

Multipoint Injection Controller

iCIP Solar Solutions Series - Intelligent Chemical Injection Pump

Installation & operation procedures manual



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The benefits of solar powered chemical injection pumping systems offered by Dresser Natural Gas Solutions will provide years of low maintenance, clean reliable service, zero noise pollution, without emissions to the surrounding environment. Our goal is to pass along a quality product, both a renewable resource and affordable investment to our customers.

To ensure quality product, functionality, operating procedures, warranty, and service pertaining to equipment provided by Dresser to our customer, consult a qualified manufacturing representative.

WARNING

This equipment may be installed in locations that subjects the units to the ingress of insects, rodents, etc. Make sure that the unit is properly closed after maintenance. Take the necessary precautions to protect yourself from these hazards before opening the unit.

WARNING

Minimum personal protection equipment (PPE) required for installation & maintenance of this unit: safety goggles, glove, steel toe shoes, hardhat, fire retardant suit.

THIS PRODUCT IS SUITABLE FOR USE IN CLASS I DIVISION 2 GROUPS C&D OR NON-HAZARDOUS LOCATIONS

This product is designed to work with the ICIP 2 Controller. For instructions and information on ICIP Pump and controller, follow the ICIP IOM



Multipoint Controller connected to iCIP™ Solar Package

Serialized Assemblies

It is strongly advisable that all assemblies remain complete or unbroken serialized set for proper functionality. These assemblies have been adequately sized based on the following variables: daily volume, head size, well pressures, regional sun hours, temperature, number of days without sun light, and quantities of batteries and solar panels.

WARNING

Minimum personal protection equipment (PPE) required for installation & maintenance of this unit: safety goggles, glove, steel toe shoes, hardhat, fire retardant suit.

WARNING

This equipment is designed to operate at temperatures between -40° F to 140° F. Prior to going on-site for installation or maintenance, make sure proper safety equipment is worn before handling the equipment and that you are properly dressed for the work site environment temperatures.

Pump Motor Controller Connection

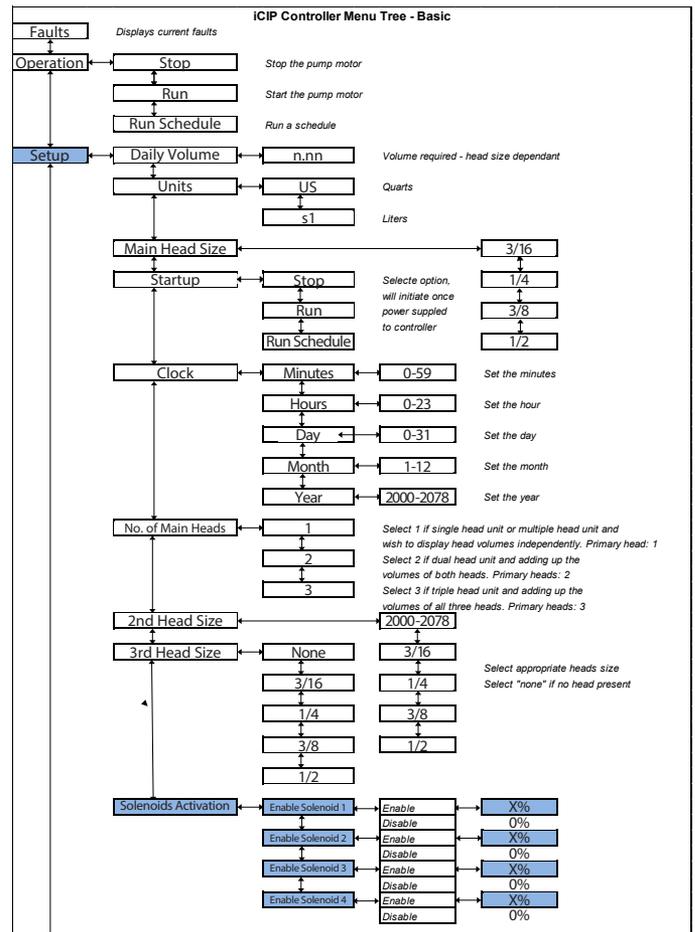
Connect cable conduit from multipoint junction box to controller box. Run cable connectors through installed fitting in the box, and tight conduit fitting. Connect solenoids to cable matching connector coming from I/O Relays. Also connect ground, or black cable.



Multipoint Configuration

On ICIP Controller click down, until setup, left to setup options, and down until solenoids. Enable each solenoid by entering the % percentage desired. Refer to menu tree (figure below). To disable a solenoid % must be set to 0%.

