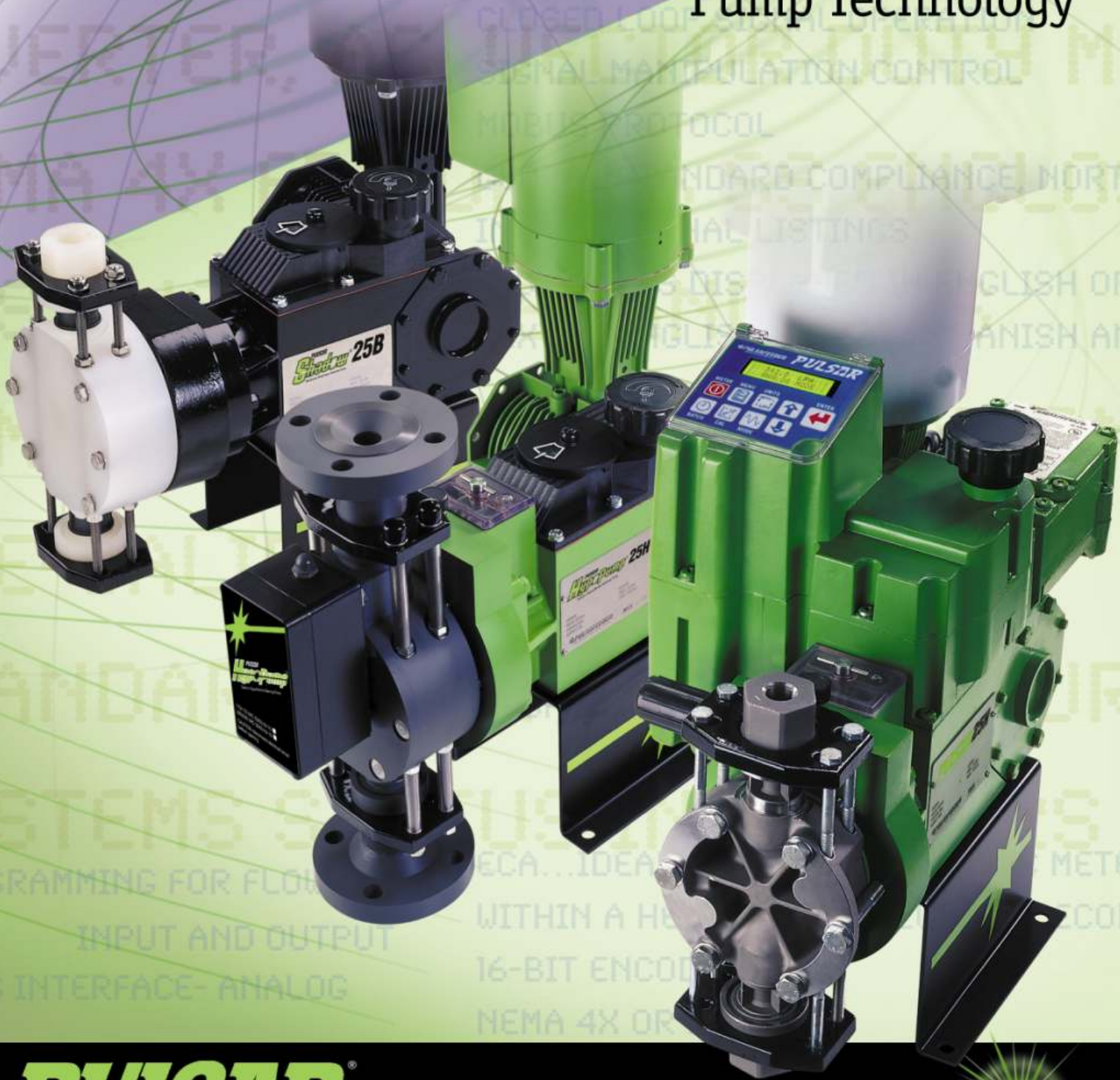


PULSAFEEDER

The World Leader In
**Precision
Metering
Pump Technology**



PULSAR PUMPS

- * PRECISION
- * MODULAR
- * UNIVERSAL
- * RELIABLE

Pulsafeeder Technology

Pulsafeeder represents the chemical metering pump and control technology standard by which all other manufacturers in the industry gauge their performance. Pulsafeeder's high precision metering pump and controller technology has provided successful installation solutions for over sixty years. Pulsafeeder delivers world class and leading edge chemical feed accuracy with the ability to monitor and regulate pump system operation while continuously striving for *global customer satisfaction*.



