

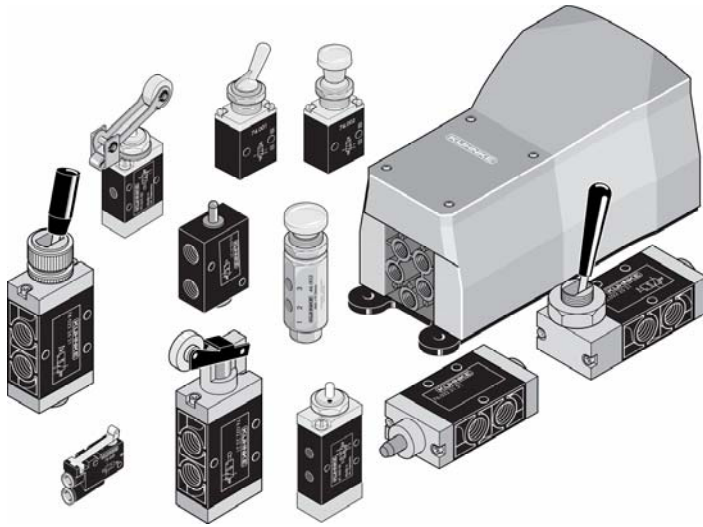
Pneumatic System Logic Devices

Timers, Counters, Miniature Regulators, Indicators, Pressure Switches, Logic Valves, Flow Controls and Miniature Fittings.

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Kuhnke Pneumatic Products.....

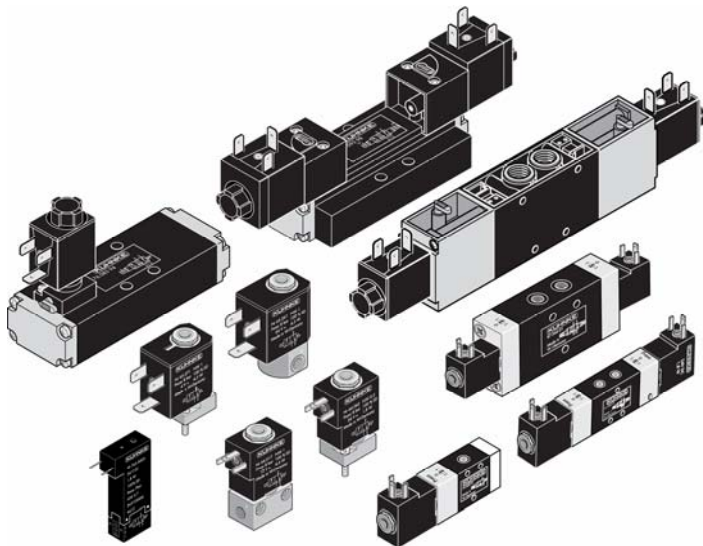
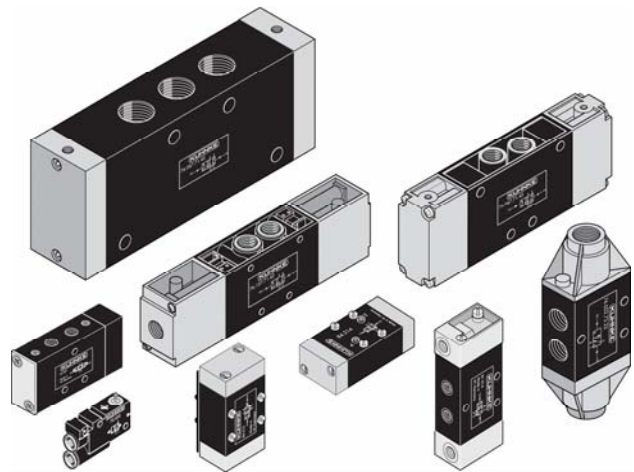


Mechanically and Manually Operated Valves

From micro valves through 1/4 ported, heavy duty foot pedals and just about every type of operator needed to fit your application.

Pneumatically Operated Valves

From low pressure amplifiers to 1/2 inch ported power valves in all types of configurations.

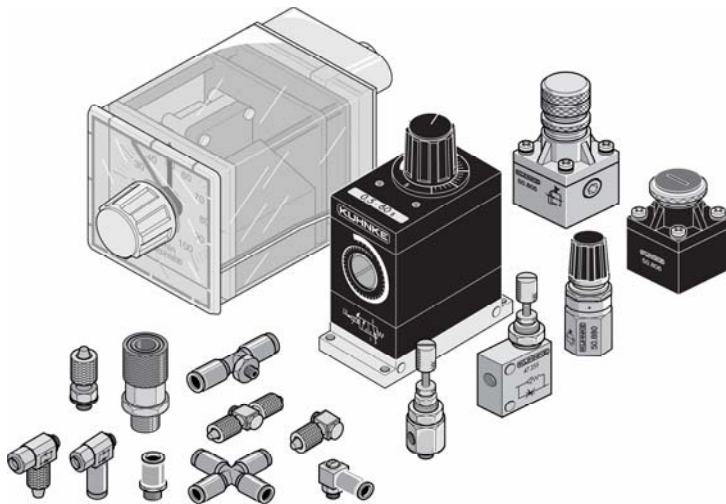
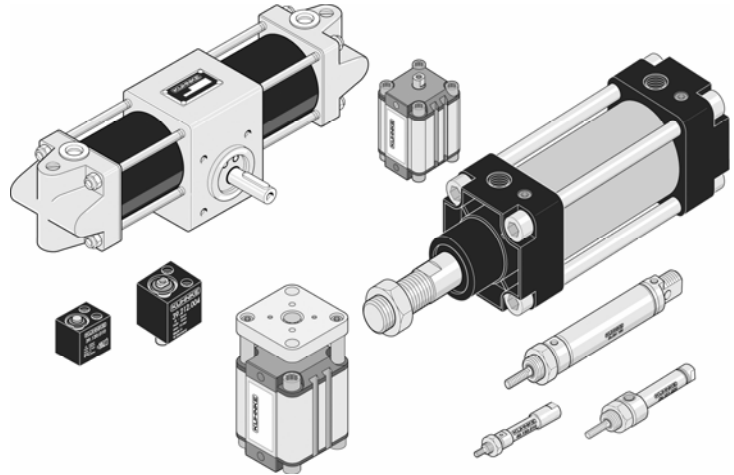


Electrically Operated Valves

A complete line of solenoid operated valves from 10mm wide bodies to 1/2 inch ported sizes. In spool as well as poppet designs.

Cylinders and Rotary Actuators

Cylinders from 3 to 200mm bores in brass, stainless or aluminum designs. Miniature short stroke cylinders and rotary actuators up to power size movers. And cylinders built to ISO 15552 (6431) and other important standards.

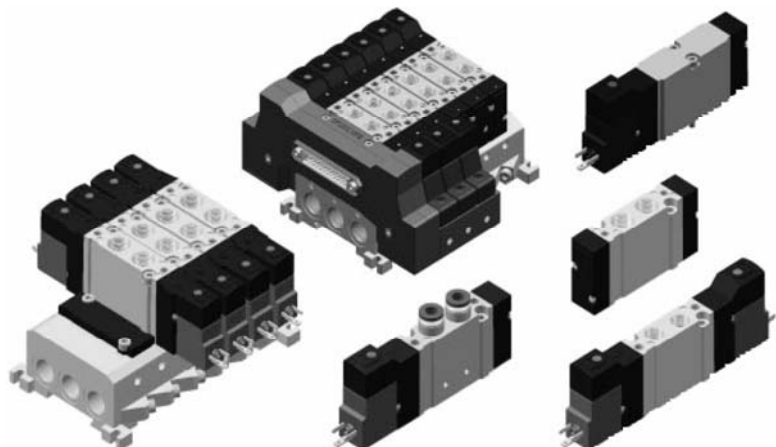


System Accessories

A wide range of pneumatic control system accessories including timers, counters, logic devices, precision regulators, indicators, pressure switches, flow controls and miniature pneumatic fittings.

Electronic/Pneumatic System Components

Valve islands incorporating I/O modules for Profi or CAN-open bus systems. Valve modules for ASi control systems. Smart cylinders incorporating electronics for bus systems and controllers for cylinder load/speed control.



Pneumatic Timers and Counters

Kuhnke's wide selection of Counters and Timers provide easy solutions for constructing pneumatic logic systems. Counters are available with 4 to 8 digit readouts, panel or base mounting with several options to suit the application. Five versions of pneumatic timers with ranges from .1 second to 100 hours with a variety of valve and mounting options provide the most complete product line available in the industry.

Counters are constructed with durable molded bodies. White digits on black background make units easy to read. Units are available with or without manual resets and a variety of options. A special type allows the counter to be reset by a pneumatic pulse in addition to a manual reset button. A predetermining counter includes an output valve to stop production when the count is reached.

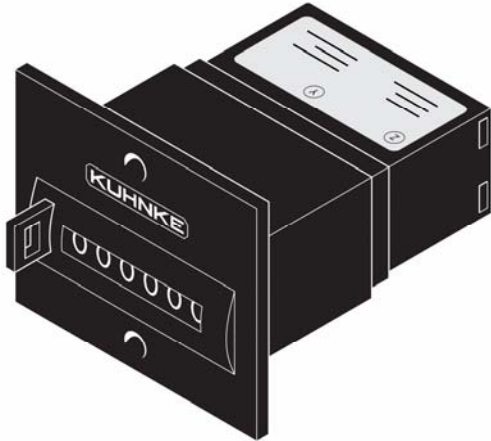
Timers depending on design, are constructed of molded bodies usually with aluminum bases to provide sturdy fitting connection points. Timers are available in on delay or off delay versions and incorporate a 3/2 or 5/2 output valve.

Typical timing circuits are included in the catalogue section to assist in designing easy installations.



Panel Mounted Pneumatic Counter

50670



The pneumatic counter can be used as an event, part or lot counter. The counter registers pneumatic impulses on a 6 digit display. Totalizer operates with impulse pressure between 2 and 8 bar. The counter can be reset either manually via a reset button, or by a pneumatic signal to a specially provided port.



Technical Specifications

Op. Pressure:

2-8 bar

Connections:

M5 ports

Display:

Black with white digits (6 numbers)

Reset:

Manual button on cover or pneumatic signal of 180 ms duration.

Media:

Filtered air

Control Connections:

Port Z - Counter pulse input

Port Y - Reset

Duty Cycle:

Continuous

Min. pulse duration 8 ms

Min. pause 10 ms

Operating Ambient:

0°C to + 60°C

Weight:

7 grams

Materials:

Molded body

Dimensions:

Face plate: 60mm W x 50mm H

Behind panel: 62mm Deep x

50mm Wide x 26mm High

Panel Cut Out:

52mm Wide x 28mm High

2 mounting holes required.

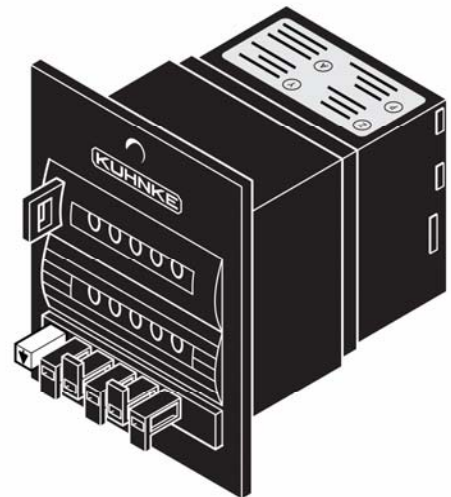
Hardware included

Panel Mounted Pneumatic Predetermining Counter

50680

Counter is used for selecting the number of desired operations on a production run. The number of operations is set on the lower scale by holding down a white button and setting the count to be reached. The upper scale is a 5 digit totalizer. When the count reaches the lower scale setting, a built-in 3/2 valve is switched to provide a pneumatic output to stop machine or signal that the count has been reached. Valve remains switched until counter is reset.

The counter operates with an impulse pressure between 2 and 8 bar and can be reset either manually via a reset button or by a pneumatic signal to a specially provided port.



Technical Specifications

Op. Pressure:

2-8 bar.

Connection:

M5 ports

Display:

Black with white digits
(5 numbers)

Reset:

Manual button on cover or
pneumatic signal of
180 ms duration.

Media:

Filtered air

Control Connections:

Port Z - Counter pulse input
Port Y - Reset
Port P - Supply air to 3 way valve
Port A - Output signal from valve

Duty Cycle:

Continuous
Min. pulse duration 8 ms
Min. pause 10 ms

Operating Ambient:

0°C to +60°C

Weight:

12 grams

Materials:

Molded body

Dimensions:

Face plate: 60mm W x 75mm H
Behind panel: 62.5mm Deep x
51mm Wide x 50mm High

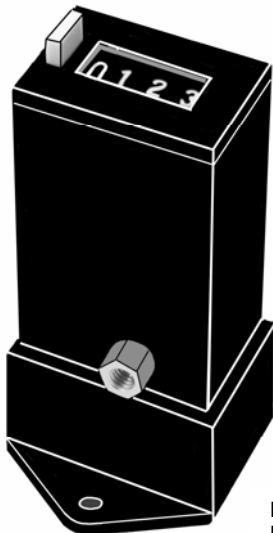
Panel Cut Out:

52mm Square
2 mounting holes required.
Hardware included.

Panel or Base Mounted Pneumatic Counters



Standard Clip Mounting



Base Mount



These pneumatic totalizers can be used as an event, part or lot counter. The counter registers pneumatic impulses on 4, 6 or 8 digit displays. Standard units operate with impulse pressures between 1.5 and 6.5 bar. Low pressure models operate between 0.5 and 2 bar. A variety of options include panel mounting with screws or mounting clips and surface mount with base or rear stud. The counters are available with or without manual reset.

Description		Catalogue Number			
		Panel Mounted		Surface Mounted	
		Standard Clip Mtg.	Screw Fastening	With Base	Stud Mounting
With Manual Reset	4 Digit	PM14-21	PM14-11	APM14-01	PM14-01
	6 Digit	PM16-21	PM16-11	APM16-01	PM16-01
	8 Digit	Not Available	Not Available	Not Available	Not Available
Without Manual Reset	4 Digit	PM14-20	PM14-10	APM14-00	PM14-00
	6 Digit	PM16-20	PM16-10	APM16-00	PM16-00
	8 Digit	PM18-20	PM18-10	APM18-00	PM18-00

Options

For Low pressure version (0.5 to 2 bar) add an "L" prefix to the catalogue number.

A manual reset guard can be added to help prevent accidental resetting of the counter. Add suffix "V" to the catalogue number.

For a spade key reset add suffix "VS" to the catalogue number.

For a secret reset add an "S" suffix.

Standard designs have 10-32 NPT ports.

Technical Specifications

Op. Pressure:

1.5 to 6.5 Bar Std.
0.5 to 2 bar Low Press.

Connections:

10-32 port, Option 1/8.

Display:

Black with white digits

Reset:

With or without manual reset.

Media:

Filtered air

Duty Cycle:

Continuous
Min. pulse duration 8 ms
Min. pause 10 ms

Operating Ambient:

0°C to + 60°C

Weight:

7 to 13 grams

Materials:

Molded body, steel frame.

Dimensions (approx.):

4 Digit – 22mm H x 33mm W x 66mm D.
6,8 Digit – 22mm H x 50mm W x 66mm D.
For Screw mtg. add 1" to H dim.
For base mtg. add 1 " to D dim.

Panel Cut Out:

4 Digit – 22mm H x 32mm W
6,8 Digit – 22mm H x 47mm W

Miniature Panel Mounted Timer

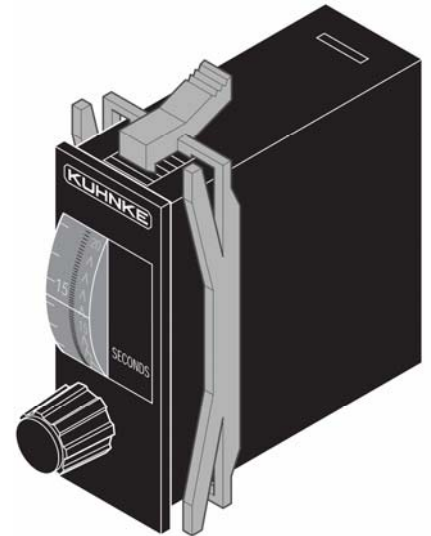
(Up to 5 minutes)

2 to 30 Seconds **51020-03**
 20 to 300 Seconds **51020-30**

The Mini-timer is an adjustable panel mounted time delay device (normally closed valve). Timing is set by adjusting the front dial. The timer is equipped with 2 vertical scales that indicate the set time and the time remaining in the cycle (countdown time).

