

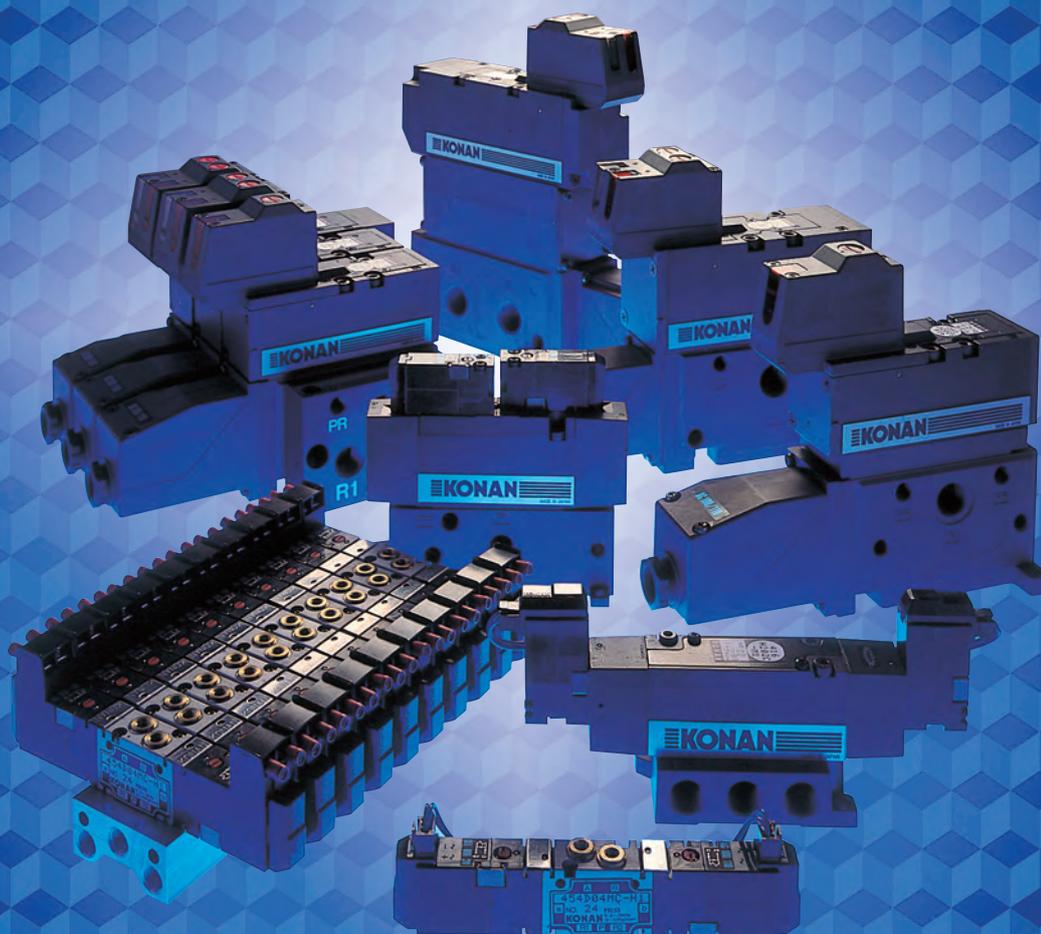
KONAN[®]

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NEW MAGSTAR 5 PORT SOLENOID VALVES

414 416 454



NEW MAGSTAR 5-PORT SOLENOID VALVES

414

Spool valve

The main valve is the spool valve, which employs a unique soft seal I-ring for spool packing made of self lubricating material. This has remarkable improved operation reliability.

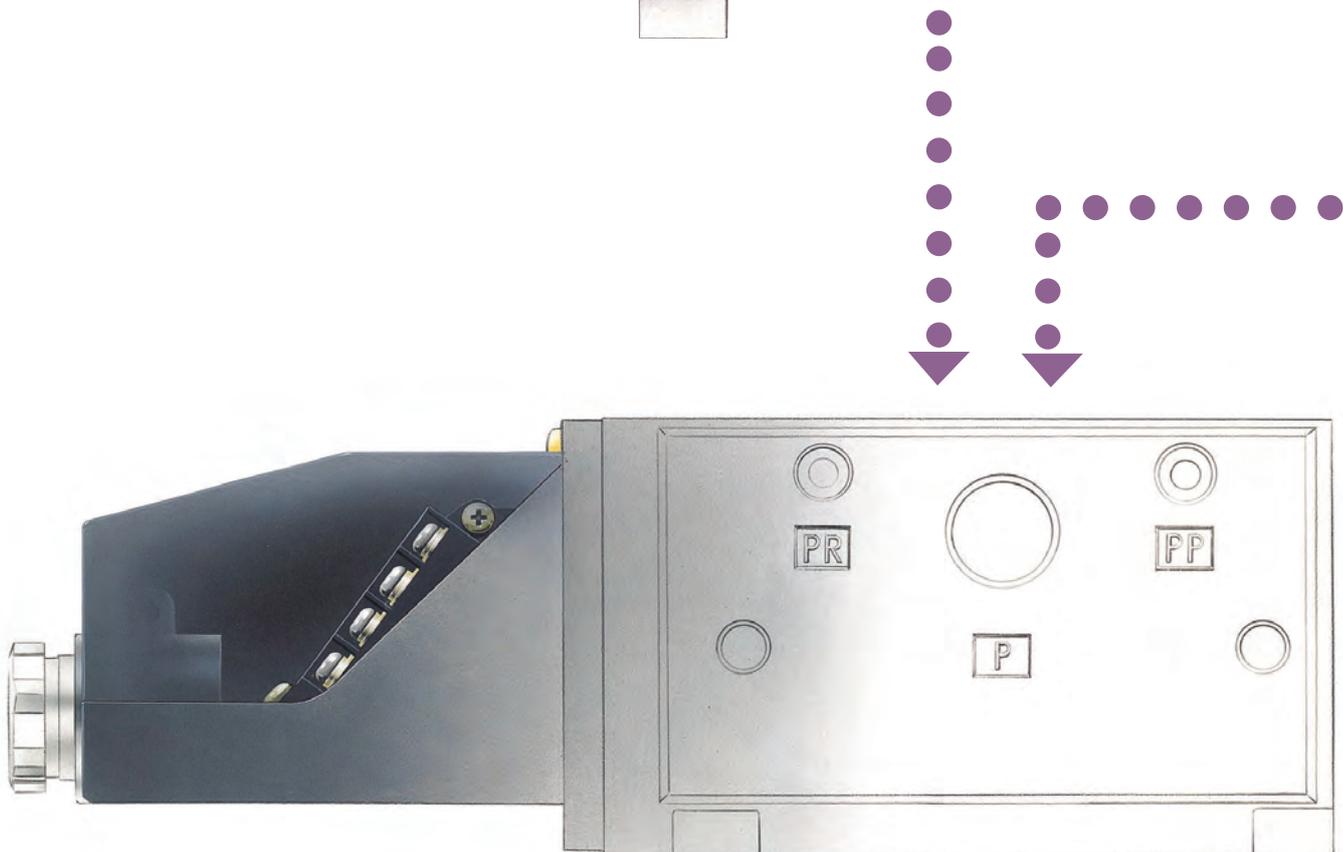
■ Port size : Rc1 / 8~1

■ Operating pressure : 0.2~1.0 MPa



Gasket-connected type

This type provides superb maintainability requiring only to connect air pipe to the mount, whichever the main valve type may be.



Mount common for gasket-connected type products

NEW MAGSTAR Boasting Abundance in Types and Sizes

NEW MAGSTAR 5-port solenoid valves are multipurpose valves housing any one of the two valve types (spool and slide) as standard. In varieties of versions, you can select the best suited to the requirement on the site. The valve can be easily replaced as required. What's more, the body can easily be replaced as an assembly without removing subplate (mounting block), piping or wiring. Thus, inspection and maintenance can be conducted easily with New Magstar products.

416

Ceramic slide valve

This is a lubrication-free slide valve whose main valve adopts super hard ceramic. With its outstanding durability in any type of environment, it is most suitable for both high and low frequency uses.

- Port size : Rc1 / 8 ~ 1 / 2
- Operating pressure : 0.1 2 ~ 1.0 MPa



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Direct piping type

This is the valve type light in weight and small in size. Air pipe is directly connected to the valve.

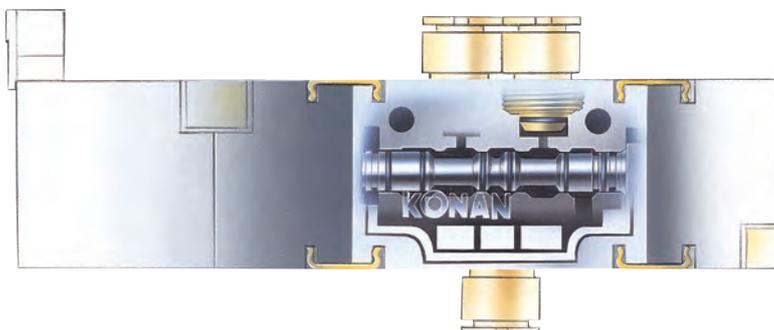
454

Spool valve

A simple spool valve is arranged in a small width rectangular body.

This has made a compact valve small yet capable of large flow rate.

- Port size : 4mm tube fittings, M5 ~ Rc1 / 2
- Operating pressure : 0.2 ~ 1.0 MPa



Solenoid Valves for Fluid Control and Valve Systems

General Handling Instructions and Precautions

Please read the following general handling precautions carefully before ordering solenoid valves for fluid control.

Following information is based on a risk assessment for Konan general purpose solenoid valves used for fluid systems (hereafter referred to as Agvalve(s)Ah). Each section provides information essential for safe operation of valve systems and prevention of risk and damage that may affect operators. Please read carefully.

Safety Precautions

References:

JIS B9702:
Safety of machinery principles of risk assessment
JIS B8370:
Pneumatic fluid power general rules relating to systems



Warning

A valve is operated by switching electric signals to increase / decrease or stop/supply fluid. It is widely used for fluid control systems in general. For safe operation of the valve, care should be taken especially for the following points.

① Selection of solenoid valves

1.1 Applicable fluid

A valve should be used with compressed air only, except for cases where nitrogen gas tank¹⁾ is used for system inspection, emergency measure, or portable pressure source. If highly dry air with dew point of no more than -40°C is to be used, make sure to use the valve with lubrication taking into consideration the dryness measure.

For a general purpose solenoid valve (for liquid and gas fluid) for which air is not specified as one of applicable fluids, do not employ compressed air as a flow media. For anything unclear regarding applicable fluids, feel free to ask our sales personnel in the planning stage.

Note1) Be careful to avoid suffocation of operators and others around the valve system. For a system that uses portable air or nitrogen tank, the High Pressure Gas Safety Law will be applied where fluid pressure exceeds 1 MPa.

1.2 Safety of a valve

A pneumatic system may be exposed to various hazardous environment, including those derived from the system components as well as the condition for use and the system structure. In selecting a valve make sure to take into consideration the valve function as well as safety in installation, adjustment, actual operation, system failure, and disposal of the valve.

1.3 Electrical safety

A solenoid valve is activated by magnetic force (solenoid). Take into consideration the following matters when selecting a valve and electric options.

- 1) Dust-proof/water-proof specification Water-proof indication should follow JIS C0920.
- 2) Sudden shut down of power source (power failure, emergency shutdown, etc.)
- 3) Voltage fluctuation in power source and electrical surge
- 4) Leakage current at PLC (sequencer) power off Konan solenoid valves are not equipped with functions that meet the following conditions. Do not use the valves in these conditions or employ a safe electric distribution.
 - 1) External magnetic field effect
 - 2) Electric current from the relevant control circuit
 - 3) Lightning-induced voltage

1.4 Pilot valve

A compact size pilot valve is widely used in general, as it switches large main valve with a small output. However, a certain inlet pressure is essential for the valve operation. For control of minimal pressure, select a direct-acting type valve. With optional pilot supply (separate pilot piping needed), a pilot valve can be used even when the main valve pressure is zero.

1.5 Back pressure from exhaust port

In some poppet valves, back pressure from the exhaust port may affect the valve operation. There is no problem with the back pressure generated in the silencer set at the exhaust port, but do not force to narrow the exhaust port diameter or connect a long pipe to the port. Details of the effect of back pressure are described in a separate operation manual. For anything unclear feel free to contact our sales personnel.

1.6 Reverse flow

Use a valve complying with the flow direction indicated with arrow mark in the JIS figure of the catalogue and operation manual. Safe operation cannot be guaranteed if the valve is used with reverse pressure or reverse flow. There is no problem with the slow reverse flow exhaustion during maintenance or compressor power off. If valve operation is stopped abnormally, a failure may occur when restarting operation due to the stop position of the valve. If reverse flow is detected at abnormal stop or any trouble at the restart of the valve is concerned, feel free to ask our sales personnel.

1.7 Manual operation

- 1) If there is a possibility that manual operation button of a valve may be pushed unexpectedly, select a valve equipped with protection cover.
- 2) If failure to unlock manual operation of a valve may cause serious danger, select a valve without locking function.

② Solenoid valve installation

Solenoid valves have precise operational functions and are used for applications with versatile conditions and environment. It is therefore sometimes difficult to assume all concerned risks or risk factors when designing a valve. In such cases the valve function and performance may be deteriorated in a period shorter than the maintenance period set by the manufacturer. In order to avoid the risks, install the valve as instructed below.

2.1 Installation site

Install a valve in a place where setting and maintenance is easy. As a valve is often incorporated into an existing main system, consideration for maintenance is sometimes insufficient. Secure enough space for safety of the valve operation.

2.2 Operating procedure

When operating a valve to activate a pneumatic cylinder and other actuators, install the components and complete piping, and then start operation of the actuators with small load and slow speed, gradually adjusting them to rated conditions while confirming no abnormalities or air leakage in the valve and actuators.

2.3 Bursting out of a cylinder

After installation or maintenance, supply air after confirming that a cylinder is in a targeted valve control position. If not in

the position, the cylinder may rapidly shift to the control position. In order to avoid this risk, installation of a slow-start valve at the IN port of the valve is recommended.

Note) (See Section 2.4) When installing a slow-start valve at the IN port of a pilot valve, adjust a bypass valve of the slow-start valve in order to maintain minimal operational pressure of the pilot valve. If the bypass valve diameter is excessively narrowed, the pilot pressure will become less than the minimal operational pressure, which may cause valve malfunction.

Also, when restarting air supply, open a manual valve in a short period of time while checking manometer to secure minimal operational pressure of the pilot valve, and then supply air slowly.

2.4 Securing pilot pressure

Install a pilot valve taking care for the following matters.

- 1) Inlet pressure of a valve should be higher than the minimal operational pressure. Especially if air supply is not enough, pressure fluctuation may occur during the valve operation and pressure may be below the lower limit of the operational pressure.
- 2) If long piping is employed at the inlet of a valve or the pipe diameter is smaller than the port diameter, pressure drop may occur, resulting in the inlet pressure decrease.

Note: One countermeasure is to install a supplementary air tank in front of the inlet port. In order to confirm no decrease in inlet pressure, install a manometer around the port.

- 3) For a manifold type solenoid valve, make sure to connect allowable number of valves only. Simultaneous operation with excess number of valves (more than 3 units in standard) may cause centralized pressure drop at the manifold, decreasing the valve inlet pressure.

Note: For a manifold with two inlet ports, the number of valves can be increased by supplying air from both ports.

2.5 Indication

If a valve nameplate cannot be seen due to installation environment, place an alternative indication near the valve.

2.6 Residual pressure

Compressed air in a pneumatic valve system may not be completely exhausted after the valve power shut down. Residual pressure may cause unintended cylinder operation in the system. A valve should be installed taking into consideration the risks including sudden blowout of residual air.

2.7 Air exhaustion

At an exhaust port of a valve, sonic jet flow may occur, causing noise as well as damage to operator due to the fragments and dusts spread by the jet flow. If any personnel may come closer to the exhaust port, install a silencer to avoid noise and adjust air flow.

2.8 Training

A sufficiently trained person should be responsible for installation and maintenance of a pneumatic system. (Konan provides training for operation and maintenance of pneumatic components. Feel free to contact our sales personnel for details.)

③ Maintenance of solenoid valves

Maintenance should be performed in accordance with the following steps. Feel free to contact our sales personnel for separate maintenance manual.

3.1 Daily inspection

- 1) Drains contained in compressed air may inhibit the valve lubrication. Set an air filter in front of the valve and routinely exhaust drains. actuators.

- 2) During the valve system operation, check the valve visually and acoustically for external abnormalities or noise. Check also the loosening of screws and air leakage from exhaust port and piping joint without exhausting air from the system, and perform periodical inspection as necessary to recover any abnormalities.

3.2 Periodical inspection

Following periodical inspection should be conducted by-annually or annually.

- 1) Overhaul should be performed after pneumatic/electric shut-down and abnormalities recorded and repair conducted as necessary.
- 2) In the 2nd periodical inspection, perform an overhaul of the product, repair or exchange solenoid assAfy, coil, packings, and other components as necessary. However, even before 2 years has passed, the valve that reached the specified durable operation cycle²⁾ should be over hauled and parts exchanged if necessary.

Note2) [Laboratory durable operation cycle]: New Magstar 414 series and heavy duty series solenoid valves: 5 million cycles

Durable operation cycle for each valve is specified in the operation manual or drawing. This cycle is determined based on the Konan standard test results. Inspection interval should be determined referring to the actual installation environment or storage records.

- 3) If a valve is not used for a long time, the valve function may be deteriorated when restarting operation, due to precipitation or effusion of lubricant film. According to the JIS standard, minimal operation frequency of a valve is specified as once in 30 days. Before reaching that date perform periodical test operation or take other measures for preventing the valve deterioration.

3.3 Residual energy

Maintenance requiring actual operation of a system should be performed after pneumatic/electric shut-down and exhaustion of all residual electrical charge and compressed air from the system. Make sure the movable components do not move during the maintenance, and mechanically fix them if necessary for safety. Care should also be taken for components that may drop out during the maintenance operation and components with sharp edges to ensure safety.

3.4 Communication

If multiple persons are involved in the maintenance operation, keep all the personnel informed about the conditions including power-off, completion of residual pressure exhaustion, power-on, and resumption of air supply.

④ Solenoid valve installation site

Use of a valve at the following sites requires compliances with special functional specifications and regulations. Consult our sales personnel in the planning process for anything unclear. thing unclear.

- 1) Operating conditions not within the specified range
- 2) Significant risk for users, properties, or environment is anticipated

Eg: Use in explosive environment³⁾, use for nuclear power plants, vehicles, medical components, components related to the Occupational Health and Safety Law and/or the High Pressure Gas Safety Law, etc.

Note3) : Select Konan explosion-proof solenoid valves for use in general gas explosive environment.

Users Instructions

Followings are comprehensive precautions for operation of a solenoid valve and a system incorporating a valve. Make sure to keep in mind these matters for maintaining safety.

Caution ① **Transport of solenoid valves**

1.1 Weight

For safety of operators, heavy-weight valves and valve units should be transported with the aid of conveyer equipment. Valve weight can be confirmed by referring to Konan Pneumatic Solenoid Valve Catalogue and product drawings. Mini-size valves should be handled with care, as they may collapse by excessive force. Especially make sure not to hold the lead wire when transporting the valves.

1.2 Dropping

During lifting or horizontal transportation of a valve, handle the valve carefully not to drop or damage.

1.3 Dust prevention

Plastic plug is attached to the valve connection ports to prevent dusts and rusts from entering the valve. Do not remove the plug until immediately before piping. If the plug is lost, take a protection measure with alternative cover.

Caution ② **Storage**

2.1 Storage during transport

If a valve is to be installed where it is exposed to wind and rain or other adverse environment, transport the valve to the specified site just before installation. If the valve is to be stored at the installation site by necessity, keep it packed and protect with a sheet cover.

2.2 Storage

A valve should be stored as follows to prevent contamination and material deterioration.

- 1) Avoid high temperature and humidity as well as places with dusts.
- 2) If a valve is to be stored for more than 1 year, keep it packed or provide equivalent protection.
- 3) Long-term storage may result in sticking of packings or other components due to shortage of lubrication. In such cases, conduct pre-conditioning operation of the valve before regular use.
- 4) After a long period of storage, permanent deformation, change of size, or deterioration of packings and other components would be a concern. After such storage period, conduct a valve operation test. If any abnormalities are found, perform an overhaul or exchange deformed/deteriorated components as appropriate

Warning ③ **Surrounding environment**

3.1 Vibration/shock

- 1) Install a valve using hose connection to avoid the place where the valve is exposed to excessive shock or vibration. Care should be taken not to make outlet piping longer, which may affect system response.
- 2) If a valve is to be installed in a place where it is exposed to excessive shock or vibration, set the valve with a vibration isolation table. Ensure the valve is firmly fixed at the setting and connection portions fastened tightly. After start of operation, inspect the connections in a periodical manner to check any loose parts or deformation and re-fasten screws.

3.2 Handling during installation

For safety of operators

Do not ride on a valve and pipes or hang wires on the operational equipment during installation.

3.3 Surrounding environment

Environment surrounding a valve should be considered carefully. Avoid places where the valve is exposed to rain and wind, direct sunlight, salt, corrosive gas, chemical fluids, organic solvents, steam, etc. Corrosion resistance measure can be taken depending on the environment. Feel free to contact our sales personnel for details.

3.4 Working temperature

Use a valve with specified range of ambient temperature and fluid temperature. Care should be taken especially for the following cases.

