

Heavy duty tank and pump systems for practically any chemical addition need



Chemical feed systems that combine on one platform - a holding tank for mixing and storing chemical solutions, a mixer, a Madden diaphragm metering pump to inject the chemical solution, and suction and relief piping. Standard pre-engineered systems are available, as well as customized systems with equipment and features specified by the end user.

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DESIGN NOTE (Pressure): All Madden chemical feed systems are designed to inject into ≤ 150 PSI applications. Systems can be modified to reach up to 300 PSI by changing out the standard PVC pump solution head and discharge piping to 316SS for an added cost.

GENERIC, COMPACT DESIGNS - FEATURES

The Madden compact chemical feed systems are designed to be simple, durable and effective, all while taking up less than 3 sq. ft. of floor space. The main features are as follows:

- **TANKS:** durable polyethylene tanks are standard. Stainless steel tanks are optional. Hinged lids and piping connections are included. Tanks are translucent, rated to 140 deg F. Standard sizes are 55 gallon and 110 gallon.
- **PUMPS:** Madden diaphragm metering type pumps are used to inject chemicals into the plant operating system. Madden pumps are industrial grade, heavy duty construction, with adjustable output control. Our JN102 pump is the standard model, other sizes are optional. See the JN21 data sheet for more details.
- **MIXERS:** Madden high speed mixers are used to mix the chemical solution needed. Stainless steel shaft and propeller are standard. See the Madden mixer brochure for complete mixer details.
- **PLATFORMS:** welded steel construction designed to support the filled tank, and serve as a mounting for the mixer, pump and piping. Platforms elevate the tank 16" above the ground for easy operator access. Standard finish is acrylic gray enamel, with highly corrosion resistant epoxy primer with polyurethane top coat as an option.
- **PIPING:** standard pipe is $\frac{1}{4}$ " ID, Sch 80 PVC with FNPT Sch 80 PVC fittings. Includes a foot valve and strainer on the suction line and a pressure relief valve on the discharge.
- **APPLICATIONS:** these compact systems have been sold by Madden for over 60 years. The part numbers were previously TE502 and TE503. They are used in many industries including food processing, boiler rooms, wastewater treatment, and more.

BOILER WATER TREATMENT DESIGNS – FEATURES

The Madden boiler room focused chemical feed system designs include the following features:

- **TANKS:** durable polyethylene cone bottom tanks are standard. Stainless steel tanks are optional. Hinged lids and piping connections are included. Tanks are translucent, rated to 140 deg F. Standard sizes are 125, 250, and 350 gallon.
- **PUMPS:** Madden diaphragm pumps as mentioned above. Our JN105, 107, and 111 models are also included in this lineup.
- **MIXERS:** Madden high speed mixers are used for the 125 gallon design. For the 250 and 350 gallon designs we use our medium speed mixer with a bridge type mounting support.
- **SKIDS:** Systems come pre-installed on 4' x 8' steel skid tops with a 3" 5# C channel frame. Skids include holes for securing to floor and are finished with grey acrylic paint.
- **PIPING:** standard piping is the same as the above.
- **APPLICATIONS:** these designs can be used for any chemical injection application, but they are specifically tailored to boiler rooms with the following capacities:
 - 125 Gallon – Boiler rooms producing up to 50,000 PPH of steam.
 - 250 Gallon – Boiler rooms producing 50,000 to 100,000 PPH of steam.
 - 350 Gallon – Boiler rooms producing 100,000 to 250,000 PPH of steam.

MADDEN ENGINEERED PRODUCTS

CHEMICAL FEED SYSTEM PART NUMBER FORMAT

Material
P - HDPE
S - Stainless Steel
Tank Size (Gallons)
055
110
125
250
350

Pump Output (GPH)
02
05
07
11
Pump Quantity
Up to 4
Mixer
AH
AM

Optional Ancillary Eq.
1 - Variable Frequency Drive
2 - Toggle Switch & Cord
3 - Tank Level Switch & Alarm
4 - Flow Meter & Display
5 - Pressure Gauge
6 - Pulsation Dampener
7 - Back Pressure Valve
8 - 316SS Pump & Discharge

Full P/N Example:

CFP055	-	021AH	-	23
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PRE-DESIGNED CHEMICAL FEED SYSTEMS

"Generic, Compact Designs" - Model No's:

CFP055-021AH-(TBD)

CFP110-021AH-(TBD)

"Boiler Water Treatment Designs" - Model No's:

CFP125-022AH-(TBD) - Boiler Rooms Producing 0-50 KPPH

CFP250-052AM-(TBD) - Boiler Rooms Producing 50-100 KPPH

CFP350-072AM-(TBD) - Boiler Rooms Producing 100-250 KPPH

Standard Items in our Compact Designs:

JN102 Diaphragm Metering Pump

AH1B1 High Speed Mixer

Pressure Relief Valve

Piping: Rigid PVC, 1/4" ID w/ Sch 80 Threaded Fittings Piping

Platform: steel platform elevates system 16" above ground. Includes 1/2" bolt holes in foot pads.

