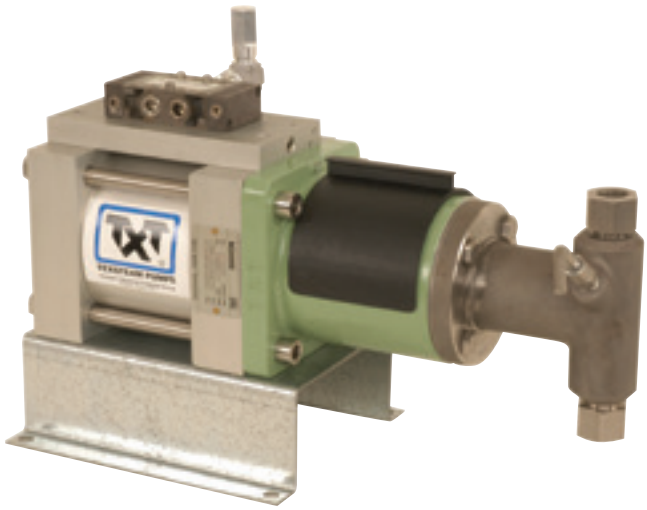
Series MX-5

Gas/Pneumatic Driven Injection Pump

Features



- 1 to 62 GPH
- Duplex Models Available
- No springs in the power cylinder-positive cycle operation
- Adjustable packing allows for planned maintenance
- Easily field serviceable
- Environmentally friendly - able to recycle unused supply gas
- 1 to 60 Strokes Per Minute
- Lightweight
- Wide range of service gas pressure
  minimum – 30 psi
  maximum – 145 psi
- Option of ceramic plungers - longer life on the plunger and packing
- Variety of packing allows for many chemical compatibilities

Model Designation

MX 5 1 AM W 02

- 02 — Indicates head trim options & packing & O-rings materials (See parts list for options)
- W — Indicates paint (W is standard)
- AM — Indicates pump model (AM is pump with base. Consult factory for other options)
- 1 — Indicates number of Injector heads (1 is Simplex and 2 is Duplex)
- 5 — Indicates plunger size (5 is 1/2", 6 is 3/4", 7 is 1" and 8 is 1-1/4")

Performance Chart

Plunger SIze	Inlet Pressure psi (bar)	No. of Heads	Volume Range - GPH (LPH)		Discharge Pressure psi (bar)	Volume per Stroke	Air Consumption
			Low	High	Maximum	cc	SCF/G
1/2″	50 (3.45)	Simplex	1.04 (3.9)	5.2 (19.7)	3000 (206.8)	6.1	208
		Duplex	1.9 (7.2)	10.4 (39.4)	3000 (206.8)		
	100 (6.9)	Simplex	1.04 (3.9)	5.4 (20.5)	8000 (551.5)		
		Duplex	1.9 (7.2)	10.4 (39.4)	8000 (551.5)		
	145 (10)	Simplex	1.04 (3.9)	5.4 (20.5)	10000 (690)		
		Duplex	1.9 (7.2)	10.4 (39.4)	10000 (690)		
3/4″	50 (3.45	Simplex	2.1 (7.9)	12.9 (49)	1300 (89)	13.76	92
		Duplex	3.75 (14.2)	42 (159)	1300 (89)		
	100 (6.9)	Simplex	2.1 (7.9)	12.9 (49)	3500 (241)		
		Duplex	3.75 (14.2)	42 (159)	3500 (241)		
	145 (10)	Simplex	2.1 (7.9)	12.9 (49)	5500 (379)		
		Duplex	3.75 (14.2)	42 (159)	5500 (379)		
1″	50 (3.45	Simplex	9.4 (35.6)	23 (87)	750 (51)	24.44	52
		Duplex	14.6 (55.3)	42 (159)	750 (51)		
	100 (6.9)	Simplex	9.4 (35.6)	23 (87)	2000 (137)		
		Duplex	14.6 (55.3)	42 (159)	2000 (137)		
	145 (10)	Simplex	9.4 (35.6)	23 (87)	3100 (213)		
		Duplex	14.6 (55.3)	42 (159)	3100 (213)		
1-1/4″	50 (3.45	Simplex	14.6 (55.3)	34 (128)	480 (33)	38.2	34
		Duplex	27 (102.3)	62.5 (237)	480 (33)		
	100 (6.9)	Simplex	14.6 (55.3)	34 (128)	1250 (86)		
		Duplex	27 (102.3)	62.5 (237)	1250 (86)		
	145 (10)	Simplex	14.6 (55.3)	34 (128)	2000 (137)		
		Duplex	27 (102.3)	62.5 (237)	2000 (137)		

