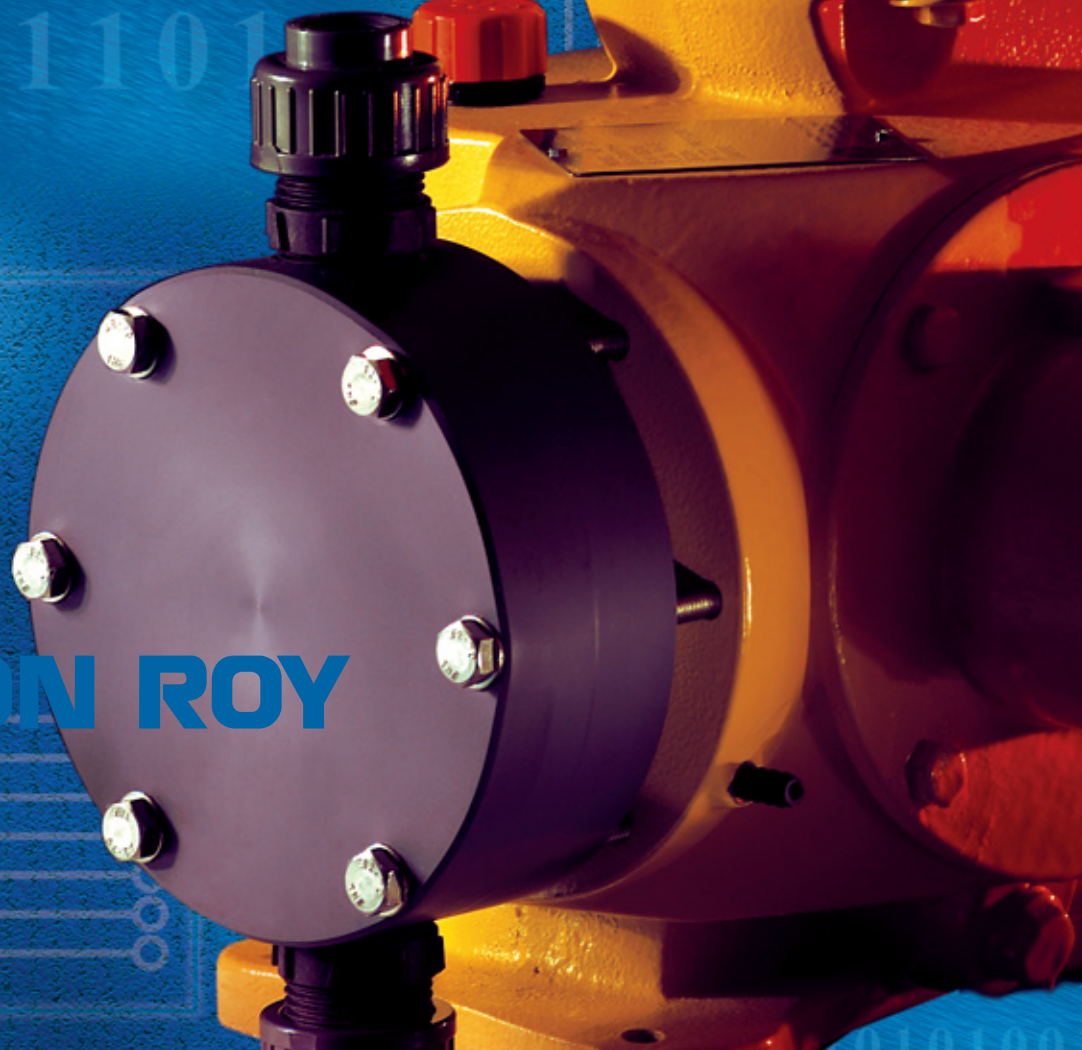


**MACROY<sup>®</sup>**

**SERIES OF  
METERING  
PUMPS**



**MILTON ROY**



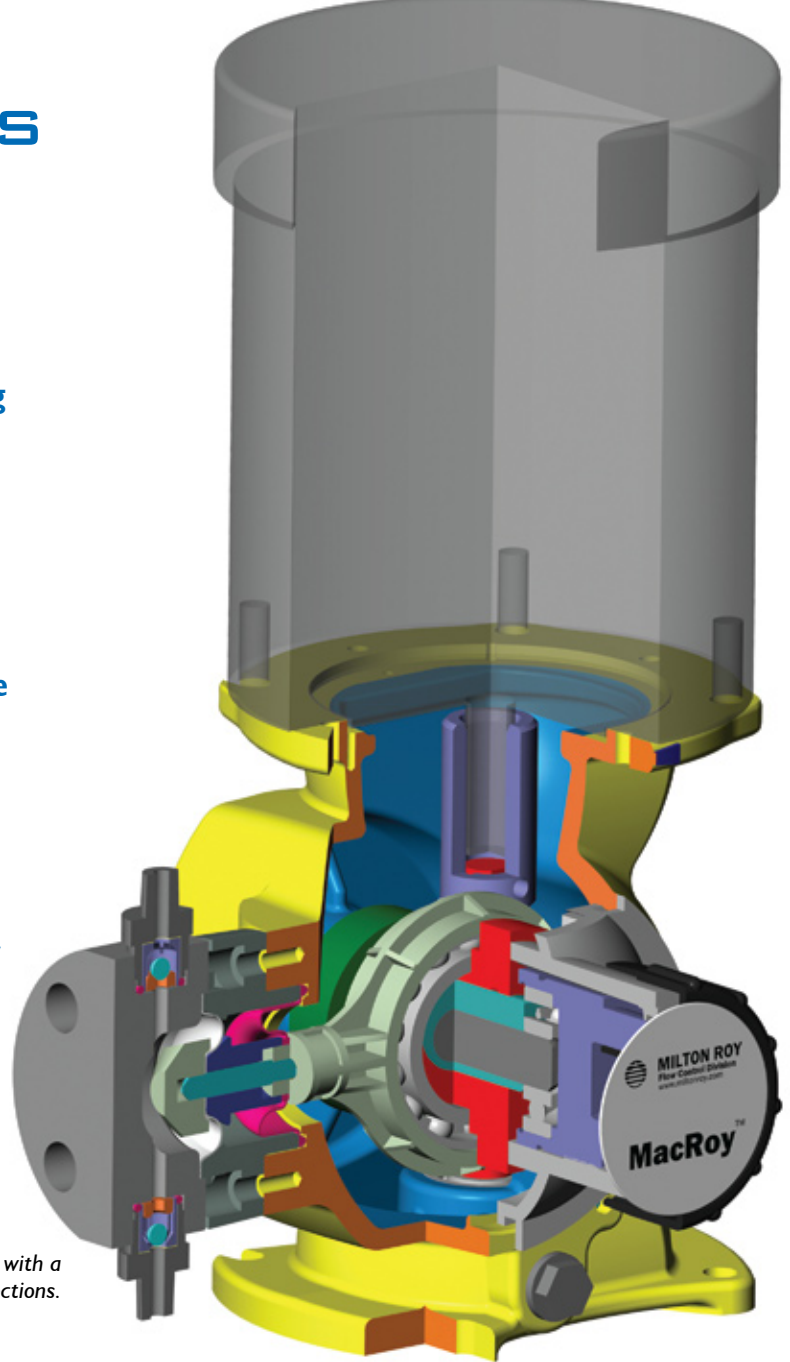


# MACROY® SERIES

The MacRoy® Series of metering pumps offer traditional Milton Roy reliability with outstanding value for applications up to 175 psi (12 Bar).

Milton Roy has combined its heavy-duty industrial drive technology with state of the art design and manufacturing processes in creating the MacRoy® Series metering pump. This family of Mechanically Actuated Diaphragm metering pumps is designed for durability and cost effectiveness.

*Illustrated to the right is a D4 with a PVC liquid end, featuring NPT connections.*