To begin the timing operation, air pressure is applied to port one. When the set time is reached the internal valve is switched over to provide an output at port 2. The valve remains open until the input air is switched off. Removing the air supply at any time resets the timer.

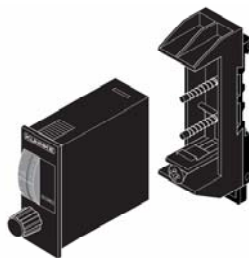
The mini timer is constructed of a molded body with a clear plastic lens for viewing the scales. Ports, M5 are located on the rear of the unit. The timer is panel mounted with a built in retaining clip.



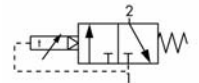
Accessories

A molded bezel (catalogue no. **51025**) can be added to the panel to provide screw fastening of the timer for easy removal. The bezel cutout size is 52 x 52mm and the bezel dimensions are 60mm wide x 75mm high.

A rear mounting bracket, (catalogue no. **51031**) can be used to mount the timer in the rear of the panel or on a DIN rail as required. The bracket has built-in connections for side M5 porting.



Rear Mounting



Technical Specifications

Op. Pressure:
2 to 6 bar

Connections:
M5

Media:
Filtered, dry air.
Non-lubricated

Operating Valve:
3/2 (NC) - internal exhaust
Orifice size - 1mm
Flow @ 6 bar – 40 litre

Timing Start:
Application of line pressure to port 1.

Reset:
By removal line pressure

Reset Time:
200 ms

Repeatability:
± 0.3 Sec. 51020-03
± 3 Sec. 51020-30

Time Setting:
Via adjustment knob.

Setting Accuracy:
± 0.6 Sec. 51020-03
± 6 Sec. 51020-30

Materials:
Molded housing.

Operating Ambient:
0°C to 60°C

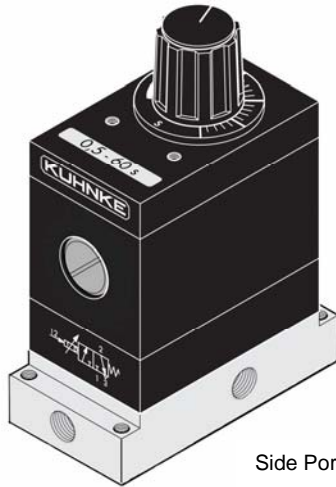
Dimensions (inches):
24mm W x 48mm H x 68mm D.

Panel Cutout:
20mm W x 45mm H.

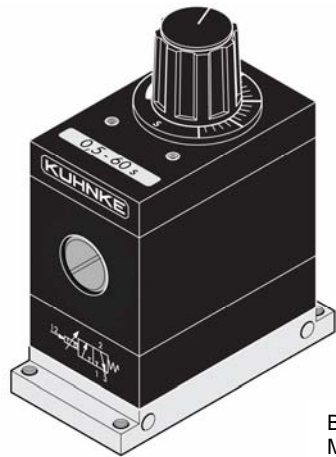
Mounting:
Retaining Clip.

Rear Mounted - Set-it, Forget-it Timer

(Up to 3 minutes)



Side Ported 1/8



Bottom Ported
M5

The Series 51 timer is an adjustable precise time delay control device. The timer is available with either an on delay- (NC) or off delay- (NO) 3/2 built-in valve. It is designed for mounting along with valves or other logic devices and is available with M5 bottom ports, or 1/8 side ports. Bottom ported timers can also be panel mounted using (2) threaded M3 inserts on the top cover.

Timing operation can be set up in 2/2; either via direct connection of the pressure line to be timed (1/8 ported only) or via a separate pilot signal. When pressure is applied to the input (or pilot port) the timing sequence begins by setting a vacuum within the timer. Using atmospheric pressure (independent of line pressure), the timer begins the preset timing cycle. At the end of the cycle an internal 3/2 valve is switched providing an output. The timer resets automatically after removal of the control signal.

Technical Specifications

Op. Pressure:

1.5 to 8 bar

Connections:

M5 (10-32) or
1/8 ports

Media:

Filtered air, non lubricated.

Operating Valve:

3/2 - internal exhaust
Orifice size - 2mm
Flow @ 6 bar - 200 liters

Timing Start:

Application of pilot (or Line)
pressure to control port.

Reset:

By removal of pilot (or Line)
signal - independent of whether
the time interval has elapsed or not.

Reset Time:

200 ms

Repeatability:

± 2% of selected time.

Time Setting:

Via adjustment knob.

Operation:

Timing cycle uses atmospheric
pressure drawn into vacuum.

Air Consumption:

During timing cycle only -3 l/m

Materials:

Polyamide housing, aluminum
base, Buna N seals.

Operating Ambient:

-10°C to 60°C

Dimensions (mm):

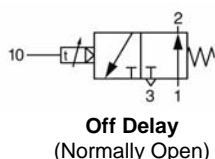
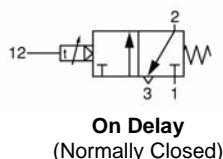
	M5 port	1/8 port
Height	92	105
Width	36	36
Length	70	70
Weight	35 gr.	45 gr.

Mounting:

Via 4 holes in base.

Selection Chart

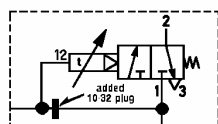
Diagrams



Connections

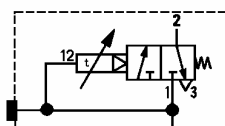
1/8 Side Ported Timers

Side ported timers are supplied with a 10/32 port plug to set up preferred connections.



Separate Pilot Signal

For a *separate (isolated) pilot signal*, insert a 10-32 plug into the internal port (inside port 12 or 10). Use loctite or equal to seal the port. Then connect a separate pilot input signal at port 12 (10).



Supply and Pilot Same Source

For using the *same source* as the supply for the output valve and pilot signal, plug port 12 (10) using a 1/8 plug and connect the switched air supply to port 1. Discard the 10-32 plug.

10-32 (M5) Bottom Ported Timers

Timer is supplied only with separate (isolated) control input signal port. Connections are located on the underside of the timer base.

The bottom ported timer can be panel mounted using (2) M3 threaded inserts on the top cover.

Timing Range		Catalogue Number	
		1/8 Side ported	M5 Bottom Ported
On Delay (NC)	.5 to 60 Seconds	51006-00US	51006-00
	1 to 120 Seconds	51012-00US	51012-00
	1 to 180 Seconds	51018-00US	51018-00
Off Delay (NO)	.5 to 60 Seconds	51006-01US	51006-01
	1 to 120 Seconds	51012-01US	51012-01
	1 to 180 Seconds	51018-01US	51018-01

Port Identification

- 12 - Control input signal (NC version).
- 10 - Control input signal (NO version).
- 1 - Air supply.
- 2 - Valve output.

Power Connections

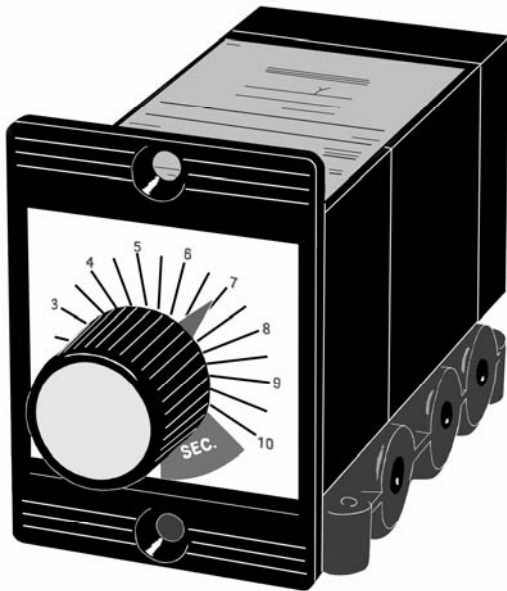
For installations requiring larger output valves, use the standard timer and connect a pneumatically operated single air piloted 3/2 or 5/2 valve of the size required to the timer output. Contact factory with size requirements.

Typical Circuits

See typical timing circuit diagrams at the end of the timer catalogue section for help in constructing pneumatic timer circuits.

Panel or Subplate Mounted Pneumatic Timer

(Up to 3 Minutes)



Panel Mounted PMT
timer with SPA1B
subplate

The Type PMT timer is an adjustable precise time delay control device. The timer is available with an on delay (NC) output.

Timing operation is dependent upon the input of a separate control signal which starts the timing sequence by setting a vacuum within the timer. Using atmospheric pressure (independent of line pressure), the timer begins the preset timing cycle. At the end of the cycle an internal 3/2 valve is switched providing an output. The timer resets automatically after removal of the control signal.

The PMT has a separate subplate enabling the unit to be supplied with 10-32 or 1/8 porting. The timer can be panel mounted with a bezel, or in the rear on a sub plate.

Technical Specifications

Op. Pressure:

1 to 6.5 bar.

Connections:

10-32 or 1/8 ports
via bottom sub plate

Control Pressure:

(A) Low Press. – 1 to 6.5 bar
(B) Standard – 2 to 6.5 bar

Media:

Filtered air or non-aggressive
gas, non-lubricated.

Timing Valve:

Flow @ 6.5 bar – 0.3 liters

Dial Indicator:

Displays set time.

Timing Start:

Application of pilot pressure
to control port.

Reset:

Automatic by removal of
pilot signal.

Reset Time:

60 ms @ 3 bar

Repeatability:

± 3% of selected time.

Time Setting:

Via adjustment knob.
Accuracy ±10%

Operation:

Timing cycle uses
atmospheric pressure
drawn into vacuum.

Air Consumption:

0.3 l/m @ 6.5 bar

Materials:

Acetal and polycarbonate
enclosure. Diaphragms-
Buna N

Operating Ambient:

0°C to 65°C

Dimensions (mm):

(including sub plate)
Height – 55
Width – 38
Depth – 108

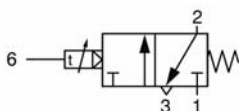
Mounting:

Via sub plate (2 holes) or if
Panel mounted, through a
38mm square cutout.
2 mounting holes required,
hardware included.

Selection Chart

Timing Range	Catalogue Number		
	Subplate Mounting	Panel Mount Vertical Bezel	Panel Mount Horizontal Bezel
0.3 to 3 Seconds	PMT1D1B3	PMT1D2B3	PMT1D3B2
1 to 10 Seconds	PMT1E1B3	PMT1E2B3	PMT1E3B2
3 to 30 Seconds	PMT1F1B3	PMT1F2B3	PMT1F3B2
6 to 60 Seconds	PMT1G1B3	PMT1G2B3	PMT1G3B2
12 to 120 Seconds	PMT1H1B3	PMT1H2B3	PMT1H3B2
18 to 180 Seconds	PMT1J1B3	PMT1J2B3	PMT1J3B2

Diagram



Port Identification

- 6 - Control input signal.
- 1 – Air supply.
- 2 – Valve output.

Subplate (Required)

The PMT, whether panel or base mounted, requires a subplate for connecting fittings and air lines. Several types are available to suit connection needs. The subplate is supplied loose and unmounted, as a separate item.

Port Location	Catalogue Number	
	10-32 Ports	1/8 NPT
3 Bottom ports	SPA1A	SPA2A
6 Side ports	SPA1B	SPA2B
6 Side and 3 Bottom ports	SPA1C	SPA2C

Low Pressure Version

The PMT standard control input pressure range is 2 to 6.5 bar. For a low pressure pilot actuator (1 bar min.), change the “B” in the catalogue number to “A”.

Subplate Mounting Position

Standard timers are supplied with the subplate mounting position at the bottom of the timer. For mounting the subplate in another position, change the last digit of the catalog number as follows: 1 for top; 2 for right side; 3 for bottom; 4 for left side.

Power Connections

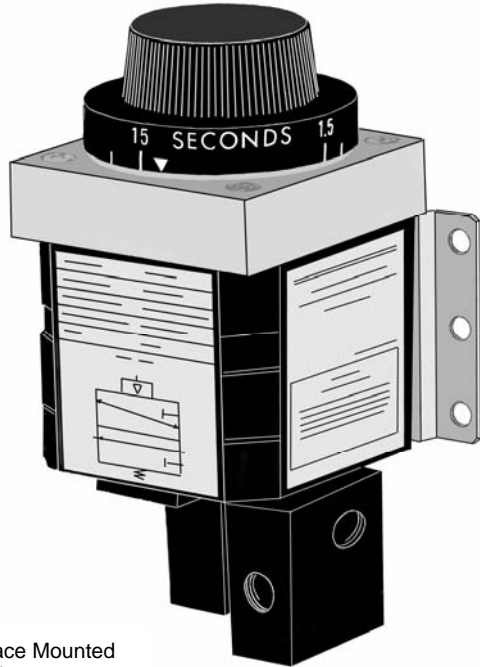
For installations requiring larger output valves, use the standard timer and connect a pneumatically operated single air piloted 3/2 or 5/2 valve of the size required to the timer output. Contact factory with size requirements.

Typical Circuits

See typical timing circuit diagrams at the end of the timer catalogue section for help in constructing pneumatic timer circuits.

Panel or Rear Mounted Pneumatic Timer

(Up to 60 Minutes)



Surface Mounted
PT Timer

The PT timer is an adjustable precise time delay pneumatic device. The timer is available with an on delay (NC), or an off delay (NO) output. The timer has 1/8 NPT ports.

The PT series timer combines a pneumatic timing mechanism with a floating spool valve assembly to provide a wide range of adjustable time control for fluid power systems. The timing assembly, which operates independently of the control pressure, is available in nine different ranges from one tenth of a second to 60 minutes, adjustable by means of a time-calibrated dial. Timing action is initiated by a motor diaphragm operated by a control pressure of from 0.5 to 10 bar.

The timer is equipped with a multi purpose 3/2 output valve allowing it to be used as normally open, normally closed or as a diverter.

The PT is designed for panel or surface mounting. Panel mounted versions include a 88mm square bezel while surface mounted units are equipped with a bracket for vertical mounting. If required, The PT can be specially calibrated for mounting horizontally.

Technical Specifications

Op. Pressure

0.5 to 10 bar.l

Connections:

1/8" NPT ports

Control Pressure:

0.5 to 10 bar

Media:

Filtered air or non-aggressive gas, non-lubricated.

Output Valve:

Flow @ 6.5 bar – 250 liters
Multi purpose 3/2 spool.

Dial Indicator:

Displays set time.

Timing Start:

On Delay - Application of pilot pressure to control port.
Off Delay - Removal of pilot pressure to control port.

Reset:

On Delay - Removal of pilot pressure from control port.
Off Delay - Application of pilot pressure to control port.

Reset Time:

60 ms @ 3.5 bar

Repeatability:

Up to 200 sec. - $\pm 5\%$.
Over 200 sec. - $\pm 10\%$.

Time Setting:

Via dial.
Accuracy $\pm 10\%$ of full scale.

Operation:

Timing cycle uses atmospheric pressure.

Materials:

Zamak housing, polycarbonate knob, aluminum valve with stainless spool. Diaphragms - Buna N

Operating Ambient:

-30°C to 70°C

Dimensions (mm):

Height – 134

Width – 63

Depth – 63

Mounting:

Surface or panel mounted.

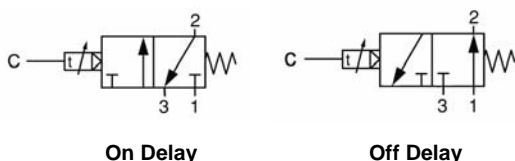
Drilling Plan (panel mount):

81 dia. hole.

Selection Chart

Timing Range	Catalogue Number			
	Standard Vertical Surface Mount		Panel Mounted	
	On Delay	Off Delay	On Delay	Off Delay
0.1 to 1 Second	PT31A	PT41A	PT35A	PT45A
0.5 to 5 Seconds	PT31B	PT41B	PT35B	PT45B
1.5 to 15 Seconds	PT31C	PT41C	PT35C	PT45C
5 to 50 Seconds	PT31D	PT41D	PT35D	PT45D
20 to 200 Seconds	PT31E	PT41E	PT35E	PT45E
1 to 300 Seconds	PT31K	PT41K	PT35K	PT45K
1 to 10 Minutes	PT31F	PT41F	PT35F	PT45F
3 to 30 Minutes	PT31H	PT41H	PT35H	PT45H
6 to 60 Minutes	PT31I	PT41I	PT35I	PT45I

Diagrams



Port Identification

- Port C - Control input signal
- 1 - System air supply
- 2 - Valve output
- 3 - Exhaust

On Delay Timer Operation

Pilot pressure is applied to the control port to start timing. After the timer reaches its set time, the valve switches over. *Removal of the pilot signal at any time resets the timer.*

Off Delay Timer Operation

Applying pilot pressure of at least 100ms in duration to the control port shifts the valve. *When the pilot pressure is removed, the timing sequence begins.* After the timer reaches its set time, the valve switches off. Re-applying the pilot pressure resets the timer and valve.

