

Operation and Maintenance Instructions

for

MPA003 Minimum-Volume Pneumatic

Metering Systems

NANJING BIJUR MACHINERY PRODUCTS, LTD.

Tel: 86-25-85801188 Toll Free: 800-8286000 Fax: 86-25-85802288

Website: [http:// www.bijur.com.cn](http://www.bijur.com.cn)

E-mail: china@bijur.com.cn

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● General Description

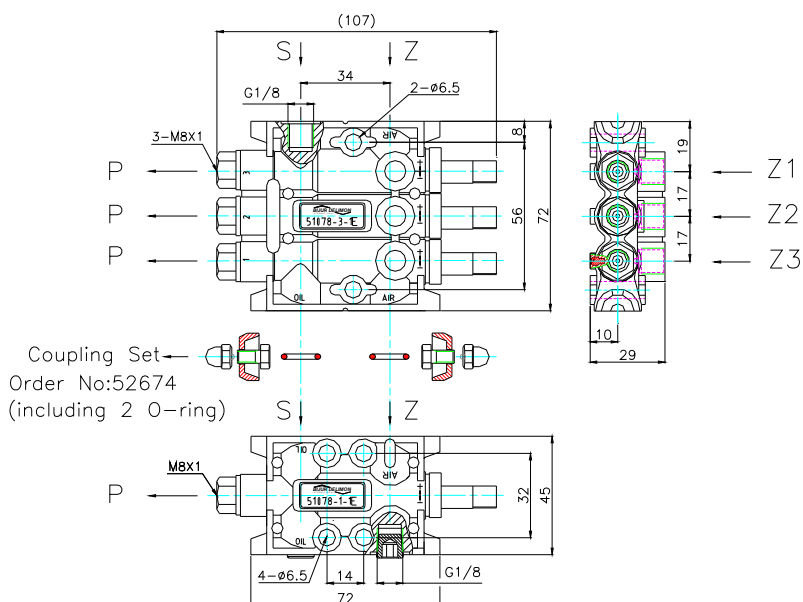
MPA003 Minimum-Volume Pneumatic Metering System is a pneumatically actuated piston pump that delivers the lubricant in small, metered quantities. The oil is not delivered until the servo-part is actuated by a pneumatic signal. The oil volume can be precisely adjusted with the setting sleeve of the oiler. Care must be taken to ensure that the compressed air line is relieved of pressure after pressurization, so that the actuating piston of the metering pump can return to its initial position. It has two types: group actuation, individual actuation. Main characteristics:

- Metered amount of lubricant, consistent function;
- The volume is small, simple to install;
- Lubrication can either be group actuated or individually actuated.
- Units can be configured in series or in parallel.
- The oil volume is adjustable.

The system is used :

- To lubricate tools during drilling, reaming, thread-cutting, thread-forming, tapping, sawing;
- Broaching, punching, milling and cold-forming operations;
- To oil various kinds of joined parts, e.g. in motor-assembly operations;
- To oil gears and toothed belts to reduce noise;
- To spray or wet sheet metal prior to cold-forming.

● Principle



S = oil supply

The oil can be supplied by gravity oil or by a pressurised line (max 0.3MPa).

P = oil outlet

The outlets are connected directly to the lubrication points.

Z = compressed air connection

Group actuation : connection ports **Z**

Individual actuation : connection ports **Z1, Z2, Z3**

With group actuation (**Z**) all the outlets (**P**) deliver at the same time.

With individual actuation (**Z1, Z2, Z3**) only the respective outlet (**P**) delivers.

● Technical Data

Delivery Rate: 0~0.03 ml/stroke ;

Actuation Pressure (on air side): 0.3~1 Mpa;

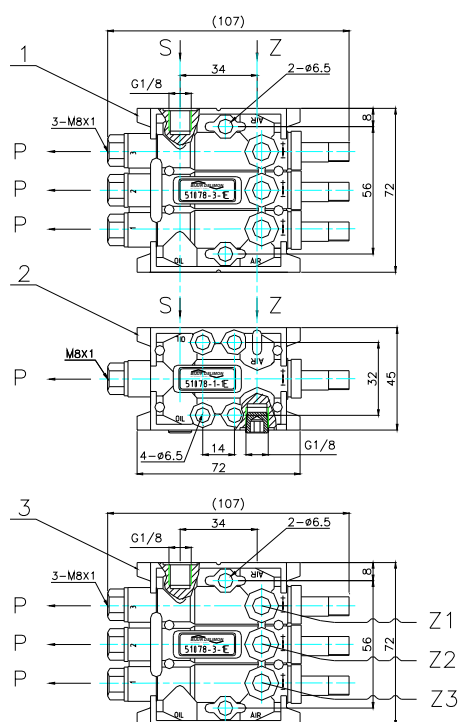
Oil Pressure: max 0.3Mpa;

