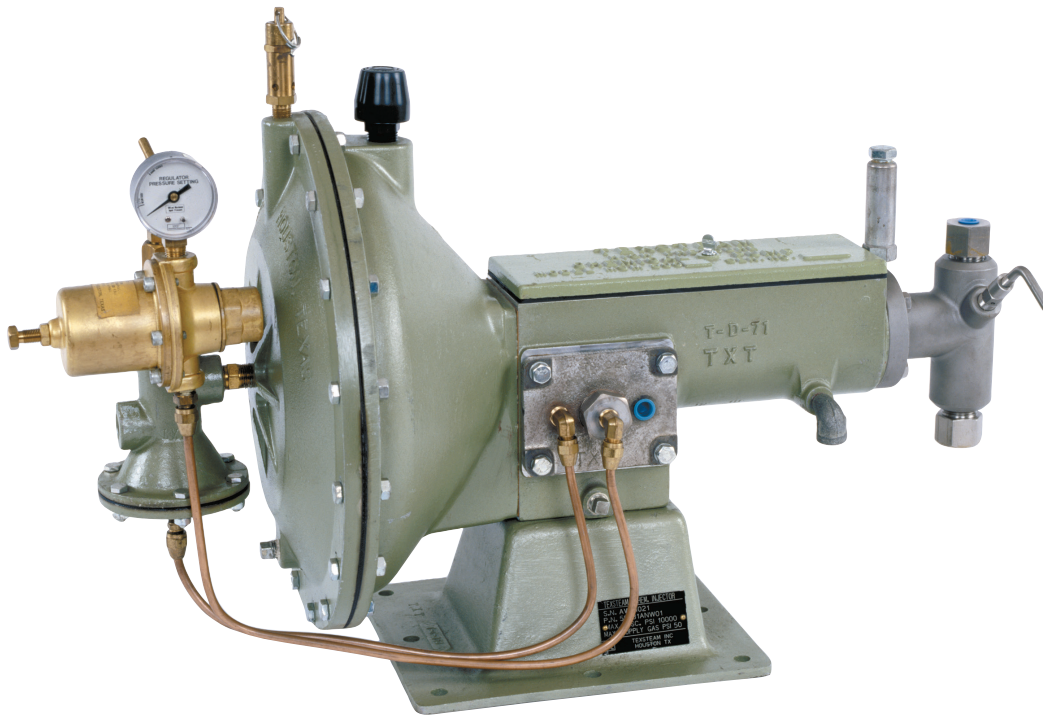


Series 5000

Gas/Pneumatic Driven Injection Pump



Description

Texsteam Series 5000 chemical injectors are positive displacement units powered by integral gas/air motor. These pumps fill the requirements of a broad range of applications because of their ability to achieve high discharge pressures (up to 12,000 psi) and wide volume ranges. A horizontal plunger and vertical check valve arrangement assure high operating efficiency. The standard pump head has a Ductile Iron body and stainless steel trim. Stainless steel heads are available for high corrosive applications. A built-in priming valve facilitates pump head priming, enables the operator to easily check pump operation, and offers a sample-catching device. The pump frame and body castings are high-strength aluminum. The operating mechanism strokes in oil and is gasket sealed to protect against dust and other atmospheric influences. A standard equipment safety valve offers protection against accidental overpressure of the main diaphragm. The adjustable packing is equipped with a lantern ring and a grease jack (except on 1 1/4" head) for lubricating the plunger and packing to insure long life.

Applications

- Introducing detergents in air-gas drilling operations
- Blending foaming agents in water laden gas wells
- High pressure addition of fluid compounds in blending and chemical processing.
- Introduction of de-salting agents, de-emulsifiers, inhibitors and flocculants in crude oil and gas streams
- High and low pressure lubrication systems
- Methanol and alcohol injection in gas systems to prevent freezing
- General high pressure injection applications
- Fluid blending of extreme pressures within varied, controlled processes
- Hydrostatic testing
- Glycol circulation
- Water treatment