Pulsar® Metering Pumps

Pulsar® Metering Pumps and Controls represent a generational leap in chemical feed technology combining optimum features and maximum benefits in an effort to simplify the customer pump and control selection process. Pulsar® Pump Products feature a competitive cost structure and deliver long-term value and outstanding performance.

Industrial Construction

Pulsar® Series Pump products are rugged and durable; designed for extreme environments including outdoor services, elevated process and atmospheric heat, and aggressive installations including salt spray, humidity, and direct sunlight.

Chemical Feed Accuracy

Pulsar® products offer maximum precision and accuracy for chemical feed performance unparalleled in the industry.

Application Expertise

Pulsafeeder fluid metering and system control experience provides the ultimate engineering expertise and application support to evaluate and customize process solutions.

Pulsar® Pump Product Scope

- Flows from 0.49 gph (1.86 lph) to 170 gph (643 lph)
- Pressures to 3190 psig (220 bar)
- Temperatures up to 230°F (110°C)
- Viscosities to and beyond 3000 cPs
- Accuracies to +/- 0.5% of Set Point
- Turndown Capacity Adjustable to 100:1

Materials of Construction

- 316ss
- Alloy 20
- Hastelloy C
- Hastelloy B
- Titanium
- Monel
- PVC
- PVDF

Typical Applications

- | | | |
|------------|------------------------|---------------------------------|
| • Bleaches | • Plating Solutions | • Heavy Water |
| • Caustics | • Lime Slurries | • Liquid Petroleum Gas Products |
| • Acids | • Molten Metals | • And, many more |
| • Solvents | • Dyes | |
| • Polymers | • Chemical Fertilizers | |

Markets

- | | | |
|---|--|--|
|  Chemical |  Paints & Dyes |  Power & Energy |
|  Food & Beverage |  Petroleum |  Water Treatment |
|  Petrochemical |  Pharmaceutical |  General Industries |
|  Mining |  Pulp & Paper |  Agriculture |

World-Class Hydraulic Diaphragm Metering Pumps

PULSAR

Hydraulic Diaphragm Metering Pump

Pulsar® is the global standard in the Hydraulically Actuated Diaphragm Metering Pump Industry. The Pulsar® brand products are designed with complete modularity and a multitude of standard features that makes selection simple, customization standard, commissioning intuitive, operation reliable, and maintenance negligible.

PATENTED HYDRAULIC DIAGNOSTICS

Immediate visual intelligence of pump and system performance including hydraulic operation, system pressure, oil level, and diaphragm integrity



BALANCED DIAPHRAGM DESIGN

One-piece composite PTFE diaphragm with integral o-ring superior performance and extended diaphragm life

FOUR BOLT TIE BAR SYSTEM

Resists connection forces and piping strain while promoting leak-free performance

THREE COMPONENT CHECK VALVE SYSTEM

High performance ball valve system features wide clearance flow path with controlled rise and four-point guide, assuring optimum life and high performance accuracy

EXTERNAL HYDRAULIC BYPASS

Valve operation is instantly verified through the hydraulic diagnostics window as fluid bypassing indicates hydraulic setting has been exceeded



HYDRAULIC PERFORMANCE VALVE

Provides resiliency to system upsets and accommodates available NPSH as low as 3 psi

PATENTED PUSH TO PRIME

Simple external spring-loaded button allows hydraulic fluid priming and purging of entrained air in preparation for start-up or during operation

CORROSION RESISTANT HARDWARE

Standard stainless steel reagent head bolts and tie bar studs and nuts and powder coated tie bars for maximum atmospheric corrosion resistance

RUGGED POWER TRANSMISSION

Worm is hardened and polished steel; worm gear is constructed of Dynalloy® Bronze; forged one-piece eccentric shaft design is non-axially loaded

