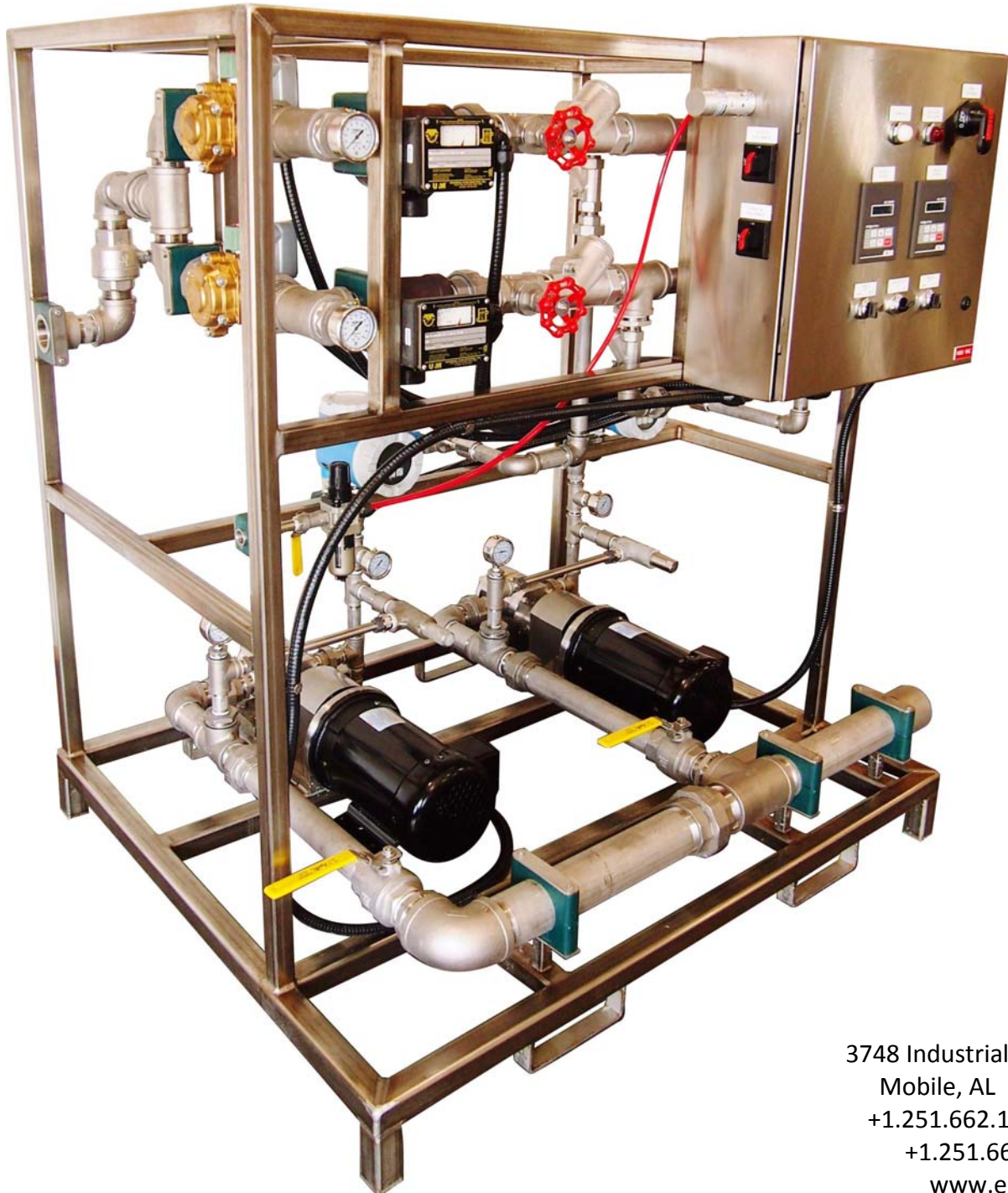


# **EGM<sup>LLC</sup>**

PROCESS & CHEMICAL FEED EQUIPMENT

Oil & Gas • Power Generation • Chemical Processing • Mining • Pulp and Paper • Water Resources • Pharmaceutical

## ***GEAR PUMP SYSTEMS***



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At EGM, we have designed our series of Gear Pump Feed Units to be compact, rugged, and reliable. As a standard offering, Roper helical gear pumps are supplied as the feed pump of choice. Alternately, we can equip gear pump feed units with Liquiflo pumps or end-user specified brands to meet plant, mill or site standards. Available in simplex, duplex, triplex or customized multi-plex configurations, the EGM series of Gear Pump feed systems can be wired to meet your specific power requirements.



