

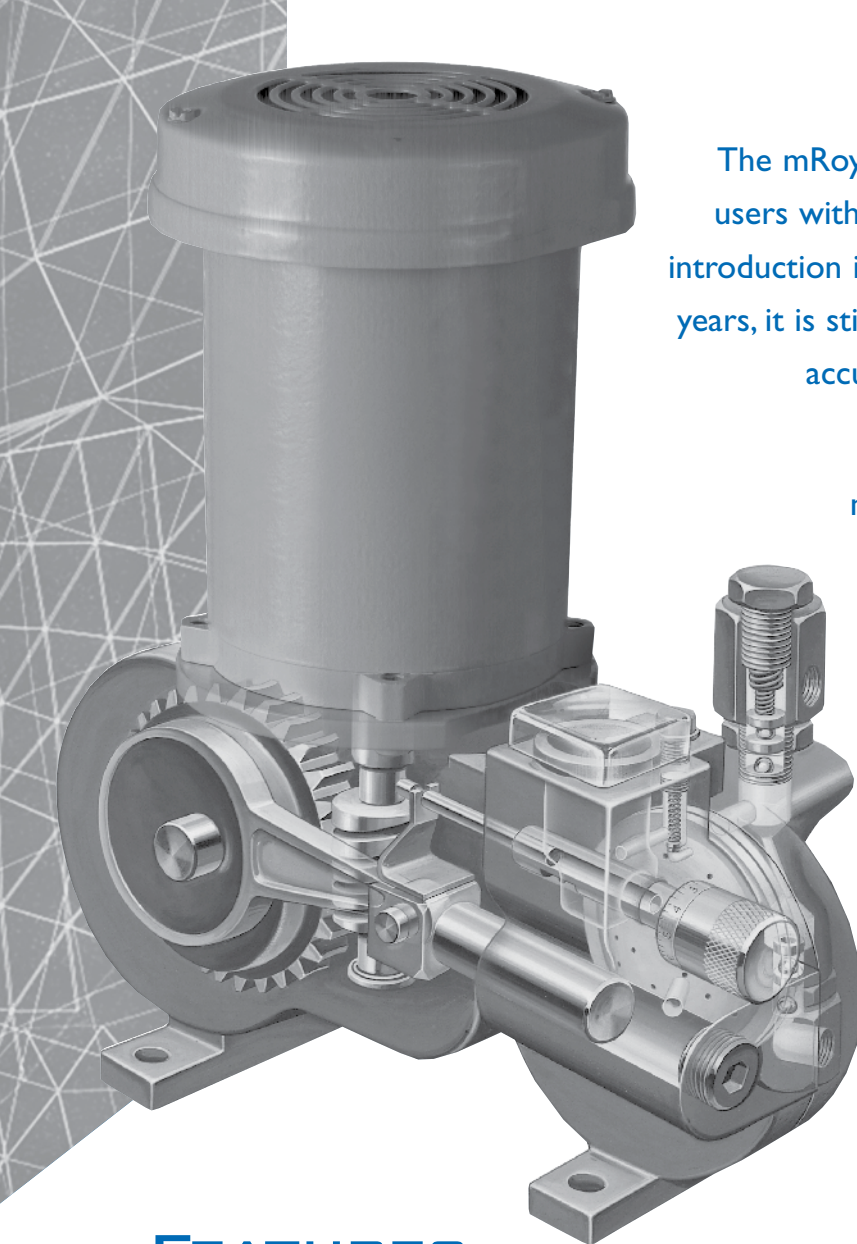
mRoy™

**SERIES
HYDRAULIC
DIAPHRAGM
METERING
PUMPS**



MILTON ROY





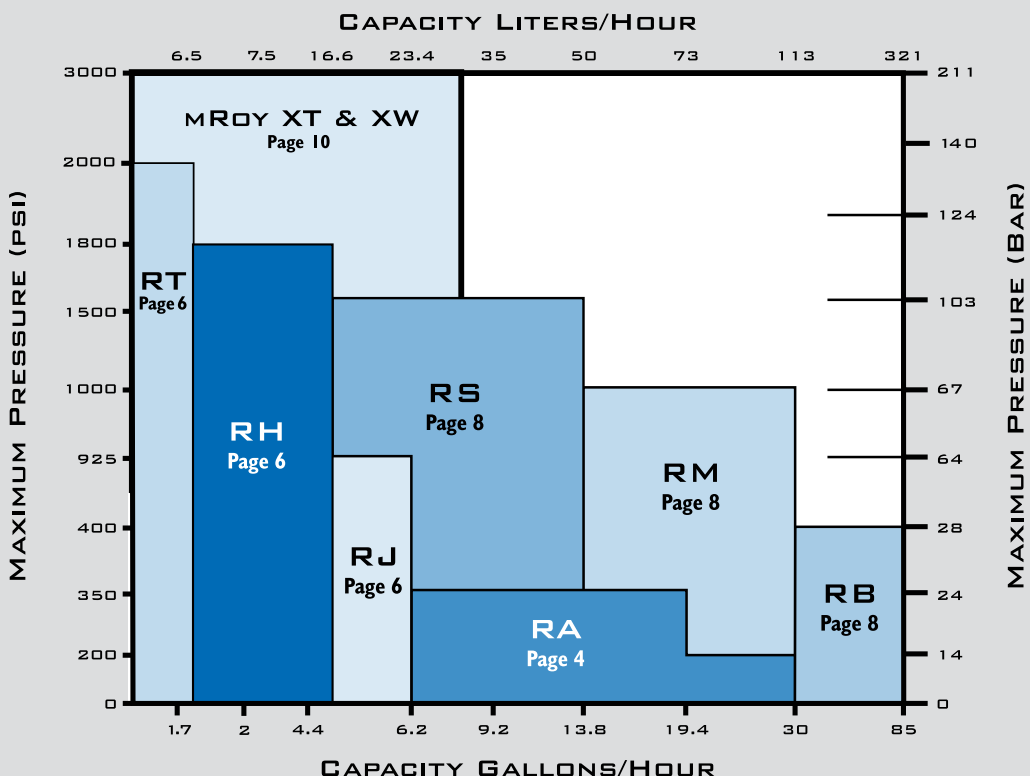
The mRoy series of metering pumps have provided users with high performance and reliability since its introduction in 1962. Enhanced and improved over the years, it is still the industry standard for durability and accuracy in the most demanding applications.

The mRoy is available in several different model series to meet the demands of any application with optimum performance and efficiency.

FEATURES

- Electric, hydraulic or air motor drives ensure that your mRoy will operate in all environments and power supplies
- Dust-tight cast iron drive housing provides a rugged enclosure that will operate in all plant and field environments
- Worm & pinion drive produces a smooth, continuous mechanical motion that eliminates “wear and tear” of mechanical “lost motion” designs
- Oil bath lubrication eliminates the continuous maintenance of packed grease, or auxiliary oil lubrication systems
- Tapered roller-bearing pinion shaft support maintains pinion gear and motor shaft alignment
- One piece connecting rod with integral bearing surfaces
- One piece floating cross head/plunger assembly designed to eliminate plunger seals
- Micrometer capacity adjustment for accurate output flow control
- Double or single ball high-performance cartridge-type check valves provide positive, repeatable sealing on every pump stroke
- Metallic and non-metallic liquid end materials for corrosion resistance in any chemical application
- Solid PTFE diaphragm provides seal-less design and eliminates plunger packing maintenance
- Automatic hydraulic system bypass maintains accurate balance between hydraulic and process flow
- Internal hydraulic pressure relief valve automatically protects the hydraulic system from over pressure conditions
- Front mount oil fill and sight provide convenient location for oil replacement and level monitoring