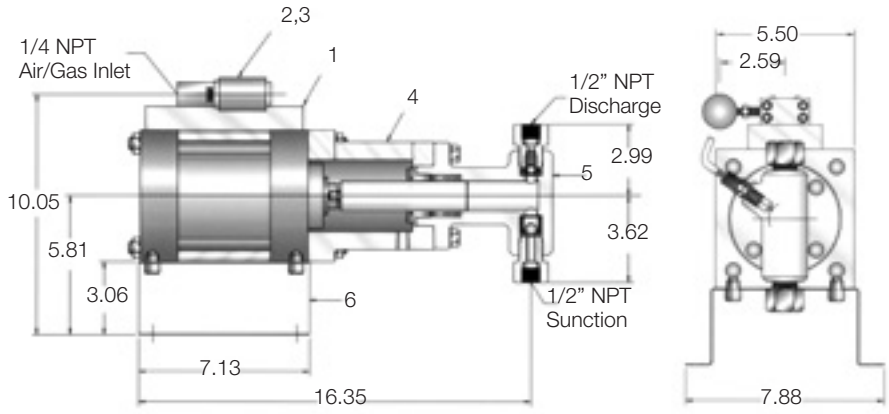
Ordering Notes:

- Stroke Length all models – 2″
- Stroke Speed all models – 1 - 60 SPM
- All MX5 Pumps should be mounted in the horizontal position – pump mounts are included with each unit

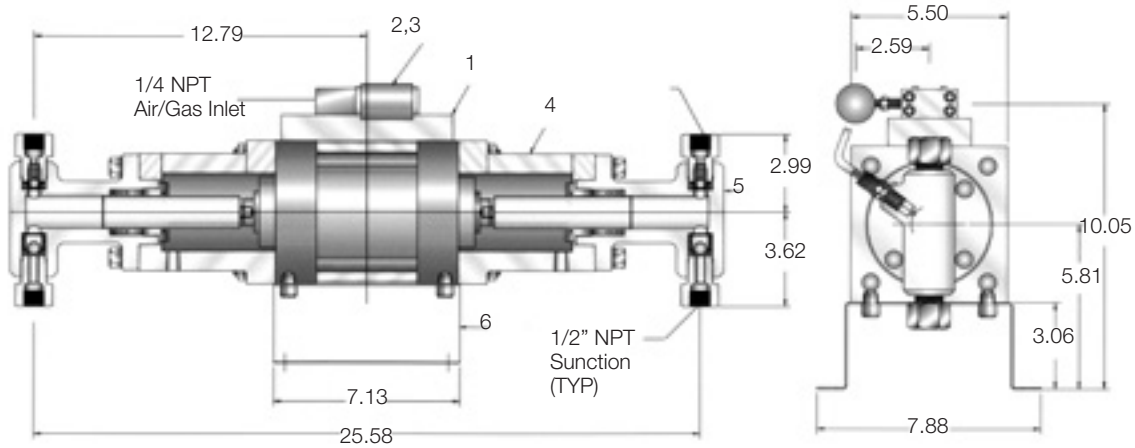
Parts List

Item	Part Number.	No. Req'd		Description	Material
		Simplex	Duplex		
1	TB 16541 TB 1642	1	 1	Power Unit - Simplex Power Unit - Duplex	
2	TA 7062	1	1	Nipple	SST
3	TA 5851	1	1	Speed Control Valve	Aluminium
4	TC 2141	1	1	Yoke	Aluminium
5	See Head Assembly Chart	1	2	Head Assembly	CF8M
6	TB 1644	1	1	Mounting Bracket	16 GA Galv Steel
7	TB 1643	1	1	Yoke Cover	Plastic

