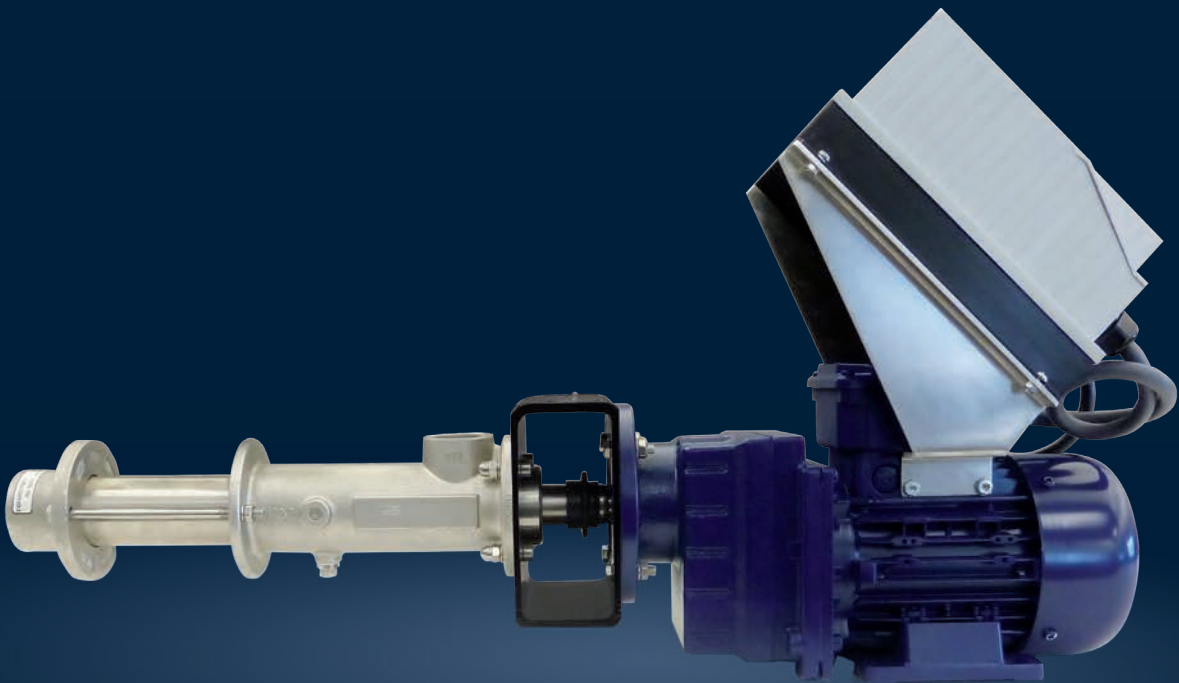


SEEPEX.

PRODUCT GROUP D AND W

INTELLIGENT METERING PUMP



Make every drop count. The latest innovation from SEEPEX is precise, programmable and pulsation-free. Our valveless flow control PCP provides superb metering for all your blending needs. **ALL THINGS FLOW**

INTELLIGENT METERING PUMP

SEEPEX Intelligent Metering Pumps (IMP) integrate MD and BW progressive cavity pumps with a gear reducer and a programmable vector drive. The drive used on IMPs integrates a single reduction gear box, a four-pole, TEFC, inverter-rated electric motor and a “vector” type, variable frequency drive in a NEMA 4 enclosure. External or specially fabricated control enclosures are not required for dead head or dry-running protection instruments. Installation is no more complicated than a typical home stereo.

The unit operates from standard 1x120 VAC, 20 amp circuits with a grounded plug. The drive comes with a programmable chip. If the drive fails, the chip can be transferred to a new drive. Chips can also be easily duplicated. The drive has a digital HMI scalable readout for numerous engineering parameters and some programming functions. A 4-20 mA process signal, external high pressure and low-flow or run-dry protection can be connected via a terminal strip inside the control box.

