

MARCH

MODEL 210-5, 210-10, & 212 CORROSIVE SOLUTION "METL-LESS" PISTON METERING PUMPS INSTRUCTIONS AND REPAIR PARTS

PUMP MATERIALS AND SOLUTIONS

The Metering pump was designed to meter a wide range of mild acids, caustics, solvents and any other liquids that will not affect Ryton® plastic, ceramic, viton "A" rubber, and Teflon®. These are the basic materials that come in contact with the liquid being pumped. Contact the factory for more specific information on the liquid and effect on the pump components. This pump is for intermittent duty only and should be flushed with clean water after use. The piston rings have a life expectancy of approximately 5000 hours. If leakage is observed past the piston, then the piston and arm assembly, item 5a, should be replaced.

ELECTRICAL AND OPERATION

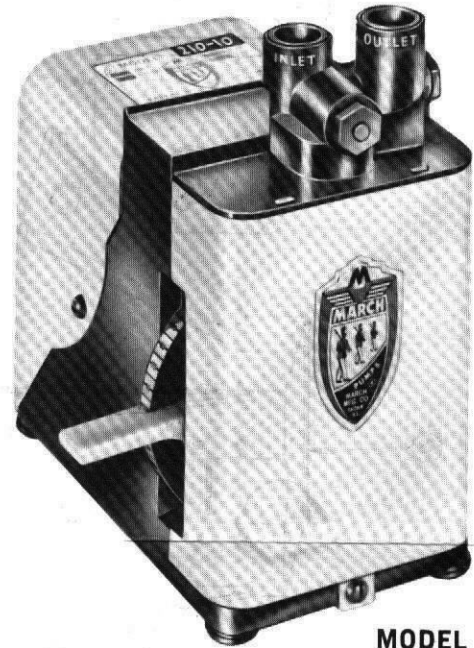
The standard motor is 115 volts, 60 cycle, 1 phase A.C. shaded pole motor. The pump comes equipped with a SJT electric cord, 6 foot long with a 3 prong molded grounding type plug. Other cords can be furnished under special order. The 3600 RPM constant duty fan cooled gear motor with thermal overload protector is U.L. listed

The pump should not be allowed to run dry for longer than 10 minutes as there is a possibility of damaging the plastic piston and piston rings. The pump should have primed itself well within this time. If the pump has not primed itself within 10 minutes something is wrong. Check for leakage around the threaded areas of the inlet and outlet pipe fittings. It is recommended that you use teflon sealing tape on the threads of your connection fittings. The pump will prime rapidly if some of the liquid is poured into the inlet and outlet ports. Once the valve and valve seats are wet there should be no problems priming, provided all the connections are air tight.

PUMP CONSTRUCTION & SERVICING

The flow can be varied while the pump is running. Loosen the white thumb screw protruding through the front cover approximately 1/2 turn and then move your adjusting lever up or down until you get your desired flow. The scale is graduated from 0 flow to 100 percent flow and should be used as a reference guide only. Once a percentage of flow is achieved you can move the lever, and as long as you come back to the same reference mark, your flow will repeat.

The 210 series pumps will develop approximately 160 PSI and the 212 pump approximately 60 PSI. Care must be taken at these high pressures so as not to burst your fittings or tubings or not to stall out the motor. If you are going to use this pump at high pressures or through a small nozzle you should provide a bypass or any other safety means to prevent clogging of the nozzle and thusly building excessive pressure.



MODEL 210-10

If the pump loses prime or does not repeat on flow rates or pressures, there may be dirt or other foreign matter between the valves and valve seats. This will prevent the valves from closing properly. Remove the two hexagon plugs on the front and side of the pump body and carefully pull out the two small valves. Check for dirt and damage to the valve faces and valve seats. March uses a patented magnetic repulsion action to actuate the valves. This prevents the need for valve springs and assures positive shut off of the valves.

LIMITED WARRANTY

March pumps are guaranteed only against defects in workmanship and/or material for a period of one year when used on room temperature water. See March Pump Application Questionnaire F4110 for additional warranty information.



