



FluidFlex

Pressurized Dispensing System



*Industry's economical solution for cooling,
lubricating and process wetting.*



Industry's most versatile pressurized dispensing system for fluids, lubricants or coolants

Bijur Lubricating Corporation's FluidFlex® pressurized dispensing system is designed for maximum efficiency, accuracy and control when dispensing virtually any fluid used in manufacturing or process industries. The FluidFlex low pressure dispensing system easily adapts to any industrial process or machine type that requires a controlled flow of fluid during operation. The air-actuated system dispenses a wide range of fluids — from water-based coolants to viscous lubricants including synthetic fluids.

The FluidFlex System offers:

- Compact design
- Self-contained controls
- Separate air and fluid lines
- Adjustable discharge or flow
- Level gauges
- Wide performance range
- Easy installation and mounting

Rugged Construction

The FluidFlex System's rugged construction can withstand the most hostile manufacturing conditions. The cast aluminum reservoir is securely mounted to the system regulating components.

For operator convenience, a liquid level and an air trap level gauge are provided and are recessed into the reservoir to protect against accidental breakage.

Integrated Design

All FluidFlex controls — pneumatic and electrical— are contained within the unit and are sealed to protect against spilling when refilling the reservoir. The integrated design is ideally suited to a variety of applications. Separate fluid handling components are not required.

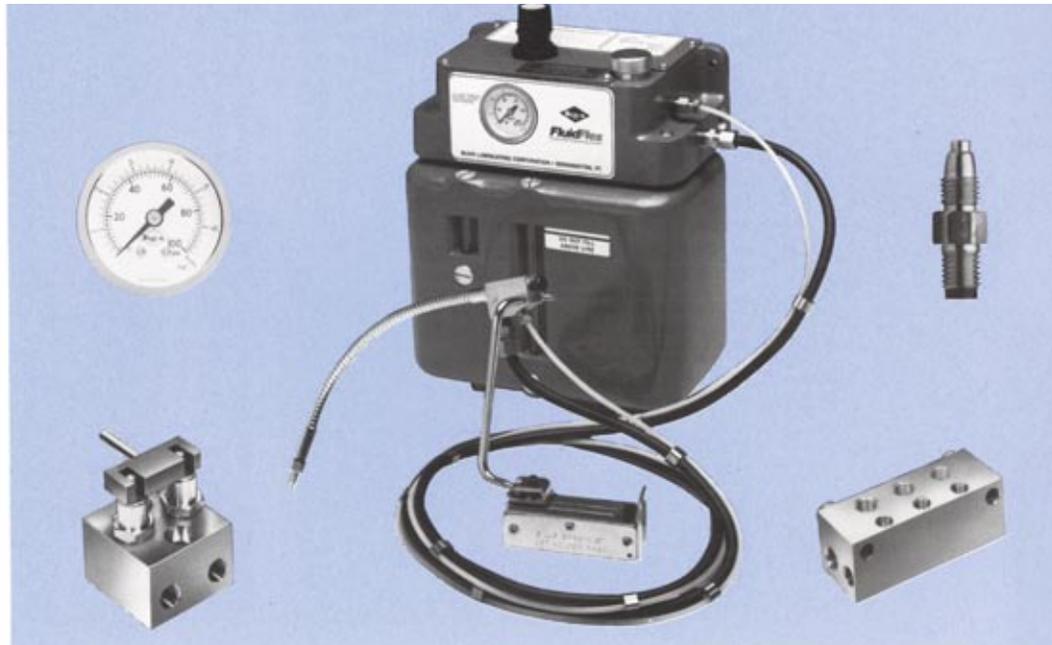


Table 1. Typical FluidFlex System applications.

Application/Industry	Mineral oils	Synthetic oils	Water	Coolants	Synthetic coolants	Alcohol	Freon	Water soluble oils	Tapping fluids	Semi-synthetic fluids	Specialty fluids
Stock feed lubrication	•	•									•
Conveyor chains	•	•									
Moisture control			•	•							•
Cutting operations				•	•	•			•		
Grinding				•	•				•		
Milling				•	•	•			•		
Glass forming/cutting			•	•							
Woodworking (sawing)			•	•	•						
Baking			•								•
Metal forming	•	•					•				
Punch and die lubrication	•	•									
Punch and die cooling					•						•
Bar feeds	•	•									
Enclosed gears	•	•									
Bearings (at assembly)	•										
Rust prevention	•						•				
Tapping								•	•		
Drilling				•	•			•	•		
Bijur's engineering lab will check compatibility of fluids not listed.											

The “all-in-one” system that cools, lubricates and wets.

- Fine spray
- Wet spray
- Fluid droplets
- Continuous delivery
- Cyclic (intermittent) delivery

Versatility

The FluidFlex System is easily adapted to either new or existing equipment. Separate distribution lines carry air and fluid to the application point for mixing just prior to discharge for maximum control.

The FluidFlex System is ideally suited for industrial processes highlighted in Table 1.

Flexible Design

A single FluidFlex System normally supplies up to 25 points requiring fluids. A variety of hose assemblies and Jet Tips are available to direct the fluid to critical points during operation.

The FluidFlex System is quickly and easily adaptable to specific machines or processes. A selection of either rigid, flexible, or manifold mounted Extension Jet assemblies is available.

The system may be adjusted to deliver either continuous or cyclic fluid delivery.

Accuracy and Control

Accurate needle adjustment at Extension Jet Body provides efficient end-point atomization control. Precise amounts of fluid are discharged to prevent flooding or residual fog or drift.



