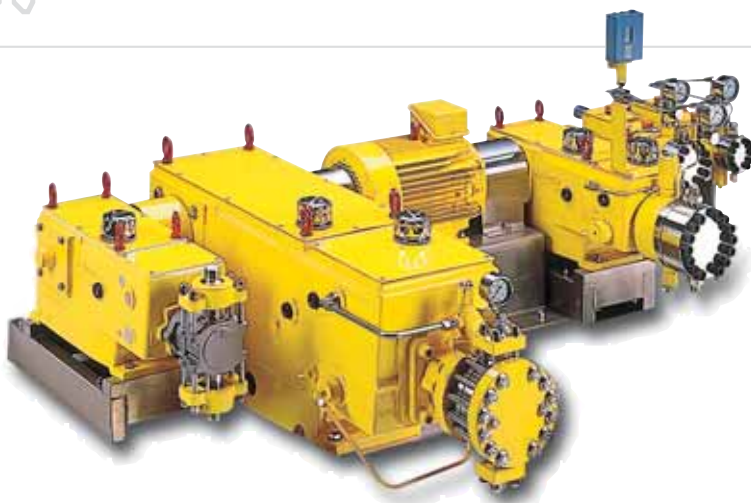
There are five dosing pump models to choose from depending on your flow rate and

pressure criteria: Milroyal® D, B, C, Maxroyal® and Primeroyal®.

We manufacture all of our pumps in conformity with API 675 standard using 14 CNC milling machines. Each is tested in accordance with our ISO 9001 certified quality procedures.

Milroyal®

- range of gearbox assemblies with polar crank mechanism.
- Pressure-lubricated bearing for longer service life.



Oil and gas

FRANCE

APPLICATION

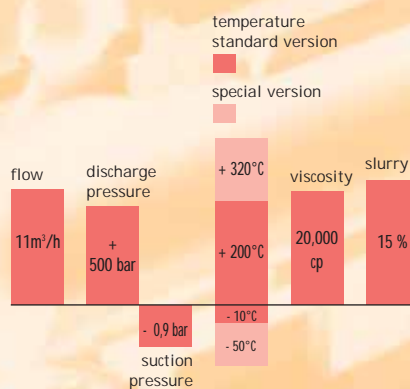


Sample being taken in an extraction column at high vacuum (7 torr).

In the early days packed plunger pumps were used to take samples from extraction columns under vacuum. However, the hazardous nature of the products being pumped prompted the health and safety committee to propose using sealed diaphragm pumps instead. Dosapro Milton Roy, experts in hydraulically and mechanically driven diaphragm pumps, developed such a pump capable of providing suction at 7 torr (-0.91 bar). Some applications however only require a low vacuum for suction, such as dosing of degassed fruit juice or high density liquids with suction lift.

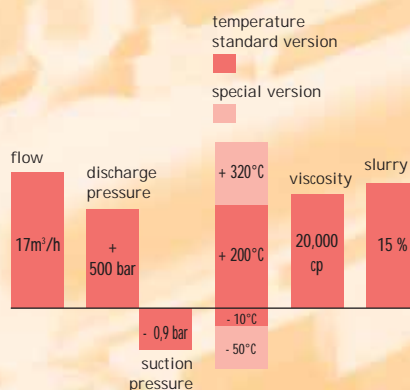
Maxroyal®

- pivot arm system adjusts stroke length. Design reduces pump footprint.



Primeroyal®

- dual cam design (patent pending). Power transmission system operates independently from the stroke adjustment system.



Dosing pumps

Proven innovations

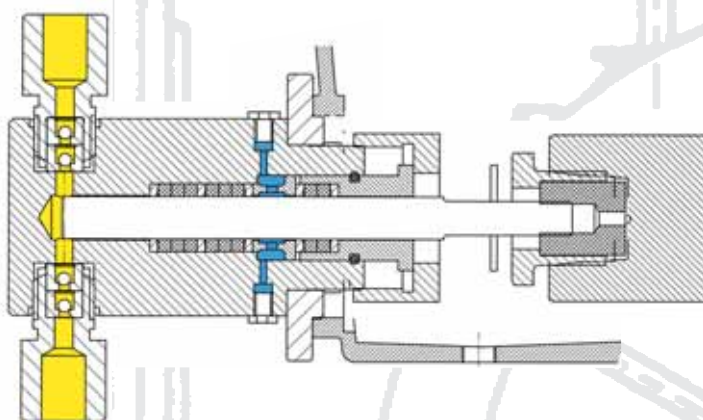
Over 130 patents have been registered since 1980 and over 30 are still in effect for dosing pumps

Dosapro Milton Roy has many years of experience in designing different types of dosing pump for use in a broad range of applications involving radioactive materials, slurry-laden products, liquefied gases and the like.