NOTE: All solenoids % must add to 100%, OTHERWISE PUMP WILL NOT START.



For % solenoid adjustment and flow rate refer to table SP2217, or (SP2218 for 65 RPM Motor) located on ICIP Controller Box, and next page.

Multipoint Injection Controller

ICIP MultiPoint - % Solenoid Adjustment Flow rate

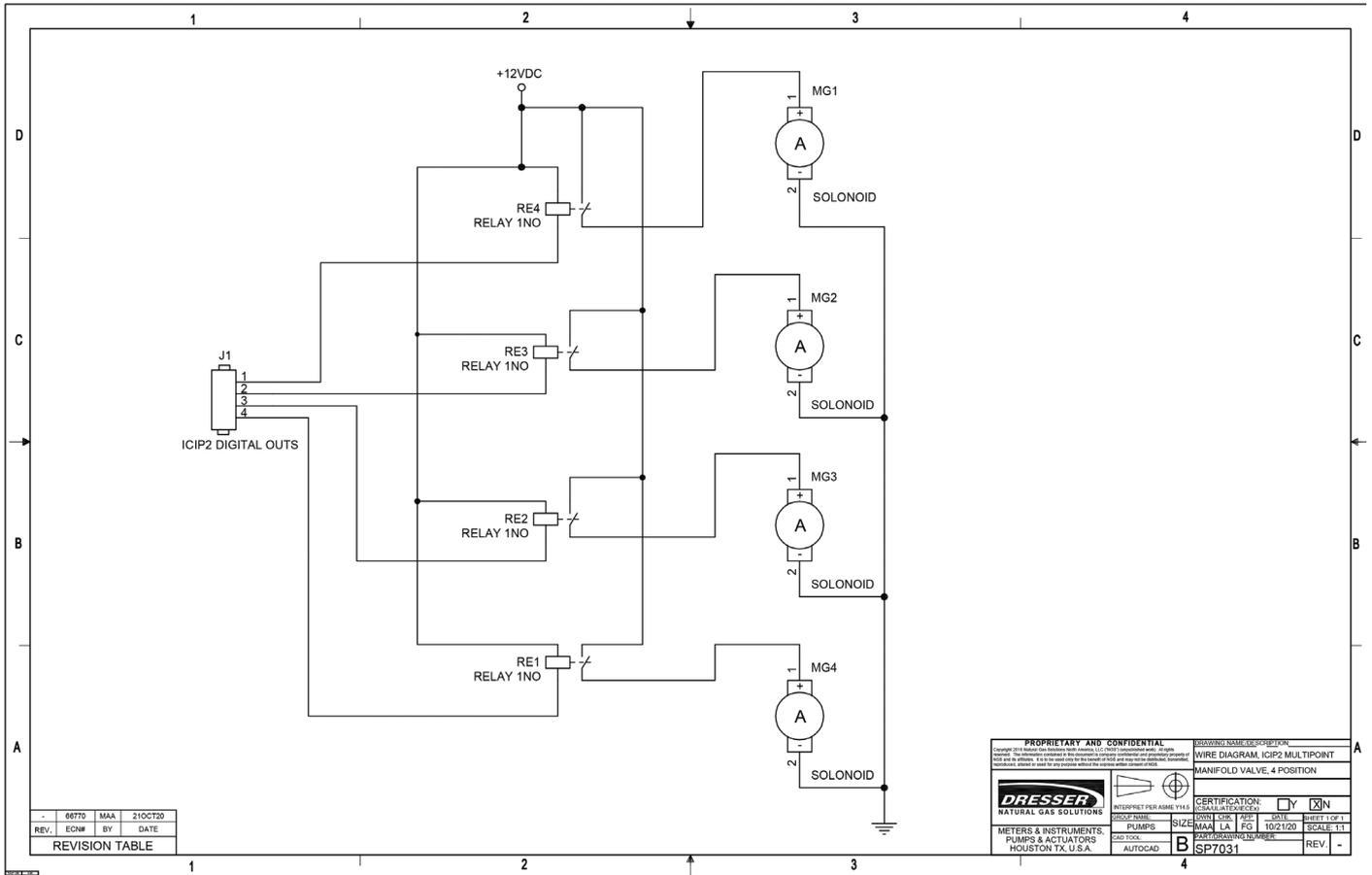
	3/16" Head					1/4" Head					3/8" Head					1/2" Head				
	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI
	1.75	26.31	1.66	24.87	2500	3.07	46.07	2.91	43.61	2500	11.52	103.68	10.90	98.12	2500	20.48	184.29	19.38	174.43	2500
5%	0.09	1.32	0.08	1.24	2500	0.15	2.30	0.15	2.18	2500	0.58	5.18	0.55	4.91	2500	1.02	9.21	0.97	8.72	2500
10%	0.18	2.63	0.17	2.49	2500	0.31	4.61	0.29	4.36	2500	1.15	10.37	1.09	9.81	2500	2.05	18.43	1.94	17.44	2500
15%	0.26	3.95	0.25	3.73	2500	0.46	6.91	0.44	6.54	2500	1.73	15.55	1.64	14.72	2500	3.07	27.64	2.91	26.16	2500
20%	0.35	5.26	0.33	4.97	2500	0.61	9.21	0.58	8.72	2500	2.30	20.74	2.18	19.62	2500	4.10	36.86	3.88	34.89	2500
25%	0.44	6.58	0.42	6.22	2500	0.77	11.52	0.73	10.90	2500	2.88	25.92	2.73	24.53	2500	5.12	46.07	4.85	43.61	2500
30%	0.53	7.89	0.50	7.46	2500	0.92	13.82	0.87	13.08	2500	3.46	31.10	3.27	29.44	2500	6.14	55.29	5.81	52.33	2500
35%	0.61	9.21	0.58	8.70	2500	1.07	16.12	1.02	15.26	2500	4.03	36.29	3.82	34.34	2500	7.17	64.50	6.78	61.05	2500
40%	0.70	10.52	0.66	9.95	2500	1.23	18.43	1.16	17.44	2500	4.61	41.47	4.36	39.25	2500	8.19	73.72	7.75	69.77	2500
