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BANKABLE SOLENOID VALVE



# MSE030/060

**B** HYDRAULIC PRODUCT

SYSTEM OF FLUID POWER



# MSE-060

## PERFORMANCE

	MSE030	MSE060
Nominal flow rating	30 l/min	60 l/min
Operating pressure (max.)	parallel circuit : 250 bar	parallel circuit : 315 bar series circuit : 210 bar
Back pressure(max.)	210 bar (outlet port T)	
Internal leakage A (B) ⇒T (max.)	14 c.c/min at 100 bar (1450 psi) (fluid and valve at 40°C)	
Fluid	mineral oil with viscosity ranging between 15 to 75 mm/s	
Fluid temperature	Min. -20°C , Max. 80°C ,with NBR (BUNA-N) gaskets Min. -20°C ,Max. 100°C ,with FPM (VITON) seals gaskets	
Ambient temperature for working conditions	Min. -20°C , Max. 50°C	
Optimum oil clarity	210Bar : 20µm	350Bar : 10µm

## Port threads

### MSE030

Port	BSP	SAE
P	G3/8	3/4-16UNF
A & B port	G3/8	9/16-18UNF
T	G3/8	3/4-16UNF

### MSE060

Port	BSP	BSP*	SAE
P	G1/2	G1/2	3/4-16UNF
A & B port	G3/8	G1/2	9/16-18UNF
T	G1/2	G1/2	3/4-16UNF

Note(\*):optional thread

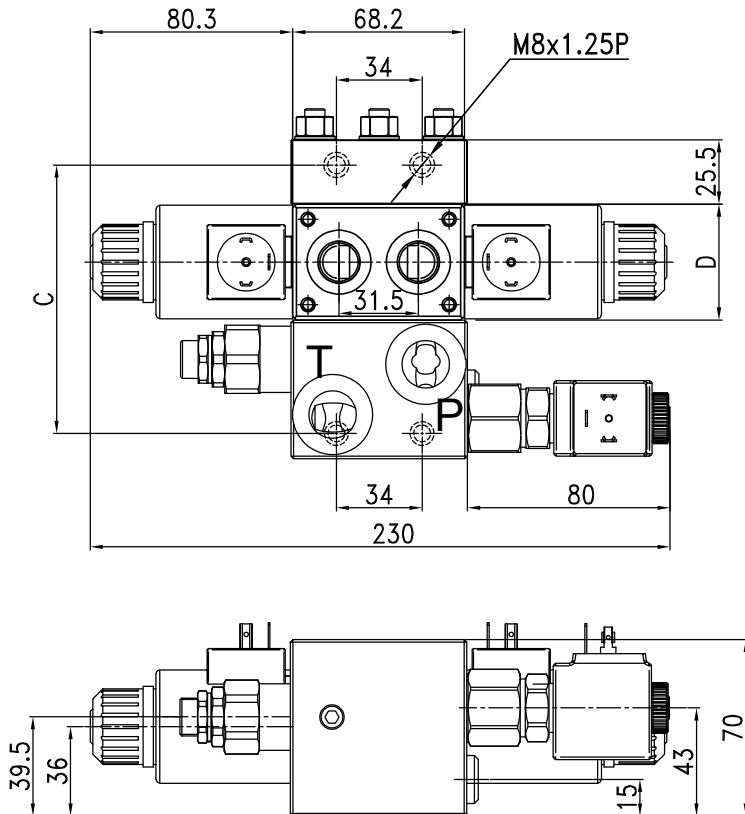


# Sectional Directional Control Valves

## MSE-060

### DIMENSIONS

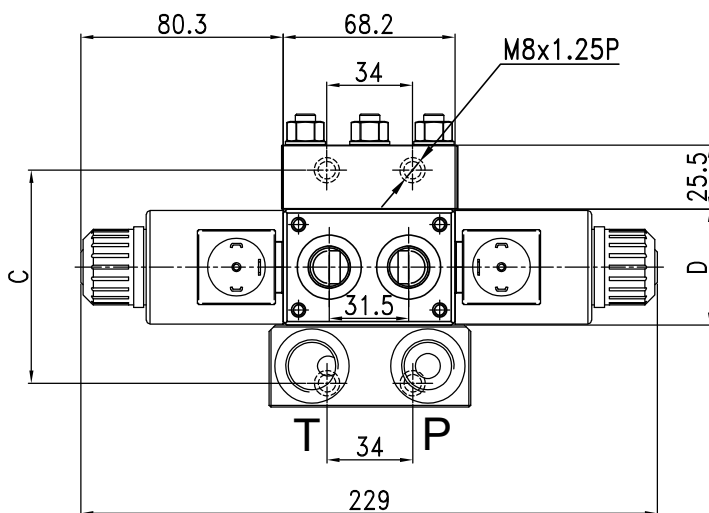
WV Inlet cover



Type	Dimensions		D
	WV.WVS	WVC	
MSE-030/1	107	85.5	46
MSE-030/2	153	131.5	92
MSE-030/3	199	177.5	138
MSE-030/4	245	223.5	184
MSE-030/5	291	269.5	230
MSE-030/6	337	315.5	276
MSE-030/7	383	361.5	322
MSE-030/8	429	407.5	368
MSE-030/9	475	453.5	414
MSE-030/10	521	499.5	460

unit : mm

NV Inlet cover



Type	Dimensions	
	C	D
MSE-030/1	85	46
MSE-030/2	131	92
MSE-030/3	177	138
MSE-030/4	223	184
MSE-030/5	269	230
MSE-030/6	315	276
MSE-030/7	361	322
MSE-030/8	407	368
MSE-030/9	453	414
MSE-030/10	499	460

unit : mm



SYSTEM OF FLUID POWER

# MSE-030

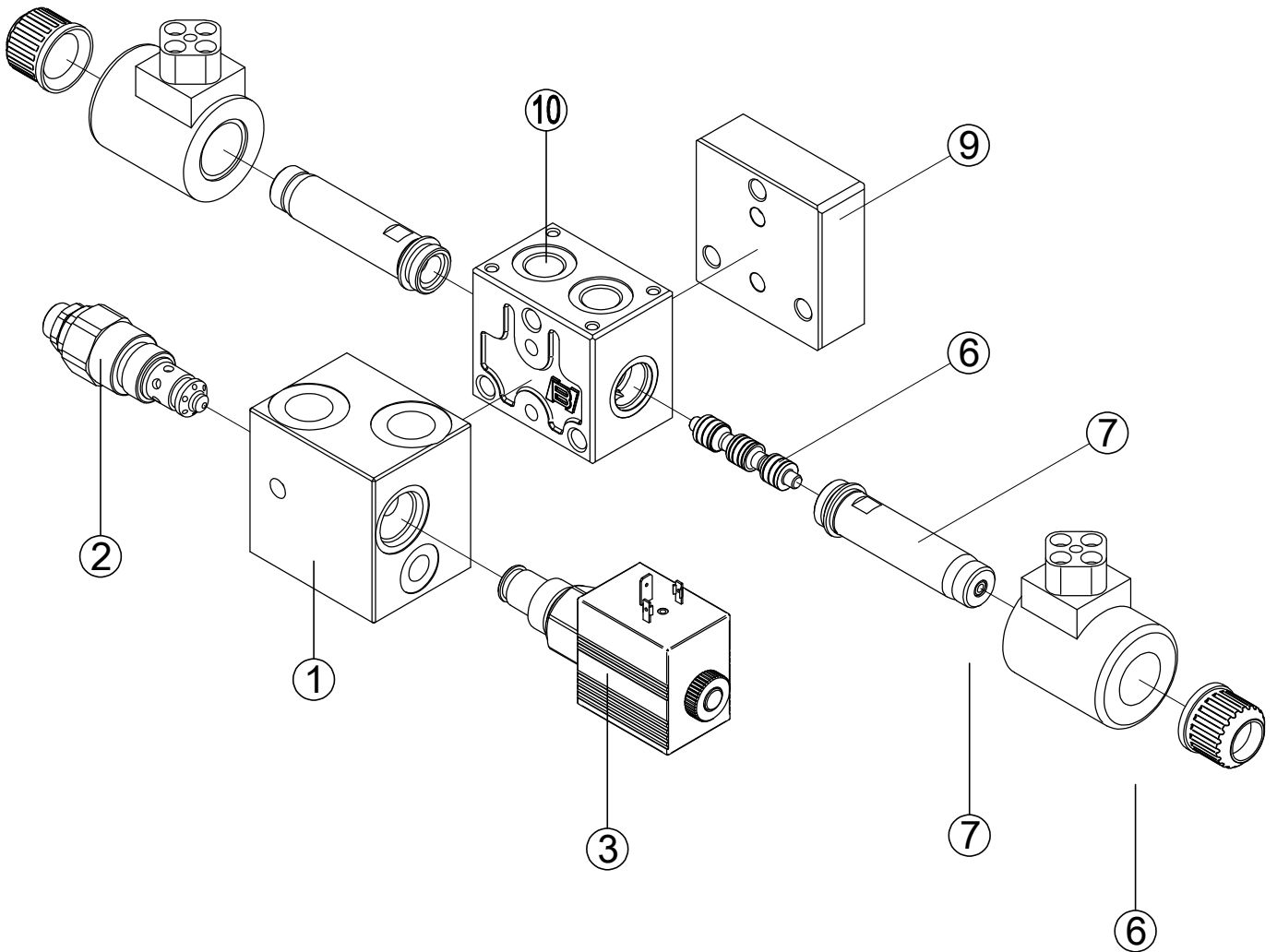
## ORDERING CODE NUMBER EXAMPLE

MSE-030 / 2 / WV( R - 175 )NE / PC / S A1 ES1 - FCR ( 2 - 100 ) /  
 / S A1 ES3 - FAR ( 2 - 100 ) / RP / SAE

NO. of working section.

