BIJUR DELIMON®
INTERNATIONAL

Operators Manual

OIL STREAK

Air-Oil Mixing Unit

35718 • R2

Contents

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Precautions & Symbols

The following symbols, used to identify safety instructions, are defined as follows:	
	Non-compliance will affect safety.
	Electrical safety is involved.
ATTENTION	Safe operation of the lubricator and/or protection of the lubricator should be considered.
	Electrical connections made to Earth ground.
WARNING	Conditions and actions that pose hazards to the user.
N	Electrical connections made to the neutral conductor are identified with the capital "N"

All safety and/or warning labels affixed to the Air-Oil Mixing Unit must be maintained in a completely legible condition. Also, any modifications made to the Air-Oil Mixing Unit (or to any of its components) must be approved by Bijur Delimon International prior to its use; otherwise the warranty and any liability by Bijur Delimon International will be null and void.

Manufacturer's Statement

The manufacturer and/or distributor has provided the parts list and assembly diagram in this manual as a reference tool only. Neither the manufacturer or distributor makes any representation or warranty of any kind to the buyer that he or she is qualified to make any repairs or replace any parts to the product. In fact, the manufacturer and/or distributor expressly states that all repairs and parts replacements should be undertaken by certified and licensed technicians, and not by the buyer. The buyer assumes all risk and liability arising out of his or her repairs to the original product or replacement parts thereto, or arising out of his or her installation of replacement parts thereto.

General

Before installing this unit, please read this *Operators Manual* carefully. Failure to follow these instructions can result in damage to the product and/or serious bodily injury. The Air-Oil Mixing Unit meets all of the operating parameters for a positive displacement injector centralized lubricating system. You will need this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures, parts list and assembly diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep this manual and invoice in a safe and dry place for future reference.

Application

The Air-Oil Mixing Unit delivers high efficiency lubrication for high-speed spindles and other applications requiring accurate oil deliveries, in combination with air flow. The Air-Oil Mixing Unit is versatile and allows multiple configurations that enable systems to be designed to suit various applications.

Overview

The Air-Oil Mixing Unit is ideal for application on smaller equipment where space is a premium, the system allows the lubricator to be remotely positioned on the equipment. It includes everything required to provide for precision lubrication, Air-Oil mixing manifold to inject oil into the air delivery tubing, Air Treatment System (primary 5 micron filter and a secondary 0.01 micron coalescing filter) and an On-off Air Solenoid. The Air-Oil Mixing Unit is fitted with the provision for monitoring the air and oil pressures.

The Air-Oil Mixing Unit is designed to deliver small amounts of lubricant in a uniform and continuous feed basis. The oil is injected periodically into the output air stream every 1~5 minutes and depending on oil viscosity and air pressure, delivers continuous particles of lubricant to the bearing. The goal is to still have lubricant exiting the tubing at the end of the interval, then initiate another oil injection. Spindles with high RPM and DN values over 500,000 benefit the most from the continuous oil delivery, as well as small pitch chain, cam followers and linear bearings subjected to coolant and debris. The ground rule is the Air-Oil systems must be vented and have a flow path to carry the lubricant to the desired surface. Spindles, housings and linear bearings must be vented to work properly.

The Air-Oil Mixing Unit is versatile and allows multiple configurations that enable systems to be designed to suit various applications. The advanced design delivers precise amounts of lubricant and eliminates residual drift of "oil fog" mist during operation. In general terms, Air-Oil can replace an existing Oil Mist or aerosol lubrication system, without modification of the spindle or system. Other machines that were formerly lubricated with grease-pack will require modification to allow air flow. Contact Bijur Delimon for assistance and specific solutions.

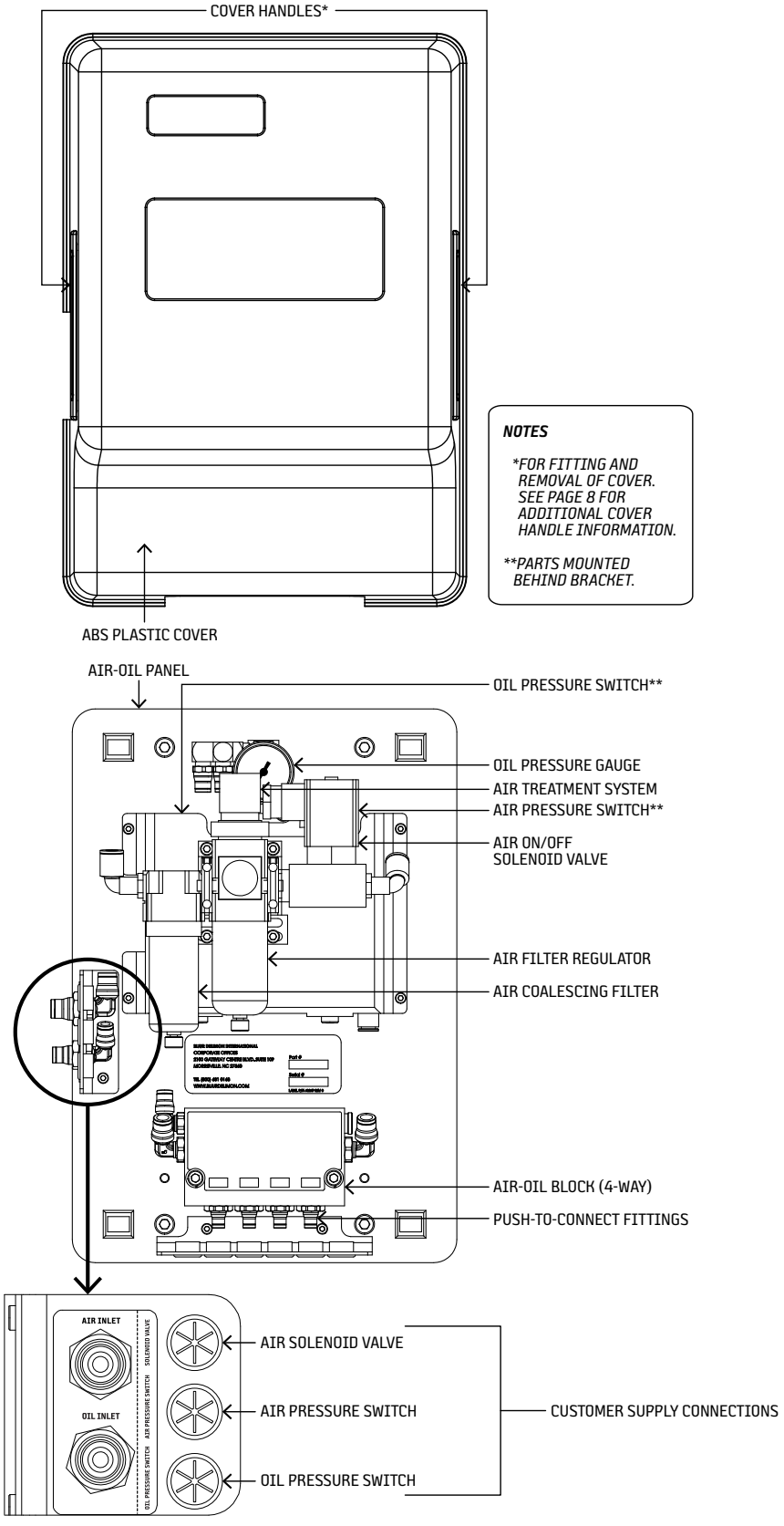
The system advantage over a Mist system is each lubrication point utilizes a Positive Displacement Injector (PDI) with eight oil outputs ranging 0.01 (1/3 oil drop) ~0.40cc (12 oil drops) per pump cycle. This permits exact oil volumes to be discharged into an air mixing valve, for controlled air and oil flows. Ideally the lubricant can use an uninterrupted tube path through metal or clear plastic tubing to the lube inlet point. Avoid bulkhead fittings, elbows and manifolds downstream, they disrupt the flow path and delay oil delivery on start-up.

