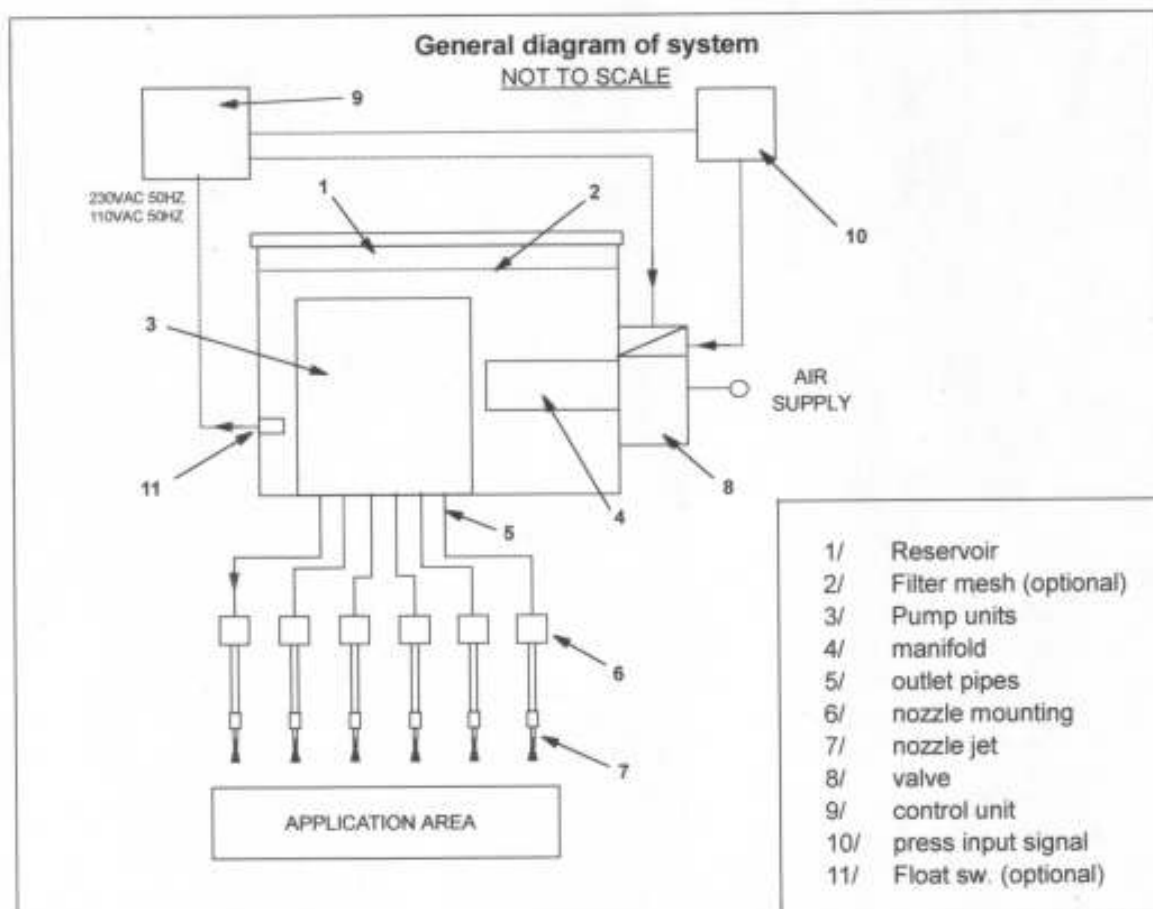


METERLUB[®] Lubrication System General Layout

The JACO 'One Shot' System is an equipment is designed to apply lubricants to industrial applications and processes.

The system works by using a pneumatic pump to deliver a set amount of lubricant to the workpiece either directly or by injecting this amount into a slow moving air stream which can be used to spread the lubricant over the target area.

The JACO system uses a separate pump for each nozzle, thus ensuring accurate and consistent application to each area.