1st section

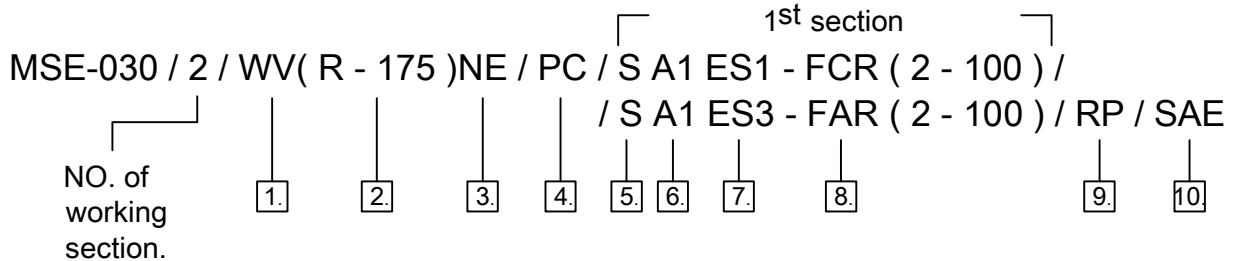
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.





# MSE-030

## ORDERING CODE NUMBER EXAMPLE



### 1. Inlet cover page.10

Type	Description
NV	Without valves arrangement.
WV	With relief and unloading valves.
WVS	With relief valve and plug.
WVC	With relief and,unloading valves, and carry-over plug

### 2. Inlet cover main relief valve page.11

Type	Description
R1-80	Range 10 to 120 bar (145-1750 psi) standard setting 80 bar (1160 psi)
R2-175	Range 40 to 200 bar (580-2900 psi) standard setting 175 bar (2550 psi)
R3-250	Range 200 to 350 bar (2900-5100 psi) standard setting 250 bar (3600 psi)
NR	Relief valve blanking plug.

### 3. EL control unloading valve page.11

Type	Description
NE	Without emergency actuation.
BE	Button type emergency actuation.
NU	Unloading valve blanking plug.

*For list of coils see page 23*

### 4. Hydraulic circuit page.12

Type	Description
PC	Parallel circuit.

### 5. Working sections cover page.13

Type	Description
S	Parallel circuit.
SR	As type S, for the use of regenerative circuit on port A: spool type A5 required.

### 6. Spool option page.15

Type	Description
A1	Double acting,3 positions with A and B closed in centre.
A2	Double acting,3 positions with A and B open to tank in neutral position.
A3	Double acting, A and B to tank in neutral postion.
A5	Double acting, for the use of regenerative circuit, section type SR required.

### 7. Control option page.16

Type	Description
ES1	On/off electro-hydraulic control with solenoid function to position 1. Spring return to neutral.
ES2	On/off electro-hydraulic control with solenoid function to position 2. Spring return to neutral.
ES3	On/off electro-hydraulic control with solenoid function to position 1 or 2. Spring return to neutral.
EHS3	As type ES3,with emergency lever operation.



# MSE-030

## 8. Complete flangeable valve block

Relief valve page.18

Type	Description
FCR	Relief valves on port A and B.
FAR	Relief valve on port A.
FBR	Relief valve on port B.

Pilot-operated check valve page.19

Type	Description
FCC	Check valves on port A and B.
FAC	Check valve on port A.
FBC	Check valve on port B.

Solenoid-operated check valve page.20

Type	Description
normally-closed circuit	
FSNC3	Solenoid valves on port A and B.
FSNC1	Solenoid valve on port A.
FSNC2	Solenoid valve on port B.
normally-opened circuit	
FSNO3	Solenoid valves on port A and B.
FSNO1	Solenoid valve on port A.
FSNO2	Solenoid valve on port B.

## 9. Outlet cover page.21

Type	Description
RNH	Without P and T ports
RP	P and T ports plugged
RPO	P open, T plugged
RTO	T open, P plugged

## 10. Port threads option page.24

Type	Description
BSP	G
SAE	UN-UNF





SYSTEM OF FLUID POWER

# MSE-060

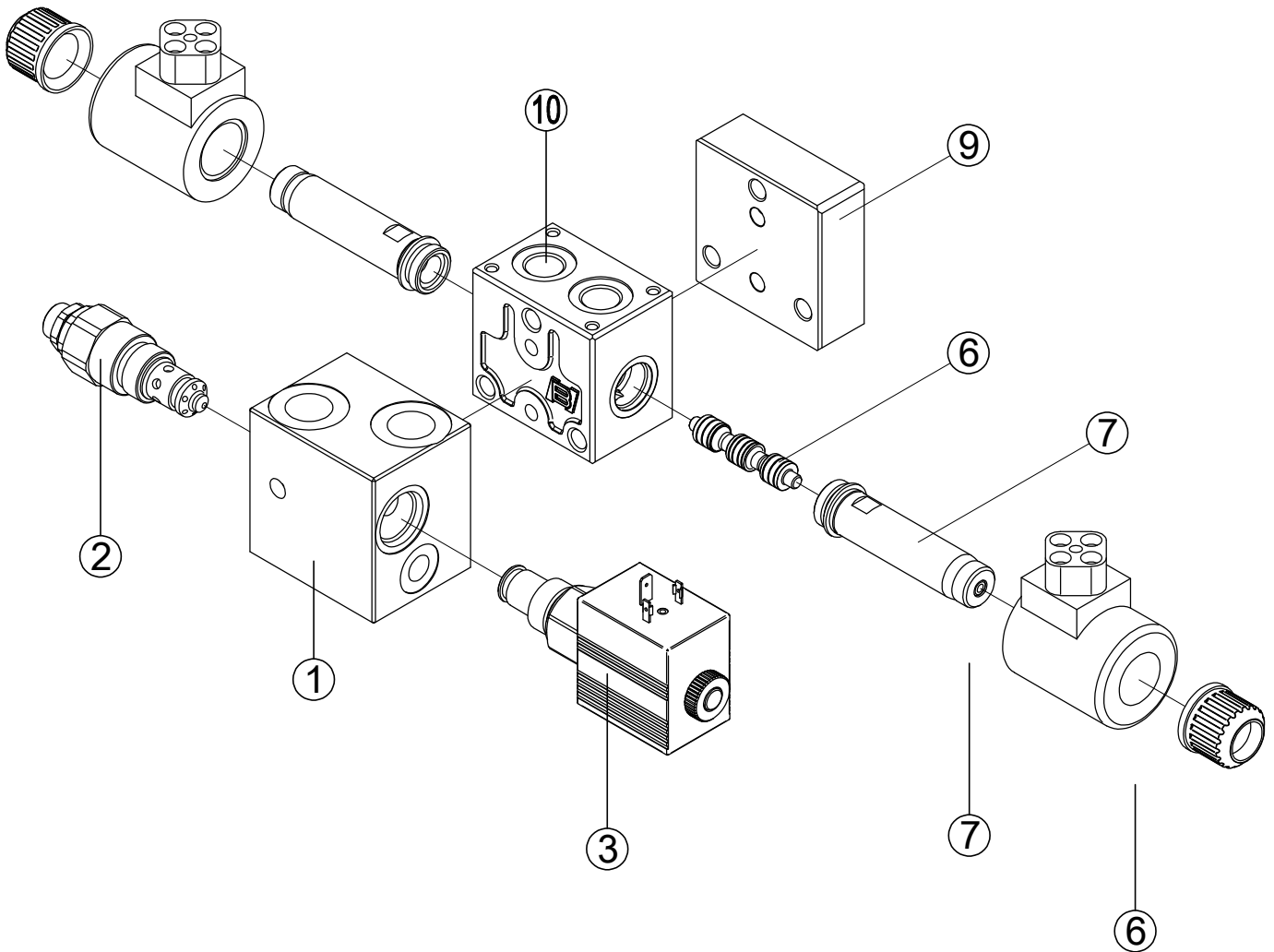
## ORDERING CODE NUMBER EXAMPLE

MSE-060 / 2 / WV( R - 175 )NE / PC / S A1 ES1 - FCR ( 2 - 100 ) /  
 / S A1 ES3 - FAR ( 2 - 100 ) / RP / SAE

NO. of working section.

1st section

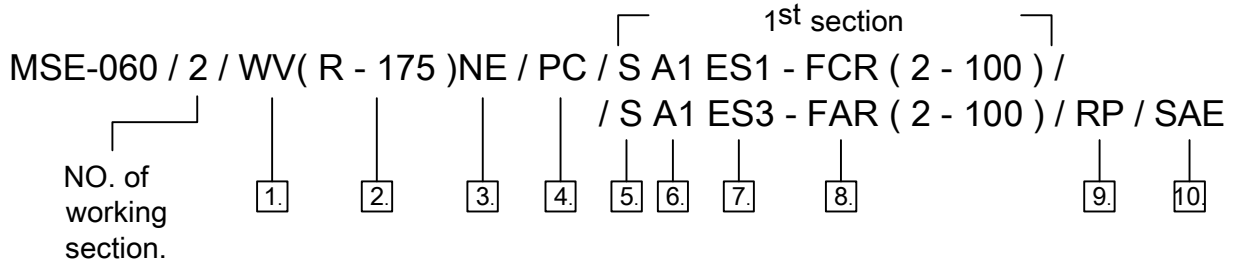
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# MSE-060

## ORDERING CODE NUMBER EXAMPLE



### 1. Inlet cover page.10

Type	Description
NV	Without valves arrangement.
WV	With relief and unloading valves.
WVS	With relief valve and plug.
WVC	With relief and,unloading valves, and carry-over plug

### 2. Inlet cover main relief valve page.11

Type	Description
R1-80	Range 10 to 120 bar (145-1750 psi) standard setting 80 bar (1160 psi)
R2-175	Range 40 to 200 bar (580-2900 psi) standard setting 175 bar (2550 psi)
R3-250	Range 200 to 350 bar (2900-5100 psi) standard setting 250 bar (3600 psi)
NR	Relief valve blanking plug.