PERFORMANCE RANGE

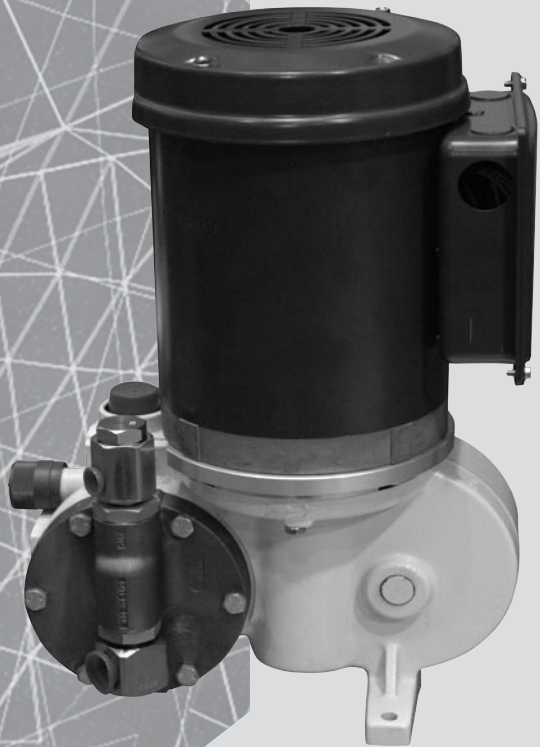


APPLICATIONS

The reliability of the mRoy has been proven in hundreds of thousands of installations worldwide. The mRoy provides a great deal of value to customers whether they have routine or demanding applications. Its outstanding performance has allowed process engineers to trust the mRoy in the most critical of services. Installations are found in every applicable industry including chemical or hydrocarbon processing, water treatment, food and beverage, mining, power, pulp and paper, textile and many others.

Once installed, the mRoy's "uptime" design makes it one less thing for operators and maintenance personnel to worry about. The mRoy is built to run 24 hours a day, 7 days a week. It's not unusual to find mRoy pumps still operating at design performance after 20 or more years in service.

For decades, customers have been secure in their choice of mRoy pumps. Your application can also benefit from mRoy's durability and Milton Roy's experience.



mRoy A simplex with manual micrometer capacity adjustment, metallic liquid end, close coupled motor mount.

PERFORMANCE MAXIMUM RANGE:

Simplex: 30 GPH (329 liter/hr)
 Duplex: 60 GPH (658 liter/hr)
 350 psi (24 Bar)

GENERAL SPECIFICATIONS

Liquid End Type:

Hydraulically Actuated Disc Diaphragm

Capacity Adjustment:

Hydraulic Bypass from 0 to 100%
 While Running or Stopped

Capacity Control:

Manual Micrometer (standard)
 Electronic (optional)
 Pneumatic (optional)
 Variable Speed (optional)

Steady State Accuracy:

± 1.0 % over 10:1 Turndown

Internal Relief Valve:

Adjustable (Standard)

Number of Pumping Heads:

Simplex Standard, Duplex Optional

Liquid Temperature Range:

Metallic Heads: 20° to 200° F (-7° to 93° C)

Plastic Heads: 20° to 145° F (-7° to 62° C)

Coating System:

Polyester TGIC Powdercoating

Warranty:

Three Year Standard (details available separately)

Average Shipping Weight:

Simplex - 75 lbs (34 kg)

Duplex - 85 lbs (38.5 kg)

Stroke Length:

0.7" (17.8 mm)

Motor Requirements:

Simplex - 1/4 Horsepower (0.25 kW)

Duplex - 1/3 Horsepower (0.25 kW)

CAPACITY/PRESSURE TABLE

Capacities are based on simplex liquid end configurations

| Series | Gear Ratio Code | SPM@ 1725 RPM | METALLIC LIQUID ENDS | | | | | | PLASTIC LIQUID ENDS | |
|-------------------------|-----------------|---------------|---|--------|------------------|--------|------------------|--------|---------------------|----------|
| | | | CAPACITY WITH MOTOR OPERATING AT 1725 RPM | | | | | | | |
| | | | 100 PSI (7 BAR) | | 200 PSI (14 BAR) | | 350 PSI (24 BAR) | | 150 PSI (10 BAR) | |
| | | | GPH | LITER/ | GPH | LITER/ | GPH | LITER/ | GPH | LITER/HR |
| 7/16" (11 mm) Plunger | 77 | 23 | See mRoy H Page 6 | | | | | | 0.46 | 1.7 |
| | 48 | 37 | | | | | | | 0.62 | 2.3 |
| | 24 | 73 | | | | | | | 1.5 | 5.7 |
| | 15 | 117 | | | | | | | 2.4 | 9.1 |
| 5/8" (16 mm) Plunger | 48 | 37 | 1.8 | 6.8 | 1.7 | 6.4 | 1.6 | 6.1 | 1.5 | 5.7 |
| | 24 | 73 | 3.8 | 14.4 | 3.7 | 14.0 | 3.5 | 13.2 | 3.4 | 12.9 |
| | 15 | 117 | 6.2 | 23.5 | 6.0 | 22.7 | 5.7 | 21.6 | 5.5 | 20.8 |
| 1 1/16" (27 mm) Plunger | 48 | 37 | 6.1 | 23.1 | 5.9 | 22.3 | 5.5 | 20.8 | 5.6 | 21.2 |
| | 24 | 73 | 12.3 | 46.6 | 12.1 | 45.8 | 11.2 | 42.4 | 11.2 | 42.4 |
| | 15 | 117 | 19.4 | 73.4 | 19.2 | 72.7 | 18.1 | 68.5 | 18.0 | 68.1 |
| | 10 | 185 | 30.0 | 113.6 | 29.0 | 109.8 | - | - | - | - |

HIGH VISCOSITY OPTION

The "A" series is available with a high viscosity option. The pump is renamed a "P" series and capacities above are reduced by 10%. Gear ratio code 10 is not available for "P" series.

MODEL CODE SELECTION

Additional options are available. Consult with your representative

End Item Code: **R A**

Option Select Number:

| | | | | | | | | |
|--------------|---------------|------------------|------------|-------------|--------------------|-----------|------------------|--------------------------|
| Number Heads | Material Code | Plunger Diameter | Gear Ratio | Mount/Motor | Suction Connection | Discharge | Capacity Control | Rupture Detection & Base |
|--------------|---------------|------------------|------------|-------------|--------------------|-----------|------------------|--------------------------|

Number Heads

| Code | Description |
|------|-------------|
| 1 | Simplex |
| 2 | Duplex |

Material Code

| Code | Description |
|------|------------------------------|
| 0 | Cast Iron |
| 1 | 316 SS |
| 2 | PVC (N/A with Gear Code 10) |
| 7 | PVDF (N/A with Gear Code 10) |
| 5 | Alloy 20 |
| 6 | Alloy C22 |

Plunger Diameter

| Code | Description |
|------|-----------------|
| 07 | 7/16" (11 mm) |
| 10 | 5/8" (16 mm) |
| 17 | 1-1/16" (27 mm) |

Gear Ratio

| Code | SPM @ RPM | |
|------|-----------|---------|
| | 1725 | 1425 |
| 77 | 23 spm | 19 spm |
| 48 | 37 spm | 30 spm |
| 24 | 73 spm | 60 spm |
| 15 | 117 spm | 96 spm |
| 10 | 185 spm | 152 spm |

Motor/Motor Mount

| Mount with Motor | |
|------------------|---|
| Code | Description |
| A1 | 1/4 HP TE 1/60/115 Close Coupled (STANDARD) |
| A8 | 1/4 HP TE 3/60/230/460 Close Coupled |

Motor Mount

| Code | Description |
|------|---------------------------------------|
| SR | Close Coupled NEMA 56C |
| SS | Close Coupled IEC Frame 71, B5 Flange |
| FR | API Flange NEMA 56C |
| FS | API Flange IEC Frame 71, B5 Flange |
| | (Other Available) |

Suction Connection

| Metallic Heads | |
|----------------|---------------------------------|
| Code | Description |
| SE | NPT Female (STANDARD) |
| T1 | ANSI 150# RF 1/2" Threaded |
| T3 | ANSI 300# RF 1/2" Threaded |
| S1 | ANSI 150# RF 1/2" Socket Welded |
| S3 | ANSI 300# RF 1/2" Socket Welded |

Plastic Heads

| Code | Description |
|------|---------------------------|
| SE | NPT Male (STANDARD) |
| T1 | 150# 1/2" Threaded Flange |