The syetm is normally mounted onto the press or machine frame as close to the application area as possible. Brackets are fitted to the reservoir to allow fixing to the machine surface with 8M fixings. The nozzles are fitted to a mounting block which has two holes provided for fixing to the machine. Flexible hoses are used to connect the pump outlets to each nozzle. The nozzles are made from brass and copper and may be angled slightly for precise aiming of the application.

The unit requires a main air supply to the operating valve and solenoid valve if fitted, when fitting the system it is best to keep all pipes and hoses as short as possible and clipped away to protect them.

As the reservoir is non-pressurised for safety, it can be re-filled at any time, even when the unit is working. A low level indicator and float switch are fitted to warn of low lubricant level in the reservoir.

When correctly installed and set-up the system will accurately apply the pre-set and adjustable ammount of lubricant each time it is operated.

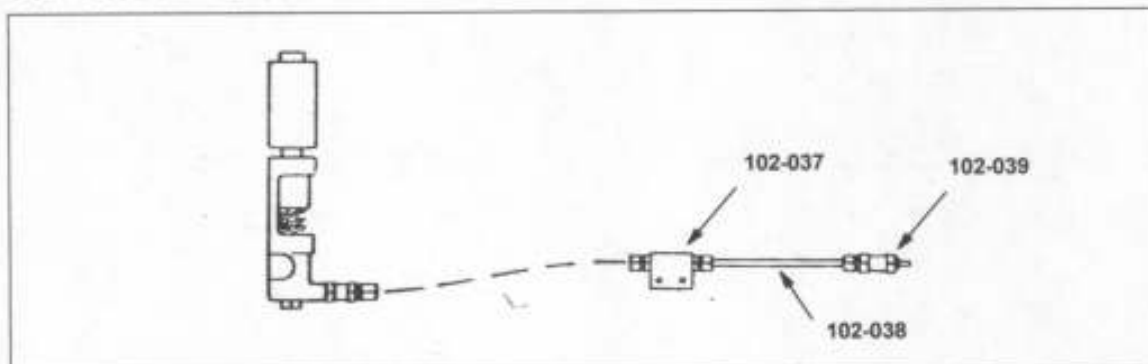
Connections to Nozzles

The following information details how to connect the pump system to the individual nozzle units when installing onto a machine. These instructions should be followed to ensure correct operation in use.

Type 'A' Pump

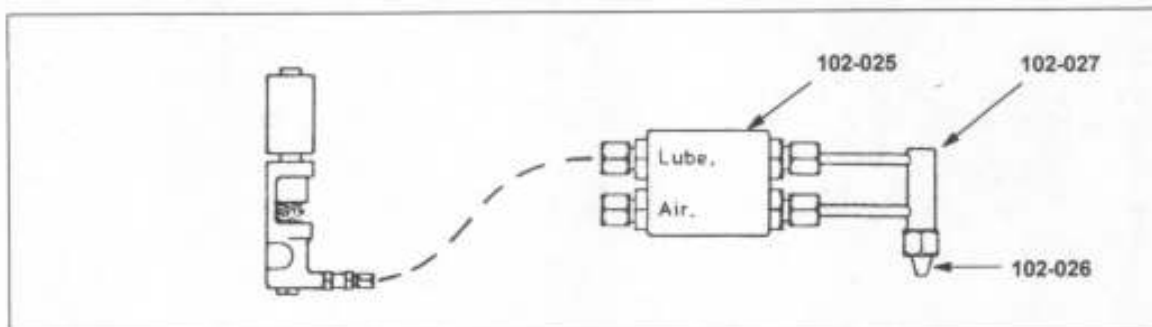
Metal tubing should be used where possible on Type 'A' installations. If however flexible connections are necessary then heavy duty Nylon or Plastic tubing with a capacity of 70 Bar.(1000lb/sq.) should be used to connect between the pump and the nozzle.

Where long lengths of pipe are required between base unit and nozzle, it may be necessary to increase the diameter of the pipe slightly, e.g. Above two metres length the pipe should be increased to 6mm bore and where the nozzle is required to move, metal piping should be used as far as possible and only the final section in flexible material.



Type 'A' & 'C' Pumps

The lube connection is made in heavy duty Nylon tubing with the overall pipe length kept as short as possible. On longer lengths metal piping should be used as above.