Options

Surface mounted units are calibrated for mounting in the vertical position. If horizontal mounting is required, add suffix "Y1" to the catalogue number. For a stainless steel fitting mounted on the pilot port add suffix "SS". To include a Dial Stop set at the factory (which prevents settings above or below a given number) add suffix "DS" and specify setting. For a Tamper Proof Cover add suffix "TP" to the catalogue number.

Power Connections

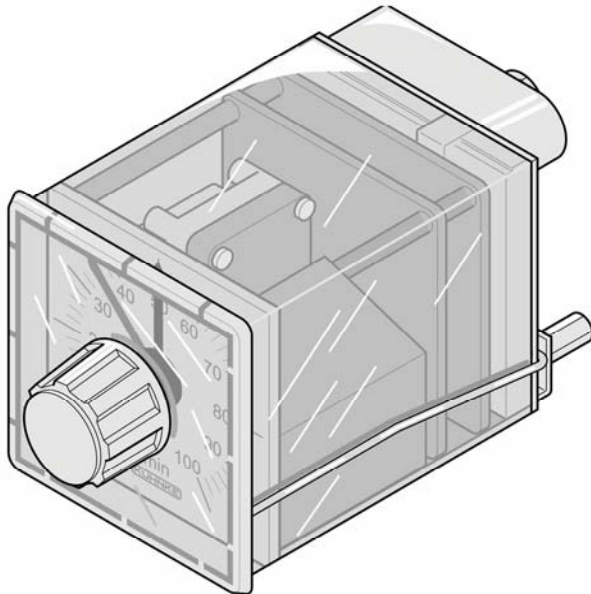
For installations requiring larger output valves, use the standard timer and connect a pneumatically operated single air piloted 3/2or 5/2 valve of the size required to the timer output. Contact factory with size requirements.

Typical Circuits

See typical timing circuit diagrams at the end of the timer catalogue section for help in constructing pneumatic timer circuits.

Panel Mounted Pneumatic Timer

(Up to 100 Hours)



The 54 Series timer is a totally pneumatic device with +/- 1% repeatability. Timing is fully adjustable throughout the timing range by a knob on the front dial face. The standard timer is equipped with a special 5/2 valve which provides for on or off delay timing (depending on plumbing connections). The front dial displays set time and the time remaining in the cycle.

The operation of the timer depends on the input of a separate control signal. The control signal drives a regulated air motor and gear chain to provide accurate timing regardless of control air pressure fluctuation. The timer resets automatically (approx. 200ms) after removal of control pressure signal.

A special version of the timer includes a rotor stop option which allows for an external valve to be added to permit a "count down on hold" function.

The 54 Series timer is self-contained in a panel mounted lexan case with a front timing adjustment knob. Connections are made at the rear of the timer. Spring clips are used to panel mount the unit.

Technical Specifications

Op. Pressure:

0-10 bar

Control Pressure:

1.5 to 10 bar
non-lubricated air

Output Valve:

5/2
Flow – 200 liters @ 6.5 bar
Orifice size - 2mm

Connection:

M5 ports

Media:

Filtered air or gas.
Non-lubricated.

Indicators:

Displays set time and time remaining before valve actuation.

Time Setting:

Via front dial knob. Adjustable throughout timing range

Accuracy of Setting:

± 2%

Repeatability:

± 1% of end scale value.

Operation:

Independent regulated air motor. Air consumption 10 l/m
Output air piloted 5 way valve.

Reset:

Automatic - by removal of control pressure.

Reset Time:

200 ms.

Timing Sequence:

On delay or off delay depending on valve connections.

Operating Ambient:

0°C to 60°C

Materials:

Lexan case, cast aluminum rear housing, nylon, brass, and stainless alloy mechanism.

Dimensions (mm):

Faceplate –72 square Behind panel –112 D x 66 H x 66 W.

Panel Cutout:

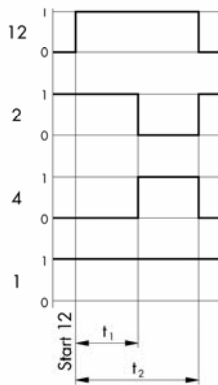
66mm square

Mounting:

Spring clips.

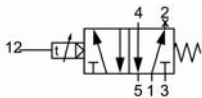
Selection Chart

Timing Sequence

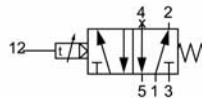


t₁ = Selected time delay. t₂ = Total duration of cycle.

Diagrams



On Delay
Blocked Port 2



Off Delay
Blocked Port 4

Timer output valve is 5/2, with M5 connections. Valves are supplied from factory blocked with a cap nut (port 4) for 3/2 *off delay*. For *on delay*, move cap nut to port 2. For full 5/2 operation remove nut.

Port Identification

Port 12 - Control input signal (on timer body).

Valve -

- 1 - System air supply
- 2 - Valve output "off delay connection"
- 3 - Exhaust for port 2
- 4 - Valve output "on delay connection"
- 5 - Exhaust for port 4

Replacement Parts

Control port input filter **72754500-00**
Output valve **54530**

Timing Range	Catalogue Number	
	Standard Timer	With Rotor Stop Option
0.3 to 10 Seconds	54021	54050
3 to 100 Seconds	54022	54051
0.3 to 10 Minutes	54023	54052
3 to 100 Minutes	54024	54053
0.3 to 10 Hours	54025	54054
3 to 100 Hours	54026	54055

Rotor Stop Option (Countdown on Hold)

A rotor stop option is available to override the timing action or to hold the timer valve in its switched position after the timer has completed its cycle, and signal pressure is removed. Option provides 2 additional rear ports connected via tube, which allows valves or other logic devices to be spliced into the internal circuit between the pilot signal regulator and rotor assembly.

For holding timer valve in its switched position or to place "timing on hold", an external 3/2 valve (NO) can be used to block the flow to the air motor (connected between rotor stop ports 1-2). If timing on hold is desired, the pilot signal must remain on throughout the entire cycle.

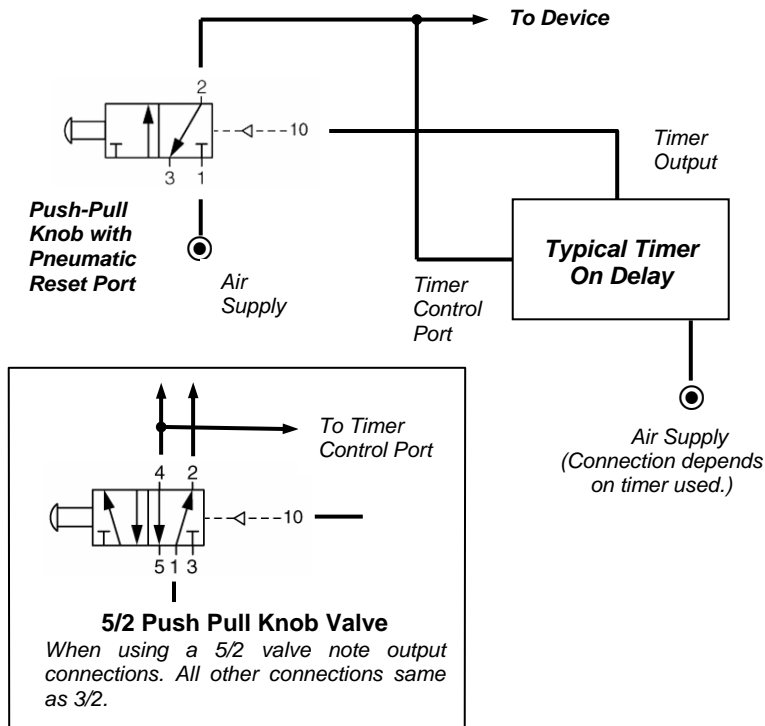
Power Connections

For installations requiring larger valves, use the standard timer and connect a pneumatically operated single air piloted 3/2 or 5/2 valve of the size required to the timer output. Contact factory with size requirements.

Typical Circuits

See typical timing circuit diagrams at the end of the timer catalogue section for help in constructing pneumatic timer circuits.

Timing Using a Manual Push-Pull Valve



Push-Pull valve can be used to start and stop system manually while providing timing to the circuit. A 5/2 valve can also be used when operating a double acting cylinder, or for alternating outputs.

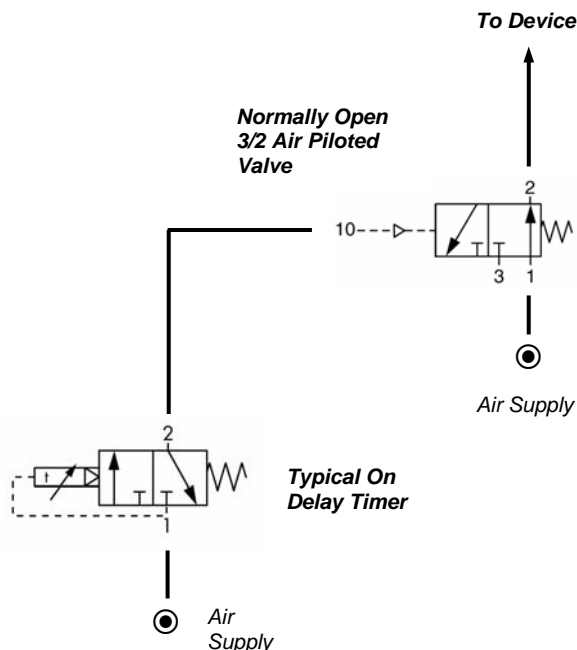
Operation

Pushing in knob starts air flowing to device and to timer. When the timer reaches set time, it sends a signal to the reset port of the push-pull valve shutting down the air output. To stop the process, pull the knob out, shutting off the air and resetting the timer.

Typical Item Selection

Any on delay timer (Consider length of time required and mounting preference).
Push-Pull Valve- Cat. nos. 76022-27-22 (3/2, 1/8 ports), 76023-27-42 (5 way, 1/8) or 76043-27-42 (5/2, 1/4).
Alternative- Lever operated valve, pneumatic reset, contact factory for information.

Converting an On Delay timer output to an Off Delay output



On delay timer signals can be converted to an off delay signal with the use of an interposing normally open 3/2 air piloted valve.

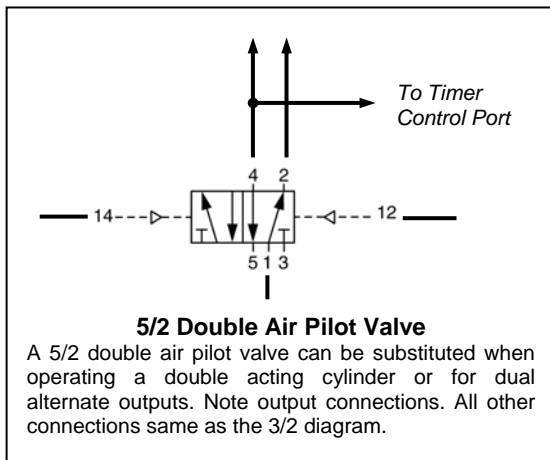
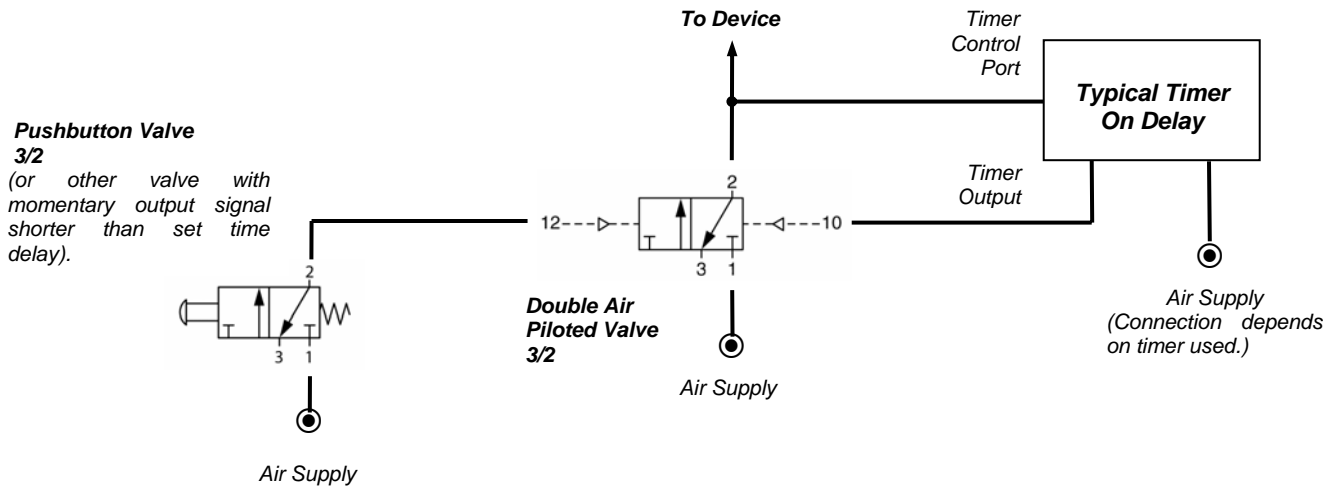
Operation

Air pressure is applied to the timer and to the operating device through the 3/2 piloted valve. When the timer reaches set time, it's output switches the air piloted valve shutting off the air to the device. Removing the air signal from the timer resets the air piloted valve and air flows again to the device.

Typical Item Selection

Any on delay timer (Consider length of time required and mounting preference).
3/2 air piloted valve (NO) Cat. no. 76036-71-31 (1/8). For larger valves contact factory for information.

Timing Using a Momentary Start Signal



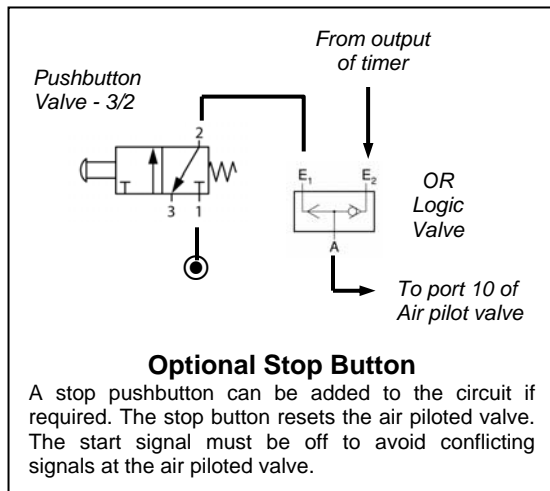
A timing sequence can be established from a momentary pressure signal using an interposing pneumatically operated valve. The most common signal used is from a pushbutton, but inputs from limit switches, foot pedals or other devices can be used to initiate timing. The size of the air piloted valve determines the air volume output.