Simplex Dimensions

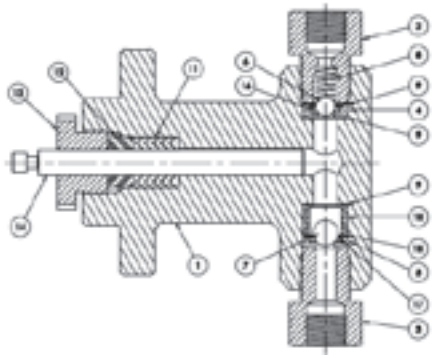


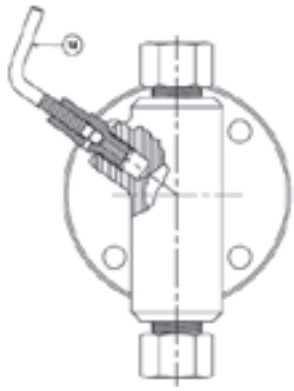
Duplex Dimensions



Head Assembly Parts List

Item	Description	Material	No. Req'd	Plunger Size			
				1/2″	3/4″	1″	1-1/4″
	Head Assembly			TC 2201	TC 2178	TC 2203	TC 2181
1	Pump Head	316 SS	1	TC 2158	TC 2142	TC 2143	TC 2145
2	Discharge Bushing	303 SS	1	TA 2456	TA 2456	TA 2456	TA 2456
3	Suction Bushing	303 SS	1	TA 2455	TA 2455	TA 2455	TA 2455
4	Discharge Check Valve Seat	303 SS	1	TB 0695	TB 0695	TB 0695	TB 0695
5	Suction Check Valve Seat	303 SS	1	TB 0698	TB 0698	TB 0698	TB 0698
6	Discharge Check Ball	3116 SS	1	TA 0054	TA 0054	TA 0054	TA 0054
7	Suction Check Ball	316 SS	1	TA 0053	TA 0053	TA 0053	TA 0053
8	Check Ball Spring	316 SS	1	TA 0077	TA 0077	TA 0077	TA 0077
9	Plain Gasket	304 SS	3	TA 2350	TA 2350	TA 2350	TA 2350
10	Ball Cage	17-4PH SS	1	TA 0444	TA 0444	TA 0444	TA 0444
11	Packing	Buna-N Teflon Viton/Teflon Fluorosilicone HP-Buna-N HP-Viton SDP	1 Set	TA 0959 TA 1012 TA 4103 TA 6259 TA 1874 TA 6557 TA 7173	TA 2771 TA 2988 TA 4657 TA 6839 TA 2772 TA 7174	TA 0050 TA 1013 TA 4658 TA 6835 TA 4135 TA 7175	TA 0405 TA 1014 TA 4480 TA 6836 TA 4133 TA 7176
12	Packing Gland	303 SS	1	TA 1219	TA 2769	TA 0043	TA 6450
13	Packing Gland Nut	303 SS	1	TA 6484	TA 2768	TA 0047	TA 6451
14	Plunger	17-4PH SS Ceramic	1	TA 6559 TA 6734	TA 6560 TA 6735	TA 6561 TA 6736	TA 6562 TA 6737
15	Bleeder Valve Assembly		1	TA 0123	TA 0123	TA 0123	TA 0123
16	O-Ring	Buna-N Teflon Viton Aflas Fluorosilicone Kalrez	1	TA 2097 TA 6189 TA 2336 TA 6101 TA 6501 TA 6325	TA 2097 TA 6189 TA 2336 TA 6101 TA 6501 TA 6325	TA 2097 TA 6189 TA 2336 TA 6101 TA 6501 TA 6325	TA 2097 TA 6189 TA 2336 TA 6101 TA 6501 TA 6325
17	O-Ring	Buna-N Teflon Viton Aflas Fluorosilicone Kalrez	1	TA 0612 61439P007 TA 2184 TA 6102 TA 6711 TA 6947	TA 0612 61439P007 TA 2184 TA 6102 TA 6711 TA 6947	TA 0612 61439P007 TA 2184 TA 6102 TA 6711 TA 6947	TA 0612 61439P007 TA 2184 TA 6102 TA 6711 TA 6947
18	Gasket	304 SS	1	TA 2338	TA 2338	TA 2338	TA 2338