- 1) Temperature of compressed air around an air compressor may become high, which may cause deterioration of packings or malfunction of the valve.
- 2) Coil life depends on thermal degradation of insulation material. Avoid high temperature environment or continuous energization as much as possible.
- 3) In a place where temperature is close to 0°C, remove moisture in the compressed air with an air dryer. If the dehumidification is not performed, significant amount of moisture may freeze inside the valve to cause malfunction.

Warning ④ **Modification**

Do not modify a solenoid valve. Unexpected risk may arise.

Caution ⑤ **Intermediate stop of a cylinder by control of a solenoid valve**

- 1) A pneumatic cylinder can be stopped intermediately by controlling with a 3-position closed-center type solenoid valve. Due to compressible nature of air, however, precise stop position or retention rigidity of the stop position cannot be secured.
- 2) If the piping area between the speed control valve and the closed-center solenoid valve is large, air shifts from inside the cylinder to the valve pipings even after the valve is closed, thus the stop position shifts. In order to avoid this, install a speed control valve in front of the closed-center valve to minimize piping length.
- 3) As sealing portions inside a valve or cylinder system allow minimal leakage, it is difficult to maintain the intermediate stop position for a long time. If long-term retention of the stop position is necessary, install mechanical retention equipment such as brake, lock, or latching system.

Caution ⑥ **Spray lubrication using a lubricator**

See Konan Solenoid Valve Catalogue if a valve needs lubrication. For valves that need lubrication, set a lubricator at the inlet of the valve and perform spray lubrication.

6.1 Type of lubricating oil

- 1) Use JIS K 2213 (ISO VG32 or VG46) type turbine oil for lubrication using a lubricator.
- 2) Spray volume of a lubricator is determined by the number of oil drops (typically 0.03cm³ per drop or 1.5 to 2.5 drops per 1m³ of air).

6.2 Centralized lubrication

In principle 1 lubricator should be used for 1 valve. Lubricating multiple valves may result in uneven oil supply to each valve or actuator, particularly if there are differences in the operation

frequency, pipe length, size, and installation height of the actuators. By grouping the valves and actuators with similar conditions, centralized lubrication can be achieved.

6.3 Selection of oilless solenoid valve

For control of an oilless actuator, select an oilless solenoid valve. If the valve is not frequently used, lubricated oil may not reach the valve or actuator due to little spray volume.

- 1) Use specified grease for overhaul of an oilless solenoid valve. Reconfirm the type of grease with our sales personnel.
- 2) A greased oilless valve or oilless actuator can be lubricated, but once lubricated, the grease will be exhausted. Although durability is enhanced after the lubrication, continual lubrication will be required.



Reference ⑦ Pneumatic system control

7.1 Sequence control

Follow the below steps for sequence control of an actuator incorporating a pneumatic valve.

- 1) Detect the position.
- 2) Interlock the circuit of the valve that controls other actuators in the system.

7.2 Power failure and pneumatic pressure failure

- 1) In case of power failure or emergency stop during a sequence operation, select normal stop position of the valve so that the cylinder at operation stops or shifts to a safe position. Depending on the type of valve following action may be seen at emergency stop.
 - a) Single-acting return type: Shifts to the start position.
 - b) Double-acting detent (retention) type: Shifts to the final stop position.
 - c) Closed-center type: Stops at the current position.
- 2) If operation is stopped in the middle of sequence and restarting operation from the stopped position may cause any trouble, manually control each actuator to return to the start position. Indicate procedure to recover operation.
- 3) If operation is stopped in the middle of sequence and air inside the system exhausted, a cylinder piston may drop due to gravity or it may rapidly shift at the next air supply to damage operator or surrounding equipment. Make sure to return the piston to the start position before exhausting air from the system.
- 4) In order to complete a cycle operation even in case of pressure failure, reserve sufficient amount of pneumatic pressure in an air tank.



Warning ⑧ Residual pressure exhaustion

In a system circuit using a check valve (non-return valve), a pilot check valve, and/or a closed center solenoid valve, exhaust residual pressure separately or indicate warnings for residual pressure, as air may be contained even the system is not in operation.

Indicate the manual type valve for residual pressure exhaustion in the system circuit drawing.



Reference ⑨ Circuit and piping

9.1 Pressure drop

In a pneumatic control system employing long pipes at the end or entrance of the system, sufficient pressure may not be supplied due to pressure drop. Piping thus should be designed properly, or supplementary air tank should be installed to secure supply pressure if a valve is operated intermittently.

9.2 Air filtration

Air supplied to a valve should be filtrated by a filter with nominal filtration rating of no more than 40 mm to remove solid contaminants. Exhaust liquid drain or oil through the filter or drain separator after sufficient cooling of the air.

Exposure to contaminated, high temperature compressed air may deteriorate packings or other components, making the valve life shorter.

9.3 Piping

- 1) Use galvanized pipe for steel tube piping and remove dusts after screwing.
- 2) Before connection, clean the pipes by air flushing or washing to remove internal dusts, moisture, and oil.
- 3) If a seal tape is used for screwing, wrap the tape around twice or three times in a direction opposite to the screwing direction, leaving 1.5 to 2 threads from the screw edge.
- 4) When screwing pipes and joints into a valve, use an appropriate size of wrench and fasten the pipes and joints to the extent not causing air leakage. Forceful screwing may result in cracking of the valve connection port or leakage/malfunction due to contamination with fragments of sealing materials.
- 5) In case of 6A to 25A (Rc1/8 to 1) size pipes or joints, 4 to 5 threads should be screwed. An exercise for seal tape wrapping and screwing before actual work is recommended.
- 6) A valve (especially large-size valve) should be fixed not only with the piping but also with supporting components. For some mini-size solenoid valves with steel tube piping, supporting components may be used for the piping portion. In this case sufficiently support around the valve with piping clamp and other components.



Caution ⑩ Electrical circuit and piping

- 1) Reconfirm that the voltage and current (AC or DC) of power source and the valve to be used are identical.
- 2) For DC solenoid, check the polarity of the connection terminal to avoid improper connection.
- 3) For a double solenoid valve with common terminal, make sure not to perform improper common connection.
- 4) If TRIAC is used for the AC output of the PLC (sequencer), leakage current at power shut down may affect action of solenoid or indicator lamp. In such case submit the PLC output specification to the PLC manufacturer or Konan sales personnel to discuss about a method to decrease leakage current.
- 5) Power surge due to electromagnetic induction at solenoid power off may significantly shorten the operating life of junction on the electrical circuit. For Konan solenoid valves without surge absorber, consult our sales personnel for a method to connect surge absorber.
- 6) For lead wire connection, wiring should be conducted using appropriate connecting terminal while keeping the wire loose.



Caution ⑪ Special valves

For valves with special specifications like below, consult our sales personnel before ordering regarding the conditions for use.

- 1) Use with carbon gas or nitrogen gas
- 2) Use under conditions with high/low temperature or high radiant heat
- 3) Use at a place with ozone or salt
- 4) Use in explosive environment

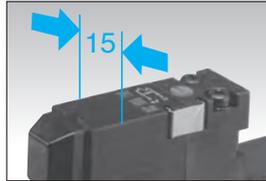


Warning ⑫ Disposal

- 1) Do not incinerate a valve for disposal. It may explode or emit poisonous gas.
- 2) Check the material of each component of a valve with catalogue or operation manual for segregation disposal. Konan solenoid valves do not include materials indisposable as general industrial waste.

Lower electric power consumption pilot valves

Fifteen millimeters in width, the pilot valves for NEW MAGSTAR consumes only a lower electric power(AC: 2W, DC: 3W). Also, it can be directly connected with command units such as CPUs and programmable controllers.



Global interchangeability

The dimensions of mounting surface of gasket-connected type (Model 414 or 416) adopt ISO 5599/1 and JIS B 8375 standards. This ensures international interchangeability.

Enough to withstand adverse situations Heavy duty models

The valve of gasket-connected type (Model 414 or 416) is wholly covered with a die cast case and meets heavy duty specification. In the case of use outdoors, please contact us.

Splendid maintenance characteristics

Gasket-connection type, models **414** and **416**

The main body and the pilot valve can be exchanged without removing piping and wiring. It is not necessary to remove them from the sub-plate when the valve type and the voltage need to be changed.

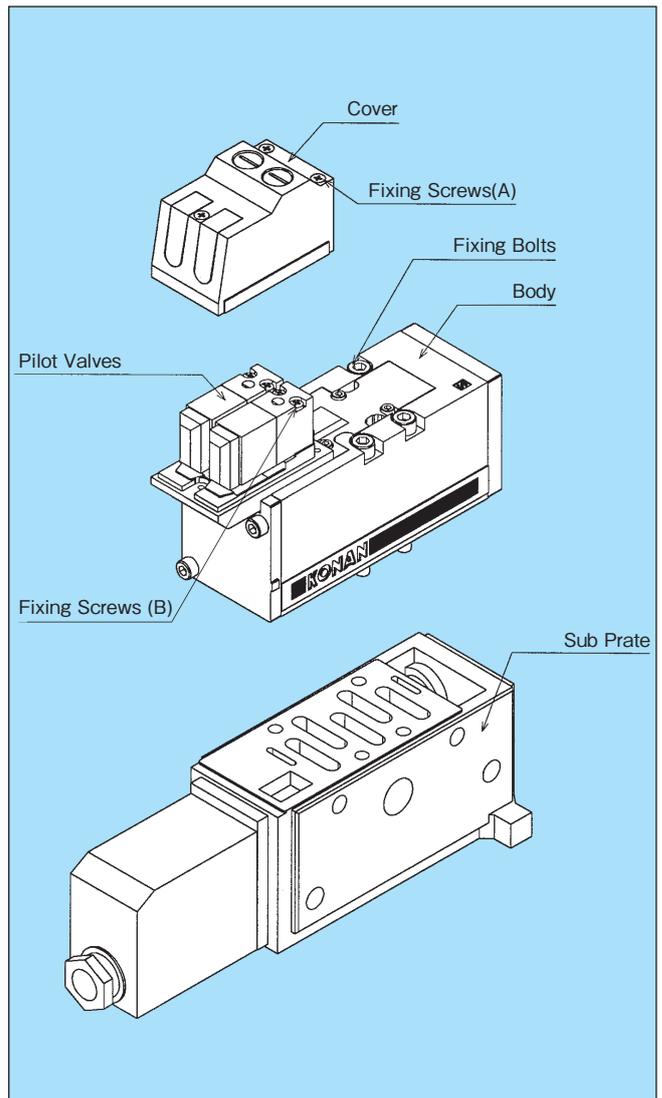
1. How to Exchange of Pilot Valve

Loosen Fixing screws(A), remove a Cover.

Loosen Fixing screws(B) and exchange it for a new one.

2. How to Exchange of Body

Loosen Fixing Bolts, remove a Body and exchange it for a new one.



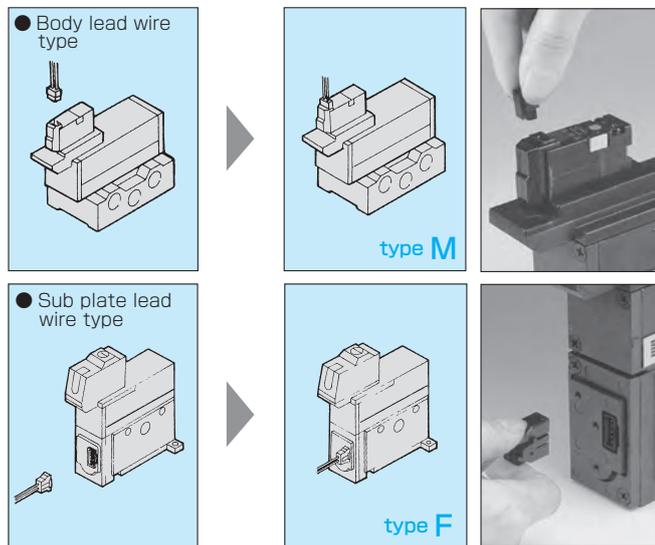
Great variety of wiring connection

Gasket-connection type, models 414 and 416

Even double pilot type valves are featured with a superb workability that wiring is completed only with one connection.

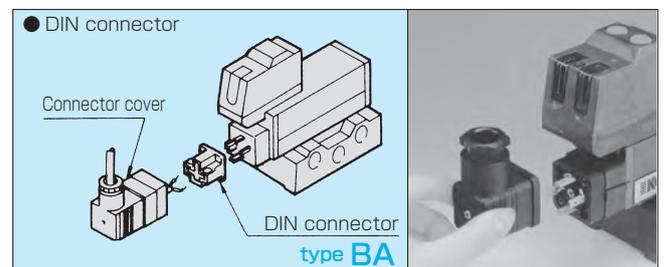
Lead wire type

- Adopts one step wiring method, very advantageous in maintenance.
- Includes body lead type, wiring direct to the pilot valve, and mount lead type, wiring to the mount.



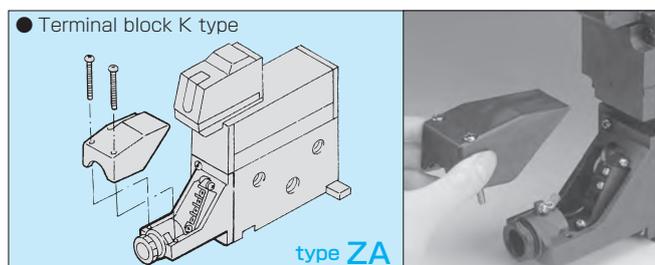
DIN connector type

- This method is provided with high generality equipping a DIN connector directly on the valve body.



Terminal block K type

- This is the KONAN's unique wiring method strong to vibration, the most suitable for cases utilizing external wiring or requiring a long lead wire.
- The block of K type is equipped with a solid cover of aluminium die casting as standard.

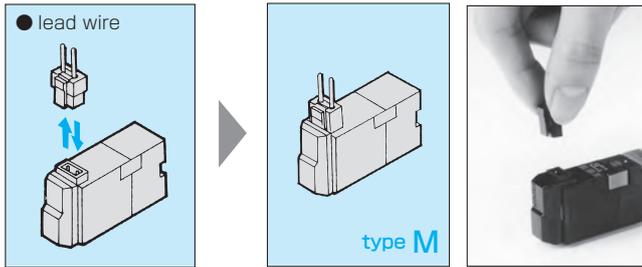


Features

Direct piping type, models 454

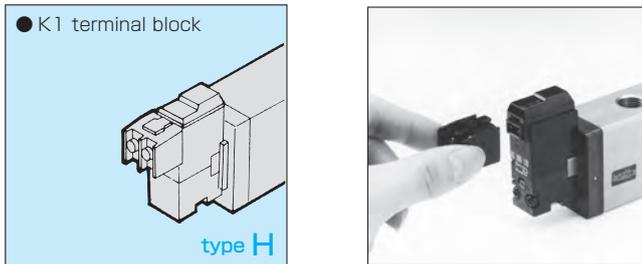
Lead wire type

- Adopts one step connecting/disconnecting construction.



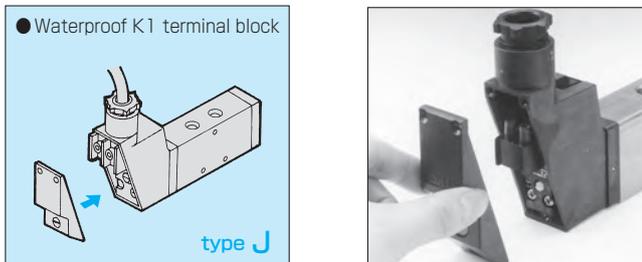
Terminal block K1 type

- Similarly to block K type of the gasket-connected valve, this method is most suitable for cases utilizing external wiring or requiring a long lead wire.



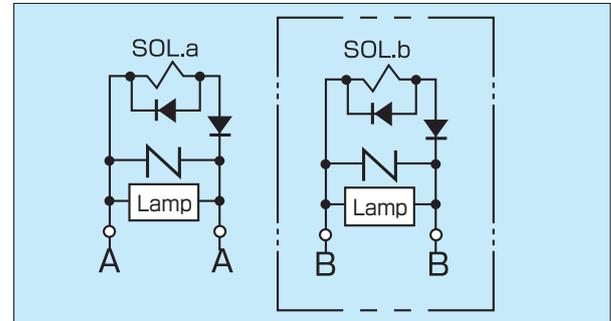
Waterproof terminal block K1 type

- Wiring connection of the terminal block K1 type plus a waterproof cover of aluminium die casting.
 - The waterproof specification is equivalent to Protection Class IP65.
- In the case of use outdoors, please contact us.



Connection

- Lead wire/K1 terminal block/
Waterproof K1 terminal block/K terminal block

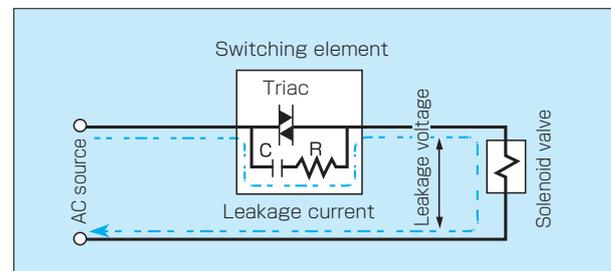


- The circuit within the unshaded area corresponds to the case of double solenoid valve.
- No diode is used in the product of DC specification.
- No polarity is designated for the product of DC specification.

Notes

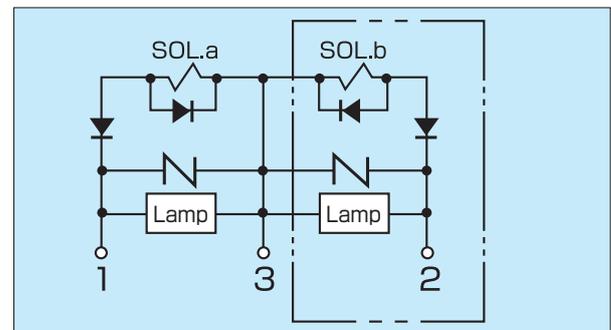
On leakage voltage(leakage current).

- Be notified that, in case when a C-R element is used for protection of the switching element against surge voltage, increase of leakage voltage may cause malfunction of the solenoid valve because leakage current runs through the C-R element(in devices such as a programmable controller).



- Be careful to make the residual leakage voltage, either AC or DC, not over 10%.

- DIN connector type



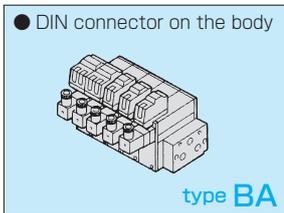
Replete manifold (Combined type) solenoid valve

Gasket-connection type, models 414 and 416

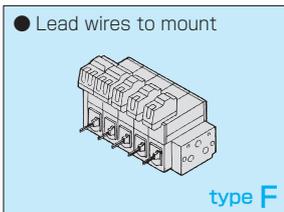
Manifold type can be maximum 10 combinations. And we add the collective wiring and unified exhaust manifold type on our standard in addition to individual wiring and unified exhaust.

Individual wiring(Unified exhaust)

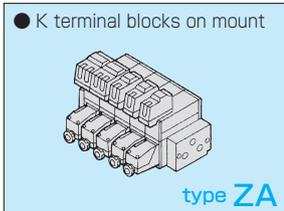
- DIN connector on the body



- Lead wires to mount

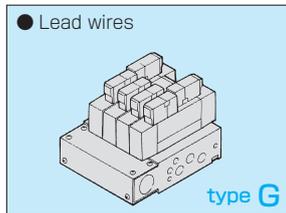


- K terminal blocks on mount

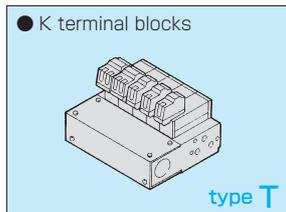


Collective wiring(Unified exhaust)

- Lead wires

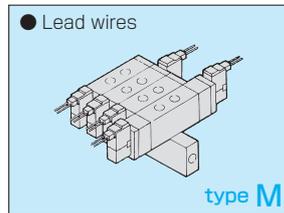


- K terminal blocks

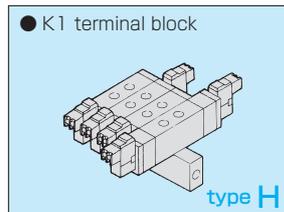


Individual exhaust

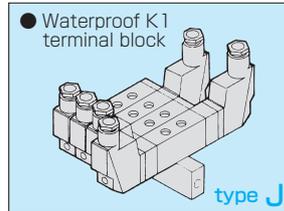
- Lead wires



- K1 terminal block

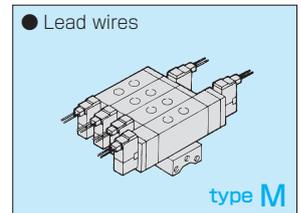


- Waterproof K1 terminal block

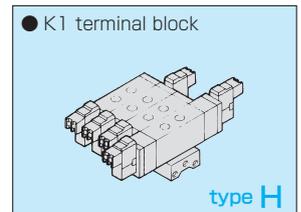


Unified exhaust

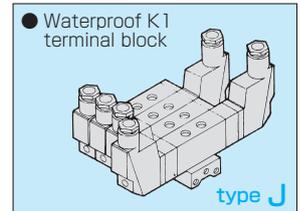
- Lead wires



- K1 terminal block



- Waterproof K1 terminal block



Direct piping type, models 454

Using non-subplate type solenoid valves, manifolds(valve combinations) are available up to 20 valve combinations. Featured with multi-function and multi-application, the quick-mount manifolds include two types. One is the individual exhaust type in which valves can control the actuator speed individually. The other is the unified exhaust type with which control is easy due to the common exhaust.