The Air-Oil Mixing Unit can deliver small or large air flows to the bearings and handle a wide range of oil viscosities. At 60 psi (4 bar) air flow in the adjustable Air-Oil manifold ranges from 1.7~125 Standard Cubic Feet Hour (SCFH) or 0 .8~58 Normal Liters Per Minute. The non adjustable high-flow Air-Oil manifold delivers 5~7 SCFM depending on a fixed nozzle size and air pressure. The high flow is used in high speed grinding to displace coolant ingress around the front labyrinth seal and certain Vertical Machine Center (VMC) where multiple bearings are lubricated from a single oil passage. The air flow balances the Air-Oil delivery.

ATTENTION

See back cover for location listing and contact information.

Air-Oil Mixing Unit at a Glance



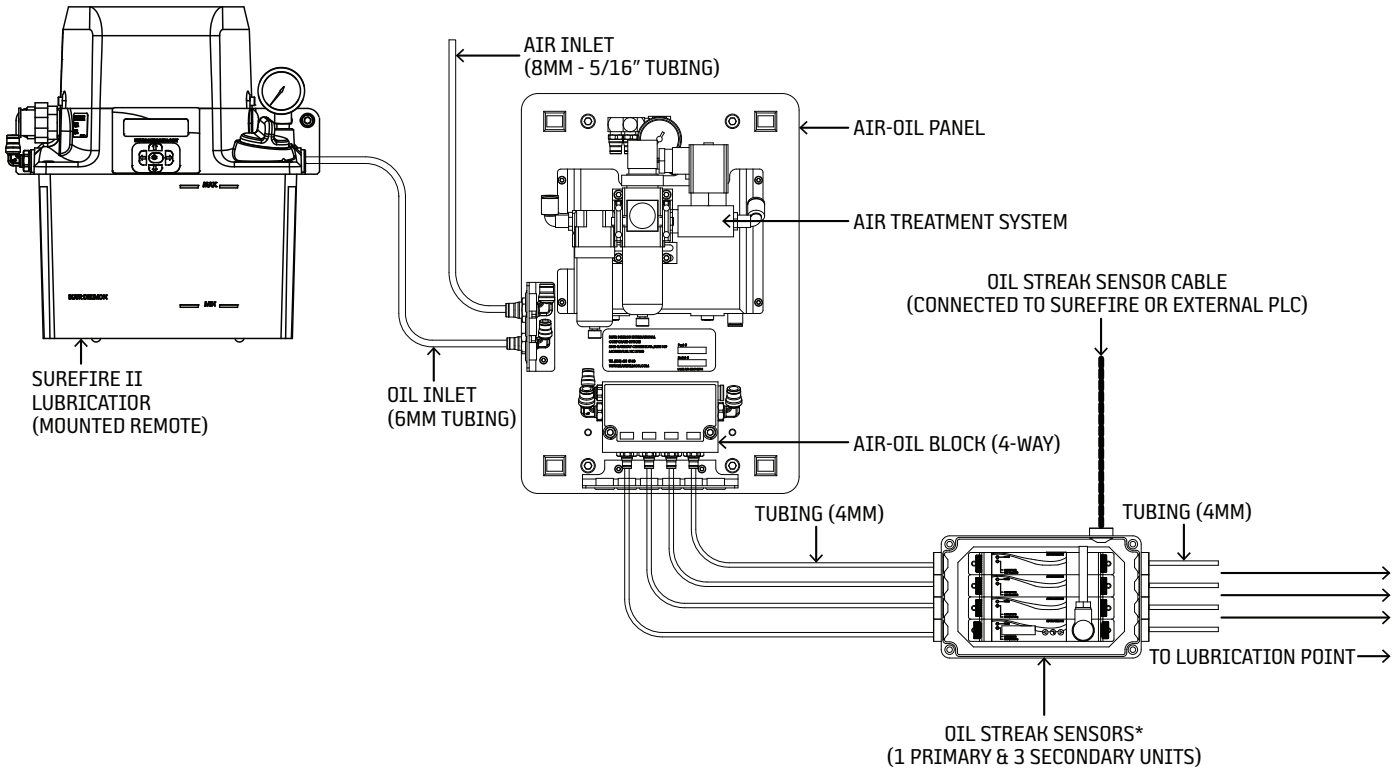
NOTES

**FOR FITTING AND REMOVAL OF COVER. SEE PAGE 8 FOR ADDITIONAL COVER HANDLE INFORMATION.*

***PARTS MOUNTED BEHIND BRACKET.*

Installation Diagram

Typical Layout: 4 Lubrication Points



**OIL STREAK SENSORS IN ENCLOSURES*

FEATURES

- INTEGRATED PACKAGING PROVIDES CLEAN, REGULATED AIR AND OIL FLOW TO BEARINGS.
- INDIVIDUAL, CONTROLLED AIR FLOW TO EACH POINT.
- MIXING BLOCK INJECTORS DELIVER PRECISE OIL OUTPUT.
- MODULAR SYSTEM – ADD OR CHANGE COMPONENTS AS REQUIRED.
- CUSTOMIZED KITS AVAILABLE FOR SPECIAL APPLICATIONS.

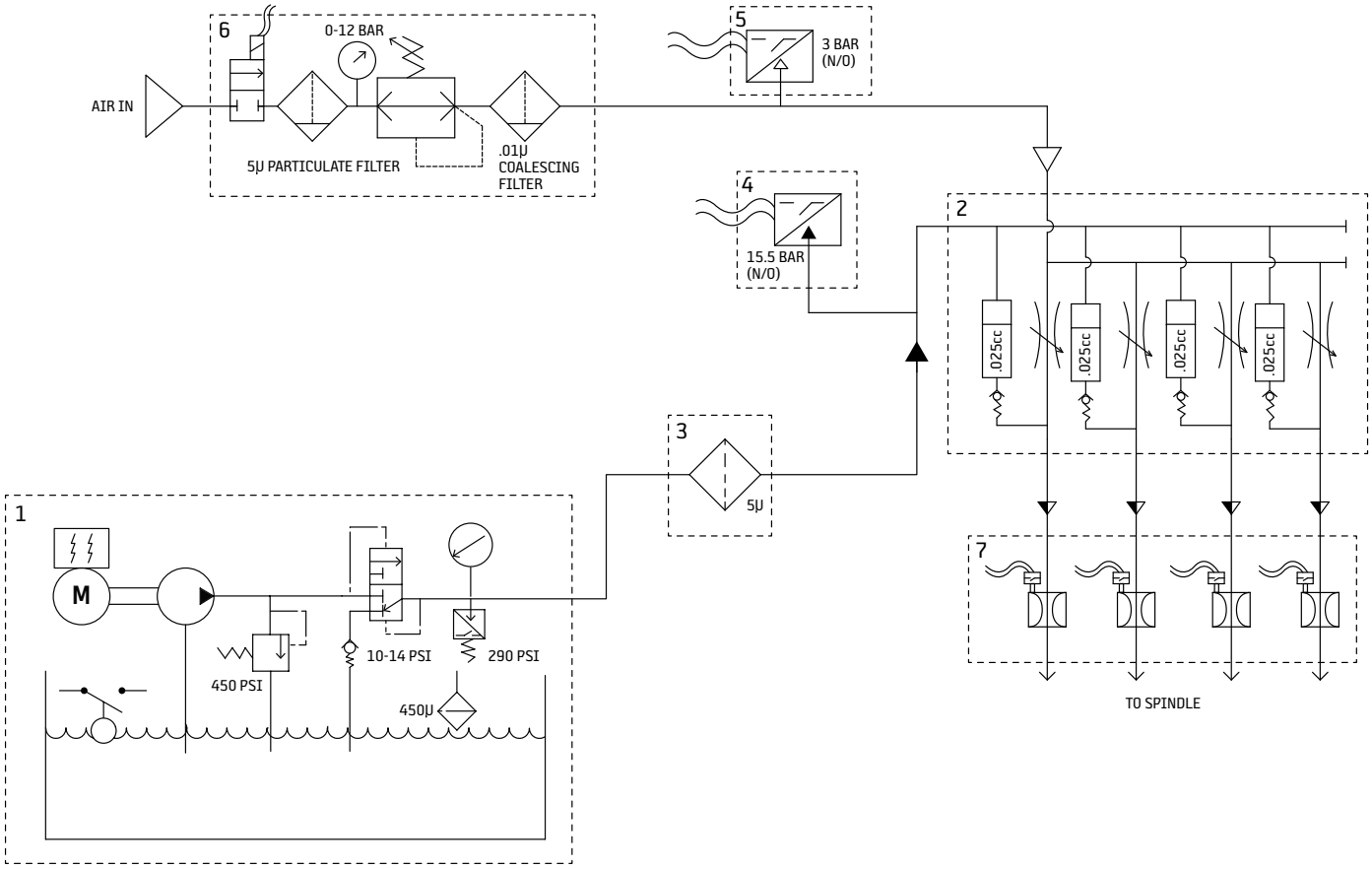
ATTENTION

The Oil Streak Air-Oil Mixing Unit is for indoor use only.

