DATA SHEET
HIGH-PRESSURE PULSE PUMPS

The Pumps with Nine Lives

Stainless Steel Models: **6350, 6351**

SPECIFICATIONS	U.S. Measure	Metric Measure
Pressure Range	500–3000 psi	35–207 bar
Maximum Injection Rate	12.0 gph	45.4 lph
RPM Range	300–1800 rpm	300–1800 rpm
Maximum Inlet Pressure of Drive Pump	20 psi	1.38 bar
Maximum Liquid Temp.	130° F	54° C
Inlet Port	¼" Hose Barb	¼" Hose Barb
Discharge Port	⅛" NPT(F)	⅛" NPT(F)
Inlet Valve Material **(6350)**	Acetal	Acetal
Inlet Valve Material **(6351)**	304SS	304SS
Weight Without Adapter Assembly	2.9 lbs	1.32 kg
Diameter	2"	51 mm
Length	5"	127 mm

FEATURES

- Chemicals bypass the pump downstream, preventing premature wear on internal parts.
- Applies chemicals for cleaning at pressures up to 3000 psi.
- Conveniently mounts into any inlet valve chamber on the main pump with an adapter.
- Two pulse pumps can be used on one high-pressure pump to double chemical injection rate or use two separate chemicals.
- Chemical pump can be turned on and off independently from main system.

MAXIMUM INJECTION RATE

Pump RPM	Injection Rate	Injection Rate
300	3.0 gph	11.4 lph
400	4.0 gph	15.1 lph
500	5.0 gph	18.9 lph
600	6.0 gph	22.7 lph
700	7.0 gph	26.5 lph
800	8.0 gph	30.3 lph
900	9.0 gph	34.1 lph
1000	10.0 gph	37.6 lph
1100	11.0 gph	41.6 lph
1200–1800	12.0 gph	45.4 lph

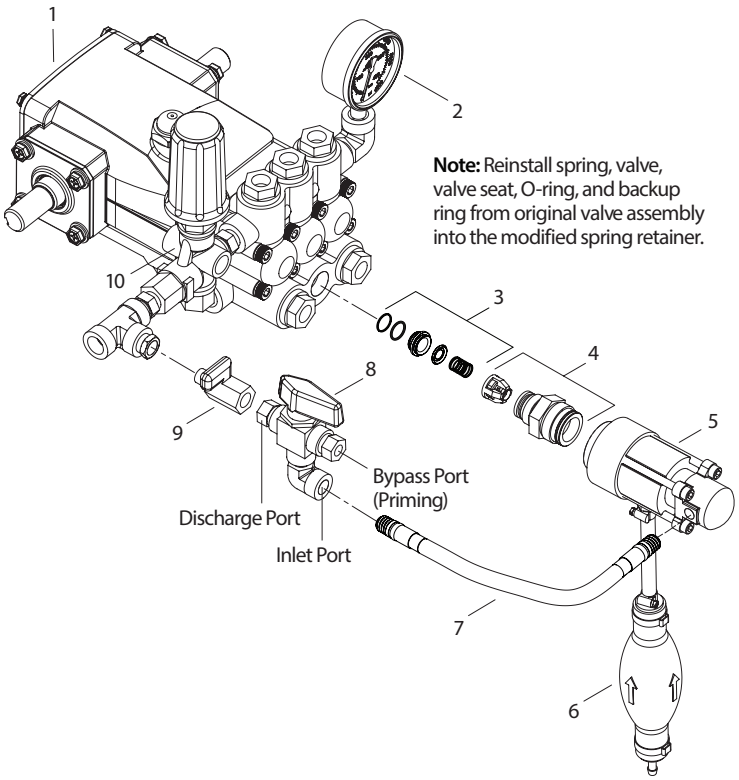
SELECTION

Select proper adapter assembly to match the appropriate pump model.