FluidFlex Jet B-101 delivers coolant resulting in lower temperatures during turning operation and, thus, higher productivity and better part finishes.

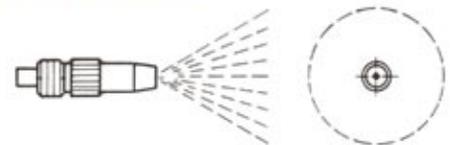
Extension Jets Available for Any Application

A variety of Jet dispensing types— from light sprays to heavy wet tip application—is available with the FluidFlex System. A specific fan pattern may be selected by specifying Bijur's unique Jet Tip design. Depending on the application, either normal or high-temperature nozzles may be selected.



Bijur's compact Jet Tip Assembly contains a coaxial tubing assembly which delivers end-point atomization.

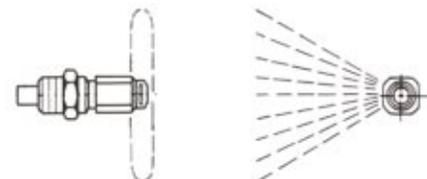
FluidFlex Offers Spray Patterns to Satisfy Every Application



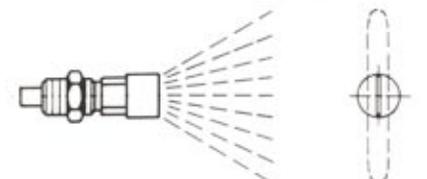
Jet Tip B-136 Spray Pattern (Standard)



Side Outlet B-171 Spray Pattern



Side Fan Outlet B-179 Spray Pattern



Fan Outlet B-172 Spray Pattern

Versatility... the all-in-one system that delivers the benefits of cooling, lubricating and wetting

Bijur's FluidFlex combines ruggedness and reliability into one compact system. Application of FluidFlex to the solution of industry's cooling, lubricating, or wetting problems is only limited by the imagination of the user.

Versatile Operation

FluidFlex is designed to operate when the system is pressurized with shop air ranging from 5 psi with light liquids to 100 psi for higher viscosity fluids (Table 2).

The system can be operated either intermittently or on a continuous basis. For more rapid cycling during high-speed intermittent operation, the system can be modified by adding solenoid valves into both the air and the fluid lines on the Dual Hose Assembly.

For applications requiring very large amounts of fluid on a continuous basis, FluidFlex can be supplied with an automatic refill option.



Table 2. Fluid Pressure

Application	Pressure Range
Cooling	15-35 psi
Lubricating	5-75 psi
Wetting	5-15 psi

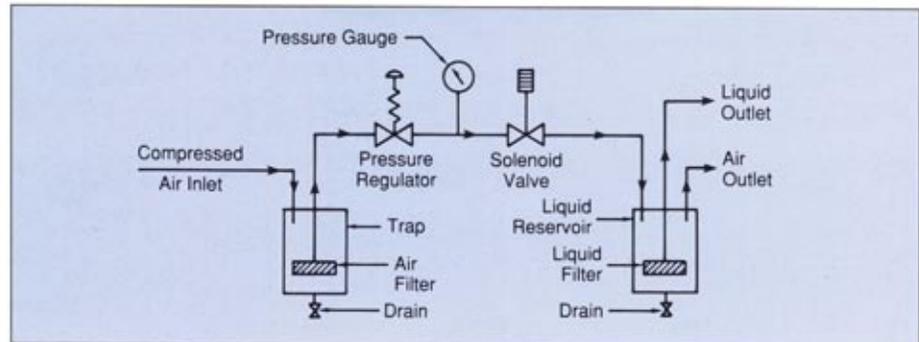
Principle of Operation

Compressed air (125 psi maximum) is connected to the FluidFlex unit. During operation, airborne particles, contaminants and moisture are trapped by the system's dual filtration assembly.

Air pressure is reduced to the desired level and passed through a solenoid valve which synchronizes the system with machine or equipment being operated.

Low-pressure air enters the fluid reservoir and forces fluid from the reservoir. Separate lines carry air and fluid through distribution lines in the system to the Jet Tip Assembly for discharge.

NOTE: Periodic removal of unwanted material from Air Trap and Liquid Filter replacement is recommended (at least annually).



5-Way Dual Tee Block B-129

**Manual Dual Line
Shut-Off Valve
B-7987**



**Dual Hose Assembly
B-156-(feet)**



FluidFlex Usable Liquid Media

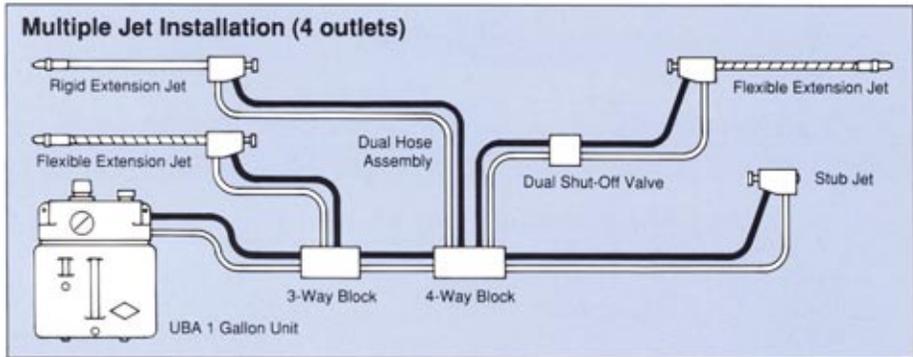
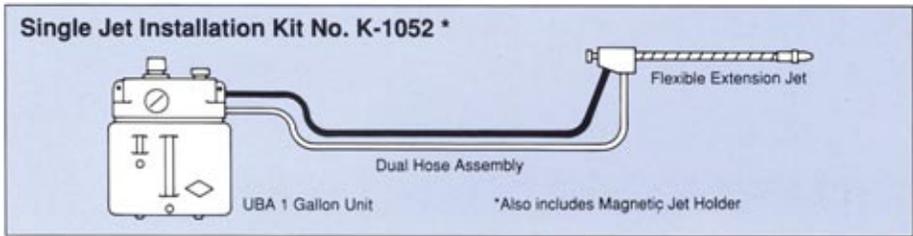
Bijur's FluidFlex System is designed for maximum versatility and is suited to dispense the following fluids:

- Water
- Water-based lubricants
- Synthetic coolants
- Water-based coolants
- Emulsion coolants
- Spindle oils
- Petroleum-based oils
- Kerosene
- Tapping oils
- Cutting oils
- Lubricating oils
- Silicone
- Alcohol
- Ethlene glycol
- Water glycol

The following may require a special adapter kit:

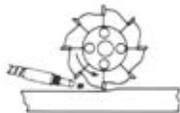
- Synthetic lubricants
- Hydraulic fluids
- Naptha
- Phosphate esters
- Chlorinated hydrocarbon
- Freon

CAUTION: Certain liquids can cause combustible hazards. Follow manufacturer's instructions and recommendations.



Specify FluidFlex Coolant and general purpose cutting fluid for all metalworking operations.

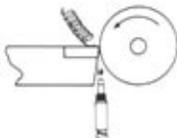
Recommended dilutions with water: Cutting 50:1 Grinding 70-80:1



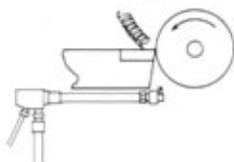
For milling operations:
Locate the Jet Tip close to the contact point between the work and the tool.



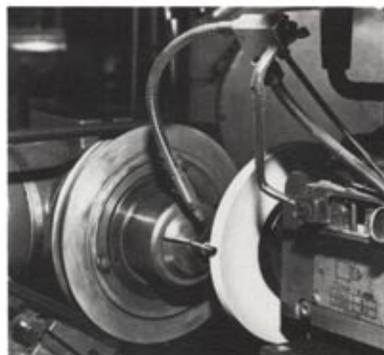
On cutting tools:
Aim discharge into clearance crevice.



On grinding wheel applications:
Aim the discharge spray at the leading edge of the wheel.



On lathes:
Use a Side Outlet Tip and aim under the tool so that fluid enters between the tool and the work.



Controlled air/coolant mix from FluidFlex Jet dissipates heat at critical work surfaces.

Rapid cooling results in better finishes and longer tool life

When cutting or grinding metal or any other material, FluidFlex is the ideal spray coolant dispensing system. Up to 70% more metal can be removed when compared to flood cooling methods.

Water based coolant is mixed with pressurized air in the proper proportion at the Jet Tip Assembly. Evaporation and rapid air expansion creates a cooling effect which dissipates heat from the critical work area.

FluidFlex cooling results in the following benefits:

- Increased tool life — up to 500%
- High quality work finishes
- Faster cutting speeds
- Maximum heat dissipation
- Clean operation — no flooding
- Rapid removal of chips and waste

Bijur's FluidFlex System is ideally suited for all cutting, grinding, or shaping applications requiring cooling for up to 5 points.



Cooling operation

Efficient lubrication helps cut the costs of machinery operation

Putting the proper amount of lubricant in the proper place at the right time can improve productivity, reduce unscheduled maintenance, and keep equipment running longer.

By using Bijur's single line resistance (SLR) flow devices, FluidFlex is designed to discharge precisely metered amounts of oil to any type of bearing surface ... slides, ways, bearings, or other friction points.

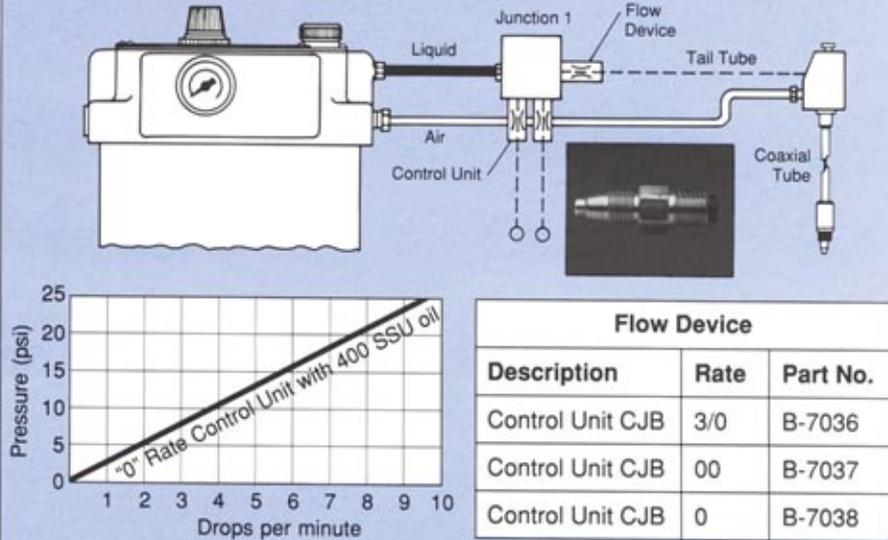
FluidFlex may be used to drip oil onto large gears and chains. In addition, it can be utilized as a centralized lubrication system to proportion and deliver an air/oil mix at the bearing surface on medium- and high-speed spindles.

Typical installations cover up to 25 points of lubrication.