Standard Items in our Boiler Water Treatment Designs:

(2) JN Series Diaphragm Metering Pumps, plumbed for duty/standby operation

For the 125g system, the AH1B1 mixer is standard, for the 250g and 350g designs change to AM1B3 medium speed with a bridge type mounting support.

(2) Pressure Relief Valves

Calibration column and Y strainer on suction line

Piping: Rigid PVC, 1/4" ID w/ Sch 80 Threaded Fittings Piping

Available Optional Adders:

304SS tanks

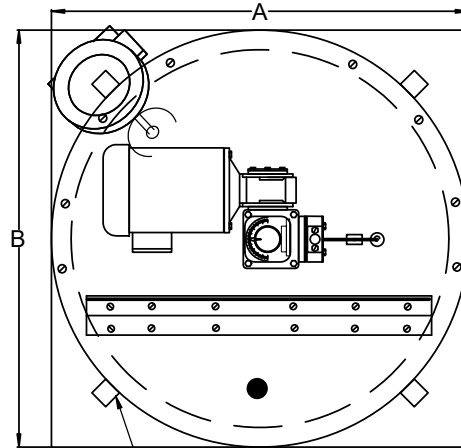
316SS piping with FNPT or Swagelok Compression fittings

316SS pump solution head for 300 PSI applications (Optional Ancillary Item 8)

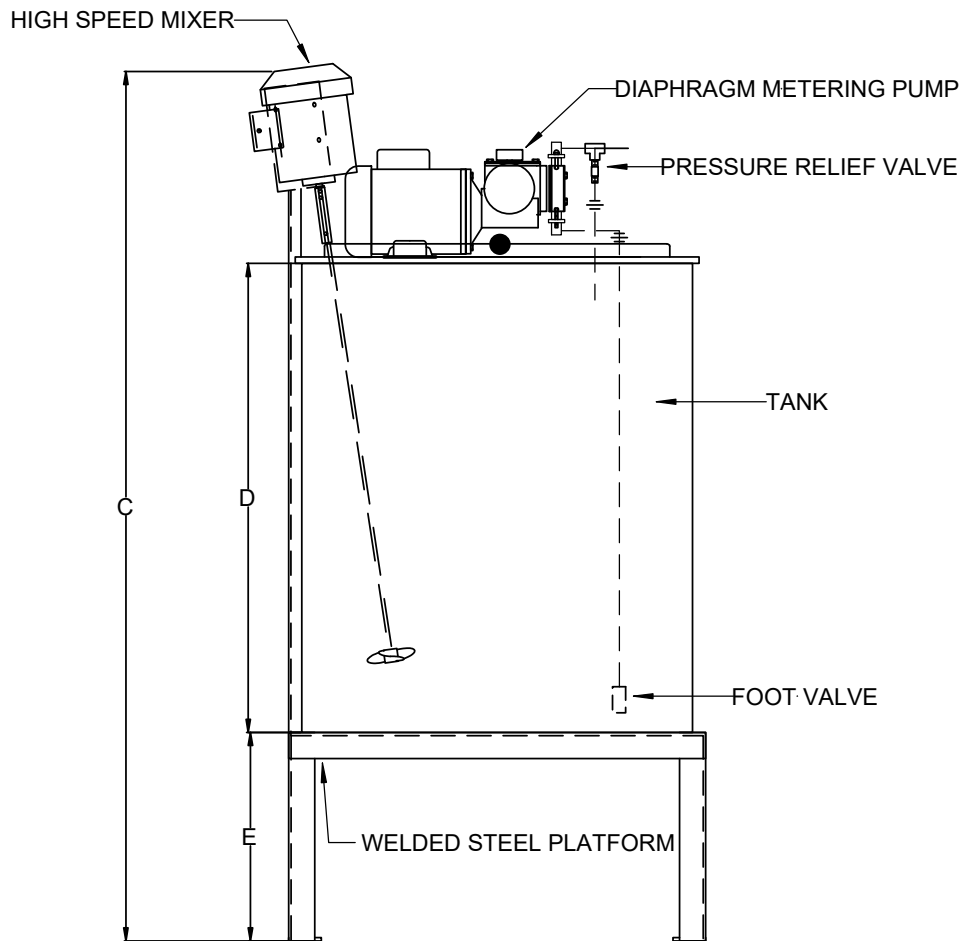
Larger Madden Pumps (MF and MH Series, up to 360 GPH)