6350, 6351 ADAPTER ASSEMBLIES

Pump Models	Adapter Assembly
335, 435	76400
3CP1120, 3CP1130, 3CP1140, 310, 340, 350, 5CP2120W, 5CP2140WCS, 5CP2150W, 5SP30ELR, 5SP35ELR, 5SP40ELR	76405
45, 5CP3105CSS, 5CP3110CSS, 5CP3120, 5CP3120CSS, 5CP3150CSS, 5CP3160CSS, 5CP5120, 5CP5135CSS, 5CP5140CSS	76410
56, 60	76626
530, 550, 650, 660, 1050, 5CP6120, 5CP6180CSS, 5CP6190, 7CP6110CS, 7CP6170	76415

TYPICAL PLUNGER PUMP INSTALLATION



1. Plunger Pump
2. Gauge
3. Valve Components
4. Adapter Assembly
5. Pulse Pump
6. Priming Bulb
7. High-Pressure Discharge Hose
8. 3-Way Ball Valve, Closed Center (PN 992043 or Equivalent)
9. Needle Valve (PN 992040 or Equivalent)
10. Unloader
11. Check Valve (Not Shown) (PN 33937 or Equivalent)

Plunger Pump Conversion

1. Remove one of the three inlet valve plugs from discharge manifold.
2. Remove complete valve assembly from valve chamber.
3. Separate spring retainer, spring, valve from valve seat.
4. Reinstall valve and spring onto valve seat, then install new manifold spring retainer onto valve seat.
5. Install new valve plug O-ring around small end of adapter body, then install new backup ring and new O-ring around larger end of adapter body. Lubricate both O-rings.
6. Apply Loctite® 242® to exposed threads on small end of adapter assembly.
7. Install modified valve assembly into open inlet valve chamber.
8. Thread adapter assembly into valve chamber and torque to 870 in-lbs.
9. Use PTFE thread tape or pipe thread sealant on large end of the adapter assembly. Thread pulse pump onto adapter assembly and position pulse pump so that ¼" NPT barb is in desired position.
10. Attach priming bulb with hose to ¼" NPT barb on pulse pump.
11. Attach any standard high-pressure hose from ⅛" NPT port on pulse pump to a metering valve after the unloader.

Piston Pump Conversion

1. Remove discharge manifold from the piston pump.
2. Replace with new pulse pump manifold and associated parts, and a new flat valve kit. Refer to Data Sheet 6300.
3. Place pulse pump manifold with three cylinder holes facing upwards.
4. In the cylinder hole with the deeper counterbore, install one white PTFE seal washer and one spring retainer (without nylon insert).
5. Install heavy-duty spring, standard flat valve spring, flat valve, flat seat and spacer into this same deep cylinder hole.
6. In the remaining two cylinder holes, first install one white PTFE seal washer and then a complete flat valve assembly.
7. Remove existing shims from each cylinder bolt. Since the number of shims may change with the manifold, refer to Tech Bulletin 017 for proper shimming procedure and mount pulse pump manifold to pump.
8. Install backup ring, then O-ring on adapter assembly. Lubricate O-ring.
9. Apply Loctite® 242® to exposed male threads of adapter assembly.
10. Thread adapter assembly into special ½" NPT(F) port on the top of the pulse pump manifold.
11. Thread pulse pump into adapter assembly and position pulse pump so that ¼" NPT barb is in desired position.
12. Attach priming bulb with hose to ¼" NPT barb on pulse pump.
13. Attach any standard high-pressure hose from ⅛" NPT port on pulse pump to a metering valve after the unloader.

OPERATION

Note: A needle valve (PN 992040 or equivalent) and closed center 3-way ball valve (PN 992043 or equivalent) are required to properly operate the pulse pump.

1. Ensure pump is connected to a water supply and is not turned on.
2. Open 3-way ball valve to bypass port.
3. Squeeze priming bulb repeatedly until chemical flows through the pulse pump and comes out the bypass port of 3-way ball valve.
4. Turn on water supply, open trigger gun and start up pump.
5. Bring pump up to operating pressure and set regulating devices.