Operation

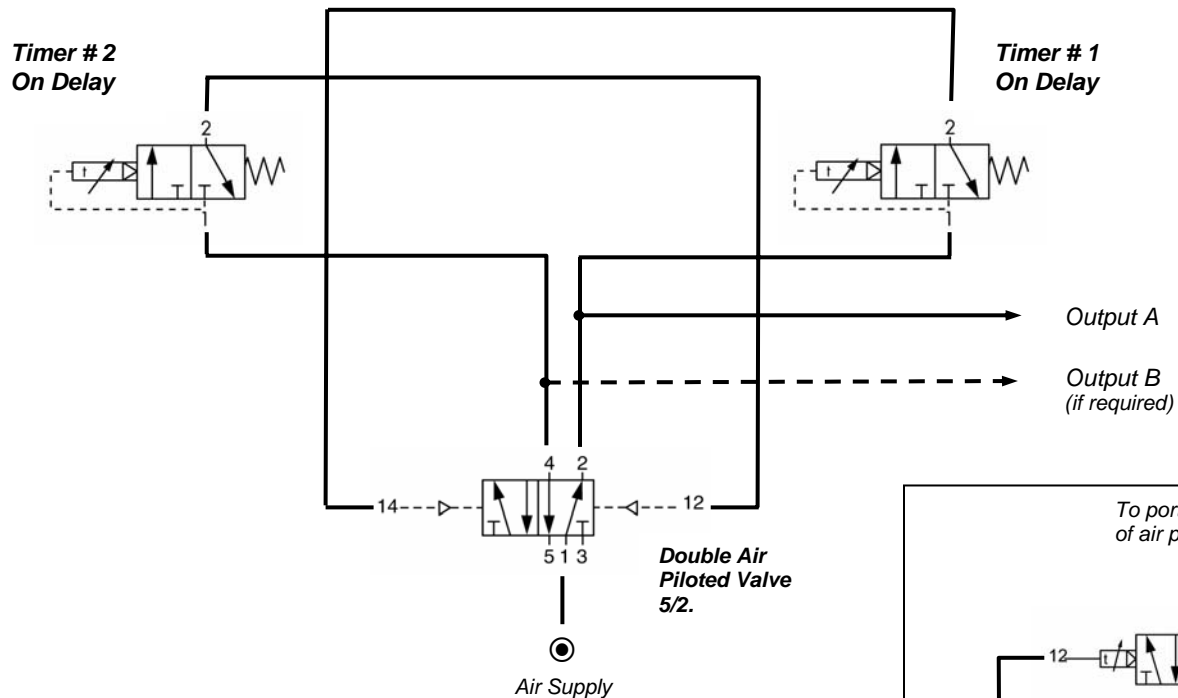
Pressing the pushbutton sends a signal to switch the air piloted valve on. The valve output is connected to the device to be controlled and to the timer control port. When the timer reaches it's set time it sends a signal back to the air piloted valve resetting it, turning off the output to the device. The timer resets.

Typical Item Selection

Any on delay timer (consider length of time required and mounting preference).
 Pushbutton 3/2 (choice of colour)- Cat. nos. 76022-62-21 (Red), -23 (Black) or -24 (Green).
 Double air piloted valve 3/2- Cat. no. 76022-71-22 (1/8 Ports).
 For larger sizes of double air piloted valves use a 5/2 valve and plug port 2 for 3/2 operation. Connect device and timer control to port 4 of 5/2 valve. Use Cat. nos. 76047-81-42 for 1/4 ports or 76067-81-42 for 1/2 ports.



Continuous Cycling Timer Circuit



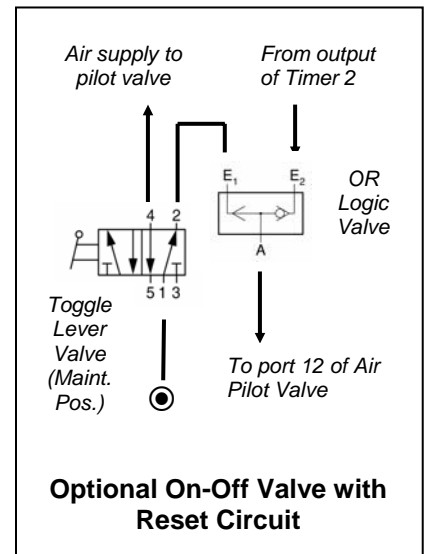
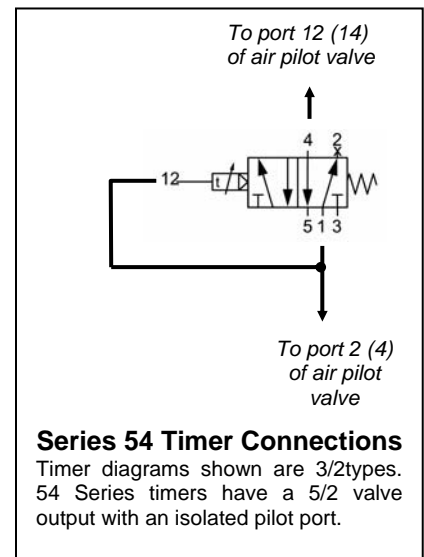
Continuous cycling is accomplished by the use of 2 timers operating a double air piloted valve. Off and on times are dependent on the type and set time of timers used. The size of the air piloted valve determines the air volume output. The position of the air piloted valve determines the start up of the timing sequence. If the timing sequence must be restarted in a specific order, a reset circuit must be added at port 12 of the air piloted valve to move it to the start position prior to resuming operation.

Operation

System pressure is turned on. Air flows through port 2 of the pilot valve to drive timer #1 and the device being controlled. When timer 1 reaches set time, it sends a signal to port 14 of the pilot valve, switching the air output to port 4, starting the timing sequence on timer #2 and shutting down timer 1 and the output to the device being controlled. When timer 2 reaches set time, a signal is sent to port 12 of the piloted valve resetting it and restarting the cycle.

Typical Item Selection

Timers- Any on delay timer. (Consider length of time required and mounting preference.)
 Double Air Piloted Valve- Cat. nos. 81014 (M5 ports), 76027-71-42 (1/8), 76047-81-42 (1/4), or 76067-81-42 (1/2).



Continuous Cycling Timer Circuit Using PT Timers

Continuous cycling is accomplished by the use of 2 timers operating a spring return air piloted valve. Off and on times are dependent on the time range of the timers used. The size of the air piloted valve determines the air volume output.

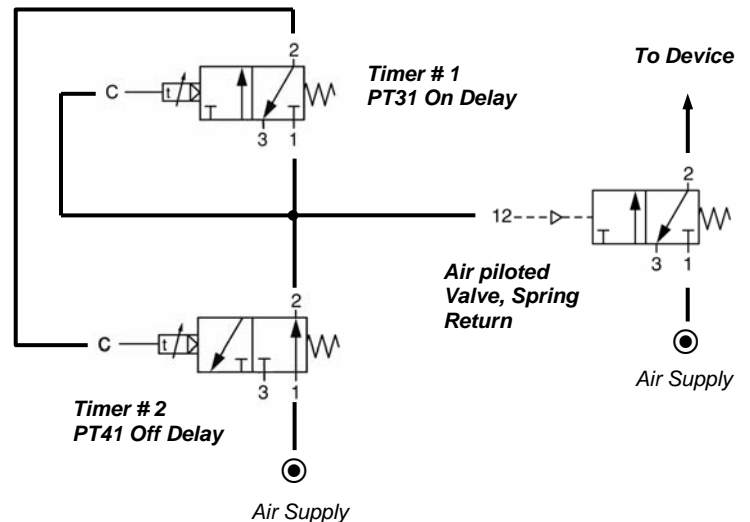
Operation

System pressure is turned on. Air flows through port 2 of Timer #2 to drive timer #1 and to operate the air pilot valve turning on air to the device being controlled. When timer 1 reaches set time, it sends a signal to port C of timer 2, shutting down the air supply to the air piloted valve and timer 1. This enables timer 2 to begin timing. When timer 2 reaches set time, it operates and the cycle is repeated. Removing the air supply resets the circuit to the start position.

Typical Item Selection

One On Delay PT timer and one Off Delay PT timer with the required time ranges.

Single air piloted, spring return valve, 3/2, cat. no. 76026-71-21 (1/8), 76046-71-21 (1/4), 76066-81-21 (1/2). For operating double acting cylinders use 5/3 valves.



Using a Momentary Start Signal with an Off Delay PT 41 or PT45 Timer

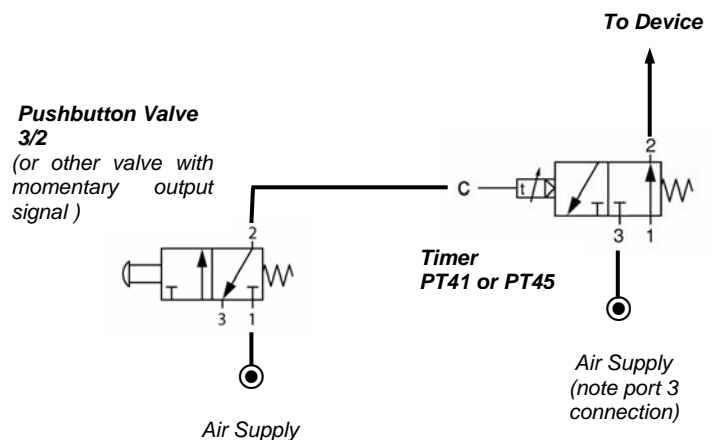
One shot timing can be initiated from a momentary air signal using a PT41 or PT45 off delay timer.

Operation

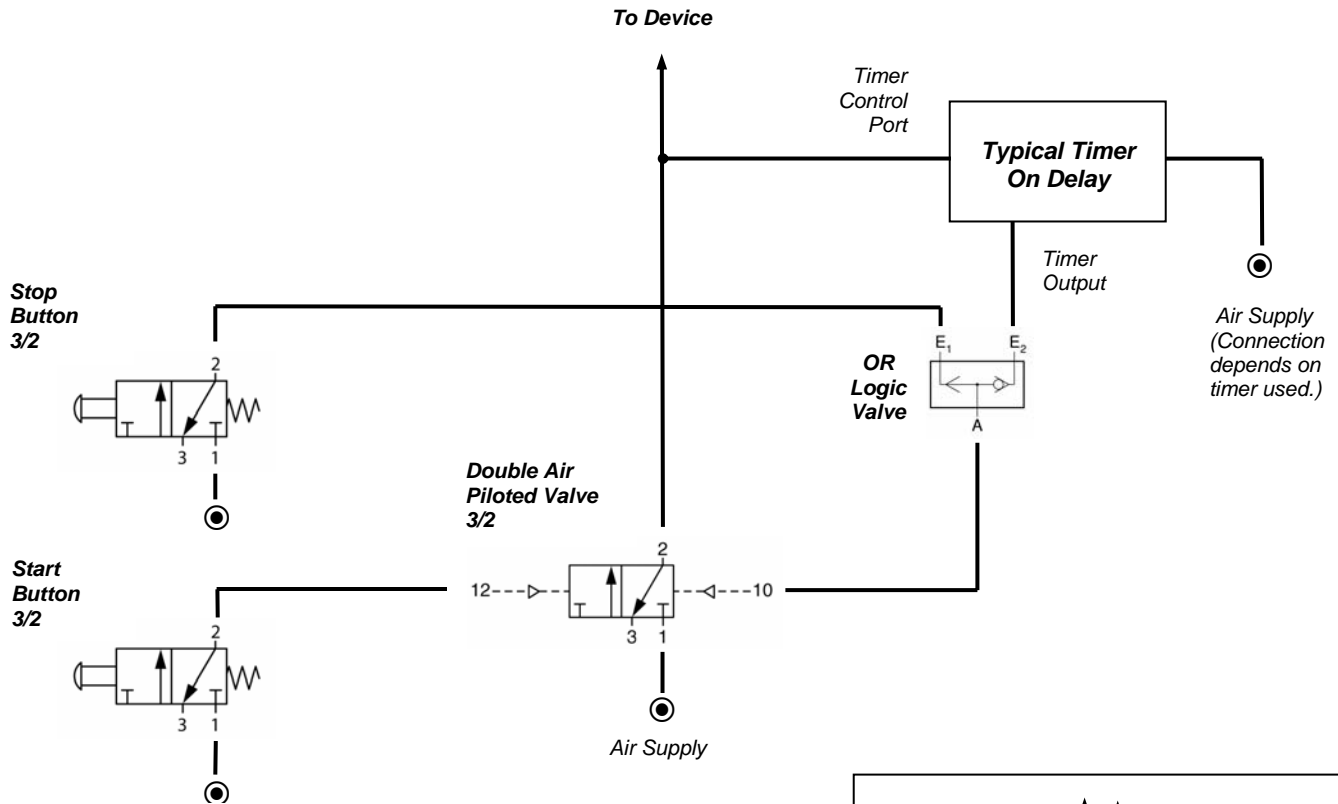
A momentary pilot pressure applied to the control port from a pushbutton or similar device switches the timer valve and provides an output. Releasing the button starts the timing cycle. When the set time is reached, the valve operates, shutting down the output to the device being controlled.

Typical Item Selection

Any PT41 or PT45 timer.
 Pushbutton catalogue number 76022-62-21 (Red) or other valve with a momentary output signal.



Timing using Start-Stop Pushbuttons



Separate start-stop pushbuttons can be used in conjunction with a double air piloted valve and an “or” logic valve to control a timing circuit if required. A wide selection of types and colours of pushbuttons is available to meet design requirements. The size of the air piloted valve determines the air volume output.

Operation

Pressing the start pushbutton sends a signal to switch the air piloted valve on. The valve output is connected to the device to be controlled and to the timer control port. When the timer reaches its set time it sends a signal back to the air pilot valve resetting it, turning off the output to the device. To stop the timing (ie. emergency stop) press the stop button, which sends a signal via the “or” logic valve to reset the double air piloted valve.

Typical Item Selection

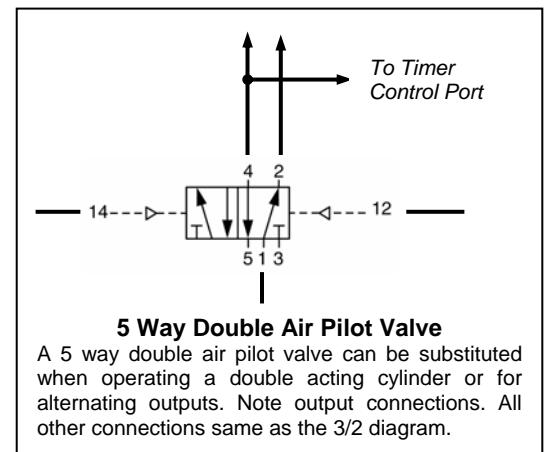
Any on delay timer (consider length of time required and mounting preference).

Pushbutton 3/2 (choice of colour)- Cat. nos. 76022-62-21 (Red), -23 (Black) or -24 (Green).

Double air piloted valve 3/2- Cat. no. 76022-71-22 (1/8 Ports).

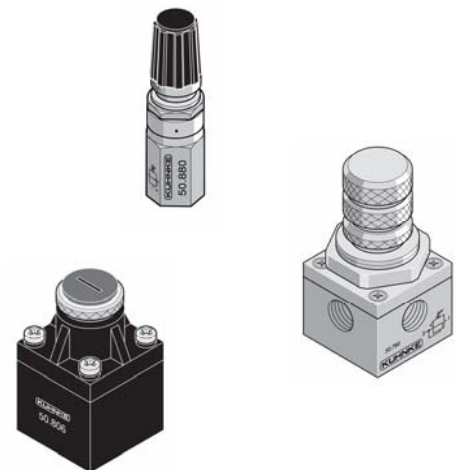
For larger sizes of double air piloted valves use a 5/2 valve and plug port 2 for 3/2 operation. Connect device and timer control to port 4 of 5/2 valve. Use Cat. nos. 76047-81-42 for 1/4 ports or 76067-81-42 for 1/2 ports.

Logic valve-“OR” cat. no. 47003.



Miniature Secondary Regulators

Kuhnke manufactures several types of precision regulators for use in fine regulation of air pressure on small air tools, breathing apparatus and other devices. Units are made of nickel plated brass or molded material and are adjustable or can be factory set for specific applications. Several types are available for mounting on manifolds in addition to standard in line versions. Output pressures range from 0 to 8 bar depending on unit selected. Volume output can be up to 200 l/m.



Regulators

Series 50 Miniature Regulator

Kuhnke System Logic Devices

Sub - Miniature Pressure Regulator



Regulator with optional Knob

The sub-miniature Series 50 regulator provides regulation of air pressure from 0 to 8 bar. Available in both relieving and non-relieving versions, the unit's size and shape makes it ideally suited for mounting in dental, medical and laboratory equipment where close regulation and fine adjustments are necessary.

The regulator is supplied with a panel nut for mounting in a 1/2 inch diameter hole. It can be screw driver adjusted, and set with a locking nut, or with the use of a control knob can be continuously adjusted. Ports (2) have M5 threads and are 180° apart on the side of the regulator body. The housing is nickel plated brass.

Several adjustment ranges are available for close regulation in most applications. Special designs are available.



Technical Specifications

Op. Pressure:

0-10 bar.

Regulator Range:

0-8 bar.

Porting:

M5

Flow Rate:

Dependent on regulator model. See charts.

Media:

All neutral liquid and gaseous media. Consult factory before use on liquids.

Types:

Relieving or non-relieving. Single stage, diaphragm/spring construction.

Response Time:

(Dependent on secondary volume).
Response average: 75ms at 20% loss of secondary air pressure;
1 sec at 50% loss of secondary air pressure.

Adjustment:

Screw driver (or knob accessory).
Equipped with locking nut to prevent tampering after setting is made

Materials:

Brass housing (nickel plated),
stainless and brass interior parts,
Buna N seals.