Technical Data

Minimum Lube Connections		1
Maximum Lube Connections		12
Electrical Connections	Air ON /OFF Solenoid Options	115 VAC, 220 VAC, 24 VDC (2/2 N/C Valve)
	Air Pressure Switch	44 psi (3 bar) rising, N/O, DIN 43650-A
	Oil Pressure Switch	225 psi (15.5 bar), N/O, DIN 43650-A
Inlet Air Connection		8mm - 5/16" Tubing (Push-to-Connect)
Inlet Oil Connection		6mm Tubing (Push-to-Connect)
Lube Point Connection		4mm or 6mm or 1/4" Tubing (Push-to-Connect)
Air Treatment System	Supplier	SMC
	Regulator	1/4" Porting, C/W Gauge (psi or bar)
Primary Filtration Rating		5 Micron
Coalescing Filtration Rating		0.01 Micron
Solenoid Valve		N/C, DIN 43650-A
Oil Filtration	Pressure Filter On Panel	5 Micron
Overall Dimension		262mm x 372mm x 190mm
Cover Material		ABS
Weight (With 4-Way Air-Oil Block)		15lb (6.7kg)
Relative Humidity		80% at 31°C decreasing linearly to 50% at 40°C

Typical Air-Oil Lubrication Schematic



SYSTEM COMPONENTS

1. REMOTE LUBRICATOR (NOT INLUDED)
2. AIR-OIL MIXING BLOCK (4-WAY)
3. OIL FILTER
4. OIL PRESSURE SWITCH
5. AIR PRESSURE SWITCH
6. SMC AIR TREATMENT UNIT
7. OIL STREAK SENSOR KIT

Safety

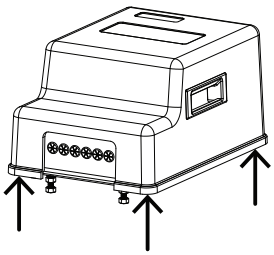
This *Operators Manual* covers fundamental concepts, which are to be observed for installation, operation and maintenance. Therefore, it is absolutely necessary that the *Operators Manual* be studied by the person doing the installation prior to installation and start-up. It is also necessary to have this *Operators Manual* nearby and available for reference in the future. The safety instructions mentioned in this *Operators Manual*, as well as all national operating and safety regulations for the safe operation of such equipment are to be observed.

Installation

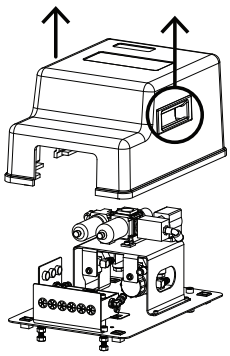
ATTENTION

Product Removal

Do not remove/lift the Air-Oil Mixing Unit panel from the box using the cover handles. It is advised that you lift the Air-Oil Mixing Unit by the panel bottom.



The Air-Oil Mixing Unit's cover handles are only for fitting and removing the Air-Oil Mixing Unit cover.



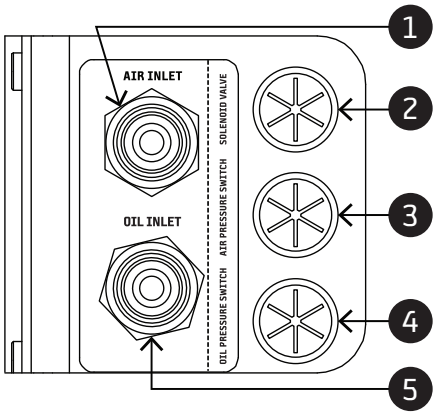
Mounting

The Air-Oil Mixing Unit should be mounted in a location free from vibrations and impacts. It must be mounted on a vertical face and not on a moving machine part. The Air-Oil Mixing Unit is mounted using 4 x M8 screws. See *Dimensional Schematics* on page 18 for mounting dimensions.

1. Using the handles remove the panel cover and set aside.
2. Provide access for means of cleaning and visual inspection.
3. Always adhere to installation instructions of the machine manufacturer with regards to drilling and welding procedures. Observe minimum distances specified between holes and the upper and lower flange of the frame or between the holes.
4. Use drilling templates to locate and drill mounting holes. Mounting plates and templates are available for this product. When possible use existing mounting holes or studs.
5. Lubrication lines and electrical cable must be secured by means of clamps or straps to prevent them from rubbing or coming loose. Keep lines away from shocks and heat. For added protection tubing and cables should be wrapped with appropriate loom or spiral wrap.

Inlet Oil & Air Connections

Connect the air supply using 8mm (5/16") tubing to the customer supply connections. Connect the oil supply using 6mm tubing to the lubricator.



Item	Description
1	Air Inlet Connector (Push-to-Connect); 8mm (5/16") tube
2	Air Solenoid Valve
3	Air Pressure Switch
4	Oil Pressure Switch
5	Oil Inlet Connector (Push-to-Connect); 6mm tube

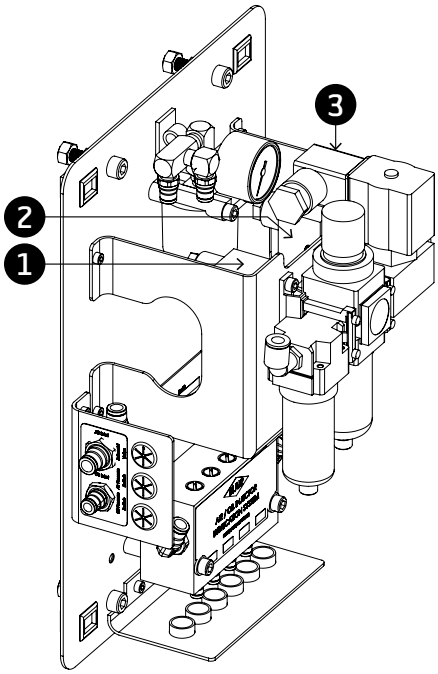
Electrical Pin-Outs

The user connects the Air and Oil Pressure switches to the remote lubricator or external PLC. The Air and Oil Pressure Switches must be wired per diagram *Electrical DIN Connector (Air and Oil Pressure Monitoring Switches)* during commissioning of the Air-Oil Mixing Unit.

Note: See Technical Data for full specification of both the Air & Oil pressure switches.