Type 'A' & 'C' Pumps Air Blast Connections

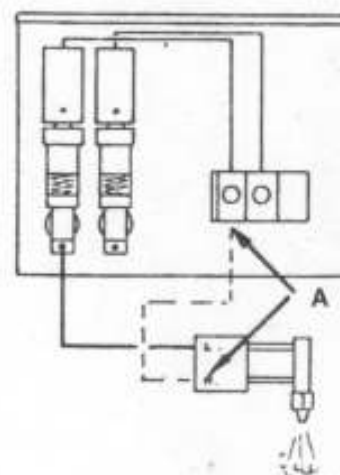
The air blast connection is made with either Nylon

or Polyurethane tubing. Each pump has a control manifold as shown in the diagram 'A'.

Each manifold has an air flow adjuster, which is used to vary the air blast supplied to the nozzles when operated.

The air blast only operates when the system is actuated by the control signal or valve.

Control is only of flow not pressure. Pressure is controlled by the regulator fitted to the main input manifold.

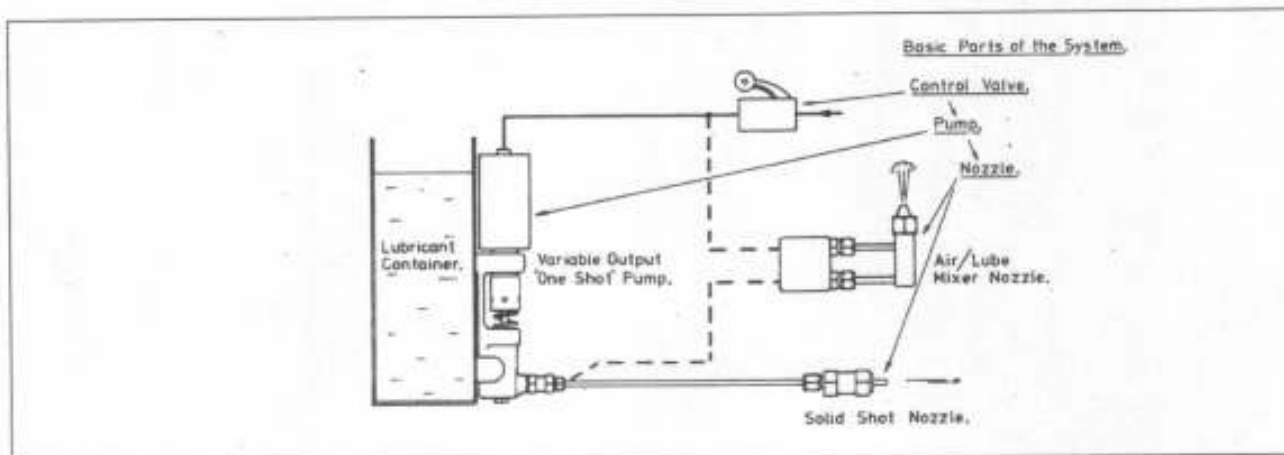


Each JACO 'One Shot' System is built up by deciding how many spray points are required and of which of three types of pumps available for the system.

Type 'A' This projects the set amount of lubricant without spray air and is normally used for small accurate amounts in very precise areas. Maximum amount per shot 0.3ml (cc).

