



Product Specification

MacRoy D Metering Pump

General

Description: The MacRoy® D is a positive displacement metering pump with a mechanically actuated liquid end.

Introduction: 2001

Weight: Approximate in Pounds (kg)

	Pump & motor	Domestic box	Export box
Simplex	38 (17.2)	45 (20.4)	140 (63.5)
w/ECC	57 (21.2)	63 (23.51)	157 (58.5)

Dimensions: Approximate in inches (mm)

	Domestic Box	Export box
Simplex	27x19x28 (686x483x711)	39x23x31 (991x583x788)
w/ECC	36x28x30 (914x711x762)	

Ambient Temperature: Standard product suitable for temperature environments from 14° F (-14° C) to 122° F (50° C). Modifications are available for extended ranges. Pumps should be protected from direct sunlight exposure.

Performance

Maximum Pressure Rating: 175 PSI (12 bar)

Maximum Capacity: 127 GPH (481 Liters/Hour)

Turndown and Accuracy

Standard Turndown Ratio: 10:1 with constant speed motor - as high as 150:1 with addition of variable speed drive.

Steady State Accuracy: ± 1.0 %

Repetitive Accuracy: ± 3.0 %

Linearity: ± 3.0%

Liquid End

Description: Mechanically actuated diaphragm with suction and discharge single ball check valves.

Materials:

- **Diaphragms:** PTFE standard
- **Head and Check Valve Bodies:** Polypropylene, Acrylic, PVDF, 316ss, PVC with Alloy 20 Balls and seats, PVC with 316ss balls and seats
- **Seals:** Viton or Aflas
- **Ball Checks:** Same material as check valve bodies except PVC and PVDF that use ceramic. Optional ball materials are available

Liquid End (continued)

Connections:

Liquid End Size	PP, PVC, Acrylic, PVDF	H ₂ SO ₄	316SS
D2	¼"	¼"	¼"
D4	¼"	¼"	½"
D7 & 8	½"	½"	½"

Options: Flanges and others as required

Suction Pressure:

NPIP (NPSH) Required: 12 PSIA (0.82 bar absolute)

Maximum Suction Pressure: 15 PSI (1 bar)

Typical Maximum Lift: (H₂O) 8.2 ft (2.5 meters)

Discharge Pressure:

Minimum recommended: for best performance: 30 psi (2.06 bar), or 20 psi (1.4 bar) over suction pressure.

Liquid Temperature:

Standard Minimum: 14° F (-14° C)

Standard Maximum: 122° F (50° C)

Relief Valve Settings:

External in piping system: 10% over discharge pressure or 15 psi (1 bar) – whichever is greater.

Ball Check Configurations:

Standard: Single ball

Options: Slurry seats, PTFE seats, Alloy 20 seats

Typical Viscosity Ratings:

Ratings are conservative estimates. Any applications with viscous fluid should be evaluated with an NPIP (NPSH) calculation.

SPM	MAX CPS FOR PLASTIC	MAC CPS FOR 316SS	MAX CPS FOR POLYMER
36	500	2000	4000
43	400	2000	4000
72	300	1100	2200
86	150	900	1800
144	100	500	1000
173	75	350	700
180	50	350	700





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Liquid End (continued)

Degassing Options:

- Manual bleed:** Vents head on startup.
- Automatic Bleed:** Continuously bleeds a small portion of the fluid to purge any gas bubbles from the liquid end

Drive

Description:

Capacity Adjustment:

Standard:

10 turn manual micrometer with indication at 1% intervals

Options:

- Electronic capacity control accepting 4-20 mA input with manual override. NEMA 4 or explosion proof enclosures
- Variable speed drives providing additional turndown capabilities and potential for multiple control signals
- Manual micrometer with locking knob

Capacity Adjustment Design:

Stroke Length: 0.47 inches (11.9 mm)

End Load: 800 lbs. (3558 Newtons)

Motor Direction: Clockwise facing driven end

Motor Requirements: ¼ HP (0.18 kW)

Motor Frames: NEMA: 56C

Maximum Motor RPM: 1800

Standard Coating: Baked-on powder coating – yellow RAL 1018 – highly resistant to chemical and corrosion attack.

Nameplate Material: 20 gauge 300 series stainless steel

Nameplate Data: Model #, Serial #, Rated capacity at maximum pressure. Additional tag space for customer equipment tag information. Optional loose or wired tagging available for more extensive requirements

Lubrication System: The gears operate completely submerged in an oil bath.

Drive (Continued)

Lubricants and Volumes

	Ambient ≥ 50° F (10° C)	Ambient 15° to 50° F (-9° to 10° C)
Standard	Zurn EP 95	Zurn EP 35
AGMA Grade	5 EP	2 EP
ISO Grade	220	68
Volume Required	3.5 Quarts (3.31 Liters)	
Volume supplied	4 Quarts (3.78 Liters)	

Testing

Standard Production Test: Every pump is tested to assure the pump meets capacity and pressure expectations and functions as expected. A report is available that indicates ratings, the test results, the repetitive accuracy based on the test, and if the pump passed test.

Optional Test:

Hydrostatic Test Pressure: Pump head is subjected to maximum rated pressure x 1.5.

API Linearity Test: 5 point Curve

API Repeatability Test: 10 point curve (5 identical points ascending and descending).

Customer Witness Test: For any of the above.

Certifications

Electrical

Motors: Available in various enclosures and at ratings required by the site conditions

Electronic capacity control: Available in 2 enclosures:

- NEMA 4
- FM approved explosion proof Class I, Groups B, C, D, and Class II, Groups F and G





Dimension Drawings and Documentation

General arrangement drawings:

METALLIC PUMPS:

Simplex Manual Micrometer: 102-2784-000

Manuals:

Pump Manual: 339-0076-000

Electronic Capacity Control: 339-0083-000

Literature:

Brochure: PD3212

Illinois Location:
 (847) 841-7867
 860 Church Rd Elgin, IL 60

Minnesota Location:
 (651) 758-7867
 330 Mill Bay South Suite 1
 Afton, MN 55001

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