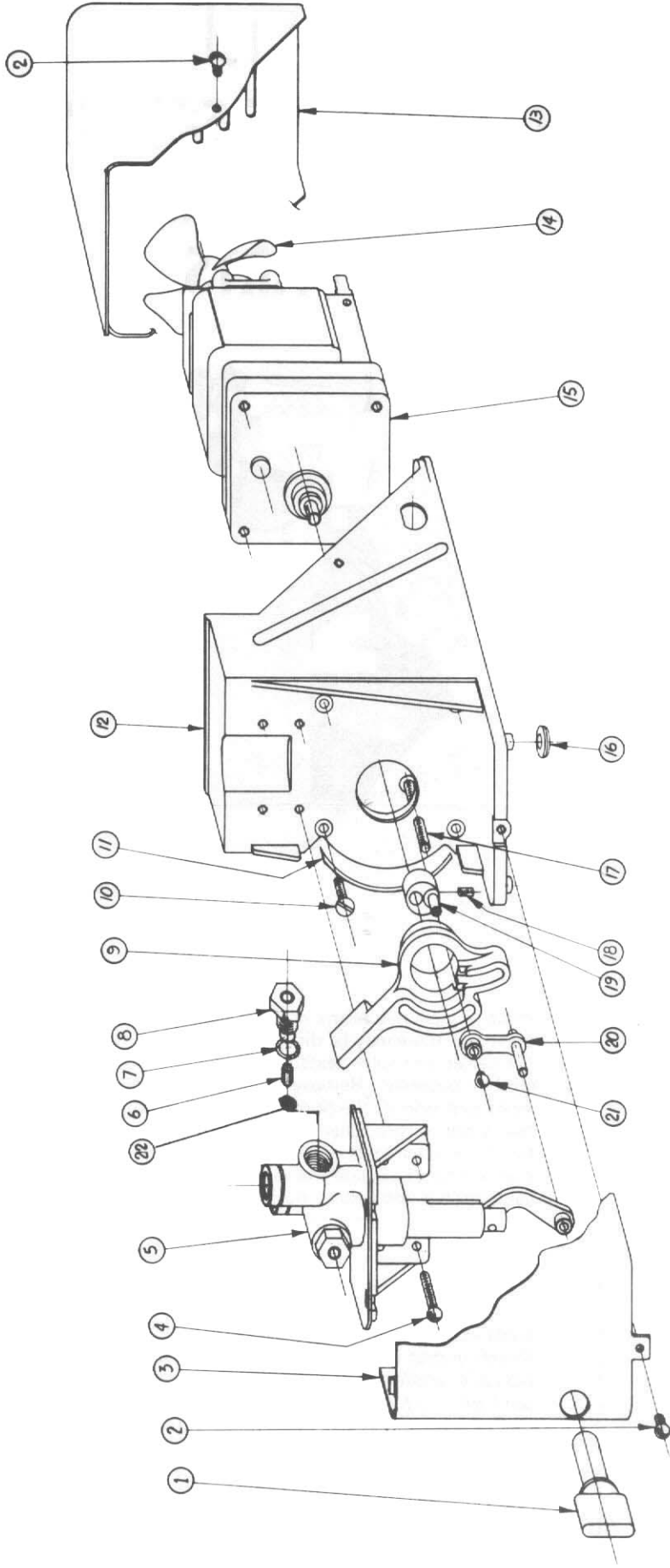
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210-059-10R7