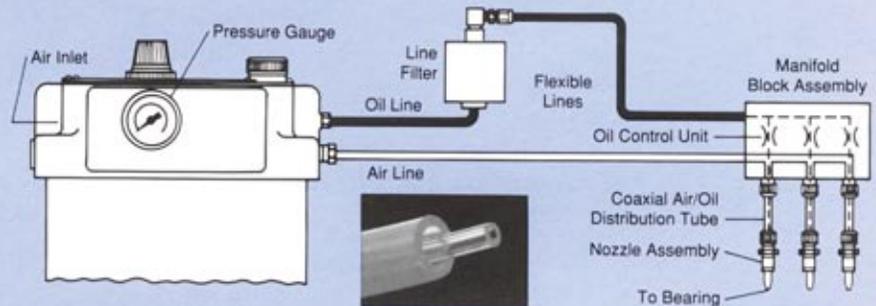
Industrial Lubrication

Centralized Lubricating System (Single Line Resistance)

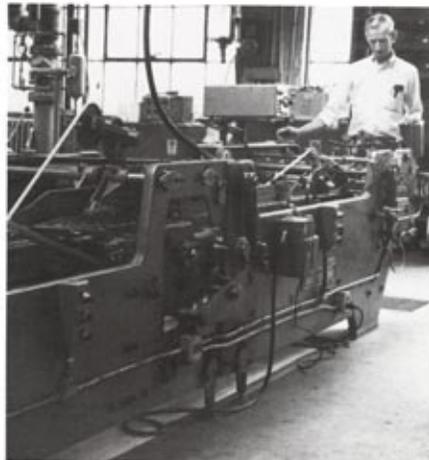


The graph above displays the amount of oil discharged from a medium rate SLR Flow Device (0 Rate). A 00-rated device will deliver 50% of the output shown. A 3/0-rated device will deliver 25% of the output. For lighter oils, output is reduced inversely proportional to viscosity increase.

Medium- and High-Speed Spindle Applications

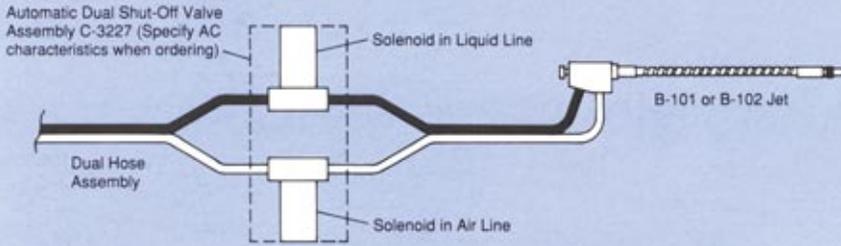


Controlled oil-spray droplets are delivered through the spindle housing to efficiently lubricate high-speed, anti-friction bearings. Optimum temperatures are maintained for maximum operating speeds and long life.



The self-contained FluidFlex System is easily adapted to deliver lubrication for virtually all types of industrial equipment.

Automatic Fast Cycle Configuration



Controlled wetting of high-speed surfaces can increase productivity by nearly 50%

If you can pour it, FluidFlex can handle it!

FluidFlex is ideally suited to applications which demand either large volumes of fluid or high-viscosity discharge on critical work surfaces during manufacture.

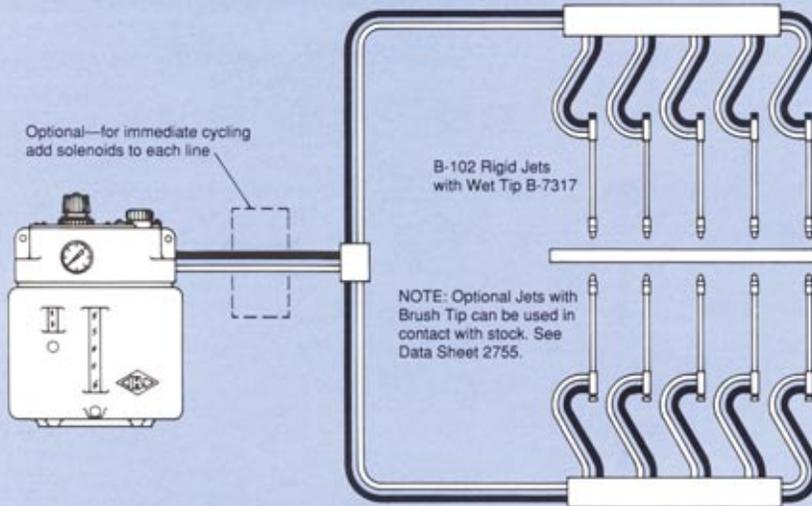
High production rates can be matched with FluidFlex's fast cycle capability. For fast intermittent operation or electronic control at individual Jet Tips, solenoid valves may be installed and placed ahead of any Jet. See Automatic Fast Cycle Configuration.

Wetting of stock at intermediate stations during progressive punch press operations is reliable and accurate when using FluidFlex with either a Brush Tip or Spray Tip aimed at the work surface.

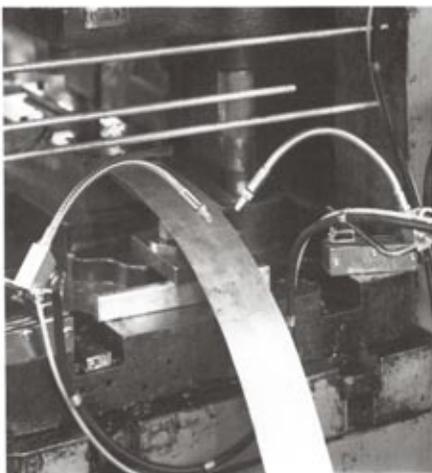
FluidFlex is designed for use in any manufacturing operation requiring large amounts of a wetting fluid to maintain production rates and prolong tool life.