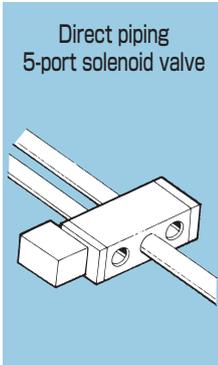
List of NEW MAGSTAR Types

Basic type

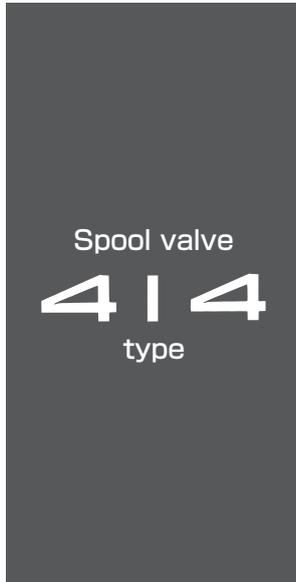
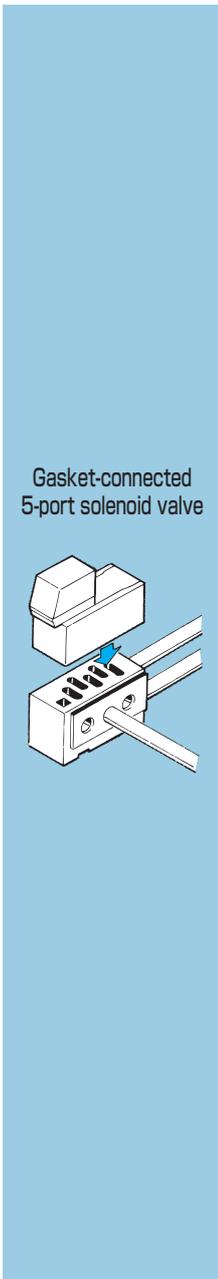
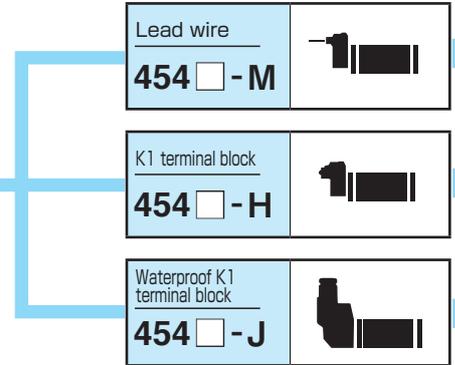
Valve construction

Valve positions, type and JIS symbol

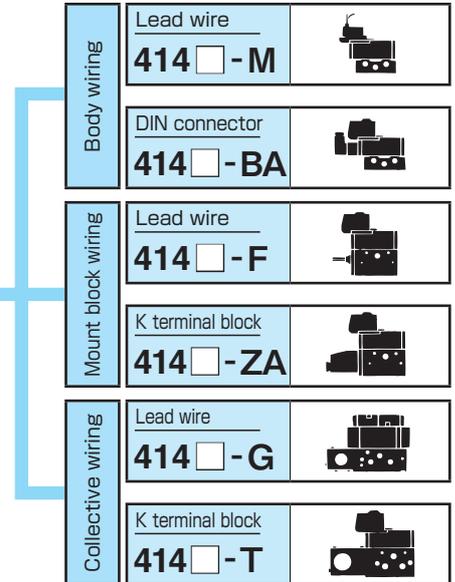
Wiring connection



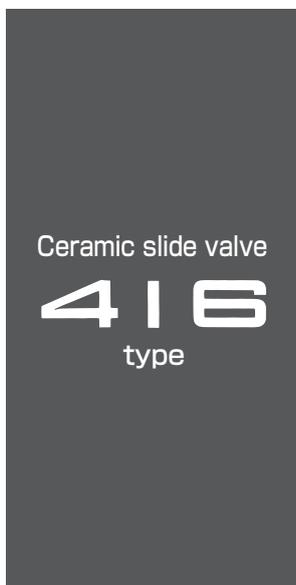
2 positions	Return	454S	
	Hold	454D	
3 positions	Closed center	454H	
	Center open to exhaust	454J	
	Center open to pressure	454I	



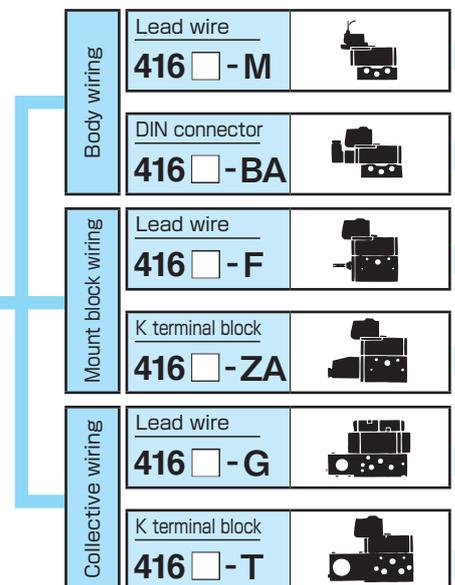
2 positions	Return	414S	
	Hold	414D	
3 positions	Closed center	414H	
	Center open to exhaust	414J	
	Center open to pressure	414I	



● Applicable only to manifolds



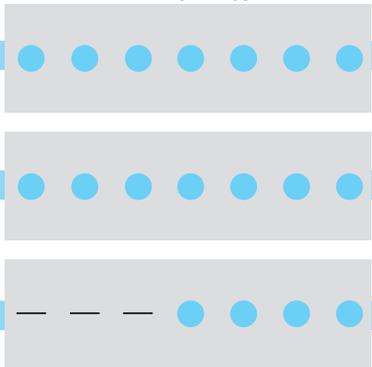
2 positions	Return	416S	
	Hold	416D	
3 positions	Closed center	416H	
	Center open to exhaust	416J	
	Center open to pressure	416I	



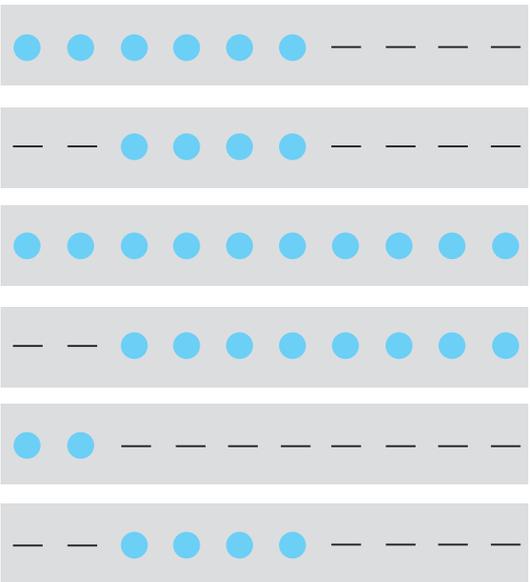
● Applicable only to manifolds

Valve symbol, port size (The colored mark showing availability)

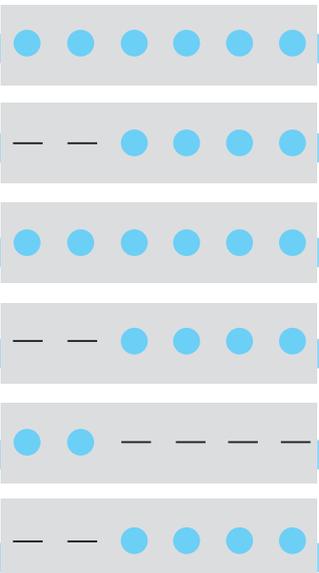
B04		B09		B20		B40	
4mm	M5	Rc1/8	1/4	3/8	3/8	1/2	
04FC	04MC	091C	202C	203C	403C	404C	
			202K	203K			



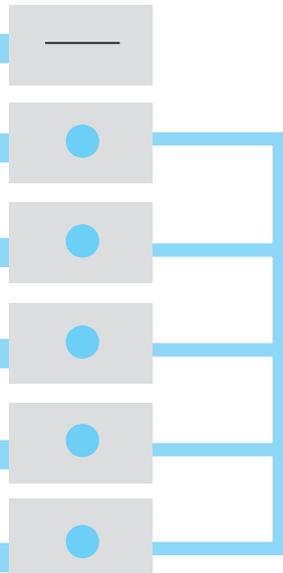
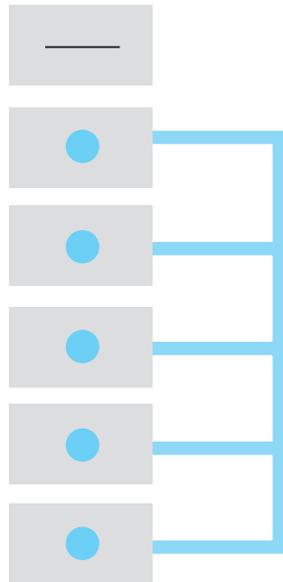
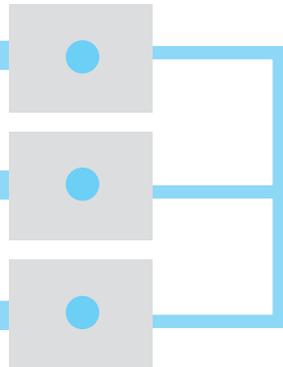
B20		B30		B60		B110		B190	
Rc1/8	1/4	1/4	3/8	3/8	1/2	1/2	3/4	3/4	1
201C	202C	302C	303C	603C	604C	A14C	A16C	A96C	A91C



B20		B30		B60	
Rc1/8	1/4	1/4	3/8	3/8	1/2
201C	202C	302C	303C	603C	604C



Manifold



Manifold type

Individual exhaust

454 C - - C

454 K - - C

● Max.10 valve combination for B20 and B40

Collective exhaust

454 C - - C

454 K - - C

● Max.10 valve combination for B20 and B40

Collective exhaust

414 C - -B

414 E - -B

● Max.6 valve combination for B110 and B190;
Max.10 for B20;and B30, B60

Collective exhaust

416 C - -B

416 E - -B

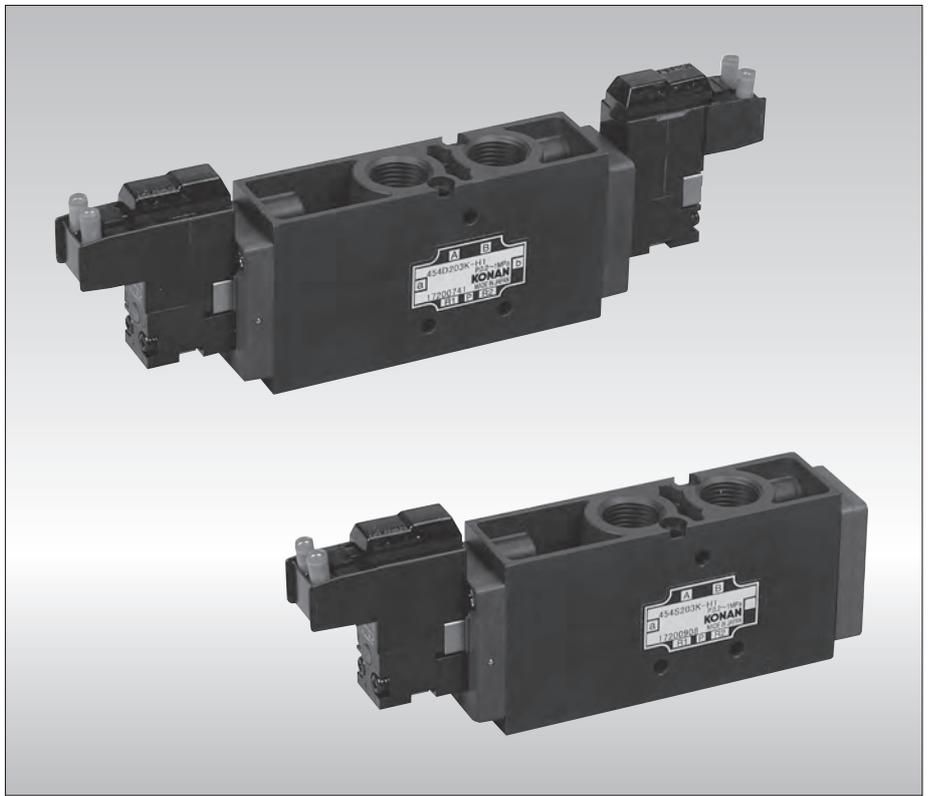
● Max.10 valve combination for B20;and B30, B60

5 NEW MAGSTAR

Port Solenoid Valve

Direct piping type

Spool valve
454
 With 4mm fitting Rc1/2



● See p.25 for manifold type.

Specification

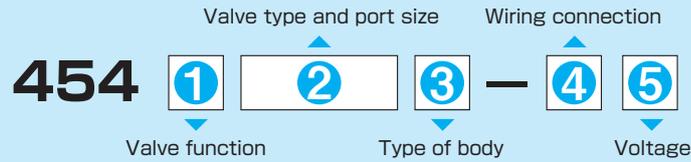
Type symbol	Return	454S 04FC	454S 04MC	454S 091C	454S 202K	454S 203K	454S 403C	454S 404C
	Hold	454D 04FC	454D 04MC	454D 091C	454D 202K	454D 203K	454D 403C	454D 404C
	Closed center	454H 04FC	454H 04MC	454H 091C	454H 202C	454H 203C	454H 403C	454H 404C
	Center open to exhaust	454J 04FC	454J 04MC	454J 091C	454J 202C	454J 203C	454J 403C	454J 404C
	Center open to pressure	454I 04FC	454I 04MC	454I 091C	454I 202C	454I 203C	454I 403C	454I 404C
Body type		B 04		B 09	B 20		B 40	
Port size		4mm One-step fitting	M5	Rc 1/8	Rc 1/4	Rc 3/8		Rc 1/2
Effective sectional area		4 mm ²		9 mm ²	22 mm ²		40 mm ²	
Operating pressure		0.2~1.0 MP a						
Proof pressure		1.5 MP a						
Operating temperature		-5~50°C (Remove moisture perfectly from the fluid to prevent freezing when used at 5°C or lower.)						
Solenoid	Allowable voltage fluctuation	± 1.0% of applicable voltage						
	Temperature rise	Max. 60						
	Insulation class	Class B						
	Power consumption	AC : 2W / DC : 3W						
※ Response time		0.02s (0.035s)	0.02s	0.045s			0.06s	
Performanse frequency		MAX. 4 cycles/s. 1 cycle/mon.						
Mass		Refer to the page of outside dimensions drawings						
Applicable cylinder size(for reference)		φ 32以下		φ 32~100	φ 80~140		φ 125~180	

● For specifications other than those listed above, please contact us.

Note) * mark: Response time in() corresponds to the case with the solenoid set to off in return(S).

The value accompanying no () value indicates that the time is the same irrespective of the return(S) solenoid set to off or on.

Model code



①, ②, ③ and ④ is ordering in four items set.

① Valve function

Valve type	JIS symbol	Codes
2 positions	Return 	S
	Hold 	D

② Valve type and port size ③ Type of body ④ Wiring connection

Valve type	Port Size	Codes			Lead wire 	K1 terminal block 	Waterproof K1 terminal block
		②	③	④			
B 04	With 4mm fitting	04F	C	M	H	J	
	M5	04M					
B 09	Rc 1/8	091	K	M	H	J	
B 20	Rc 1/4	202					
		Rc 3/8	203				
B 40	Rc 3/8	403	C	M	H	J	
	Rc 1/2	404					

Valve type	JIS symbol	Codes
3 positions	Closed center 	H
	Center open to exhaust 	J
	Center open to pressure 	I

Valve type	Port Size	②	③	④		
B 04	With 4mm fitting	04F	C	M	H	J
	M5	04M				
B 09	Rc 1/8	091	C	M	H	J
B 20	Rc 1/4	202				
		Rc 3/8	203			
B 40	Rc 3/8	403	C	M	H	J
	Rc 1/2	404				

● Indicator lamp is equipped as standard.

⑤ Voltage

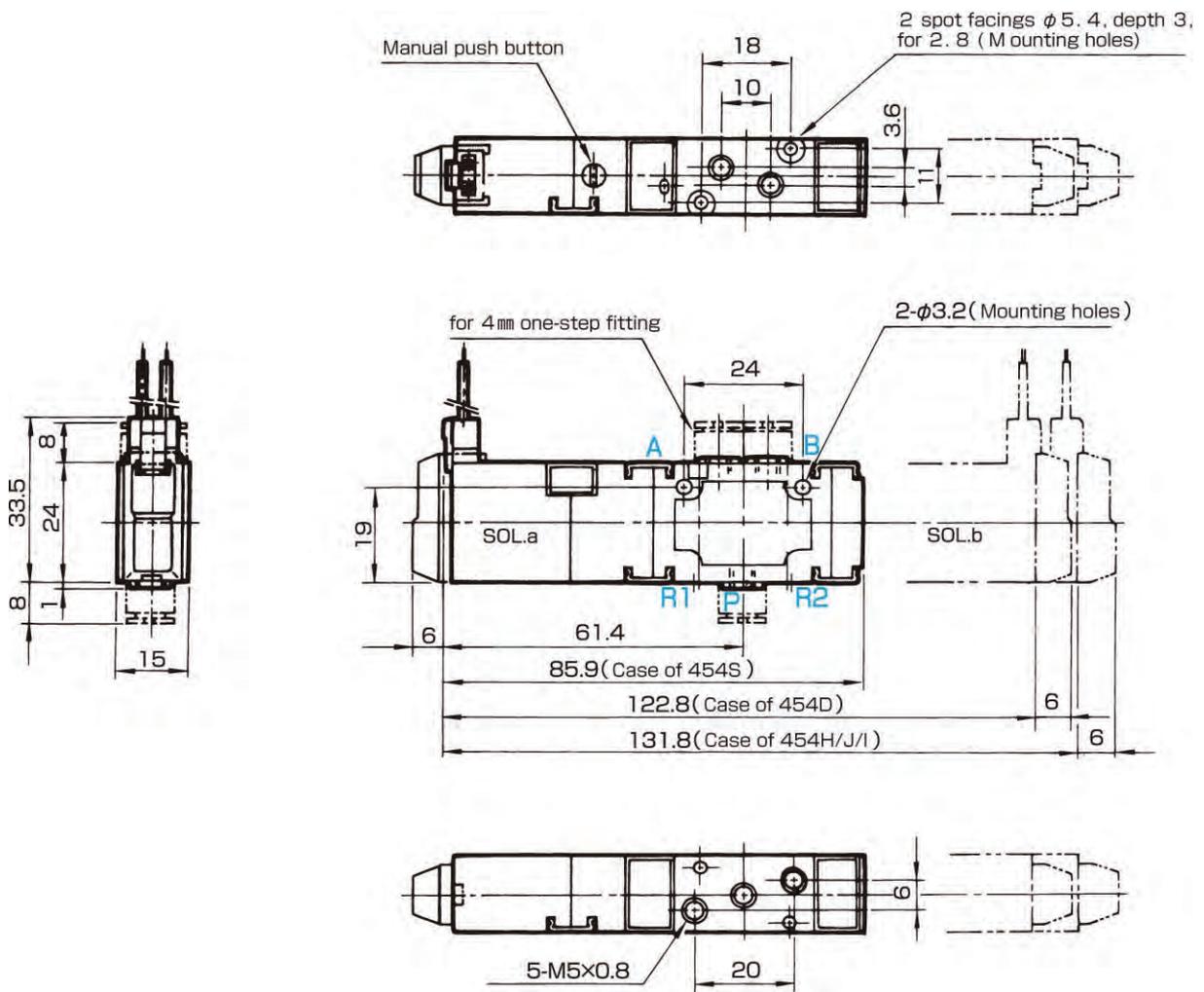
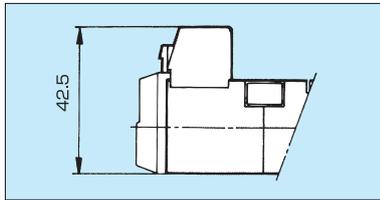
Voltage	Codes
AC 100 (110) V 50/60 Hz	1
AC 200 (220) V 50/60 Hz	3
DC 24V	5

- For other voltage, please contact vs.
- The solenoid of DC specifications have not polarity.
- If the valve type ② is B04orB09, the code is only for 1or5.