TOTALLY NON-VENTED GEAR BOX DESIGN

Prevents condensation and ingress of water and other contaminants, providing exceptional durability and protection from the most extreme environments

UNIVERSAL DESIGN

Available with NPT, BSPT, ANSI flange, and DIN flange connections, speed and stroke controllers for a multitude of voltages and currents, and NEMA and IEC motor adapters for global installations



- PRECISION
- MODULAR
- UNIVERSAL
- RELIABLE

STANDARD LIQUID END MATERIALS OF CONSTRUCTION

Const. Ref.	Reagent Head	Flat Diaphragm	Check Valves			Cap & Guide
			Ball	Seat	Gasket	
316SS	316SS	TFE FACED	316SS	316SS	PTFE	316SS
H ₂ SO ₄	316SS	TFE FACED	HCO	020SS	PTFE	316SS
20SS	020SS	TFE FACED	HCO	020SS	PTFE	020
PVC	PVC	TFE FACED	ALA	PVC	PTFE	PVC
PVDF	PVDF	TFE FACED	HCO	PVDF	PTFE	PVDF

ALA = Alumina Ceramic HCO = Alloy C H₂SO₄ = Sulfuric Acid Construction 020 = Alloy 20

PULSAR® PUMP

CAPACITY RANGE		MAXIMUM RATED PRESSURE	
60 HZ GPH (LPH)	50 HZ GPH (LPH)	PSIG	BAR
0.49 - 116.4 (1.86 - 440.6)	0.41 - 119.8 (1.54- 453.4)	3190.0	220.0
This pump is available with flat composite, solid PTFE, and leak detection diaphragms.			



These and other process end connections are available.

Innovative Hydraulic Diaphragm Metering Pump for Vapor Handling

PULSAR **HypoPump**

Innovative Hydraulic Diaphragm Metering Pump for Vapor Handling

The Pulsar HypoPump[®] is specifically designed to meter the full range of concentrations of Sodium Hypochlorite and its vapors. The patent pending design allows pressurized process fluid to cyclically flush liquid and vapors through the pump's discharge check system while maintaining high performance and chemical dosing accuracy.

GAS HANDLING DESIGN

Eliminates gas buildup that normally causes true metering pumps to bind up or lose prime

COMPACT AND SEALLESS BY DESIGN

Design is integral to the pump head and eliminates the need for expensive, unsafe, and unreliable bypass systems that are prone to clogging while promoting clean and leak free performance

SELF PRIMING BY DESIGN

Enhances self priming capabilities since the pump system automatically evacuates entrained air in the pump head and piping system

EXCLUSIVE PATENT PENDING DESIGN

Generational leap in fluid and gas handling metering pump technology—Provides years of uninterrupted service without frequent parts replacements such as tubing, rotors, or stators

MAXIMUM INTERCHANGEABILITY

Components are interchangeable with the Pulsar[®] Hydraulic Diaphragm pump, which minimizes inventory

CORROSION RESISTANT HARDWARE

Standard stainless steel reagent head bolts and tie bar studs and nuts and powder coated tie bars for maximum atmospheric corrosion resistance

FOUR BOLT TIE BAR SYSTEM

Resists connection forces and piping strain while promoting leak-free performance

THREE COMPONENT CHECK VALVE SYSTEM

High performance ball valve system features wide clearance flow path with controlled rise and four-point guide, assuring optimum life and high performance accuracy

UNIVERSAL DESIGN

Available with NPT, BSPT, ANSI flange, and DIN flange connections, speed and stroke controllers for a multitude of voltages and currents, and NEMA and IEC motor adapters for global installations

WIDE VARIETY OF SYSTEM CONTROL OPTIONS

Available with standard manual stroke adjustment as well as all exclusive Pulsar[®] speed and stroke control options

FIELD PROVEN PERFORMANCE

Preferred solution in a wide variety of successful installations in municipal and industrial water and wastewater applications



- PRECISION
- MODULAR
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- RELIABLE



