Mazzei™ Injectors

Application

Used to inject fertilisers, chemicals and water treatment additives through your irrigation system.

Features

- Extremely efficient and compact venturi design with no moving parts for minimised maintenance operation.
- Available in a wide range of sizes for varying flow rates and injection capacities
- Powered by motive fluid so no external energy is required for most installations.
- Moulded from a chemically coupled polypropylene with 40% glass fill, with internal mixing vanes. Model 4091 constructed from PVDF (Kynar).

Benefits

- Substantial fertiliser savings can be made through irrigation application.
- Can also be used for injecting system cleaning chemicals through micro irrigation systems.
- Selection of flow meters, metering valves and foot strainers.
- Can be used to inject air into the system for aeration/ oxidation purposes.

Injector Accessories

- **Flow Meters**
  Four variable area flow meters available:
  0.4-4 L/m, 0.8-8 L/m
  1.8-18 L/m, 5-38 L/m
  Pressure Rating:
  1000 kPa at 20˚C
  Polysulfone bodies and adaptors.
  Stainless Steel Grade 316 internal parts.
  Inlet/outlet size: 15 mm male NPT.
- **Tube Fittings - Tails**
  High density polyethylene.
  Two sizes, 15 mm male NPT x 6 mm barb, and 15 mm male NPT x 8 mm barb.

- **Metering Valves**
  Model MV-25.
  Inlet/outlet: 6 mm tubing, dial reference scale.

  Model MV-50.
  Inlet/outlet: 15 mm female NPT.

  Materials: Polypropylene and PTFE with Viton™ O-rings, dial reference scale.
- **Strainers**
  Tube end polypropylene strainer.
  500 micron screen.

MV-25

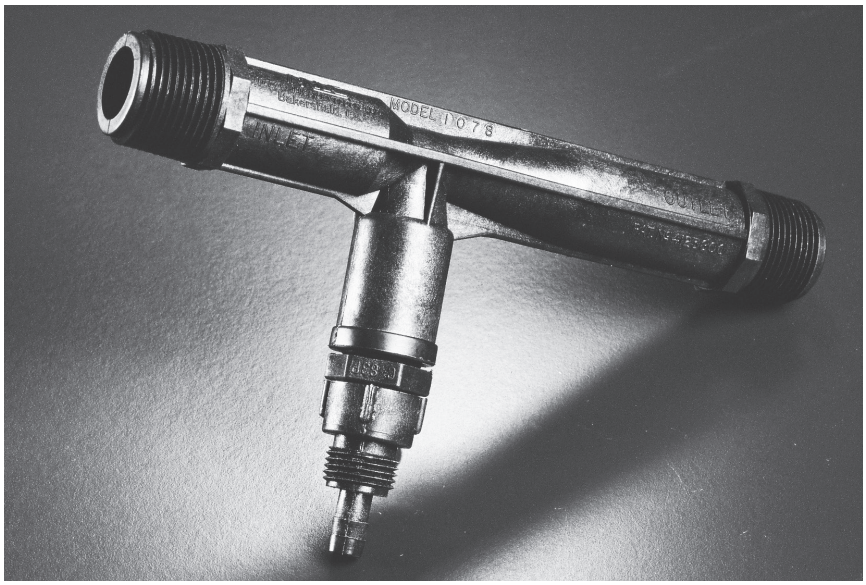
MV-50

Metering Valves

Flow Meters

Strainers

Tails



Mazzei™ Injectors

Standard Equipment Required

Model 584 (20 mm)
Suction inlet, built-in check valve with Viton™ seat, PTFE ball, and Hastelloy-C™ spring. Suction inlet has 1/4" NPT thread and 6 mm hose tail. Use with 6 mm Clear Vinyl Tubing. Use 1014831 Flow Meter, 1014843 Metering Valve and 1014848 Strainer if required.

Model 1078 (25 mm)
Suction inlet includes check valve with Viton™ seat, PTFE ball and Hastelloy-C™ spring. Suction inlet has 15 mm NPT thread and 8 mm hose tail. Use with 8 mm Clear Vinyl Tubing. Use 1014831 or 1014832 Flow Meter, 1014842 Metering Valve and 1014844 Strainer or 1014841 Strainer assembly if required.