45%	0.79	11.84	0.75	11.19	2500	1.38	20.73	1.31	19.62	2500	5.18	46.66	4.91	44.15	2500	9.22	82.93	8.72	78.49	2500
50%	0.88	13.16	0.83	12.44	2500	1.54	23.04	1.46	21.81	2500	5.76	51.84	5.45	49.06	2500	10.24	92.15	9.69	87.22	2500
55%	0.96	14.47	0.91	13.68	2500	1.69	25.34	1.60	23.99	2500	6.34	57.02	6.00	53.97	2500	11.26	101.36	10.66	95.94	2500
60%	1.05	15.79	1.00	14.92	2500	1.84	27.64	1.75	26.17	2500	6.91	62.21	6.54	58.87	2500	12.29	110.57	11.63	104.66	2500
65%	1.14	17.10	1.08	16.17	2500	2.00	29.95	1.89	28.35	2500	7.49	67.39	7.09	63.78	2500	13.31	119.79	12.60	113.38	2500
70%	1.23	18.42	1.16	17.41	2500	2.15	32.25	2.04	30.53	2500	8.06	72.58	7.63	68.68	2500	14.34	129.00	13.57	122.10	2500
75%	1.31	19.73	1.25	18.65	2500	2.30	34.55	2.18	32.71	2500	8.64	77.76	8.18	73.59	2500	15.36	138.22	14.54	130.82	2500
80%	1.40	21.05	1.33	19.90	2500	2.46	36.86	2.33	34.89	2500	9.22	82.94	8.72	78.50	2500	16.38	147.43	15.50	139.54	2500
85%	1.49	22.36	1.41	21.14	2500	2.61	39.16	2.47	37.07	2500	9.79	88.13	9.27	83.40	2500	17.41	156.65	16.47	148.27	2500
90%	1.58	23.68	1.49	22.38	2500	2.76	41.46	2.62	39.25	2500	10.37	93.31	9.81	88.31	2500	18.43	165.86	17.44	156.99	2500
95%	1.66	24.99	1.58	23.63	2500	2.92	43.77	2.76	41.43	2500	10.94	98.50	10.36	93.21	2500	19.46	175.08	18.41	165.71	2500
100%	1.75	26.31	1.66	24.87	2500	3.07	46.07	2.91	43.61	2500	11.52	103.68	10.90	98.12	2500	20.48	184.29	19.38	174.43	2500