STANDARD LIQUID END MATERIALS OF CONSTRUCTION

Const. Ref.	Reagent Head	Flat Diaphragm	Check Valves			Cap & Guide
			Ball	Seat	Gasket	
PVC	PVC	TFE FACED	ALA	PVC	PTFE	PVC
PVDF	PVDF	TFE FACED	ALA	PVDF	PTFE	PVDF

ALA = Alumina Ceramic

PULSAR HYPOPUMP[®]

CAPACITY RANGE		MAXIMUM RATED PRESSURE	
60 HZ GPH (LPH)	50 HZ GPH (LPH)	PSIG	BAR
0.64 - 106.9 (2.6 - 404.7)	0.57 - 110.0 (2.14 - 416.4)	150.0	10.4

This pump is available with flat composite and solid PTFE diaphragms.



PVC Threaded PVDF Flanged PVDF Threaded

These and other process end connections are available.

Mechanically Actuated Diaphragm Metering Pumps



Mechanically Actuated Diaphragm Metering Pumps

The Pulsar Shadow[®] Mechanically Actuated Diaphragm Metering Pump is designed to shadow the paradigm in the metering pump industry: the Pulsar[®] Hydraulically Actuated Diaphragm Metering Pump. The Pulsar Shadow[®] features a rugged and reliable construction designed for simplicity of operation and maintenance. The Pulsar Shadow[®] sets a new standard in the mechanically actuated metering pump arena.

FOUR BOLT TIE BAR SYSTEM

Resists connection forces and piping strain while promoting leak-free performance

THREE COMPONENT CHECK VALVE SYSTEM

High performance ball valves feature wide clearance flow path with controlled rise and four-point guide, assuring optimum life and performance



SUPERIOR DIAPHRAGMS

Sealless Composite PTFE diaphragms designed for minimum of two years uninterrupted performance

CORROSION RESISTANT HARDWARE

Standard stainless steel reagent head bolts and tie bar studs and nuts and powder coated tie bars for maximum atmospheric corrosion resistance

RUGGED POWER TRANSMISSION

Worm is hardened and polished steel; worm gear is constructed of Dynalloy[®] Bronze; forged one-piece eccentric shaft design is non-axially loaded



TOTALLY NON-VENTED GEAR BOX DESIGN

Prevents condensation and ingress of water and other contaminants, providing exceptional durability and protection from the most extreme environments

UNIVERSAL DESIGN

Available with NPT, BSPT, ANSI flange, and DIN flange connections, speed and stroke controllers for a multitude of voltages and currents, and NEMA and IEC motor adapters for global installations

WIDE VARIETY OF SYSTEM CONTROL OPTIONS

Available with standard manual stroke adjustment as well as all exclusive Pulsar[®] speed and stroke control options

FIELD PROVEN DESIGN

Years of installation experience and established proven performance



- PRECISION
- MODULAR
- UNIVERSAL
- RELIABLE

STANDARD LIQUID END MATERIALS OF CONSTRUCTION

Const. Ref.	Reagent Head	Flat Diaphragm	Check Valves			Cap & Guide
			Ball	Seat	Gasket	
316SS	316SS	TFE FACED	316SS	316SS	PTFE	316SS
H ₂ SO ₄	316SS	TFE FACED	HCO	020SS	PTFE	316SS
20SS	020SS	TFE FACED	HCO	020SS	PTFE	020
PVC	PVC	TFE FACED	ALA	PVC	PTFE	PVC
PVDF	PVDF	TFE FACED	HCO	PVDF	PTFE	PVDF

ALA = Alumina Ceramic HCO = Alloy C H₂SO₄ = Sulfuric Acid Construction 020 = Alloy 20

PULSAR SHADOW[®] PUMP

CAPACITY RANGE		MAXIMUM RATED PRESSURE	
60 HZ GPH (LPH)	50 HZ GPH (LPH)	PSIG	BAR
2.7 - 165.0 (10.0 - 625.0)	2.2 - 170.0 (8.3 - 643.0)	305.0	21.0

This pump is available with flat composite and leak detection diaphragms.



316 Stainless Steel Flanged PVC Threaded PVDF Flanged

These and other process end connections are available.