Additional ancillary equipment on discharge line (see above)

(Standard Compact Design)



TANK STOP (4) PLACES



Model Number	Tank Capacity (Gal)	Tank Material *	A	B	C	D	E
CFP055-021AH-(TBD)	55	HDPE/SS	24"	24"	68"	36"	16"
CFP110-021AH-(TBD)	110	HDPE/SS	32"	32"	68"	36"	16"

MADDEN ENGINEERED PRODUCTS

Proposal Specification No. () CHEMICAL FEED SYSTEM: "Generic, Compact" Design Madden Model Number CFP ___ -021AH- ___

1.1 The Summary

- A. The CONTRACTOR shall provide all labor, materials, equipment, tools, and incidentals required to furnish, install, test, and place into operation this Madden boiler chemical feed system to deliver the boiler(s)' water with the proper water treatment chemicals (system design assumes: phosphate, oxygen scavenger, and amine).

Note: Madden Engineered Product's standard chemical feed systems are designed to dose into ≤ 150 PSIG applications, (i.e. the Deaerator tank and the boiler's make up water feed line.) For an additional cost, systems can be increased to a 300 PSIG by switching the pump wetted ends to 316SS.

1.2 Equipment

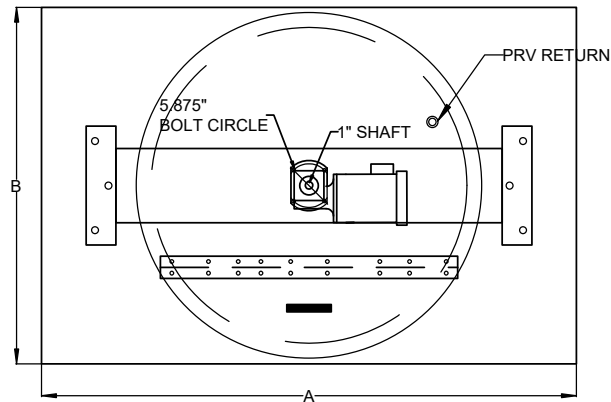
1. Diaphragm Metering Pump
 - a. Madden part no. JN1021-PTHST0-TBD, simplex diaphragm metering pump, rated for 0.2 - 2 gallons per hour at a maximum pressure of 150 psi. The pump's output will be manually adjustable while the pumps are running. The motor will be 1/3 HP, 1,725 RPM TEFC, (1/60/115-230 or 3/60/230-460). The pumps will be finished with acrylic blue paint. Pump solution head construction: PVC solution head, Teflon faced diaphragm, Teflon valve seats, 316 SS valve balls, double ball valves for both inlet and outlet valves. The inlet/outlet piping connection will be 1/4" FNPT, Horizontal.
2. Tank: ___ gallon HDPE, ___" inside diameter X 36" height. Translucent walls for view of liquid level. 12" screw on lid comes standard, with cone bottom and drain for pump suction line. Includes 1/4" bulkhead fitting for PRV return line. Come with blue powder coated steel stands. Rated to 140 degrees.
3. High Speed Mixer: Madden Mixer part no. AH1B1-S036A, 1725 rpm direct drive, constructed with a 36" long, 5/8" diameter stainless steel shaft and a 4" stainless steel propeller. The motor will be 1/3 HP, (1/60/115-230 or 3/60/230-460), TEFC. Mixer Mounting: 2" Angle Iron Leg extended up to motor mount plate, CS, 56 frame for footed motors, 10 deg.
4. Platform: _ gauge top with 2" angle legs with foot pad. Welded construction with grey enamel finish
5. Tank Top: _ gauge CS fastened to polyethylene underlayment and tank flange with SS hardware with 2 1-1/2" angles welded for mixer motor mounting. 1" x 1" angle to support hinge. Grey enamel finish.
6. Foot Valve: PVC with filter screen installed in pump suction with 1/4" PVC piping
7. Pump suction tubing for each pump: 1/4" ID PVC Sch 80 with Sch 80 FNPT PVC fittings.
8. Pump discharge tubing for each pump: 1/4" ID PVC Sch 80 with Sch 80 FNPT PVC fittings.
9. Pump relief piping: 1/4" ID PVC Sch 80 pipe and Sch 80 FNPT PVC fittings for return of liquid to supply tank.
 - a. Includes IN250 adjustable pressure relief valve, Set at 150 psi, SS, 1/4" FNPT connections.