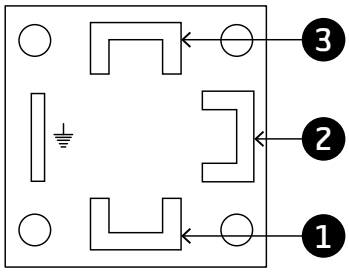
Electrical Connection (Solenoid)

The Air Solenoid Valve is supplied with a DIN connector and must be wired per diagram *Electrical DIN Connector (Air Solenoid Valve)*. The Air Solenoid Valve is a 2/2 – normally closed valve. The voltage depends on the unit that is ordered.



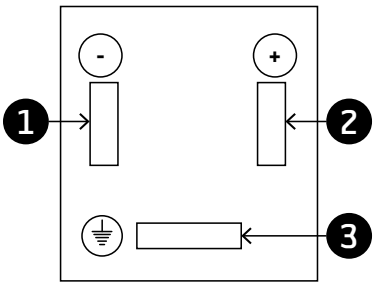
Item	Description
1	Oil Pressure Switch
2	Air Pressure Switch
3	Air Solenoid Valve

Electrical DIN Connector (Air and Oil Pressure Monitoring Switches)



Pin #	Description
1	Common
2	Normally Closed
3	Normally Open
⏚	Ground

Electrical DIN Connector (Air Solenoid Valve)



Pin #	Description
1	(-) AC/DC
2	(+) AC/DC
3	Earth

ATTENTION

Do not use oil containing solid lubricant additives with air-oil system.

Choosing Oil Lubricant

Typical oil lubricants for high-speed anti-friction bearings consist of oil viscosities ranging from ISO VG32 to VG100. The Bijur Delimon SureFire II Lubricator is also capable of using as low as ISO VG10 (special gear head is required for ISO VG10 lubricant).

ISO @100°F	Viscosity (cSt)	Nominal (SSU)
32	30	142
46	45	200
68	65	300
100	100	465

Calculating The Oil Amounts

A thin oil film separates the rolling elements from the raceways. The oil film should be of a sufficient thickness to prevent asperity contact between moving surfaces.

Lubricant requirement for the anti-friction bearings can vary with lubricants and operation conditions.

The formula below is offered as a guide only as the final requirements for individual applications can vary from these values:

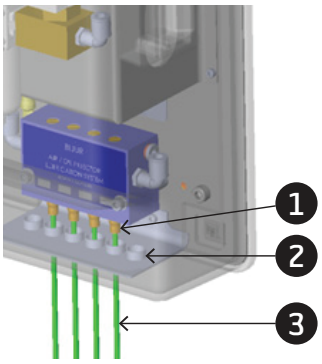
Lubricant Requirement Formula

***V** = 0.03 x Bearing Internal Diameter x Number of Rows of Rolling Bearing Elements*

V is the oil requirement in cc/hour

Lubrication Point Connections

The lubrication tubes are connected through the grommets and into the push-to-connect fittings on the Air-Oil Block. The tube used for connecting between the Air-Oil Block and the lubrication points should be transparent and can be 4mm (5/32"), 6mm or 1/4". This depends on the system that is ordered (if the system requires an Oil Streak Sensing unit than the tubes should be 4mm (5/32") or 6mm).



Item	Description
1	Push-to-Connect fittings, on Air-Oil Block
2	Grommets
3	Tubes to lubrication point

Helical coiled tubing maybe used where short line runs are encountered. In longer line runs, multiple coils may not be necessary. Two to five coils are available.

Note: Fewer coils deliver proportionally less lubricant on start-up after shutdown.

Setting the Inlet Air Supply & Needle Valves

It is important to ensure that the air supplied to the lubrication point is very clean and it is highly recommended that a coalescing filter (0.01 microns) is fitted to the system.

Normal air flow settings are listed in the table to the right (for accurate flow readings connect a flow meter to the lubrication tube at the lubrication point). Increased flows are required for higher viscosity oils.

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.

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).

Air & Oil Pressure Monitoring Switches

The Air-Oil Mixing Unit is fitted with an air and oil pressure monitoring switch. Both switches have to be wired back into the remote lubricator/PLC. See *Technical Data* on page 6 for a full specification for both switches.

Air Flow Data per Outlet

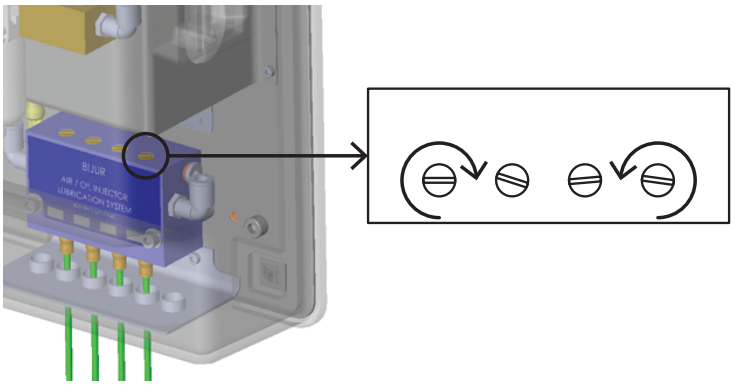
Outlet air flow vs needle valve position.

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.

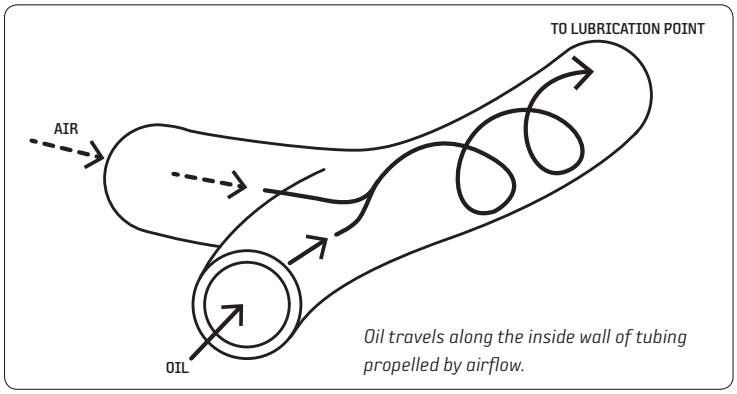


Note: To adjust the needle valve a short slotted head screw driver is required.