Pulsar® Pump and System Controls

Pulsar® pumps are available with multiple levels of the most intelligent and exclusive controllers in the industry to meet your specific requirements. Microprocessor controlled DLC, DLCM, and ECA provide system diagnostics and recovery unparalleled by any other manufacturer. System health monitoring such as PULSAlarm® leak detection systems responds to diaphragm rupture. Combining PULSAlarm® leak detection with exclusive Pulsar® digital logic controllers provides the industry's only system monitoring and automatic reaction to process variations and system fluctuations.

Microprocessor Based Control Technology—Digital Logic Controllers

DLCM—Digital Logic Controller and Motor Speed and Piston Stroke Control



- Up to 50:1 turndown within 0.5% accuracy on setpoint
- Exclusive On-Board Flow and Signal Calibration
- Local and Remote motor start and stop control
- Standard NEMA 4X, IP66 Class I, Division II, Groups C&D
- Optional NEMA 7, EEx d IIB T6 Explosion Proof and Flameproof Design
- PULSAlarm® leak detection system interface
- Monitors and reacts to process variations such as loss of power or signal
- Modular design is easy to retrofit to an existing manually controlled pump
- DLCM controls stroke length and stroking speed
- PULSAnet® MODBUS network communication protocol
- Daisy chain up to 32 units

DLC—Digital Logic Controller Automatic Piston Stroke Control



ECA—Electronic Control Actuator

Simple automatic stroke length controller

- Standard NEMA 4X, EEMAC 4X, IP66
- Optional NEMA 7, EEx d IIB T6 Explosion Proof and Flameproof Design
- Simple 4-20mA analog input and output calibration
- Reacts to signal and power loss



Cruise Control®—Variable Speed Drives Pre-engineered control panels incorporating most commonly used functions in pump applications

- Modular design and field expandable
- Choice of DC-SCR, AC Inverter, or AC Vector control
- Color coded terminals for easy wiring
- Interfaces with all Pulsar® controllers and PULSAlarm® leak detection systems
- Designed to ANSI, NFPA, and UL Standards
- NEMA 4X design in FRP or 316SS enclosures
- Analog input signal controls pump stroking speed
- Custom engineered designs available to meet specific requirements



Manual Stroke Adjustment

Large, easy grip knob and resolution delivers +/- 0.5% control accuracy. Pulsar, automatic stroke lock mechanism with mechanical disengagement maintains desired stroke length setting.

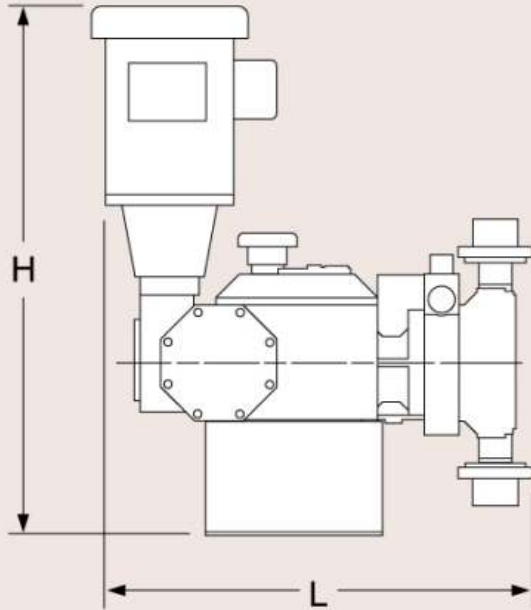


Systems Monitoring

Pulsafeeder offers a multitude of technologies used for monitoring the health of your chemical metering system including PULSAlarm® pressurized or vacuum based diaphragm leak detection, PULSAnet® SCADA communication technology, and exclusive speed and stroke control.