Reduction Ratio: 15: 1;

Lubricant Oil: 10~1100 mm²/s (cst) ;

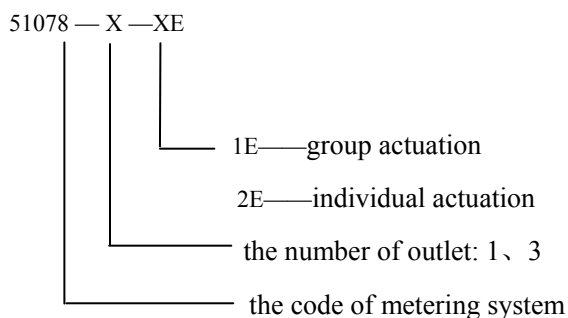
Ambient Temperature: -20°~80°C.

● Configurations



No.	Code	Number of outlet	The type of actuation
1	51078-3-1E	3	group actuation
2	51078-1-1E	1	group actuation
3	51078-3-2E	3	individual actuation

The Part Number Code:



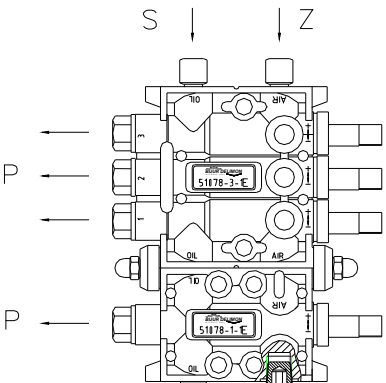
S = oil supply Z、Z1、Z2、Z3 = compressed air port

P = oil outlet

● Combined Type and Related Details

The three valves above can be assembled to form various combinations. According to the type of actuation they include: group actuation combinations, individual actuation combinations and mixed actuation combinations. No matter what combination it is, the number of the total outlets ,formed from serially mounted units should not be more than 12.

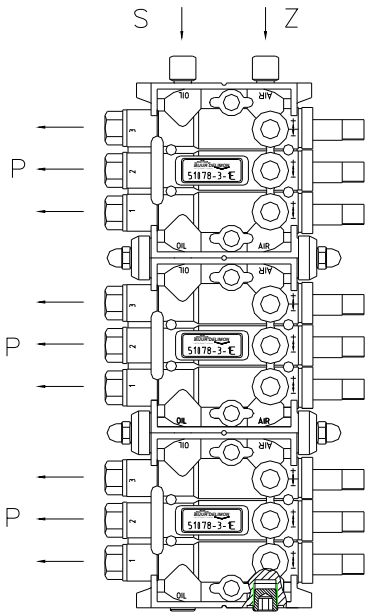
(a): Group Actuation Combinations



S = oil supply
Z = compressed air port
P = oil outlet

Combination Type	Code	Name	No.	Instruction
group actuation	51078-3-1E	metering system	1	This type needs 1 coupling set and 2 closure plugs .
	51078-1-1E	metering system	1	
	52674	coupling set	1	
	28516-2	closure plug	2	

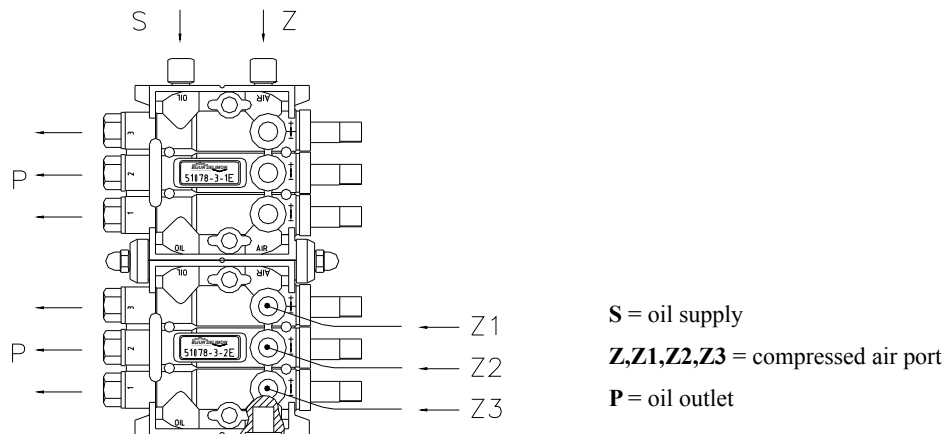
(b): Group Actuation Combinations



S = oil supply
Z = compressed air port
P = oil outlet

Combination Type	Code	Name	No.	Instruction
group actuation	51078-3-1E	metering system	3	This type needs 2 coupling sets and 2 closure plugs .
	52674	coupling set	2	
	28516-2	closure plug	2	