EGM—"ELF" LOW FLOW SIMPLEX GEAR PUMP SYSTEM



**GEAR PUMP FEED SYSTEM STANDARD COMPONENTS**

<u>Manufacturer</u>	<u>Description</u>
Baldor	Washdown or Inverter Duty Motor
Endress+Hauser	Magnetic Flowmeters
Roper	"ROC" or Series Pumps
Roper	Close Couple Bracket
Universal	Variable Area Flowmeters (water dilution)
Koflo	Static Mixer
ACTech	M Series AC Drive
DPro	Pressure Relief Valves
WIKA / Winters	Pressure Gauges
Cash	Regulators / Back Pressure Valves

\*\* Components subject to change pending customer specification and / or availability

**LOW FLOW SYSTEMS**

For low flow rate applications requiring precise metering, EGM *ELF* Systems are an ideal fit.

These small, but powerful units are purpose built to meter and dose a wide variety of liquid chemicals in low flow (maximum 4 gallon / minute) applications. Feed rates can be controlled locally using the variable frequency drive or remotely using a 4-20mA control signal.

Simplex, duplex and triplex configurations are available. All systems incorporate flow control on the chemical via a magnetic flow meter and P&I loop control. An optional water loop is available for all configurations when post dilution or carrier water is required. Post dilution flow is monitored via an optional variable area vane style flow monitor and includes low flow indication on the duplex & triplex systems.

Power configurations can also be changed for worldwide use.

If you need a small job done right... *put an ELF to work!*

**ELF Series Benefits**

- Properly sized plumbing specifically designed for low flow applications
- Quality gear pumps installed to provide accurate metering and prolonged motor life
- Available water dilution loops (both manual and automated) to deliver accurate feed with increased injection velocities.



**G**ear pump systems built at EGM incorporate reliability, durability and flexibility into a cost effective package with a small footprint. As a standard, we use **Roper** gear pumps as they have proven to be extremely reliable and have delivered the type of performance we demand. As with all EGM units, however, the modular design and piping layout allows for retro-fit with a pump design of our client’s choosing to conform with site specifications or standards. Additionally, dilution loops, closed loop control, multiple drive options and DCS communication tie-in is available. To discuss your specific needs, simply give us a call.

### HIGH VISCOSITY SYSTEMS

**F**or applications where highly viscous chemicals are to be used, EGM has developed modified versions of the gear pumping systems to offer clients reliable performance. The control sequence on these specialized systems can utilize either P&I loop control or remote DCS monitoring for proper chemical metering. These systems incorporate a water dilution loop that is equipped as a standard offering that is useful to alter dosing solids or simply improve injection velocities. Additionally, suction piping is oversized to promote good flooded suction to the pump to prevent flow swings and equipment damage.

The High Viscosity Gear Pump Units are “ruggedized” versions of EGM Low Flow “ELF” series systems, modified for specific use with fluids that demonstrated greater pumping resistance.

To inquire about your specific application requirements, call EGM for personalized support and equipment configuration assistance.



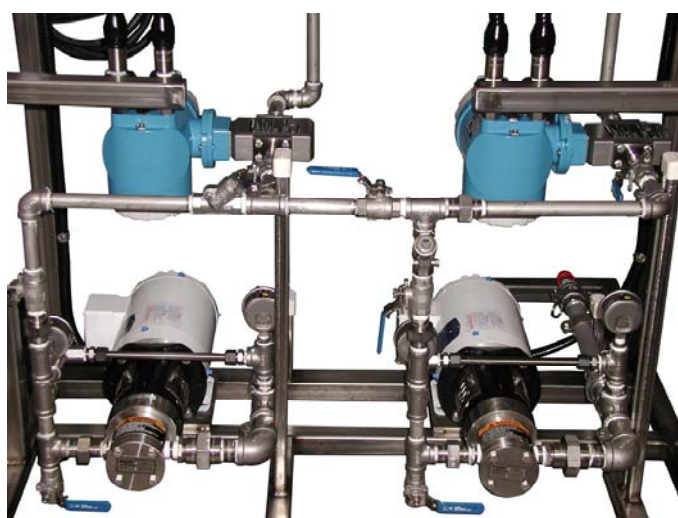
**SIMPLEX GEAR PUMPING UNIT**

### DUPLEX FEED SYSTEMS

**A**ll duplex systems are built to the most rigid standards to withstand the harshest operating conditions. The systems incorporate a modular construction design allowing for ease of maintenance and are user friendly. All systems utilize both P&I loop control or remote DCS monitoring to ensure accurate chemical metering. Systems can be individually designed to meet any specific electrical configuration or mill requirement.

