Air-Oil Injector Block

Oil Streak Generating, Mixing and PDI systems

General

The Air-Oil Injector Block Assembly is available with one to four, six and eight Positive Displacement Injectors(PDI). Each outlet has an individual air flow needle valve. These blocks deliver a precise amount of oil into a controlled air flow. The air propels the oil droplets along the inside wall of the small bore tubing until it reaches the lubrication point in one continuous uninterrupted oil streak.

Application

PDI's for Air-Oil systems are available in seven outputs to cover many types of applications. Note: For critical high-speed applications using ceramic and steel roller bearing elements, the smaller output rate of 0.01 and 0.025 cc/cycle are usually recommended. Operation of the injectors occurs during an alternating pressure and relief cycle controlled by the lubricator.

Air-Oil block AV4AAAA

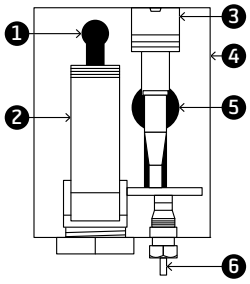
Technical Data

Typical Input Air Pressure	63-87 psi (4.3-6 bar)
Maximum Pressure	125 psi
Minimum Pressure	50 psi
Accuracy	±20% (±5% for High Accuracy)
Oil Pressure to Operate	Min 210 psi (15 bar), Max 500 psi (34 bar)
Oil Pressure to Relieve	Min 0, Max 30 psi (2 bar)
Oil Viscosity	ISO VG32 / 142SSU to ISO VG100 / 465SSU

Refer to the following documents:

- *Datasheet #35721: Oil Streak Mixing Unit*
- *Datasheet #35720 Oil Streak Generating Unit*
- *Datasheet #35719: Oil Streak Sensing Unit*
- *Datasheet # 35465: SureFire PDI Lubricator*
- *Datasheet# 20349: Airmatic PDI Lubricator*

Block Cross Section



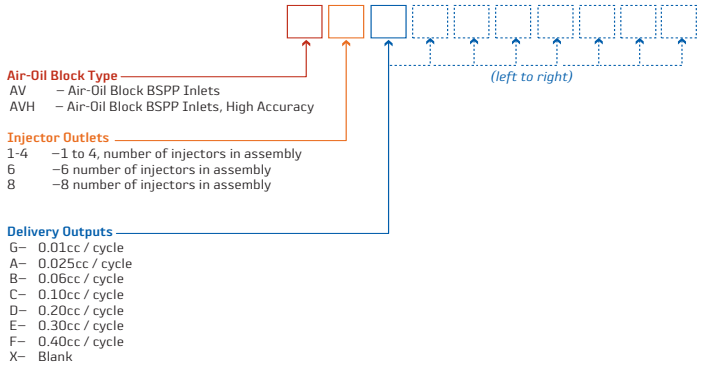
Item	Description
1	Oil Inlet (from lubricator)
2	Positive Displacement Injector, cap integrated * (self-contained cartridge for easy servicing)
3	Adjustable Needle Valve (Air)
4	Air/Oil Block
5	Air Inlet
6	Air/Oil Mix Delivery Tail Tube

NOTES:

New Style ZCN Slotted Plug Head Injector with Integrated Cap

See page 3 for replacement injectors.