Installation and operating instructions

1. After removing pump from carton, inspect for possible damage in transit from factory. If the pump has been damaged, file claim with the carrier.
2. Bolt holes are provided for mounting. See drawing for dimensions on page 5.
3. Connect the suction line to pump head.
 - a. When a reservoir is furnished with the pump, the suction line is already connected. Fill the reservoir and open (all the way) the TB-0871 sight feed shutoff assembly. It is important to have the TB-0871 valve open all the way when the pump is in operation because the TB-0871 valve seals-off in the open position and prevents air from entering the suction line through the valve. A dual strainer is furnished as part of this unit.
 - b. When a power unit model (less tanks) is purchased, a strainer should be piped into the suction line to prevent sand, rust or other particles, which score the plunger or possibly foul the check valves, from entering the pump head. Texsteam manufactures the TB-0021 sight feed assembly which can be used with the 3/8" and 1/2" plungers only. A TA-0075 street ell and TA-0674 nipple is required to pipe the TB-0021 sight feed into the bottom bushing of the pump head. The TB-0021 should be installed as shown on page 6. The inlet connections on the pump head and the sight feed are 1/4" FPT.
4. Connect the discharge line. The top connection on the pump head is the fluid discharge and has a female 1/4" pipe thread connection. A line check should be installed in the discharge line as close to the point of injection as possible. For pumps with ifs" plunger, Texsteam offers a 1/4" line check either in brass (TA-0676) or stainless steel (TA-0675) which will withstand working pressures of 3000 and 6000 psi respectively. For other plunger sizes, 1/2", 1" and 1-1/4", Texsteam offers the TB-0283 stainless steel line check which withstands pressures up to 6000 psi. When installing these check valves note the arrow on the body which indicates the direction of flow.
5. Connect the power gas line.
 - a. First blow power gas line clean to remove any loose rust particles, slag, sand, etc.
 - b. Consider the pressure requirements of the pump. If the gas supply exceeds 50 psi (consider erratic pressure), the supply should be equipped with a regulator to reduce the gas pressure to 50 psi. If the main air or gas supply to the pump is over 50 psig, it must be reduced to 50 pounds. This can be done by installing another TB-0040 regulator and TA-0129 gauge (available as optional components for field installation). The maximum allowable inlet pressure to a TB-0040 regulator for installing in the main gas supply is 1500 psig.
 - c. The TA-0131 safety valve is for protection of the TB-0010 diaphragm and is set at 50 psi. Pressure on the diaphragm should not in any case exceed 50 psi.
 - d. Tie in gas line into TA-0022 inlet valve.
6. Lubrication (30 wt. non-detergent oil - 3 quarts)
 - a. Remove the cover plate TB-0004 and fill the chamber next to diaphragm with oil. Only on pumps with 1-1/4" plungers are both the chambers filled with oil. The model 5007 requires oil in the packing gland chamber in order to lubricate the plunger.
 - b. Insert stick lubricant into the TA-0558 grease jack. Texsteam has available and recommends P/N TA-3179 for most fluids. No lubrication is required if the pump is equipped with teflon packing and chrome-plated plunger. In this case the connection for the grease jack should be plugged with a 1/8" pipe plug.
7. Adjust for desired volume by considering pump speed (see charts) and position of TA-0035 pin. Different volumes can be achieved by short and long stroke setting (see charts). The pump is assembled with TA-0035 plunger travel adjusting pin TA-0035 inserted in the hole of the plunger nearest the plunger packing gland nut. This is the position of longest stroke. To shorten the stroke, place the pin in the other hole. (See Page 6.)
8. Start the pump by slowly opening the TA-0022 inlet valve. Prime the pump head by opening the TA-0123 priming valve. After the pump discharges fluid without bubbles, close the priming valve for normal operation. At this point make a visual check of the plunger drip and using a flat blade screwdriver slowly tighten the gland nut to prevent excess drippage and waste of chemicals. Do not over-tighten plunger packing. It may be necessary to readjust the packing the next day. A slight leak during the break-in period is beneficial. Sufficient time should be allowed to let the packing 'seat-in.' DO NOT ADJUST PACKING UNDER PRESSURE. If low volumes are being pumped, the pump head the fluid discharge line and all other fittings up to the line check should be thoroughly purged of all air bubbles.

CAUTION

The TB-0040 regulator (Item 2, Pg. 6) mounted on the pump as a standard component **DOES NOT REDUCE THE MAIN AIR OR GAS SUPPLY PRESSURE** down to 50 psig, which is the maximum allowable for operating the Series 5000 pump. It is factory-set at 12 psi to prevent over-pressuring the TB-0037 master valve (Item 6, page 6).