Discharge Connection

Codes are same as suction connections

Capacity Control

| Code | Description |
|------|--|
| M2 | Manual Micrometer (STANDARD) |
| E1 | Electronic - NEMA 4, 4-20 mA, 115 Volt |
| E2 | Electronic - NEMA 4, 4-20 mA, 220 Volt |
| EA | Electronic - Ex Proof, 4-20 mA, 115 Volt |
| EB | Electronic - Ex Proof, 4-20 mA, 220 Volt |
| PN | Pneumatic, 3-15 psi, Direct Acting |

***When using control other than manual, derate pump capacity by 5% for plunger codes 07 and 10, and 10% for plunger code 17.**

Rupture Detection & Base

| Metallic Liquid Ends | |
|----------------------|--|
| Code | Description |
| NN | None (STANDARD) |
| NB | Base Only - Recommended with Flanges |
| C5 | Rupture Detection with Base & Gauge |
| SN | Rupture Detect with Base, Gauge, & NEMA 4 Switch |
| S7 | Rupture Detect with Base, Gauge, & Ex Proof Switch |
| DD | Double Diaphragm with Base |
| DP | Double Diaphragm with Base & Conductivity Probe |

Plastic Liquid Ends

| Code | Description |
|------|---|
| NB | Base Only (STANDARD) |
| DD | Double Diaphragm with Base |
| DP | Double Diaphragm with Base & Conductivity Probe |

***When using rupture detection or double diaphragm, derate pump capacity by 5%.**

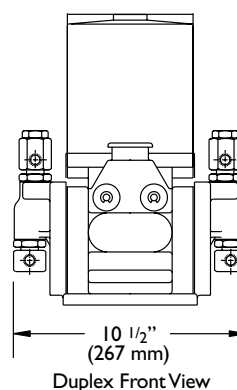
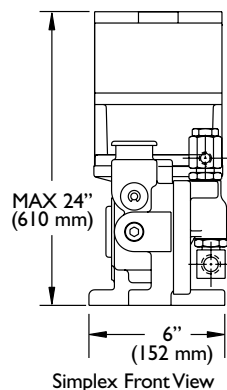
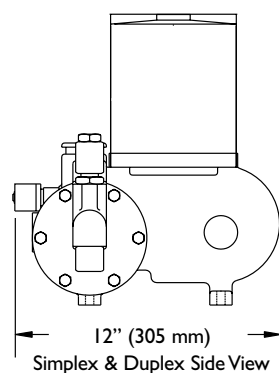
MATERIALS OF CONSTRUCTION

| LIQUID END MATERIAL | DIAPHRAGM | HEAD | VALVE BODY | SEATS | BALLS | SEALS | CONTOUR PLATE | CHECK VALVE SPRING |
|---------------------|-----------|-----------|------------|-----------|-----------|----------------|---------------|--------------------|
| Cast Iron | PTFE | Cast Iron | 316 ss | 316 ss | 316 ss | Viton & Buna N | 316 ss | 316 ss |
| 316 ss | | 316 ss | 316 ss | 316 ss | 316 ss | | 316 ss | 316 ss |
| PVC | | PVC | PVC | PVC | Ceramic | | PVC | N/A |
| PVDF | | PVDF | PVDF | PVDF | Ceramic | | PVDF | N/A |
| Alloy 20 | | Alloy 20 | Alloy 20 | Alloy 20 | Alloy 20 | | Alloy 20 | Alloy C |
| Alloy C22 | | Alloy C22 | Alloy C22 | Alloy C22 | Alloy C22 | | Alloy C22 | Alloy C |

PIPING CONNECTION SIZES

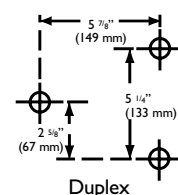
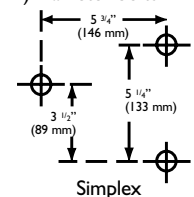
| DESCRIPTION | SUCTION | DISCHARGE |
|---|-----------------|-----------------|
| Metallic Liquid Ends (Codes 0, 1, 5, & 6) | 1/2" NPT Female | 1/4" NPT Female |
| Plastic Liquid Ends (Codes 2, 7) | 1/2" NPT Male | 1/2" NPT Male |

DIMENSIONS Approximate for envelope estimations. Certified prints are available



BOLT HOLE DIMENSIONS

Bolt holes accommodates 5/16" (8 mm) diameter bolts



PERFORMANCE MAXIMUM RANGE:

Simplex: 6.2 GPH (23.5 liter/hr)

Duplex: 12.4 GPH (47 liter/hr)

2000 psi (124 Bar)

GENERAL SPECIFICATIONS

Liquid End Type:

Hydraulically Actuated Disc Diaphragm

Capacity Adjustment:

Hydraulic Bypass from 0 to 100%

While Running or Stopped

Capacity Control:

Manual Micrometer (standard)

Electronic (optional)

Pneumatic (optional)

Variable Speed (optional)

Steady State Accuracy:

± 1.0 % over 10:1 Turndown

Internal Relief Valve:

Adjustable (Standard)

Number of Pumping Heads:

Simplex Standard, Duplex Optional

Liquid Temperature Range:

Metallic Heads: 20° to 200° F (-7° to 93° C)

Coating System:

Polyester TGIC Powdercoating

Warranty:

Three Year Standard

(details available separately)

Average Shipping Weight:

Simplex - 75 lbs (34 kg)

Duplex - 85 lbs (38.5 kg)

Stroke Length:

0.7" (17.8 mm)

Motor Requirements:

Simplex - 1/4 Horsepower (0.25 kW)

Duplex - 1/3 Horsepower (0.25kW)



mRoy H simplex with manual micrometer stroke adjustment.

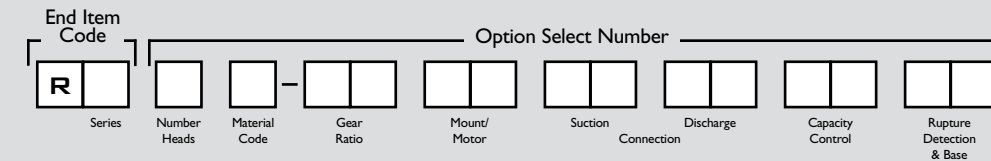
CAPACITY/PRESSURE TABLE

Capacities are based on simplex liquid end configurations

| SERIES | GEAR RATIO CODE | SPM@ 1725 RPM | CAPACITY WITH MOTOR OPERATING AT 1725 RPM | | | | | | | | | | | | | |
|---------------------------------------|-----------------|---------------|---|----------|------------------|----------|------------------|----------|------------------|----------|--------------------|----------|--------------------|----------|--------------------|----------|
| | | | 100 PSI (7 BAR) | | 500 PSI (34 BAR) | | 700 PSI (48 BAR) | | 925 PSI (64 BAR) | | 1500 PSI (103 BAR) | | 1800 PSI (124 BAR) | | 2000 PSI (140 BAR) | |
| | | | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR |
| mRoy T 3/8" (9.5 mm) Plunger | 77 | 23 | 0.46 | 1.7 | 0.41 | 1.6 | 0.37 | 1.4 | 0.35 | 1.3 | 0.28 | 1.1 | 0.24 | 0.9 | 0.21 | 0.8 |
| | 48 | 37 | 0.73 | 2.8 | 0.66 | 2.5 | 0.6 | 2.3 | 0.56 | 2.1 | 0.45 | 1.7 | 0.38 | 1.4 | 0.34 | 1.3 |
| | 24 | 73 | 1.45 | 5.5 | 1.31 | 5.0 | 1.18 | 4.5 | 1.11 | 4.2 | 0.89 | 3.4 | 0.75 | 2.8 | 0.68 | 2.6 |
| | 15 | 117 | 2.32 | 8.8 | 2.1 | 7.9 | 1.9 | 7.2 | 1.78 | 6.7 | 1.43 | 5.4 | 1.2 | 4.5 | 1.09 | 4.1 |
| | 10 | 185 | 3.67 | 13.9 | 3.32 | 12.6 | 3 | 11.4 | 2.81 | 10.6 | 2.26 | 8.6 | 2 | 7.6 | 1.72 | 6.5 |
| mRoy H 7/16" (11 mm) Plunger | 77 | 23 | 0.57 | 2.2 | 0.54 | 2.0 | 0.5 | 1.9 | 0.5 | 1.9 | 0.43 | 1.6 | 0.4 | 1.5 | | |
| | 48 | 37 | 0.8 | 3.0 | 0.7 | 2.6 | 0.6 | 2.3 | 0.6 | 2.3 | 0.6 | 2.3 | 0.6 | 2.3 | | |
| | 24 | 73 | 1.7 | 6.4 | 1.6 | 6.1 | 1.5 | 5.7 | 1.5 | 5.7 | 1.3 | 4.9 | 1.2 | 4.5 | | |
| | 15 | 117 | 2.8 | 10.6 | 2.6 | 9.8 | 2.5 | 9.5 | 2.4 | 9.1 | 2.1 | 7.9 | 2 | 7.6 | | |
| | 10 | 185 | 4.4 | 16.7 | 4.1 | 15.5 | 4 | 15.1 | 3.8 | 14.4 | 3.3 | 12.5 | 3.1 | 11.7 | | |
| mRoy J 5/8" (16 mm) Plunger | 48 | 37 | 1.8 | 6.8 | 1.5 | 5.7 | 1.4 | 5.3 | --- | --- | | | | | | |
| | 24 | 73 | 3.8 | 14.4 | 3.4 | 12.9 | 3.2 | 12.1 | 3.1 | 11.7 | | | | | | |
| | 15 | 117 | 6.2 | 23.5 | 5.6 | 21.2 | 5.3 | 20.1 | 5.1 | 19.3 | | | | | | |