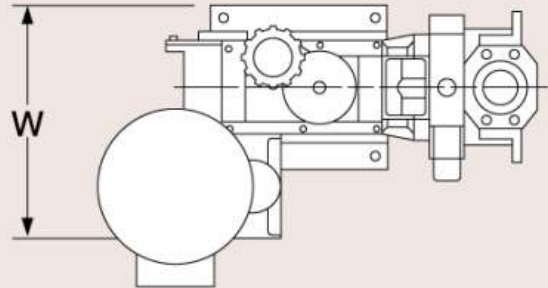
PULSA★**NET**

Dimensions

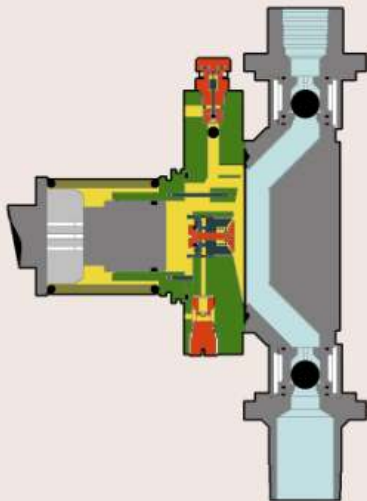


Dimensions	Model 25		Model 55	
	Inch	MM	Inch	MM
Length	22.3	566.4	22.9	581.7
Width	10.6	269.3	10.6	269.3
Height	32.1	816.2	32.1	816.2
Approx Ship. Wt.	125lbs.	56.7kg	140lbs	63.5kg

Note: Dimensions represent basic configuration only.
Not to be used for construction.



Diaphragm Metering Pump Technology

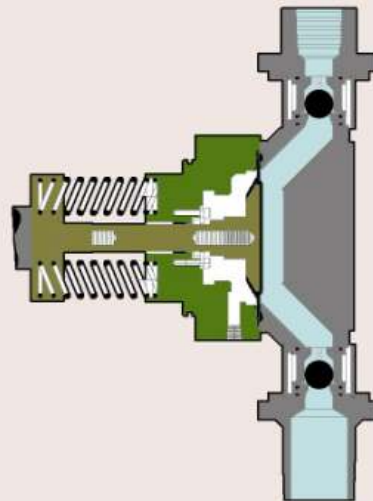


Hydraulically Actuated Diaphragm Technology

Diaphragm is hydraulically balanced between process fluid and hydraulic fluid. The piston reciprocates through a precisely sized cylinder resulting in positive displacement of controlled volume of hydraulic fluid. This action causes the diaphragm to reciprocate and precisely dose process fluid through the suction and discharge valve mechanism.

Benefits:

- Hydraulically balanced diaphragm does no work
- Pump and diaphragm life is maximized
- Optimum accuracy and performance
- Maximized pressure capabilities



Mechanically Actuated Diaphragm Technology

Diaphragm is mechanically attached to the reciprocating piston. The reciprocating diaphragm displaces controlled volume of process fluid through the suction and discharge valve mechanism.

Benefits:

- Eliminates hydraulic fluid
- Simplifies commissioning and maintenance
- Minimizes power requirements
- Economical



Engineered Solutions

Pulsafeeder is high accuracy metering pump products, controls, systems, and services from 0.30 gpd (1.20 lpd) to 57 gpm (13 m³/hr) and pressures as high as 5550 psig (383 bar). Pulsafeeder delivers fluid transfer technology through capacities of 275 gpm (62 m³/hr), total dynamic heads to 365 ft (111 m), and viscosities to 1,000,000 ssu.



Duplex Systems

Pulsar[®] Series Pumps' modular design allows simple duplex service through manual operation or through various automatic control technologies.



Multiplex Systems

Pulsar[®] Series modular concept simplifies multiple dosing heads to be operated by one driver. Optional microprocessor based control features allow up to 32 units to be daisy chained and operated by one master unit, PLC, or DCS.



Chemical Feed Systems

Pulsafeeder's Engineered Systems Network is capable of providing global and regional engineering services, design concepts, and packaged equipment to meet specific systems requirements.



Global Service and Support

Pulsafeeder's global support includes highly qualified technical support and factory-trained representatives for start-up services, training, and factory and field engineering services.



Chlorination

Pulsafeeder is recognized as the world's premier diaphragm metering pump equipment used for chlorinating and disinfecting our global supply of potable drinking and process water and wastewater.



Chloramination

The recommended design includes a duplex PVDF Pulsar Pump driven by one motor and one DLCM to appropriately dose highly accurate ratios of Sodium Hypochlorite and Ammonia for Chloramination of potable water.

A World of Pumping Technology at Your Control



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