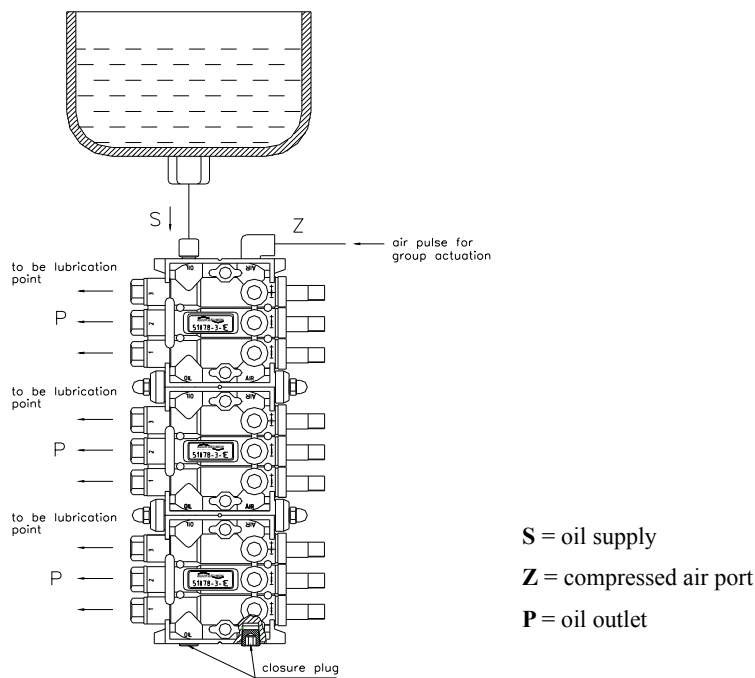
(c): Mixed Actuation



Combination Type	Code	Name	No.	Instruction
mixed actuation	51078-3-1E	metering system	1	This type needs 1 coupling set and 1 closure plug .
	51078-3-2E	metering system	1	
	52674	coupling set	1	
	28516-2	closure plug	1	

• MPA003 Minimum-Volume Pneumatic Metering Systems
Applied Examples

(a): Gravity oil configuration(Group actuation)



