

## Contact Details

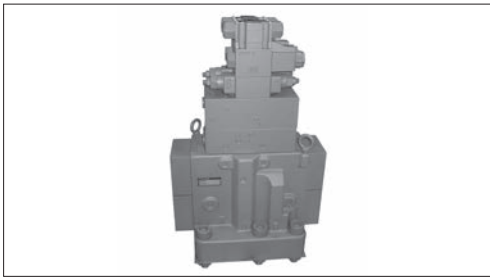
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# Type C4 Solenoid Pilot Operated Directional Control Valve



## Features

- These compound valves incorporating the functions of a differential circuit, counterbalance valve and a throttle valve, along with a decompression function, make it easy to construct a hydraulic press circuit.

## Nomenclature

※ — C4S ※ — G 06 — 7 QD ※ ※ — 30 — ※ ※ ※  
 1 2 3 4 5 6 7 8 9 10 11 12 13

### 1 Applicable fluid code

No designation: Petroleum-based hydraulic fluid  
 H: Water-glycol hydraulic fluid  
 F: Phosphate ester hydraulic fluid

### 2 Model No.

C4S: Type C4 solenoid pilot valve

### 3 Compound function

No designation: Without throttle function  
 T: With meter-in throttle function at ports A and B

### 4 Connections

G: Gasket mount type

### 5 Nominal diameter

06: 3/4

### 6 Switch code

7: Equivalent to 7C

### 7 Circuit code

QD: With counterbalance valve function at port A  
 With decompression function at port B

### 8 Pressure adjustment range of counterbalance valve at port A

1: Up to 7 MPa {Up to 70 kgf/cm<sup>2</sup>}  
 2: Up to 16 MPa {Up to 160 kgf/cm<sup>2</sup>}  
 3: Up to 25 MPa {Up to 250 kgf/cm<sup>2</sup>}

### 9 Voltage code for the solenoid valve

A: AC 100 V (50/60 Hz), AC 110 V (60 Hz)  
 B: AC 200 V (50/60 Hz), AC 220 V (60 Hz)  
 P: DC 24 V

### 10 Design No. (The design No. is subject to change)

### 11 Cartridge valve option code \*1

No designation: Standard cartridge valve type  
 K: Shockless cartridge valve type

### 12 Option code

No designation: Flow rate adjusting screw type  
 D: Digital handle type

### 13 Solenoid pilot valve option code

See the option code table of KSO-G02 on Page G-16 for the options for solenoid pilot valves.

Note: \*1 Applicable only to C4S (without throttle function)

## Specifications

| Model No. | Nominal diameter | Maximum operating pressure<br>MPa {kgf/cm <sup>2</sup> } | Maximum flow rate<br>L/min | Permissible back pressure<br>MPa {kgf/cm <sup>2</sup> } | Mass<br>kg |
|-----------|------------------|----------------------------------------------------------|----------------------------|---------------------------------------------------------|------------|
| C4S※-G06  | 3/4              | 25 {250}                                                 | 400                        | 7 {70} *2                                               | 50         |

Note: \*2 Keep the back pressure of the tank line as small as possible since it is added to the minimum adjustment pressure of the counterbalance valve function.

Refer to KSO-G02 on Page G-16 for the solenoid specifications.

## Sub-plate model code

- The sub-plate is not provided with the valve. Order it separately if required by specifying the model code given in the table below.

| Model code | Nominal diameter | Connection port diameter | Mass kg |
|------------|------------------|--------------------------|---------|
| JS-06M     | 3/4              | Rc3/4                    | 5.2     |
| JS-06M08   |                  | Rc1                      |         |

Refer to Page S-10 for the dimensions of the sub-plate.

## Accessories

| Model No. | Hexagon socket head cap bolt | Quantity | Tightening torque<br>N·m {kgf·cm} |
|-----------|------------------------------|----------|-----------------------------------|
| C4S※-G06  | M12 × 90                     | 6        | 80 to 100 {800 to 1000}           |

## Handling

### ● Adjusting switching response

- The response can be adjusted by changing the adjusting fixed throttles (NPTF<sup>1</sup>/<sub>16</sub>).
- The opening/closing speeds from port P to port A, from port P to port B, and from port B to port T can be adjusted using the fixed throttle for each cartridge element at PA, PB, and BT.
- At shipment, the product is equipped with fixed throttles of  $\phi 1.4$  at PA and PB and of  $\phi 1$  at BT.

If you require fixed throttles other than these, order them separately by referring to the model codes below.