When it comes to choosing a design, conventional plunger pumps are known for their robustness and simplicity, while the more modern diaphragm pumps deliver leak free operation.

Valves come in a wide number of configurations — single ball, double ball, spring loaded ball, spring loaded poppet valve, etc. All handle viscosities of up to 20,000 cp and they can be constructed in a broad range of materials to allow particles up to 200 μm as standard. Each valve is built specially to handle the abrasiveness of a number of slurries.

● Plunger pump with double packing



- Simple, rugged, built to withstand high pressures and temperatures
- Single packing standard, optional double packing with barrier/flushing rings
- Simple to operate dosing pump can be constructed in a wide variety of materials, sizes and for many performance levels

APPLICATION

Petrochemistry

QATAR

Manufacturing processes in chemical and petrochemical applications often involve fluids at high temperatures. For obvious safety and environmental concerns, manufacturers and engineers are turning to diaphragm and even double-diaphragm pumps. The suction and discharge valves are remotely

mounted on these pumps so that they can be cooled using a cooling jacket. The liquid end can thus handle fluids exceeding 300°C without endangering its operating life. In other configurations the entire pump head is separated from the liquid end instead.

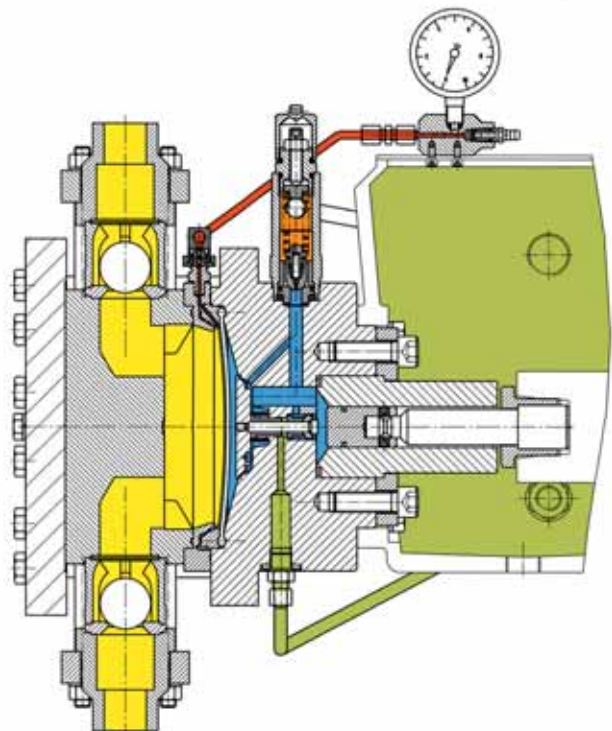


Pumping of oxazolidone at 200°C

technology.

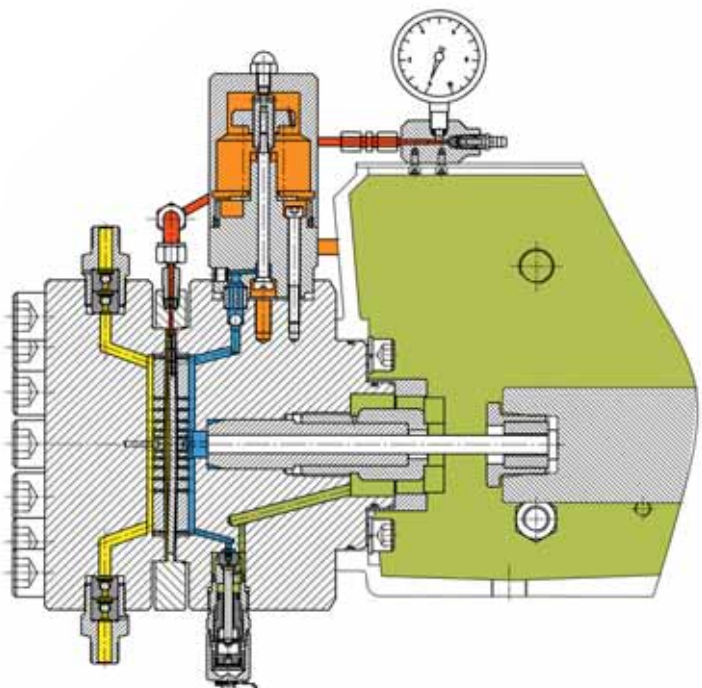
● Single or double HPD diaphragm dosing pump