Operation

High performance machinery that utilizes high-speed roller bearings require a thin lubricant film to separate the rolling element from the raceway. Over-lubrication can be just as destructive as under-lubrication, accurate delivery of the correct viscosity oil is essential to maintain maximum bearing life at peak operating conditions. Bijur Delimon offers various formulas to calculate oil volume per hours as a starting point. Once the system is operational, performance oil flow can be monitored by temperature or vibration analysis. Once established the ideal interval can be determined and monitored by the "OSS" Oil Streak Sensor.

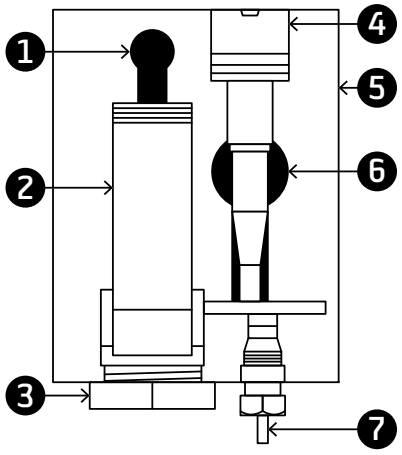
The Air-Oil Mixing Unit utilizes an air/oil Positive Displacement Injector (PDI) block to deliver a precise amount of oil into a controlled air flow. The air propels the oil droplets along the inside wall of the small bore tubing until it reaches the lubrication point. The tubing length stretches out the flow of lubricant so that a continuous flow arrives at the nozzle/lubrication point.



Oil travels along the inside wall of tubing propelled by airflow.

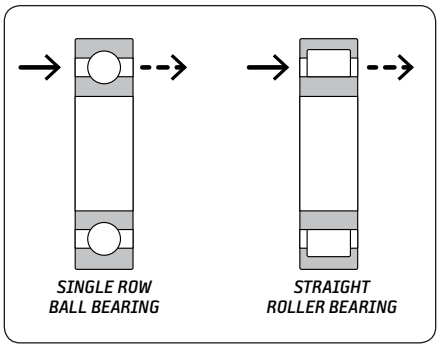
Air expansion at the nozzle outlet generates a controlled spray for efficient bearing lubrication. A wide selection of injector rates combined with individually adjustable air valves provide specific air/oil deliveries to maintain thin lubricant oil films to each high-speed anti-friction bearing or other surfaces.

Operation of the injectors occurs during an alternating pressure and relief cycle controlled by the lubricator operation.



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

How Air/Oil Flows Through Bearings



Bearings dynamics affect the delivery method of how air/oil flows through the tubing. Air/Oil deliveries must flow unimpeded through the bearing for successful lubrication. Always ensure a free air flow passage through the bearing element. Air restrictions and back pressure can impede proper deliveries to critical areas.

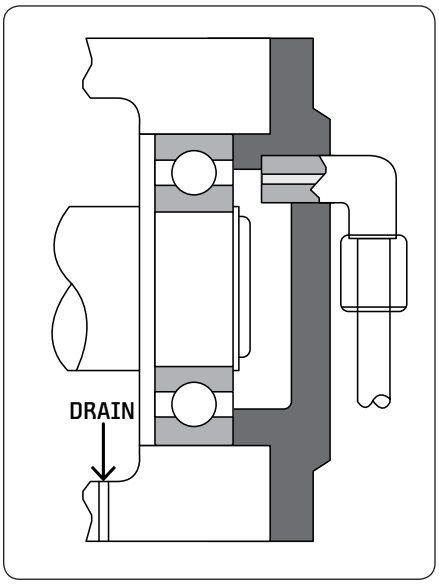
- If required, air flow pressures may be adjusted to overcome air turbulence created by high speed bearings.
- One nozzle is required for most applications, for larger bearings, greater than 150mm (6") a second nozzle maybe required.
- For single-row bearings, direct nozzle bore to the side of the bearing at lower inner ring surface. Do not direct the output delivery towards the ball cage of the bearing.
- Angular contact bearings develop a pumping action in one direction – the oil must be supplied in the direction shown above.

How Tubing Connects to Bearing

The feed line can be 4mm, 6mm or 1/4" O.D. clear plastic tubing is recommended. The minimal tube length is one meter (3.3 feet). Greater line runs are permitted, runs less than 1 meter from air/oil block injector to bearing should incorporate a series of helical coils to increase developed length. Tubes with two to five coils are available.

Venting the Bearing

It is necessary to locate a 4mm minimum diameter drain/vent in the bearing housing to minimize air back pressure and prevent oil collection in the sump.



ATTENTION

In certain situations, lubricant may be directed to the outer bearing ring. Ensure that lubricant is not delivered into the pressure zone between the ball and outer ring. Always direct lubricant into the unloaded ring.

ATTENTION

If a SureFire II Lubricator with Controller is used as the lubricator, when programming it is recommended to select the Controller option.

Start-Up Instructions

This *Operators Manual* covers fundamental concepts, which are to be observed for installation, operation and maintenance. Therefore, it is absolutely necessary that the *Operators Manual* be studied by the person doing the installation prior to installation and start-up. It is also necessary to have this *Operators Manual* nearby and available for reference in the future. The safety instructions mentioned in this *Operators Manual*, as well as all national operating and safety regulations for the safe operation of such equipment are to be observed.

Starting Up the System

For the initial start-up remove the cover from the Air-Oil Mixing Unit.