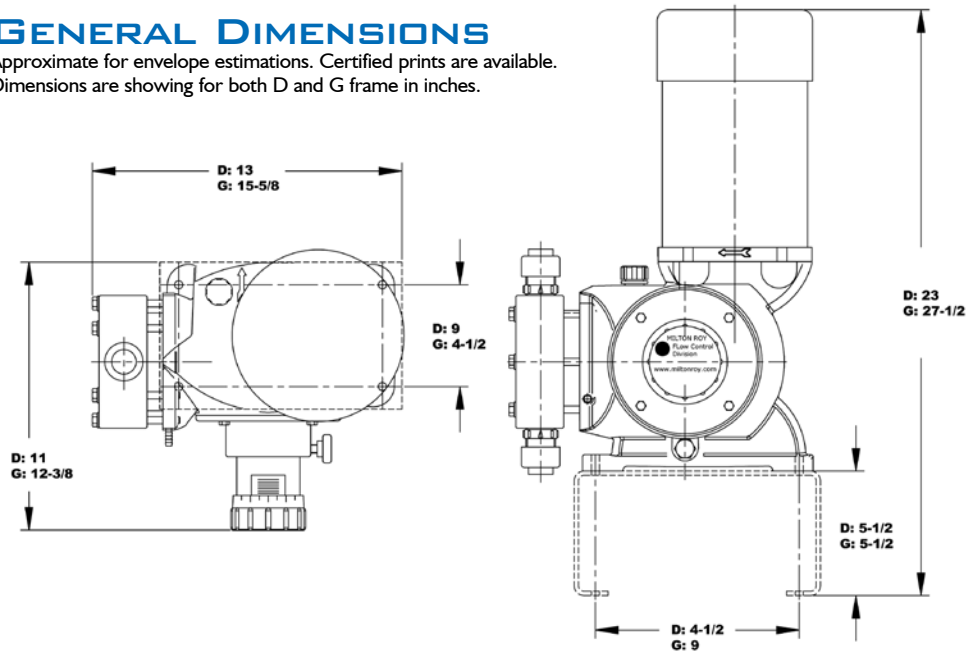


## MACROY FEATURES AND SPECIFICATIONS

- ▶ Flow Rates up to 312 GPH (1180 Liters/hr)
- ▶ Mechanically Actuated Diaphragm liquid end eliminates flow restrictions
- ▶ Durable, metallic housing designed to withstand tough environments
- ▶ High efficiency motors minimize heat buildup
- ▶ A robust, metallic, worm gear drive coupled with the industrial duty variable eccentric stroke adjustment mechanism yields a 10 to 1 turn down ratio with smooth velocity profiles as compared to the pulsating flows of solenoid pumps or lost motion designs
- ▶ Smooth running, low friction bronze gears
- ▶ The PTFE, high performance, diaphragm design increases diaphragm life by eliminating the stresses inherent in most designs
- ▶ Reliable low flow performance is a result of high performance check valves with machined seats
- ▶ All gear components operate in an oil bath for long life
- ▶ Precision stroke adjustment can be operated while the pump is running or stopped
- ▶ Steady State Accuracy –  $\pm 1\%$  of full capacity over the 10 to 1 turndown ratio
- ▶ Liquid Temperature Range – 14° to 122° F (-14° to 50° C)
- ▶ Coating – 2 part epoxy
- ▶ Average Weight with motor – Frame D: 45 lbs (20 kgs)  
Frame G: 105 lbs (48 kgs)

## GENERAL DIMENSIONS

Approximate for envelope estimations. Certified prints are available.  
Dimensions are showing for both D and G frame in inches.



## NPT CONNECTION SIZES

| FRAME | LIQUID END SIZE | CONNECTION PORT SIZE FOR THE FOLLOWING MATERIALS |              |           |           |
|-------|-----------------|--|--------------|-----------|-----------|
|       |                 | BLACK PP, PVC, PVDF & ACRYLIC                    | APPLICATIONS |           | 316 SS    |
|       |                 |  |              | H2SO4     |           |
| D     | 2               | 1/4" Male  | 1/4" Male    | 1/4" Male | 1/4" Male |
|       | 4               |  | 1/2" Male    |           | 1/2" Male |
|       | 7 & 8           |  |              |           |           |
| G     | 5               | 1/2" Female                                      |              |           |           |
|       | 6 & 7           |  | 1" Male      | 1" Female | 1" Male   |
|       |                 |  |              |           |           |