REPAIR PARTS LIST FOR MODEL 210-5R, 210-10R, & 212 METERING PUMPS



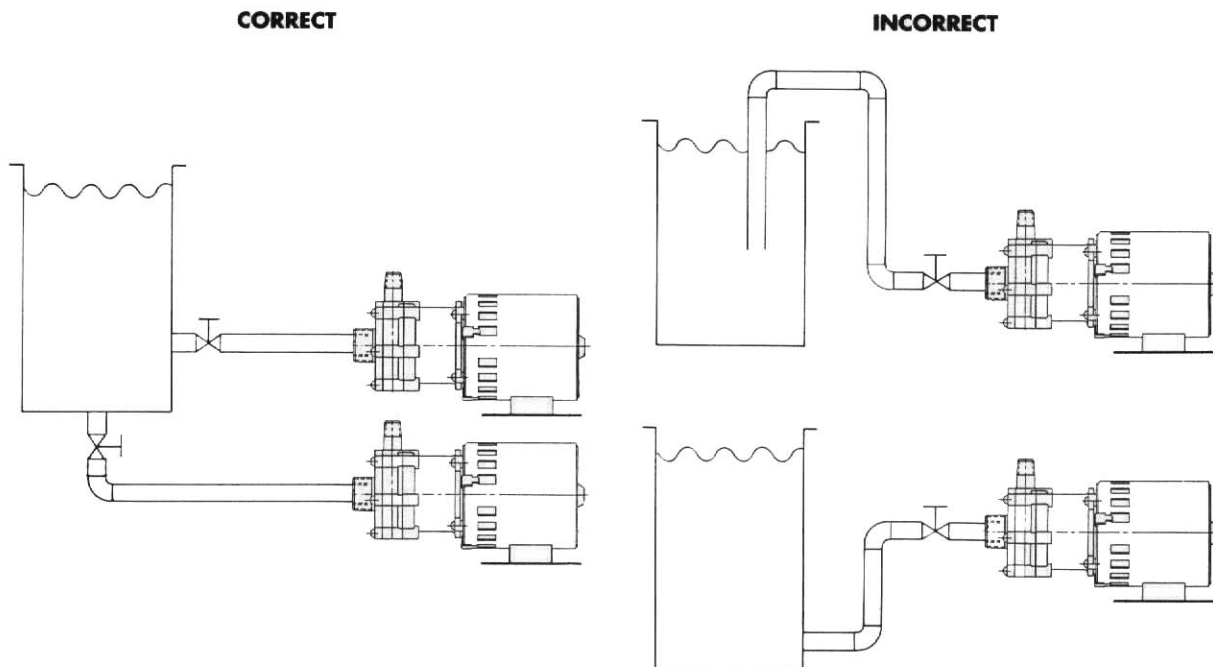
ITEM	DESCRIPTION	PART NO.	QTY.	ITEM	DESCRIPTION	PART NO.	QTY.
PARTS COMMON TO ALL PUMPS				PARTS FOR 210 PUMPS			
1	Cam Wing Nut	210-001-10	1	5	1/2 Diam. Pump Head & Piston Ass'y.	210-074-02	1
2	No. 8-32 Round Head Screw	135-042-10	3	5a	Piston & Arm Ass'y. only	210-073-02	1
3	Front Cover	210-018-10	1	6	Valve-Magnet Ass'y.	210-071-01	2
4	No. 8-32 x 3/4 Round Head Screw	210-036-10	4	7	"O" Ring - Viton Rubber	210-008-10	2
9	Adjustable Cam Drive	210-016-10	1	8	Holding Screw - Magnet Ass'y.	210-025-01	2
10	No. 10 Flat Head Screw	212-032-10	4	15a	Motor for -10 (235 RPM) 115 Volt W/Fan	212-033-10	1
11	Graduation Label	210-033-10	1	15b	Motor for -5 (60 RPM) 115 Volt W/Fan	212-035-10	1
12	Pump Housing Bracket	210-021-10	1	22	Valve Disc - Viton Rubber	210-070-10	2
13	Motor Cover	210-019-10	1	PARTS FOR 212 PUMP			
14	C. W. Fan (As Spare Only) *	210-081-10	1	5	3/4 Diam. Pump Head & Piston Ass'y.	212-008-02	1
16	Rubber Leg Grommet	410-045-10	4	5a	Piston & Arm Ass'y. Only	212-005-02	1
17	No. 10 x 1 1/4 Flat Head Screw	210-029-10	1	6	Valve-Magnet Ass'y.	212-002-01	2
18	No. 8 Set Screw	210-038-10	1	7	"O" Ring - Viton Rubber	212-017-10	2
19	Motor Cam	210-080	1	8	Holding Screw - Magnet Ass'y.	212-003-01	2
20	Connecting Arm Ass'y.	210-004-02	1	15	Motor for 212 (235 RPM) 115 Volt W/Fan	212-033-10	1
21	Connecting Arm Screw	210-082-10	1				