MODEL CODE SELECTION

Additional options are available. Consult with your representative



Series

| Code | Description |
|------|---------------|
| T | 3/8" Plunger |
| H | 7/16" Plunger |
| J | 5/8" Plunger |

Number Heads

| Code | Description |
|------|-------------|
| 1 | Simplex |
| 2 | Duplex |

Material Code

| Code | Description |
|------|---------------------------------------|
| 0 | Cast Iron (not available on J series) |
| 1 | 316 SS |
| 5 | Alloy 20 |

Gear Ratio

| Code | SPM @ RPM | |
|------|-----------|--------|
| | 1725 | 1425 |
| 77 | 23 spm | 19 spm |
| 48 | 37 spm | 30 spm |
| 24 | 73 spm | 60 spm |
| 15 | 117 spm | 96 spm |

Motor/Motor Mount

Mount with Motor

| Code | Description |
|------|---|
| A1 | 1/4 HP TE 1/60/115 Close Coupled (STANDARD) |
| A8 | 1/4 HP TE 3/60/230/460 Close Coupled |

Motor Mount

| Code | Description |
|------|---------------------------------------|
| SR | Close Coupled NEMA 56C |
| SS | Close Coupled IEC Frame 71, B5 Flange |
| FR | API Flange NEMA 56C |
| FS | API Flange IEC Frame 71, B5 Flange |
| | (Other Available) |

Suction Connection

Metallic Heads

| Code | Description |
|------|---------------------------------|
| SE | NPT Female (STANDARD) |
| T1 | ANSI 150# RF 1/2" Threaded |
| T3 | ANSI 300# RF 1/2" Threaded |
| S1 | ANSI 150# RF 1/2" Socket Welded |
| S3 | ANSI 300# RF 1/2" Socket Welded |

Discharge Connection

Codes are same as suction connections

Capacity Control

| Code | Description |
|------|--|
| M2 | Manual Micrometer (STANDARD) |
| E1 | Electronic - NEMA 4, 4-20 mA, 115 Volt |
| E2 | Electronic - NEMA 4, 4-20 mA, 220 Volt |
| EA | Electronic - Ex Proof, 4-20 mA, 115 Volt |
| EB | Electronic - Ex Proof, 4-20 mA, 220 Volt |
| PN | Pneumatic, 3-15 psi, Direct Acting |

***When using control other than manual, derate pump capacity by 5%.**

Rupture Detection & Base

| Code | Description |
|------|--|
| NN | None (STANDARD) |
| NB | Base Only - Recommended with Flanges |
| C5 | Rupture Detection with Base & Gauge |
| SN | Rupture Detect with Base, Gauge, & NEMA 4 Switch |
| S7 | Rupture Detect with Base, Gauge, & Ex Proof Switch |

***When using rupture detection, derate pump capacity by 5%.**

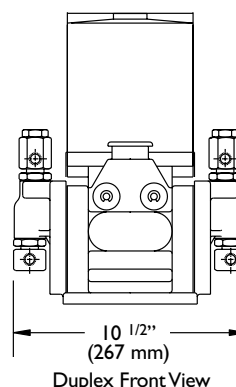
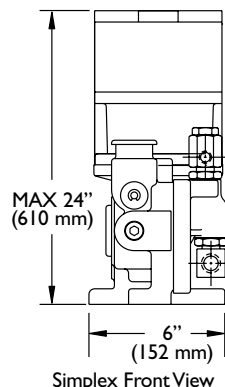
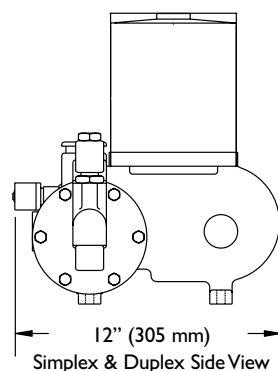
MATERIALS OF CONSTRUCTION

| LIQUID END MATERIAL | DIAPHRAGM | HEAD | VALVE BODY | SEATS | BALLS | SEALS | CONTOUR PLATE | CHECK VALVE SPRING |
|---------------------|-----------|-----------|------------|----------|----------|----------------|---------------|--------------------|
| Cast Iron | PTFE | Cast Iron | 316 ss | 316 ss | 316 ss | Viton & Buna N | 316 ss | 316 ss |
| 316 ss | | 316 ss | 316 ss | 316 ss | 316 ss | | 316 ss | 316 ss |
| Alloy 20 | | Alloy 20 | Alloy 20 | Alloy 20 | Alloy 20 | | Alloy 20 | Alloy C |

PIPING CONNECTION SIZES

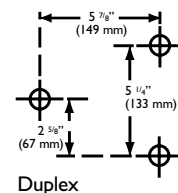
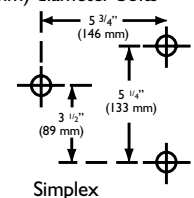
| DESCRIPTION | SUCTION | DISCHARGE |
|-------------------------------|-----------------|-----------------|
| All liquid ends (codes 0,1,5) | 1/2" NPT Female | 1/4" NPT Female |

DIMENSIONS Approximate for envelope estimations. Certified prints are available



BOLT HOLE DIMENSIONS

Bolt holes accommodates 5/16" (8 mm) diameter bolts



SERIES S, M, AND B

PERFORMANCE MAXIMUM RANGE:

Simplex: 87 GPH (329 liter/hr)
Duplex: 174 GPH (658 liter/hr)
1500 psi (103 Bar)

GENERAL SPECIFICATIONS

Liquid End Type:

Hydraulically Actuated Disc Diaphragm

Capacity Adjustment:

Hydraulic Bypass from 0 to 100%
While Running or Stopped

Capacity Control:

Manual Micrometer (standard)
Electronic (optional)
Pneumatic (optional)
Variable Speed (optional)

Steady State Accuracy:

± 1.0 % over 10:1 Turndown

Internal Relief Valve:

Adjustable (Standard)

Number of Pumping Heads:

Simplex Standard, Duplex Optional

Liquid Temperature Range:

Metallic Heads: 20° to 200° F (-7° to 93° C)
Plastic Heads: 20° to 145° F (-7° to 62° C)

Coating System:

Polyester TGIC Powdercoating

Warranty:

Three Year Standard (details available separately)

Average Shipping Weight:

Simplex - 95 lbs (43 kg)

Duplex - 165 lbs (75 kg)

Stroke Length:

1.5" (38 mm)

mRoy B simplex with metallic
liquid end and API motor mount.