Outside dimensions

└ 454 □ 04 □ C - M / H (Lead wire/K 1 terminal block)

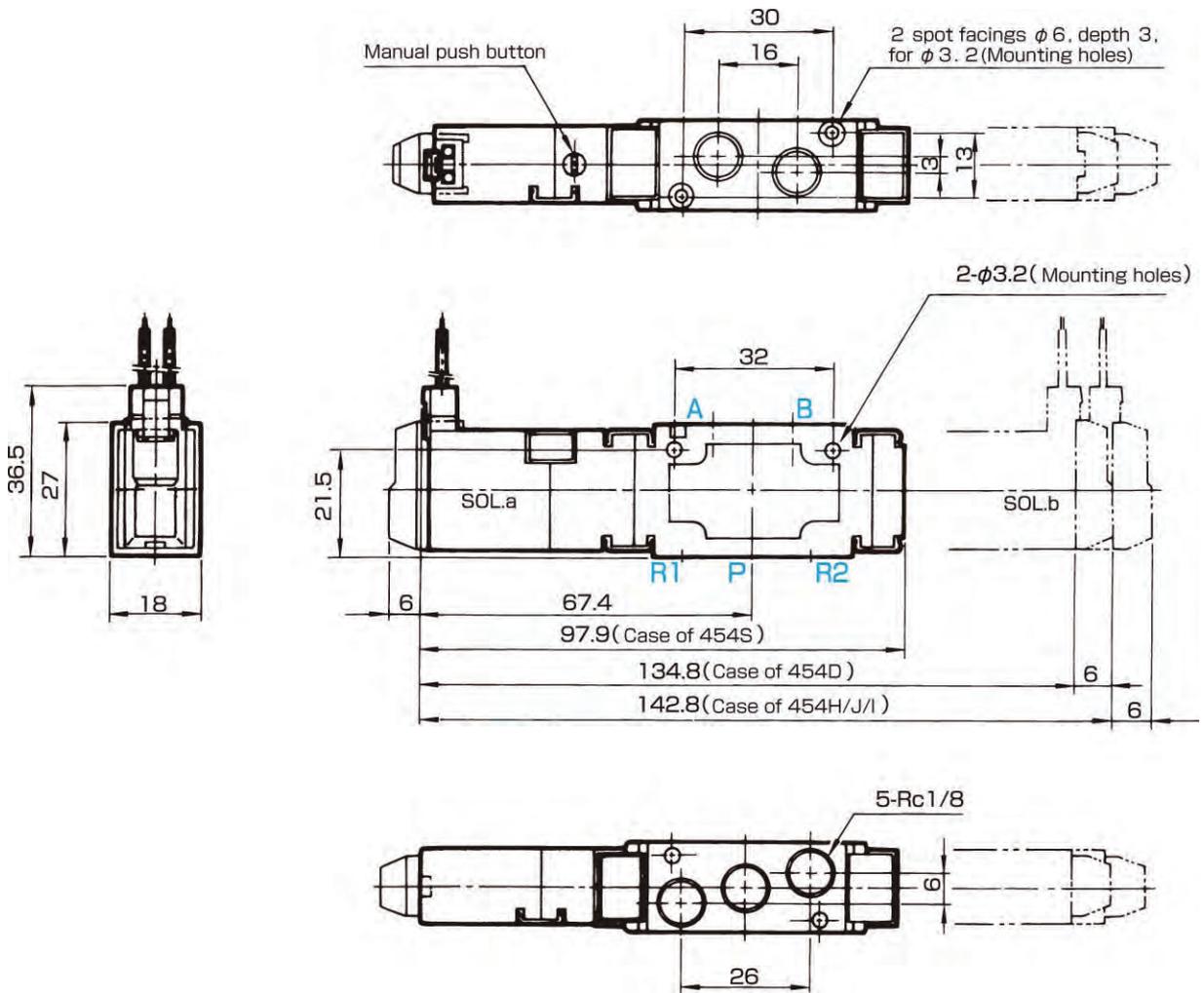
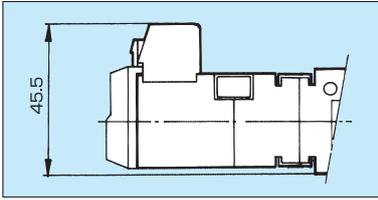
< Case of K1 terminal block >



■ Mass	Unit : kg
Return	0.08
Hold	0.13
Closed center Center open to exhaust Center open to pressure	0.14

454 □ 091 C-M/H (Lead wire/K 1 terminal block)

< Case of K1 terminal block >

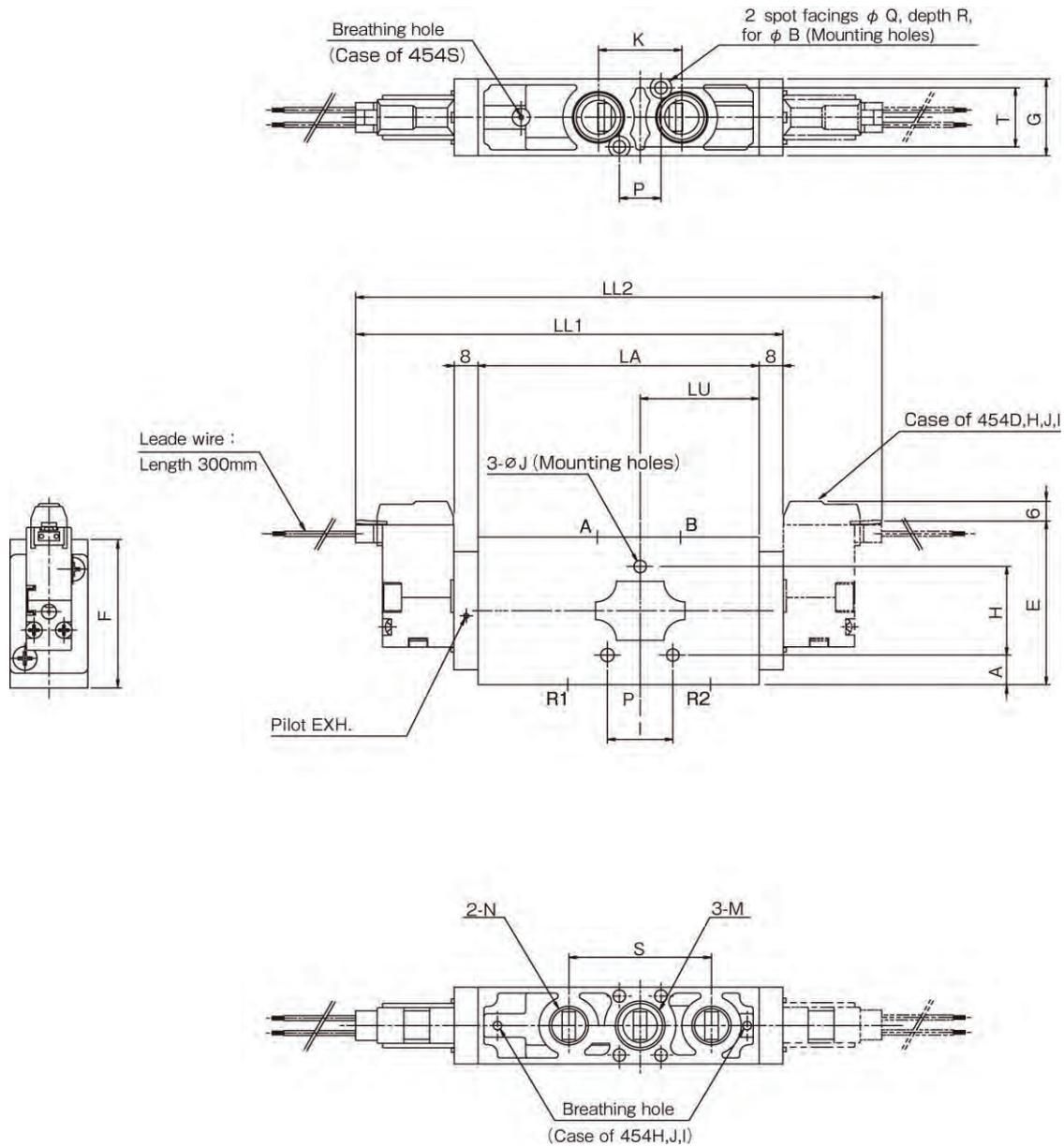


■ Mass		Unit : kg
Return		0.1
Hold		0.14
Closed center		0.15
Center open to exhaust		
Center open to pressure		

Outside dimensions

- 454 □ 20 □ C / K - M / H / J (Lead wire/K1 terminal block/waterproof K 1 terminal block)
- 454 □ 40 □ C - M / H / J (Lead wire/K1 terminal block/waterproof K 1 terminal block)

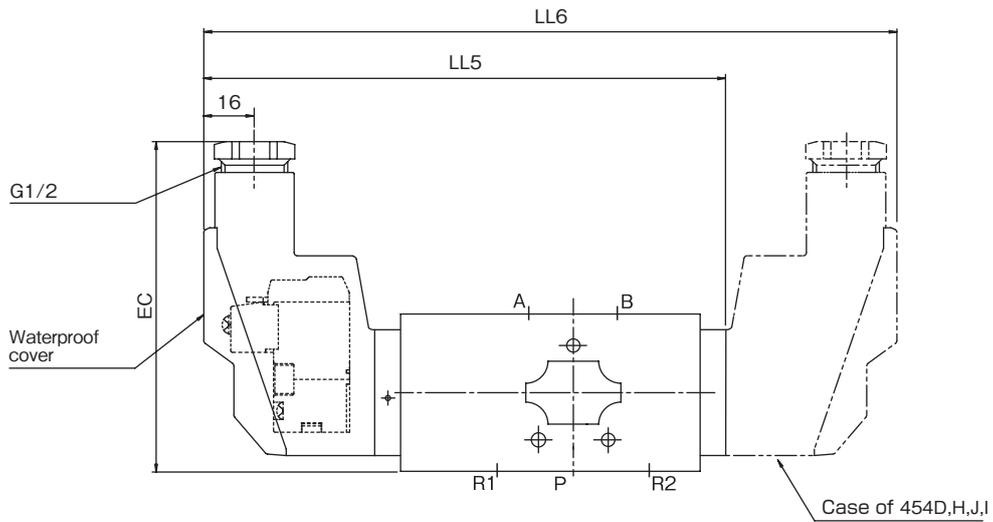
< Case of Lead wire >



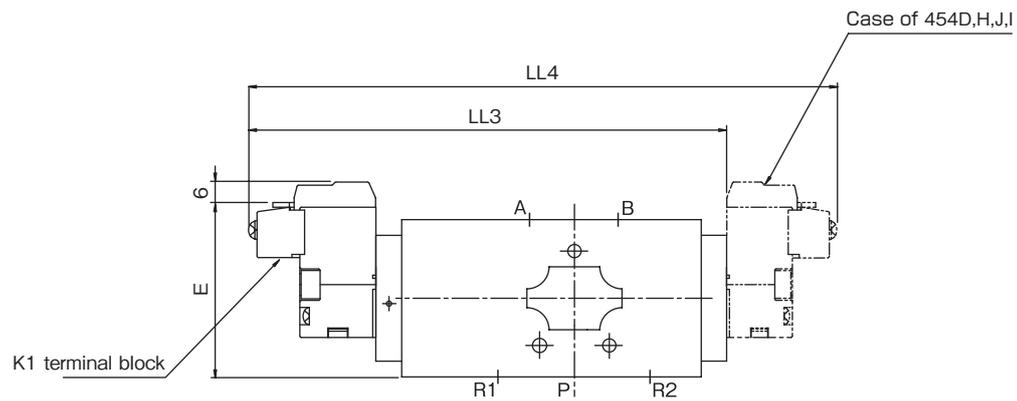
Unit : mm

Type symbol	M	N	LA	LL1	LL2	F	E	G	H	I	J	K	S	LU	B	Q	R	P	A	T	質量 (kg)	
454S202K	Rc1/4	Rc1/4	94.5	143.5	—	50	56	26	30	22	4.2	28	48	40	4.2	7.2	3	14	10	20	0.4	
454S203K	Rc3/8			—	176.5																0.5	
454D202K	Rc1/4		105	—	187	40	51	—	—	—	—	—	—	52.5	—	—	—	—	5	—	—	0.8
454D203K	Rc3/8																					0.5
454H/J/1202C	Rc1/4	Rc3/8	110	160	—	56	57	36	40	30	5.3	36	68	55	5.3	9.5	4	14	8	28	0.75	
454S403C	Rc3/8			—	192																0.9	
454S404C	Rc1/2		Rc1/2	135	—	217	—	—	—	—	—	—	—	67.5	—	—	—	—	—	—	—	1.3
454D403C	Rc3/8		Rc3/8																			0.9
454D404C	Rc1/2	Rc1/2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
454H/J/1403C	Rc3/8	Rc3/8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
454H/J/1404C	Rc1/2	Rc1/2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

< Case of waterproof K1 terminal block >



< Case of K1 terminal block >



Unit : mm

Type symbol	LL3	LL4	LL5	LL6	E	EC
454S202K	148	—	164.5	—	56	105
454S203K	—	185.5	—	218.5		
454D202K	—	197	—	229	51	100
454H/J/1202C	—	—	—	—	57	107
454S403C	164	—	180	—		
454S404C	—	202	—	234	57	107
454D403C	—	227	—	259		
454H/J/1403C	—	—	—	—	57	107
454D404C	—	—	—	—		

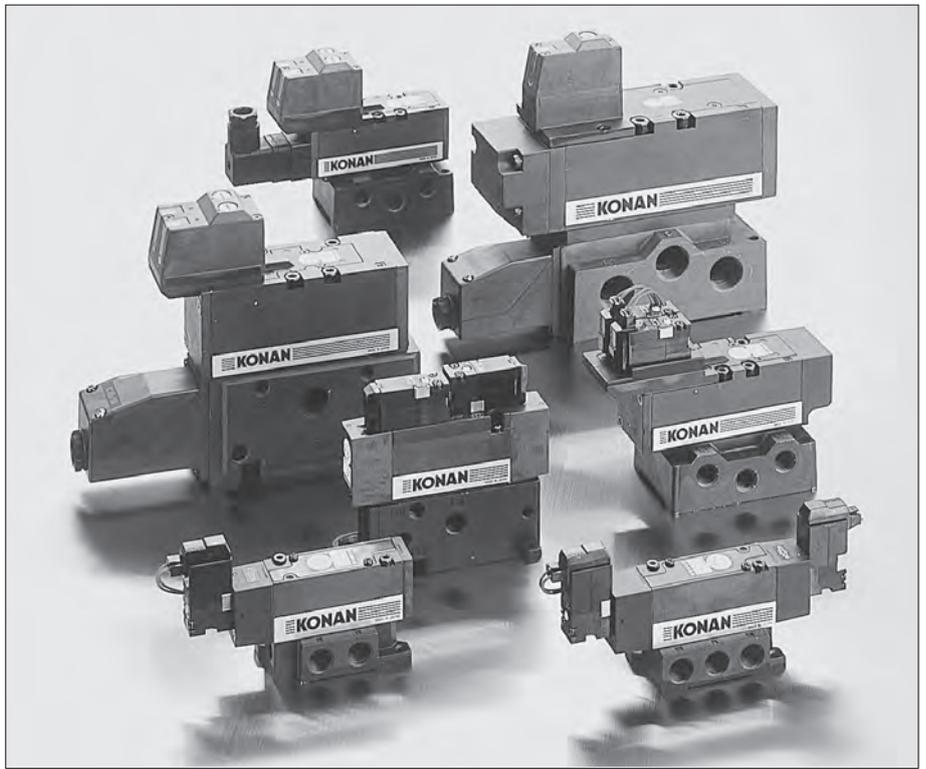
5 NEW MAGSTAR

Port Solenoid Valve

Gasket-connected type

Spool valve
414
Rc 1/8~1

Slide valve
416
Rc 1/8~1/2



● See p33, for manifold type.

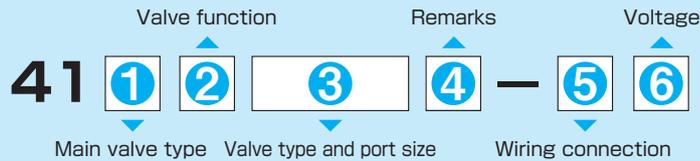
Specification

Type symbol	414 type	Return	41□S201□	41□S202□	41□S302□	41□S303□	41□S603□	41□S604□	414SA14C	414SA16C	414SA96C	414SA91C
		Hold	41□D201C	41□D202C	41□D302C	41□D303C	41□D603C	41□D604C	414DA14C	414DA16C	414DA96C	414DA91C
416 type	Closed center	41□H201C	41□H202C	41□H302C	41□H303C	41□H603C	41□H604C	414HA14C	414HA16C	414HA96C	414HA91C	
	Center open to exhaust	41□J201C	41□J202C	41□J302C	41□J303C	41□J603C	41□J604C	414JA14C	414JA16C	414JA96C	414JA91C	
	Center open to pressure	41□I201C	41□I202C	41□I302C	41□I303C	41□I603C	41□I604C	414IA14C	414IA16C	414IA96C	414IA91C	
Body type			B 20		B 30		B 60		B 110		B 190	
Port size			Rc 1/8	Rc 1/4		Rc 3/8		Rc 1/2		Rc 3/4		Rc 1
Effective sectional area	414 type		16mm ²	20mm ²	25mm ²	30mm ²	51mm ²	60mm ²	94mm ²	110mm ²	160mm ²	190mm ²
	416 S.D		16mm ²	17mm ²	20mm ²	25mm ²	43mm ²	51mm ²	—	—	—	—
	416 H.J.I		13mm ²	14mm ²	16mm ²	18mm ²	40mm ²	45mm ²	—	—	—	—
Operating pressure	414 type	0.2~1.0MP a										
	416 type	0.12~1.0MP a										
Proof pressure		1.5MP a										
Operating temperature	414 type	-5~50°C		Remove moisture perfectly from the fluid to prevent freezing when used at 5°C or lower.								
	416 type	-20~60°C										
Solenoid	Allowable voltage fluctuation	±:10% of applicable voltage										
	Temperature rise	Max. 60°C										
	Insulation class	Class B										
	Power consumption	AC : 2W / DC : 3W										
※ Response time	414 type	0.03s (0.06s)	0.05s (0.1s)		0.08s (0.12s)		0.05s		0.08s			
	416 type	0.05s (0.08s)		0.08s		0.14s		—		—		
Performance frequency	414 type	Max. 4 cycle/s ; Min. 1 cycle/mon.										
	416 type	Max. 4 cycle/s ; Min. 1 cycle/3 mon.										
Mass		0.6kg	1.3kg		2.2kg		4.0kg		6.0kg			
Applicable cylinder size (for reference)		φ63~125		φ100~160		φ140~200		φ160~250		φ200~500		

● For specifications other than those listed above, please contact us.

Note) * mark: Response time in () corresponds to the case with the solenoid set to off in return(S).The value accompanying no () value indicates that the time is the same irrespective of the return (S) solenoid set to off or on.

Model code



1 Main valve type

Main valve constructions	Codes
Spool valve	4
Ceramic slide valve	6

2 Valve function type

Valve type	JIS symbol	Codes
2 positions	Return 	S
	Hold 	D
3 positions	Closed center 	H
	Center open to exhaust 	J
	Center open to pressure 	I

3 Valve type and port size 5 Wiring connection

Valve type	Port Size	Codes	Body wiring		Mount wiring	
			Lead wire	DIN connector	Lead wire	Kterminal block
		5				
B 20	Rc 1/8	201	● ●	—	● ●	—
	Rc 1/4	202	● ●	—	● ●	—
B 30	Rc 1/4	302	● ●	● ●	● ●	● ●
	Rc 3/8	303	● ●	● ●	● ●	● ●
B 60	Rc 3/8	603	● ●	● ●	● ●	● ●
	Rc 1/2	604	● ●	● ●	● ●	● ●
B 110	Rc 1/2	A14	—	—	●	●
	Rc 3/4	A16	—	—	●	●
B 190	Rc 3/4	A96	—	—	●	●
	Rc 1	A91	—	—	●	●

Notes

- Figure ● shows 416 series
Figure ● shows 414 series
- Body wiring type with no ● ● figure are out of manufacture.
- Indicator lamp is equipped as standard.