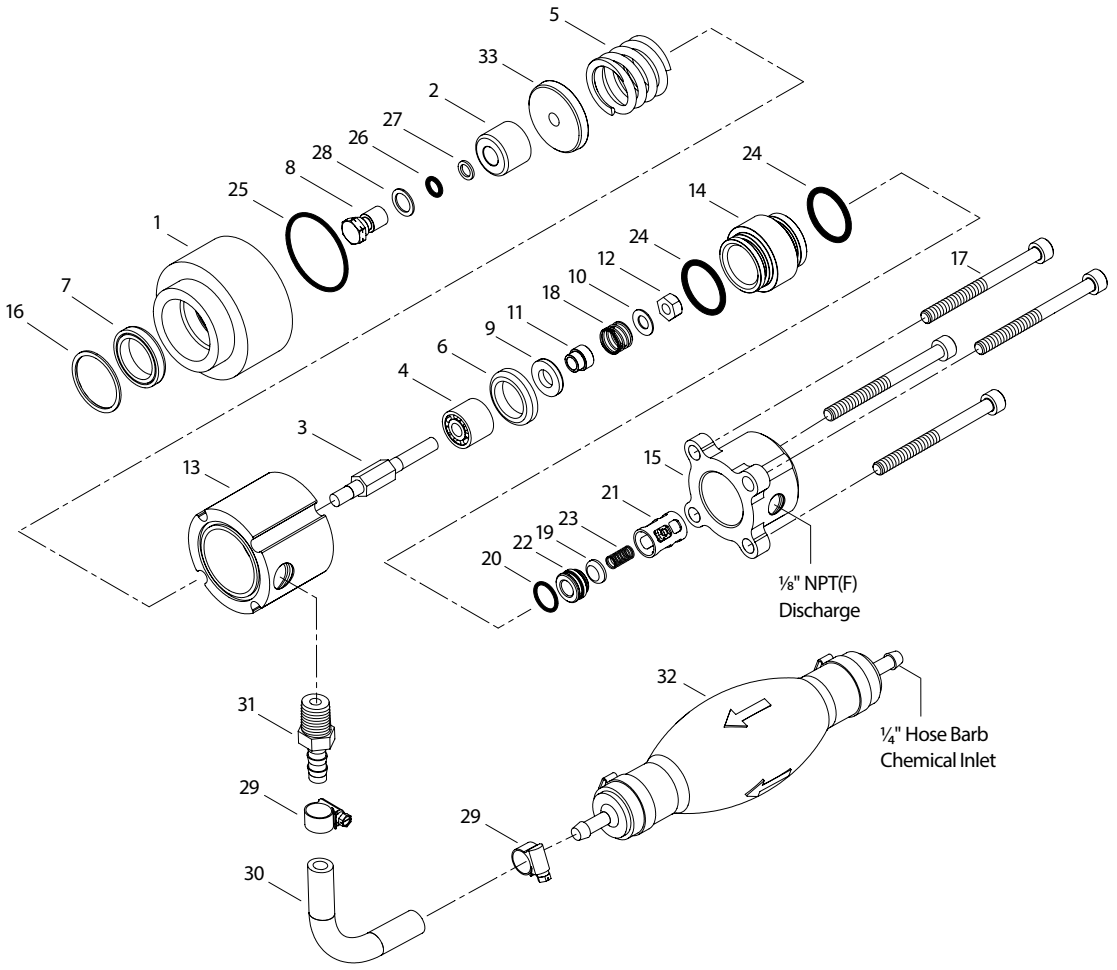
NOTICE **Main pump inlet pressure must not exceed 20 psi.**

6. Allow chemical to flow out of bypass port of 3-way ball valve, then switch 3-way ball valve to discharge port.
7. Adjust needle valve to the desired amount of chemical/water mixture.

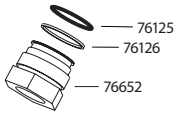
Note: Optional check valve (PN 33937 or equivalent) can be placed after primary bulb to prevent back flow.

Note: Priming bulb can be eliminated if chemical is gravity-fed.