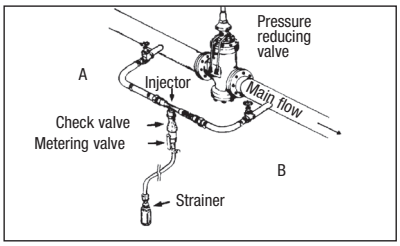
Model 1583-A (40 mm)
Suction inlet includes check valve with Viton™ seat, PTFE ball, and Hastelloy-C™ spring. Suction inlet has 15 mm NPT thread and 12.5 mm hose tail. Use with 12.5 mm Clear Vinyl Tubing. Use with 1014833 Flow Meter, 1014842 Metering Valve and 1014845 Strainer if required.

Model 2081-A (50 mm)
Suction inlet, 32 mm MBSP thread. Check Valve is not included with this model. Use with Check Valve, code 1012872 and Foot Valve code 1012871, and 25 mm Clear Vinyl Tubing.

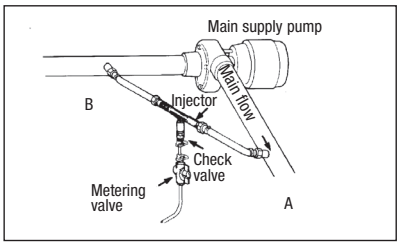
Ordering Information

Code	Description
1014855	Model 584 Mazzei Injector complete with 1.5m suction tube, metering valve, strainer and foot valve
1014821	20 mm Male BSP Model 584 Mazzei Injector (95 L/h Injector)
1014831	20 mm Flow Meter (0.4 - 4 L/m)
1014843	Metering Valve MV- 6 mm ID Tubing
1014846	Tail, 15 mm Thread x 6 mm Barb
1014848	6 mm Barbed Model S-84 Foot Strainer
1014856	Model 1078 Mazzei Injector complete with 1.5m suction tube, metering valve, strainer and foot valve
1014822	25 mm Male BSP Model 1078 Mazzei Injector (285 L/h Injector)
1014832	25 mm Flow Meter (0.8 - 8 L/m)
1014842	Metering Valve MV-50 15mm Female NPT
1014847	Tail, 15 mm Thread x 8 mm Barb
1014841	8 mm Foot Strainer with Check Valve
1014844	8 mm Barbed Model S-84 Foot Strainer
1014857	Model 1583-A Mazzei Injector complete with 1.5m suction tube, metering valve, strainer and foot valve
1014823	40 mm Male BSP Model 1583-A Mazzei Injector (680 L/h Injector)
1014833	40 mm Flow Meter (1.8 - 18 L/m)
1014845	12.5 mm Barbed Model S-84 Foot Strainer
1014824	50 mm Male BSP Model 2081-A Mazzei Injector (1900 L/h Injector)
1014834	50 mm Flow Meter (5 L/m - 38 L/m)
1014825	100m BSP Male, Model 4091 Mazzei Injector only

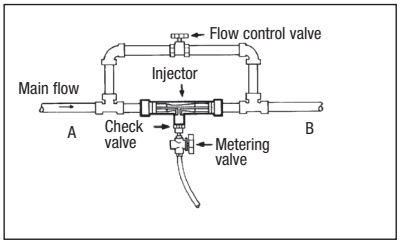
Typical Installations



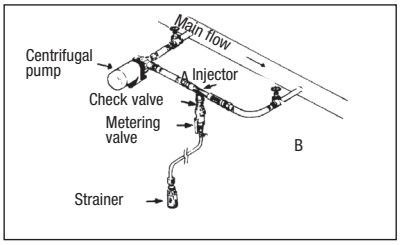
Example A. Injector installed around a point of restriction such as a regulator valve or gate valve which creates a pressure loss, thereby allowing the injector to produce a vacuum.



Example B. Injector installed across the differential pressure created by an existing booster or supply pump in the system. It is plumbed from the discharge side to the intake side of the pump.



Example C. Injector installed in main flow line with flow control valve on by-pass line.