4 Remarks

Code No.	記入文字
416S 20, 30, 60	E
Others	C

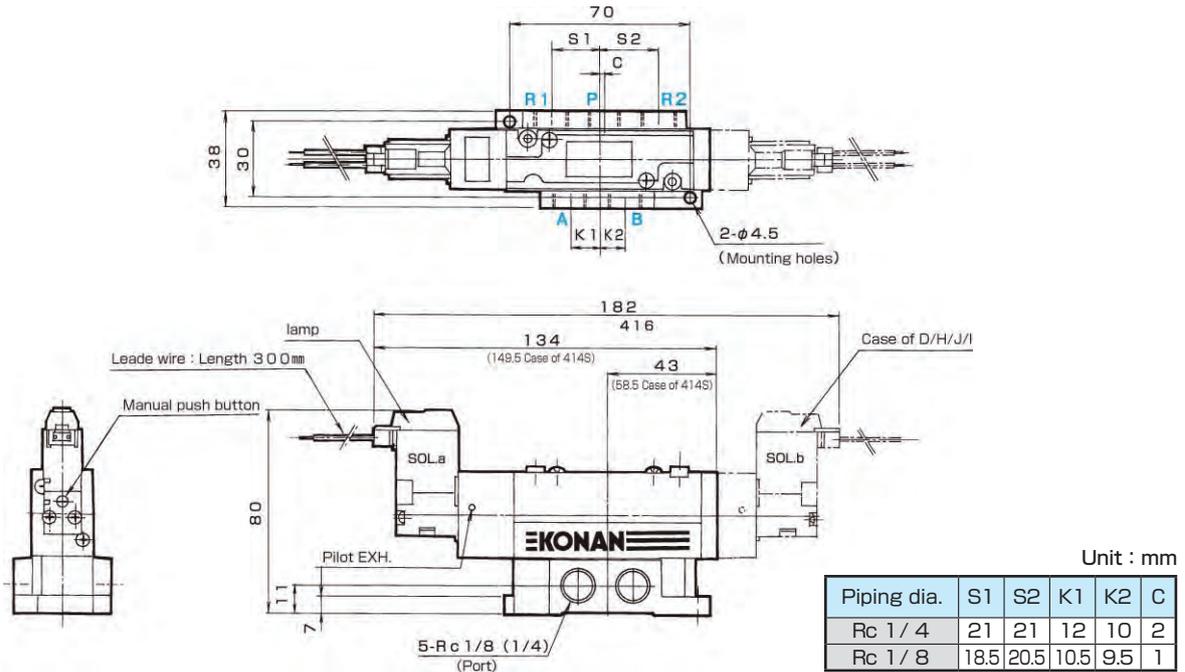
6 Voltage

Voltage	Codes
AC 100 (110) V 50/60 Hz	1
AC 200 (220) V 50/60 Hz	3
DC 24V	5
DC 100V	7
DC 110V	9

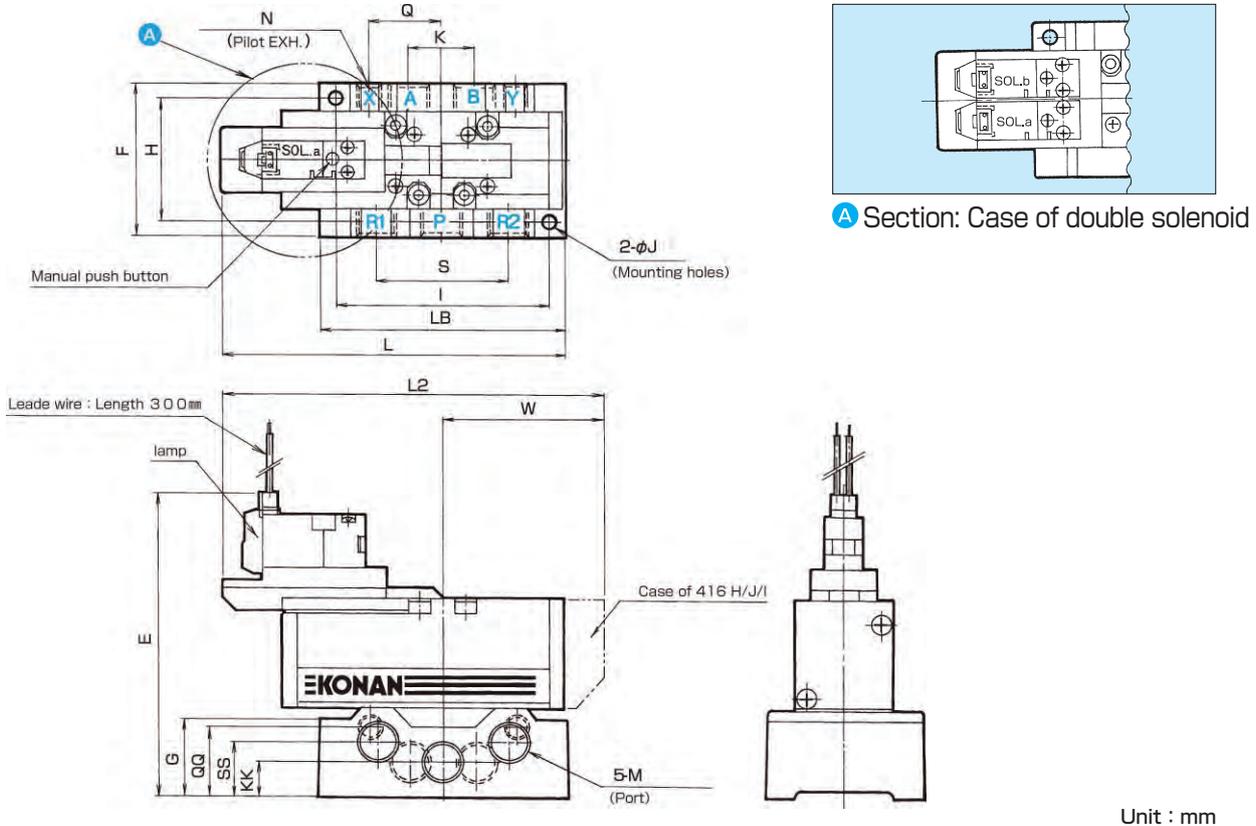
- Other voltages are available.
- The solenoid of DC specifications have not polarity.
Please contact us for details.

Outside dimensions

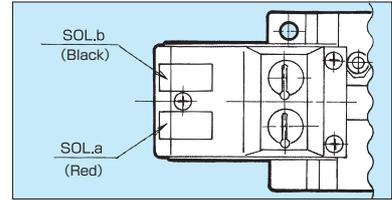
└ 41 □ □ 20 □ C / E - M (Lead wire)



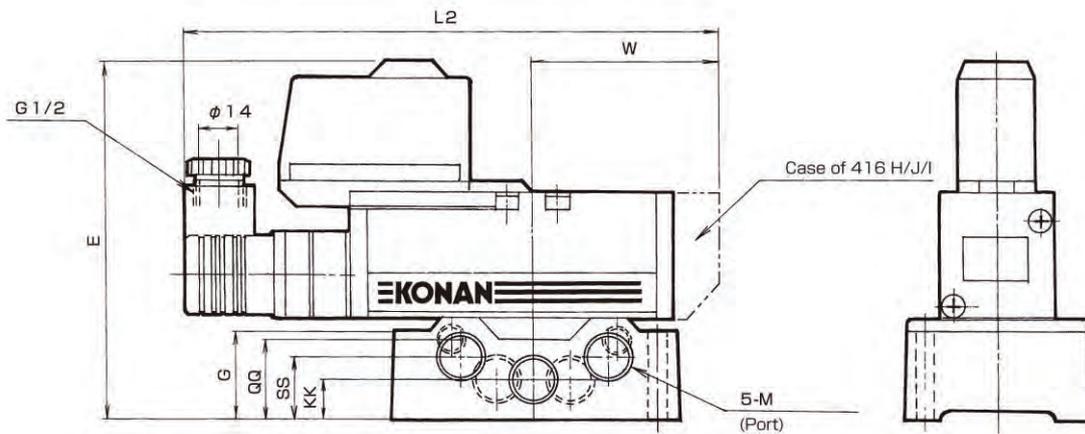
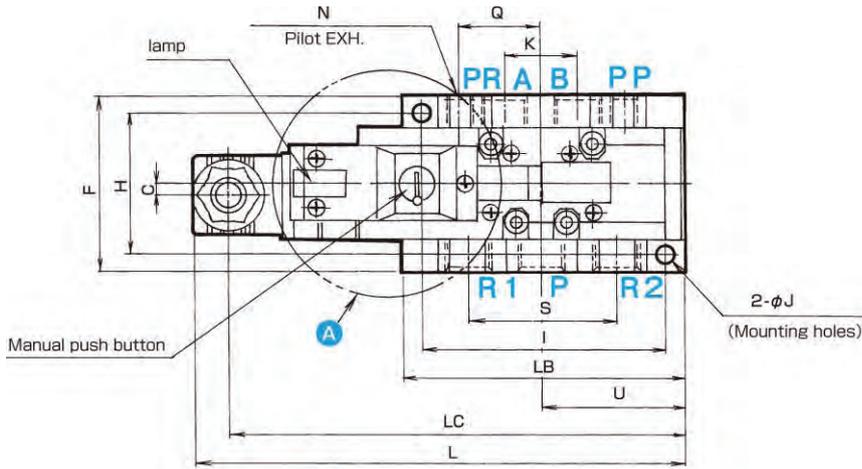
└ 41 □ □ 30 □ C / E - M (Lead wire)
 └ 41 □ □ 60 □ C / E - M (Lead wire)



- 41 □□ 30 □ C /E – BA (DIN connector)
- 41 □□ 60 □ C /E – BA (DIN connector)



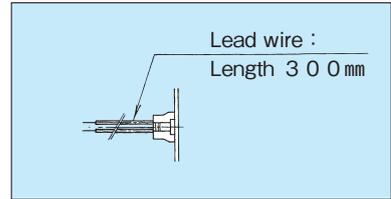
A Section: Case of double solenoid



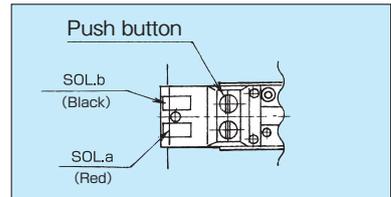
Unit : mm

Type symbol	M	N	L	LB	E	F	G	H	I	J	K	KK	Q	QQ	S	SS	LC	U	C	W	L2	
41 □□ 302C/E	Rc1/4	Rc1/8	172	98	126	62	31	50	85	7	26	14	29	28	52	22	160	49	4	65	188	
41 □□ 303C/E	Rc3/8		192	110	148	74	33	62	98		32	18	35	36	60	28	180	62	165	79	217	
41 □□ 603C/E	Rc3/8																					
41 □□ 604C/E	Rc1/2																					

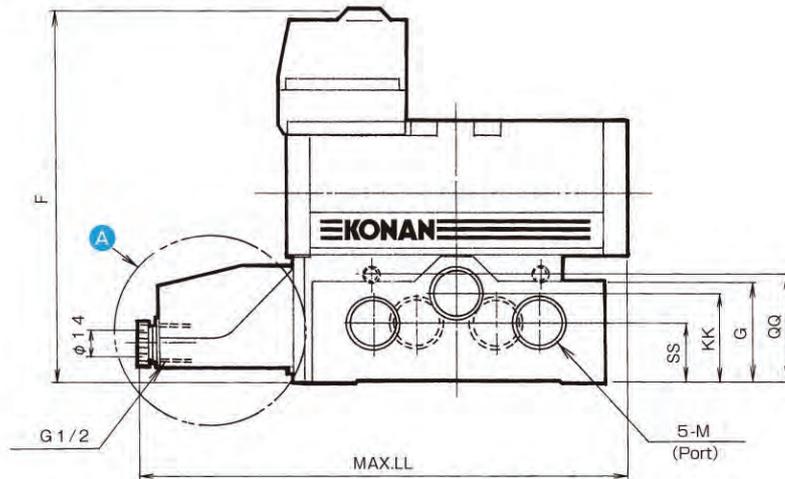
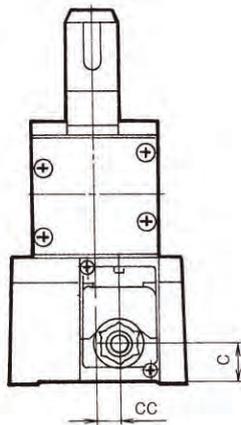
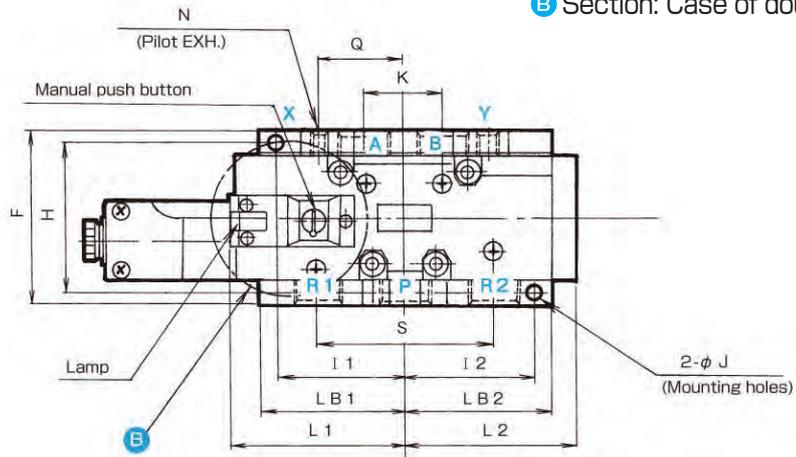
- 414 □ A1 □ C – F/ZA (Lead wire/K terminal blocks)
- 414 □ A9 □ C – F/ZA (Lead wire/K terminal blocks)



A Section: Case of lead wire



B Section: Case of double solenoid



Unit : mm

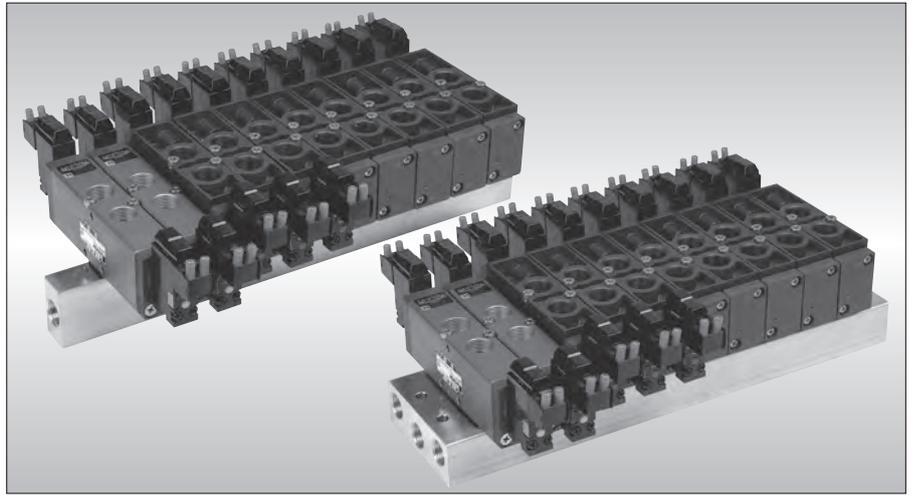
Type symbol	M	N	L1	L2	LL	LB1	LB2	E	F	G	H	I1	I2	J	K	KK	Q	QQ	S	SS	C	CC
414 □ A14C	Rc1/2	Rc1/8	91	88	260	75	75	195	90	52	78	66	66	7	34	46	43	56	80	31	20.5	12
414 □ A16C	Rc3/4														40				84			
414 □ A96C	Rc3/4		107	107	280	80	83	213	110	58	94	71	74	9	50	52	53	70	100	32	34.5	17
414 □ A91C	Rc1																					

5 NEW MAGSTAR

Port Solenoid Valve

Manifold type

Spool valve
454
 With 4mm fitting ~ Rc 1/2



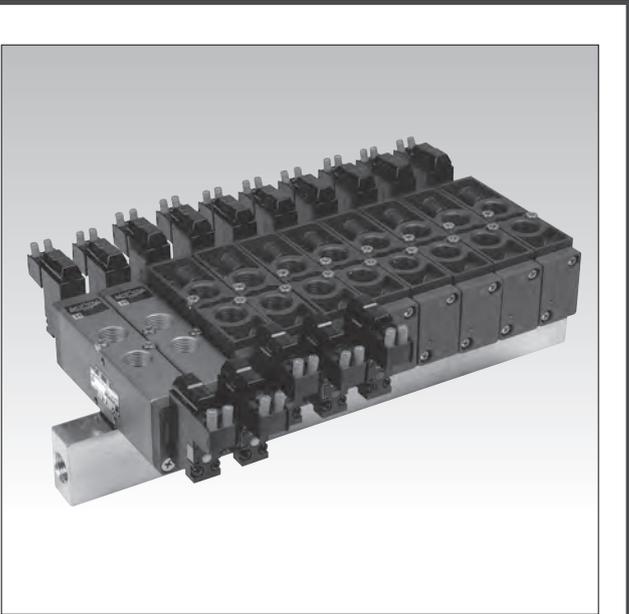
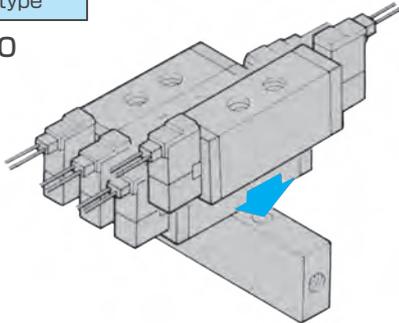
- Complex manifold mounting is available such as different function type (S.D.H.J.I) by mixture.
- Optimum wiring connection can be selected according to the site specifications.
- Indicator lamp is equipped as standard in every type.

Individual exhaust: C

This is the quick mounting manifold type solenoid valve in which R1 and R2 (exhaust) ports can be individually taken out together with the solenoid valve. This type is optimum in case when to control connected load (aircylinder) 's speed with the exhaust valve (exhaust throttling valve) .

Applicable body type

B20. B40

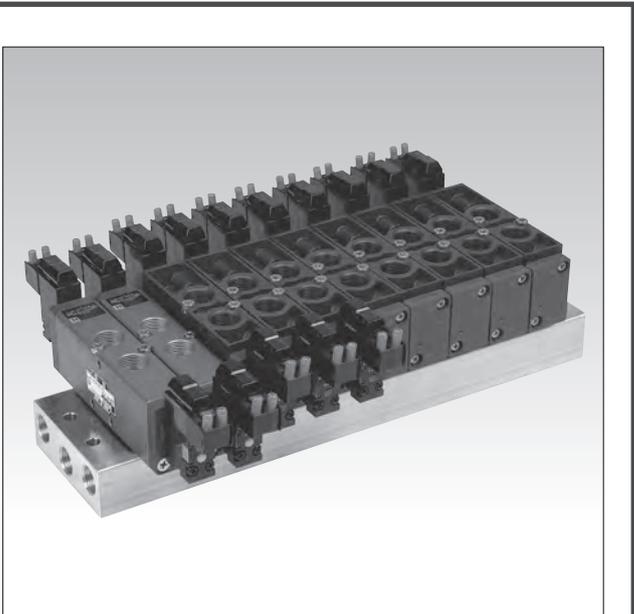
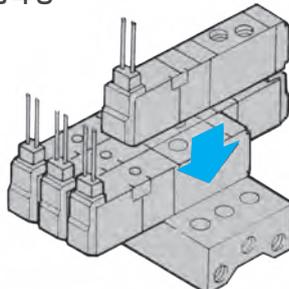


Collective exhaust: D

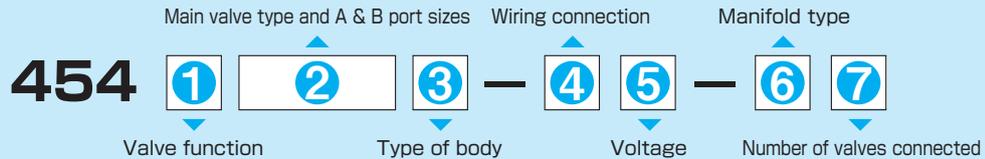
This is the quick mounting manifold type solenoid valve in which R1 and R2 (exhaust) ports of the mounted solenoid valves are made common. Making exhaust ports common and collective facilitates line control.

Applicable body type

B04. B09. B20. B40



Model code



①, ②, ③ and ④ is ordering in four items set.

① Valve function

Valve type	JIS symbol	Codes
2 positions	Return 	S
	Hold 	D
※ Case of compound type		Z

※ With regard to compound type manifolds, please designate valve arrangement order on a separate sheet.

Valve type	JIS symbol	Codes
3 positions	Closed center 	H
	Center open to exhaust 	J
	Center open to pressure 	I

② Main valve type and A&B port sizes ③ Type of body ④ Wiring connection

Valve type	Port size (A&B ports)	Codes			Lead wire	K1 terminal block	Waterproof K1 terminal block
		②	③	④			
B 04	With 4mm fitting	04F	C	M	H	J	—
	M5	04M					
B 09	Rc 1/8	091	K	M	H	J	—
B 20	Rc 1/4	202					
	Rc 3/8	203					
B 40	Rc 3/8	403	C	M	H	J	—
	Rc 1/2	404					

Valve type	Port size (A&B ports)	②	③	④		
B 04	With 4mm fitting	04F	C	M	H	J
	M5	04M				
B 09	Rc 1/8	091	C	M	H	J
B 20	Rc 1/4	202				
	Rc 3/8	203				
B 40	Rc 3/8	403	C	M	H	J
	Rc 1/2	404				

● Indicator lamp is equipped as standard.

⑤ Voltage

Voltage	Codes
AC 100 (110) V 50/60 Hz	1
AC 200 (220) V 50/60 Hz	3
DC 24V	5
DC 100V	7
DC 110V	9

- Other voltages are available.
- The solenoid of DC specifications have not polarity. Please contact us for details.

⑥ Manifold types

Manifold type	Codes
Individual exhaust 	C
Collective exhaust 	D

- Valve type B04 and B09 are only available for collective exhaust type (D).