## MATERIALS OF CONSTRUCTION

| MATERIAL             | FRAME | LIQUID END SIZE | HEAD     | CHECK VALVE | SEALS | SEATS     | BALLS   | DIAPHRAGM |      |  |
|----------------------|-------|-----------------|----------|-------------|-------|-----------|---------|-----------|------|--|
| Black Polypropylene  | D     | 2               | Black PP | PVDF        | Aflas | Alloy C22 | Ceramic | PTFE      |      |  |
|                      |       | 4               |          |             |       | PTFE      |         |           |      |  |
|                      |       | 7 & 8           |          |             |       |           |         |           |      |  |
|                      | G     | 5               |          | Viton       | PVC   |           |         |           |      |  |
|                      |       | 6 & 7           |          | PP          |       |           |         |           |      |  |
| PVC                  | D     | 2               | PVC      | PVDF        | Aflas | Alloy C22 | Ceramic | PTFE      |      |  |
|                      |       | 4               |          |             |       | PTFE      |         |           |      |  |
|                      |       | 7 & 8           |          |             |       |           |         |           |      |  |
|                      | G     | 5               |          | Viton       | PVC   |           |         |           |      |  |
|                      |       | 6 & 7           |          | PVC         |       |           |         |           |      |  |
| PVDF                 | D     | 2               | PVDF     | PVDF        | Aflas | Alloy C22 | Ceramic | PTFE      |      |  |
|                      |       | 4               |          |             |       | PTFE      |         |           |      |  |
|                      |       | 7 & 8           |          |             |       |           |         |           |      |  |
|                      | G     | All             |          | PTFE        | PVDF  |           |         |           |      |  |
| Acrylic              | D     | 2               | Acrylic  | PVDF        | Aflas | Alloy C22 | Ceramic | PTFE      |      |  |
|                      |       | 4               |          |             |       | PTFE      |         |           |      |  |
|                      |       | 7 & 8           |          |             |       |           |         |           |      |  |
|                      | G     | 5               |          | Viton       | PVC   |           |         |           |      |  |
|                      |       | 6 & 7           |          | PVC         |       |           |         |           |      |  |
| Polymer Applications | D & G | All             | PVC      | PVC         | Viton | 316 SS    | 316 SS  |           |      |  |
| Slurry Applications  | D & G | All             |          | 316 SS      | Aflas | CA 20     | CA 20   |           |      |  |
| H2SO4 Applications   | D & G | All             |          | PVDF        |       |           |         |           |      |  |
| 316 SS               | D     | 2               | 316 SS   | 316 SS      | PTFE  | 316 SS    | 316 SS  | PTFE      |      |  |
|                      |       | 4               |          |             |       | PTFE      |         |           |      |  |
|                      |       | 7 & 8           |          |             |       |           |         |           |      |  |
|                      | G     | 5               |          |             | Viton | 316 SS    |         |           |      |  |
|                      |       |                 |          |             | 6 & 7 |           |         |           | PTFE |  |

## PUMP SELECTION BY CAPACITY AND PRESSURE

| PUMP SELECTION |               |              | MAXIMUM RATINGS                |          |                                |          |          |     |
|----------------|---------------|--------------|--------------------------------|----------|--------------------------------|----------|----------|-----|
| FRAME          | MACROY        |              | CAPACITY @ 60 HZ<br>(1725 RPM) |          | CAPACITY @ 50 HZ<br>(1425 RPM) |          | PRESSURE |     |
|                | LIQUID<br>END | GEAR<br>CODE | GPH                            | LITER/HR | GPH                            | LITER/HR | PSI      | BAR |
|                | D             | 2            | 1                              | 0.18     | 0.7                            | 0.15     | 0.6      | 175 |
| 2              |               |              | 0.35                           | 1.3      | 0.29                           | 1.1      |          |     |
| 6              |               |              | 0.48                           | 1.8      | 0.40                           | 1.5      |          |     |
| 3              |               |              | 0.7                            | 2.6      | 0.58                           | 2.2      |          |     |
| 4              |               | 1            | 3.0                            | 11.4     | 2.5                            | 9.5      | 150      | 10  |
|                |               | 2            | 6.6                            | 25       | 5.5                            | 21       |          |     |
|                |               | 6            | 10                             | 38       | 6.9                            | 26       |          |     |
|                |               | 3            | 14.4                           | 45       | 12                             | 45       |          |     |
| 7              |               | 1            | 13                             | 99       | 10                             | 39       | 100      | 7   |
|                |               | 2            | 25                             | 95       | 21                             | 79       |          |     |
|                |               | 6            | 34                             | 129      | 28                             | 106      |          |     |
|                |               | 3            | 50                             | 189      | 42                             | 159      |          |     |
| 8              |               | 1            | 31                             | 117      | 26                             | 98       | 75       | 5   |
|                |               | 2            | 57                             | 216      | 47                             | 178      |          |     |
|                |               | 6            | 87                             | 329      | 72                             | 273      |          |     |
|                |               | 3            | 127                            | 481      | 106                            | 401      |          |     |
| G              | 5             | 1            | 26                             | 98.4     | 22                             | 82       | 150      | 10  |
|                |               | 2            | 53                             | 200.6    | 44                             | 167      |          |     |
|                |               | 6            | 75                             | 283.9    | 62                             | 237      |          |     |
|                |               | 3            | 106                            | 401.2    | 88                             | 334      |          |     |
|                |               | 8            | –                              | –        | 110                            | 416      |          |     |
|                | 6             | 1            | 37                             | 140.0    | 31                             | 117      | 100      | 7   |
|                |               | 2            | 74                             | 280.1    | 62                             | 233      |          |     |
|                |               | 6            | 104                            | 393.6    | 87                             | 328      |          |     |
|                |               | 3            | 147                            | 556.4    | 122                            | 464      |          |     |
|                |               | 8            | –                              | –        | 154                            | 583      |          |     |
|                | 7             | 1            | 75                             | 283.9    | 62                             | 237      | 50       | 3.5 |
|                |               | 2            | 150                            | 567.8    | 125                            | 473      |          |     |
|                |               | 6            | 213                            | 806.2    | 177                            | 672      |          |     |
|                |               | 3            | 300                            | 1135.5   | 250                            | 946      |          |     |
|                |               | 8            | –                              | –        | 312                            | 1181     |          |     |