### 3. EL control unloading valve page.11

Type	Description
NE	Without emergency actuation.
BE	Button type emergency actuation.
NU	Unloading valve blanking plug.

*For list of coils see page 25*

### 4. Hydraulic circuit page.12

Type	Description
PC	Parallel circuit.
SC	Series circuit.

### 5. Working sections cover page.14

*Standard thread G3/8, also with optional \*G1/2*

Type	Description
S	Parallel circuit, with arrangement for flangeable valve block on top. (for G3/8 section only)

### 5. Working sections cover page.14

Type	Description
SS	As type S, for the use of series circuit, spool type A4 required. Only for section up to 60 l/min(15.8 US gpm)
SR	As type S, for the use of regenerative circuit on port A: spool type A5 required.

### 6. Spool option page.15

Type	Description
A1	Double acting,3 positions with A and B closed in centre.
A2	Double acting,3 positions with A and B open to tank in neutral position.
A3	Double acting, A and B to tank in neutral position.
A4	Double acting, for the use of series circuit.
A5	Double acting, for the use of regenerative circuit, section type SR required.

### 7. Control option page.17

Type	Description
ES1	On/off electro-hydraulic control with solenoid function to position 1. Spring return to neutral.
ES2	On/off electro-hydraulic control with solenoid function to position 2. Spring return to neutral.
ES3	On/off electro-hydraulic control with solenoid function to position 1 or 2. Spring return to neutral.
EHS3	As type ES3,with emergency lever operation.



# MSE-060

## 8. Complete flangeable valve block

Relief valve page.18

Type	Description
FCR	Relief valves on port A and B.
FAR	Relief valve on port A.
FBR	Relief valve on port B.

Pilot-operated check valve page.19

Type	Description
FCC	Check valves on port A and B.
FAC	Check valve on port A.
FBC	Check valve on port B.

Solenoid-operated check valve page.20

Type	Description
normally-closed circuit	
FSNC3	Solenoid valves on port A and B.
FSNC1	Solenoid valve on port A.
FSNC2	Solenoid valve on port B.
normally-opened circuit	
FSNO3	Solenoid valves on port A and B.
FSNO1	Solenoid valve on port A.
FSNO2	Solenoidvalve on port B.

## 9. Outlet cover page.21

Type	Description
RNH	Without P and T ports
RP	P and T ports plugged
RPO	P open, T plugged
RTO	T open, P plugged

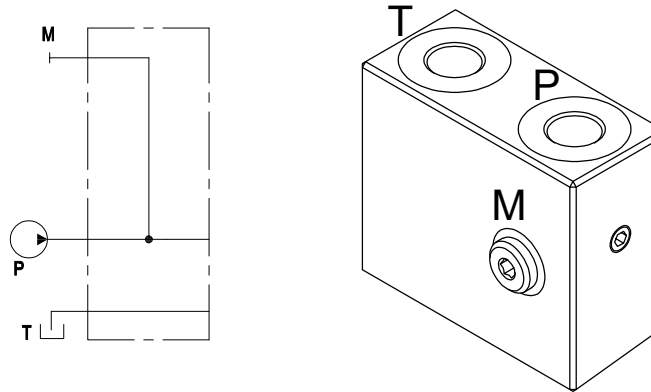
## 10. Port threads option page.24

Type	Description
BSP	G
SAE	UN-UNF

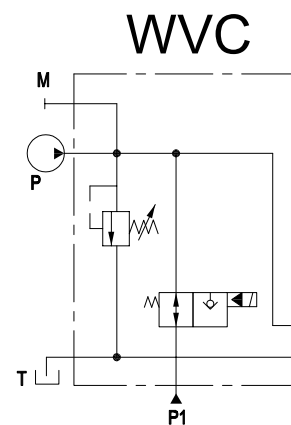
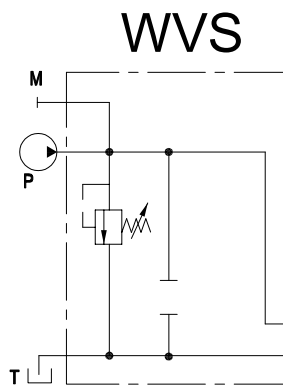
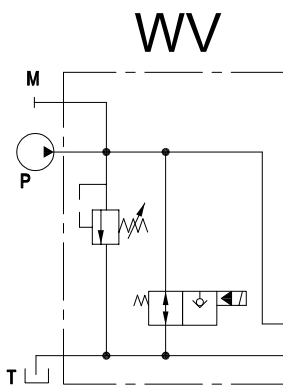
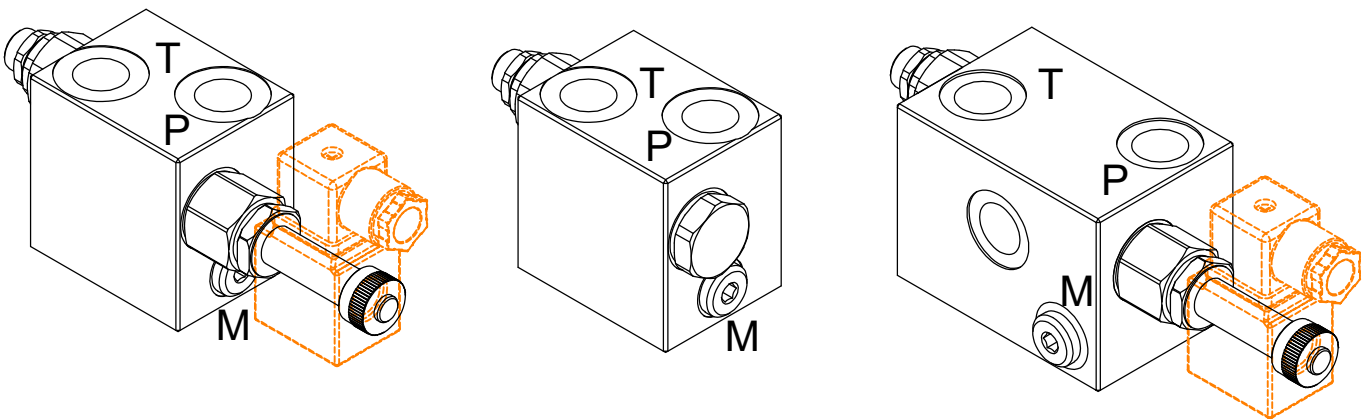
# MSE-030/060

## 1. Inlet cover

**NV** Without valves arrangement.



**WV** With relief and, unloading valves, and carry-over plug

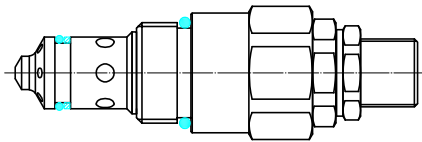
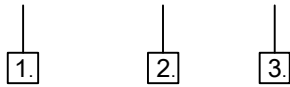


# MSE-030/060

## 2. Inlet cover main relief valve

### Main relief valve position

(R1 - 80) NE

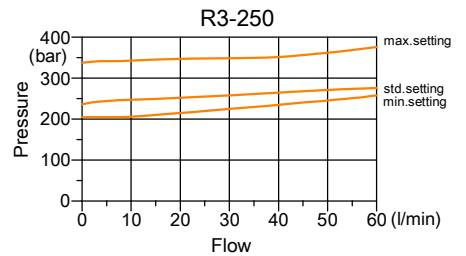
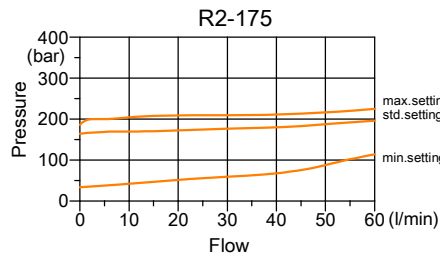
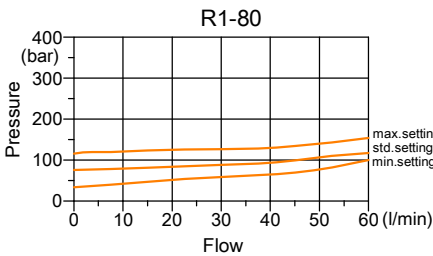


1. NR=Relief valve blanking plug.  
R=With relief valve.

2. 1-80: Range 10 to 120 bar (145-1750 psi)  
Standard setting 80 bar (1160 psi)

2-175: Range 40 to 200 bar (580-2900 psi)  
Standard setting 175 bar (2550 psi)

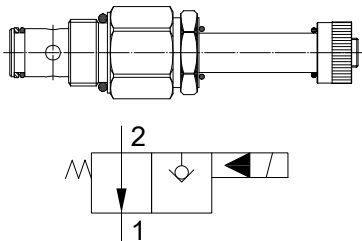
3-250: Range 200 to 350 bar (2900-5100 psi)  
Standard setting 250 bar (3600 psi)



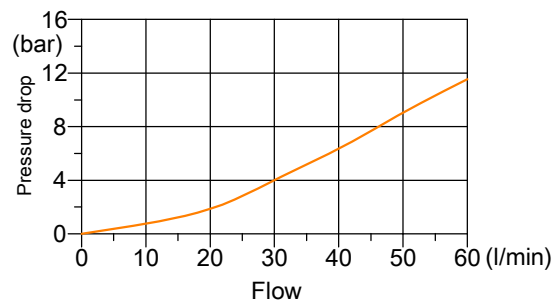
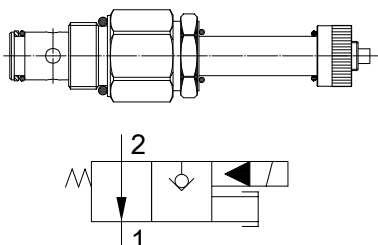
## 3. Inlet cover EL control unloading valve option