⑦ Number of valves connected

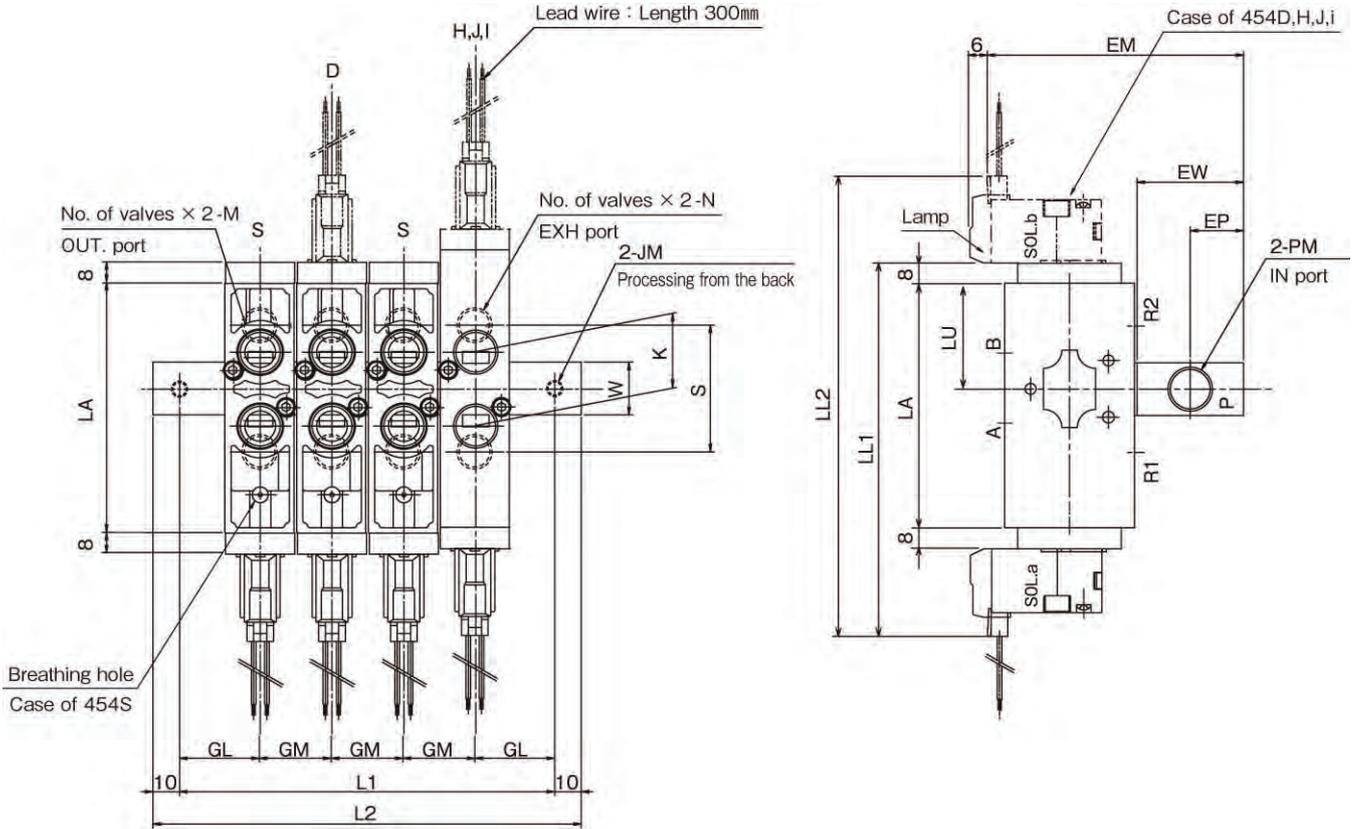
Number	Codes
2	02
3	03
⋮	⋮
19	19
20	20
For spare solenoid valve (without manifold base)	00

- Note) Maximum connectable number
- B 04 & B 09 20
 - B 20 & B 40 10

Outside dimensions

- 454 □ 20 □ C /K -M / H / J - C (Lead wire/K1 terminal block/waterproof K 1 terminal block)
- 454 □ 40 □ C -M / H / J - C (Lead wire/K1 terminal block/waterproof K 1 terminal block)

< Case of Lead wire >



Unit : mm

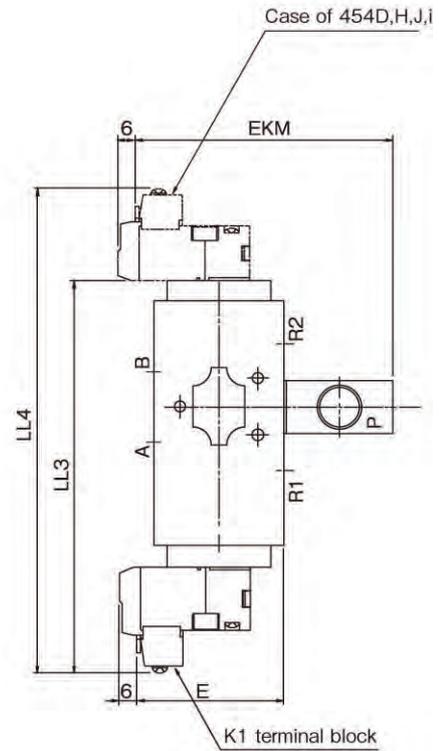
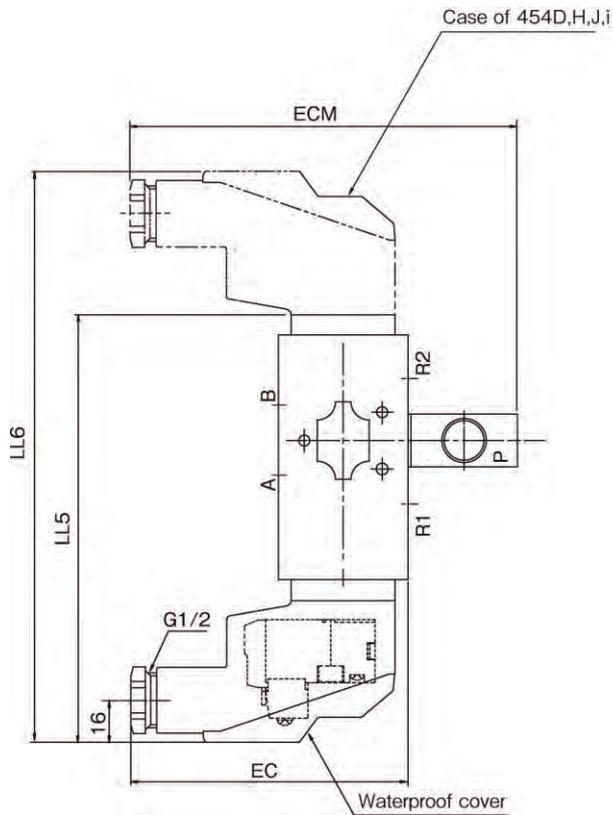
Type symbol	M	N	PM	LA	LL1	LL2	LU	EM	EP	EW	GM	GL	JM	K	S	W
454S202K-□□-C	Rc1/4	Rc1/4	Rc3/8	94.5	143.5	-	40	97	20	40	27	30	M6 深サ 8	28	48	20
454S203K-□□-C	Rc3/8				-	176.5										
454D202K-□□-C	Rc1/4			105	-	187	52.5	92								
454D203K-□□-C	Rc3/8															
454H/J/1202C-□□-C	Rc1/4															
454H/J/1203C-□□-C	Rc3/8															
454S403C-□□-C	Rc3/8	Rc3/8	Rc1/2	110	160	-	55	107	50	50	37	40	M8 深サ 11	36	68	30
454S404C-□□-C	Rc1/2	Rc1/2			-	192										
454D403C-□□-C	Rc3/8	Rc3/8		135	-	217	67.5									
454D404C-□□-C	Rc1/2	Rc1/2														
454H/J/1403C-□□-C	Rc3/8	Rc3/8														
454H/J/1404C-□□-C	Rc1/2	Rc1/2														

Unit : mm

Type symbol	No. of valves		2	3	4	5	6	7	8	9	10
	L1	L2	87	114	141	168	195	222	249	276	303
454 □ 202C/K-□□-C	L1	L2	107	134	161	188	215	242	269	296	323
454 □ 203C/K-□□-C	L1	L2	117	154	191	228	265	302	339	376	413
454 □ 403C-□□-C	L1	L2	137	174	211	248	285	322	359	396	433
454 □ 404C-□□-C	L1	L2									

< Case of waterproof K1 terminal block >

< Case of K1 terminal block >

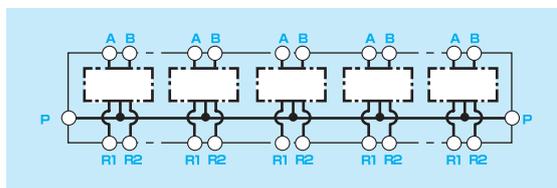


Unit : mm

Type symbol	ECM	EKM	LL3	LL4	LL5	LL6	E	EC
454S202K-□□-C	146	97	148	-	164.5	-	56	105
454S203K-□□-C			-	185.5	-	218.5		
454D202K-□□-C	141	92	-	197	-	229	51	100
454D203K-□□-C			-	197	-	229		
454H/J/I202C-□□-C	157	107	164	-	180	-	57	107
454S403C-□□-C			-	202	-	234		
454S404C-□□-C	157	107	-	202	-	234	57	107
454D403C-□□-C			-	227	-	259		
454D404C-□□-C	157	107	-	227	-	259	57	107
454H/J/I403C-□□-C			-	227	-	259		
454H/J/I404C-□□-C	157	107	-	227	-	259	57	107
454D404C-□□-C			-	227	-	259		

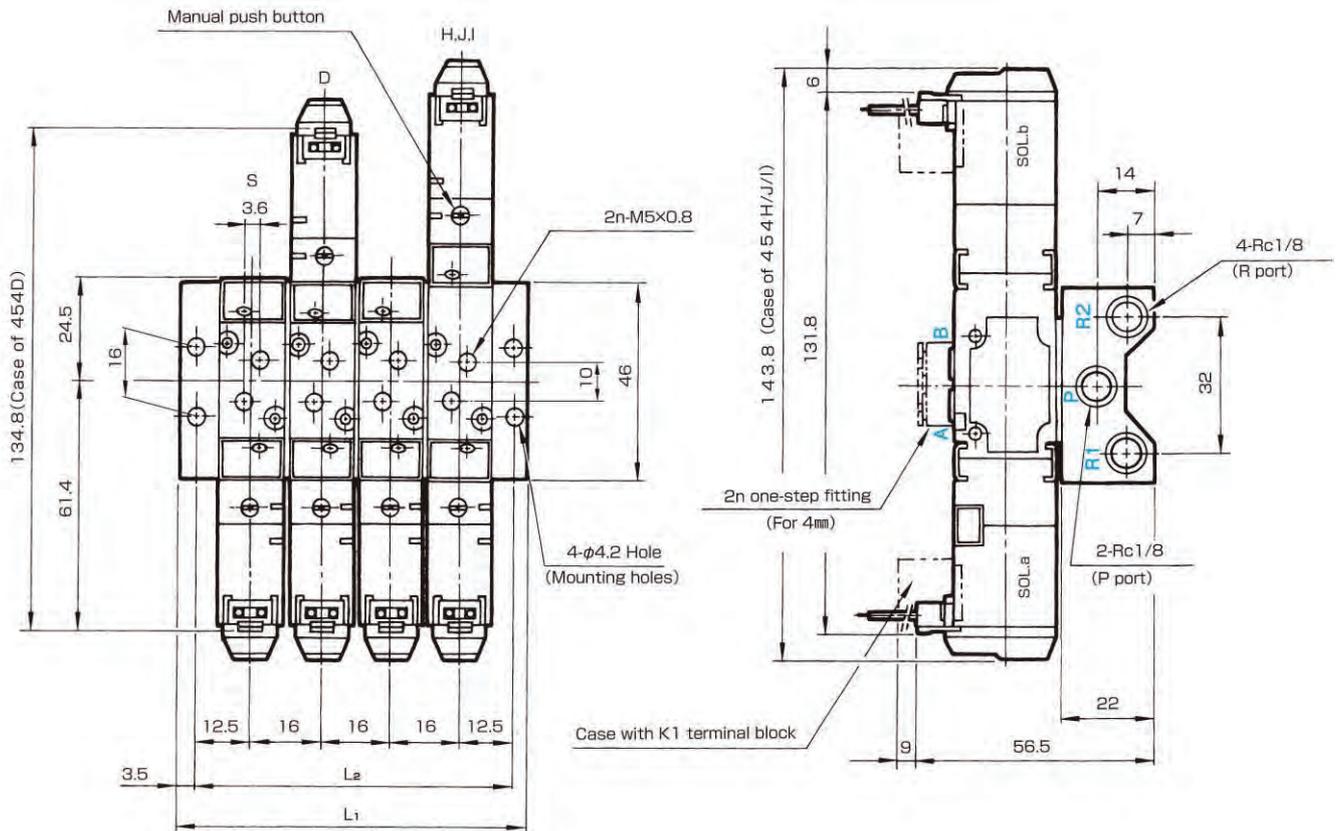
■ JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.



Outside dimensions <Collective exhaust type>

└ 454 □ □ 04 □ C – M/H – D □ (Lead wire/K 1 terminal block)

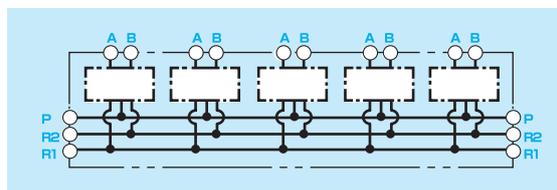


Unit : mm

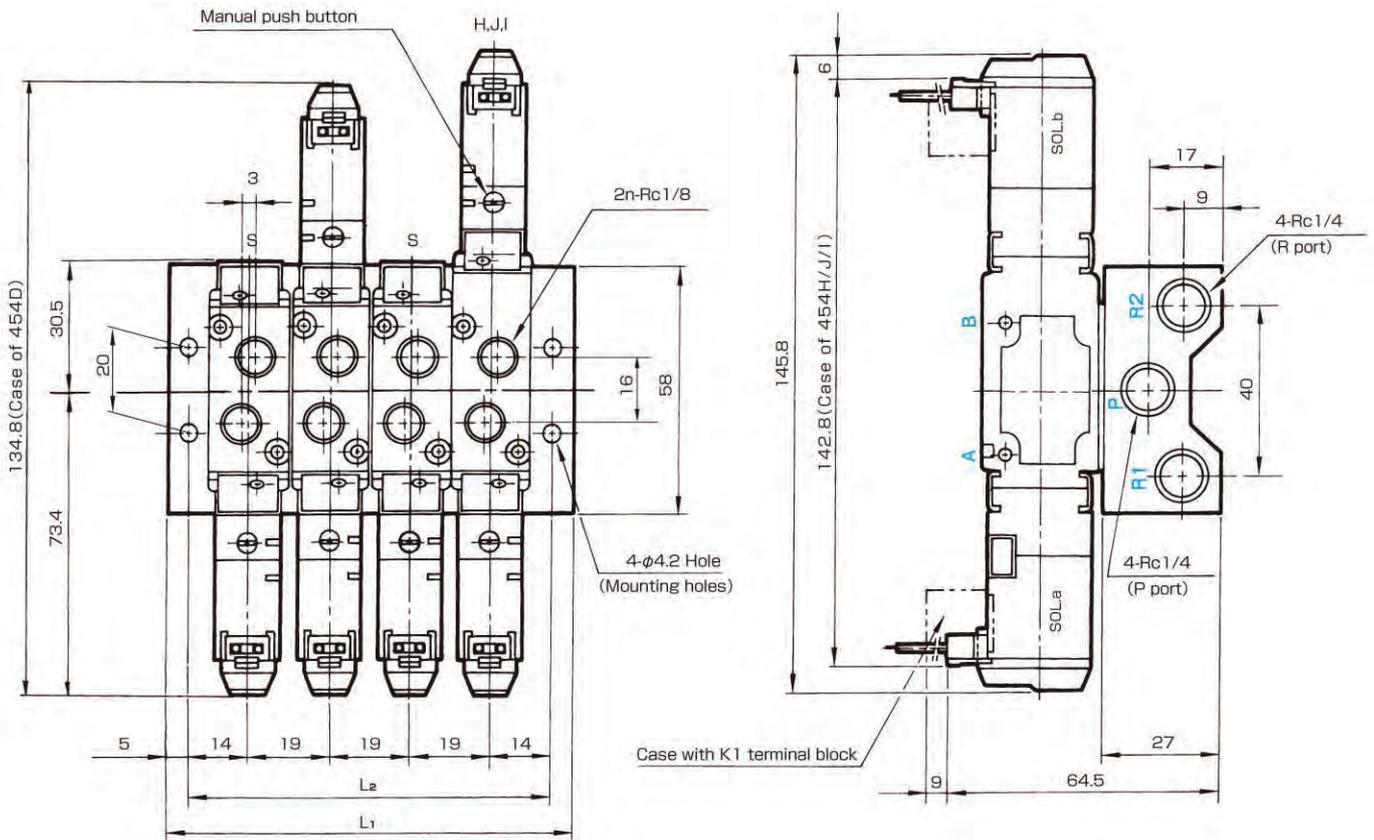
n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L ₁	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336
L ₂	41	57	73	89	105	121	137	153	169	185	201	217	233	249	265	281	297	313	329

■ JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.



454 □ 091C – M/H – D (Lead wire/K 1 terminal block)

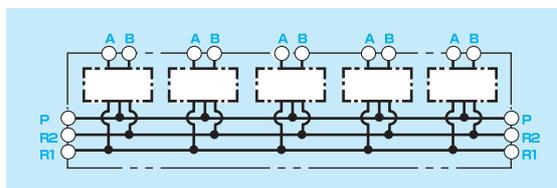


Unit : mm

n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L ₁	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380	399
L ₂	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313	332	351	370	389

■ JIS symbol

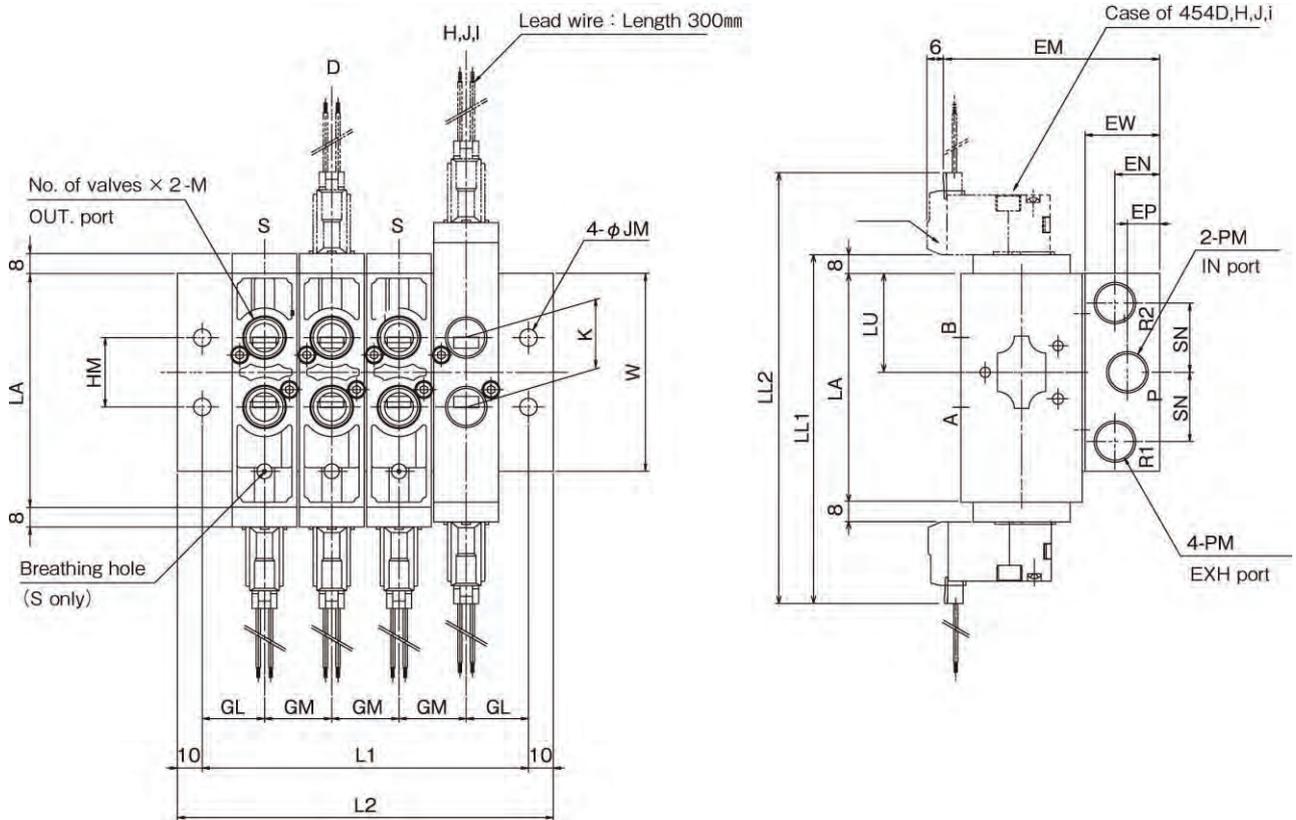
Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.