Model code: T1-16- $\times\times$  ( $\times\times$ : Throttle diameter code) Tightening torque: 6 to 7.5 N·m {60 to 75 kgf·cm}

| Throttle diameter code  | 06         | 07         | 08         | 09         | 10       | 12         | 14         | 16         | 18         | 20       | 25         |
|-------------------------|------------|------------|------------|------------|----------|------------|------------|------------|------------|----------|------------|
| Fixed throttle diameter | $\phi 0.6$ | $\phi 0.7$ | $\phi 0.8$ | $\phi 0.9$ | $\phi 1$ | $\phi 1.2$ | $\phi 1.4$ | $\phi 1.6$ | $\phi 1.8$ | $\phi 2$ | $\phi 2.5$ |

### ● Flow rate adjustment method (only with C4ST)

- Turning the flow rate adjusting screw counterclockwise increases the flow rate.
- Since a large force will be required to operate the flow rate adjusting screw when the pressures at ports P, A, B and T increase, adjust the flow rate at 10 MPa {100 kgf/cm<sup>2</sup>} maximum or with the solenoid valve turned off.

### ● Pressure responsiveness adjusting method (counterbalance valve function)

Turning the pressure adjusting screw clockwise increases the pressure.

| Model code                          | Pressure change (MPa) {kgf/cm <sup>2</sup> } per screw revolution |
|-------------------------------------|-------------------------------------------------------------------|
| C4S $\times$ -G06-7QD1 $\times$ -30 | 2.5 {25}/revolution                                               |
| C4S $\times$ -G06-7QD2 $\times$ -30 | 4.6 {46}/revolution                                               |
| C4S $\times$ -G06-7QD3 $\times$ -30 | 7.9 {79}/revolution                                               |

### ● Decompression (depressurizing) response adjusting method

Turning the adjusting screw clockwise increases the response speed.

### ● Differential circuit

A differential circuit can be constructed based on energizing of SOL. a, b, c.

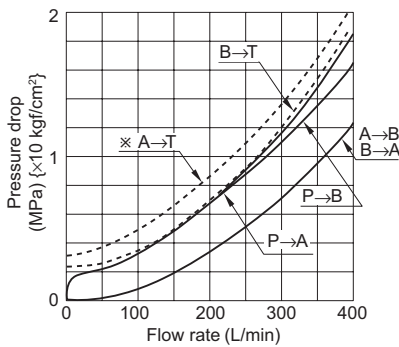
With the meter-in throttle function of C4ST, flows A  $\rightarrow$  B and B  $\rightarrow$  A are controlled with two meter-in throttles.

The meter-out throttle function does not control flows A  $\rightarrow$  B and B  $\rightarrow$  A. It differs from the JIS graphic symbols for hydraulic system at this point.

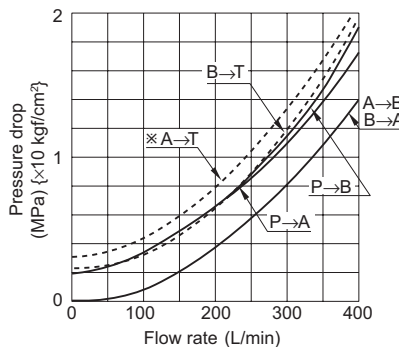
### ● Shocks at switching can be suppressed by using the shockless cartridge valve type (option code: K).

## Performance curves (viscosity: 32 mm<sup>2</sup>/s {cSt})

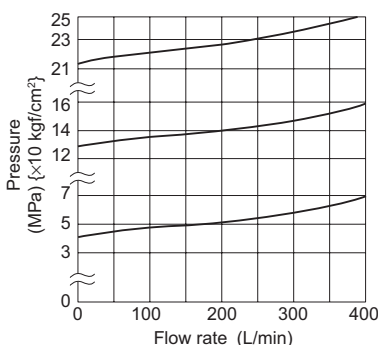
Pressure drop characteristics  
C4S



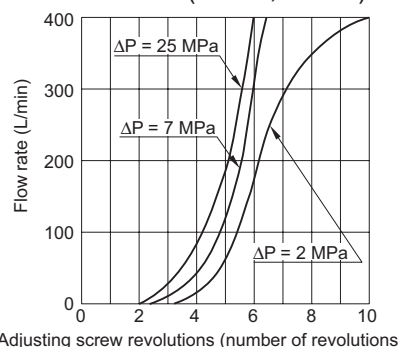
Pressure drop characteristics  
C4S-K, C4ST



Pressure - Flow rate characteristics  
Counterbalance valve function at port A

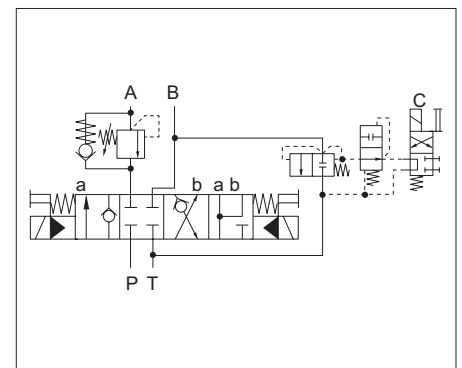


Adjusting screw revolution -  
Flow rate characteristics (C4ST)  
Meter-in throttle (P  $\rightarrow$  A, P  $\rightarrow$  B)