1.3 Common Optional Additions, (specify if needed):

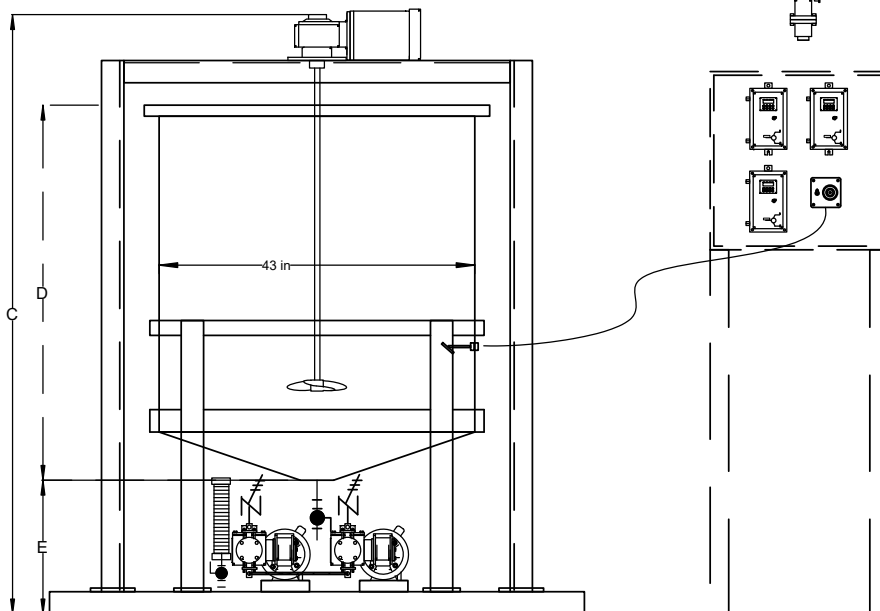
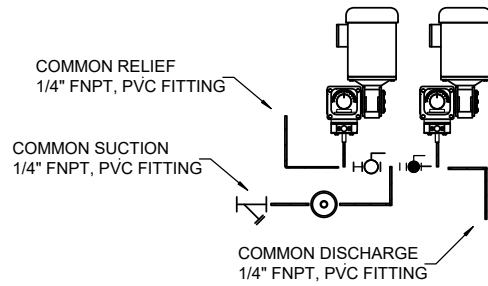
10. (Motor Control Option 1) Digital variable frequency drive for remote/local control of pump and mixer motors. Includes 4-20mA signal follower and a NEMA4X enclosure. Power in to drive is 1/60/115, power out to motor is 3/60/0-230V.
11. (Motor Control Option 2) 15' Black electric cord with on/off toggle switch, one per motor.
12. Low level tank switch, Madison 5920, SS, 1/2" MNPT connections, with local alarm box. Alarm box has additional contact to wire to DCS.
13. Flow meter with integral rate/totalizer.
14. Pressure Gauge, liquid filled, 2-1/2" dial, 0-150 PSI, SS, 1/4" MNPT.
15. Pulsation dampener, 10 cu. In., CPVC, 3/8" FNPT connection.
16. Back pressure valve: Adjustable, 10-150 PSI, PVC body with Teflon diaphragm, 1/4" FNPT connections. For use with pump dosing into low pressure systems.

Comments: Madden Engineered Products chemical feed systems come with the piping for the pump suction lines and relief lines installed. Any and all other piping installation to be done by the installing contractor. For further questions you can call Madden 574-295-4292 or email: info@maddenep.com.