Outside dimensions

- 454 □ 20 □ C / K - M / H / J - D □ (Lead wire/K1 terminal block/waterproof K 1 terminal block)
- 454 □ 40 □ C - M / H / J - D □ (Lead wire/K1 terminal block/waterproof K 1 terminal block)

< Case of Lead wire >



Unit : mm

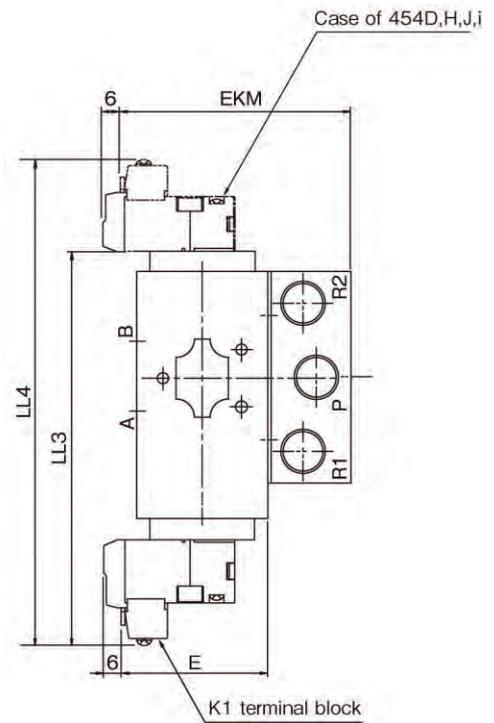
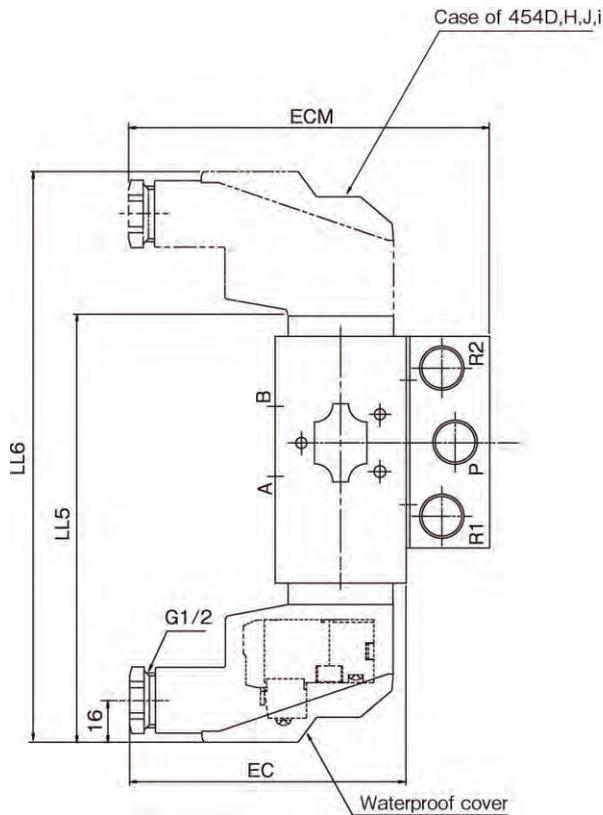
Type symbol	M	PM	LA	LL1	LL2	LU	EM	EW	EN	EP	SN	GM	GL	JM	K	W	HM
454S202K-□□-D	Rc1/4	Rc3/8	94.5	143.5	-	40	87	30	18	13	28	27	25	7	28	80	28
454S203K-□□-D	Rc3/8			-	176.5												
454D202K-□□-D	Rc1/4		105	-	187	52.5	82										
454D203K-□□-D	Rc3/8																
454H/J/1202C-□□-D	Rc1/4	Rc1/2	110	160	-	55	97	40	23	18	38	37	30	9	36	110	38
454S403C-□□-D	Rc3/8			-	192												
454S404C-□□-D	Rc1/2		135	-	217	67.5											
454D403C-□□-D	Rc3/8																
454D404C-□□-D	Rc1/2																
454H/J/1403C-□□-D	Rc3/8																
454H/J/1404C-□□-D	Rc1/2																

単位 : mm

Type symbol	No. of valves		2	3	4	5	6	7	8	9	10
	L1	L2	77	104	131	158	185	212	239	266	293
454 □ 202C/K-□□-D	L1	L2	97	124	151	178	205	232	259	286	313
454 □ 203C/K-□□-D	L1	L2	97	134	171	208	245	282	319	356	393
454 □ 403C-□□-D	L1	L2	117	154	191	228	265	302	339	376	413
454 □ 404C-□□-D	L1	L2									

< Case of waterproof K1 terminal block >

< Case of K1 terminal block >

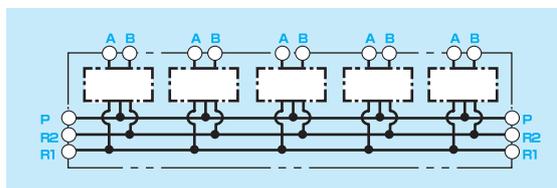


Unit : mm

Type symbol	ECM	EKM	LL3	LL4	LL5	LL6	E	EC	
454S202K- □□ -D	136	87	148	—	164.5	—	56	105	
454S203K- □□ -D			—	185.5	—	218.5			
454D202K- □□ -D			—	—	—	—			—
454D203K- □□ -D	131	82	—	197	—	229	51	100	
454H/J/I202C- □□ -D			—	—	—	—			
454H/J/I203C- □□ -D			—	—	—	—			—
454S403C- □□ -D	147	97	164	—	180	—	57	107	
454S404C- □□ -D			—	202	—	234			
454D403C- □□ -D			—	—	—	—			—
454D404C- □□ -D			—	—	—	—			—
454H/J/I403C- □□ -D			—	—	227	—			259
454H/J/I404C- □□ -D			—	—	—	—			—

■ JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.



5 NEW MAGSTAR

Port Solenoid Valve

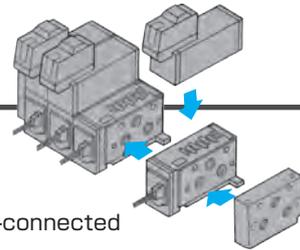
Manifold type

Spool valve
414
Rc 1/8~1

Slide valve
416
Rc 1/8~1/2



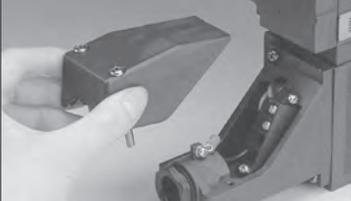
- Complex manifold mounting is available such as main valve type (414,416) and the function type (S.D.H.J.I) by mixture.
- Optimum wiring connection can be selected according to the site specifications.
- Piping is also possible to the bottom(A & B ports).
- Operation indicator lamp is equipped as standard in every type.



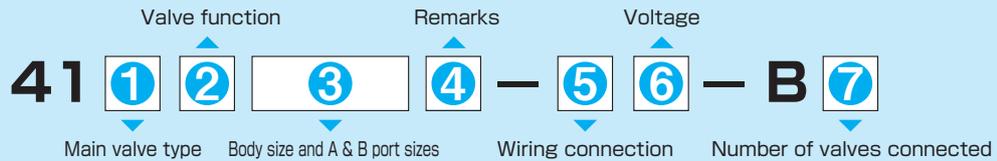
Collective exhaust: B

This is the manifold solenoid valve of collective exhaust type stacking gasket-connected solenoid valves, model 4 1 4s and 4 1 6s.

With various functions and variation, it has a wide range of applications in FA fields.

Wiring connection	BA		Wiring is connected with the DIN terminals on the body of solenoid valve.	
	F		Wiring is connected to the manifold base (subplate) with the one-step type lead wires.	
	ZA		Wiring is connected with K terminal block on the manifold base(subplate). With improved workability, this is a manifoldtype solenoid valve for heavy duties.	
	G		This is a collective wiring type manifold solenoid valve eliminating labor consuming wiring work on the site. It can be used in serial transmission systems. ● To lead wire out from the valve, lead wire method is used.	
	T		Similar to wiring method G, this is a collective wiring type manifold solenoid valve. ● To lead wire out from the valve, the K terminal block is	
			Applicable body types B30 • B60	
			Applicable body types All types B20 ~ B 190	
			Applicable body types B30 • B60 • B 110 • B 190	
			Applicable body types B20	
			Applicable body types B30 • B60	

Model code



1 Main valve type

Main valve constructions	Codes
Spool valve	4
Ceramic slide valve	6
Mixture of valves	Z

2 Valve function

Valve type	JIS symbol	Codes
2 positions	Return 	S
	Hold 	D
3 positions	Closed center 	H
	Center open to exhaust 	J
	Center open to pressure 	I
※ Case of compound type		Z

※ With regard to compound type manifolds, please designate valve arrangement order on a separate paper.

3 Main valve type and A&B port size

Nominal size of main valve	Port size (A&Bports)	Codes
B 20	Rc 1/8	201
		202
B 30	Rc 1/4	302
		303
B 60	Rc 3/8	603
		604
B 110	Rc 1/2	A14
		A16
B 190	Rc 3/4	A96
	Rc 1	A91

● Nominal size of main valve B 110 and B 190 are out of manufacture for "model 416".

4 Remarks

Code No.	Codes
416S20, 30, 60	E
Others	C

5 Wiring connection

Wiring connection		Valve types	Codes
Individual wiring scheme	DIN connector	B 30 ~ B 60	BA
	Lead wire	All types (B 20 ~ B 190)	F
	K 1 terminal block	B 30, B 60, B 110, 190	ZA
Collective wiring scheme	Lead wire	B 20	G
	K 1 terminal block	B 30, 60	T

6 Voltage

Voltage	Codes
AC 100 (110) V 50/60 Hz	1
AC 200 (220) V 50/60 Hz	3
DC 24V	5
DC 100V	7
DC 110V	9

- Other voltages are available.
- The solenoid of DC specifications have not polarity. Please contact us for details.

7 Number of valves connected

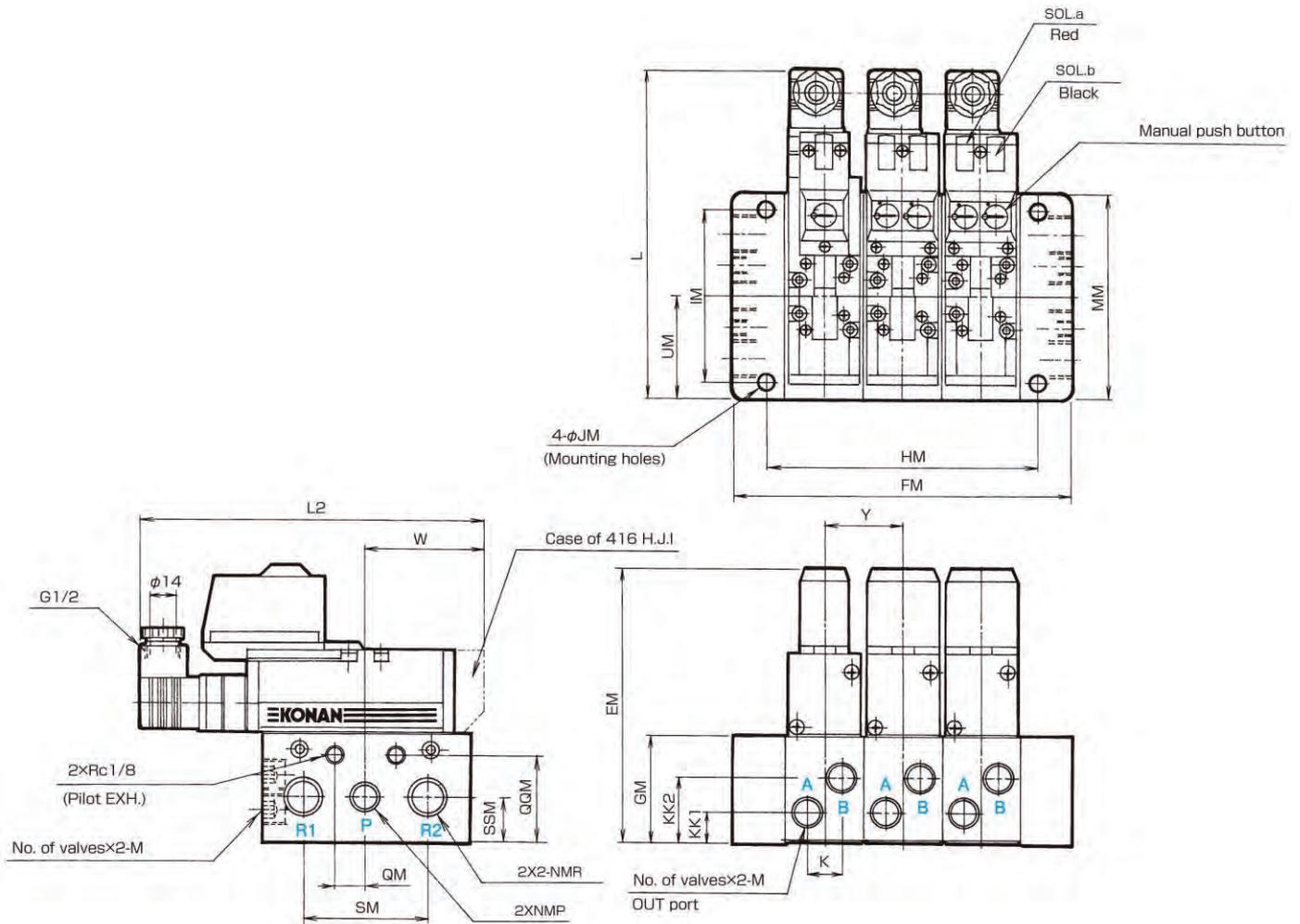
Number	Codes
2	02
3	03
⋮	⋮
9	09
20	20
For spare solenoid valve (without manifold base)	00

Note) Maximum connectible number

- B 20&B 30&B 60.....1 0
- B 110& 1906

Outside dimensions

- └ 41 □□ 30 □ C /E – BA □ – B □ (DIN connector)
- └ 41 □□ 60 □ C /E – BA □ – B □ (DIN connector)



Unit : mm

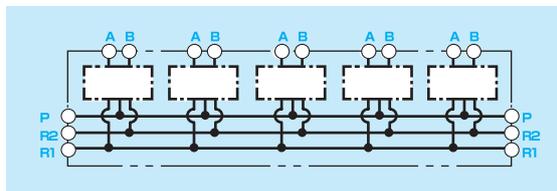
Type symbol	No. of valves	2	3	4	5	6	7	8	9	10
		41 □□ 302C(E)/303C(E)	HM	106	149	192	235	278	321	364
FM	140		183	226	269	312	355	398	441	484
41 □□ 603C(E)/604C(E)	HM	162	218	274	330	386	442	498	554	610
	FM	182	238	294	350	406	462	518	574	630

Unit : mm

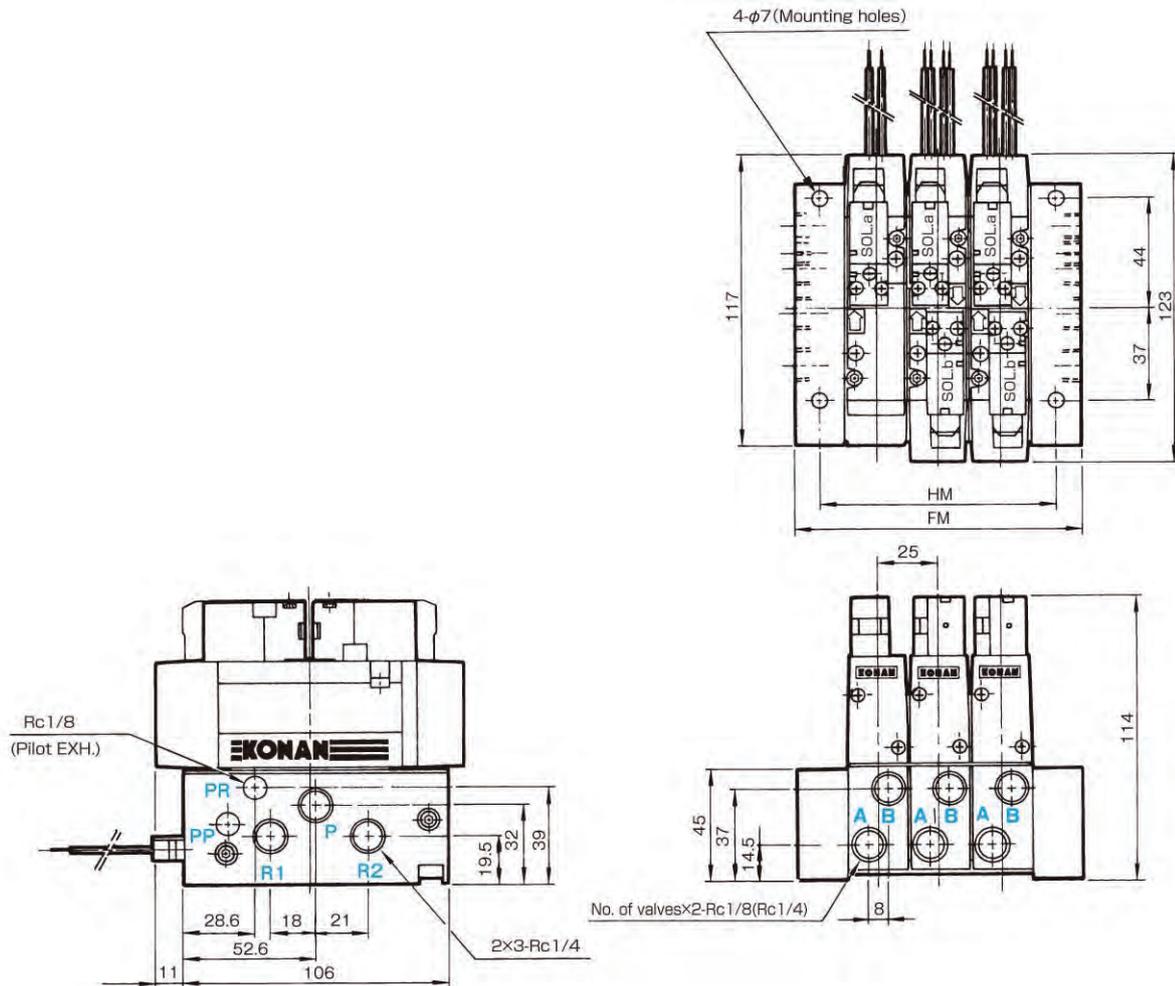
Type symbol	M	NMR	NMP	SSM	QQM	SM	QM	L2	W	EM	GM	KK2	KK1	K	Y	L	UM	IM	MM	JM
41 □□ 302C/E	Rc1/4	Rc1/2	Rc3/8	24	47	68	17	188	65	152	60	36	17	19	43	179	56	94	112	9
41 □□ 303C/E	Rc3/8																			
41 □□ 603C/E	Rc3/8	Rc3/4	Rc1/2	25	63	76	20	217	79	182	76	36	17	28	56	208	70	120	140	11
41 □□ 604C/E	Rc1/2																			

JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.



└ 41 □ □ 20 □ C / E - F □ - B (Lead wire)

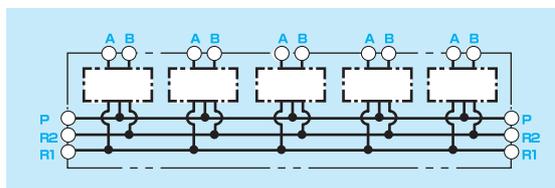


Unit : mm

Type symbol	No. of valves	2	3	4	5	6	7	8	9	10
		41 □ 201C(E)/202C(E) - B	HM	70	95	120	145	170	195	220
FM	90		115	140	165	190	215	240	265	290

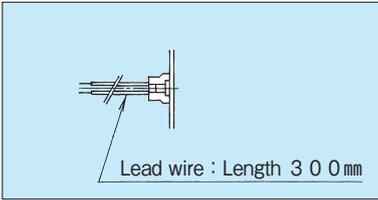
■ JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.

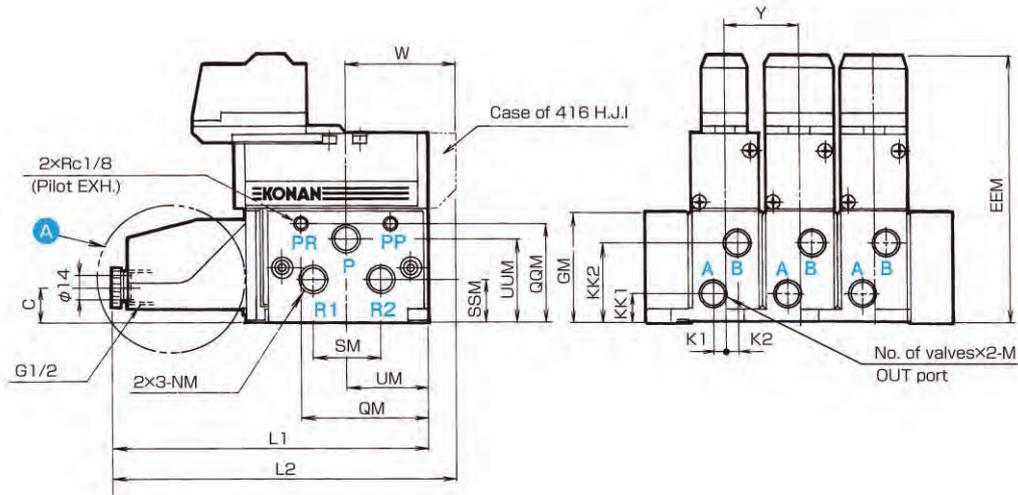
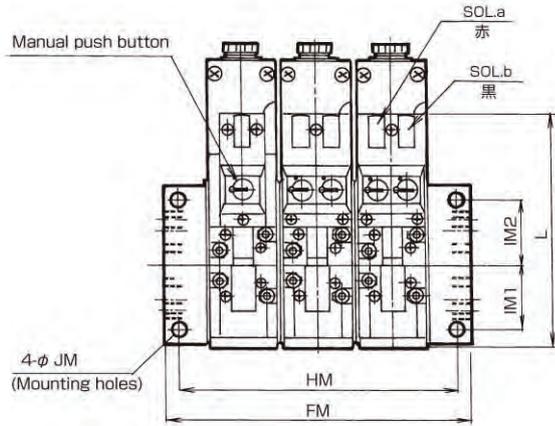


Outside dimensions

- └ 41 □□ 30 □ C/E – F/ZA – B □ (Lead wire/K terminal blocks)
- └ 41 □□ 60 □ C/E – F/ZA – B □ (Lead wire/K terminal blocks)



A Section: Case of lead wire



Unit : mm

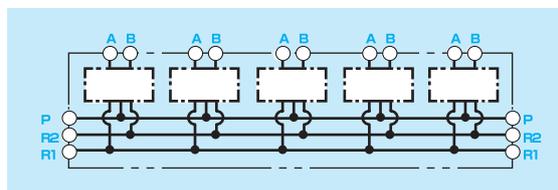
Type symbol		No. of valves		2	3	4	5	6	7	8	9	10
41 □□ 302C(E)/303C(E)	HM	120	163	206	249	292	335	378	421	464		
	FM	136	179	222	265	308	351	394	437	480		
41 □□ 603C(E)/604C(E)	HM	152	208	264	320	376	432	488	544	600		
	FM	172	228	284	340	396	452	508	564	620		

Unit : mm

Type symbol	M	NM	L	L1	L2	EEM	GM	IM1	IM2	JM	K1	K2	KK1	KK2	QM	QUM	SM	SSM	UM	UUM	Y	C	W
41 □□ 302C/E	Rc1/4	Rc3/8	137	195	212	157	65	38	38	9	7	7	17	47	74.5	57	40	25	48	49	43	21.5	65
41 □□ 303C/E	Rc3/8										7	7	17	47	74.5	57	40	25	48	49	43	21.5	65
41 □□ 603C/E	Rc3/8	Rc1/2	167	225	234	176	70	54	48		8	14	19	51	104	63	56	27	70	49	56	25.5	79
41 □□ 604C/E	Rc1/2										8	14	19	51	104	63	56	27	70	49	56	25.5	79

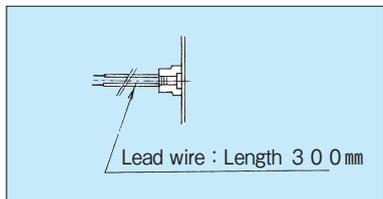
JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.