If the main air or gas supply to the pump is over 50 psig, it must be reduced to 50 lbs. This can be done by installing another TB-0040 regulator and TA-0129 gauge (available as optional components for field installation) on the inlet gas line to the pump. **The maximum allowable inlet pressure** to a TB-0040 regulator for installing in the main **gas supply is 1500 psig.**

Maintenance instructions for inspection or replacement of power equipment

Inspection of TB-0040 Pressure Regulator

Loosen TA-0402 lock nut, hack out TA-0217 regulator screw, remove the five TA-0223 body screws and lift off TA-3110 bonnet. Lift out and inspect TA-3133 adjusting spring disc and TA-2111 adjusting spring. Unscrew TA-0220 lock nut and lift out TA-3135 adjusting spring plate, TA-0211 diaphragm, TA-0210 body gasket and TA-0213 diaphragm nut gasket. To inspect other parts, unscrew TA-0209 cap, lift out TA-0212 cap gasket. At this point TA-0222 seat block pin must be removed with punch. When pin is removed, TA-0214 valve seat assembly (reversible) and TA-0219 orifice screw can be removed.

Now the TA-0208 valve seat block yoke can be lifted out through other side of TC-0029 body. Check TA-0519 inlet filter screen for obstructions. Reset regulator at 12 psi

TB-37 Master Valve Assembly

Remove the six TA-0163 cap screws, remove TA-0001 housing cap and inspect TA-1329 diaphragms. After removing the diaphragms, the TA-0197 stem may be removed. To inspect TA-0202 valve spring, TA-0196 valve disc and TA-0201 lower valve seat, unscrew TA-0200 upper valve seat.

Inspecting TB-9 Pilot Valve Assembly

Unscrew TA-0906 disc retainer, lift out TA-0077 valve spring, TA-0579 washer and TA-4668 valve disc. Close inspection of the valve disc sealing surface and drive socket slot is necessary. Very close inspection of the drive pin should be made, if ends are worn, the valve disc should be replaced. If TB-0001 Body and TA-4668 valve disc are badly scored, replace. Realignment of the valve disc is important. Refer to positioning diagram on page 7.

Replacement of TB-0010 Diaphragms, TA-0025 Spring and Related Parts

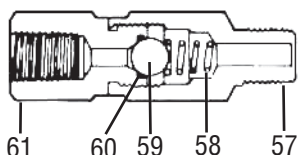
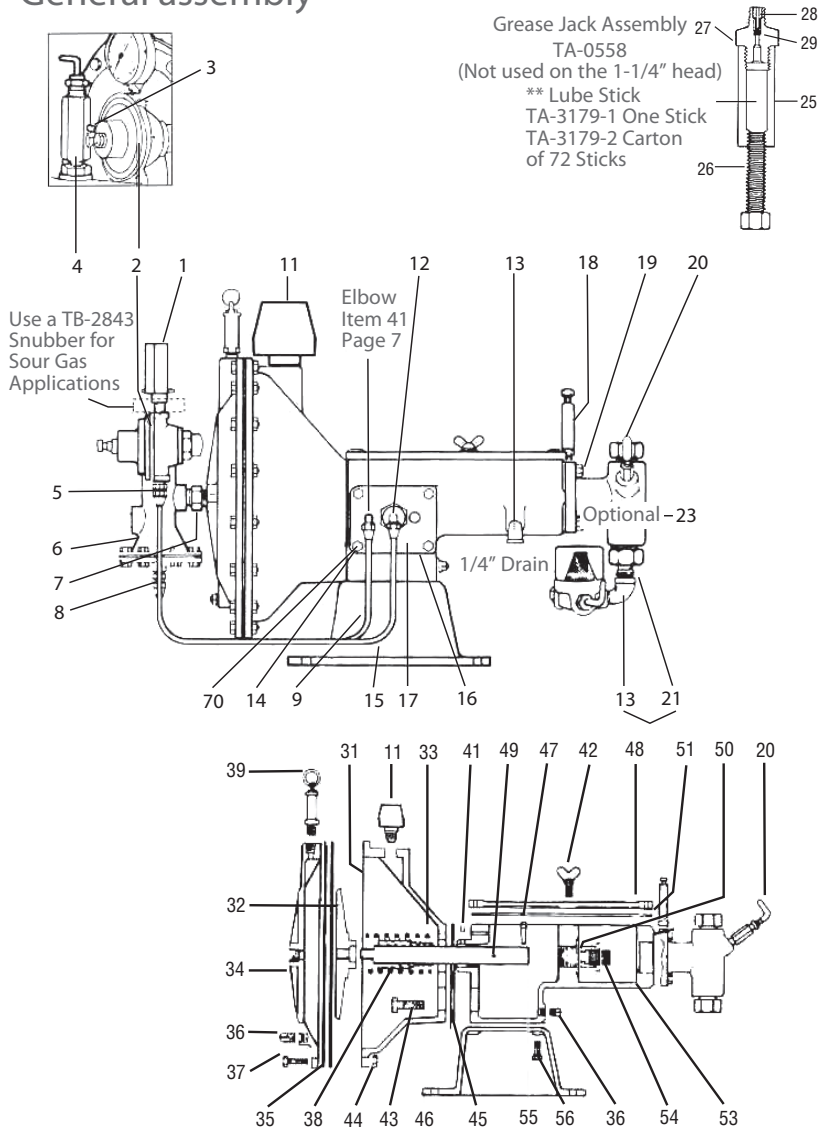
Remove TB-0040 regulator, TA-0022 valve, and TB-0037 master valve. Remove 16 TA-0142 bolts. The cover is under tension. Care should be exercised when removing the last TA-0142 bolts. Two C-clamps or 5/16" x 2 (slightly longer than TA-0142 bolts) would be very helpful for this work.