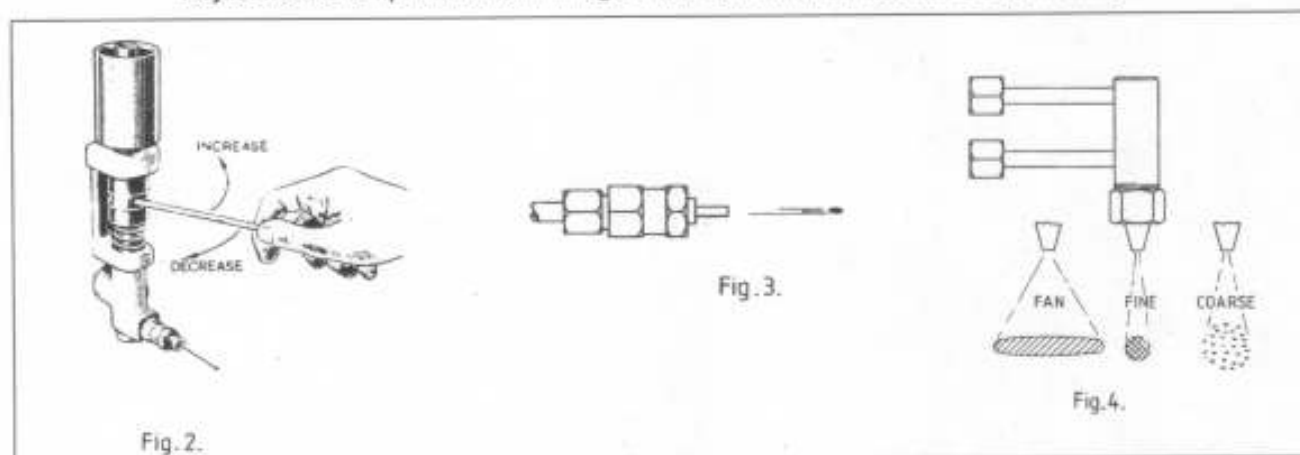
Type 'B' Where a higher degree of spread is required together with small amounts, for example: fine presswork. This unit provides the facility to mix air with the lube shot. Both air and lubricant have fine output controls. Maximum shot 0.3ml(cc).

Type 'C' This is a larger version of the Type'B' and has a maximum output per shot of 1.2ml(cc).



When the spray shot is required, the controlling air valve puts air line pressure on to the pump cylinder. This cylinder, which has a fixed stroke, is connected to the pump plunger and the amount of effective pumping stroke i.e. Pump Output, is governed by the position of the Cylinder / Plunger assembly. This assembly is positioned by the Adjusting Nut and thereby controls the amount of lubricant issued at each stroke.

Adjustment is simple as shown in Fig. 2. and can be made with the pump working.



The lubricant is then carried by a strong tube to the nozzle which in the case of 'A' Type Spray Point Kits is to the special output nozzle shown in Fig. 3.

'B' and 'C' Type Spray Point Kits have Air/Lube mixer nozzles, with interchangeable tips. Fig. 4.

Three different tips are supplied with each pump, allowing a range of application patterns.

Users often make up special nozzles to suit their own situations, the advantage of the JACO system being that because the lubricant shot is supplied at high pressure (24:1 Over Air Line Pressure Type'A') the unit will function successfully even against high nozzle or pipe resistance.

In many applications the lube shot is piped directly into the tool or slide or even into the die area itself.

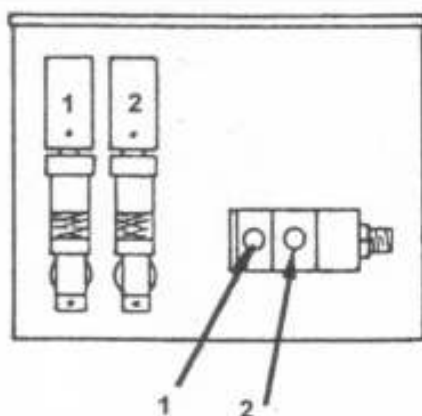
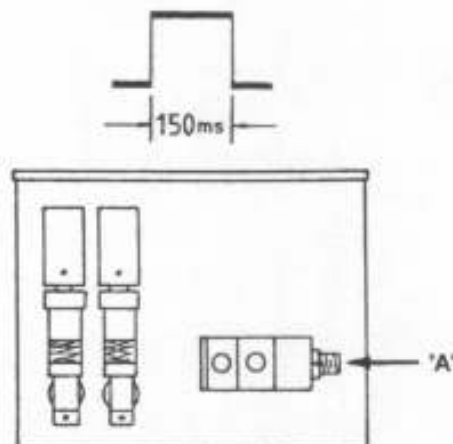
OPERATING AND ADJUSTING

OPERATING IMPULSE

The system is operated by switching on the air supply to the unit via a mechanical valve or solenoid device for a time period of not less than 150ms. The recharge time should be not less than 150ms. This will ensure that the pumps will fill correctly and dispense the full set output.