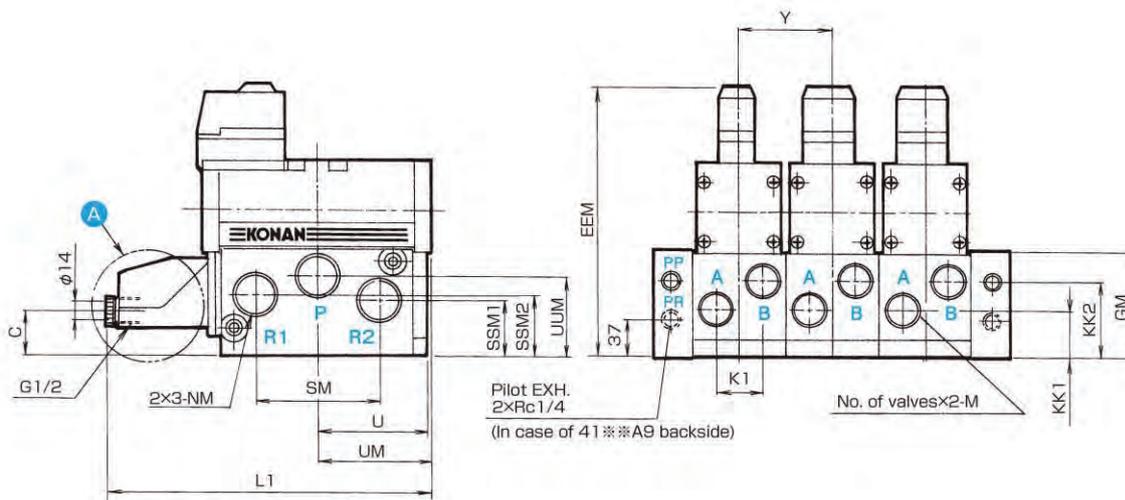
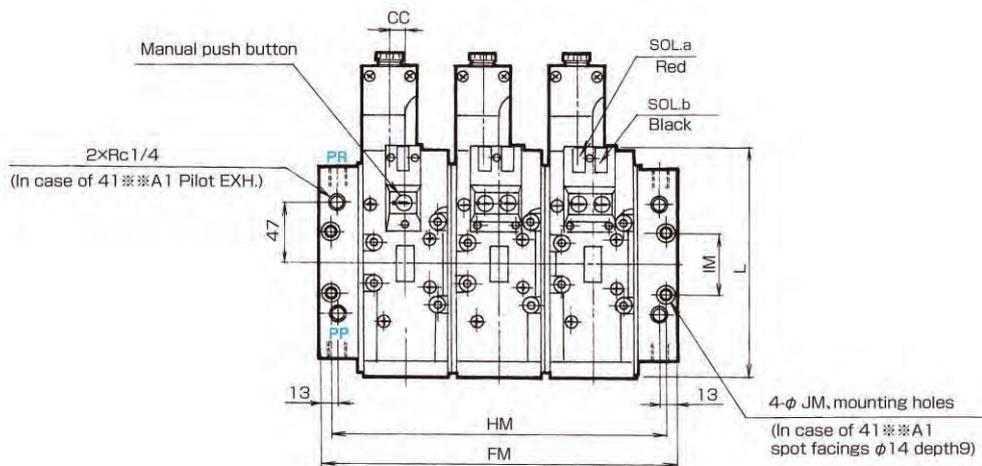


414 □ A1 □ C – F/ZA □ – B □ (Lead wire/K terminal blocks)

414 □ A9 □ C – F/ZA □ – B □ (Lead wire/K terminal blocks)



A Section: Case of lead wire



Unit : mm

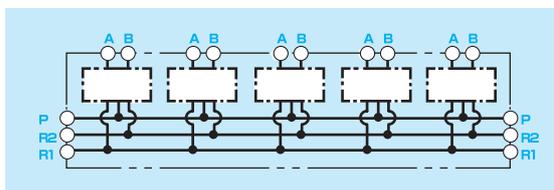
Type symbol	No. of valves	No. of valves					
		2	3	4	5	6	
414 □ □ A14C/A16C	HM	186	257	328	399	470	
	FM	202	273	344	415	486	
414 □ □ A9C/A91C	HM	206	288	370	452	534	
	FM	224	306	388	470	552	

Unit : mm

Type symbol	M	NM	L	L1	EEM	GM	IM	JK	K1	KK1	KK2	SM	SSM1	SSM2	UM	U	UUM	Y	C	CC
414 □ □ A14C	Rc1/2	Rc1	179	255	209	82	48	9	35	37	59	96	43	47	88	85	61	71	35	12
414 □ □ A16C	Rc3/4		213	275	231	105	57	10	40	38	68	114	52	57	107	98	77	82	53	17
414 □ □ A96C	Rc3/4	Rc1	213	275	231	105	57	10	40	38	68	114	52	57	107	98	77	82	53	17
414 □ □ A91C	Rc1		213	275	231	105	57	10	40	38	68	114	52	57	107	98	77	82	53	17

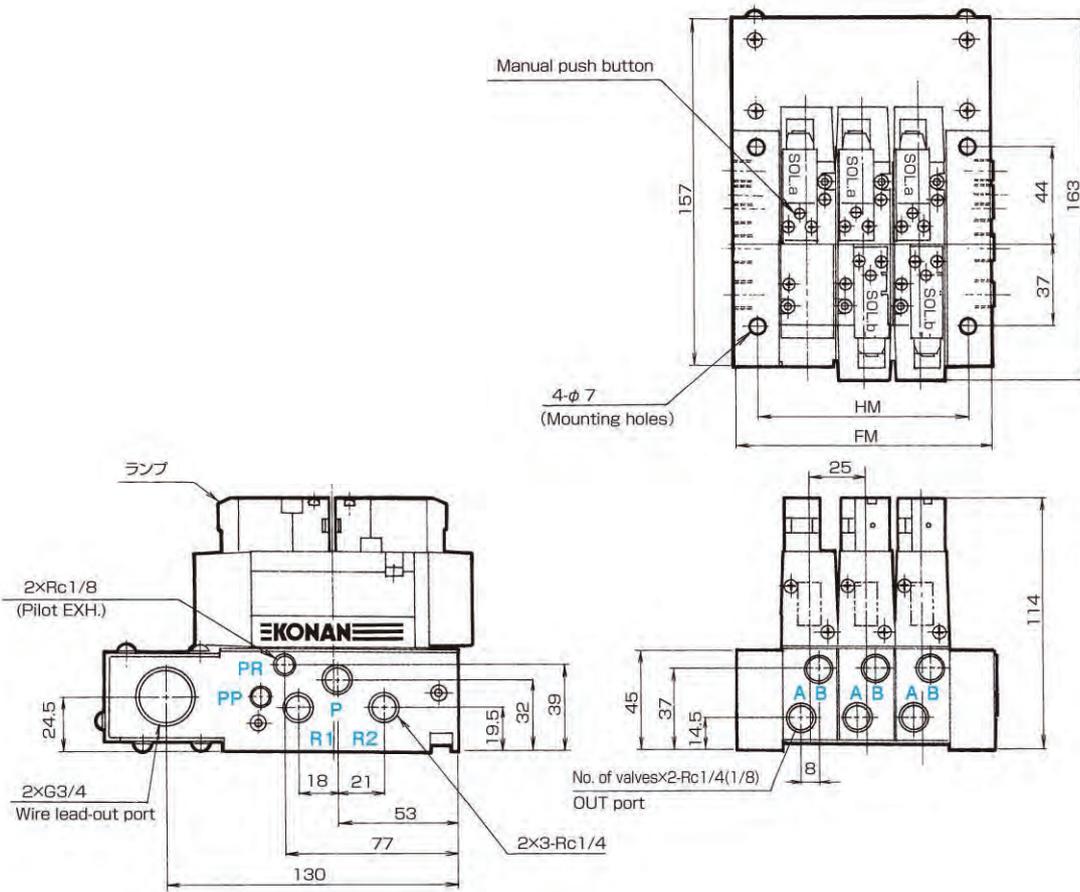
■ JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.



Outside dimensions

└ 41 □ □ 20 □ C / E – G □ – B □ (Collective wiring)

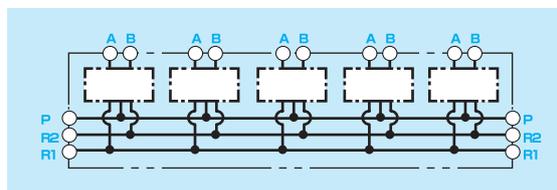


Unit : mm

Type symbol		No. of valves									
		2	3	4	5	6	7	8	9	10	
41 □ □ 202C(E)/203C(E)	HM	70	95	120	145	170	195	220	245	270	
	FM	90	115	140	165	190	215	240	265	290	

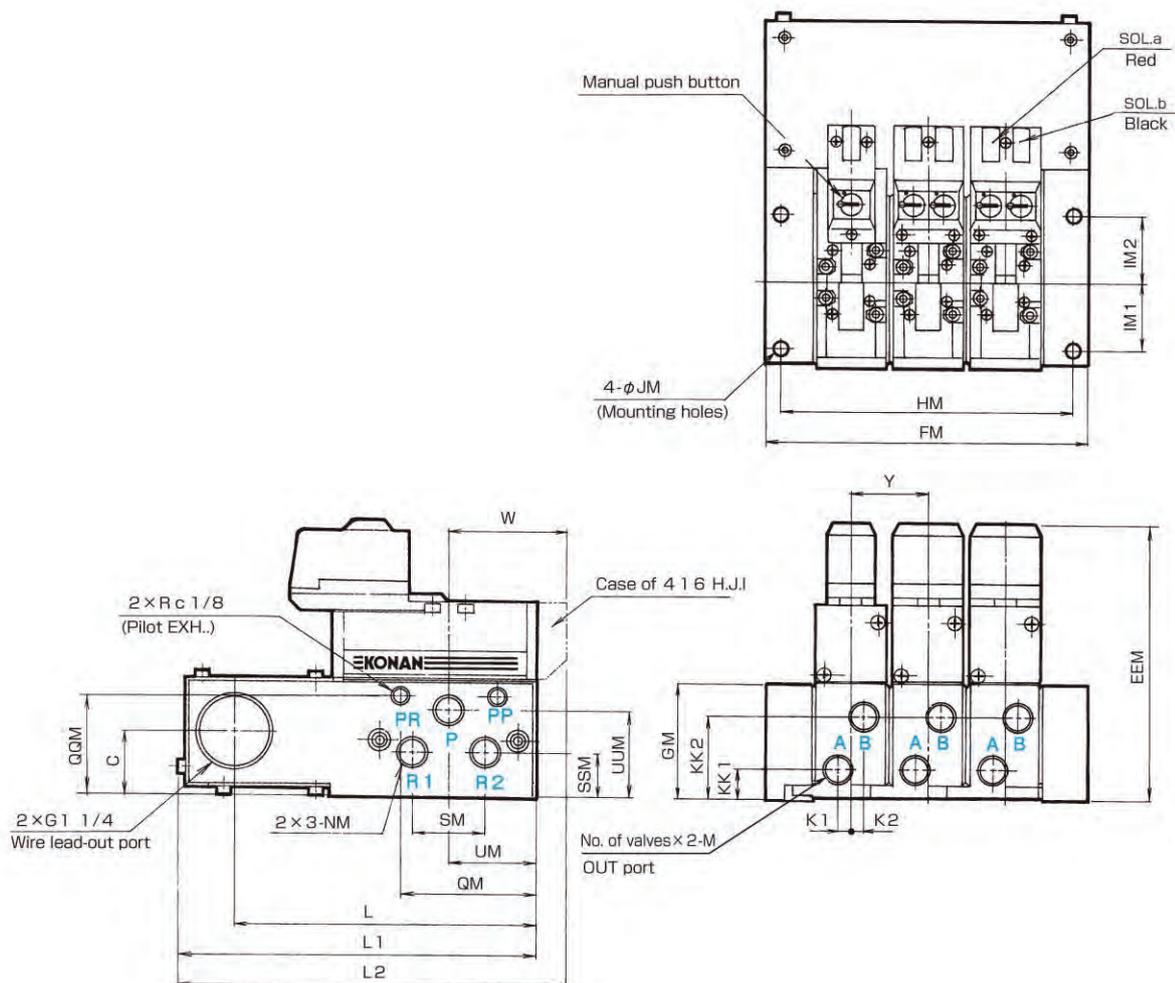
■ JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.



41 □ □ 30 □ C / E - T □ - B □ (Collective wiring)

41 □ □ 60 □ C / E - T □ - B □ (Collective wiring)



Unit : mm

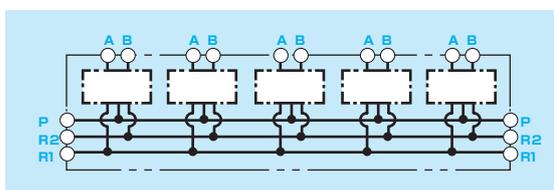
Type symbol		No. of valves	2	3	4	5	6	7	8	9	10
41 □ □ 302C(E)/303C(E)	HM		120	163	206	249	292	335	378	421	464
	FM		136	179	222	265	308	351	394	437	480
41 □ □ 603C(E)/604C(E)	HM		152	208	264	320	376	432	488	544	600
	FM		172	228	284	340	396	452	508	564	620

Unit : mm

Type symbol	M	NM	L	L1	L2	EEM	GM	IM1	IM2	JM	K1	K2	KK1	KK2	QM	QGM	SM	SSM	UM	UUM	Y	W	C
41 □ □ 302C/E	Rc1/4	Rc3/8	168	198	212	157	65	38	38	9	7	7	17	47	74.5	57	40	25	48	49	43	65	36
41 □ □ 303C/E	Rc3/8	Rc1/2	187	222	234	176	70	54	48		8	14	19	51	104	63	56	27	70	49	56	79	38
41 □ □ 603C/E	Rc3/8		187	222	234	176	70	54	48		8	14	19	51	104	63	56	27	70	49	56	79	38
41 □ □ 604C/E	Rc1/2	187	222	234	176	70	54	48	8		14	19	51	104	63	56	27	70	49	56	79	38	

JIS symbol

Any of the valve type JIS symbols is applicable to the blank space in the figure on the right.

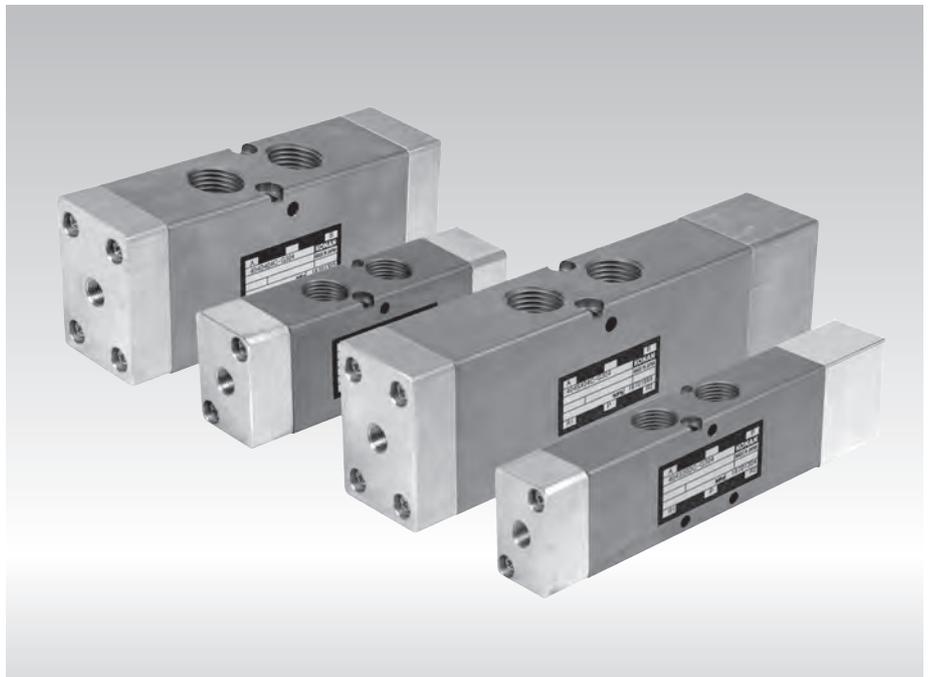


5 Air Operated Valves

Port

Direct piping type

Spool valve
404
 Rc 1/4 ~ Rc 1/2



Specification

Type symbol	Return	404S 202C-G 304	404S 203C-G 304	404S 403C-G 304	404S 404C-G 304
	Hold	404D 202C-G 304	404D 203C-G 304	404D 403C-G 304	404D 404C-G 304
	Closed center	404H 202C-G 304	404H 203C-G 304	404H 403C-G 304	404H 404C-G 304
	Center open to exhaust	404J 202C-G 304	404J 203C-G 304	404J 403C-G 304	404J 404C-G 304
	Center open to pressure	404I 202C-G 304	404I 203C-G 304	404I 403C-G 304	404I 404C-G 304
Body type	B 20			B 40	
Tube size	Rc 1/4	Rc 3/8		Rc 1/2	
Effective sectional area	20mm ²			40mm ²	
Operating pressure	0 ~ 1.0 MPa				
Proof pressure	1.5 MPa				
Operating temperature	-5 ~ 50 °C (Remove moisture perfectly from the fluid to prevent freezing when used at 5 °C or lower.)				

Model code

Valve type and port size

404 1 2 **C - G304**

Valve function

1 Valve function

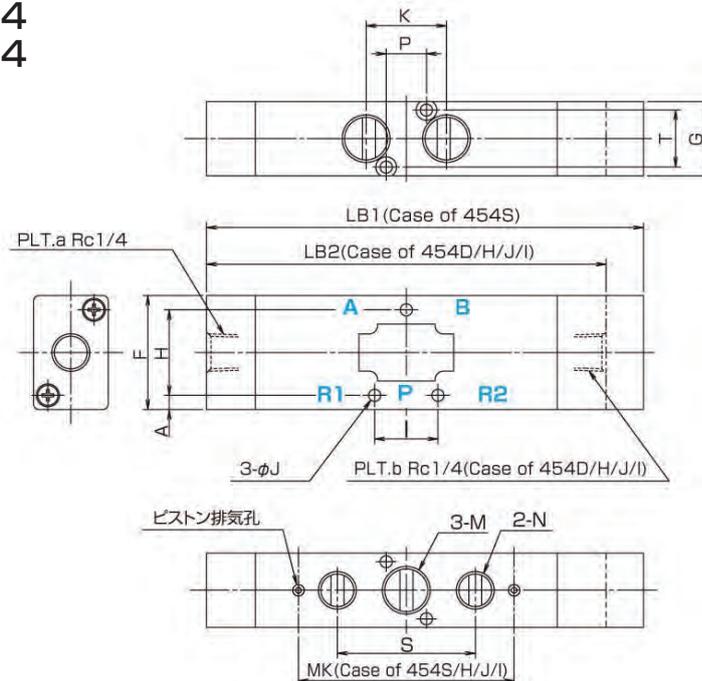
Valve type		JIS symbol	Codes
2 positions	Return		S
	Hold		D
3 positions	Closed center		H
	Center open to exhaust		J
	Center open to pressure		I

2 Valve type and port size

Valve type	Port Size	Codes
B 20	Rc 1 / 4	202
	Rc 3 / 8	203
B 40	Rc 3 / 8	403
	Rc 1 / 2	404

Outside dimensions

L 404 20 C - G 304
 404 40 C - G 304



Unit : mm

Type symbol	M	N	LB1	LB2	F	G	H	I	J	K	S	P	A	T	MK	
404S202C - G304	Rc1/4	Rc1/4	152	-	40	26	30	22	4.2	28	48	14	5	20	75	
404S203C - G304	Rc3/8															
404D202C - G304	Rc1/4															
404D203C - G304	Rc3/8															
404H/J/I202C - G304	Rc1/4	Rc3/8	-	139	56	36	40	30	5.3	36	68	14	8	28	100	
404H/J/I203C - G304	Rc3/8															
404S403C - G304	Rc3/8		Rc3/8	187												-
404S404C - G304	Rc1/2		Rc1/2													
404D403C - G304	Rc3/8	Rc3/8	-	144												
404D404C - G304	Rc1/2	Rc1/2														
404H/J/I403C - G304	Rc3/8	Rc3/8	-	169												
404H/J/I404C - G304	Rc1/2	Rc1/2														

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