- Leak free
- Moulded and preformed PTFE/elastomer composite diaphragm
- Patented re-usable diaphragm
Service life over 20,000 hours
- Integrated patented air-bleed valve
- Adjustable relief valve setting. Model with pilot operated relief valve provides better accuracy when handling extremely high flow rates (patented system)
- Patented MARS hydraulic fluid compensation system
- High suction capacity up to 9 metres of water



● Single or double metallic diaphragm dosing pump

- Leak free
- Handles high pressures, radioactive liquids and diffusing fluids
- All metal-metal seals (diaphragms, valves)
- Integrated and patented differential air-bleed valve (advantages: extremely high opening accuracy and very low losses).
Adjustable setting
- Designed to make diaphragms last over 10,000 hours
- Oil compensation valve with adjustable setting



Solutions

In tune with your needs

14 designers ready to find the exact and reliable solution to meet your specifications



In Siberia, dosing pumps used in gas treatment are usually installed indoors away from sub-zero temperatures. Dosapro Milton Roy manufactures odorant pumps which can be installed outdoors. Constructed in resilient materials such as stainless steel and killed steel castings, each pump also houses a system that warms up the lubricating oil prior to start-up.

Specially made Dosapro Milton Roy pumps can operate at temperatures as low as -50°C .

Not only does Dosapro Milton Roy design and manufacture its standard pump ranges, it also manufactures many specially designed pumps.

Its team of application engineers analyse specifications while "package unit" designers focus on dosing pump systems, many of which are supplied to engineering contractors.

The following pages illustrate several examples of "exceptional" situations.

● Gas treatment: down to -50°C



Designed and modified for temperatures reaching -50°C

● Nuclear: remote heads

Dosing radioactive or potentially radioactive fluids in nuclear power plants or uranium enrichment plants involves painstaking adherence to specifications. Plastics are prohibited, pumps and materials must be designed to withstand all forms of corrosion and abrasives and no leak is tolerated. Here, the entire double-diaphragm pump head, placed in the containment area, is constructed in Hastelloy® and can

Water treatment

UK



Pressurisation pump used to supply a filter press

As a 'cake' forms in a filter press, there is an accompanying rise in pumping pressure. At a certain predetermined pressure no more pumping is required. This pump achieves this automatically with no special protection. Once the desired pressure is reached the swept volume of the pump is diverted into an accumulator mounted on a liquid filled chamber between two diaphragms and pumping ceases. It is a far simpler solution than the traditional one which would involve pressure sensors and controllers to shut down the pump.

be removed by a remote-controlled robot. The liquid end is placed outside the containment area and separated from the pump head by a wall over 3 m thick. Similar remote pump heads are frequently used to dose and inject catalysts in slurry-laden suspensions in polyethylene polymerisation for instance.

performance. At higher flows the life of metallic diaphragms is less predictable and their size makes maintenance difficult. Generally pumps using PTFE diaphragms are also not suitable as PTFE is porous to halogens like Hydrogen, Chlorine, Bromine, and Helium. Dosapro Milton Roy has developed and patented a simple system to deal with this problem. All gas migrating through the diaphragm is collected and diverted to a safe place. Diaphragm rupture can still be detected by the normal pressure sensing system. Some odorants used in gas treatment or high concentrations of sodium hypochlorite, a chemical used in water treatment, also have the same characteristics which can equally be solved by this new system.



Dosing aqueous and organic phases in uranium enrichment.