The operating valve is normally fitted directly to the manifold section indicated 'A'.

If the valve cannot be mounted at that point then care must be taken not to have long pipes between the valve and the unit as this will reduce the efficiency of the system.



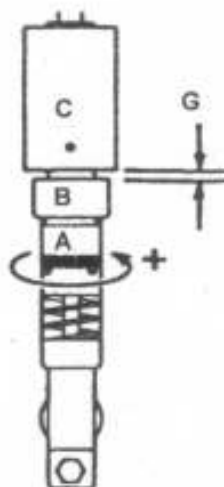
ADJUSTING THE AIR BLAST

SETTING THE AIR BLAST

The air blast feed to the nozzles is controlled via the distribution manifold mounted on the front of the reservoir unit. For Type 'B' & 'C' pumps only there is an adjusting screw in the manifold which correspond with each pump outlet as shown. (1,2)

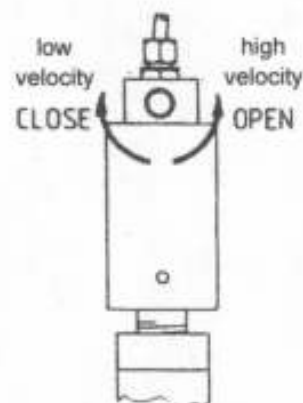
The screw is turned anticlockwise to increase the flow of air to the nozzle. If the adjuster is screwed fully home then no air will be fed to the nozzle unit. When piping up the system take care to pie logically e.g. pump #1 and manifold #1 feed to the first nozzle and so on.

PUMP SETTING (VOLUME AND FORCE)



To adjust the volume pumped each cycle, turn the adjusting nut 'A' in the indicated direction to increase the shot size, and in the other direction to reduce the shot size. When the air cylinder 'C' is touching the body 'B' the pump is on maximum shot. When the gap 'G' is 9mm the pump will be on minimum shot. It is possible to adjust this type of pump so that no shot is given.

On type 'A' pumps only there is a shot velocity adjuster mounted in the pump cylinder cap. This is a screw type adjuster which can be used to reduce the output velocity of the shot where the lube shot may 'bounce off' the target item or area. This is used particularly in the case of lubricating conveyor wheel bearings or small punch and die tools.



Both 'B' and 'C' Type units will also project lubricant without spray air but at a lower velocity than Type 'A' units.

When the number of sprays is decided, the base unit can be selected on the basis of up to three sprays use **Base Unit Size 1**, and from four to six sprays use **Base Unit Size 2**. An exception is made for users requiring the larger tank capacity of the Size 2 Base Unit with less than four sprays, spare sets of plugs are available to close off any pump mountings not used.

Base unit kits are available with up to 12 pump positions as standard. These are shown in the reservoir selection data table.

With these units it is possible to build up an equipment exactly to the job requirements where it is perhaps necessary to have solid shot of lubricant on one part of the press tool and a fine spray over another area.

Each spray point has individual controls for both the amount of, and force of the lubricant shot.

When the control valve is operated only the set amount will be sprayed from each nozzle. This equipment is most suitable for repeating machine operations i.e. **Presswork, Forging, Tapping etc.**

Types Of Lubricant Which Can Be Used, and Spray Shot Rates

Generally the equipment will handle all lubricants that will flow into the pumps under atmospheric pressure.

Even light greases can be used providing that they will flow under the influence of the pump suction.

When the unit is being used at low spray shot rate e.g. 20 shots/min. or less, there should be sufficient time to recharge the pump for a full capacity shot with light grease. If however the amount discharged is much less than a full shot, the shot rate could be increased to more than 80 shots/min.

With medium to light oils, the shot rate can be as high as 180-200 shots per minute.

Materials Not Suitable

Care must be taken when using lubricants containing suspended solids.

Many lubricants of this type with Graphite or Molybdenum in suspension are quite useable providing the suspension is stable, but some are not, and require a different equipment.