Operating Ambient:

-10°C to +60°C

Dimensions:

Height – 46mm
Width – 16mm Hex Body
Weight – 6 gr.

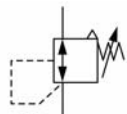
Drilling Plan:

Mounts in 12mm dia. hole.
Equipped with mounting nut.
Behind panel depth – 28mm.

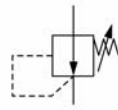
Selection Chart

Secondary Pressure Regulation Range	Catalogue Number	
	Relieving Type	Non- Relieving Type
8 Bar	50880-00-80-00	50880-00-80-10
4 Bar	50880-00-40-00	50880-00-40-10
2 Bar	50880-00-20-00	50880-00-20-10

Diagrams



Relieving



Non- Relieving

Accessories

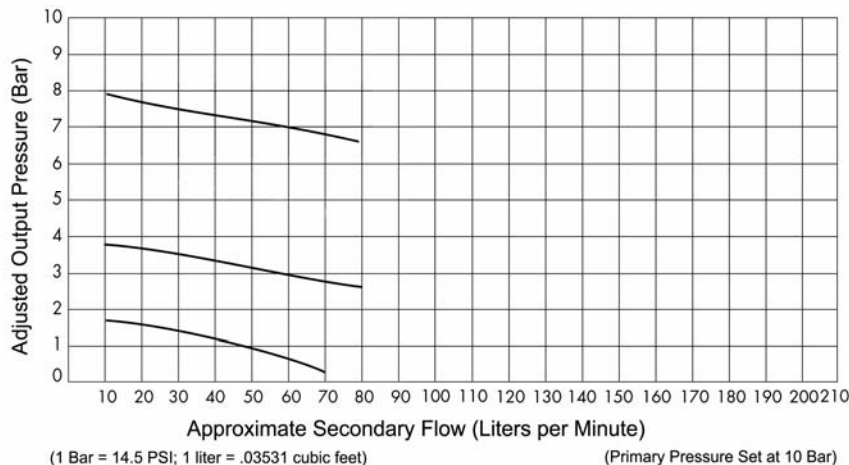
The standard regulator is supplied with a slotted shaft for screwdriver adjustment. A plastic knob catalogue number **50883-00** can be added for easy adjustment.

A flat mounting flange catalogue number **43010-1** or an 'L' bracket catalogue number **43010-2** can be used to mount the regulator on a surface. Brackets have (2) 3mm dia. fastening holes and approximate dimensions are 40mm wide x 26mm high.

Operation

Relieving type regulators allow excessive pressure on the secondary side of the regulator to bleed off to the atmosphere, helping maintain steady pressure. Non-relieving types are used where pressure build up is not a concern as in air motors, or air gun applications etc.

Flow Chart

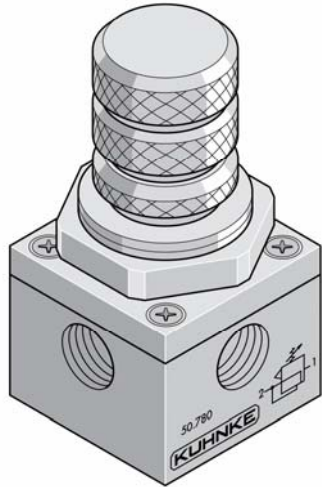


Regulators

Series 50 Miniature Regulator

Kuhnke System Logic Devices

Miniature Pressure Regulator



The miniature Series 50 regulator provides regulation of air pressures from 0 to 8 Bar. The regulator is available in both relieving and non-relieving versions. Housing is nickel-plated brass.

The regulator is supplied with a panel nut for mounting in a 25mm diameter hole. A large brass knob provides for adjustment throughout the regulator's range. A setting lock nut is included to prevent tampering after adjustment. The regulator has a third port for connection of a pressure gauge. Primary and secondary ports are 180° apart on the side of the regulator body.

Several adjustment ranges are available for close regulation in most applications. Special designs are available.



Technical Specifications

Op. Pressure:

0-10 bar

Regulator Range:

0-8 bar

Porting:

1/8

Flow Rate:

Dependent on regulator model.
See charts.

Media:

Filtered air.

Types:

Relieving or non-relieving.
Single stage, diaphragm/
spring construction.

Response Time:

(Dependent on secondary volume).
Response average: 45ms at 20%
loss of secondary air pressure;
100ms at 50% loss of secondary
air pressure.

Adjustment:

Knob Adj. Equipped with locking nut
to prevent tampering after setting is
made.

Materials:

Brass housing nickel-plated,
stainless and brass interior parts,
Buna N seals.

Operating Ambient:

0° C to + 60° C

Dimensions:

Height – 59mm
Width – 30mm Square
Weight – 27 gr.

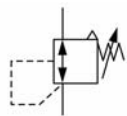
Drilling Plan:

Mounts in 25mm dia. hole.
Equipped with mounting nut.
Behind panel depth – 28mm.

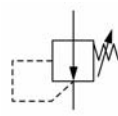
Selection Chart

Secondary Pressure Regulation Range	Catalogue Number	
	Relieving Type	Non- Relieving Type
With 1/8 NPT ports...		
6 Bar	50780-00US	---
With Metric G 1/8 ports...		
8 Bar	50780-00-80-00	50780-00-80-10
2.5 Bar	50780-00-25-00	50780-00-25-10
1 Bar	50780-00-10-00	50780-00-10-10

Diagrams



Relieving



Non- Relieving

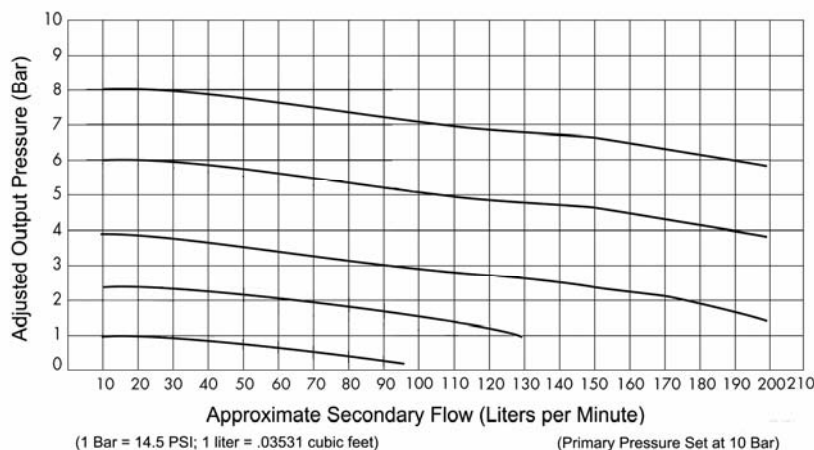
Accessories

An 'L' shaped bracket catalogue number **48255-100** can be used to mount the regulator on a flat surface using (2) M5 threaded holes on the rear of the unit.

Operation

Relieving type regulators allow excessive pressure on the secondary side of the regulator to bleed off to the atmosphere, helping maintain steady pressure. Non-relieving types are used where pressure build up is not a concern as in air motors, or air gun applications etc.

Flow Chart

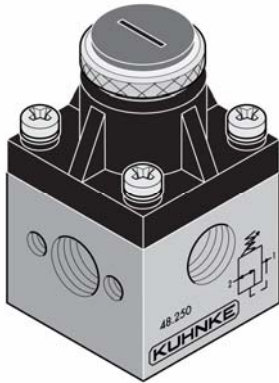


Regulators

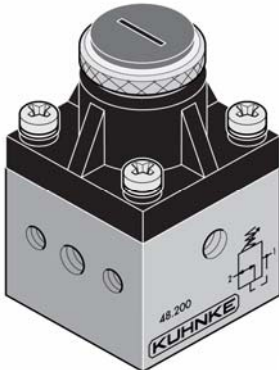
Series 48 Regulator

Kuhnke System Logic Devices

Miniature Screw Driver Adjusted Pressure Regulator



1/8 G or NPT
Ported Design



M5
Ported Design



The Series 48 miniature regulator has characteristics similar to the Series 50 miniature regulator. The unit, however, is specially designed for systems where constant adjustment of pressure is not necessary.

The Series 48 regulator is designed for mounting in panel interiors. Two M5 tapped holes are provided in the side of the housing for attachment to panel or mounting brackets. Ports (2) are 180° apart on the sides of the unit housing.

A variety of regulation ranges is available to suit most applications. Special designs are available.

Technical Specifications

Op. Pressure:

0-10 bar

Regulator Range:

0-5 bar

Porting:

M5 or 1/8

Flow Rate:

Dependent on regulator model. See chart.

Media:

Filtered Air.

Types:

Relieving or non-relieving.
Single stage, diaphragm/spring construction.

Response Time:

(Dependent on secondary volume).
Response average: 45ms at 20% loss of secondary air pressure;
100ms at 50% loss of secondary air pressure.

Adjustment:

Screw driver.
Equipped with locking nut to prevent tampering after setting is made

Materials:

Brass housing (nickel plated),
stainless and brass interior parts,
Buna N seals, polyamide cover.

Operating Ambient:

0°C to +60°C

Dimensions:

Height – 42mm
Width – 30mm Square.
Weight – 17 gr.

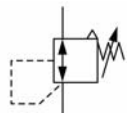
Mounting:

Via (2) M5 tapped holes on side of housing.
Mounting bracket available.

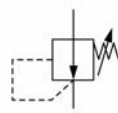
Selection Chart

Secondary Pressure Regulation Range	Catalogue Number			
	Relieving Type		Non- Relieving Type	
	M5 Ports	1/8 Ports	M5 Ports	1/8 Ports
With NPT ports...				
4 Bar	---	---	48225-90US	48255-90US
2.6 Bar	---	---	48225-80US	48255-80US
1.3 Bar	---	---	48225-70US	48255-70US
0.7 Bar	---	---	48225-60US	48255-60US
0.5 Bar	---	---	48225-50US	48255-50US
With Metric Ports...				
5 Bar	48200-00-50-00	48250-00-50-00	48200-00-50-10	48250-00-50-10
2.5 Bar	48200-00-25-00	---	48200-00-25-10	---
1 Bar	48200-00-10-00	48250-00-10-00	48200-00-10-10	48250-00-10-10

Diagrams



Relieving



Non- Relieving

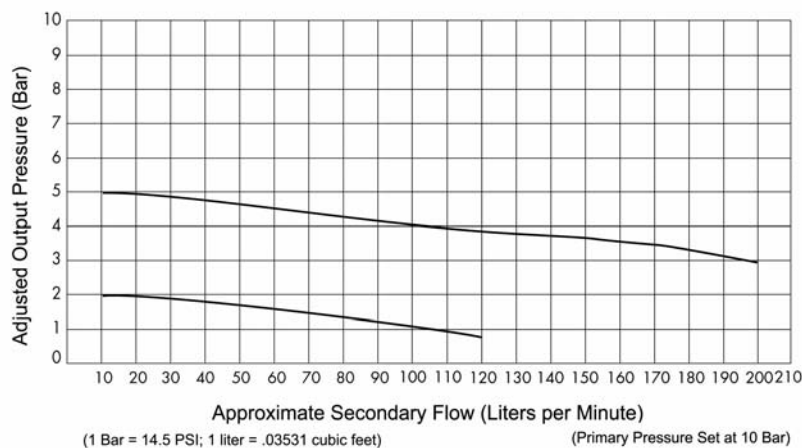
Accessories

An 'L' shaped bracket catalogue number **48255-100** can be used to mount the regulator on a flat surface using (2) M5 threaded holes on the rear of the unit.

Operation

Relieving type regulators allow excessive pressure on the secondary side of the regulator to bleed off to the atmosphere, helping maintain steady pressure. Non-relieving types are used where pressure build up is not a concern as in air motors, or air gun applications etc.

Flow Chart



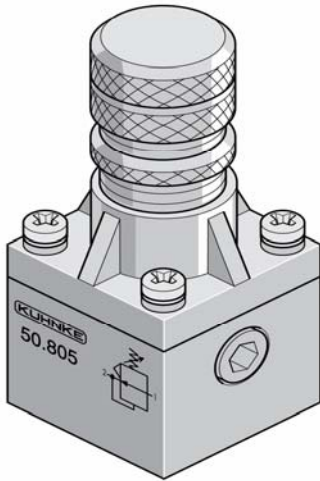
Miniature regulators are not intended to be used as primary line regulators.

Regulators

Series 50 Manifold Regulator

Kuhnke System Logic Devices

Manifold Mounted Miniature Pressure Regulator



The manifold mounted regulator provides regulation of air pressures from 0 to 10 bar. The miniature regulator is available in both relieving and non-relieving versions in a nickel-plated brass housing. The unit is provided with a third port for connection of a pressure gauge.

A large brass knob provides for adjustment throughout the regulator's range. A setting lock nut is included to prevent tampering after adjustment. Two adjustment ranges are available as standard, for close regulation in most applications. Special designs are available.



Technical Specifications

Op. Pressure:

0-10 bar

Regulator Range:

0-8 bar

Porting:

Manifold mounted.

Flow Rate:

Dependent on regulator model.
See charts.

Media:

Filtered air.

Types:

Relieving or non-relieving.
Single stage, diaphragm/
spring construction.

Response Time:

(Dependent on secondary volume).
Response average: 45ms at 20%
loss of secondary air pressure;
100ms at 50% loss of secondary
air pressure.

Adjustment:

Knob Adj. Equipped with locking nut
to prevent tampering after setting is
made.

Materials:

Brass housing nickel-plated,
stainless and brass interior parts,
Buna N seals.

Operating Ambient:

0° C to +60° C

Dimensions:

Height – 59mm
Width – 30mm Square
Weight – 27 gr.

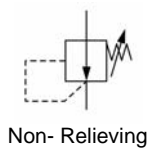
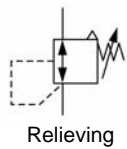
Drilling Plan:

See drawing.

Selection Chart

Secondary Pressure Regulation Range	Catalogue Number	
	Relieving Type	Non- Relieving Type
8 Bar	50805-00-80-00	50805-00-80-10
1 Bar	50805-00-10-00	50805-00-10-10

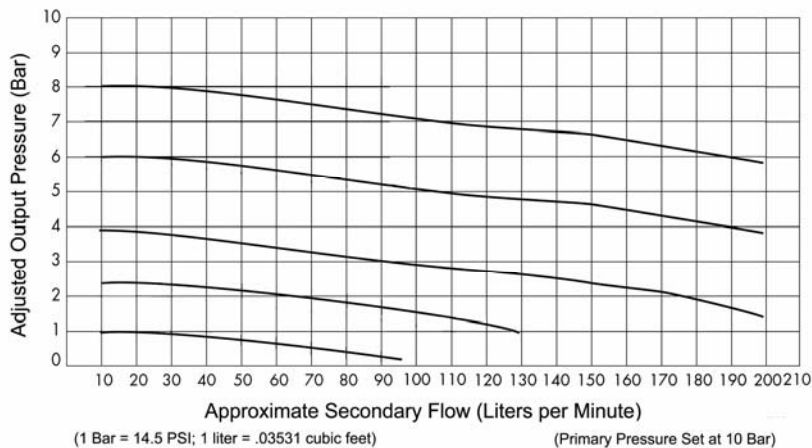
Diagrams



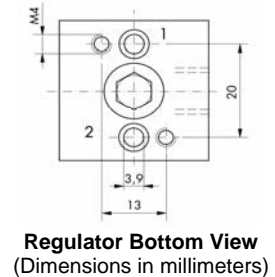
Operation

Relieving type regulators allow excessive pressure on the secondary side of the regulator to bleed off to the atmosphere, helping maintain steady pressure. Non-relieving types are used where pressure build up is not a concern as in air motors, or air gun applications etc.

Flow Chart



Drilling Plan

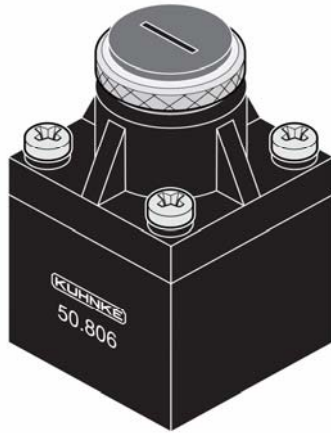


Regulators

Series 50 Manifold Regulator

Kuhnke System Logic Devices

Manifold Mounted Miniature Pressure Regulator



The manifold mounted regulator was designed for use on custom manifolds. The miniature regulator is available in both relieving and non-relieving versions in a molded housing.

The unit is screw driver adjustable and is equipped with a locking ring to prevent tampering after the setting is made.