Typical wetting installations cover up to 10 discharge points.

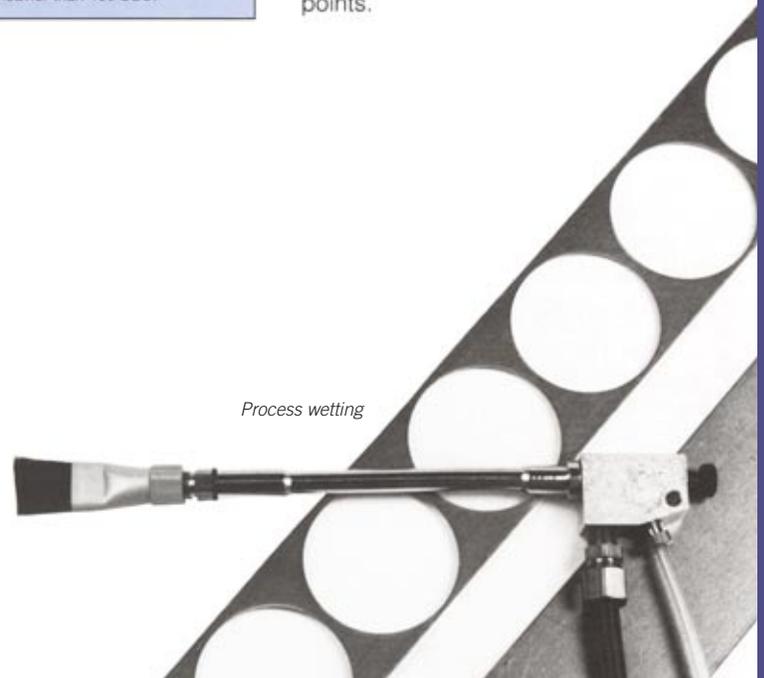
Typical Stock Feed (Wetting) System



- For maximum control (non-flooding) during wetting process, specify Bijur Wet Tip B-7317 with either rigid or flexible Extension Jet.
- For high-temperature (150 °F–350 °F) wetting applications specify Bijur Wet Tip B-197.
- NOTE: Use of a Bijur Wet Tip is recommended for applications using oils heavier than 400 SSU.



Even dispersing of process wetting fluids to all work surfaces ensures maximum productivity over a wide range of industrial applications.



Installation and mounting of your FluidFlex System

The FluidFlex System is quickly and easily installed on an individual machine or other convenient location. Simply mount the unit with two 1/4" bolts through the pre-drilled mounting holes located at the back of the unit.

Electrical and Pneumatic Connections

After mounting securely, connect shop compressed air (125 psi maximum) to 1/4" pipe thread inlet hole on the left side of the unit. It is not necessary to install a trap, regulator, gauge or valve in the air supply line.

Next, remove the junction box cover on the top of the unit and complete electrical wire connections to the unit through conduit inlet on right side of the housing. Attach cable or conduit fitting to 1/2" pipe thread hole. Reassemble housing cover.

Connection of Hose Assembly

The Dual Hose Assembly can now be connected to the right side of the unit using the appropriate 1/4" and 1/8" pipe thread holes. Connect the other end of the Dual Hose Assembly to body of Extension Jet Assembly.

All connections are designed for standard compression type fittings.

System Operation

Before starting the system, fill the reservoir with fluid through conveniently located fill hole. A variety of industrial fluids may be used with the FluidFlex System — water-based coolants, synthetics, viscous lubricants, or other suitable fluids. See FluidFlex Usable Liquid Media on page 4.

The FluidFlex Junction Box is completely sealed to protect the System from accidental spilling of fluid.