ICIP High Efficiency MultiPoint - % Solenoid Adjustment Flow rate

	3/16" Head					1/4" Head					3/8" Head					1/2" Head				
	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI	Low Qts/Day	High Qts/Day	Low L/Day	High L/Day	Max PSI
	2.90	38.00	2.80	35.90	2500	5.10	66.60	4.80	63.00	2500	11.50	149.80	10.90	141.70	2500	20.50	266.20	19.40	252.20	2500
5%	0.15	1.90	0.14	1.80	2500	0.26	3.33	0.24	3.15	2500	0.58	7.49	0.55	7.09	2500	1.03	13.31	0.97	12.61	2500
10%	0.29	3.80	0.28	3.59	2500	0.51	6.66	0.48	6.30	2500	1.15	14.98	1.09	14.17	2500	2.05	26.62	1.94	25.22	2500
15%	0.44	5.70	0.42	5.39	2500	0.77	9.99	0.72	9.45	2500	1.73	22.47	1.64	21.26	2500	3.08	39.93	2.91	37.83	2500
20%	0.58	7.60	0.56	7.18	2500	1.02	13.32	0.96	12.60	2500	2.30	29.96	2.18	28.34	2500	4.10	53.24	3.88	50.44	2500
25%	0.73	9.50	0.70	8.98	2500	1.28	16.65	1.20	15.75	2500	2.88	37.45	2.73	35.43	2500	5.13	66.55	4.85	63.05	2500
30%	0.87	11.40	0.84	10.77	2500	1.53	19.98	1.44	18.90	2500	3.45	44.94	3.27	42.51	2500	6.15	79.86	5.82	75.66	2500
35%	1.02	13.30	0.98	12.57	2500	1.79	23.31	1.68	22.05	2500	4.03	52.43	3.82	49.60	2500	7.18	93.17	6.79	88.27	2500
40%	1.16	15.20	1.12	14.36	2500	2.04	26.64	1.92	25.20	2500	4.60	59.92	4.36	56.68	2500	8.20	106.48	7.76	100.88	2500
45%	1.31	17.10	1.26	16.16	2500	2.30	29.97	2.16	28.35	2500	5.18	67.41	4.91	63.77	2500	9.23	119.79	8.73	113.49	2500
50%	1.45	19.00	1.40	17.95	2500	2.55	33.30	2.40	31.50	2500	5.75	74.90	5.45	70.85	2500	10.25	133.10	9.70	126.10	2500
55%	1.60	20.90	1.54	19.75	2500	2.81	36.63	2.64	34.65	2500	6.33	82.39	6.00	77.94	2500	11.28	146.41	10.67	138.71	2500
60%	1.74	22.80	1.68	21.54	2500	3.06	39.96	2.88	37.80	2500	6.90	89.88	6.54	85.02	2500	12.30	159.72	11.64	151.32	2500
65%	1.89	24.70	1.82	23.34	2500	3.32	43.29	3.12	40.95	2500	7.48	97.37	7.09	92.11	2500	13.33	173.03	12.61	163.93	2500
70%	2.03	26.60	1.96	25.13	2500	3.57	46.62	3.36	44.10	2500	8.05	104.86	7.63	99.19	2500	14.35	186.34	13.58	176.54	2500
75%	2.18	28.50	2.10	26.93	2500	3.83	49.95	3.60	47.25	2500	8.63	112.35	8.18	106.28	2500	15.38	199.65	14.55	189.15	2500
80%	2.32	30.40	2.24	28.72	2500	4.08	53.28	3.84	50.40	2500	9.20	119.84	8.72	113.36	2500	16.40	212.96	15.52	201.76	2500
85%	2.47	32.30	2.38	30.52	2500	4.34	56.61	4.08	53.55	2500	9.78	127.33	9.27	120.45	2500	17.43	226.27	16.49	214.37	2500
90%	2.61	34.20	2.52	32.31	2500	4.59	59.94	4.32	56.70	2500	10.35	134.82	9.81	127.53	2500	18.45	239.58	17.46	226.98	2500
95%	2.76	36.10	2.66	34.11	2500	4.85	63.27	4.56	59.85	2500	10.93	142.31	10.36	134.62	2500	19.48	252.89	18.43	239.59	2500
100%	2.90	38.00	2.80	35.90	2500	5.10	66.60	4.80	63.00	2500	11.50	149.80	10.90	141.70	2500	20.50	266.20	19.40	252.20	2500

Solenoids Wiring Diagram

Solenoids are wired from the factory to the Pump Motor Controller units with a liquid tight flexible conduit. For reference or troublehooting purposes, here is the wiring diagram.