Several adjustment ranges are available for close regulation in most applications. Special designs are available.



Technical Specifications

Op. Pressure:

0-10 bar

Regulator Range:

0-5 bar

Porting:

Manifold mounted.

Flow Rate:

Dependent on regulator model.
See charts.

Media:

Filtered air.

Types:

Relieving or non-relieving.
Single stage, diaphragm/
spring construction.

Response Time:

(Dependent on secondary volume).
Response average: 45ms at 20%
loss of secondary air pressure;
100ms at 50% loss of secondary
air pressure.

Adjustment:

Screw driver Adj. Equipped with
locking nut to prevent tampering
after setting is
made.

Materials:

Molded POM housing,
stainless and brass interior parts,
Buna N seals.

Operating Ambient:

0° C to +60° C

Dimensions:

Height – 42mm
Width – 30mm Square
Weight – 6 gr..

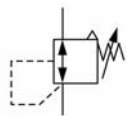
Drilling Plan:

See drawing.

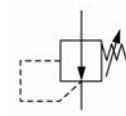
Selection Chart

Secondary Pressure Regulation Range	Catalogue Number	
	Relieving Type	Non- Relieving Type
5 Bar	50806-00-50-00	50806-00-50-10
2.5 Bar	50806-00-25-00	50806-00-25-10

Diagrams



Relieving

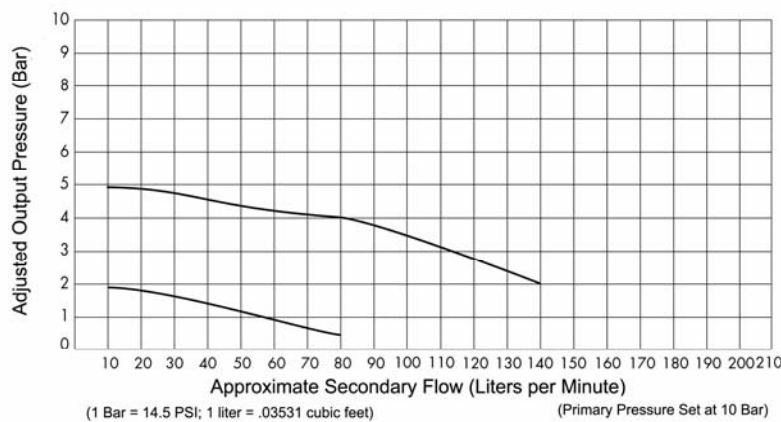


Non- Relieving

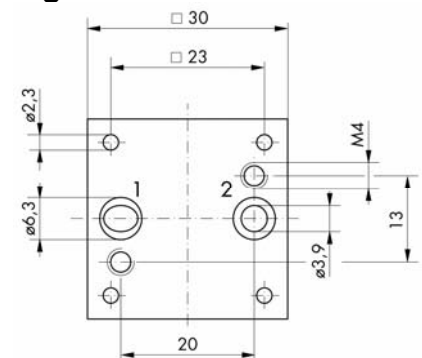
Operation

Relieving type regulators allow excessive pressure on the secondary side of the regulator to bleed off to the atmosphere, helping maintain steady pressure. Non-relieving types are used where pressure build up is not a concern as in air motors, or air gun applications etc.

Flow Chart

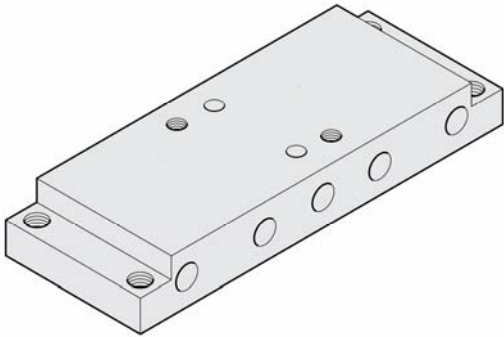


Drilling Plan



Regulator Bottom View
(Dimensions in millimeters)

Manifold Section for Regulators



50800

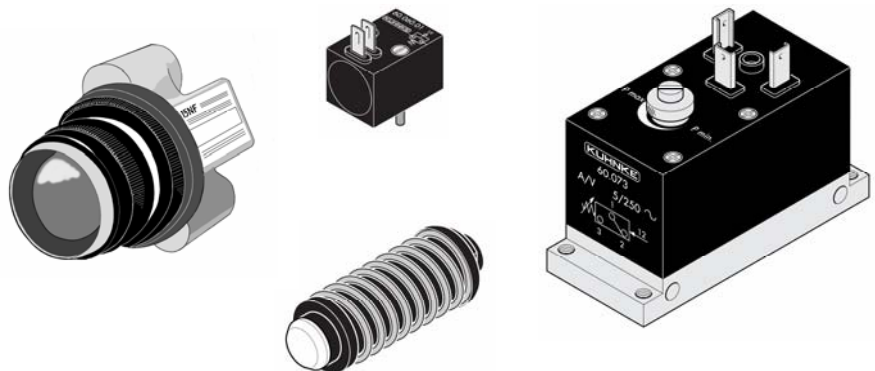
Aluminum base is used for mounting manifold type regulators on Kuhnke Series 84 manifold systems to regulate supply pressure to downstream valves. Base connects air supply to regulator input. Output sends lowered air pressure to the manifold valves on the secondary side. With the addition of a header kit (Cat. no. 84465), the section can be used as a mounting base for regulators. See Series 84 valves for details on the manifold system.

Indicators and Pressure Switches

Two types of product families are available that indicate of the presence of air pressure in pneumatic systems.

Several visual indicators for either panel or in line mounting provide the operator clear visual signals of system pressure for aid in machine operation and trouble shooting. Units are constructed of molded materials with clear high visibility lenses.

Pressure switches (P/E switches) provide electrical contact outputs to electromechanical or electronic devices signaling the presence of air pressure. Two types are available with pressure adjustment capability. Units are made of molded materials and have several contact output ratings.

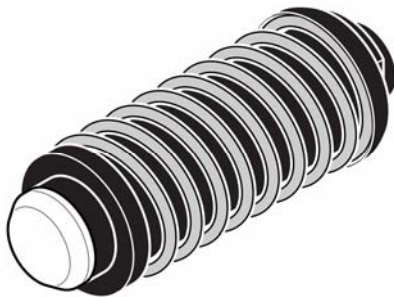


Pressure Switches and Indicators

Series 50 Indicators

Kuhnke System Logic Devices

Visual Pressure Indicator, Panel Mounted



50520 Red

50521 Green

Panel mounted indicators provide a visual signal of the presence of air pressure in a pneumatic system. A black background viewed through a clear lens indicates no pressure, and a colour, the presence of system pressure. Indicators operate between 1.5 and 8 bar. Connection is via M5 port at the rear of the indicator. Mounting is via a spring locking device, and includes a front bezel. For mounting in a 13mm dia. hole.

Dimensions:

Length – 45mm
Body Dia. – 15mm incl. spring
Bezel Dia. – 15mm
Height above panel – 8mm

Op. Pressure:

1.5 to 8 bar max.

Ports:

M5

Material:

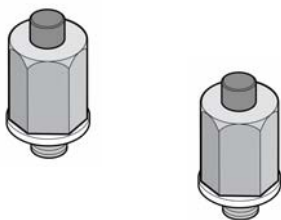
Molded polyamide.

Drilling Plan:

13mm dia. hole.



Port Mounted Indicator



50590 Red

50591 Green

Port mounted indicators can be mounted strategically in pneumatic systems to provide visual indications of the presence of pressure. Excellent for test or trouble shooting functions on machinery.

Indicators are machined from 7mm hex brass bar and have a M5 male stud for mounting in ports. A red or green indicator pops up when line pressure is present.

Dimensions:

Overall length – 15.5mm
Above thread – 13mm
Hex shape – 7 mm
Pop up – 1.5mm

Op. Pressure:

3-10 bar

Port:

M5 male stud.

Material:

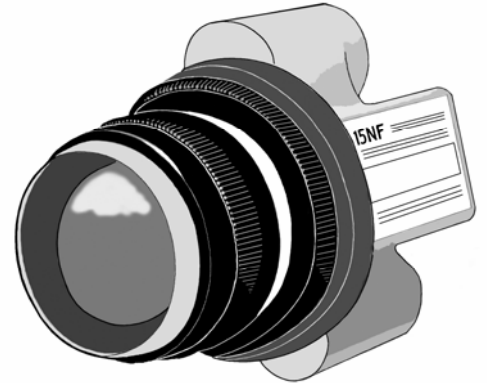
Brass body
Nylon seal
Plastic pop up



Visual Pressure Indicator, Panel Mounted

Type NF indicators provide a 2 colour visual indication of the presence of air pressure in a system. Indicator colour choices are available as noted in the catalogue number selection chart. The NF provides for two modes of operation. By moving an adjustment clip, the indicator will operate with a spring return for pressure/no pressure indication, or with the use of a second port will remain in its switched position until a second pressure signal is applied returning the indicator to its original position.

Units are designed for oil tight panel mounting. Lenses and ball indicator design extend beyond panel surface to provide visual indication of position without standing directly in front of indicator.



Indicator Colours	Catalogue Number
Red - Green	15NF1-RG
Green – Black	15NF1-GBK
Red - Black	15NF1-RBK
Yellow - Black	15NF1-YBK
Amber - Black	15NF1-ABK
Amber - Green	15NF1-AG
Black - White	15NF1-BKW
Green - White	15NF1-GW

Operation

The rear of the indicator has 2 ports and a spring clip window. The unit is shipped with spring clip set for spring return and for the supply pressure to be connected to port 1. To reverse the colours (ie. from red-green to green-red), move the spring clip to the groove adjacent to port 1, and connect the air supply to port 2. To use the indicator in the detent mode, move the spring clip to the center position and connect the switching air inputs to both ports to control the indicator position.

Replacement Parts

Lens **3028**
Mounting nut **1074**
Replacement Sphere **NF5-XX** (insert colour code)

Technical Specifications

Op. Pressure:
1.5 to 10 bar (Detent Mode)
3 to 10 bar (Spring Return)

Op. Ambient:
2° C to 65° C

Dimensions:
67mm L x 38mm D x 54mm W.
Above panel dim. 16mm

Connections:
1/8 NPT ports

Materials:
Lens-Lexan
Body-ABS
Internal-Stainless Steel.

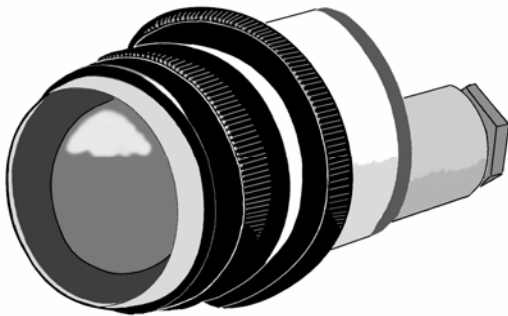
Panel Drilling:
30mm Diameter.

Pressure Switches and Indicators

AL Series Indicators

Kuhnke System Logic Devices

Visual Pressure Indicator, Panel Mounted



AL indicators provide a 2 colour visual indication of the presence or absence of air pressure in a system. The indicators are available in a variety of colour choices. The AL series are fixed 2 colour units that change colour when air pressure is applied.

Units are designed for oil tight panel mounting. The rounded lens configuration provides for a 180° view of position.

Indicator Colours (Off to On colour)	Catalogue Number	
	10-32 Port	1/8 NPT Port
Red - Green	AL19-RG	AL15-RG
Green - Red	AL19-GR	AL15-GR
Green - Black	AL19-GBK	AL15-GBK
Black - Green	AL19-BKG	AL15-BKG
Red - Black	AL19-RBK	AL15-RBK
Black - Red	AL19-BKR	AL15-BKR
Yellow - Black	AL19-YBK	AL15-YBK
Black - Yellow	AL19-BKY	AL15-BKY
Amber - Black	AL19-ABK	AL15-ABK
Black - Amber	AL19-BKA	AL15-BKA
Amber - Green	AL19-AG	AL15-AG
Green - Amber	AL19-GA	AL15-GA
Black - White	AL19-BKW	AL15-BKW
White - Black	AL19-WBK	AL15-WBK
Green - White	AL19-GW	AL15-GW
White - Green	AL19-WG	AL15-WG



Replacement Parts

Lens	3028
Mounting nut	1074
Replacement Sphere	AL-XX (insert colour code).

Technical Specifications

Op. Pressure:
1.5 to 8 bar

Op. Ambient:
2° C to 65° C

Dimensions:
40mm L x 32mm Diameter.
Above panel dim. 16mm

Connections:
10-32 ports or
1/8 NPT ports

Materials:
Lens-Lexan
Body-ABS
Internal-Stainless Steel.

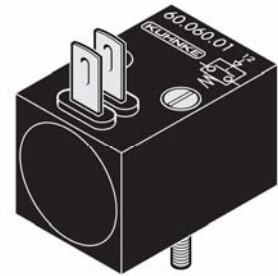
Panel Drilling:
30mm Diameter.

Miniature Pressure Switch

60006-01

- Op. Pressure:**
0.8 to 8 bar
- Connections:**
M5 port
- Contact Rating:**
10 mA @ 24V DC (NO)
- Connection:**
Solder or push on terminals.
- Dimensions:**
25mm H x 17mm W x 26mm D
Weight – 3 gr.
- Mounting:**
Through body holes.
- Operating Ambient:**
-10° C to 60° C

Small micro switch used to detect the presence of air pressure in pneumatic systems. The switch is M5 ported and contains a micro switch rated at 10 mA 24V DC. The switch is designed for use with programmable controllers, providing indication of air pressure, operating when pressure rises above 0.8 bar ($\pm 25\%$).

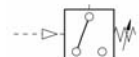
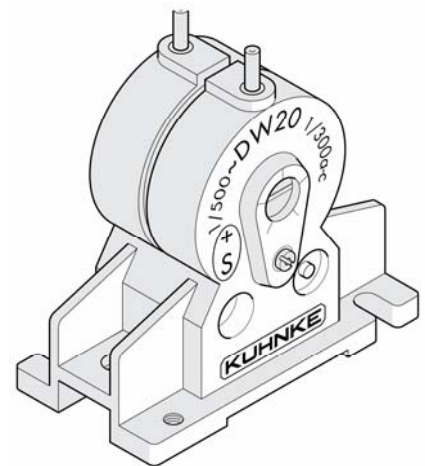


Adjustable High Sensitivity Pressure Switch

60006

- Min./Max. Pressures:**
3 to 30 mbar
pressure or vacuum.
- Max. Overload Pressure:**
100 mbar
- Contact Rating:**
1 Amp and 220V AC.
- Dimensions:**
58mm H x 44mm W x 30mm D
Weight – 9 gr.
- Mounting:**
2 mounting holes in base.
- Operating Ambient:**
-15° C to 70° C

The high sensitivity pressure switch is used to detect pressures or vacuum between 3 and 30 mbar. It can be used in detection systems operated by changes in air pressure. The switch is diaphragm operated, with an integral, adjustable electrical contact rated at 1 Amp 220V AC.



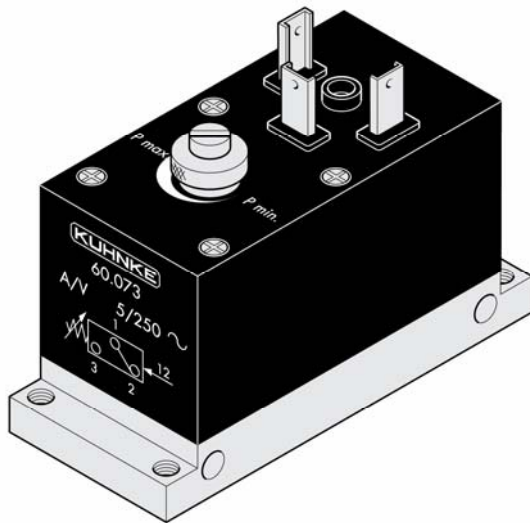
Pressure Switches and Indicators

Series 60 P/E Switches

Kuhnke System Logic Devices

Adjustable Pressure Switch

(Normal and Low Pressure types)



60073-80-99 Standard version 3 to 10 bar

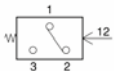
60073-40-99 Low pressure version 0.5 to 4 bar

The Series 60 adjustable pressure switch is designed for use in detecting pressure in pneumatic systems, and provides an electrical contact output to control or indication devices.

The P/E switch pull in pressure can be adjusted throughout its operating pressure range. The dropout point is $\pm 3\%$ below the set point pressure.