*Use 210-081-10 with 210-10 & 212 motors
Use 210-089-10 with 210-5 motor

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GENERAL INSTALLATION INSTRUCTIONS

1. The Pump should be mounted horizontally on a foundation and secured by Anchor Bolts.
2. Install the pump as near to the suction source and as low as possible. Suction must be flooded. When using an elbow, valve, etc., the suction must have straight piping in length at least five (5) times the diameter of the pipe.
3. Suction piping should not be smaller than the pump suction size and preferably one size larger than pump suction. Liquid supply vessel should not have a pipe size smaller than the pump suction and then increased to pump suction size.
4. Piping and valving should be independently supported. Do not allow the pump to support the weight of the piping.
5. All suction piping should be direct and short as possible with as little bending as possible. Excessive bending and pump suction length will lead to flow distortion and pump cavitation.
6. Available NPSH should exceed 120% of pump required NPSH. Contact a March Distributor for pump requirements.
7. Suction velocity should not exceed 6.5 feet per second. Viscous and hot liquids will have an effect on velocity.
8. If reducers or increasers are necessary, caution is to be used as to proper installation so as not to trap air.
9. Use a vacuum gauge in the suction line and it should be as close as possible to the pump suction. This is for monitoring the performance of the pump while in operation.
10. Ball valves may be installed on the suction side to allow maintenance and service. NEVER use the valve to limit flow into the pump.
11. Negative suction or suction lift is not recommended and should not be used. See illustration below:



12. Suction Pressure:

Systems utilizing high suction pressure where a pump is used to boost system pressure is of concern. Be sure that the pressures do not exceed that of pump design, otherwise severe damage and possible operator injury could result.

DISCHARGE

1. All discharge piping size should be determined by flow velocity which should not exceed 15 feet per second.
2. A Throttling Valve should be installed for flow and pressure control. Caution—Location of check valves on long discharge piping, high static discharge of 50 feet or more and two or more pumps used on the same common piping.
3. Install Discharge Pressure Gauge to monitor performance during operation.
4. Connect electrical power to the motor in accordance with motor manufacturers nameplate instruction.

OPERATION

1. Check pump for proper rotation by allowing fluid into the pump and turning power to motor on and off in a quick manner. If motor is not rotating in proper rotation, the leads should be changed to conform to motor manufacturer's nameplate. Improper rotation reduces capacity.

—CAUTION—

2. Do not run pump without liquid. Be sure liquid is in the pump. If pump is run dry, excessive heat will occur damaging internal parts and could result in operator injury.
3. Open suction valve completely.
4. Open discharge valve slightly (crack).
5. Observe all connection for leaks. If leaks occur, close all valves and repair all leaks before further operation.
6. Start motor.
7. Open discharge valve gradually until desired flow and pressure is attained.

—CAUTION—

IF DISCHARGE VALVE ON START UP IS WIDE OPEN, DECOUPLING COULD OCCUR OR MOTOR OVERLOAD IS POSSIBLE.

8. Operating the pump for excessive periods of time at shut off (discharge valve fully closed) or at near shut off conditions could cause the liquid to rise in temperature which could cause failure of internal parts and failure of pump.
9. Flow rates should be controlled by the discharge valve only, never by the suction valve.
10. Electrical operation is also critical. High or low voltage could have an affect on pump performance. Caution—Do not operate the motor at varied voltages, without contacting a March Distributor first.



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