Packing Material Assembly

PLUNGER SIZE	MATERIAL	MAX PRESSURE PSI (BAR)*	TEMPERATURE RANGE F (C)	PART NUMBER
1/2"	BUNA-N	3000 (206.8)	-40 to 250 (-40 to 121)	TA 0959
	TEFLON	3000 (206.8)	-80 to 450 (-62 to 232)	TA 1012
	VITON/TEFLON	5000 (344.6)	-20 to 400 (-28 to 204)	TA 4103
	FLUOROSILICONE/ TEFLON	5000 (344.6)	-80 to 450 (-62 to 232)	TA 6259
	HP-BUNA-N	10000 (690)	-40 to 250 (-40 to 121)	TA 1874
	HP-VITON	10000 (690)	0 to 450 (-17 to 232)	TA 6557
	SDP	10000 (690)	-30 to 450 (-34 to 232)	TA 7173
3/4"	BUNA-N	3000 (206.8)	-40 to 250 (-40 to 121)	TA 2771
	TEFLON	3000 (206.8)	-80 to 450 (-62 to 232)	TA 2988
	VITON/TEFLON	5000 (344.6)	-20 to 400 (-28 to 204)	TA 4657
	FLUOROSILICONE/ TEFLON	5000 (344.6)	-80 to 450 (-62 to 232)	TA 6839
	HP-BUNA-N	5500 (379)	-40 to 250 (-40 to 121)	TA 2772
	SDP	5500 (379)	-30 to 450 (-34 to 232)	TA 7174
1"	BUNA-N	3000 (206.8)	-40 to 250 (-40 to 121)	TA 0050
	TEFLON	3000 (206.8)	-80 to 450 (-62 to 232)	TA 1013
	VITON/TEFLON	3100 (213)	-20 to 400 (-28 to 204)	TA 4658
	FLUOROSILICONE/ TEFLON	3100 (213)	-80 to 450 (-62 to 232)	TA 6835
	HP-BUNA-N	3100 (213)	-40 to 250 (-40 to 121)	TA 4135
	SDP	3100 (213)	-30 to 450 (-34 to 232)	TA 7175
1 1/4"	BUNA-N	2000 (137)	-40 to 250 (-40 to 121)	TA 0405
	TEFLON	2000 (137)	-80 to 450 (-62 to 232)	TA 1014
	VITON/TEFLON	2000 (137)	-20 to 400 (-28 to 204)	TA 4480
	FLUOROSILICONE/ TEFLON	2000 (137)	-80 to 450 (-62 to 232)	TA 6836
	HP-BUNA-N	2000 (137)	-40 to 250 (-40 to 121)	TA 4133
	SDP	2000 (137)	-30 to 450 (-34 to 232)	TA 7176

* Inlet pressure determines maximum pressure. Inlet pressures less than 145 psi may not allow reaching the maximum pressure capability of the packing material

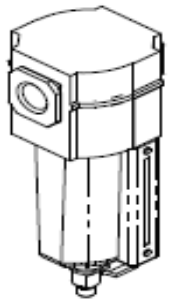
• Packing recommendations constitute no guarantee – for questionable applications contact Dresser Texsteam Engineering