### EL control unloading valve option

NE



BE



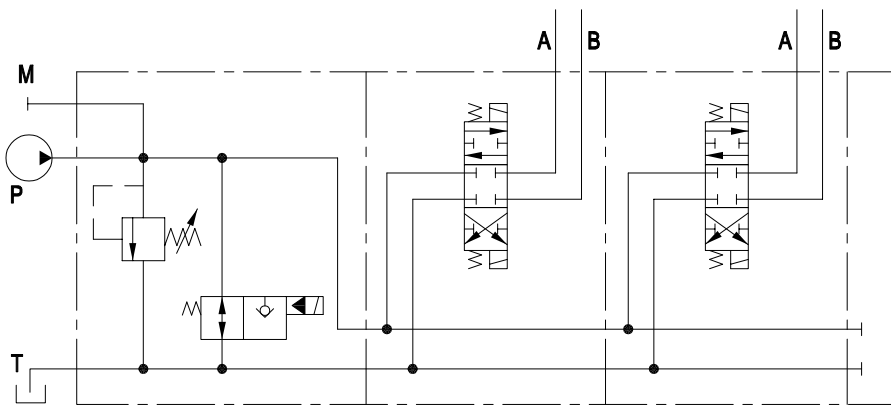
3. NE: Without emergency actuation.  
BE: Button type emergency actuation.  
NU: Unloading valve blanking plug.

*For list of coils see page 25*

# MSE-030/060

## 4. Hydraulic circuit

### PC Parallel circuit

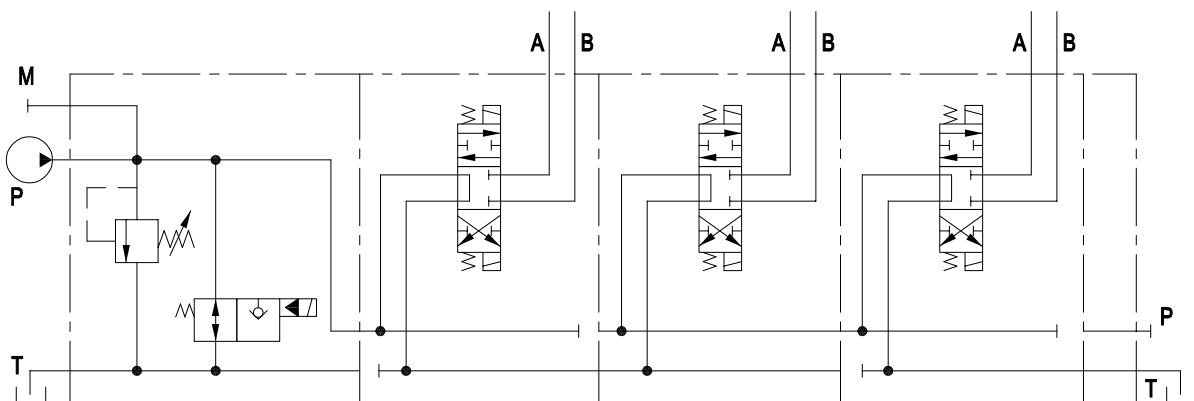
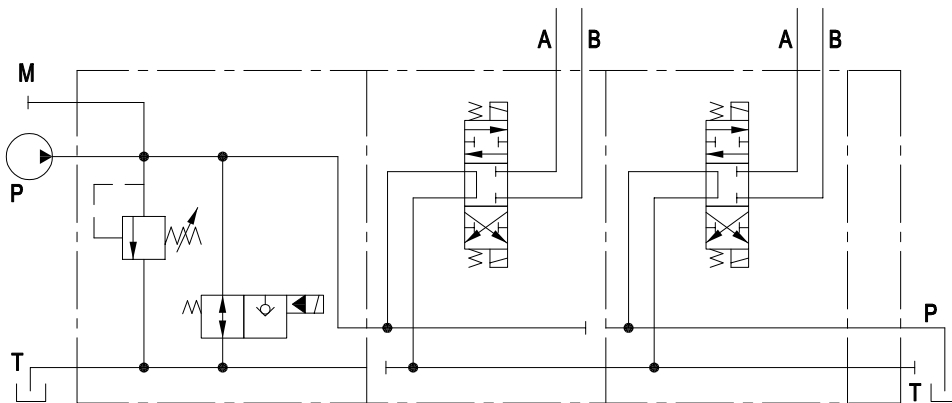


### SC Series circuit (MSE060 Only)

The series circuit is composed using alternatively S and SS working sections, both with A4 series spool.

The circuit starts always with SS working section.

The outlet section depends on total number of working sections: if it is even, the outlet section must have P port open, if it is odd, the outlet section must have T port open.



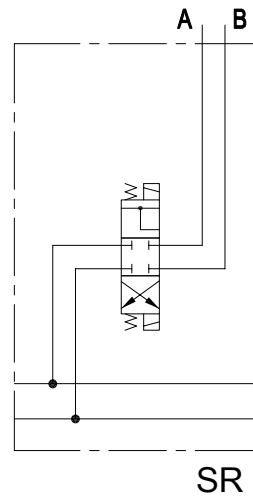
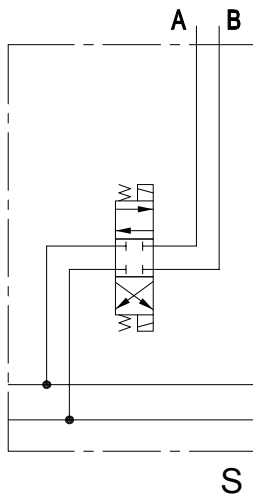
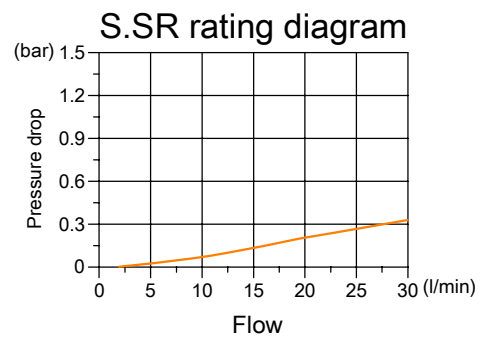
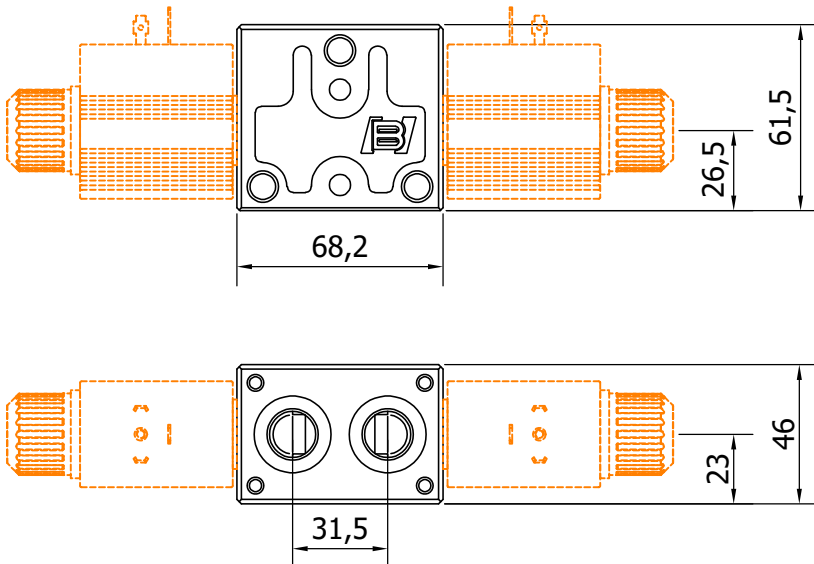
# MSE-030

## 5. Working section cover

S A1 ES1



1. S : Parallel circuit.  
 SR : As type S, for the use of regenerative circuit on port A : spool type A5 required.  
 For list of coils see page 15