REV.	ECN#	BY	DATE
-	66770	MAA	21OCT20

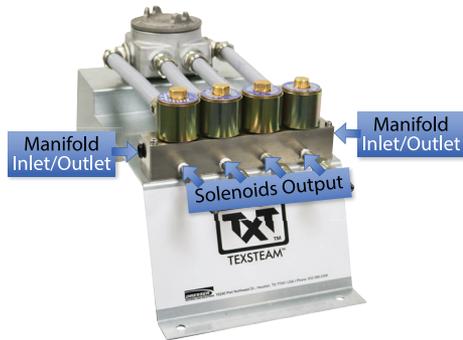
REVISION TABLE

PROPRIETARY AND CONFIDENTIAL		DRAWING NAME: ICI2MULTIPOINT	
<small>Copyright © 2011 Dresser Industries, Inc. Houston, TX. All rights reserved. This drawing is intended for use in the design and construction of equipment. It is not to be used for any other purpose without the written consent of Dresser Industries, Inc.</small>		WIRE DIAGRAM, ICI2 MULTIPPOINT	
DRESSER NATURAL GAS SOLUTIONS		MANIFOLD VALVE, 4 POSITION	
METERS & INSTRUMENTS, PUMPS & ACTUATORS HOUSTON TX, U.S.A.		CERTIFICATION: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
PROJECT PER: MAA 1114	DATE: 10/21/20	SCALE: 1:1	SHEET 1 OF 1
SIZE: LA	FG: 102120	REV: -	
AUTOCAD: B	SP7031		

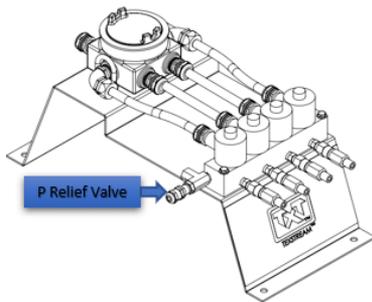
Multipoint Injection Controller

Installation Mechanical

1. Remove and discard plastic plugs from manifolds inlet/outlet, and solenoids output.
2. Install ¼" NPT nipples on solenoids outputs and install line checks (Texsteam accessories TA4626 & TA0675)



3. Forged steel plug rated for 3000psi is provided with the unit. If manifold is located on opposite, remove, and install on correct size.
4. Connect ¼" fluid line to manifold inlet.
5. Connect ¼" fluid output line to solenoid outputs.
NOTE: Solenoids are rated to 2500psi.
6. A pressure relief valve is highly recommended to be install at the manifold output, or in a pressure relief line to the fluid inlet, or tank.



NOTE: A pressure relief valve accessory is available from Texsteam (TA0173 & TA0180 Spring Kit). It can be connected.

7. A bleed valve is recommended to be install on the drain line before pressure relief valve with bleed outlet to a waste reservoir. Bleed valve is available from Texsteam as an accessory.

Model Number

Part #	Description
TA 4626	NIPPLE HEX 1/4 3000# 316 SS
TA 0675	LINE CHECK SS 1/4
TA 0173	Pressure Relief Valve 1/4 MNPT X 1/4 FNPT
TA 0180	Pressure Relief Valve - Spring Kit 2250-3000PSI
TA 0179	Bleed Valve

Dimensions & Part List

Dimensions for Multipoint Controller are shown on the next page. System shown is for 4 solenoids. Options for 2 solenoids and 3 solenoids are also available.

PART LIST		TC 2400	TC 2401	TC 2402	COMMENTS
1	SEE TABLE	1	1	1	
2	TB1775	1	1	1	
3	TB1776	1	1	1	
4	SP2430	2	2	2	
5	P53-031000-3900	2	2	2	
6	TA 0174	5	4	3	
7	TA 0175	1	1	1	
8	TA 0176	2	1	0	
9	SP1117	1	1	1	
10	P01-025250-3900	2	2	2	
11	P52-025000-3900	2	2	2	
12	P55-025000-3900	2	2	2	
13	TA 0177	3FT.	2FT.	1FT.	
14	SP2054	1	1	1	NOT SHOWN, INSIDE JUNCTION BOX
15	SP1056	1	1	1	NOT SHOWN, INSIDE JUNCTION BOX
16	SP2053	8	6	4	NOT SHOWN
17	SP4201	1	1	1	NOT SHOWN

OPTIONAL ITEMS		
PART NO.	DESCRIPTION	QTY
TA 0173	PRESSURE RELIEF VALVE, 1/4 NPT X 1/4 NPT	1
TA 0178	STREET TEE, SST, 1/4NPT FMX1/4 NPT	1
TA 0179	BLEED VALVE, SST, 1/4NPT	1
TA 0180	BROWN SPRIN KIT FOR RSA SERIES RELIEF VALVE	1
TA4626	NIPPLE HEX 1/4 NPT	OPTIONAL
TA0675	LINE CHECK 1/4	OPTIONAL