CONVEYING CAPACITY

0.08 GPH - 5 GPM

PRESSURE

UP TO 360 PSI

SPEED RANGE

20-600 RPM

OPTIONS

**VERTICAL &
HORIZONTAL
MOUNTING**

MEMORY CHIP

Each unit has comes with a standard Electronic Programming Module (EPM) memory chip. Parameters can be preconfigured onto this chip. This makes replacement of a drive simple, quick, and accurate. Just plug the EPM chip from your old drive into the new one and you are good to go. A drive reset to factory default or customer settings takes seconds with the EPM. When the EPM equipped drive is used on a line containing multiple drives with the identical setup, it takes just minutes to program the entire line.

Without the need to reconfigure every parameter, it will save you valuable time.



The drive can also be correlated to a signal to inject chemicals for disinfection, flocculation or multiple component blending. It can also follow a signal from load cells on tanks or capacitance probes in volumetric fillers to maintain a set level. The “vector” capability of the drive has an internal sensor-less feedback system for superior but economical speed control and stability. The gear box

provides the unit with strong torque capability across the entire speed range. Unlike DC units, this unit has excellent speed control even in areas, like agricultural or oil production fields, where input line voltages vary. There is also no concern for contamination or maintenance caused by the wearing of commutator brushes. For more information consult your local SEEPEX representative.

OPERATOR PAD

Each unit has a keypad on the controller lid equipped with membrane operator elements for H-O-A selection, manual speed control, display of pump speed/RPM or flow, fault indication and the ability to change many factory settings. In the automatic mode it functions to set the maximum speed/flow rate as a scaling device. When using the optional follower programming, it will allow the ratio between the 4-20 mA input and the pump speed to be varied.

Fault Indication

An LED display provides alphanumeric codes to aid in determining the cause of a fault trip, which can come from an overload condition or an inhibit signal from one of the external instruments for sensing dry-running, high pressure, or low-flow.

Field Modification of Parameters

The keypad allows some factory set parameters to be adjusted in the field. You can use the “M” key and UP or DOWN arrows to achieve customized settings. Please refer to the manual for detailed instructions.

TERMINAL STRIP

Accessories can easily be connected to the drive via the control terminals on the terminal strip.

Digital Inputs

- Dedicated Start/Stop
- (3) Programmable

Analog Inputs

- 0 - 10 VDC
- 4 - 20 mA

Digital Outputs

- Form “A” Relay
- Open Collector

Power Supplies

- 10 VDC Potentiometer Ref
- 12 VDC, 20 mA Digital Input Ref or OVDC Common
- 12 VDC, 50 mA Supply Common