Example D. Installed in conjunction with a centrifugal pump to boost pressure through the injector thereby creating a differential pressure and producing a vacuum for chemical induction downstream from the pump.

Mazzei™ Injectors Required Information

The following information and calculations are required to determine the correct size and model of injector for an irrigation system.

1. Total water flow of the irrigation system (in litres per minute).
   _____L/m
2. Rate of fertilizer/chemical injection required (in litres per hour).
   _____L/h
3. Pressure differential available in the system.
   i). Maximum available water pressure (System Pressure prior to the pressure reducing or flow control valve in installation examples A and C, or pressure at the discharge of the main supply pump in installation example B).
   _____kPa (a)

ii). Minimum water pressure required to operate the system (Pressure after the pressure reducing or flow control valve in examples A and C, or pressure at the inlet of the main supply pump in example B).
_____kPa (b)

iii). Available pressure differential (a-b).
_____kPa (c)

iv). Percentage of pressure differential (c/a x 100).
_____%

- If the pressure differential (as calculated) is 20% or greater, a bypass installation method can be used. (See examples A, B and C of typical installations).
- If there is not at least 20% pressure differential, the injector must be installed in series with a booster pump. (See example D of Typical Installations).

Injector Selection

The Injector Performance Chart on the following page lists the motive flow requirements and suction capacities of several models of Mazzei Injectors at various differential pressure conditions.

From the calculations, use the Performance Chart on the next page to select an injector model that can exceed the required injection (suction) rate. For the injector to operate, the motive flow (flow through the Injector) must not exceed the total flow of the irrigation system.

1. Locate the Injector Inlet Pressure (kPa) which most closely corresponds to your maximum available water pressure (3i above).
2. Locate the Outlet Pressure (kPa) which most closely corresponds to your pressure required to operate the system (3ii above).
3. Read across the table (next page) to locate the Injector Model with a Liquid Suction Rate which will exceed your injection requirements. (Use a metering valve to adjust to the desired injection rate).

Specifications					
	Model 584	Model 1078-2	Model 1583-A	Model 2081-A	Model 4091
Body Material	Glass reinforced polypropylene	Glass reinforced polypropylene	Glass reinforced polypropylene	Glass reinforced polypropylene	PVDF (Kynar)
Pressure rating @ 20°C	1034 kPa	1034 kPa	1034 kPa	1034 kPa	896 kPa
Length (mm)	150	229	279	297	660
Height of suction port below centreline of Injector	63.5 mm	114 mm	89 mm	63.5 mm	130 mm
Suction Port	¼" ID tube barb and ¼" MNPT	1/2" ID tube barb and 1/2" MNPT	1/2" ID tube barb and 1/2" MNPT	1 ¼" MBSP	2 x 2" MBSP