air pulse for individual actuation

Z1

Z2

Z3

to be lubrication point

P

to be lubrication point

P

air pulse for group actuation

Z

to be lubrication point

P

to be lubrication point

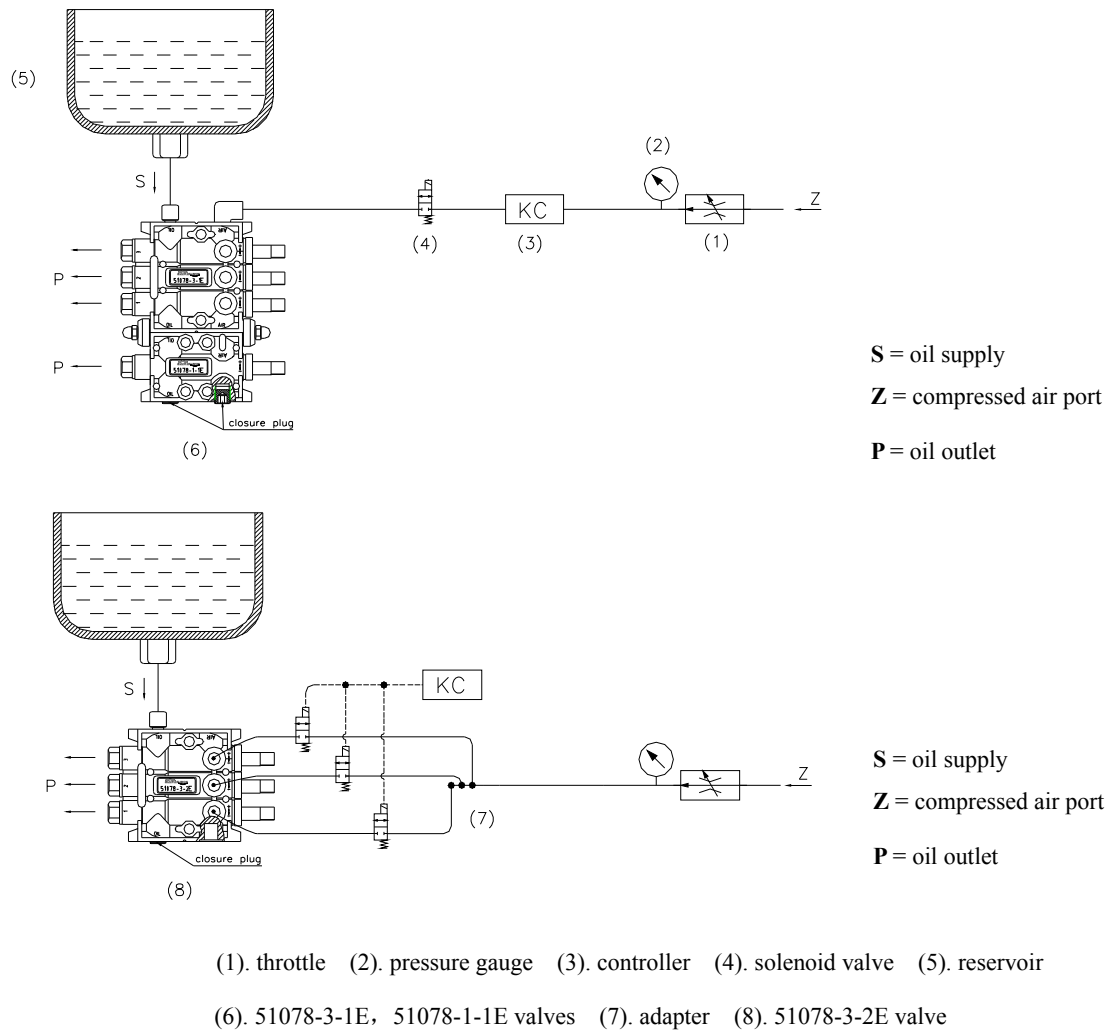
P

S

P = oil outlet

P = oil outlet

● MPA003 Minimum-Volume Pneumatic Metering Systems Installed Examples



● Order Listing

Code	Name	Unit	The type of actuation	Remark
51078-1-1E	metering system	piece	group actuation	1 oil outlet
51078-3-1E	metering system	piece	group actuation	3 oil outlets
51078-3-2E	metering system	piece	individual actuation	3 oil outlets
52674	coupling set	set	—	include: 2 o-rings , 2 bolts , 2 connection caps , 2 nuts
28516-2	closure plug	piece	—	—
53325-1E	reservoir	set	—	cubage:0.07L
53325-2E	reservoir	set	—	cubage:0.32L
53325-3E	reservoir	set	—	cubage:0.4L
53325-4E	reservoir	set	—	cubage:1L

● Troubleshooting

Phenomena	Reason	Solution
Adjustable indicator pin no carry out	1. Air Pressure is too low.	Increase Air Pressure
	2. The piston pair is blocked	Unscrew the oil outlet nut properly
The oil outlet has air bubbles entrained.	1. The check valve at the oil outlet is leaking.	Tighten the oil outlet nut correctly
	2. The oil outlet fitting is not sealing against the body.	Tighten the correlative link-nut of the oil outlet
The piston pair is working but the oil is not come out at the outlet	The oil outlet check valve is leaking.	Unscrew the oil outlet nut to let the oil come into the check valve, then re-tighten the oil outlet nut properly. If having done this and the oil is still not appearing at the outlet, please seek professional assistance.

Product Quality Feedback Sheet

Customer					
Order No.					
Contact		Tel			
Address					
Part No.					
Model No.		Quantity			
Date Code		Installation date			
Satisfaction Level	1.Satisfied	2.Adequate	3.Dissatisfied		
Quality Problems					
Aspect Affected	1.Installation	2.Debug	3.Precision	4.Performance	5.Utility
	6.Reliability	7.Life	8.Maintenance	9.Enviroment	10.Other
Requirement	1.Fax	2.Repairing	3.Assistant to debug	4.Send to repair	
	5.Return to repair	6.Reject	7. Compensation	8.Others	
Suggestion or Other Requirements					

Signature

Date

Instruction (1) The sheet is written by customer as a basis to improve product quality or deal with a product quality problem.

(2) Please select from column of 'Aspect Affected' and 'Requirement'

(3) Please send the sheet to NANJING BIJUR MACHINERY PRODUCTS, LTD
QUALITY DEPARTMENT

9 Heng Tong Road Nanjing Economic & Technical Development Zone Nanjing China 210038

Toll free:800 828 6000 Fax: 025-85802299 E-MAIL: china@bijur.com.cn