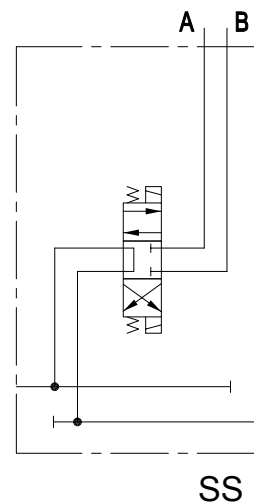
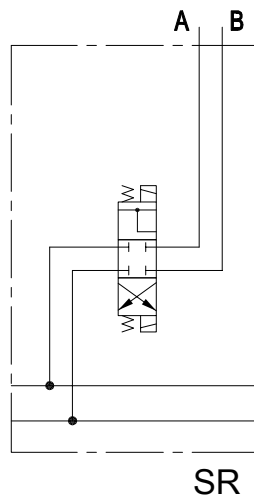
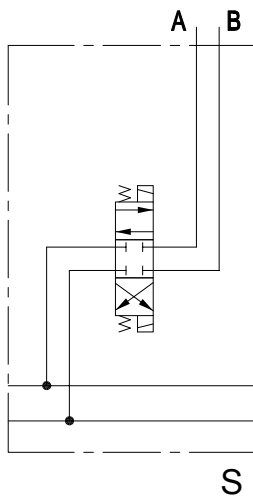
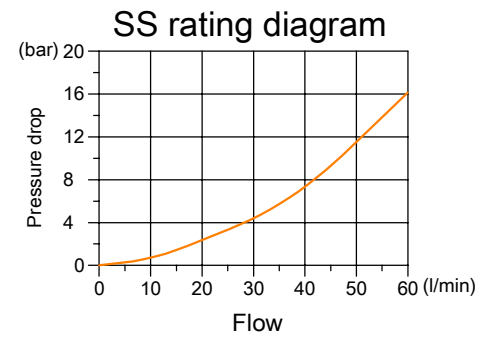
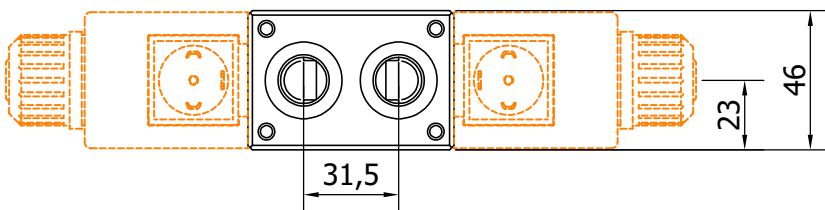
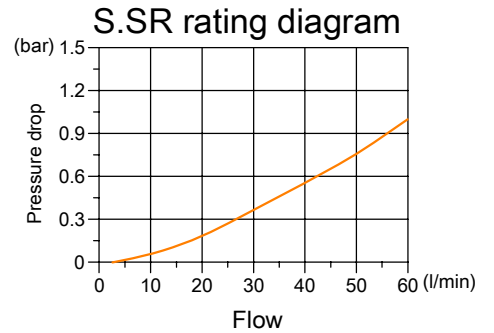
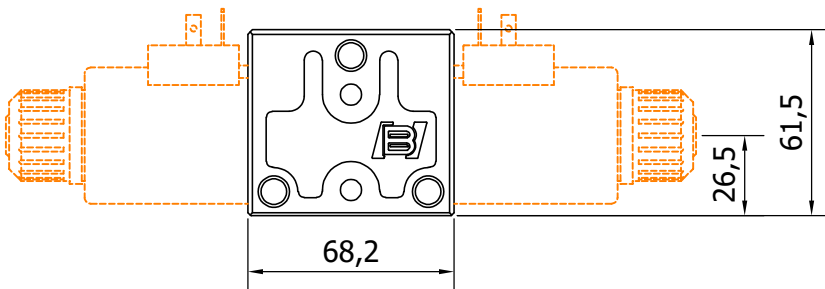
# MSE-060

## 5. Working section cover

S A1 ES1



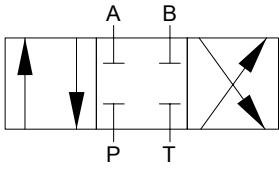
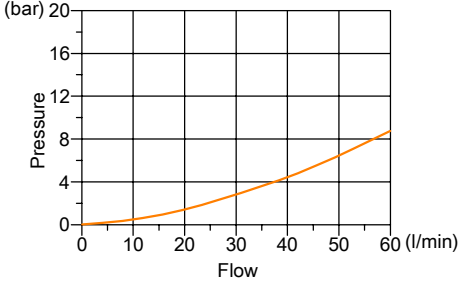
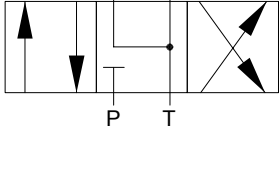
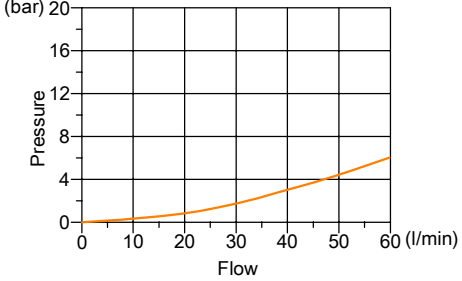
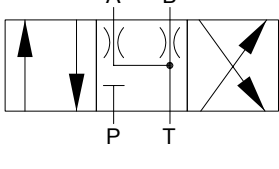
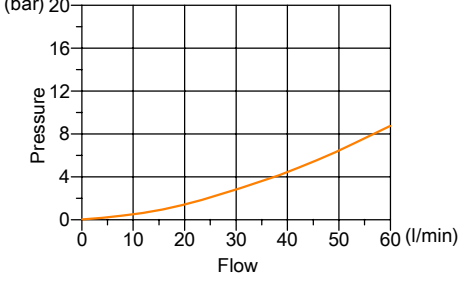
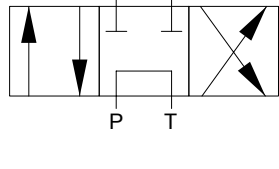
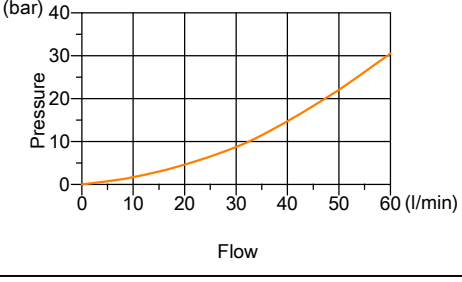
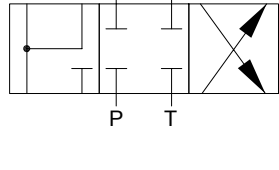
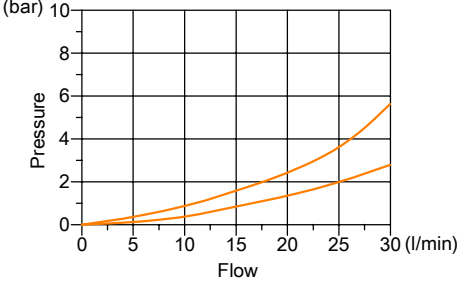
1. S : Parallel circuit, with arrangement for flangeable valve block on top.  
 SS: As type S, for the use of series circuit, spool type A4 required.  
 SR: As type S, for the use of regenerative circuit on port A : spool type A5 required.  
 For list of coils see page 15





# MSE-030/060

## 6. Spool option

Type	Scheme	P⇒Port - Port⇒T pressure drops
A1	<p>1 0 2</p> 	
A2	<p>1 0 2</p> 	
A3	<p>1 0 2</p> 	
A4	<p>1 0 2</p> 	
A5	<p>1 0 2</p> 	

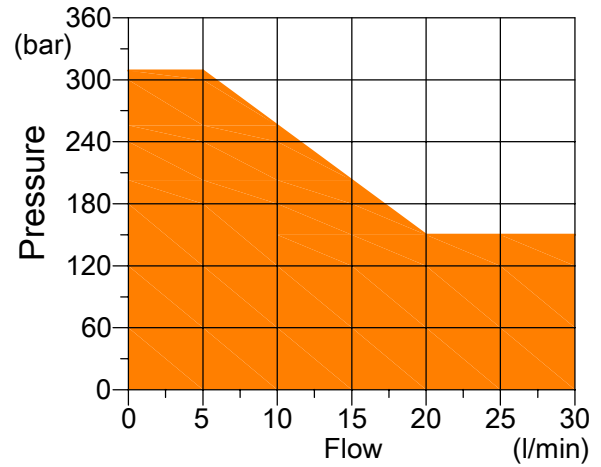
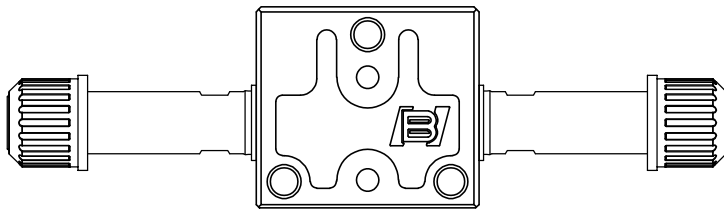
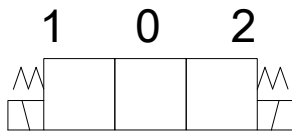
# MSE-030

## 7. Control option

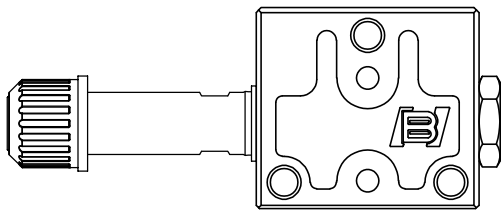
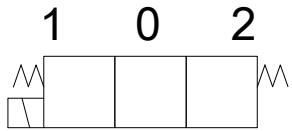
### S A1 ES3



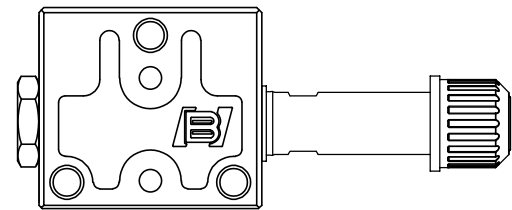
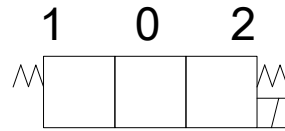
1. ES3: On/off electro-hydraulic control with solenoid function to position 1 or 2. Spring return to neutral.