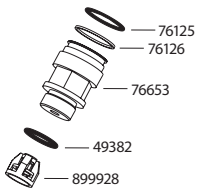
EXPLODED VIEW



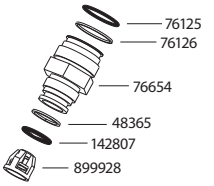
76400 Adapter Assembly



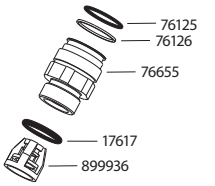
76405 Adapter Assembly



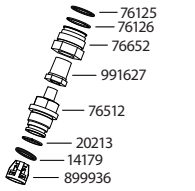
76410 Adapter Assembly



76415 Adapter Assembly



76626 Adapter Assembly



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
1	—	S	Body, Pulse	1
2	49449	CC	Plunger (M20 x 15.4)	1
3	76139	S	Rod, Plunger	1
4	45847	CC	Plunger (M18 X 14)	1
5	76107	SS	Spring, Return	1
6	46652	HT*	Seal Assembly, High-Pressure, Discharge	1
7	46667	HT*	Seal Assembly, High-Pressure, Inlet	1
8	46504	S	Retainer, Plunger	1
9	**33873**	D	Valve, Inlet (Model 6350)	1
	45854	S	Valve, Inlet (Model 6351)	1
10	88575	S	Washer, Conical (M6)	1
11	549520	S	Spacer, Inlet	1
12	81240	S	Nut, Hex (M6)	1
13	—	S	Body, Inlet	1
14	76128	S	Cylinder	1
15	—	S	Body, Discharge	1
16	76112	S	Ring, Retainer	1
17	76119	S	Screw, HSH (M6 X 70)	4
18	44872	S	Spring	1
19	547098	S	Valve	1
20	76656	FPM	O-Ring, Discharge Valve Seat	1

ITEM	PN	MATL	DESCRIPTION	QTY
21	543988	PVDF	Retainer, Spring	1
22	545177	S	Seat	1
23	134579	S	Spring	1
24	11377	FPM	O-Ring	2
25	76113	FPM	O-Ring, Body	1
26	14160	FPM	O-Ring	1
27	43235	PTFE	Backup Ring	1
28	44041	SS	Gasket	1
29	34365	S	Clamp, Hose (¼")	2
30	76268	PVC	Tubing (¼" x 4")	1
31	76651	S	Barb, Hose (¼")	1
32	76649	RBR	Bulb, Priming with Check Valve	1
33	76109	SS	Retainer, Stroke	1
—	*76270*	*FPM*	*Kit, Seal (Includes: 6, 7, 16, 20, 24–27) (Models 6350, 6351)*	*1*
—	***76275***	*FPM*	*Kit, Valve (Includes: 9–12, 18–23) (Model 6350)*	*1*
—	***76287***	*FPM*	*Kit, Valve (Includes: 9–12, 18–23) (Model 6351)*	*1*
—	***76280***	*CC*	*Kit, Plunger (Includes: 2–5, 8–12, 18, 26–28, 33) (Model 6350)*	*1*
—	***76288***	*CC*	*Kit, Plunger (Includes: 2–5, 8–12, 18, 26–28, 33) (Model 6351)*	*1*
—	*992043*	*SS*	*3-Way Ball Valve, Closed Center (Rated to 2500 psi)*	*1*
—	*33937*	*SS*	*Check Valve (Rated to 5000 psi)*	*1*

Bold print part numbers are unique to a particular pump model. Italics are optional items. *Review individual parts in each kit for material identification.
MATERIAL CODES (Not Part of Part Number): CC=Ceramic D=Acetal FPM=Fluorocarbon HT=High Temp PTFE=Pure Polytetrafluoroethylene PVC=Polyvinyl Chloride PVDF=Polyvinylidene Fluoride RBR=Rubber S=304SS SS=316SS **NOTE:** Pulse body and inlet body must be replaced as a set.

MAINTENANCE

⚠ WARNING

Before commencing with service, shut off drive (electric motor, gas or diesel engine) and turn off water supply to pump. Relieve all discharge line pressure by triggering gun or opening valve in discharge line.