CAPACITY/PRESSURE TABLE

Capacities are based on simplex liquid end configurations

| SERIES | GEAR RATIO CODE | SPM@ 1725 RPM | CAPACITY WITH MOTOR OPERATING AT 1725 RPM | | | | | | | | | | | |
|---|--|---------------|---|----------|------------------|----------|------------------|----------|------------------|----------|-------------------|----------|--------------------|----------|
| | | | PLASTIC & METALLIC | | | | | | METALLIC ONLY | | | | | |
| | | | 100 PSI (7 BAR) | | 150 PSI (10 BAR) | | 400 PSI (28 BAR) | | 600 PSI (41 BAR) | | 1000 PSI (67 BAR) | | 1500 PSI (103 BAR) | |
| | | | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR | GPH | LITER/HR |
| mRoy S 1 9/32" (15.1 mm) Plunger | 38 | 48 | 4.7 | 17.8 | 4.6 | 17.4 | 4.4 | 16.7 | 4.2 | 15.9 | 3.8 | 14.4 | 3.3 | 12.5 |
| | 25 | 72 | 7.0 | 26.5 | 6.9 | 26.1 | 6.7 | 25.4 | 6.5 | 24.6 | 6.1 | 23.1 | 5.6 | 21.2 |
| | 19 | 96 | 9.5 | 36 | 9.4 | 36 | 8.9 | 34 | 8.6 | 33 | 7.9 | 30 | 7.1 | 27 |
| | 12 | 144 | 13.3 | 50 | 13.2 | 50 | 12.8 | 48 | 12.5 | 47 | 12.0 | 45 | 11.4 | 43 |
| mRoy M 7/8" (22.2 mm) Plunger | 38 | 48 | 10 | 38 | 10 | 37 | 8 | 31 | 7 | 26 | 5 | 18 | | |
| | 25 | 72 | 16 | 61 | 16 | 59 | 14 | 54 | 13 | 50 | 11 | 42 | | |
| | 19 | 96 | 21 | 79 | 21 | 78 | 19 | 73 | 18 | 69 | 16 | 61 | | |
| | 12 | 144 | 30 | 115 | 30 | 114 | 29 | 109 | 28 | 106 | 26 | 97 | | |
| mRoy B 1 7/16" (36.5 mm) Plunger | 38 | 48 (a) | 27 | 102 | 26 | 98 | 21 | 79 | | | | | | |
| | 25 | 72 (a) | 42 | 159 | 41 | 155 | 36 | 136 | | | | | | |
| | 19 | 96 (b) | 57 | 216 | 56 | 212 | 51 | 193 | | | | | | |
| | 12 | 144 (b) | 85 | 322 | 84 | 318 | 79 | 299 | | | | | | |
| | Gear code 10 (below) available at 1425 RPM & below. Ratings are @ 1425 RPM | | | | | | | | | | | | | |
| | 10 | 148 | 87 | 329 | 86 | 326 | 80 | 303 | | | | | | |

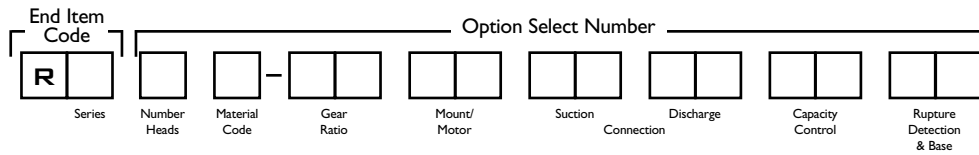
MINIMUM MOTOR HP (KW)

| | 3 PHASE | 1 PHASE |
|------------|------------------|------------------|
| Non-Shaded | 1/2 HP (0.37 KW) | 3/4 HP (0.55 KW) |
| Shaded | 3/4 HP (0.55 KW) | 1 HP (0.75 KW) |

(a). Duplex 1 7/16" plunger pumps gear codes 38 & 25 are limited to 350 psi (24 BAR).
(b). Duplex 1 7/16" plunger pumps gear codes 19, 12, & 10 are limited to 250 psi (17 BAR).

MODEL CODE SELECTION

Additional options are available --- Consult with your representative



Series

| Code | Description |
|------|--------------------------|
| S | 1 9/32" Plunger S Series |
| M | 7/8" Plunger M Series |
| B | 1 7/16" Plunger B Series |

Number Heads

| Code | Description |
|------|-------------|
| 1 | Simplex |
| 2 | Duplex |

Material Code

| Code | Description |
|------|---|
| 1 | 316 SS |
| 2 | PVC (not available on "S" series) |
| 5 | Alloy 20 |
| 7 | PVDF (Only available on "M" & "B" series) |

Gear Ratio

| Code | SPM @ RPM | |
|------|-----------|---------|
| | 1725 | 1425 |
| 38 | 48 spm | 40 spm |
| 25 | 72 spm | 60 spm |
| 19 | 96 spm | 80 spm |
| 12 | 144 spm | 120 spm |
| 10 | N/A | 148 spm |

Motor Mount

| Code | Description |
|------|--------------------------------------|
| FR | API Flange NEMA 56C (STANDARD) |
| F4 | API Flange Mount, NEMA 143TC/145TC |
| F8 | Flange Mount IEC Frame 80, B5 Flange |
| F9 | Flange Mount IEC Frame 90, B5 Flange |

Suction Connection

| Metallic Heads (Material Code 1 or 5) | |
|---------------------------------------|---------------------------------|
| Code | Description |
| SE | NPT Female (STANDARD) |
| T1 | ANSI 150# RF 1/2" Threaded |
| T3 | ANSI 300# RF 1/2" Threaded |
| S1 | ANSI 150# RF 1/2" Socket Welded |
| S3 | ANSI 300# RF 1/2" Socket Welded |
| Plastic Heads (Material Code 2 or 7) | |
| Code | Description |
| SE | NPT Male (STANDARD) |
| T1 | 150# 1/2" Threaded Flange |

Discharge Connection

Codes are same as suction connections

Capacity Control

| Code | Description |
|------|--|
| AL | Manual Micrometer (STANDARD) |
| E1 | Electronic - NEMA 4, 4-20 mA, 115 Volt |
| E2 | Electronic - NEMA 4, 4-20 mA, 220 Volt |
| EA | Electronic - Ex Proof, 4-20 mA, 115 Volt |
| EB | Electronic - Ex Proof, 4-20 mA, 220 Volt |
| PN | Pneumatic, 3-15 psi, Direct Acting |

***When using control other than manual, derate pump capacity by 10% series "M" & "B" only.**

Rupture Detection & Base

| All Liquid Ends | |
|---------------------------------------|--|
| Code | Description |
| NN | None (STANDARD) |
| NB | Base Only - Recommended with Flanges |
| Metallic Heads (Material Code 1 or 5) | |
| C5 | Rupture Detection with Base & Gauge |
| SN | Rupture Detect with Base, Gauge, & NEMA 4 Switch |
| S7 | Rupture Detect with Base, Gauge, & Ex Proof Switch |
| Plastic Heads (Material Code 2 or 7) | |
| DD | Double Diaphragm with Base |
| DP | Double Diaphragm with Base & Conductivity Probe |

***When using rupture detection or double diaphragm, derate pump capacity by 5%.**

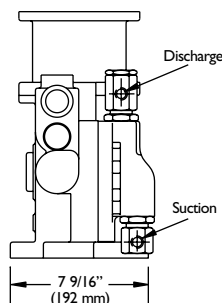
MATERIALS OF CONSTRUCTION

| LIQUID END MATERIAL | DIAPHRAGM | HEAD | VALVE BODY | SEATS | BALLS | SEALS | CONTOUR PLATE | CHECK VALVE SPRING |
|---------------------|-----------|----------|------------|----------|----------|----------------|---------------|--------------------|
| 316 ss | PTFE | 316 ss | 316 ss | 316 ss | 316 ss | Viton & Buna N | 316 ss | 316 ss |
| PVC | | PVC | PVC | PVC | Ceramic | | PVC | N/A |
| PVDF | | PVDF | PVDF | PVDF | Ceramic | | PVDF | N/A |
| Alloy 20 | | Alloy 20 | Alloy 20 | Alloy 20 | Alloy 20 | | Alloy 20 | Alloy C |