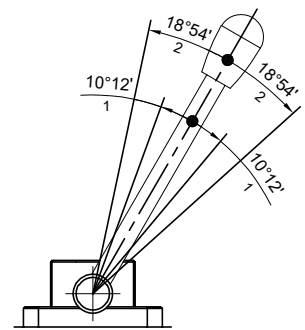
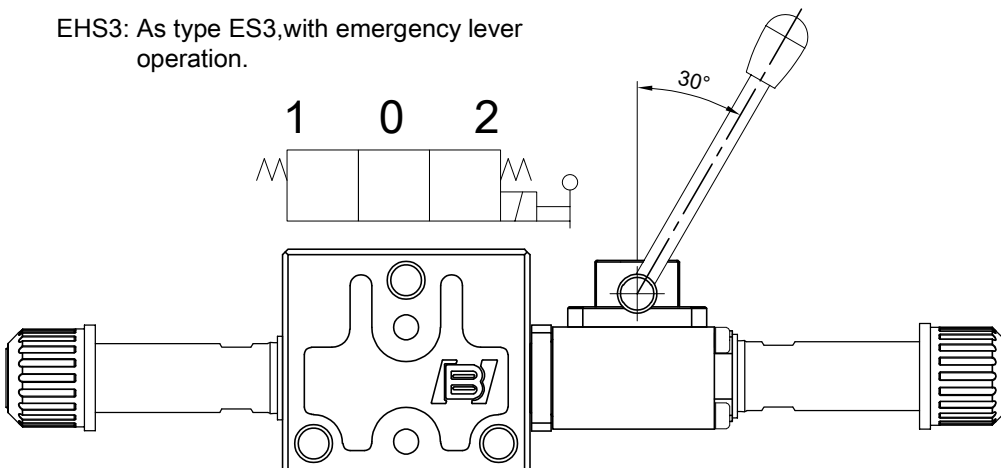
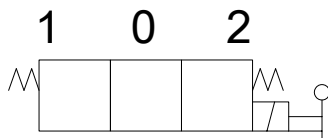
ES1: On/off electro-hydraulic control with solenoid function to position 1. Spring return to neutral.



ES2: On/off electro-hydraulic control with solenoid function to position 2. Spring return to neutral.



EHS3: As type ES3, with emergency lever operation.



1: idle stroke angles  
2: total operation angles

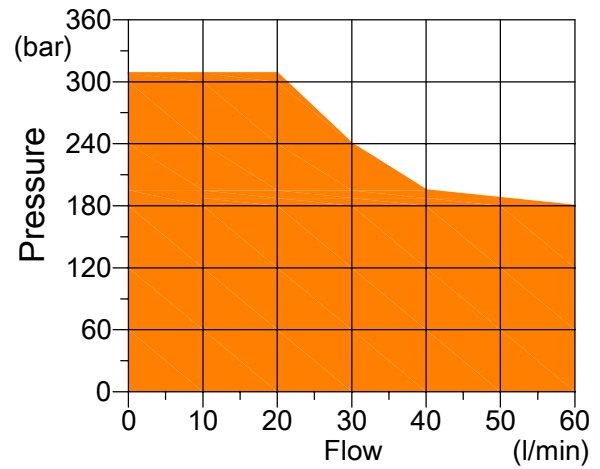
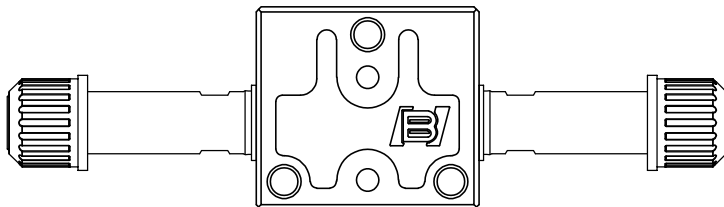
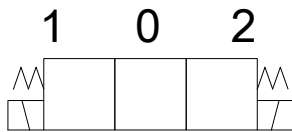
# MSE-060

## 7. Control option

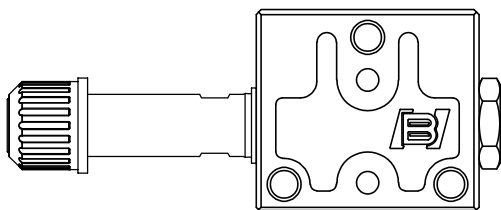
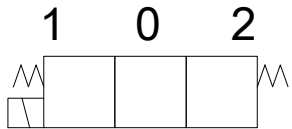
### S A1 ES3



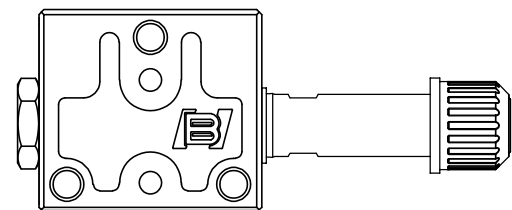
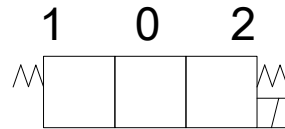
1. ES3: On/off electro-hydraulic control with solenoid function to position 1 or 2. Spring return to neutral.



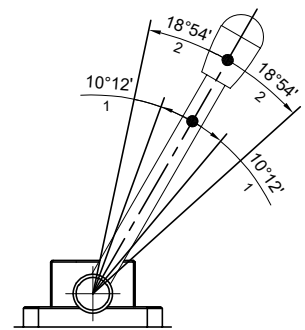
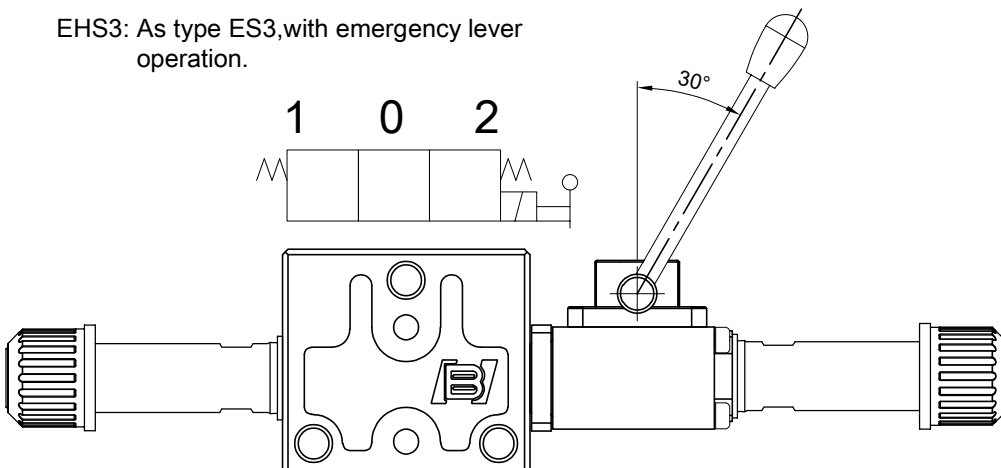
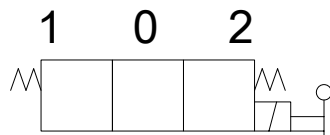
ES1: On/off electro-hydraulic control with solenoid function to position 1. Spring return to neutral.



ES2: On/off electro-hydraulic control with solenoid function to position 2. Spring return to neutral.



EHS3: As type ES3, with emergency lever operation.



1: idle stroke angles  
2: total operation angles

# MSE-030/060

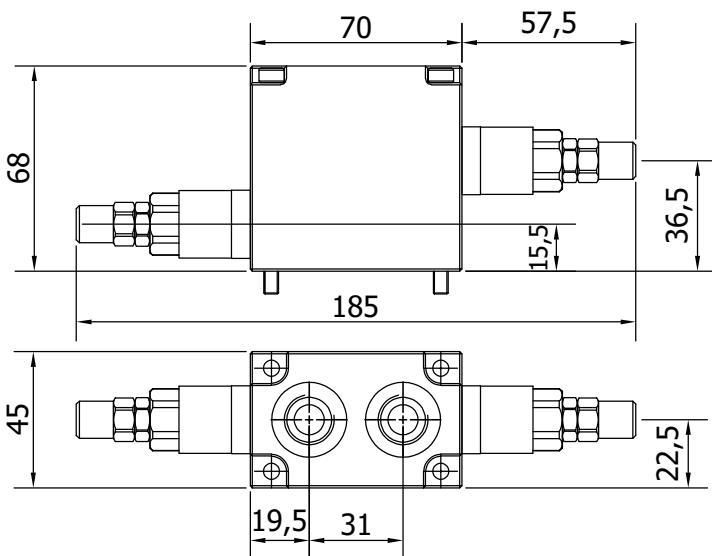
## 8. Flangeable valve block option

### Relief vavle

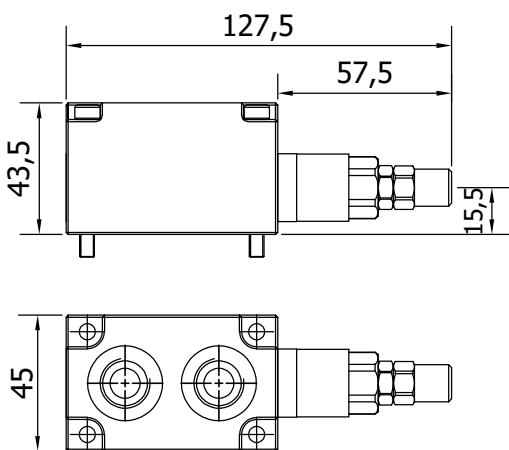
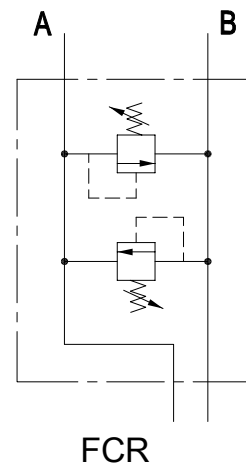
S A1 ES3 - FCR

1. FCR : Relief valves on port A and B.  
 FAR : Relief valve on port A.  
 FBR : Relief valve on port B.

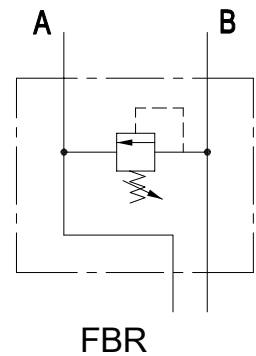
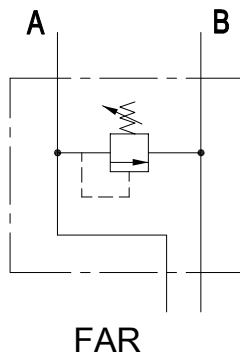
1.