Troubleshooting

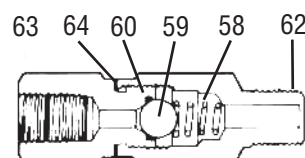
1. If pump stops with plunger in extreme discharge position and gas or air is being discharged from the TA-0131 safety valve, or a constant discharge of gas or air is discharged when the safety valve lift ring is pulled, the TA-1329 diaphragm in the TB-0037 master valve is burst.
2. If pump does not move forward and a constant discharge of gas or air is observed in the lubricating oil chamber then the TB-0010 main diaphragms are ruptured.
3. Pump is operating but not pumping fluid.
 - a. Open bleeder valve to break air lock.
 - b. Check if sight feed shutoff assembly TA-0101 is screwed in "out" position.
 - c. Check top and bottom balls and seats for leaking.

(REFER TO PARTS LIST ON PAGES 6 AND 7)

General assembly

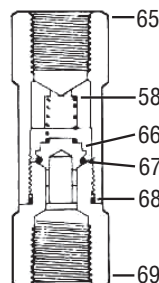


1/4" Brass Line Check
(TA-0676)
3000 PSIG
Maximum Pressure



1/4" Stainless Steel
Line Check (303SS)
(TA-0675)
6000 PSIG
Maximum Pressure

1/2" Stainless Steel (303SS)
Line Check (TB-0283)
6000 PSIG Maximum Pressure

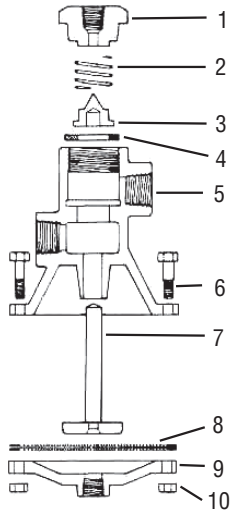


Parts list

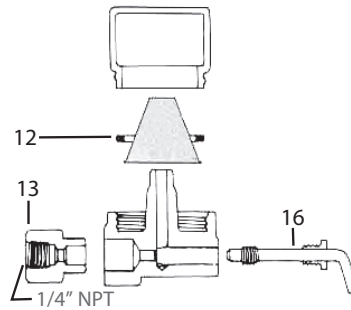
25	TA-0559	Jack Screw Body
26	P02-050125-0200	HHCS
27	TA-0561	Jack Screw Base
28	TA-0562	Jack Screw Retainer
29	TA-0564	Ball
Item	Part No.	Name
1	TA-1295	Pressure Gauge 1-12 psi
2	TB-0040	Regulator
2A	TA-2845	Sour Regulator
3	TA-4692	Nipple
4	TA-0022	Inlet Gas Valve Assembly
4A	TA-2979	Sour
5	TA-0135	Half Union
6	TB-0037	Master Valve
6A	TB-0770	Sour
7	TA-0009	Nipple
8	TA-0137	Half Union
9	TA-1494	Line Assy; Pilot to Master
9A	TB-1256	Sour
11	TA-2599	Air Filter
12	TA-0132	Elbow
12A	TA-3244	Sour
13	TA-0075	Elbow
14	P01-031100-3900	HHCS
15	TA-1493	Line Assy; Regulator to Pilot
15A	TB-1257	Sour
16	TA-0058	Gasket
17	TB-0009	Pilot Valve Assembly