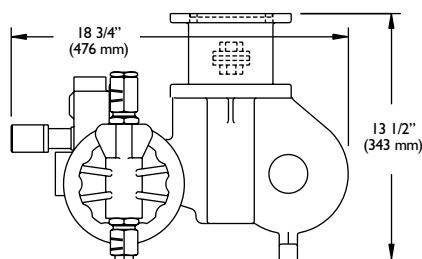
PIPING CONNECTION SIZES

| DESCRIPTION | S SERIES | | M & B SERIES | |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|
| | SUCTION | DISCHARGE | SUCTION | DISCHARGE |
| Metallic Liquid Ends (Codes 1, 5) | 1/2" NPT Female | 1/4" NPT Female | 1/2" NPT Female | 3/8" NPT Female |
| Plastic Liquid Ends (Codes 2, 7) | Not Available | | | |

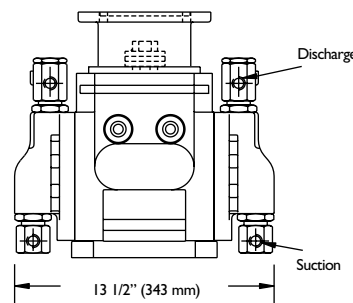
DIMENSIONS (LESS MOTOR) Approximate for envelope estimations. Certified prints are available



Simplex Front View



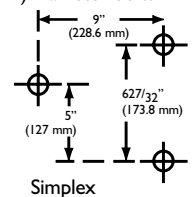
Simplex & Duplex Side View



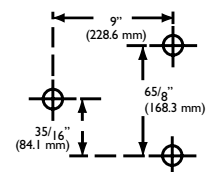
Duplex Front View

BOLT HOLE DIMENSIONS

Bolt holes accommodates 5/16" (8 mm) diameter bolts



Simplex



Duplex

PERFORMANCE MAXIMUM RANGE:

XT: 2.2 GPH (8.3 liter/hr)
XW: 9.2 GPH (34.8 liter/hr)
3000 psi (211 Bar)

GENERAL SPECIFICATIONS

Liquid End Type:

Hydraulically Actuated Disc Diaphragm

Capacity Adjustment:

Hydraulic Bypass from 0 to 100%
While Running or Stopped

Capacity Control:

Manual Micrometer (standard)
Electronic (optional)
Variable Speed (optional)

Steady State Accuracy:

± 1.0 % over 10:1 Turndown

Internal Relief Valve:

Adjustable (Standard)

Number of Pumping Heads:

Simplex Standard

Liquid Temperature Range:

Metallic Heads: 20° to 200° F (-7° to 93° C)

Coating System:

Polyester TGIC Powdercoating

Warranty:

Three Year Standard
(details available separately)

Average Shipping Weight:

XT - 75 lbs (34 kg)
XW - 95 lbs (43 kg)

Stroke Length:

XT - 0.7" (17.8 mm)
XW - 1.5" (38 mm)



mRoy XT

CAPACITY/PRESSURE TABLE

Capacities are based on simplex liquid end configurations

| SERIES | GEAR RATIO CODE | STROKES PER MINUTE | | METALLIC LIQUID ENDS | | | | | |
|--------------------------------------|-----------------|--------------------|-------|----------------------|-------|-----------------|-------|-----------------|-------|
| | | | | GPH AT 2000 PSI | | GPH AT 2500 PSI | | GPH AT 3000 PSI | |
| | | 60 HZ | 50 HZ | 60 HZ | 50 HZ | 60 HZ | 50 HZ | 60 HZ | 50 HZ |
| mRoy XT 1 1/32" (9 mm) Plunger | 77 | 23 | 19 | 0.27 | 0.23 | 0.26 | 0.21 | 0.24 | 0.20 |
| | 48 | 37 | 30 | 0.44 | 0.37 | 0.41 | 0.34 | 0.38 | 0.32 |
| | 24 | 73 | 60 | 0.87 | 0.73 | 0.80 | 0.67 | 0.74 | 0.62 |
| | 15 | 117 | 96 | 1.37 | 1.14 | 1.27 | 1.06 | 1.19 | 0.99 |
| | 10 | 185 | 152 | 2.2 | 1.8 | 2.1 | 1.7 | 1.9 | 1.6 |
| mRoy XW 1/2" (13 mm) Plunger | 38 | 48 | 40 | 2.8 | 2.3 | 2.6 | 2.2 | 2.5 | 2.1 |
| | 25 | 72 | 60 | 4.3 | 3.6 | 4.0 | 3.3 | 3.8 | 3.1 |
| | 19 | 96 | 80 | 5.8 | 4.8 | 5.4 | 4.5 | 5.0 | 4.2 |
| | 12 | 144 | 120 | 9.2 | 7.7 | 8.6 | 7.2 | 8.0 | 6.7 |
| Requires 1/2 HP minimum | | | | | | | | | |
| Requires 1 HP minimum | | | | | | | | | |
| Requires 1.5 HP minimum | | | | | | | | | |

MODEL CODE SELECTION

Additional options are available. Consult with your representative

| End Item Code | | Option Select Number | | | | | | | | |
|---------------|--|----------------------|---------------|------------|-------------|-----------------|------------------|--------------------------|-------------|----------|
| X | | 1 | 1 | | | | | | N | N |
| Series | | Number Heads | Material Code | Gear Ratio | Mount/Motor | Connection Code | Capacity Control | Rupture Detection & Base | Check Valve | |

| Series Code | Description |
|-------------|-------------|
| T | T Frame |
| W | W Frame |

Gear Ratio

| XT Code | SPM @ RPM | |
|---------|-----------|---------|
| | 1725 | 1425 |
| 77 | 23 spm | 19 spm |
| 48 | 37 spm | 30 spm |
| 24 | 73 spm | 60 spm |
| 15 | 117 spm | 96 spm |
| 10 | 185 spm | 152 spm |

| XW Code | SPM @ RPM | |
|---------|-----------|---------|
| | 1725 | 1425 |
| 38 | 47 spm | 39 spm |
| 25 | 72 spm | 60 spm |
| 19 | 95 spm | 79 spm |
| 12 | 144 spm | 120 spm |

Motor Mount

| Code | Description |
|--------------|---------------------------------------|
| FR (XT & XW) | API Flange NEMA 56C |
| F4 (XT & XW) | API Flange NEMA 143/145C |
| SR (XT) | Close Coupled NEMA 56C |
| SS (XT) | Close Coupled IEC Frame 71, B5 Flange |
| FS (XT) | API Flange IEC Frame 71, B5 Flange |
| MD (XT) | API Flange IEC Frame 80 B5 Flange |

Connection Code

| Code | Description |
|------|----------------------------------|
| NN | NPT Female (STANDARD) |
| 11 | ANSI 150# RF 1/2" Threaded |
| 33 | ANSI 300# RF 1/2" Threaded |
| AA | ANSI 150# RF 1/2" Socket Welded |
| BB | ANSI 300# RF 1/2" Socket Welded |
| EE | ANSI 1500# RF 1/2" Socket Welded |
| 66 | ANSI 600# RF 1/2" Threaded |

Capacity Control

| Code | Description |
|------|--|
| M1 | 316 SS Manual Micrometer (STANDARD) |
| E1 | Electronic - NEMA 4, 4-20 mA, 115 Volt |
| E2 | Electronic - NEMA 4, 4-20 mA, 220 Volt |
| EA | Electronic - Ex Proof, 4-20 mA, 115 Volt |
| EB | Electronic - Ex Proof, 4-20 mA, 220 Volt |

***When using control other than manual, derate pump capacity by 5%.**

Rupture Detection & Base

| Code | Description |
|------|--|
| NN | None (STANDARD) |
| C5 | Rupture Detection with Base & Gauge |
| SN | Rupture Detect with Base, Gauge, & NEMA 4 Switch |
| S7 | Rupture Detect with Base, Gauge, & Ex Proof Switch |