(Standard Boiler Water Treatment Design)



VISUAL REFERENCE - PUMPS INSTALLED UNDER TANK



Model Number	Tank Capacity (Gal)	Tank Material *	A	B	C	D	E
CFP125-022AH-(TBD)	125	HDPE/SS	48"	48"	62"	30"	18"
CFP250-052AM-(TBD)	250	HDPE/SS	72"	48"	81"	49"	18"
CFP350-072AM-(TBD)	350	HDPE/SS	72"	48"	97"	66.75"	18"

MADDEN ENGINEERED PRODUCTS

Proposal Specification No. () CHEMICAL FEED SYSTEM: "BOILER WATER TREATMENT" DESIGN Madden Model Number CFP ___-0_2A_-___

1.1 The Summary

- A. The CONTRACTOR shall provide all labor, materials, equipment, tools, and incidentals required to furnish, install, test, and place into operation this Madden boiler chemical feed system to deliver the boiler(s)' water with the proper water treatment chemicals (system design assumes: phosphate, oxygen scavenger, and amine).

Note: Madden Engineered Product's standard chemical feed systems are designed to dose into ≤ 150 PSIG applications, (i.e. the Deaerator tank and the boiler's make up water feed line.). For an additional cost, systems can be increased to a 300 PSIG by switching the pump wetted ends to 316SS.

1.2 Equipment

1. Diaphragm Metering Pump
 - a. Madden part no. JN1__1-PTHST0-TBD, simplex diaphragm metering pump, rated for ___ - ___ gallons per hour at a maximum pressure of 150 psi. The pump's output will be manually adjustable while the pumps are running. The motor will be 1/3 HP, 1,725 RPM, TEFC, (1/60/115-230 or 3/60/230-460). The pumps will be finished with acrylic blue paint. Pump solution head construction: PVC solution head, Teflon faced diaphragm, Teflon valve seats, 316 SS valve balls, double ball valves for both inlet and outlet valves. The inlet/outlet piping connection will be 1/4" FNPT, Horizontal.
2. Tank: ___ gallon HDPE, 43" inside diameter X ___" height. Translucent walls for view of liquid level. 12" screw on lid comes standard, with cone bottom and drain for pump suction line. Includes 1/4" bulkhead fitting for PRV return line. Come with steel stands. Rated to 140 degrees.
3. Medium Speed Mixer: Madden Mixer part no. AM1B3-S2__B-TBD, 350 rpm direct drive, constructed with a ___" long, 1" diameter stainless steel shaft and an 8" stainless steel propeller. The motor will be 3/4 HP, 1,725 RPM, (1/60/115-230 or 3/60/230-460), TEFC.
 - a. Madden Bridge Type Mixer Mount: part no. P/N AA032, 10" 5# steel c channel, 72" x 52". Finished with acrylic grey paint.
 - b. Note: For 125 gallon tank design - mixer and bridge is standard high speed mixer and angle iron mount. Mixer is direct drive, 1725 RPM, 5/8" X 36" shaft with 4" 3 blade type marine blade propeller, all 316SS. Motor: 1/3 HP, 1725 RPM, TEFC, (1/60/115-230 or 3/60/230-460)
4. Steel Mounting Skid: 48" wide X ___" long. Constructed with carbon steel 11 gauge top, 3" 5# structural C section frame. With fabricated vertical steel channel with pad for mounting mixer motor. Finished with grey acrylic paint.
5. Pump suction tubing for each pump: 1/4" ID PVC Sch 80 with Sch 80 FNPT PVC fittings.
6. Pump discharge tubing for each pump: 1/4" ID PVC Sch 80 with Sch 80 FNPT PVC fittings.
7. Pump relief piping: 1/4" ID PVC Sch 80 pipe and Sch 80 FNPT PVC fittings for return of liquid to supply tank.
 - a. Includes Griffco PRM025P adjustable pressure relief valve, 10-150 PSI, PVC body with Teflon diaphragm, 1/4" FNPT connections.

1.3 Common Optional Additions, (specify if needed):

8. (Motor Control Option 1) Digital variable frequency drive for remote/local control of pump and mixer motors. Includes 4-20mA signal follower and a NEMA4X enclosure. Power in to drive is 1/60/115, power out to motor is 3/60/0-230V.
9. (Motor Control Option 2) 15' Black electric cord with on/off toggle switch, one per motor.
10. Low level tank switch, Madison 5920, SS, 1/2" MNPT connections, with local alarm box. Alarm box has additional contact to wire to DCS.
11. Flow meter with integral rate/totalizer.
12. Pressure Gauge, liquid filled, 2-1/2" dial, 0-150 PSI, SS, 1/4" MNPT.
13. Pulsation dampener, 10 cu. In., CPVC, 3/8" FNPT connection.
14. Back pressure valve: Adjustable, 10-150 PSI, PVC body with Teflon diaphragm, 1/4" FNPT connections. For use with pump dosing into low pressure systems.
15. 316 SS pump solution head and 316 SS discharge piping.