Analog Outputs

- 0 - 10 VDC/2 - 10 VDC



DIMENSIONS

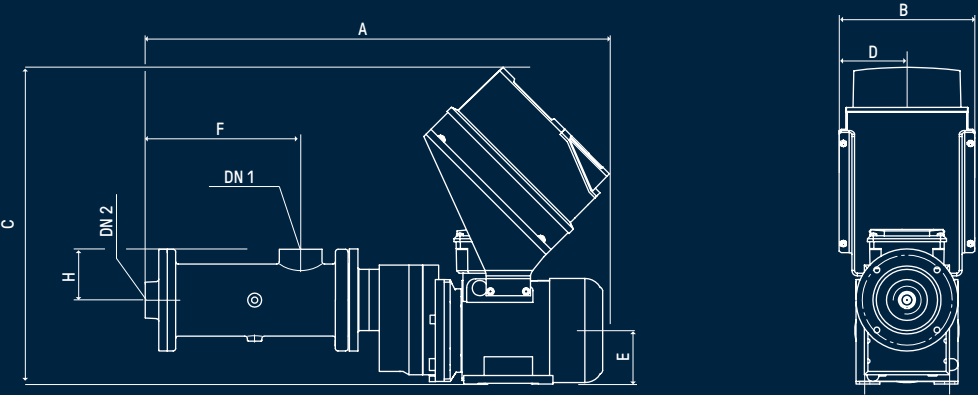
Model										Max GPH*		Max. DP	Motor	Power	Amps
	A	B	C	D	E	F	H	DN1	DN2	@ 0 psi	@ Max. DP	psi	HP	fx VAC	
0005-24	25 7⁄16"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	8 5⁄16"	1 1⁄16"	1" NPT	½" NPT	2.27	2.19	360	½	1x120	10
0015-24	25 7⁄16"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	8 5⁄16"	1 1⁄16"	1" NPT	½" NPT	5.76	5.52	360	½	1x120	10
003-12	25 7⁄16"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	8 5⁄16"	1 1⁄16"	1" NPT	½" NPT	12.79	12.13	180	½	1x120	10
003-24	28 7⁄16"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	11 13⁄32"	1 1⁄16"	1" NPT	½" NPT	13.98	13.45	360	½	1x120	10
006-12	26 7⁄8"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	9 5⁄8"	1 1⁄16"	1" NPT	½" NPT	26.7	25.27	180	½	1x120	10
006-24	31 3⁄16"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	13 13⁄32"	1 1⁄16"	1" NPT	½" NPT	27.76	26.7	360	½	1x120	10
012-12	27 7⁄8"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	10 13⁄32"	1 1⁄16"	1" NPT	½" NPT	57.1	51.3	180	½	1x120	10
012-24	32 23⁄32"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	15 35⁄64"	1 1⁄16"	1" NPT	½" NPT	53.9	52.3	360	½	1x120	10
025-6L	27 7⁄8"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	10 13⁄32"	1 1⁄16"	1" NPT	½" NPT	152	147	90	½	1x120	10
025-12T	27 7⁄8"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	10 13⁄32"	1 1⁄16"	1" NPT	½" NPT	144	137	180	½	1x120	10
05-6LT	27 7⁄8"	7 7⁄16"	11 ¼"	3 3⁄8"	3 ½"	10 13⁄32"	1 1⁄16"	1" NPT	½" NPT	281	267	90	½	1x120	10
BW1	22 15⁄16"	7 15⁄32"	11 7⁄32"	3 3⁄16"	3 5⁄32"	7 7⁄32"	2 3⁄8"	1" NPT	1" NPT	102	72.2	90	½	1x120	10
BW2	22 15⁄16"	7 15⁄32"	11 7⁄32"	3 3⁄16"	3 5⁄32"	7 7⁄32"	2 3⁄8"	1" NPT	1" NPT	216	153	60	½	1x120	10

*H2O at 20 °C or 68 °F
Note: Viscosity may affect performance. Consult your local seepex agent for correct pump selection.

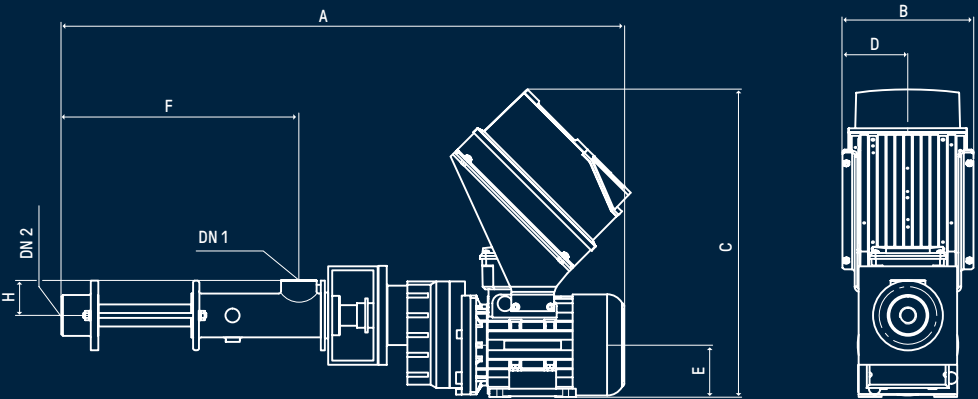


PUMPS

BW – Intelligent Metering Pump



MD – Intelligent Metering Pump



APPLICATIONS

FILLER FEEDING



Volumetric fillers such as those used in the food industry to fill bottles, cans or cups have tanks above the piston actuated filling devices. The levels in the tank need to be maintained and are usually measured with capacitance probes that output a 4-20 mA signal. With the optional follower program the SEEPEX integrated “vector” drive can be used to maintain a proper level in the supply tank, without requiring a separate controller or electrical panel.