***When using rupture detection, derate pump capacity by 5%.**

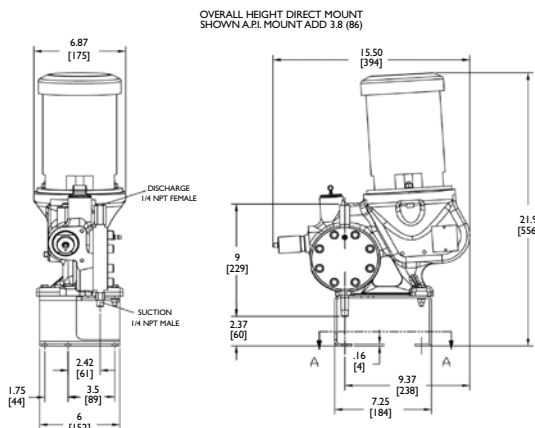
MATERIALS OF CONSTRUCTION

| LIQUID END MATERIAL | DIAPHRAGM | HEAD | VALVE BODY | SEATS | BALLS | SEALS | CONTOUR PLATE | CHECK VALVE SPRING |
|---------------------|-----------|--------|------------|--------|--------|----------------|---------------|--------------------|
| 316 ss | PTFE | 316 ss | 316 ss | 316 ss | 316 ss | Viton & Buna N | 316 ss | 316 ss |

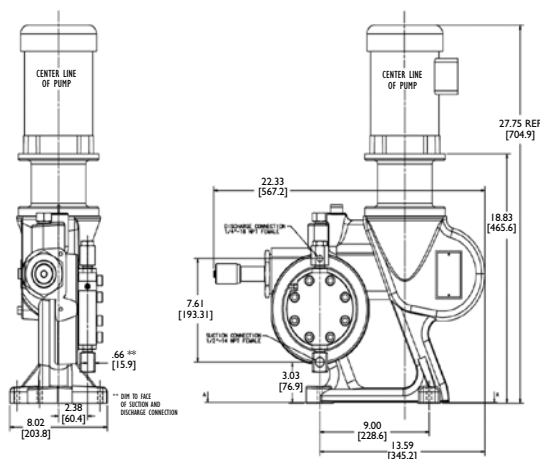
PIPING CONNECTION SIZES

| DESCRIPTION | SUCTION | DISCHARGE |
|-------------|-----------------|-----------------|
| XT | 1/4" NPT Male | 1/4" NPT Female |
| XW | 1/2" NPT Female | 1/4" NPT Female |

DIMENSIONS Approximate for envelope estimations. Certified prints are available



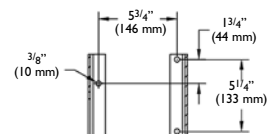
XT



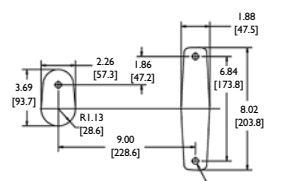
XW

BOLT HOLE DIMENSIONS

Bolt holes accommodates 5/16" (8 mm) diameter bolts



XT



XW

SERIES OPTIONS

ELECTRONIC CAPACITY CONTROL

The mRoy series Electronic Capacity Control enables the pump to accept capacity changes from a remote location, or automatically by process signal.

Features:

- 100% Duty Cycle
- Manual Handwheel
- No Clutches or Brakes
- Direct or Reverse Acting
- Superior Accuracy
- Split Signal Configurable
- Low Maintenance

GENERAL SPECIFICATIONS

Enclosure:

Class I, Div I, Groups B, C, D, T5

Class II, Div I, Groups E, F, G, T5

NEMA 4X

EEEx d IIB + H2T5 IP55

CE Ex II 3 GD

Input Power:

1 phase, 50/60 Hz, 115 VAC

1 phase, 50/60 Hz, 220 VAC

Control Signal:

4-20 mA (250 ohm load) configurable for split range or reverse acting

Position Output Signal:

4-20 mA or 1-5 VDC

Accuracy:

± 0.5%

Duty Cycle:

100%

Temperature:

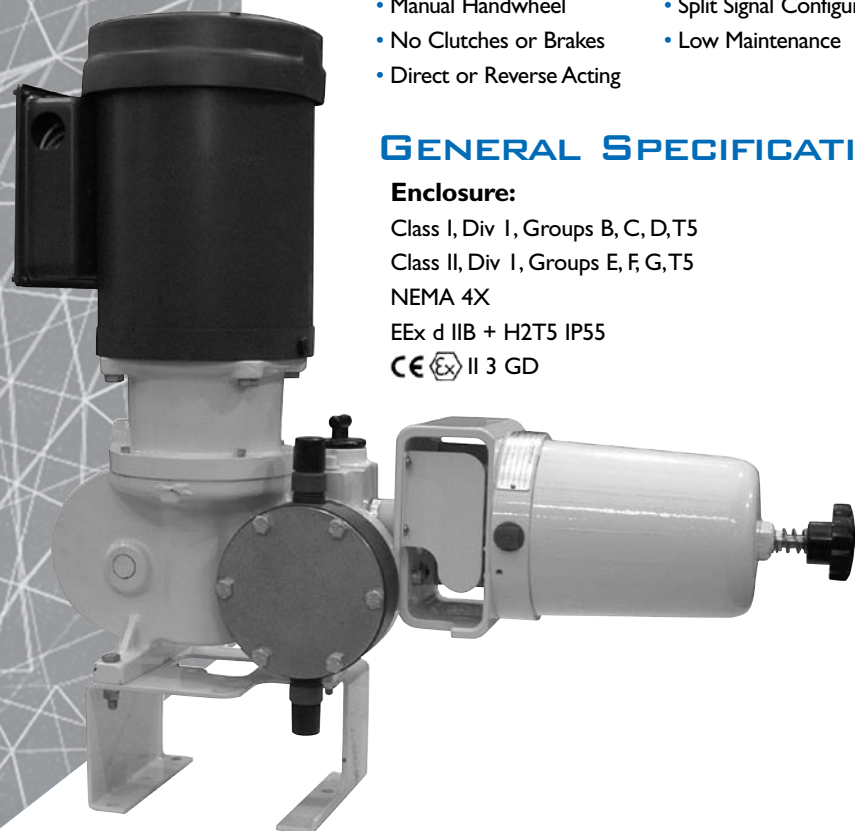
-40° to 120° F (-40° to 50° C)

Materials:

Cover & Housing -- Aluminum TGIC Powder Coating

Handwheel Shaft & Stem Adapter - Stainless Steel

Handwheel - Plastic



mRoy A Simplex with plastic liquid end, API coupled motor flange and electronic capacity control options.

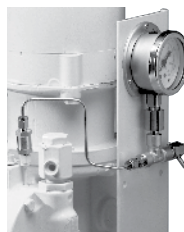
DIAPHRAGM RUPTURE DETECTION

General Information

The mRoy's diaphragm liquid ends are, by design, leakproof and durable. In some applications, however, added assurance is desired to protect the pump internals from extremely hostile chemicals, or protect the process from potential contamination by hydraulic fluids.

Operation

Depending upon the pump selected there are two similar designs consisting of two diaphragms separated by a hollow intermediate ring or a series of special shims. The two diaphragms are pushed tightly together and are separated only on their outer edge. Because there is no fluid and very little air between the two diaphragms, the area between the two diaphragms does not experience pressure from the process unless one of the diaphragms fails. Should a diaphragm fail, a pressure gauge provides visual indication or an optional pressure switch provides a contact closure for alarm and/or system shutdown.