1. Connect the Air-Oil Mixing Unit to the remote lubricator.
2. Fill the lubricator reservoir with the required lubricant; fill to above the minimum amount and do not exceed the maximum amount.
3. Make sure that the connection(s) from the Air/Oil Block to the lubrication point(s) are made.
4. Make sure the air inlet connection is made. Turn the air regulator on the Air-Oil Mixing Unit off fully. Turn on the mains air supply, this will allow air to flow as far as the air regulator or the Air Solenoid Valve if fitted.
5. Connect in the mains power to the lubricator, connect up the Air Solenoid Valve, the air and oil pressure monitoring devices need to be connected to the remote lubricator or PLC (if the Oil Streak sensor is fitted to the system it will have to be connected to the Lubricator or PLC).
6. Turn on the mains power to the lubricator. If the lubricator is a SureFire II, which has a controller, this will need to be set-up as per the SureFire II Controller manual *(Operators Manual #36412: SureFire II Controller Supplement)*.

The following parameters have to be set-up:

- Motor on time (recommended 6/10 seconds on for 1 to 6 way outlet block)
- Motor off time
- Pre-lube cycle – during initial commissioning, or after extended shutdowns, it is necessary to ensure a reliable supply of lubricant to the lube point before starting the spindle. The pre-lube will provide this lubricant by cycling the lubrication system a predetermined number of times over a short period of time, (the number of pre-lube cycles will depend on the length of lube tubes, for lubrication tubes less than 1 meter 8 cycles are recommended and for up to 10 meters 15 cycles recommended).
- The oil pressure switch should be enabled (if the oil pressure switch is connected to the SureFire II).
- The air pressure switch should be enabled (if the air pressure switch is connected to the SureFire II).

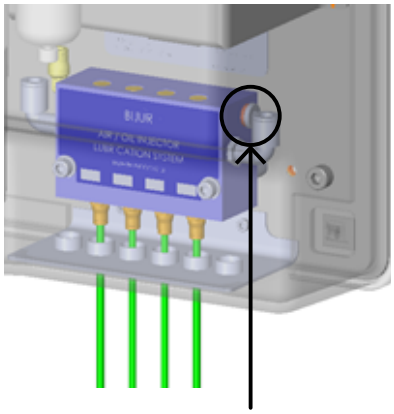
Initial Commissioning

During the pre-lube cycle the lubricant should wet the lubricating lines and the inflow channels in the spindle and there should be a visible oil streak as far as the spindle bearings. Depending on the length and size of the lubricating line it may be necessary to repeat the pre-lube cycle one or more times.

Restarting the System

Any lubricant that may have accumulated after extended down-time at low points of the lubricating lines should be delivered to the spindle with the air stream also a pre lube cycle should initiate to ensure that the lines to the lubrication points are adequately full of oil.

7. Turn on the Air Solenoid Valve (if fitted) and adjust the inlet air pressure to the required setting, minimum 60 psi (4 bar) and a maximum 88 psi (6 bar), this will allow air to travel into the air /oil block.
8. Air is now allowed to flow through the Air/Oil Block and out the outlet tubes. The flow rate in the lubrication tubes can be setup by removing the lubrication tube from the lubrication point, fitting a flow meter to the tube end and adjust the needle valve on the Air/Oil Block to get the required flow rate (See page 11 chart *Air Flow Data per Outlet* for alternative flow rate set-up).
9. Once the lubricator is on, the system has to be primed, this is done by removing the plug on the Air/Oil Block and pressing the prime button on the lubricator, run 4 to 5 cycles to ensure all the air is removed from the system. Once the system is fully primed refit the plug.



10. The system now needs to fill the lubrication tubes with an oil streak. This is done by initiating the pre-lube cycle. Additional priming can be activated by pressing the prime button on the SureFire II Lubricator*.
11. The system should be observed to ensure that there is a continuous streak in the full length of the lubrication tubes. This ensures that the supply of oil to the lubrication point is uniform.
12. Prior to fitting the cover check all of the air lines and oil lines for leaks with leak detection spray.
13. Once all of the above is completed, fit the cover and the system should be ready for operation.

ATTENTION

**It will take more cycles to prime a system with 0.01cc injectors than with a system with bigger size injectors.*

Once there is a visible/uniform oil streak present in the lubrication tubes, the system is now ready for full operation.

ATTENTION

For further assistance contact our technical support team. See back cover for location listing and contact information.