Pulse Pump Disassembly

1. Remove four hex socket head cap screws with a 5mm allen wrench.
2. Separate and remove discharge body from cylinder.
3. Grasp plastic spring retainer and pull valve assembly from cylinder.
4. Remove cylinder with O-rings from inlet body.
5. Separate and remove inlet body from pulse body.
6. Remove two-piece high-pressure seal from inlet body.
7. Remove large return spring.
8. Grasp end of plunger assembly and pull from pulse body.
9. To remove the M18 ceramic plunger, use a ⅜" open end wrench on the hex part of the plunger rod for support and with a 10mm openend wrench remove nut. Next remove conical washer, spring, inlet spacer, inlet valve and ceramic plunger.
10. To remove the M20 ceramic plunger, use a ⅜" open-end wrench on the hex part of the plunger rod for support and with a 11mm open-end wrench remove the plunger retainer. Next remove the gasket, O-ring and ceramic plunger from the plunger retainer. The retainer and spring can also be removed.
11. Remove O-ring from pulse body.
12. Turn pulse body over. Remove snap ring from threaded side of pulse body.
13. Remove two-piece high-pressure seals from pulse body.

Note: Discharge port can be orientated in 90° increments by removing the four hex socket head cap screws with a 5mm allen wrench and rotating body to desired location. Re-torque to 10 ft-lbs.

Pulse Pump Reassembly

1. Examine both high-pressure seals for wear to the internal and external surfaces and replace as needed.
2. Lubricate and place one high-pressure seal (M20) with metal backing down into threaded end of the pulse body.
3. Install retainer ring to hold high-pressure seal in place.
4. Turn pulse body over and press plunger assembly with large diameter plunger down into pulse body.
5. Examine O-ring for cuts or wear and replace as needed.
6. Place O-ring into pulse body.
7. Position large return spring over plunger assembly.
8. Place inlet body with barb end closest to pulse body. Align grooves in inlet body with tapped holes of pulse body.
9. Lubricate and place one high-pressure seal (M18) with metal backing down into the smaller hole side of the inlet body.
10. Examine O-rings for cuts or wear and replace as needed.
11. Lubricate and install one O-ring on each end of the cylinder.
12. Press cylinder into inlet body with larger hole facing down.
13. Lubricate valve seat O-ring and press complete valve assembly into small hole in cylinder.
14. Place discharge body over cylinder. Ensure mounting holes line up with grooves on inlet body and threaded holes in pulse body.
15. Thread in four hex socket head cap screws by hand. Use a 5mm allen wrench to torque to 10 ft-lbs.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
No chemical supply from pulse pump	High inlet pressure on main pump	Adjust inlet pressure to maximum 5 psi
	Air in chemical supply	Remove air in chemical supply
	Debris in inlet or discharge valves of drive pump	Remove debris
	Debris in inlet or discharge valves of pulse pump	Remove debris
	Not primed properly	Properly prime system
Limited chemical supply from pulse pump	Worn inlet discharge valves	Replace worn inlet and discharge valves
	Restriction in metering hose	Remove restriction in metering hose
	Restriction between drive pump and pulse pump	Remove restriction between drive pump and pulse pump

⚠ CAUTIONS AND WARNINGS

All high-pressure systems require a primary pressure regulating device (e.g. regulator, unloader) and a secondary pressure relief device (e.g. pop-off valve, relief valve). Failure to install such relief devices could result in personal injury or damage to pump or property. Cat Pumps does not assume any liability or responsibility for the operation of a customer's high-pressure system.

Read all CAUTIONS and WARNINGS before commencing service or operation of any high-pressure system. The CAUTIONS and WARNINGS are included in each Service Manual and with each Accessory Data sheet. CAUTIONS and WARNINGS can also be viewed online at www.catpumps.com/dynamic-literature/cautions-and-warnings or can be requested directly from Cat Pumps.

WARRANTY

View the Limited Warranty online at www.catpumps.com/literature/cat-pumps-limited-warranty

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