17A	TB-0771	Sour
18	TA-0558	Grease Jack
19	P01-037125-4400	HHCS
20	TA-0123	Priming Valve
21	TA-0674	Nipple (optional)
23		Fluid End Assembly
31	TD-0434	Housing
32	TB-0002	Diaphragm Disc
33**	TA-0025	Spring
34	TC-0001	Cover
35**	TB-0010	Main Diaphragm
36	P61-025000-8000	Drain Plug
37	P01-031125-3900	Cover - Housing Bolts
38	TA-7127	Bushing
39	TA-0131	Safety Valve
39A	TA-2862	Sour
41	P20-025025-0200	Set Screw
42	P86-025100-0200	Yoke Cover Bolt
43	P01-037125-3900	Bolt
44	P25-031000-3900	Nut
45	TB-0011	Gasket
46	TC-0004	Base
47	TA-0035	Adj Pin
48	TB-0004	Inspection Cover
49	TA-0020	Pin
50	TA-5906	Stuffing Box
51	TB-0036	Gasket
53	TD-0001	Plunger Housing
54**	TA-3230	O-Ring
55	TB-1752	Thrust Rod
56	P01-031100-3900	Screw
57	TA-0677	Outlet Body
58**	TA-0391	Spring
59**	TA-0054	Ball
60**	TA-0479	O-Ring Buna
60**	TA-2580	O-Ring Viton
61	TA-0678	Inlet Body
62	TA-1296	Outlet Body
63	TA-1297	Inlet Body
64	TA-1574	Washer
65	TB-0271	Body
66	TA-1879	Valve Disc
67**	TA-0612	O-Ring-Buna
67**	TA-2184	O-Ring Viton
68**	TA-1959	O-Ring-Buna
68**	TA-3979	O-Ring Viton
69	TA-1880	Bushing
70	P52-031000-3900	Lock Washer

*Furnished on all plungers except 1-1/4" Model 5007
Recommended spare parts

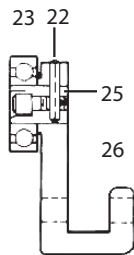
Parts list



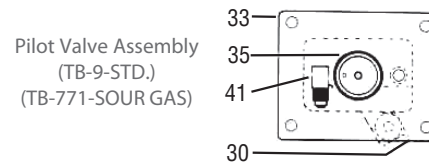
Master Valve Assembly
(TB-0037-STD.)
(TB-0770-SOUR GAS)



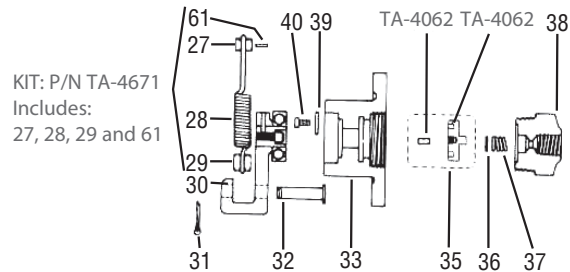
Flipper Arm Assembly
(TB-1756)
Item 30



Inlet Valve Assembly
(TA-0022-STD.)
(TA-2979-SOUR GAS)
(303SS)



Pilot Valve Assembly
(TB-9-STD.)
(TB-771-SOUR GAS)



KIT: P/N TA-4671
Includes:
27, 28, 29 and 61

Pressure Regulator Assembly
(TB-40-STD.) 1500 PSIG max. inlet pressure
(TA-2845 **SOUR GAS**) Configuration of TB-40 and TA-2845 is not identical)
250 PSIG max. inlet pressure