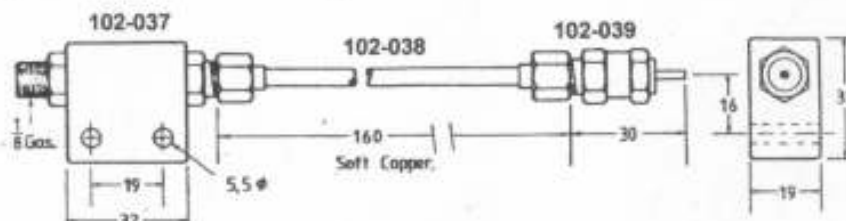
Pump Type	Output (per shot)	Output Ratio	Air Pressure	Air Consumption
Type 'A'	0 - 0.3ml	24 : 1	3 - 5.5 Bar.	8.5 cc/shot
Type 'B'	0 - 0.3ml	24 : 1	3 - 5.5 Bar.	8.5 cc/shot
Type 'C'	0 - 1.2ml	6 : 1	3 - 5.5 Bar.	8.5 cc/shot
Type 'A/B' High Pressure	0 - 0.3ml	64 : 1	3 - 5.5 Bar.	
Type 'C' High Pressure	0 - 1.2ml	16 : 1	3 - 5.5 Bar.	

Dimensions of Nozzles

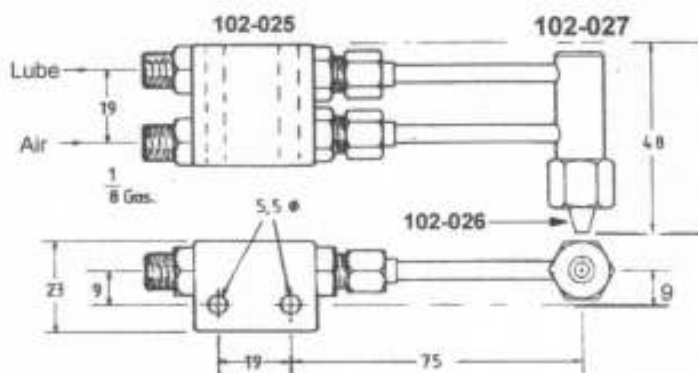
Type 'A' Nozzles (solid shot)

Solid Shot Nozzle

The Solid Shot Nozzle No. 102-039 fitted to the feed pipe and mounting block assembly allow accurate positioning of the lube shot to the work piece.



Type 'B' Nozzles (Standard and 'AA' Nozzle)



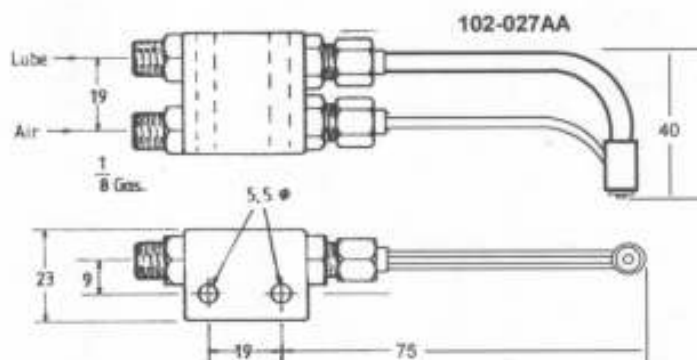
Standard Nozzle

Shown at left is the standard nozzle block with nozzle assembly and tip fitted. All tips are the same external size as illustrated. Nozzle tips are changed by removing the captive nut. The nozzle body is made with two short copper tubes brazed into the head which allows a reasonable degree of bending for adjustment to be made on installation.

'AA' Nozzle

Shown at right is the standard nozzle block with the 'AA' nozzle fitted. The nozzle body has two copper pipes of different diameters. The large diameter pipe is the lube feed to the nozzle from the system, and the smaller pipe is the air feed to the tip.

This nozzle is normally only used with the Type 'B' Pump Kit. The pipes will allow a degree of adjustment of position when installing.



Some applications require that special nozzles are used to effectively apply the lubricant to the work piece or area. We have over 40 years of experience in designing nozzles to cover these more difficult jobs with a wide range of non-standard nozzles and designs available for the customer. Please contact us for assistance.