NAOCL WATER DISINFECTION



Sodium Hypochlorite (NaOCl) can be reliably injected into the discharge of a vertical turbine pump in a water well to increase the chlorine contact time for more positive disinfection. The SEEPEX integrated “vector” drive can follow the signal from a flow meter on the discharge of the centrifugal pump to maintain the proper dosage in ppm of Cl. Because NaOCl is prone to degrade in certain conditions or time, it may be needed to change the dosage rate of the sterilizing liquid. This can be done by turning the potentiometer, while in automatic operation, to change the feed ratio. This saves consumption of these expensive chemicals as well as degradation of pipes and controls in contact with the chlorinated water. It eliminates the need to over-dose to maintain sterility or to purchase expensive chlorine concentration instruments. Those who do use these devices can still use the SEEPEX integrated “vector” drive in its optional PI program.

LIQUID INJECTION INTO EXTRUDERS



Extruders are commonly used to form a variety of shapes in the manufacturing of breakfast cereals, dry pet food and certain snack products. The SEEPEX integrated “vector” drive can be used in conjunction with a PLC to inject liquids or dyes and change the color of the product continuously, without a system shutdown. They can also be used to inject vitamins, oils, syrups or other liquids. With the optional follower program, the drive can be set to track the speed of the extruder if a hall effect or “roto-pulser” is affixed to the extruder drive or motor. The normal 5 VDC signal can be conditioned through a digital to analog converter and send a 4-20 mA signal that can be read by the drive. Again the pump drive will follow the extruder drive and using the 10-turn potentiometer on the SEEPEX integrated “vector” drive can vary the injection ratio.

THE PI ALTERNATIVE PROGRAM

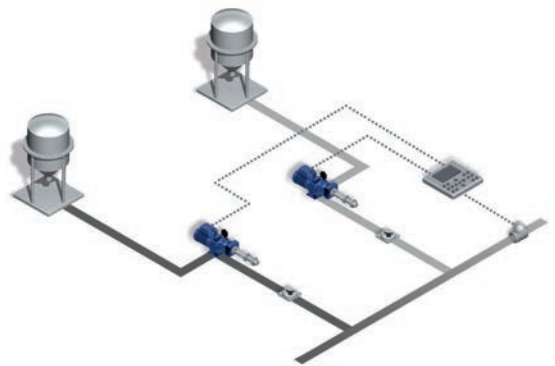
This is also the driver to maintain a set-point. It could be the fluid level in a tank, density, brightness or, in this case, the ppm of Cl in water. The “hand” mode is for manual control of pump. The pump runs at speed set by 10-turn pot or the HMI when switched to “hand” position of selector switch. The “off” position of selector switch shuts the pump off. The auto mode is for automatic regulation of an external parameter. In “auto” position of selector switch, the pump runs at a speed that regulates ph, chemical concentration, flow rate, etc. The 4-20 mA signal provides feedback proportional to the regulated parameter. The 10-turn pot then sets desired value of regulated parameter.

Example: set the pot to 8 ppm chlorine concentration. The 4-20 mA signal indicates actual chlorine concentration, and the pump is commanded to run at a speed to maintain that concentration. The pump will increase or decrease the speed to maintain the set point even if the water flow increases or the concentration if the NaOCl degrades due to temperature or time.