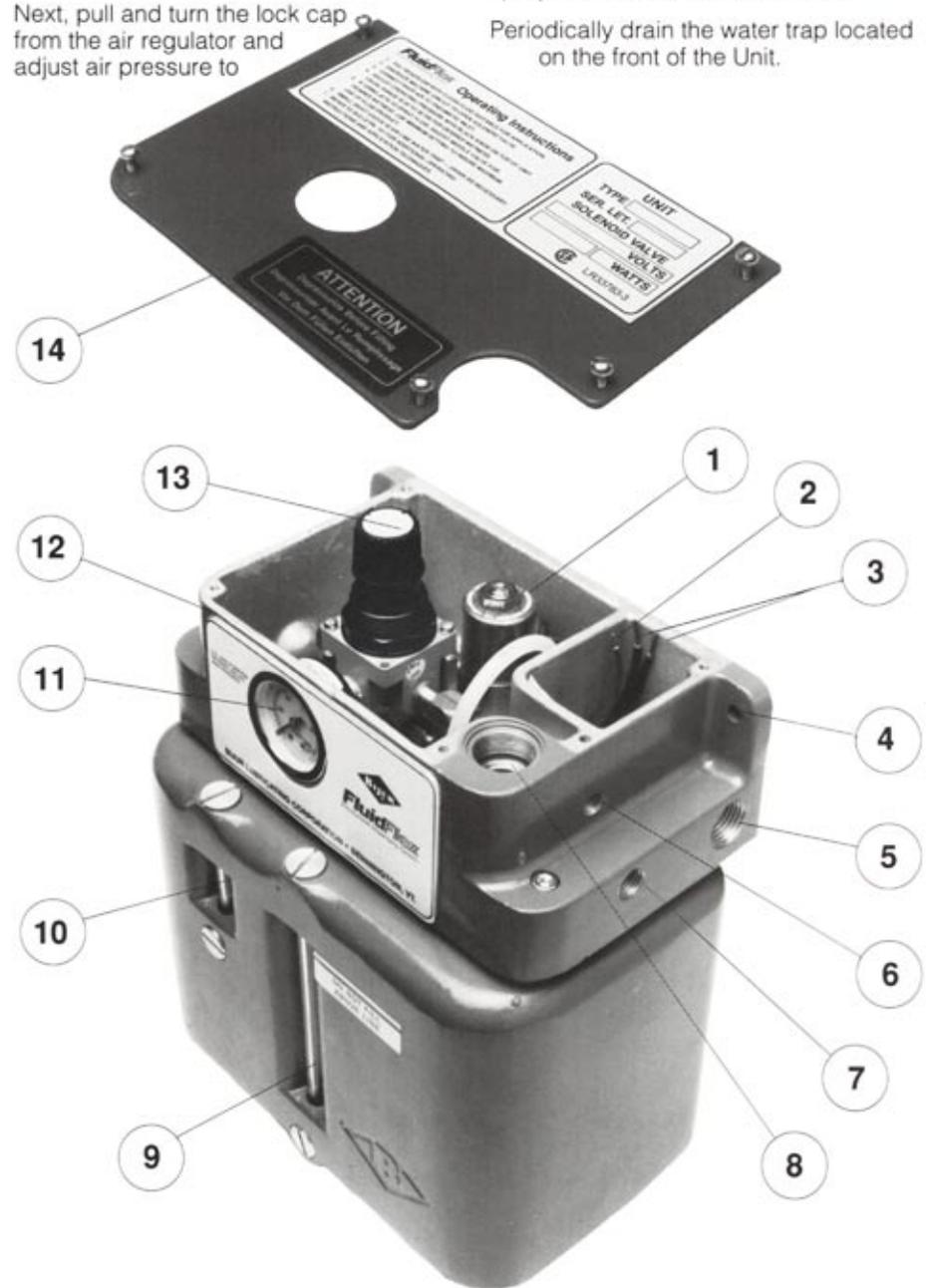
Energize the machine circuit to open the solenoid valve inside the FluidFlex. Normally there is no ON/OFF control on the FluidFlex System. The system is operated from the machine or equipment circuit.

Next, pull and turn the lock cap from the air regulator and adjust air pressure to

obtain type of fluid discharge. The usual range is from 20 to 30 psi.

Adjust the needle valve on the Extension Jet Body to obtain wetness of spray desired or correct fluid flow.

Periodically drain the water trap located on the front of the Unit.



1. Solenoid (110, 220, 440 volts)
2. Ground wire
3. Electrical leads from solenoid
4. Pre-drilled mounting holes
5. Electrical conduit connection 1/2" pipe
6. Liquid outlet 1/8" pipe
7. Air outlet 1/4" pipe

8. Fill hole
9. Reservoir level (sight glass)
10. Air trap (sight glass)
11. Pressure gauge
12. Air inlet 1/4" pipe (not visible in photo)
13. Air regulator — pull to adjust
14. Housing cover

Table 3. FluidFlex Air/Fluid Consumption (cc/min) per B-136 Extension Jet (Nominal values)

Gauge Pressure (psi)	Air Consumption CFM Free Air per Jet	Needle Valve 1/8 TURN OPEN		Needle Valve 1/4 TURN OPEN		Needle Valve 1/2 TURN OPEN		Needle Valve 1 TURN OPEN	
		Water Base Coolants*	Oil at 400 SSU**	Water Base Coolants*	Oil at 400 SSU**	Water Base Coolants*	Oil at 400 SSU**	Water Base Coolants*	Oil at 400 SSU
5	0.6	0.2	0.015	0.3	0.025	0.7	0.052	1.8	0.135
10	0.9	0.25	0.019	0.5	0.038	1.6	0.12	5.5	0.41
15	1.1	0.35	0.026	0.75	0.056	2.5	0.192	7.0	0.52
20	1.3	0.44	0.033	1.1	0.082	3.5	0.26	8.5	0.63

* Water base coolants with compound to water ratios of 1 to 10 and higher.

** For lighter viscosity oils, output is proportionally increased; for heavier viscosity oils, output is reduced inversely proportional to viscosity.

NOTE: A cubic centimeter (cc) of oil is approximately equivalent to 30 drops.

Mounting Extension Jet Assembly

A variety of Bijur FluidFlex Extension Jet Assemblies (except Manifold Assemblies) can be positioned by the convenient magnetic holder. A hole is provided in the Extension Jet Body to secure a jet Holder (rod).

The Mounting Assembly is designed with a double-axis positioning arm to facilitate locating the Jet Tip close to the work surface.

Place the magnetic assembly near the tool or work in process. A release mechanism is mounted on the Magnetic

Assembly to facilitate removal of Extension Jet Holder for realignment or replacement.

Trouble-Free Operation

To facilitate trouble-free operation of the FluidFlex System it is important to periodically check the operating pressure. For standard FluidFlex Jets (Bijur Part Numbers B-101 and B-102) typical gauge pressure is approximately 20 psi.