An electrical micro-switch with a form C (make/break) contact is actuated by a separate diaphragm operated system. Contacts are rated 10A at 230V AC. 6mm push on connectors or an electrical plug (cat. no. 67499) can be used to complete electrical connections.

Other versions of the adjustable P/E switch are available for specific applications. They include electrical contacts rated at 100mA (catalogue suffix – **01**) and contacts rated at 6 Amps. (catalogue suffix – **60**).



Technical Specifications

Op. Pressure:

3-8 bar Standard
0.5-4 bar Low press. version

Connections:

M5 bottom ported

Media:

Filtered Air.

Pull in Pressure:

Adjustable full range

Drop out Pressure:

3 % of pick-up pressure.

Contact output:

1 form C contact.

Terminal Marking:

1 - Common
2 - N/C contact
3 - N/O contact

Contact Rating:

10A @ 230V AC
6A @ 120V AC
5A @ 24V DC

Electrical Connectors:

6mm push on or
Cat. No. 67499 plug.

Setting:

Via adjustment screw.

Operating Ambient:

0°C to 60°C

Materials:

Molded body, aluminum base,
Viton diaphragms, seals.

Dimensions:

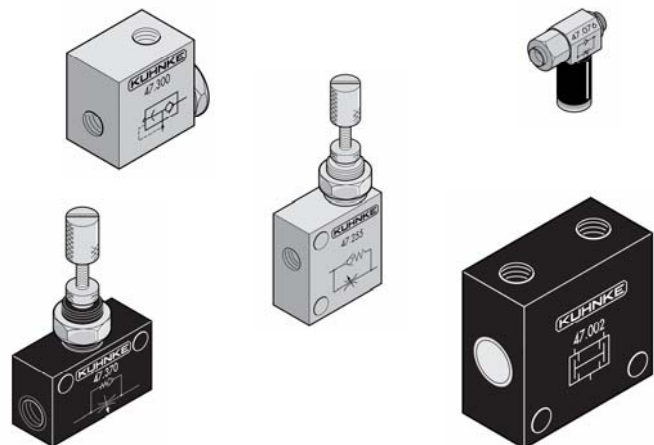
70mm L x 30mm W x 48mm H.

Mounting:

Via 4 M4 holes in base.

Miniature Logic Valves and Flow Controls

Kuhnke's miniature line of flow controls and logic devices include and/or logic valves, check and quick exhaust valves as well as adjustable and non-adjustable flow controls. Most flow control devices are made of brass and with M5 ports for constructing logic circuits. A group of push-in fittings with built in flow controls allow for speed control of small cylinders.



Logic Valves and Flow Controls

Series 47

Kuhnke System Logic Devices

AND/OR Logic Valves



47002 AND Valve (Dual Pressure)

47003 OR (Shuttle) Valve

And valve opens when pressure is present at both inlet ports. **Or** valve opens when pressure is present at either inlet port. Design uses piston construction, providing smooth output flow.

Flow: 200 l/m @ 8 bar

Min. Op. Pressure: 1 bar

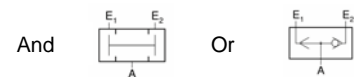
Through Body Mtg. Holes:

3.4mm dia. on 17mm centers.

Dimensions: 24mm H x 25mm W x 12mm D.

Ports: M5

Material: Anodized Aluminum Housing



Check Valve (Non Return)



47260

In line mounted, valve allows for flow in one direction only. Arrow on body shows direction of flow.

Flow: 225 l/m at 8 bar

Operation: Opens at 0.5 bar

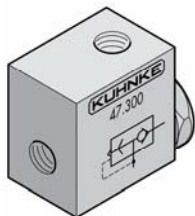
Dimensions: 21.5mm L x 9mm Hex.

Ports: M5

Material: Brass



Quick Exhaust Valve



47300

In line mounted, outlet port exhausts directly to atmosphere at loss of inlet pressure.

Dimensions:

18mm H x 21mm W x 12.5mm D.

Ports: M5

Material: Brass



Non Adjustable One Way Flow Control



47251- **

Mounts directly in port of valve or cylinder. Various fixed orifices reduce flow to a low and constant value. Check valve prevents flow in reverse direction.

Available with .10/.16/.25/.40/.60mm orifices. Add aperture size to catalogue number.

Flow @ 7 bar:

****.10** – 0.34 l/m

****.16** – 1.40 l/m

****.25** – 3.40 l/m

****.40** – 8.50 l/m

****.60** – 19.8 l/m

Check Valve: opens at 0.5 bar

Dimensions: 28mm H. x 8mm Hex.

Ports: M5

Material: Brass



Adjustable Exhaust Flow Control

47200

Flow full open: 30 l/m @ 7 bar
13 l/m @ 3 bar
Dimensions: 14mm L x 8mm Hex.
Thread: M5
Material: Brass

For direct mounting on exhaust ports. Adjustable, equipped with locking nut to prevent tampering or loosening after setting is made.



Adjustable Flow Control

Brass **47220**

Brass nickel plated **47220-01**

Flow full open: 55 l/m @ 7 bar
24 l/m @ 3 bar
Dimensions: 40.5mm H x 12mm Hex.
Ports: M5
Material: Brass

Needle valve type flow control for direct mounting or panel mounting through a 8.5mm dia. hole. Equipped with mounting nut. The knurled adjustment knob for fine adjustment has screw driver slot and shaft is equipped with locking nut to prevent tampering after proper setting is made.

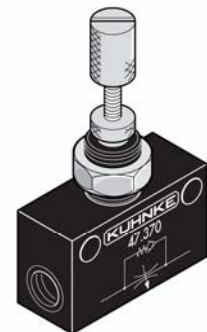


Adjustable One Way Flow Control

47370

Flow full open: 70 l/m @ 7 bar
28 l/m @ 3 bar
Check Valve: Opens at 0.5 bar
Dimensions: 39mm H x 25mm W x 10mm D.
Through Body Mounting Holes:
4.3mm dia. on 18mm centers.
Housing: Zinc alloy.
Ports: M5

Finger adjustable via knurled knob equipped with screw slot. Has lock nut to lock adjustment. Can be mounted with screws through body or panel mounted through a 8.5mm dia. hole.

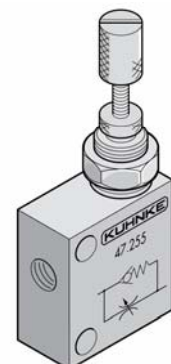


Brass Adjustable One Way Flow Control

47255

Flow full open: 75 l/m @ 7 bar
33 l/m @ 3 bar
Check Valve: Opens at 0.5 bar.
Dimensions: 47mm H x 20mm W x 10mm D.
Through Body Mounting Holes:
3.6mm dia. on 15mm centers.
Housing: Brass
Ports: M5

Finger adjustable via knurled knob equipped with screw slot. Has lock nut to lock adjustment. Can be mounted with screws through body or panel mounted through a 8.5mm dia. hole.

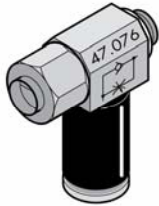


Logic Valves and Flow Controls

Series 47

Kuhnke System Logic Devices

Push-In Fittings with One Way Adjustable Flow Controls



For Inlet Ports:

47076 – 4x1 mm tubing, M5 thread

47091 – 6x1mm tubing, G1/8 thread

For Exhaust Ports:

47075 – 4x1 mm tubing, M5 thread

47090 – 6x1mm tubing, G1/8 thread

For direct mounting on cylinder or valve ports, with L-banjo type instant push-in fitting and captive adjusting screw.

Flow Full Open:

M5 – 80 l/m @ 7 bar

15 l/m @ 3 bar

G1/8 – 320 l/m @ 7 bar

50 l/m @ 3 bar

Dimensions:

M5- 23mm L x 6.5mm W x 21mm H

G1/8- 31.5mm L x 14mm W x 32mm H



Inlet



Exhaust

Barbed Fittings with One Way Adjustable Flow Controls



For Inlet Ports:

47071 - 5x1mm tubing, M5 thread

47081 - 6x1mm tubing, M5 thread

47086 - 6x1mm tubing, G1/8 thread

For Exhaust Ports:

47070 - 5x1mm tubing, M5 thread

47080 - 6x1mm tubing, M5 thread

47085 - 6x1mm tubing, G1/8 thread

For direct mounting on valve or cylinder ports, with captive adjusting screw and L-banjo type barb fitting.

Flow Full Open:

M5 - 3.35 CFM @ 100 PSI

1.4 CFM @ 45 PSI

G1/8 - 3.1 CFM @ 100 PSI

1.3 CFM @ 45 PSI

Dimensions:

M5- 18.5mm H x 6.5mm W x 21mm H

G1/8- 21mm H x 14.5mm W x 32mm H

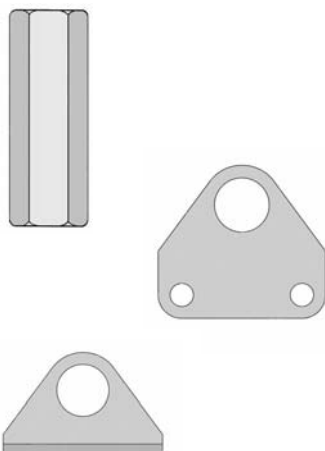


Inlet



Exhaust

Accessories for Flow Controls



47266 Protective Cover

Brass cover can be used to cap off adjustable flow controls, preventing tampering after adjustment is set.

Dimensions: 30mm H x 10mmHex.

38305 Flat Mounting Bracket

38306 L Shaped Mounting Bracket

Used to mount flow controls. Made from zinc plated sheet steel. Mounting holes are 3.5mm dia. on 18mm centers. "L" Bracket has a 9.5mm return flange.

Dimensions:

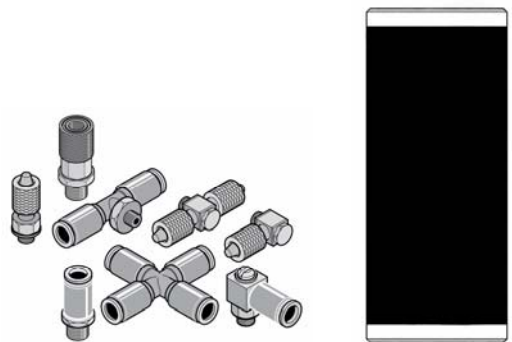
Flat – 23mm H x 25mm W.

L shape – 16mm H. x 25mm W
x 9.5mm D

Miniature Metric Fittings Miscellaneous Accessories

A complete line of miniature brass fittings and quick couplings are available to complete pneumatic connections. Accessories including silencers, volumes, adapters and tubing cutters and racks are included.

Brass fittings include units for connections to M5 and G 1/8 ports in various configurations. Instant push in fittings are available also in metric port sizes.

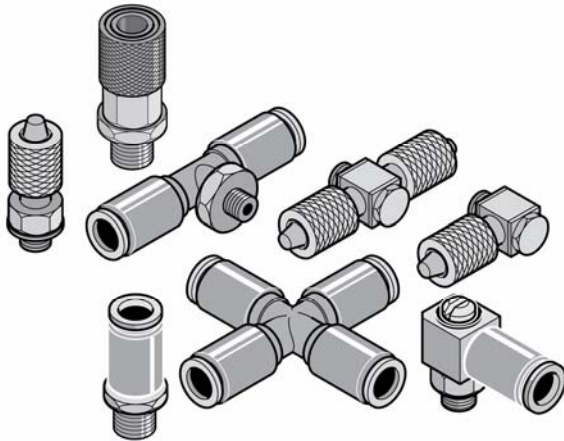


Fittings and Misc. Accessories

Series 50,52,56 Fittings

Kuhnke System Logic Devices

Miniature Metric Brass Fittings



Series 50

Brass metric sized fittings provide a full family of connectors for most applications in miniature pneumatics. Machined from solid brass stock, fittings are dependable, easy to install and reduce space requirements.

Series 50 fittings also include quick connect couplings and brass manifolds.

Series 52, 56

Instant push-in fittings provide a fast means of connecting pneumatic systems. Air connections are made by pushing tubing into fitting. Removal of tubing is done by pressing in on the brass collar, releasing tube. Series 52 fittings are designed for 4mm tubing and are constructed with a brass base and an anodized aluminum collar. Series 56 push-in fittings are constructed the same except have molded collars, and accept 6mm tubing.

Technical Specifications

Operating Pressure;

0-12 bar or vacuum.

Material:

Series 50 – Brass
Series 52 – Brass, anodized aluminum sleeve.
Series 56 – Brass, Polyamide sleeve.

Port/Thread:

M5, G 1/8, G 1/4

Port Washers:

Nylon or Buna N

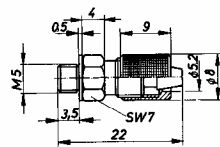
Type of tubing:

Fittings accept most non-rigid nylon or plastic (polyamide) tubes. See specific fittings for wall thickness limitations.

Miniature Metric Brass Fittings

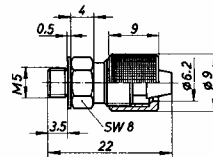
Tube Coupling

M5 for 5 x 1 mm tubing **50007**



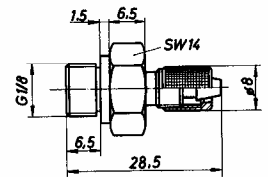
Tube Coupling

M5 for 6 x 1 mm tubing **50021**



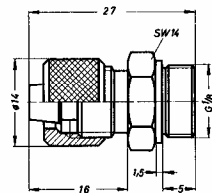
Tube Coupling

G 1/8 for 5 x 1 mm tubing **50008**



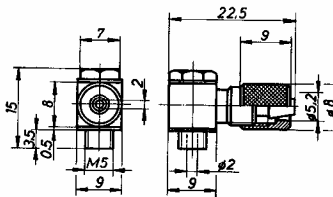
Tube Coupling

G 1/8 for 6 x 1 mm tubing **50046**



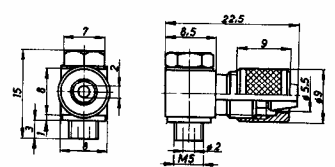
L - Banjo

M5 for 5 x 1 mm tubing **50130**



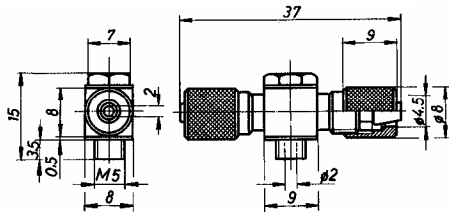
L - Banjo

M5 for 6 x 1 mm tubing **50191**



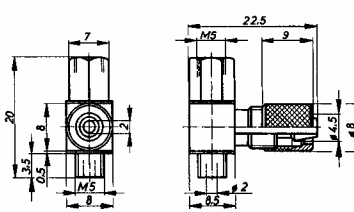
T - Banjo

M5 for 5 x 1 mm tubing **50140**
M5 for 6 x 1 mm tubing **50192**



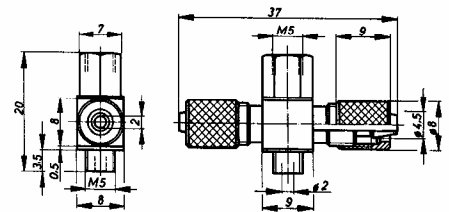
L - Banjo

M5 for 5 x 1 mm tubing **50170**



T - Banjo

M5 for 5 x 1 mm tubing **50180**



Fittings and Misc. Accessories

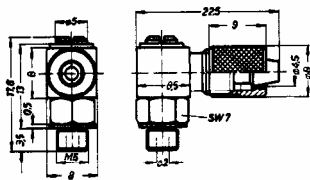
Series 50 Fittings

Kuhnke System Logic Devices

Miniature Metric Brass Fittings

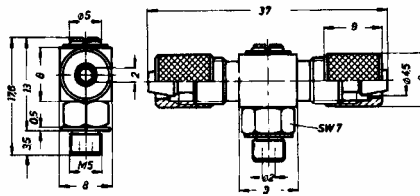
L – Swivel

50400 5 x 1 Tubing
50420 6 x 1 Tubing
 M5 movable swivel screw fitting for slow turning movements.



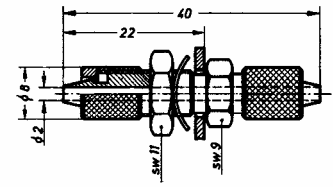
T – Swivel

50410 5 x 1 Tubing
 M5 movable swivel screw fitting for slow turning movements.