PH CONTROL

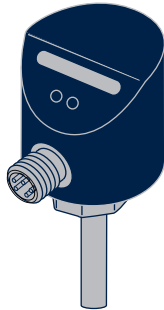
By using two pumps with the SEEPEX integrated “vector” drive, the pH of a process or waste stream can be controlled. The standard program is used and the pumps are controlled by a PLC that defines a pump handling a base to increase its speed as the pH drops or a pump handling an acid to increase its speed as the pH climbs. The length between an IMP and a motor is limited and it is often not practical to locate the pump drive near the pH meter or the PLC. Using the SEEPEX integrated “vector” drive, users can significantly reduce the installation time and cost because they do not need remote panels. Since the motors used by SEEPEX are totally enclosed and the enclosures are of a NEMA 4 design, the entire unit can be installed outdoors.



OTHER APPLICATIONS:

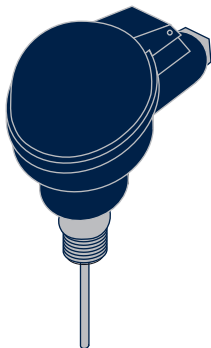
- Boundary Layer Injection
- Multiple Component Blending
- Extruder injection of colors, vitamins or minerals
- Release agents, creping agents, colors and other paper chemicals
- High Fructose Corn Syrup
- Alpha and beta amylase in corn processing
- Any enzyme
- Liquid fertilizers or herbicides into a center pivot irrigation system
- Scents and flavors into any food product, even tobacco
- Filter aids like diatomaceous earth for cold filtered beer
- Polymer flocculants and ferric chloride
- Water treatment chemicals of any type
- Spray applications like spray dryers or flavored coatings for snack foods because of the non-pulsating flow

ACCESSORIES



Flow Monitor from IFM Efector® (Model SI5006)

Available with AISI 316 or T4 titanium probe. Many low flow applications that use pumps with very small stator diameters cannot use the SEEPEX TSE controller. The flow monitor is a reliable alternative to protect against dry-running damage to the pump. It is recommended to protect the W range pumps from dry-running damage, since none of these pumps can be fitted with the TSE device.



Dry-Running Protection Device TSE in a NEMA 4X enclosure

All but the smallest SEEPEX metering pumps (D range) can be fitted with the proven TSE sensor and controller. Literally, tens of thousands of these devices have been sold by SEEPEX over the last 25+ years, as accessories for the industrial ranges of our pumps. No external wiring is required. A standard 5-pin UNF cable powers the TSE. The Nema 4X enclosure can be mounted to a wall with wood screws or plastic anchors. It is as easy as hanging a picture on the wall.



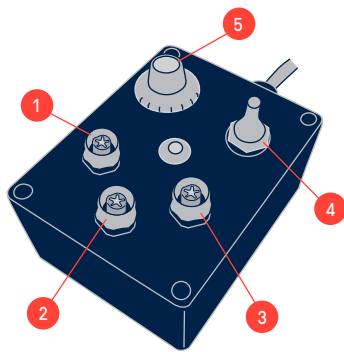
Indicating and Scalable Pressure Switch from IFM Efector® (Model PN4223)

A second dedicated 5-pin standard UNF cable from the pump drive powers this device. It indicates the discharge pressure in an LED read-out and can be set to trip and send an inhibit signal to the drive to protect against over-pressure or dead head operation. Since SEEPEX pumps are positive displacement devices, when a line is blocked the pumps will continually build pressure until something in the system fails. This device protects the pump and other system components from damage due to over-pressure conditions.



½" Standard UNF Connector Cable

These cables are available in a number of lengths to connect the drive to the source of the external 4-20 mA control signal, the dry-running, low-flow or over-pressure protection devices. SEEPEX stocks these cables in a number of lengths and configurations. Contact your distributor or a SEEPEX factory representative to obtain the correct cables for your installation.



Optional Control Module

If you do not want to use the standard terminal strip to connect dry-running, over-pressure or other SPDT switch inputs, SEEPEX can supply this optional control module for a nominal extra charge.

1 Dry-Running Control Receptacle

A 5-pin, ½" standard UNF connector supplies power and receives a 120 VAC signal that will inhibit the drive and indicate a fault. Using standard cables it can be connected to the SEEPEX TSE device in a NEMA 4X enclosure or an IFM Efector® low flow switch. Neither device requires an external power source or installation wiring providing the field device operates passively or with 120 VAC. Control cables are available in a variety of lengths.