Duplex configurations are available as primary / back-up or primary / primary which impacts the number of flow meters provided and piping layout. Additionally, clients can choose to add one or two water dilution loops to provide in-line product dilution on the downstream side of the feed pumps.

Customization available upon request.



## HIGH FLOW SYSTEMS

**F**or applications where gear pumps represent an economical choice for reaching desired flow rates above five gallons per minute, the EGM “EHF” series of feed systems offer high flow capabilities utilizing the proven performance of Roper ROC series gear pumps. Fitted with oversized plumbing to minimize discharge back-pressure and large diameter suction piping to promote continuous flooded suction, the EHF Gear Pump systems perform well in a number of different configurations and flow ranges.

**N**eed feed system accessories? EGM can supply suction and discharge hose along with all required fittings to compliment your Gear Pump Feed System!



### ROPER GEAR PUMP CAPACITIES:

Roper X2.5	Maximum 0.42 gallons per minute
Roper X5	Maximum 0.85 gallons per minute
Roper ROC 01	Maximum 2.6 gallons per minute
Roper ROC 02	Maximum 3.6 gallons per minute
Roper ROC 03	Maximum 5.6 gallons per minute
Roper ROC 07	Maximum 12.5 gallons per minute
Roper ROC 12	Maximum 21.5 gallons per minute

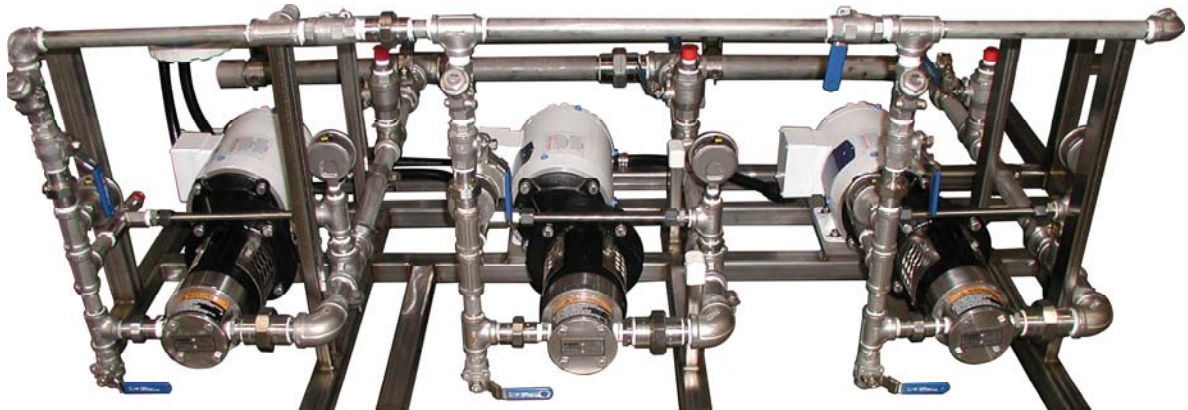
\*\* Pump capacity is dependant on fluid viscosity and operating pressure



## TRIPLEX FEED SYSTEMS

**T**he EGM Triplex pumping system can serve as either a three point metering system, or a duplex unit with “swing spare”. The modular design allows for using different **Roper “ROC”** gear pump heads without modifying the piping.

This configuration allows for utilizing multiple pump sizes for mixed feed rate installations with flexibility to upgrade pump capacity in the future.



## GENERAL SPECIFICATIONS

### Configuration:

Simplex: Primary Configuration  
 Duplex: Primary / Backup Configuration  
 Triplex: Primary / Primary / Backup Configuration  
 Optional: Customer Specified Configuration

### Service:

**LOW FLOW SYSTEMS (less than 5 gpm):**  
 Simplex: 120VAC, 1Ø, 60Hz Service  
 Duplex: 120VAC, 1Ø, 60Hz Service  
 Triplex: 480VAC, 3Ø, 60Hz Service  
 Optional: 575 VAC, includes CSA certification  
 Optional: Customer Specified Power Service  
**HIGH FLOW SYSTEMS (greater than 5 gpm):**  
 Simplex: 480VAC, 3Ø, 60Hz Service  
 Duplex: 480VAC, 3Ø, 60Hz Service  
 Triplex: 480VAC, 3Ø, 60Hz Service  
 Optional: 575 VAC, includes CSA certification  
 Optional: Customer Specified Power Service