Bulkhead Coupling

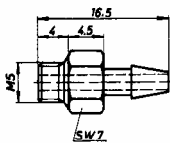
50056 5 x 1 Tubing



Tube Nipple (Polyamide)

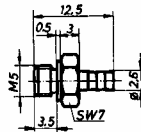
50704 M5 for 3 mm I.D. Tubing
50706 M5 for 2 mm I.D. Tubing

Max. Tightening torque 1.5 lbs. Self sealing thread. Temperature range -10° C to + 40° C.



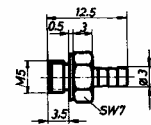
Tube Nipple

50036 M5 for 2 mm I.D. Tubing



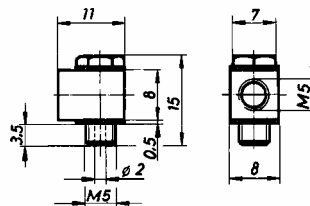
Tube Nipple

50040 M5 for 2 mm I.D. PVC type Tubing



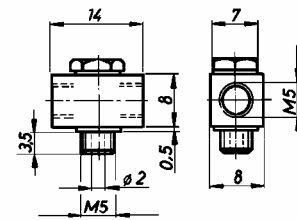
L – Banjo

50121 M5 with hex head
50150 M5 with screw head



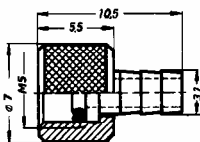
T – Banjo

50123 M5 with Hex head



Tube Coupling (Female)

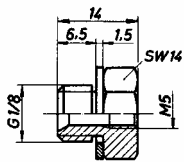
50045 M5 for 2 mm I. D. Tubing



Miniature Metric Brass Fittings

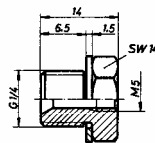
Reducing Nipple

G 1/8 to M5 **50052**



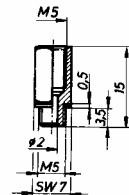
Reducing Nipple

G 1/4 to M5 **50054**
G 1/4 to G 1/8 **50627**



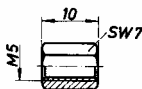
Coupling

Male to Female M5 **50051**



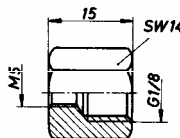
Coupling Sleeve

Female to Female M5 **50009**



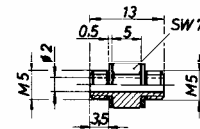
Reducing Sleeve

Female G 1/8 to M5 **50053**



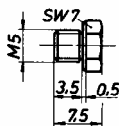
Double Nipple

Male to Male M5 **50050**



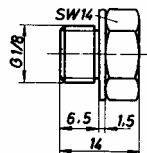
Port Plug

M5 **50500**



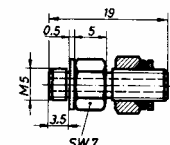
Port Plug

G 1/8 **50501**



Double Nipple

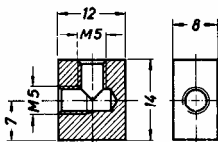
M5 with locknut **50100**



Miniature Metric Brass Fittings

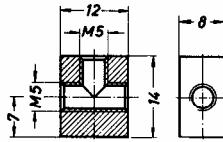
L – Manifold

50120 M5



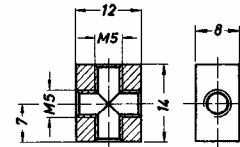
T – Manifold

50122 M5



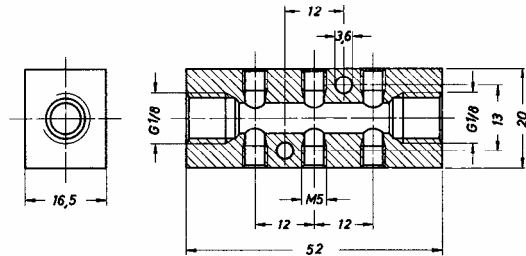
X – Manifold

50124 M5



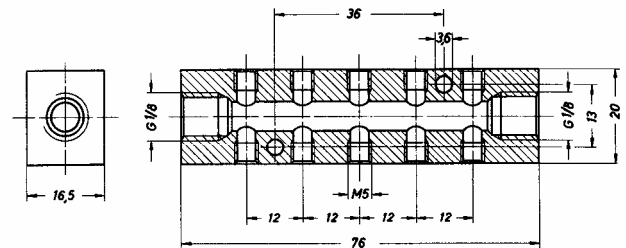
Manifold

50222 6 output
Two G 1/8 inputs to six M5 outputs.



Manifold

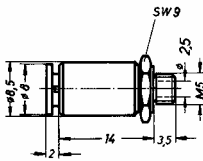
50224 10 output
Two G 1/8 inputs to ten M5 outputs.



Instant push-In Fittings for 4mm O.D. Tubing

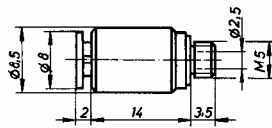
Stud Coupling

Hex nut mounting M5 **52010**



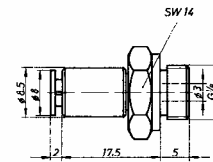
Stud Coupling

Allan Key mounting M5 **52011**



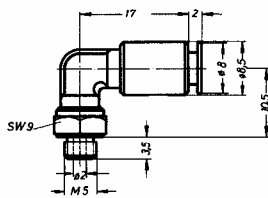
Stud Coupling

Hex nut mounting G 1/8 **52170**



Elbow

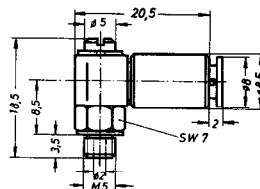
M5 **52090**



L – Swivel

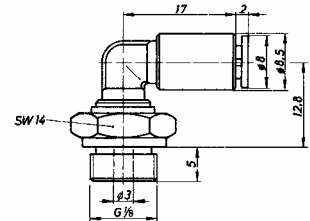
Screw top M5 **52070**

With hex nut top M5 **52095**



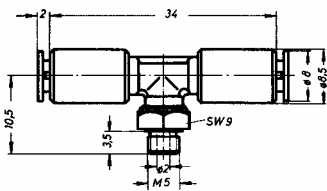
Elbow

G 1/8 **52180**



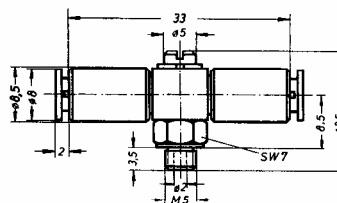
T – Banjo

M5 **52100**



T – Swivel

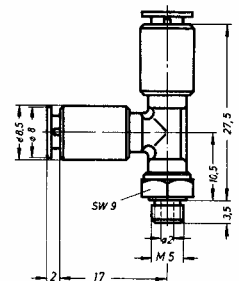
M5 **52080**



T – Banjo

M5 **52105**

G 1/8 **52055**



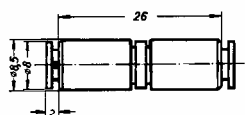
Fittings and Misc. Accessories

Series 52 Fittings

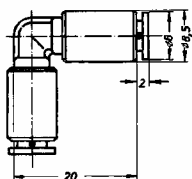
Kuhnke System Logic Devices

Instant Push-In Fittings for 4mm O.D. Tubing

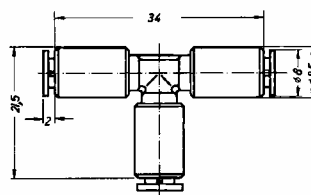
Double Coupling
52020



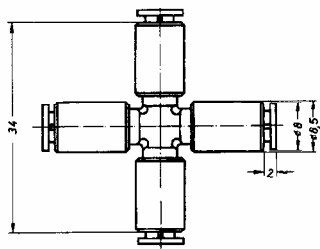
Elbow Coupling
52040



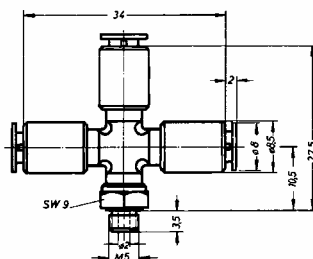
T – Coupling
52050



Cross Coupling
52060

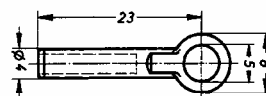


Cross Coupling
52110 with M5 stud

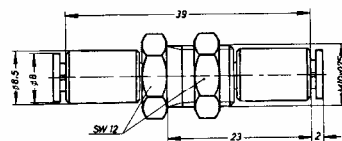


Tube Plug

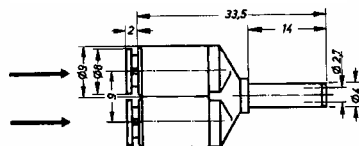
52185 for 2 mm I.D. tubing
52190 for 3 mm I.D. tubing



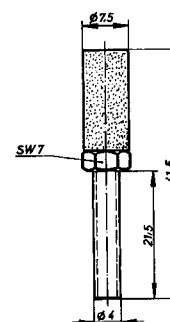
Bulkhead Coupling
52030



Y – Coupling
52025

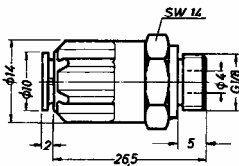


Silencer
52115
(for use on push-in fittings)

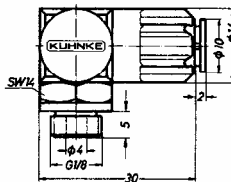


Instant push-In Fittings for 6mm O.D. Tubing

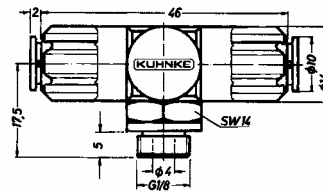
Stud Coupling
G 1/8 **56010**



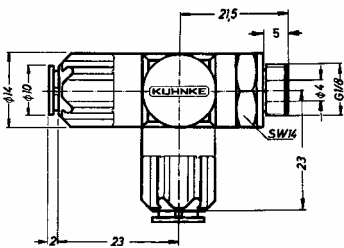
L – Banjo
G 1/8 **56090**



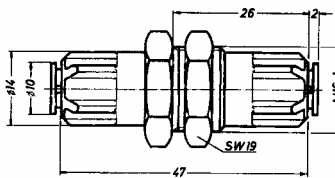
T – Banjo
G 1/8 **56100**



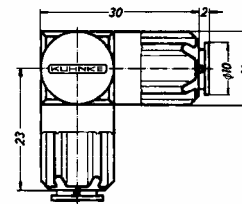
T – Banjo
G 1/8 **56105**



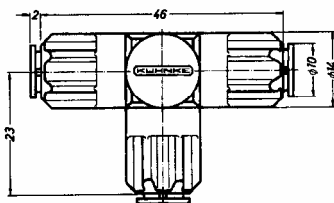
Bulkhead Coupling
56030



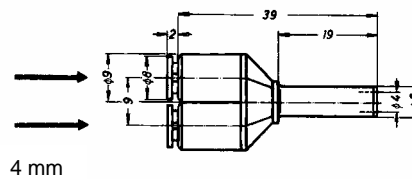
Elbow Coupling
56040



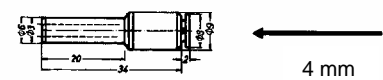
T – Coupling
56050



Y – Coupling
(2) 4mm tube push-ins **56025**

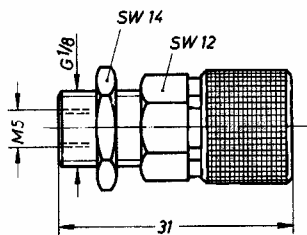


Reducer
(1) 4mm push in **52015**

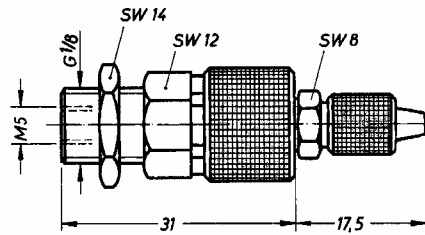


Brass Quick Connect Couplings

Coupling Master



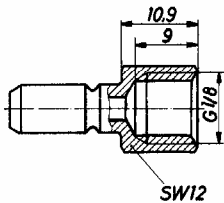
Coupling pictured with connector.



- 50061-01** Blue
- 50061-02** Red
- 50061-03** Green
- 50061-04** Yellow
- 50061-05** Black
- 50061-06** White
- 50061-10** Steel Blue

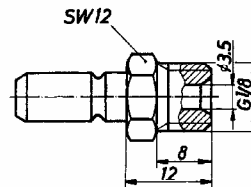
Connector

50062 G 1/8 Female



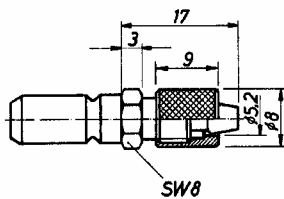
Connector

50063 G 1/8 Male



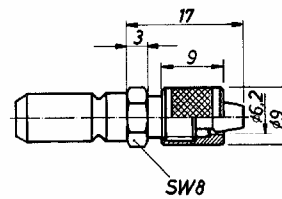
Connector

50065 For 5 mm Tubing



Connector

50064 For 6 mm Tubing



Silencer

50030

Dimensions:
26mm L x 7.5mm dia.
Material:
Brass
Fitting:
M5

Silencers can be used in exhaust ports of valves and other devices to quiet escaping air. Made of sintered Brass and has an M5 male fitting.



Spare Seals

M5 **50001**
G 1/8 **50010**
G 1/4 **50002**
Seal for Banjo fittings **50029**

Material:
Nylon or Buna N
Dimensions:
Seals fit thread size shown.

Spare seals for fittings are available in packs of 100. Seal number 50029 is used as the top seal for banjo fittings.



Adapters

M5 to 10-32 **50827**
M5 to 1/8 NPT **50826-01**

Material:
Brass

Fittings can be used to adapt to other size fittings. Made from brass. Adapters include seals.



Tube Rack

Tubing Rack **50599**

Material:
Gray Plastic
Dimensions:
12mm W x 8.5mm H x 90mm L.

Used for organizing neat runs of pneumatic tubing. Accepts 4 or 5 mm tubing. Rack holds up to 10 tubes and can be cut or snapped off for amount of positions needed. Screw holes are provided between each holder to allow for fastening.



Fittings and Misc. Accessories

Series 50 Accessories

Kuhnke System Logic Devices

Volumes



- 50034** 50 cm³
- 50033** 100 cm³
- 50043** Mounting Clip

Volumes are used to provide slight time delays in pneumatic circuits or to slow cylinder rod movements. Volumes are miniature tanks which allow pressure to build in the pneumatic circuit. Mounting clip provides for snap in mounting of volume.

Dimensions:

36mm Diameter
x 86.5mm L (50034)
x 148.5mm L (50035)

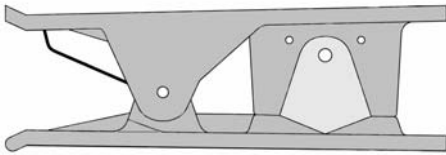
Ports:

M5

Max. Operating Pressure:

8 bar

Tube Cutter



50200

Provides smooth square edge cut on all types of flexible tubing. Insert tube beneath blade, then squeeze tool.

Material;

Plastic with stainless blade.

Dimensions;

89mm L x 25mm W x 25mm D.

Appendix

Logic Devices Catalogue Number Listing

Cat. No.	Page	Cat. No.	Page	Cat. No.	Page
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42200	43	50040	48	50500	49
43010-1	25	50043	56	50501	49
43010-2	25	50045	48	50520	36
47002	42	50046	47	50521	36
47003	42	50050	49	50590	36
47070	44	50051	49	50591	36
47071	44	50052	49	50599	55
47075	44	50053	49	50627	49
47076	44	50054	49	50670	6
47080	44	50056	48	50680	7
47081	44	50061-01	54	50704	48
47085	44	50061-02	54	50706	48
47086	44	50061-03	54	50780-00US	27
47090	44	50061-04	54	50780-xx-xx-xx	27
47091	44	50061-05	54	50800	34
47220	43	50061-06	54	50805-xx-xx-xx	31
47220-01	43	50061-10	54	50806-xx-xx-xx	33
47251-xx	42	50062	54	50826-01	55
47255	43	50063	54	50827	55
47260	42	50064	54	50880-xx-xx-xx	25
47266	44	50065	54	51006-xx	11
47300	42	50100	49	51006-xxUS	11
47370	43	50120	50	51012-xx	11
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48255-xxUS	29	50130	47	51020-30	9
50001	55	50140	47	51025	9
50002	55	50150	48	51031	9
50007	47	50170	47	52010	51
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Logic Devices Catalogue Number Listing

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52055	52	AL15-xx	38
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