Specifications

Materials: Diaphragms -- PTFE
Intermediate ring or shims & tubing -- Stainless Steel

Flow Rate: Reduced standard flow rate by 5%

Pressure: Based on Maximum pump rating

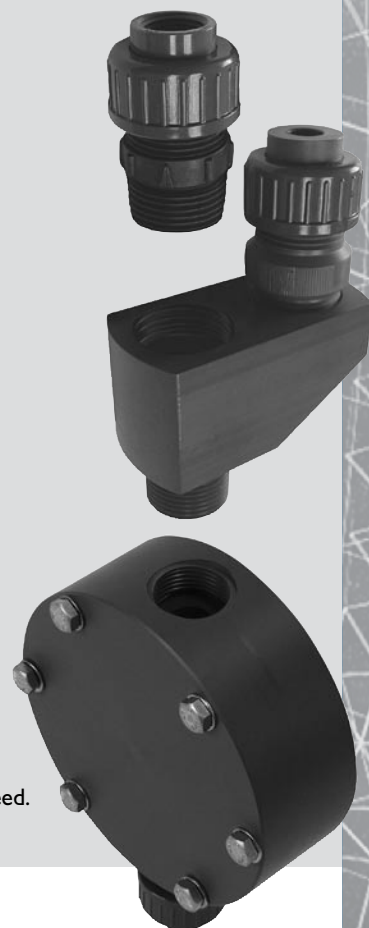
Availability: Metallic liquids ends - mRoy A, J, M, B, XT & XW

DEGASSING

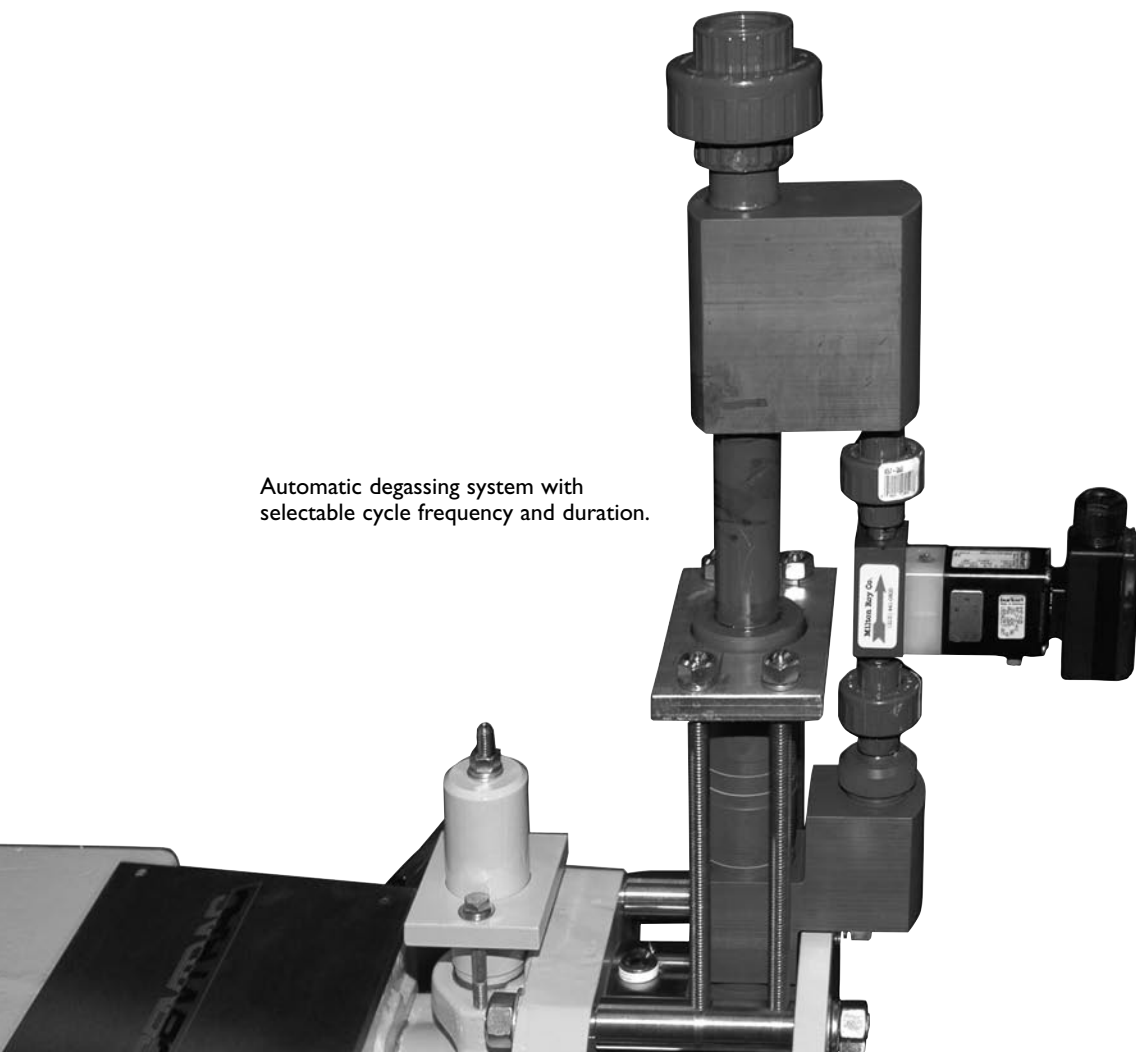
Chemical decomposition causes certain chemicals to exhibit off-gassing within the process. Gas can accumulate within the piping system and also within the liquid end of the pump and cause vapor lock. This situation is common, especially for pumps used in intermittent service. Sodium Hypochlorite is the most common chemical with this characteristic.

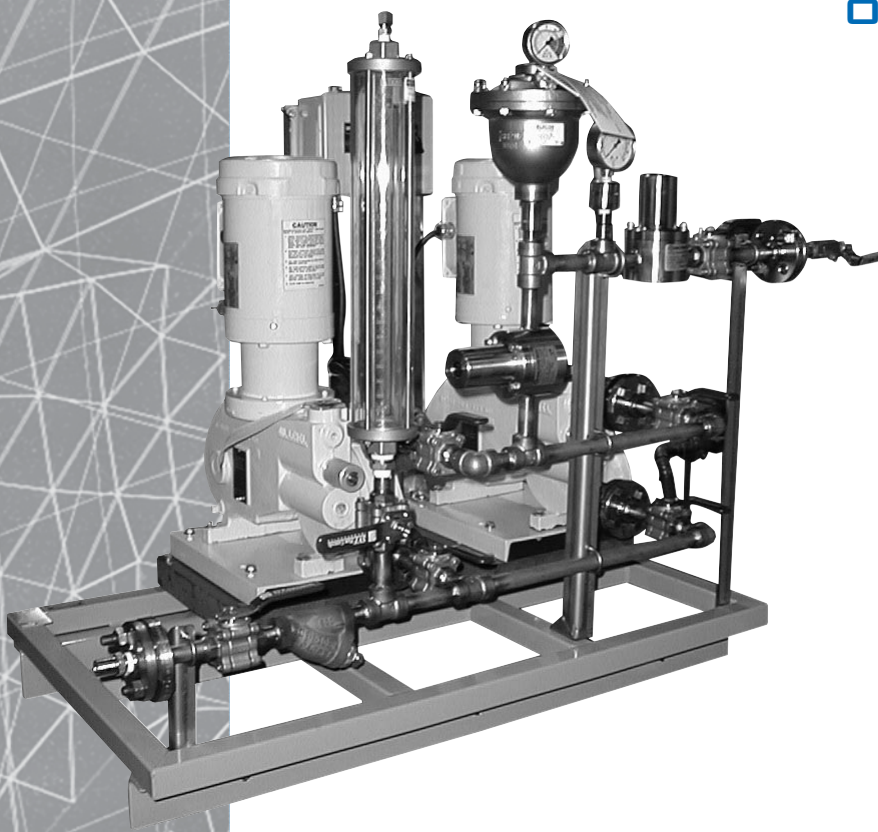
Milton Roy offers several solutions based on your application. The options range from a simple bleed valve to facilitate start-up to automatic degassing systems that can be custom configured to your process.

Degassing valve option featuring continuous bleed.



Automatic degassing system with selectable cycle frequency and duration.





OTHER OPTIONS

- Integral Duplex
- Double Diaphragm
- Pneumatic Capacity Control
- Remote Liquid Ends
- Liquid end venting (outgassing liquids)
- Heating/cooling liquid end jackets
- Slurry or Viscous Fluid Options
- Numerous Motor Choices
- Pipe connection options
- Special Modifications

ACCESSORIES



Back Pressure Valves

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



Safety Valves

Protect pump and piping from overpressure.

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.



NOTES:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.[illegible]



MILTON ROY

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