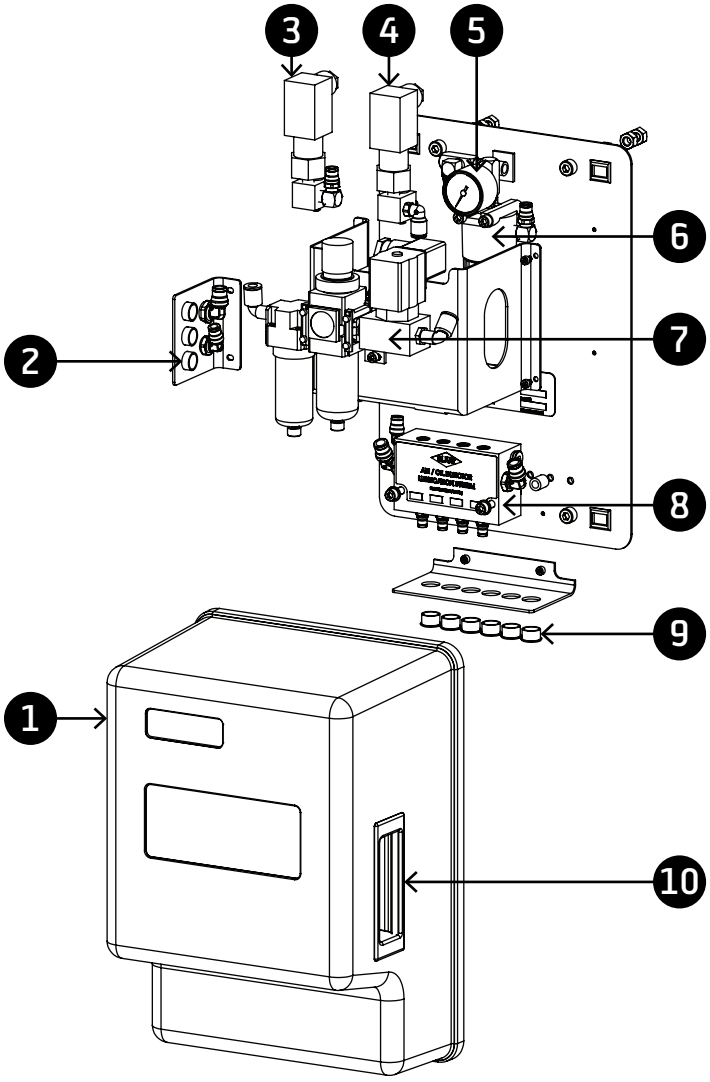
Troubleshooting

Symptoms	Possible Cause	Remedy
Air pressure switch fault	The Air Solenoid Valve is not energized.	Check to see if the solenoid is energized.
	The regulator on the panel is not open enough to allow adequate pressure.	Ensure that incoming air is not below the minimum required pressure of 58 psi (4 bar).
	Check that there are no leaks in the air lines and fittings.	Replace any faulty components.
	Check the filters on the air treatment to ensure the filters are very clean.	Replace the air filters.
	The needle valves on the air/oil block are open too much and the system is not capable of building enough air pressure.	Adjust the needle valves to allow the system to build a minimum of 58 psi (4 bar).
Oil pressure switch fault	The lubricator is not building up the required pressure.	Check that there are no oil leaks in the system.
	Check that the pressure reading on the SureFire II Lubricator is the same as the reading on the pressure gauge on the filter; both should be approx. 450 psi (31 bar).	If the SureFire II is not building pressure to 450 psi (31 bar) there is a problem with the SureFire II Lubricator (see *Operators Manual #35022: SureFire II PDI Single Phase*).
		If the SureFire II Lubricator gauge is reading 450 psi (31 bar) and the pressure gauge on the filter is reading much less then the filter element in the filter needs to be replaced.
One of the outlet injectors is not working	The lubrication tube is blocked.	Check to see that the lubrication tube is not blocked and air is travelling through it.
	There is a faulty injector.	Replace the injector. For injector replacement part #'s contact Bijur Delimon.
Oil Streak Sensing Unit fault	There is not a uniform oil streak present in the lubrication tubes.	Adjust the system so that the oil streak is uniform. This can be achieved by reducing the lube cycle off time or / and adjusting the air flow rate.
	The oil sensor unit is set-up too sensitive for the application.	Configure the oil streak sensor to suit the system – see oil streak manual for all parameters.
	There is no oil streak in one of the lubrication tubes.	Investigate to see why the injector is not operating, see symptoms ***One of the outlet injectors is not working.***

How to Order

See Datasheet #35721: Oil Streak Air-Oil Mixing Unit for product and accessory part #'s.

Service Parts



Item	Description	Part #
1	Cover Assembly	60371
2	Grommets	60254
3	Oil Pressure Switch	26772-2
4	Air Pressure Switch	26641-2
5	Pressure Gauge	26772-2
6	Oil Filter; 5 micron	43252
7	Air Filter Regulator + Solenoid Valve	60195-5*
8	Block air/oil 4-way	AV4AAAA*

Item	Description	Part #
9	Grommets	60254
10	Handle	60133

** Standard part #'s. For additional part #'s contact Bijur Delimon.*

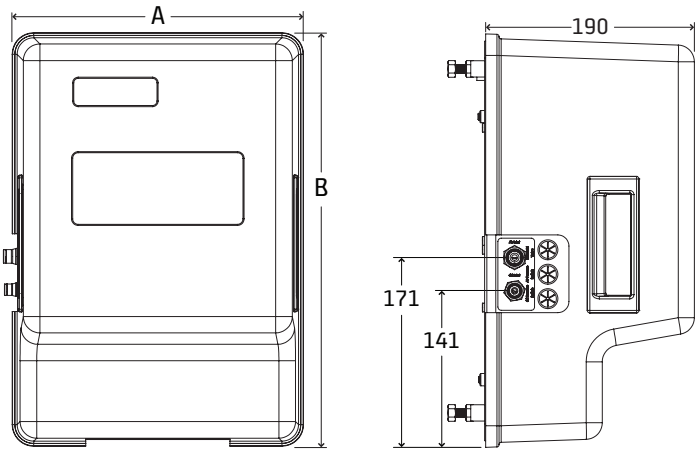
Replacement Filter Elements

Description	Part #
Oil Filter	43254
Air Filter Coalescing (0.01 micron)	60200
Air Filter (5 micron)	60201

Measurements shown in millimeters.

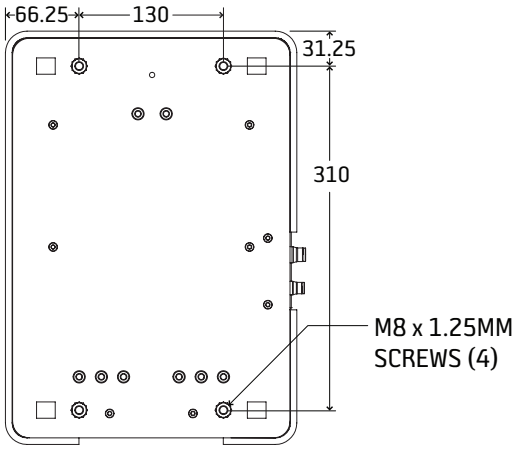
Dimensional Schematics

Overall



	A	B
Cover	262.5mm	372.5mm
Panel (w/o Cover)	250mm	360mm

Mounting



Notes

Innovators of engineered lubrication technology **since 1872**

Bijur Delimon International has ISO 9001:2008 and ISO 14000 quality certified manufacturing facilities around the world, so your centralized lubrication system meets the highest industry quality standards. It's all part of our commitment to quality and customer service.

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