● Chemistry: active and passive safety

Pumping liquids containing high levels of halogens requires the use of double diaphragm pumps. Metal diaphragms are better suited to lower flow rates and provide lasting



Combined continuous degassing and diaphragm rupture detection system

Performance

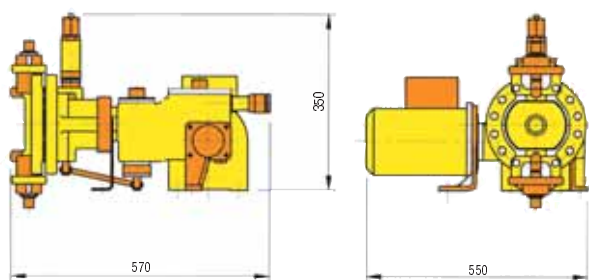
Range overview

Please contact us if the performance you require is not shown*

	Milroyal D	Milroyal B	Milroyal C	Maxroyal	Primeroyal
Maximum thrust (daN)	110	460	1100	2000/2500	4610
Adjustable stroke (mm)	0 to 25.4	0 to 38.1	0 to 76,2	0 to 80	0 to 75
Min./Max. speed (strokes/min.)	23 to 173	36 to 173	39 to 173	36 to 173	36 to 192
High speed shaft multiplexing	•	•	•		•
Slow speed shaft multiplexing				•	•
Fixed stroke				•	•

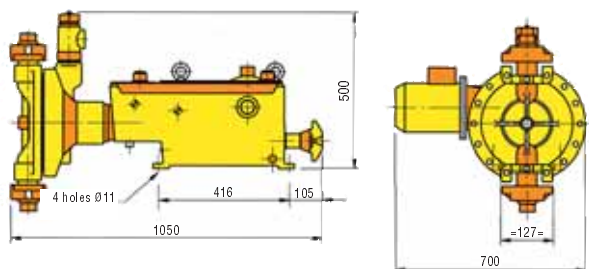
General dimensions are for guidance only. The dimensions given indicate maximum sizes. Diagrams are not contractual.

Milroyal D



PLUNGER DOSING PUMP				DIAPHRAGM DOSING PUMP (1)			
ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure	ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure
3.2	23 140	0.28 1.74	300	3	23 140	0.23 1.40	480
6	140	6.06	300	4	140	2.48	480
8	140	10.1	200	6	140	5.80	390
11.1	140	19.9	70	8	140	10.3	200
15.9	140	40	45	10	140	15.9	127
22.2	140	79	10	20	140	62	35
-	-	-	-	25	140	98	22
-	-	-	-	32	140	164	10
-	-	-	-	40	140	254	8
-	-	-	-	45	140	345	7

Milroyal B

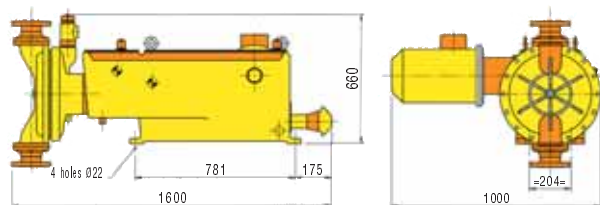


PLUNGER DOSING PUMP				DIAPHRAGM DOSING PUMP (1)			
ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure	ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure
8	140	15.5	450	8	140	14.5	480
12	140	34	392	10	140	22	480
16	140	61	217	12	140	34	400
20	140	96	137	14	140	46	300
25	140	150	86	16	140	60	230
32	140	247	52	18	140	76	180
40	140	387	32	20	140	96	145
50	140	605	20	22	140	113	120
55	140	732	16	25	140	150	93
63	140	962	11	32	140	247	57
90	140	1960	5	40	140	387	36
-	-	-	-	50	140	605	23
-	-	-	-	55	140	732	19
-	-	-	-	63	140	962	14
-	-	-	-	70	140	1180	11
-	-	-	-	90	140	1960	7
-	-	-	-	100	140	2412	5

(*) Performances given for maximum standard speeds at 50 Hz
 (1) Pressure limit for plastic liquid ends 10 barg
 (2) 10 barg flow rate (tested on water)