2 4-20 mA Input Receptacle

A 6-pin, ½" standard UNF connector links the controller to an external process control interface that can be from a variety of sources: a PLC, DCS or Scada system. The unit can also be stopped remotely without disconnecting power to the controller. Please read the description of the optional follower program for more operating options.

3 Over-pressure Control Receptacle

A 5-pin, ½" standard UNF connector supplies power and receives a 120 VAC signal that will inhibit the drive and indicate a fault. Using standard cables it can be connected to an IFM Efector® indicating and scalable pressure switch. The device does not require an external power source or installation wiring providing the field device operates passively or with 120 VAC. Control cables are available in a variety of lengths.

4 H-O-A Switch

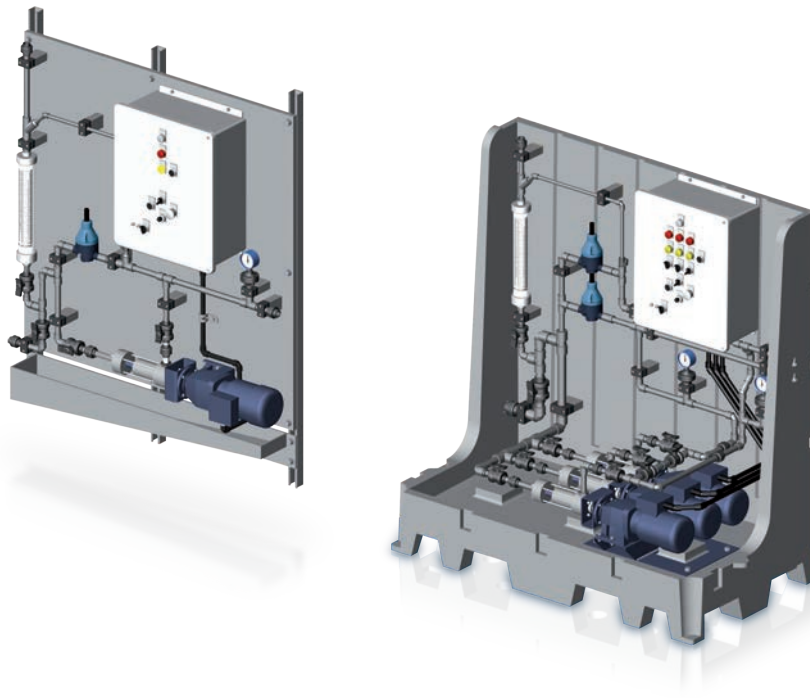
This switch allows the unit to operate either in the "Hand" (manual) mode, controlled by the potentiometer, or the automatic mode, controlled by an externally generated 4-20 mA signal. The position in the middle turns the unit "Off".

5 Speed Potentiometer

Needed for manual operation if the digital HMI is not being used.

SYSTEMS





EACH SYSTEM IS CONFIGURED BY HIGHLY TRAINED ENGINEERS

Highly trained engineers and experienced builders guarantee a high quality system.

SEEPEX also offers preconfigured dosing or metering systems. The main advantages to choosing a complete system are:

- Single source responsibility (complete system warranty)
- Plug and play installation (connecting these systems is fast and easy with all of the piping and electrical connections already installed and programmed)

The metering systems can come in many sizes. Smaller systems can be carried via a handle while larger systems can have wheels. All systems carry a standard 3 year limited warranty.

Special features

- Pulsation free progressive cavity pump(s)
- Accurate and repeatable flow
- No vapor lock
- No check valves to clean or replace
- No pulsation dampeners

Benefits

- Reduced chemical consumption
- Reduced byproducts
- Easy calibration
- Less components means better simplicity and higher reliability
- Easy maintenance

Options

- Single or Multiple Pumps
- Controls
- Chemically resistant
- Drip Tray
- Pressure Gauge
- Calibration Column
- Wall or Floor Mounting

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