Ratings based on 1/4 HP (.25 kW)

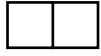
Ratings based on 1 HP (.75 kW)



*MacRoy G with PVC liquid end and manual micrometer stroke adjustment.*



# MACROY D & G PRODUCT CODE



Frame and  
Liquid End



Gear  
Ratio



Motor &/  
or Mount



Liquid  
End  
Material



Connections



Capacity  
Control



Double  
Diaphragm



Base



Stroke  
Counting

## Frame and Liquid End

### D Frame

D2

D4

D7

D8

### G Frame

G5

G6

G7

## Gear Ratio Code

1 = 43 SPM

2 = 86 SPM

6 = 120 SPM

3 = 173 SPM

8 = 180 SPM @

1450 RPM

## Motor &/or Mount

8 = 1 ph 60 Hz 115/230 VAC

1725 RPM TE

J = 3 ph 60 Hz 230/460 VAC

1725 RPM TE

9 = 1 ph 50 Hz 115/230 VAC

1450 RPM TE

L = 3 ph 50 Hz 220/380 VAC

1450 RPM TE

M = IEC 71, F130 V1 Flange  
Mount Less Motor

N = IEC 80, F165 V1 Flange

Mount Less Motor  
(G Frame only)

X = Nema 56C Mount

Less Motor

## Liquid End Material

2 = PVDF

4 = Black Polypropylene  
(UV Stable)

7 = 316 ss

8 = PVC

A = Acrylic

P = Polymer Service

L = Slurry Applications

N = H<sub>2</sub>SO<sub>4</sub> Applications

## Connections

P = NPT

T = Tubing

B = Bleed Valve NPT

C = Bleed Valve Tubing

## Capacity Control

M4 = Manual

E1 = 4-20, Nema 4, 115V

E2 = 4-20, Nema 4, 230V

EA = 4-20, Ex Prf, 115V

EB = 4-20, Ex Prf, 230V

## Double Diaphragm

N = None

D = Double Diaphragm

3 = Double Diaphragm w/  
Gauge

4 = Double Diaphragm  
w/Nema 4

Rupture Detection

7 = Double Diaphragm  
w/Nema 7

Rupture Detection

## Base Code

N = None

I = Simplex Optional Base

## Stroke Counting

N = None

I = Stroke Counting  
(20 to 250 VAC/DC)



The photograph to the right is a D4 with a PVC liquid end, featuring NPT style check valves.

## MACROY, DEPENDABLE AND VERSATILE

The MacRoy™ series of pumps has proven its exceptional value over years of solid performance in a wide range of applications and industries. Water treatment chemicals, process additives, acids, out-gassing fluids, slurries, and many more applications are all handled with ease by this robust metering pump design. Your local representative can assist you in applying the MacRoy™ metering pump to your process.



## ACCESSORIES



### Safety Valves

Protect pump and piping from overpressure.



### Back Pressure Valves

Provide smooth, artificial pressure in pump discharge line for atmospheric or low pressure systems to ensure pumping accuracy.

### Pulsation Dampeners

Minimize pressure and flow surges in the pump discharge. When applied to pump inlet, more favorable NPSH conditions result.



### Calibration Columns

Allow periodic verification of pump performance during routine checks or after system maintenance.



MILTON ROY COMPANY

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