How to Order



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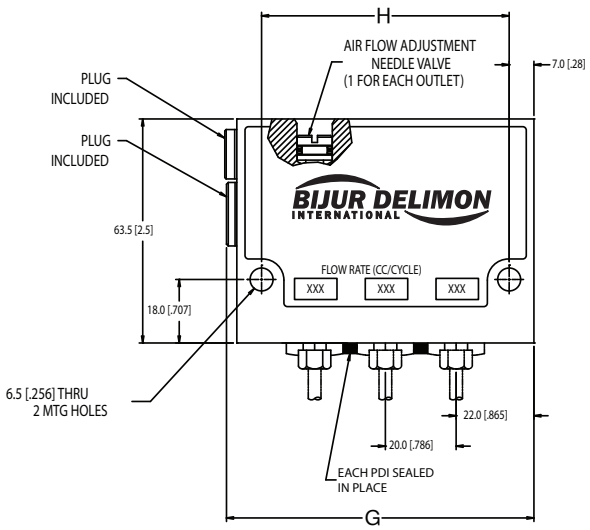
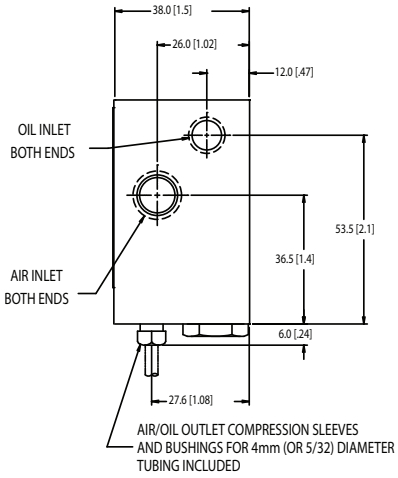
Dimensional Schematics





ATTENTION

AV & AVH:
1/8BSPP oil inlet, 1/4BSPP air inlet.

Note:
Blocks can operate in any orientation; up, down or parallel. Secondary line length is minimum 1m, maximum 5m, consult with BDI for specific guidelines.

Quantity of Injectors in Assembly	DIMENSION "G"		DIMENSION "H"		Quantity of Injectors in Assembly	DIMENSION "G"		DIMENSION "H"	
	mm	Inch	mm	Inch		mm	Inch	mm	Inch
1	49	1.93	30	1.18	**6**	149	5.87	130	5.12
2	69	2.72	50	1.97	**8**	**189**	7.44	170	6.69
3	89	3.50	70	2.76					
4	109	4.29	90	3.54					

Air Flow Data per Outlet

Outlet air flow vs. needle valve position.

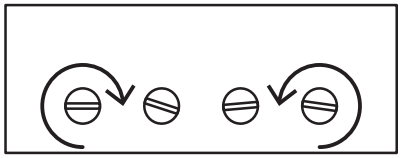
Air Pressure @ Inlet	1/6 Turn (Open)	1/2 Turn (Open)	1 Turn (Open)	2 Turns (Open)	4 Turns (Open)
50 psi (3.4 bar)	0.61 liter/min (1.3 ft^3/hour)	3.8 liter/min (8 ft^3/hour)	11.8 liter/min (25 ft^3/hour)	27.3 liter/min (58 ft^3/hour)	51.7 liter/min (110 ft^3/hour)
60 psi (4.1 bar)	0.80 liter/min (1.7 ft^3/hour)	4.7 liter/min (10 ft^3/hour)	14.1 liter/min (30 ft^3/hour)	32.7 liter/min (70 ft^3/hour)	58.8 liter/min (125 ft^3/hour)
80 psi (5.5 bar)	1.30 liter/min (2.7 ft^3/hour)	6.6 liter/min (14 ft^3/hour)	18.8 liter/min (40 ft^3/hour)	42.3 liter/min (90 ft^3/hour)	75.2 liter/min (160 ft^3/hour)

Note: With a 1.2 meter long tail tube, 2.7 mm inside diameter

Adjusting the Needle Valves

Turning the Needle Valve clockwise will decrease the flow rate while turning it counter clockwise will increase the flow rate. The flow rate is adjusted on the Air-Oil Block using the needle valves. You may adjust the flow rate of an individual outlet or multiple outlets, depending on your system.

Note: To adjust the needle valve a short slotted head screw driver is required.



Application Tip:
Once the adjustment is finalized, seal the needle valve with sealant or wax type material to determine if the valve was tampered with.