Mazzei™ Injectors Performance Chart

Suction Capacity of Mazzei Injectors at Various Operating Pressures

Operating Pressure (kPa)		Model 584 (20mm)		Model 1078-2 (25mm)		Model 1583-A (40mm)		Model 2081-A (50mm)		Model 4091 (100mm)	
Injector Inlet	Injector Outlet	Motive Flow (Lpm)	Water Suction (Lpm)	Motive Flow (Lpm)	Water Suction (Lpm)	Motive Flow (Lpm)	Water Suction (Lpm)	Motive Flow (Lpm)	Water Suction (Lpm)	Motive Flow (Lpm)	Water Suction (Lpm)
138	0		1.57		6.20		14.39		39.80		177.9
	34	15.82	1.57	41.45	6.02	81.2	12.96	245.3	39.80	1030	177.9
	69		1.50		4.42		9.06		29.50		170.3
	82		1.21		3.25		8.31		18.80		113.6
	103	(127)	0.92	(120)	1.91	(123)	4.18	(120)	9.60	(120)	45.4
207	0		1.60		5.95		14.29		39.80		177.9
	34		1.60		5.96		14.28		39.80		177.9
	69	19.38	1.57	50.76	5.96	99.5	13.35	300.5	39.80	1257	177.9
	103		1.59		5.18		10.55		32.30		162.8
	138		1.15		3.50		7.92		21.50		87.1
	173	(186)	0.73	(179)	1.13	(179)	1.15	(179)	3.90	(179)	15.1
276	0		1.62		5.88		14.34		39.80		177.9
	34		1.61		5.88		14.43		39.80		177.9
	69	22.37	1.62	58.63	5.88	114.8	14.33	347.1	39.80	1446	177.9
	103		1.61		5.88		13.91		39.80		177.9
	138		1.59		5.79		12.17		33.00		177.9
	173		1.35		4.56		9.68		24.90		117.3
	207	(245)	0.95	(237)	2.69	(230)	5.14	(231)	10.70	(241)	56.8
345	0		1.61		5.83		14.35		39.80		177.9
	69		1.61		5.83		14.28		39.80		177.9
	138	25.02	1.60	65.56	5.83	128.4	14.16	388.0	39.80	1575	177.9
	173		1.54		5.83		12.85		37.10		177.9
	207		1.36		5.45		10.88		28.60		166.5
	241		0.99		4.06		7.61		18.90		102.2
	276	(310)	0.18	(303)	2.21	(289)	2.55	(286)	7.30	(297)	22.7
413	0		1.67		5.85		14.49		39.80		177.9
	69		1.67		5.85		14.45		39.80		177.9
	138	27.4	1.65	71.8	5.85	140.7	14.37	425.1	39.80	1741	177.9
	207		1.60		5.87		13.03		37.90		177.9
	241		1.50		5.79		11.50		32.10		174.1
	276		1.27		4.87		9.33		24.00		159.0
	310	(369)	0.91	(352)	2.80	(340)	5.18	(345)	13.70	(352)	106.0
482	0		1.63		4.89		14.43		39.80		174.1
	69		1.64		5.89		14.43		39.80		174.1
	138	29.6	1.63	77.55	5.89	151.9	14.43	490.5	39.80	1874	174.1
	207		1.62		5.90		14.24		39.80		174.1
	276		1.62		5.83		12.53		33.40		174.1
	345		1.06		3.44		7.85		20.60		117.3
	380	(434)	0.57	(405)	1.82	(391)	2.73	(403)	9.00	(417)	60.6
551	0		1.65		5.92		14.61		39.80		170.3
	69		1.65		5.92		14.61		39.80		170.3
	138	31.64	1.66	82.89	5.92	162.4	14.61	520.4	39.80	2014	170.3
	207		1.66		5.92		14.61		39.80		170.3
	276		1.66		5.98		13.91		38.10		170.3
	345		1.58		5.77		11.19		31.90		170.3
	413		1.08		3.34		5.88		17.00		113.6
	448	(500)	0.50	(472)	2.08	(448)	0.76	(458)	3.80	(479)	53.0
621	0		1.71		5.96		14.47		39.80		159.0
	69		1.71		5.96		14.47		39.80		159.0
	138		1.73		5.96		14.47		39.80		159.0
	207	33.57	1.72	87.93	5.96	172.3	14.47	548.4	39.80	2154	159.0
	276		1.72		6.03		14.45		39.80		159.0
	345		1.72		5.95		13.74		39.00		151.4
	413		1.54		5.34		11.22		28.90		147.6
	482		0.84		2.50		3.10		11.30		106.0
	517	(555)	0.33	(530)	1.30	(504)	-	(521)	-	(545)	53.0
689	0		1.81		5.94		14.64		39.80		159.0
	69		1.81		5.94		14.64		39.80		159.0
	138		1.84		5.94		14.64		39.80		159.0
	207	35.39	1.83	60.3	5.94	181.6	14.64	548.4	39.80	2271	159.0
	276		1.82		5.94		14.64		39.80		159.0
	345		1.82		5.93		14.41		39.20		159.0
	413		1.70		5.99		13.01		37.50		159.0
	482		1.47		5.13		9.25		26.00		147.6
	551	(621)	1.06	(593)	1.93	(561)	1.62	(573)	7.60	(611)	56.8

Numbers in red brackets indicate the injector outlet pressure when suction stops (Zero Suction Point)