### Motors:

**ALL SYSTEMS:**  
 Wash Down Duty or Inverter Duty Motors

### Electrical Enclosure:

**ALL SYSTEMS:**  
 NEMA 4X, 316SS or FRP, Conduit to Electrical Components

### Process Connections:

**LOW FLOW SYSTEMS:**  
 Inlet 1" NPT (simplex) or Inlet 1.5" (duplex & triplex) / Outlet 0.5" NPT  
**HIGH VISCOSITY SYSTEMS:**  
 Inlet 2" CamLock / Outlet 1" NPT  
**HIGH FLOW SYSTEMS:**  
 Inlet 2" NPT (simplex) or Inlet 3" (duplex & triplex) / Outlet 1" NPT

### Chemical Flow Control:

**ALL SYSTEMS:**  
 Manual Control (VFD) or Closed Loop Control (PID)  
 Capable: DCS Control (4-20mA Signal / VFD / Magnetic Flowmeter)  
 Chemical Flow Indication:

**ALL SYSTEMS:**  
 Automated (Magnetic Flowmeter)

### Dilution Water Flow Control:

**LOW FLOW AND HIGH FLOW SYSTEMS:**  
 Optional: Manual (Flow Control Globe Valve w/ Vane Flow Meter)  
 Optional: Dilution Water Flow Indication:  
 ALL: Manual (Variable Area Vane Style Flow Monitor)

### System Alarms:

Dilution Water Low Flow Indication  
 Duplex: Variable Area Vane Style Flow Monitor (*INDICATION ONLY*)  
 Triplex: Variable Area Vane Style Flow Monitor (*INDICATION ONLY*)

## STRUCTURAL DETAILS:

### System Pressure:

**ALL SYSTEMS:**  
 200 PSIG Maximum

### Materials of Construction:

**ALL SYSTEMS:**  
 316 SS, Carbon Steel, Viton, Brass, PVC  
 Optional: Materials of construction for chemical compatibility

### Base & Frame:

**LOW FLOW AND HIGH VISCOSITY SYSTEMS:**  
 1.5", 201 SS, 7 gauge Square Tubing Configured for Fork Lift  
**HIGH FLOW SYSTEMS:**  
 2", 201 SS, 7 gauge Square Tubing Configured for Fork Lift

### Weights and Dimensions:

**SIMPLEX LOW FLOW:**  
 30" (L) x 21" (W) x 32" (H) - 250 lbs  
**SIMPLEX HIGH FLOW SYSTEMS:**  
 42" (L) x 21" (W) x 32" (H) - 275 lbs  
**HIGH VISCOSITY SYSTEMS and SIMPLEX WITH DILUTION:**  
 42" (L) x 21" (W) x 32" (H) - 275 lbs  
**DUPLEX SYSTEMS:**  
 45" (L) x 41" (W) x 66 1/4" (H) - 500 lbs  
**TRIPLEX SYSTEMS:**  
 60" (L) x 50" (W) x 66" (H) - 600 lbs  
 \*NOTE—Dimensions and weights subject to change pending pump size / plumbing and option selections

## WHEN TO USE A GEAR PUMP

**G**ear pumps are designed with close internal tolerances, providing a reliable means for metering liquids requiring accurate flow control. These designs are ideal candidates for metering liquids such as polymers, fuels, and expensive additives.