Comments: Madden Engineered Products chemical feed systems come with the piping for the pump suction lines and relief lines installed. Any and all other piping installation to be done by the installing contractor. For further questions you can call Madden 574-295-4292 or email: info@maddenep.com.

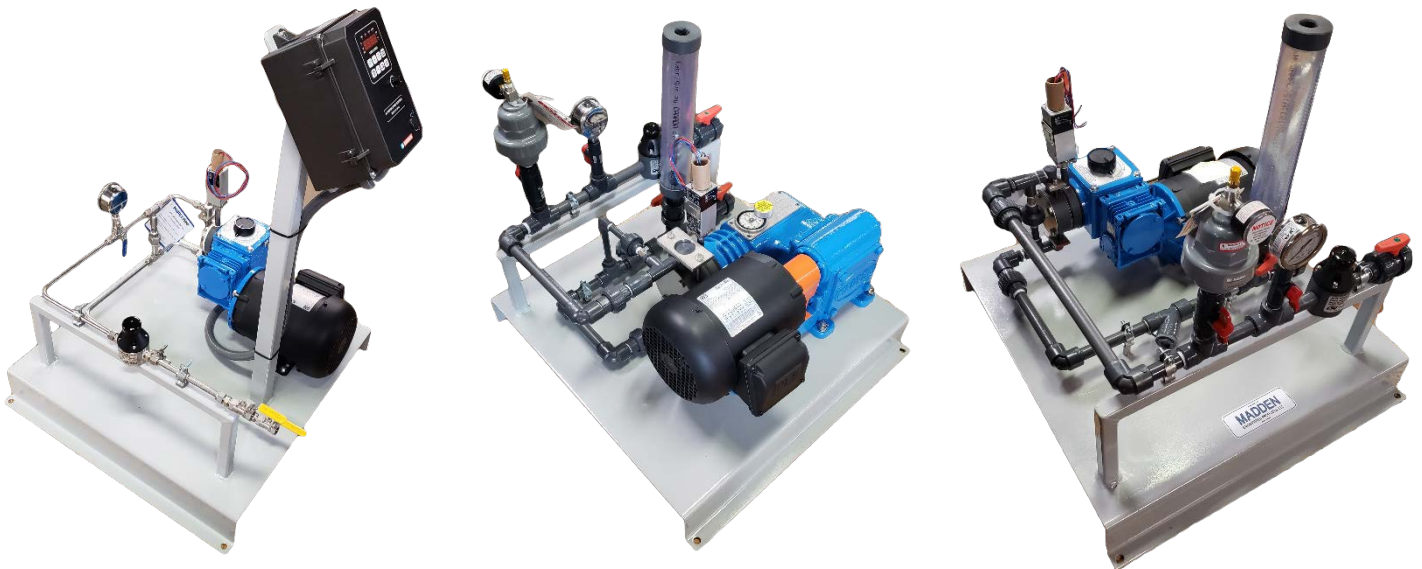
CUSTOMER SPECIFIED OPTIONS

For those customers with special requirements for a chemical feed system Madden is ready to modify the standard systems shown above or start from scratch with a complete new layout. Here are some of the features we frequently get requests to include in a chemical feed system:

- Tank level switch
- Electrical control box, including wiring in flexible conduit to each motor
- Pipe, valve and fitting features specified by the customer
- Motors: standard motors are TEFC 1/60/115-230 or 3/60/230-460. Optional motors are available for 50 HZ electric power, or special enclosure requirements
- Calibration column to measure pump output
- Duplex systems with two pumps, one for service and one for backup
- Pump materials of construction specified by the customer
- Flow meter, automatic pump flow control

DOSING STATIONS

Planning to use premixed chemical totes for your chemical injection application? No problem, we also make simple dosing skids without a holding tank and mixer. These compact skids are designed to have a 55 gallon drum or 4' x 4' x 4' chemical tote set next to them and then connected to our dosing skid with a quick connect. Let us know the ancillary equipment you prefer and the quick connect type and we'll get to work. Examples Below:



MADDEN
ENGINEERED PRODUCTS, LLC

P.O. Box 387
1317 Princeton Blvd.
Elkhart, Indiana 46516

Sold By:

Phone: (574) 295-4292
Fax: (574) 295-7562
Email: info@maddenep.com