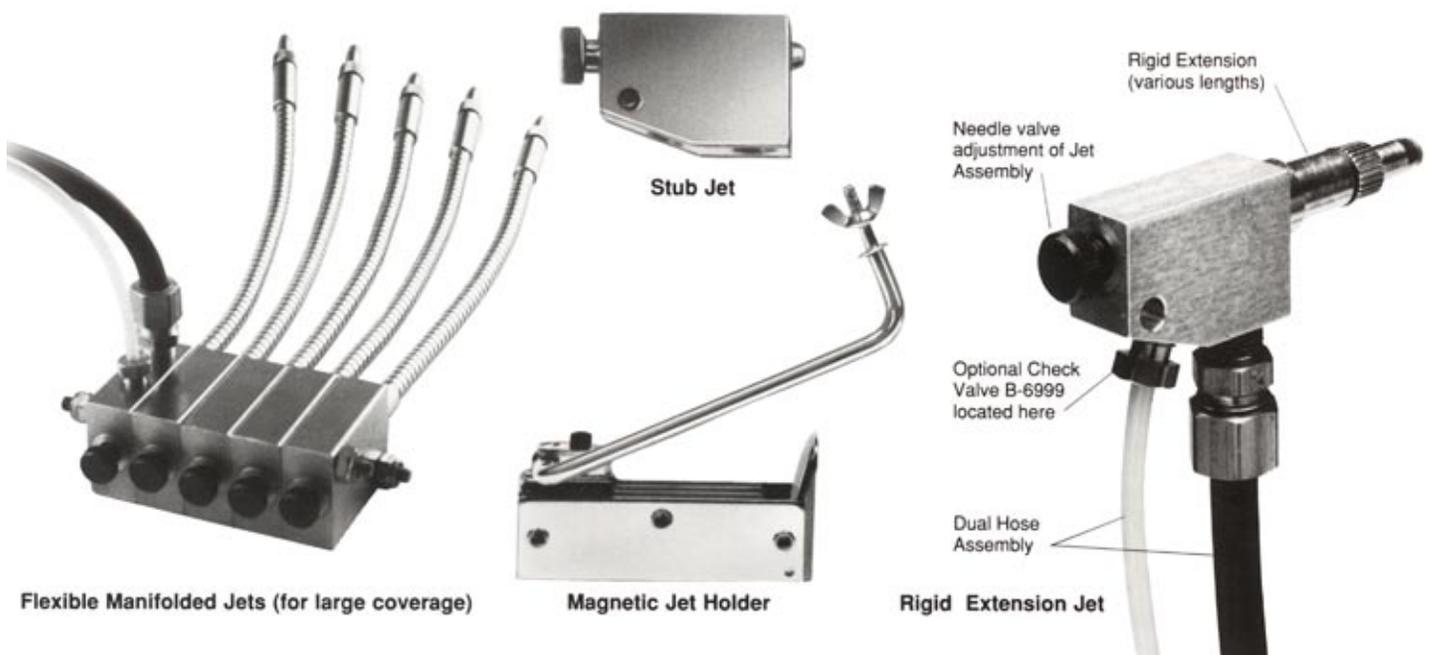
For Units with check valves to prevent fluid drain back, the correct operating pressure is approximately 17 psi (minimum).

Air and Fluid Consumption

Table 3 shows both air and liquid consumption rates at various operating pressures.

If system pressure is too low, it should be increased until a uniform spray pattern or correct fluid discharge is achieved and Jet does not sputter. If necessary adjust Needle Valve on Jet Body until desired performance is achieved. The pressure gauge on the FluidFlex Unit serves as a reference point.

In order to minimize air consumption, use the lowest possible gauge pressure to develop desired spray or fluid discharge.



Flexible Manifolded Jets (for large coverage)

Magnetic Jet Holder

Rigid Extension Jet

Specifying and ordering FluidFlex components

All components necessary to install your Bijur FluidFlex Pressurized Dispensing Systems are listed on pages 10–11. Be sure to specify each component by Bijur part numbers.

It is recommended that a schematic diagram, similar to those shown on pages 5–7, be drawn to ensure that all components have been ordered. This step will also assist when installing the system on machinery or equipment. When installing systems with hoses over one foot in length, be careful to avoid placement that will interfere with either operator control or work in process.

When ordering FluidFlex Manifolder Jet assemblies, be certain to specify both length and position (1 through 5) for each Jet. See note in FluidFlex Extension Jet Ordering Information on page 11.



A. Variety of Jet Assembly Configurations and Spray Patterns

Ensures accurate placement of liquid media and proper flow characteristics for a wide range of industrial operations. Flexible Extension Jets can be repeatedly bent into any position. Rigid Extension Jets can be bent in a position for a specific continuous process. It is not recommended that they be repositioned after initial bending.

B. Precision Control

Needle valve on each Jet provides accurate control from fine to heavy spray.

C. Replaceable Tips

Inexpensive and easy to install. No major component disassembly required if damaged during operation.



D. Dual Hose Assemblies

Pre-made in lengths of 1, 2, 3, 4, 6, 8 and 10 feet. Complete with extra fittings for connections and line shortening as needed.

E. Integral Unit Design

Built-in air filter, water trap, air regulator, pressure gauge, solenoid valve, conduit box, reservoir and filter.

F. Pressurized Reservoir

One unit supplies many Jets. No siphon lift problems. No air waste or interrupted flow.

G. Machine Tool Construction

Sturdy construction and finish. Careful design and intelligent material selection.



H. Magnetic Jet Holder

Eases mounting of all types of Extension Jets where frequent changing of job set-ups occur.

I. Dual Tee Blocks

Designed for use when branching two or more Jets from a single unit with a Dual Hose Assembly.

J. Manual Dual Line Shut-Off Valves

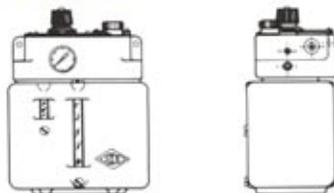
Provides positive closure of single Jets in multiple-jet installation. (Automatic type also available—see page 7.)