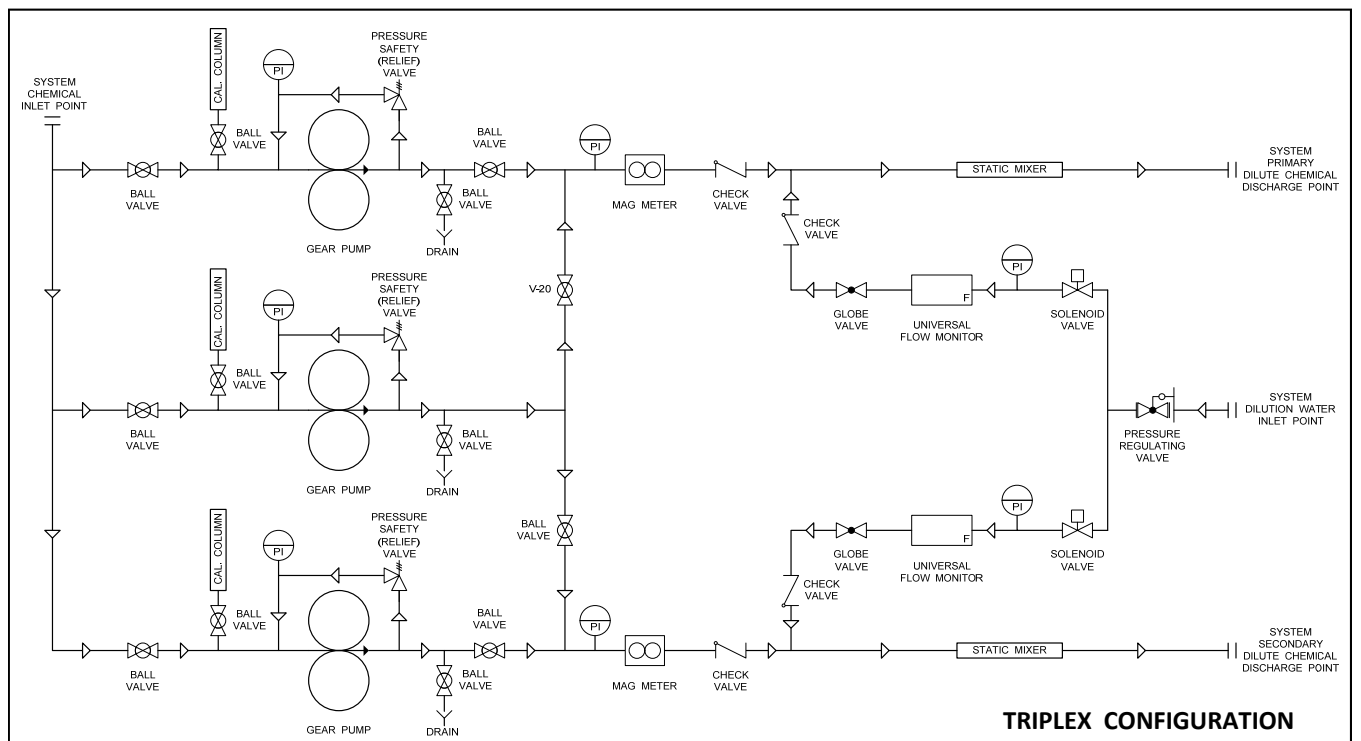
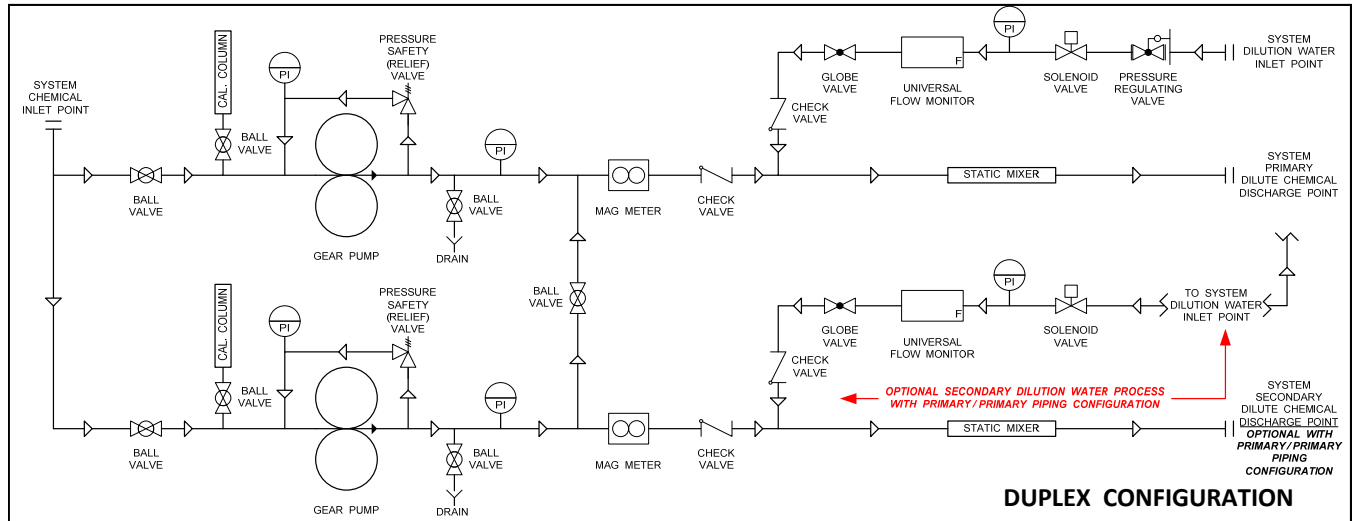
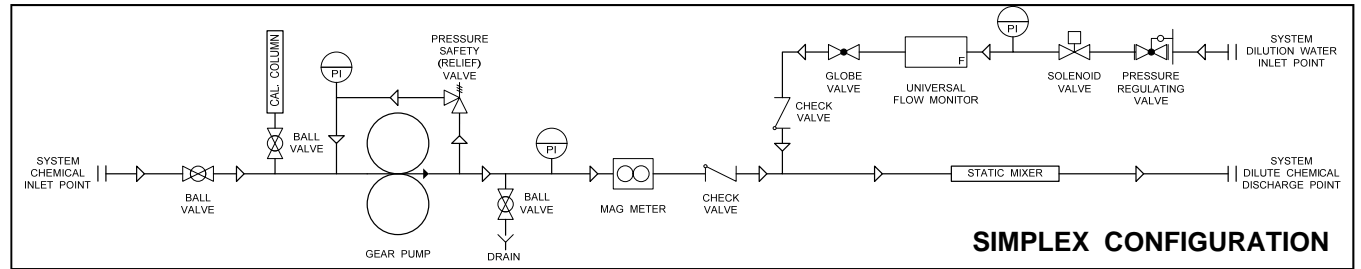
### SUITABLE APPLICATIONS:

- **Industrial and mobile applications**
- **Fuel and Lubrication**
- **Metering**
- **Mixing and Blending**
- **Hydraulic Applications**
- **Precise Dose Control**
- **Low Volume Transfers**
- **Light or Medium Duty**

## \*Built Smart...

*EGM Gear Pumps systems are built with union connections on both the inlet and outlet sides of the pumps, to allow for easy, logical and quick disassembly for access to parts and components for maintenance.*

THEORIES OF OPERATION



# EGM GEAR PUMP FEED UNIT MODEL CODE EXAMPLE



ELF- DGP- 2- ROC03- 480- 2D5- X

**Series:**

ELF = Low Flow Feed System (less than 5 gpm)  
 EHF = High Flow Feed System (greater than 5 gpm)

**Configuration:**

SGP = Simplex Gear Pump Unit  
 DGP = Duplex Gear Pump Unit  
 TGP = Triplex Gear Pump Unit  
 #GP = Where # is number of Pumps on Unit

**Capacity:**

Indicates Designed System Capacity per Application Details  
 600 = 600 cc/min  
 1200 = 1200 cc/min  
 2400 = 2400 cc/min  
 2 = 2 gallons / min  
 3 = 3 gallons / min  
 4 = 4 gallons / min  
 9 = 9 gallons / min  
 15 = 15 gallons / min  
 For High Viscosity Applications, "HV" is added to designed flow  
 Example—2HV = 2 gallons per minute for high viscosity fluids

**Pump Code:**

Designates specific pump used  
 Example —ROC03 = Roper ROC 03 Series

**Power:**

480 = 480 VAC  
 575 = CAS Certified 575 VAC

**Option 1:**

D5 = 5 gallon / minute manual dilution loop  
 2D5 = twin 5 gallon / minute manual dilution loops  
 3D5 = triplet 5 gallon / minute manual dilution loops  
 AD5 = 5 gallon / minute automated dilution loop  
 2AD5 = twin 5 gallon / minute automated dilution loops  
 3AD5 = triplet 5 gallon / minute automated dilution loops  
 D10 = 10 gallon / minute manual dilution loop  
 2D10 = twin 10 gallon / minute manual dilution loops  
 3D10 = triplet 10 gallon / minute manual dilution loops  
 AD10 = 10 gallon / minute automated dilution loop  
 2AD10 = twin 10 gallon / minute automated dilution loops  
 3AD10 = triplet 10 gallon / minute automated dilution loops  
 D30 = 30 gallon / minute manual dilution loop  
 2D30 = twin 30 gallon / minute manual dilution loops  
 3D30 = triplet 30 gallon / minute manual dilution loops  
 AD30 = 30 gallon / minute automated dilution loop  
 2AD30 = twin 30 gallon / minute automated dilution loops  
 3AD30 = triplet 30 gallon / minute automated dilution loops

**Option 2:**

X = None  
 GB# = Gearbox with "# gear reduction ratio  
 Q = Custom



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