ATTENTION

If a specific flow rate is required, remove the lubrication tube at the lubrication point and fit a flow meter. Adjust the flow rate, using the needle valves, to the required setting.
If the lubrication tube becomes blocked due to a malfunction, the maximum pressure in the tube is 220 psi (15 bar). After making the adjustment, take note of the secondary line air pressure, using this value and the same criteria, the other air-oil streak outlets can accurately be set.

Most high speed spindles operate using 60 PSI (4.1 bar) inlet pressure, 15~30 psi secondary line pressure with 1.5~2 turns open needle valve.

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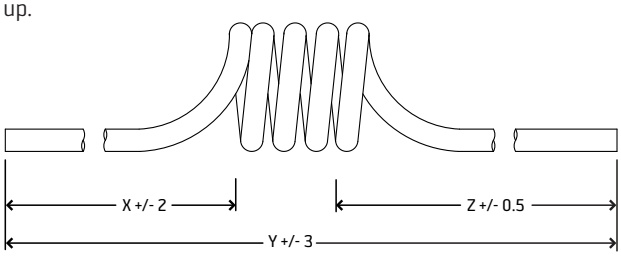
Coiled Tubing

Tubing is normally mounted in the horizontal position or at a slight incline. Coils help to stretch out deliveries in short tubes for continuous lubricant flow.

During shutdown, a small volume of oil collects at the bottom of each loop for faster delivery during start up.



Tubing Specifications:

Part #	No. Of Coils	X (Inches)	Y (Inches)	Z (Inches)
26263-5	5	20	27	6
60877	5	80	100	19

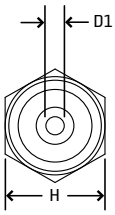
Standard Straight Tubing

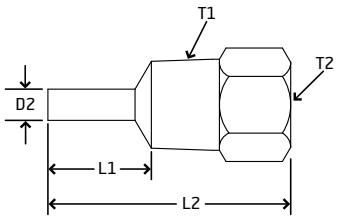
Standard Tube For Connecting to Lube Point:

Part #	Outside Diameter	Inside Diameter	Material
4N25W	4mm (5/32")	2.5mm	Clear Polyurethane
8N31T	6mm	4mm	Clear Polyurethane

Nozzles

Offered in various sizes, Nozzles normally produce a round spray pattern. Typically, this nozzle configuration is suitable for anti friction bearings and other applications where precise wetting is required. Nozzle orifice size and air pressure determine the shape and velocity of the air and oil mix.



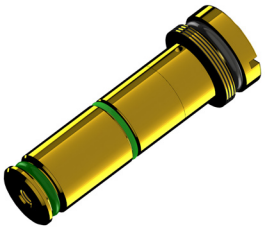


Nozzle Specifications:

Part #	T1	T2*	L1 (mm)	L2 (mm)	D1 (mm)	D2 (mm)	H (mm)
27107-1	1/8 NPT	5/16-24	4	20	2.5	6	11.1
27107-4	1/8 BSPT	M8X1	4	20	2.5	6	10
27107-5	1/8 BSPT	M8X1	4	20	1.5	6	10
27107-6	1/8 BSPT	M8X1	10	26	2.0	5	10

ATTENTION

Coiled tubing extends tubing length in short line runs to stretch out lubricant deliveries.



Replacement Parts

Injectors*:

+ *26903-01*
+ *24209-025*
+ *24209-03*
+ *24209-06*
+ *24209-10*
+ *24209-20*
+ *24209-30*
+ *24209-40*

** add an "H" to part number for AVH injectors*

Plug Kit:

+ *32132*

ATTENTION

Do not use standard plugs when less outlets are required. Use the 32132 Plug Kit and remove the PDI injector. Otherwise excess oil will build up internally and over lubricate the other outlets.

ATTENTION

***Required 4mm Tube Connection Fittings for Nozzles:**
5/16-24 Female:
B1371 comp bushing + B8272 comp sleeve
M8X1 Female:
15326 comp bushing + B8272 comp sleeve

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