K. Check Valve B-6999 (not shown in photo)

Prevents drainback during shutdown. Permits more rapid response time at Jet Tip when unit is actuated. Requires a minimum gauge setting of 17 psi.

NOTE: When using Check Valve, liquid consumption rates shown in Table 3 on page 9 DO NOT APPLY.

FluidFlex Units



Type UB – one gallon reservoir capacity

Reservoir Capacity		Solenoid Characteristics			
One Gallon		Voltage Rating		Current Draw—Amperes	
Type	Part No.	60 Hz	50 Hz	In Rush 50/60 Hz	Holding 50/60 Hz
UBA	D-153	120	110	.2	.1
UBB	D-154	240	220	.1	.07
UBC	D-155	480	440	.05	.03

Dual Tee Blocks



5-Way Block B-129

Select Block with one more pair of holes than number of Jets to be served. To close surplus holes use Plug B-3784 for liquid connection and Plug HP-603 for air connection.

Type	L	Part No.
3-Way Dual Tee Block	1"	B-128
5-Way Dual Tee Block	2½"	B-129
6-Way Dual Tee Block	3¼"	B-130
8-Way Dual Tee Block	4¼"	B-131
10-Way Dual Tee Block	6¼"	B-132

Jets and Tips



Flexible Extension Jet B-101

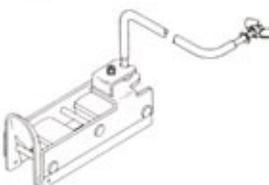


Rigid Extension Jet B-102

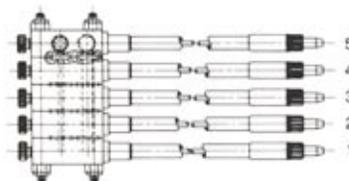
Jet B-101 and B-102 supplied with jet tip B-136. If other required, specify. (See page 3 and 7)



Stub Jet B-103

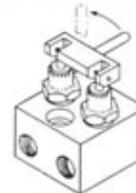


Magnetic Jet Holder B-133



Manifolded Jet Assembly (see table below)

Shut-Off Valves

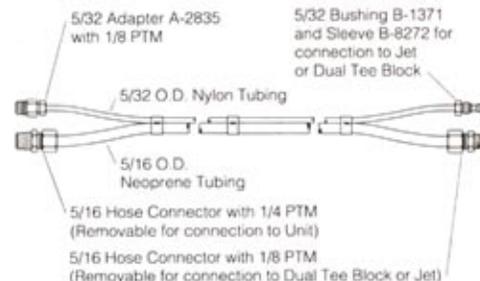


Max. overall width: 1 31/32"
Max. overall height: 3 1/32"

Manual Dual Line Shut-Off Valve B-7987 (shown)

Use straight adapter A-2835 or Elbow Adapter A-3080 to connect liquid lines to valve. These adapters must be ordered separately. (Automatic Shut-Off Valve C-3227)

Dual Hose Assemblies



Extra fittings are included with assembly to permit elbow connection at Unit and line shortening if necessary.

Length	Part No.
1 ft. Dual Hose Assembly	B-156-1
2 ft. Dual Hose Assembly	B-156-2
3 ft. Dual Hose Assembly	B-156-3
4 ft. Dual Hose Assembly	B-156-4
6 ft. Dual Hose Assembly	B-156-6
8 ft. Dual Hose Assembly	B-156-8
10 ft. Dual Hose Assembly	B-156-10

FluidFlex Extension Jet Ordering Information

Length (In.-Nominal)	Single FluidFlex Jet				Manifolded FluidFlex Jet Assembly			
	Flexible		Rigid		Flexible		Rigid	
	Normal	High Temp	Normal	High Temp	Normal	High Temp	Normal	High Temp
3.0	N/A	N/A	B-102-3	17370-3	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
3.5	N/A	N/A	B-102-3A	17370-3A	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
4.0	N/A	N/A	B-102-4	17370-4	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
5.0	N/A	N/A	B-102-5	17370-5	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
6.0	N/A	N/A	B-102-6	17370-6	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
7.0	N/A	N/A	B-102-7	17370-7	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
8.0	N/A	N/A	B-102-8	17370-8	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
9.0	N/A	N/A	B-102-9	17370-9	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
10.0	N/A	N/A	B-102-10	17370-10	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
10.5	B-101	N/A	B-102	17370	C-3091	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
12.0	N/A	N/A	B-102-12	17370-12	Specify	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
14.0	N/A	N/A	B-102-14	17370-14	either	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
16.0	N/A	N/A	B-102-16	17370-16	2,3,4, or 5	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
18.0	N/A	N/A	B-102-18	17370-18	Jet Assembly	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
20.0	N/A	N/A	B-102-20	17370-20	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
22.0	N/A	N/A	B-102-22	17370-22	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)
24.0	N/A	N/A	B-102-24	17370-24	N/A	N/A	C-3092 - (X)(Y)	15749 - (X)(Y)

NOTE: Bold face listing indicates standard length.

X = Number of jets in assembly

Y = Nominal length of jet assembly. Indicate from left (PSN. #1) to right (PSN. #2,3,4, or 5).

Operating temperature ranges: Normal 150°F; high temperature 350°F.



Innovators of engineered lubrication technology since 1923

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Bijur also has ISO 9001:2000 quality certified manufacturing facilities around the world, so you'll know your centralized lubrication system meets the highest industry quality standards. It's all part of the Bijur commitment to quality and customer service.

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