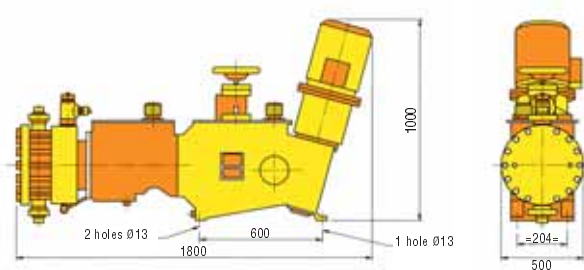
Milroyal Maxroyal Primeroyal

Milroyal C



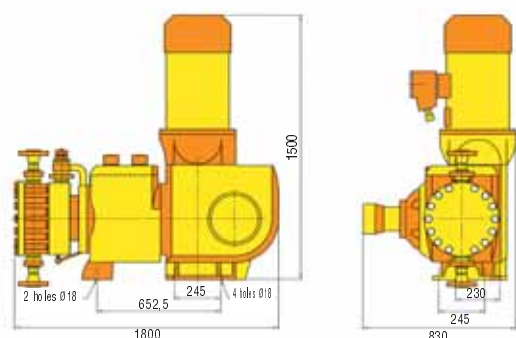
PLUNGER DOSING PUMP				DIAPHRAGM DOSING PUMP (1)			
ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure	ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure
20	140	193	341	12	140	67	500
25	140	300	217	14	140	91	500
32	140	494	131	18	140	151	430
40	140	774	83	20	140	186	350
50	140	1210	53	25	140	300	224
55	140	1460	41	32	140	494	136
63	140	1920	32	40	140	774	87
90	140	3920	15	50	140	1210	56
125	112	6060	7.5	55	140	1460	44
160	112	9930	4.5	63	140	1926	35
-	-	-	-	70	140	2370	27
-	-	-	-	90	112	3140	17
-	-	-	-	125	112	6060	8
-	-	-	-	145	112	8150	6

Maxroyal C



PLUNGER DOSING PUMP				DIAPHRAGM DOSING PUMP (1)			
ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure	ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure
20	140	201	450	25	140	313	300
25	140	314	400	32	140	513	248
32	140	518	243	40	140	801	159
40	140	812	155	50	140	1252	101
50	140	1270	98	55	140	1515	84
55	140	1537	81	63	140	1988	64
36	140	2022	61	70	140	2455	50
90	112	3299	29	90	140	4059	31
125	112	6361	14	125	112	6263	16
160	112	10430	9	145	112	8429	12
-	-	-	-	160	112	12234	10

Primeroyal



PLUNGER DOSING PUMP				DIAPHRAGM DOSING PUMP (1)			
ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure	ø Plunger (mm)	Speed (strokes/min)	Flow rate (2) (l/h)	Max (bar) pressure
32	192	660	565	32	192	660	300
40	192	1032	363	40	192	1032	300
50	192	1612	231	50	192	1612	236
55	192	1950	191	55	192	1950	195
63	168	2239	145	63	168	2239	148
70	168	2764	116	70	168	2764	121
80	168	3611	89	80	168	3611	92
90	144	3917	70	90	144	3917	72
100	144	4836	56	125	144	7556	18
125	144	7556	35	145	144	10167	18
145	144	10167	26	160	144	12379	18
170	144	13975	18	180	120	13056	18
200	120	16118	13	-	-	-	-

From the project stage to maintenance, you can rely on the world wide experience of Dosapro Milton Roy

Project:

a network ready to listen to you

Dosapro Milton Roy's international network of sales engineers is ready to attend to your needs and:

- guide your selections,
- study sophisticated projects,
- track equipment service life.

We quickly assess your requirements and accurately track your orders via our information system which also enables our sales offices to provide you with:

- the best proposal for your needs,
- information about equipment availability,
- information about the exact status of your order

Maintenance: the No. 1 job of our aftermarket teams

Two aftermarket teams are available to keep your facilities in top working order. The Technical Assistance and Replacement Parts departments:

- provide information about products, prices and delivery times,
- train your staff in pump operation,
- maintain your equipment on site or in our workshops.

Whether you contact your closest distributor or us direct, there is always a skilled person ready to listen and advise you.



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• Meurs Process B.V.
Manege 11
6662 WC Elst
The Netherlands

• Phone +31(0)481 365530
Fax +31(0)481 365539
info@meursprocess.nl
www.meursprocess.nl