FCR : Relief valves on port A and B.



FAR / FBR : Relief valves on port A or B.



# MSE-030/060

## 8. Flangeable valve block option

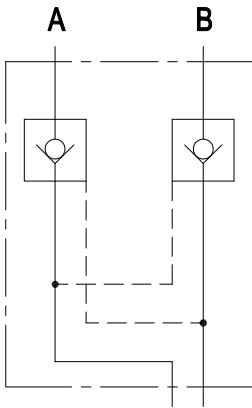
Pilot-operated check valve

S A1 ES3 - FCC

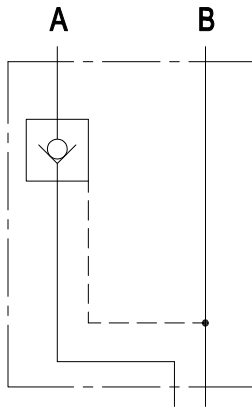
1. FCC : Check valves on port A and B.  
 FAC : Check valve on port A.  
 FBC : Check valve on port B.

1.

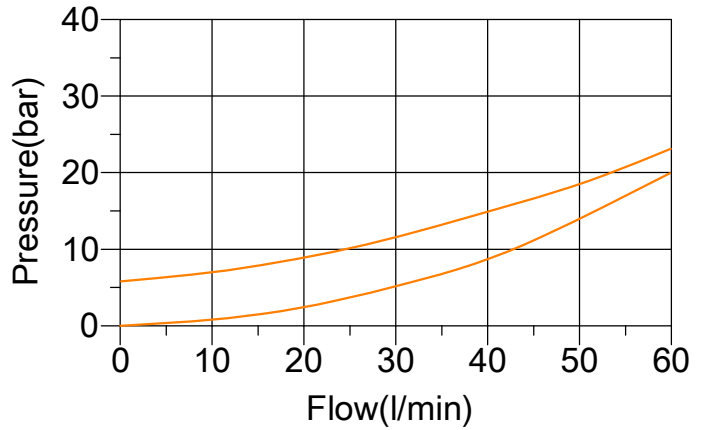
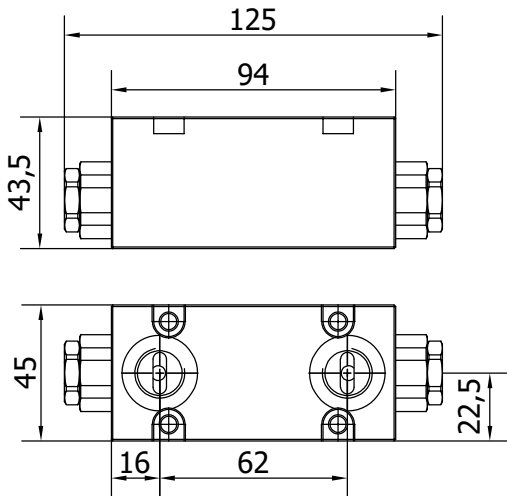
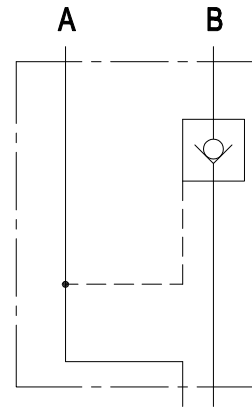
FCC



FAC



FBC



# MSE-030/060

## 8. Flangeable valve block option

### Solenoid-operated check valve

#### S A1 ES3 - FSNC3

1.

Normally-closed circuit

FSNC3 : Solenoid valves on port A and B.

FSNC1 : Solenoid valve on port A.

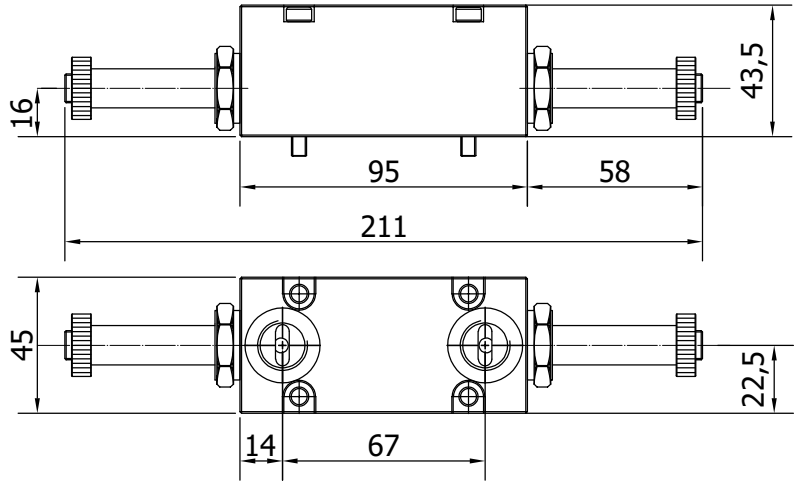
FSNC2 : Solenoid valve on port B.

Normally-opened circuit

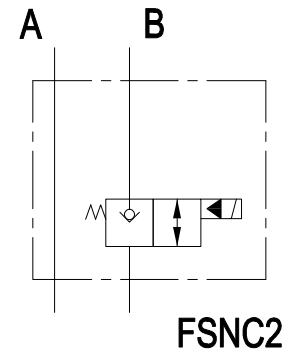
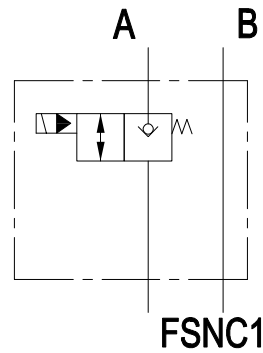
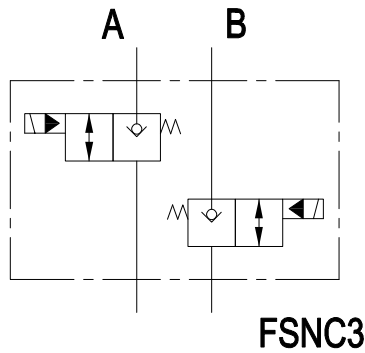
FSNO3 : Solenoid valves on port A and B.

FSNO1 : Solenoid valve on port A.

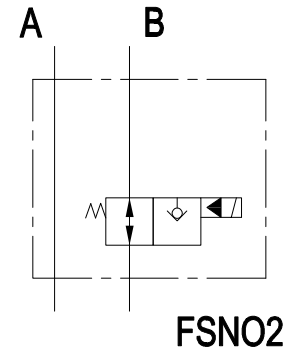
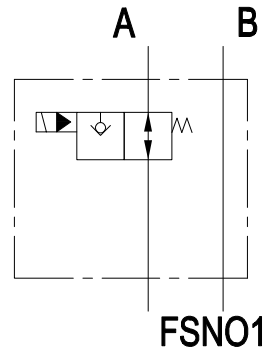
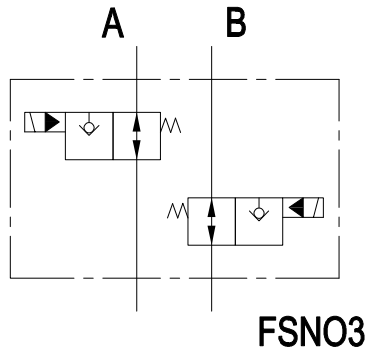
FSNO2 : Solenoid valve on port B.



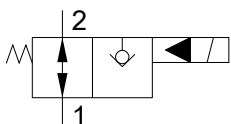
FSNC



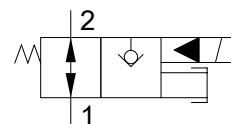
FSNO



Without emergency actuation.



Button type emergency actuation.



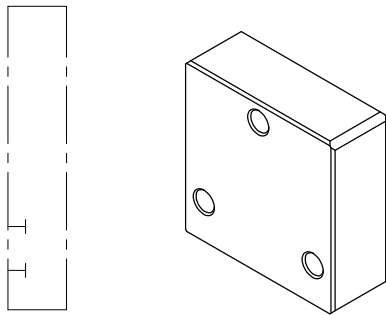
# MSE-030/060

## 9. Outlet cover

### OC-MSE-030(060) / RNH

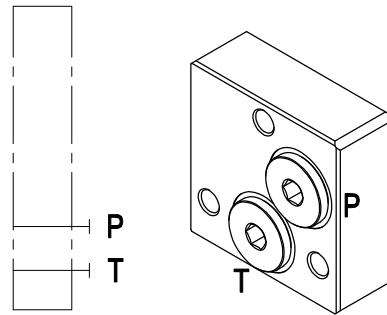
1.