ITEM 1	
PART NO.	DESCRIPTION
TB 1772	MANIFOLD VALVE, 2 POSITION
TB 1773	MANIFOLD VALVE, 3 POSITION
TB 1774	MANIFOLD VALVE, 4 POSITION

(HHCS 3/8-16)

2X 2X 2X
10 11 12

A	66770	MAA	02NOV20	
	66717	MAA	03SEP20	
REV	ECN	BY	DATE	
REVISION TABLE				

PROPRIETARY AND CONFIDENTIAL

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METERS & INSTRUMENTS,
PUMPS & ACTUATORS
HOUSTON, TX, U.S.A.

DRAWING NAME/DESCRIPTION:
ASSEMBLY FOR MULTI POSITION
MANIFOLD VALVE

CERTIFICATION:
QUALIFIED/DESIGNED: Y N
DATE: 09/21/20

SCALE: 1:1

REV: A

Servicing & Troubleshooting

WARNING

- EXPLOSION HAZARD -
SUBSTITUTION OF COMPONENTS MAY IMPAIR
SUITABILITY FOR CLASS 1, DIVISION 2.

WARNING

- EXPLOSION HAZARD -
DO NOT DISCONNECT EQUIPMENT UNLESS POWER
HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN
TO BE NON-HAZARDOUS.

WARNING

Beware of potentially harmful chemicals ejecting from the pump head when you are opening the priming valve. Take appropriate precautions to protect your self from high temperature and/or harmful chemical exposure.

WARNING

This equipment can be installed in areas that may contain gases or vapors which can lead to oxygen depletion and/or personnel asphyxiation. Additional protection and warnings should be followed and posted in such installations.

For fluid leaks check all fittings make sure there are no loose connections, and tight fittings.

For solenoids valve not operating, check electrical connections. The following spare parts are available if replacements are need it:

Part #	Description
SP2216	RELAY MODULE, DIN-RAIL MNTD TERMNL BLCK,12VDC 6AMP
TB 1774	MANIFOLD VALVE ASSY, 4 STATION
TA 1773	MANIFOLD VALVE ASSY, 3 STATION
TA 1772	MANIFOLD VALVE ASSY, 2 STATION
TC 2400-KIT	KH401XF02J1BF5 - Solenoid Repair Kit

Emergency field repairs by authorized service technicians are strongly advisable. Repairs made by un-authorized technicians will void any warranty. To assure safety of equipment and personnel, only Dresser recommended replacement parts shall be installed. And above all, disconnect power from the iCIP® pump before servicing. Damage to wiring and operating equipment may be avoided with careful reviewing the operating and installation procedures document by qualified personnel. At all times, operating safety of electrical equipment is imperative to avoid injury to personnel.

IMPORTANT

Read this instruction document with special attention to warnings, cautions and safety concerns.

**FAILURE TO ADHERE TO THESE INSTRUCTIONS
COULD RESULT IN SAFETY HAZARDS WHICH MAY
RESULT INJURY TO PERSONNEL, MOTOR/CONTROLLER
DAMAGE OR OTHER ELECTRICAL EQUIPMENT.**

Doubts or reservations with regards to installations or maintenance with reference to connecting your "Solar Powered" Chemical Injection Pump system should refer to the detailed sections supplied in this manual. For additional instruction, classification or assistance, contact an authorized Service Center.

WARNING

Avoid personnel injury involving equipment that is in motion. Always remove or disconnect power prior to service to the motor, motor controller, batteries, charge controller, solar panels.

System Specifications

Injection Points	Up to 4
Available in	2, 3, & 4 Points
Volume Adjustment	Via ICIP Controller - Pump must be sized to Total Volume of all Points
	Each Point can be set at specific percentage from Total Pump Volume
Op. Temperature	-40F° to 140F°
Max Pressure	2500 psi
Seal Material	Buna/Teflon
Power Consumption	10 Watts
Available with	ICIP & HiCIP Solar Pumps, TXTPMCICIPAC, & TXTPMCICIP12V
Solenoid Ports & Manifold	Explosion-Proof (NEMA 7)
	Valves Class I&II Groups C, D, E, F & G, Division 1&2
Pipe Connections	1/4" NPT

Industrial Products Group

Texsteam Pumps

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Houston, TX 77041

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Texsteam Pumps Multipoint IOM NGS.IPG.0065

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