Accessories

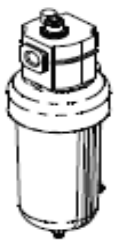
Part Number	Description
TA 3220	Filter Assembly, Non-natural gas certified
TA 3221	Lubricator Assembly, Non-natural gas certified
TA 7168	Filter, Natural gas certified
TA 7165	Lubricator, Natural gas certified

Series MX-5 Repair Kits

Part Number	Description
TA 6645	MX5 Manifold
TA 6646	MX5 Simplex Seal Kit
TA 6647	MX5 Simplex Power Unit
TA 6648	MX5 Duplex Seal Kit
TA 6649	MX5 Duplex Power Unit



TA 3220



TA 3221

TA 7168

TA 7165

Series MX5 Simplex Installation and Operating Instructions

1. Remove the pump from the shipping container and inspect for visual damage.
2. Connect the chemical supply line to the pump suction port. The pump suction port connection is 1/2" FNPT

NOTE

Simplex pumps should be mounted in the horizontal position with the suction port facing down.

3. Connect tubing or piping to the discharge port of the pump. The discharge port connection is 1/2" FNPT and perpendicular to the pump plunger axis.

NOTE

Dresser Texsteam recommends the installation of a line check at the point of injection into the line.

4. Install a shut-off valve in the air/gas supply line.
5. Connect a 1/4" line from the air/gas shut-off to control valve.
6. The pump supply air/gas pressure must be a minimum of 30 PSI but no greater than 145 PSI. If the available supply pressure is greater than 145 PSI, a regulator must be installed to reduce the pressure to an acceptable level.

NOTE

For the best trouble free performance, a filter and lubricator should be installed in the air/gas supply line.

7. Open the supply line shut-off valve to the pump. The stroke rate is controlled by adjusting the calibrated control valve.
8. Exhaust air/gas should exit the power unit through the 3/8" NPT exhaust ports located on both sides of the control valve connection in the power unit.
9. Open the priming valve on the side of the fluid housing, (approximately 1/2 turn to allow trapped air to escape from the head.) Continue to cycle the pump with the priming valve open until air bubbles are no longer visible in the fluid stream coming from the bleed hole.

NOTE

The media from the bleed hole can be piped to a container for safety purposes.

10. Control the output volume of the pump by adjusting the calibrated control valve.

NOTE

The pump can be operated at a stroke rate of 1 SPM to a maximum of 60 SPM.

11. Once the desired volume is established, the number on the barrel of the calibrated control valve should be noted for returning to the same stroke rate and pump volume in the future.

Series MX5 Duplex Installation and Operating Instructions

1. Remove the pump from the shipping container and inspect for visual damage.
2. Connect the chemical supply line to the pump suction port. The pump suction port connection is 1/2" FNPT.

NOTE

Duplex pumps should be mounted in horizontal position with suction ports facing down.

3. Connect tubing or piping to the discharge port of the pump. The discharge port connection is 1/2" FNPT and perpendicular to the pump plunger axis.

NOTE

Dresser Texsteam recommends the installation of a line check at the point of injection into the line.

4. Install a shut-off valve in the air/gas supply line.
5. Connect a 1/4" line from the air/gas shut-off to control valve.
6. The pump supply air/gas pressure must be a minimum of 30 PSI but no greater than 145 PSI. If the available supply pressure is greater than 145 PSI, a regulator must be installed to reduce the pressure to an acceptable level.

NOTE

For the best trouble free performance, a filter and lubricator should be installed in the air/gas supply line.

7. Exhaust air/gas should exit the power unit through the 3/8" NPT exhaust ports located on both sides of the control valve connection in the power unit.
8. Open the priming valve on the side of the fluid housing, (approximately 1/2 turn to allow trapped air to escape from the head.) Continue to cycle the pump with the priming valve open until air bubbles are no longer visible in the fluid stream coming from the bleed hole.