1. RNH : Without P and T ports  
 RP : P and T ports plugged  
 RPO : P open, T plugged  
 RTO : T open, P plugged



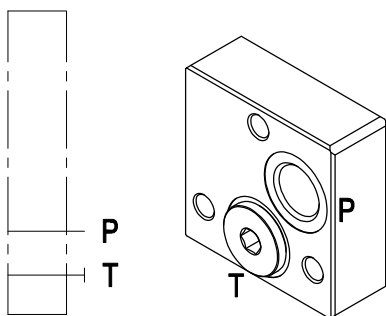
**RNH**

Without P and T ports



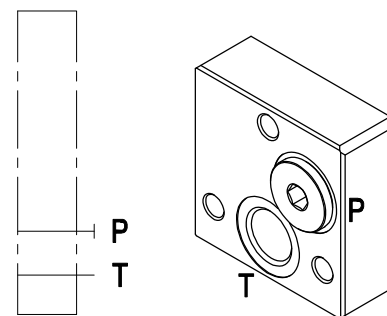
**RP**

P and T ports plugged



**RPO**

P open, T plugged



**RTO**

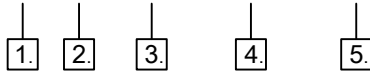
T open, P plugged



# MSE-030/060-Working section

## ORDERING CODE NUMBER EXAMPLE

WS-MSE-030(060) / S A1 ES1 - FCR / SAE



### 1. Working sections cover page.13

Standard thread G3/8, also with optional \*G1/2

Type	Description
S	Parallel circuit, with arrangement for flangeable valve block on top. (for G3/8 section only)
SS	As type S, for the use of series circuit, spool type A4 required. Only for section up to 60 l/min(15.8 US gpm)
SR	As type S, for the use of regenerative circuit on port A: spool type A5 required.

### 2. Spool option page.15

Type	Description
A1	Double acting, 3 positions with A and B closed in centre.
A2	Double acting, 3 positions with A and B open to tank in neutral position.
A3	Double acting, A and B to tank in neutral position.
A4	Double acting, for the use of series circuit.
A5	Double acting, for the use of regenerative circuit, section type SR required.

### 3. Control option page.16

Type	Description
ES1	On/off electro-hydraulic control with solenoid function to position 1. Spring return to neutral.
ES2	On/off electro-hydraulic control with solenoid function to position 2. Spring return to neutral.
ES3	On/off electro-hydraulic control with solenoid function to position 1 or 2. Spring return to neutral.
EHS3	As type ES3, with emergency lever operation.

### 4. Complete flangeable valve block

Only for section up to 60 l/min(15.8 US gpm)  
Relief valve page.18

Type	Description
FCR	Relief valves on port A and B.
FAR	Relief valve on port A.
FBR	Relief valve on port B.

Pilot-operated check valve page.19

Type	Description
FCC	Check valves on port A and B.
FAC	Check valve on port A.
FBC	Check valve on port B.

Solenoid-operated check valve page.20

Type	Description
normally-closed circuit	
FSNC3	Solenoid valves on port A and B.
FSNC1	Solenoid valve on port A.
FSNC2	Solenoid valve on port B.
normally-opened circuit	
FSNO3	Solenoid valves on port A and B.
FSNO1	Solenoid valve on port A.
FSNO2	Solenoid valve on port B.

### 5. Port threads option page.24

Type	Description
BSP	G
SAE	UN-UNF



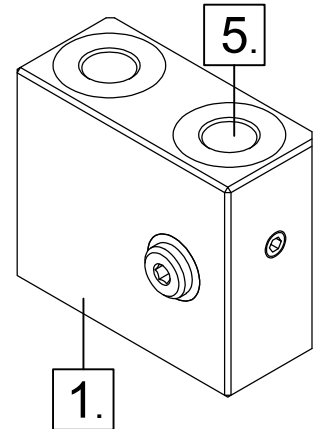
# MSE-030/060-Inlet cover

## ORDERING CODE NUMBER EXAMPLE

IC-MSE-030(MSE-060) / NV - BSP

1.

5.



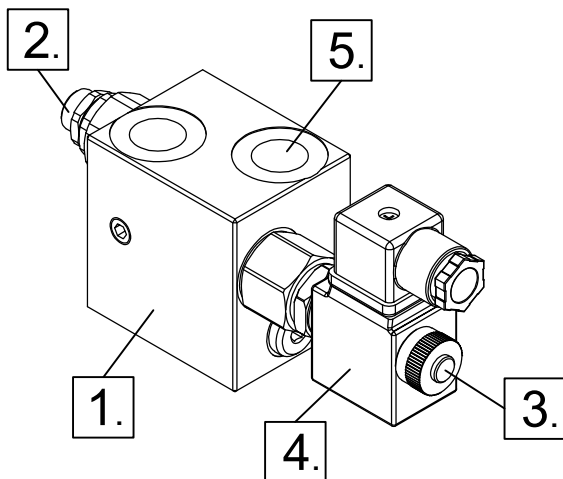
IC-MSE-030(MSE-060) / WV - (R-80) NE - BSP

1.

2.

3.

5.



### 1. Inlet cover page.10

Type	Description
NV	Without valves arrangement.
WV	With relief and unloading valves.
WVS	With relief valve and plug.
WVC	With relief and,unloading valves, and carry-over plug

### 3.EL control unloading valve page.11

Type	Description
NE	Without emergency actuation.
SE	Screw type emergency actuation.
BE	Button type emergency actuation.
NU	Unloading valve blanking plug.

### 2. Inlet cover main relief valve page.11

Type	Description
R1-80	Range 10 to 120 bar (145-1750 psi) standard setting 80 bar (1160 psi)
R2-175	Range 40 to 200 bar (580-2900 psi) standard setting 175 bar (2550 psi)
R3-250	Range 200 to 350 bar (2900-5100 psi) standard setting 250 bar (3600 psi)
NR	Relief valve blanking plug.

### 4. Coil series page.25

Coils voltage specification; for list of available coils see page.25.

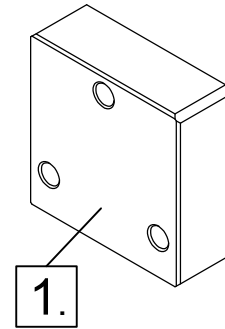
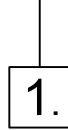
### 5. Port threads option page.24

Type	Description
BSP	G
SAE	UN-UNF

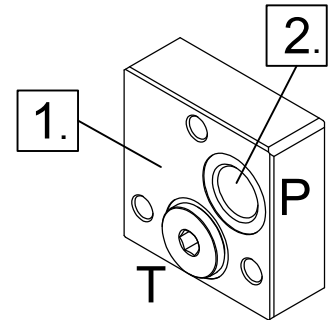
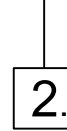
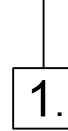
# MS-030/060-Outlet cover

## ORDERING CODE NUMBER EXAMPLE

OC-MSE-030(MSE-060) / RNH



OC-MSE-030(MSE-060) / RPO - BSP



**1.Outlet cover**

page.19

Type	Description
RNH	Without P and T ports
RP	P and T ports plugged
RPO	P open, T plugged
RTO	T open, P plugged

**2.Port threads option**

page.22

Type	Description
BSP	G
SAE	UN-UNF

## 11.Port threads option

### Port threads

#### MSE-030

Port	BSP	SAE
P	G3/8	3/4-16UNF
A & B port	G3/8	9/16-18UNF
T	G3/8	3/4-16UNF

#### MSE-060

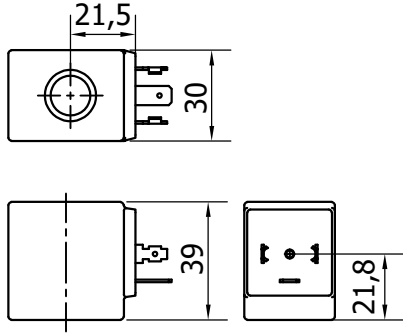
Port	BSP	BSP*	SAE
P	G1/2	G1/2	3/4-16UNF
A & B port	G3/8	G1/2	9/16-18UNF
T	G1/2	G1/2	3/4-16UNF

※A.B port can customize as G1/2.

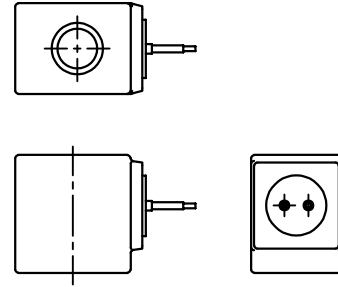
# MSE-030/060

## 12. Coil Series

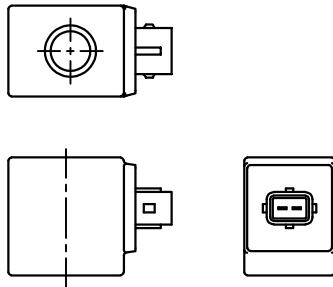
Coil series option



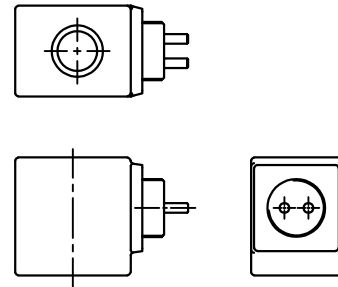
Type : CS01  
 Connection=A EN 175301-803 ISO 4400(DIN.43650)  
 Voltage : 12-24VDC



Type : CS02  
 Connection=lead wires connection  
 Voltage : 12-24VDC



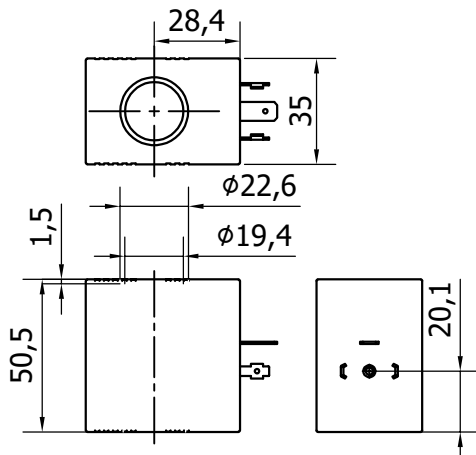
Type : CS03  
 Connection=AMP Junior connection  
 Voltage : 12-24VDC



Type : CS04  
 Connection=M27x1 connection  
 Voltage : 12-24VDC

### DIMENSIONS

MSE030  
 Working sections coil



MSE060  
 Working sections coil