NOTE

The media from the bleed hole can be piped to a container for safety purposes

9. Adjusting the Flow Rate:
   The flow rate can be adjusted by two methods:

1. Opening and closing the pump control valve controls the number of strokes per minute the pump will cycle.

NOTE

The pump can be operated at a stroke rate of 1 SPM to a maximum of 60 SPM.

2. Each fluid end has an adjustment for controlling the length of the stroke.

- Remove the yoke cover.
- Stop the pump.
- Loosen the locking set screw
- Rotate the power coupling with the aid of the gland wrench.
- Adjustments must be made in increments of one complete revolution. Confirmation of the flow rates can be made using a calibration column.
- When the desired flow rate is achieved, stop the pump and tighten the locking set screw.

NOTE

Each fluid end stroke length may be adjusted separately, but maximum stroke length adjustment is 2".

Series MX5 Troubleshooting Guide

There are three basic problems that could develop in the power unit of the MXpump:

1. Pump will not move.

2. Pump short strokes.

3. Pump will not buildup any discharge pressure.

1) If the pump power unit will not move:

a) Check the supply air/gas.

i) Make sure there is air/gas pressure at the pump supply connection fitting.

Solution: Turn on the supply of air or gas.

ii) Make sure the air/gas pressure line is connected to the control valve, which is connected to the center, port of the spool valve.

Solution: Proper connection points are important for the pump's operation.

iii) Is the supply control valve turned on, does the handle tum the needle valve stem.

Solution: The valve opens by turning it in a counter-clockwise direction. A setscrew holds the handle in position on the stem.

iv) Are the spool valve exhaust ports open (not blocked)? When piping off the exhaust gas make sure the lines are not plugged.

Solution: Clear the exhaust ports of any obstruction, so the gas can be evacuated.

b) Has the pump reached its maximum pumping capability with respect to the discharge pressure?

Solution: The pump has stalled and the pressure on the discharge line must be relieved.

2) If the pump short strokes and does not complete it's full cycle:

a) Check the control valve vents on the side of the pump power unit.

Solution: Clean these screens or ports. They must be free from obstruction.

b) The internal air passages of the pump's power unit are blocked.

Solution: If the passages can not be cleared by using the 145 psi supply, recommend returning the unit to a service center.

3) The pump will not buildup any discharge pressure:

a) Check for an air/gas leak between the spool valve and the manifold on the side of the power unit.

Solution: Remove the spool valve and replace the seals.

b) Check for an air/gas leak between the manifold and the cylinder end blocks.

Solution: Remove the spool valve and the manifold and replace the seals.

c) Check for an air/gas leak between the cylinder and the end blocks.

Solution: Remove the spool valve, manifold, and end blocks then replace the seal that is leaking.

d) Check the exhaust ports of the spool valve with the piston in one position, (Rod not moving). If there is air/gas coming out of the port the piston seal is leaking.

Solution: Disassemble the pump's power unit and replace the piston seal.

There are two problems that could occur in the fluid end of the MX pump. They have the same checkpoints:

1) The pump will not move any fluid or can not buildup any pressure.

a) Packing loose or leaking.

Solution: Tighten the packing, if worn replace the packing. You may want to check the plunger for scratches, which caused the packing to leak.

b)Suction check valve seal bad.

Solution: Disassemble the suction bushing and replace the seal.

c) Priming valve bad - leaking.

Solution: Replace the priming valve or ball. Check for any obstruction.

d) Suction check valve ball damaged (scratched or has a flat spot).

Solution: Remove the suction bushing and replace the ball.

e) Check for loose bushings, suction or discharge.

Solution: Tighten all fittings.

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Industrial Products Group
Texsteam Pumps
16240 Port Northwest Drive
Houston, TX 77041
T: 832-590-2306
Toll Free: 1-800-945-9898

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