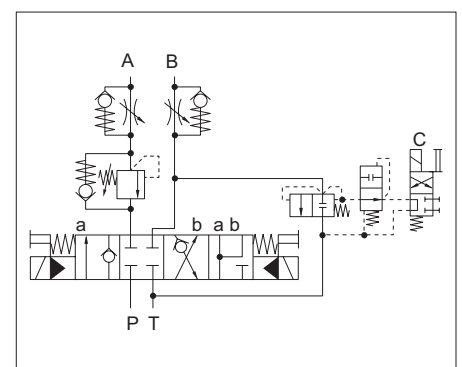


## JIS graphic symbols for hydraulic system

C4S



C4ST



Note: The line marked with (\*) indicates the minimum adjustment pressure of the counterbalance valve function.

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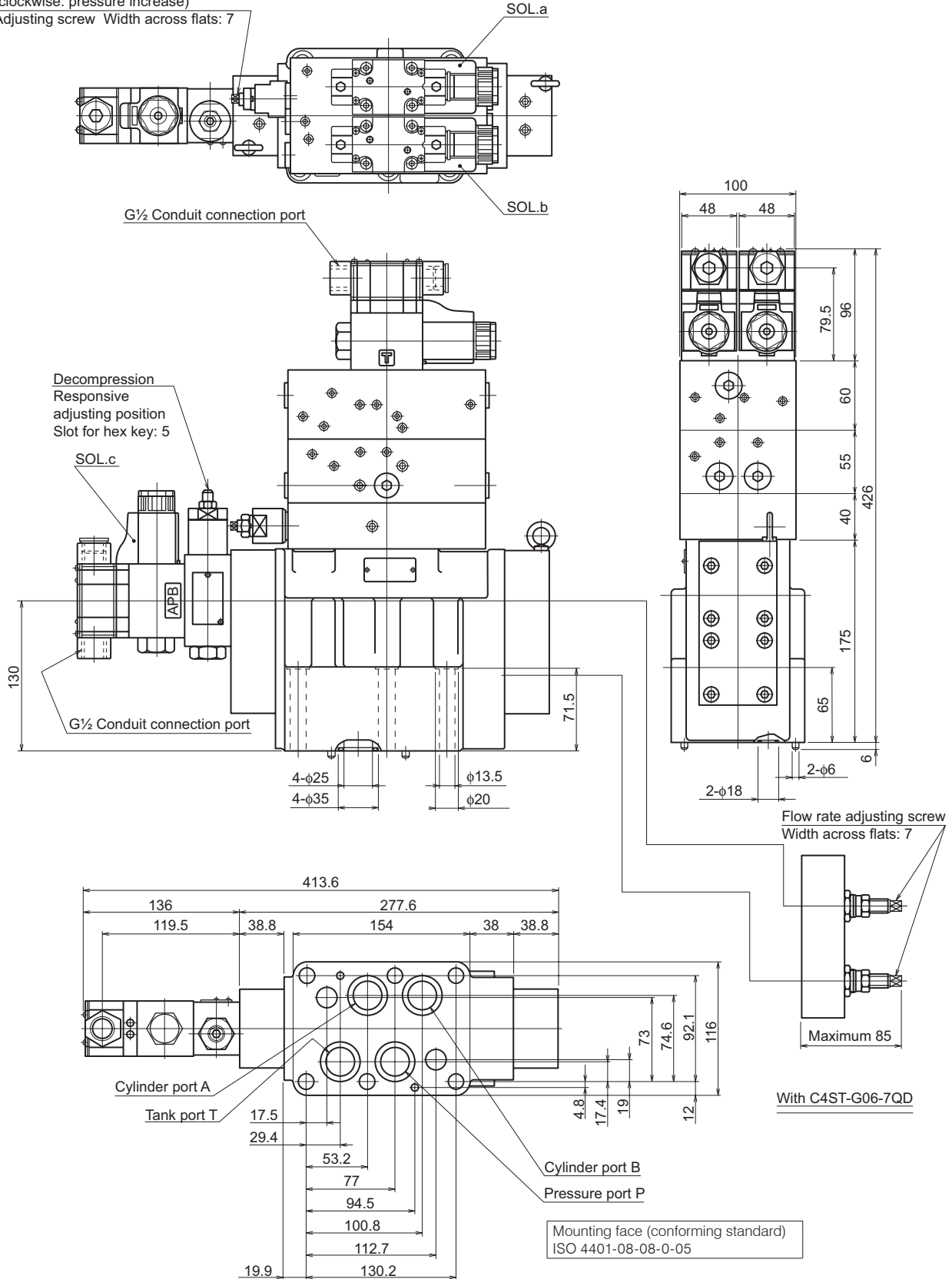
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## External dimension diagram

### ● C4S-G06-7QD

Counterbalance pressure at port A  
(clockwise: pressure increase)

Adjusting screw Width across flats: 7



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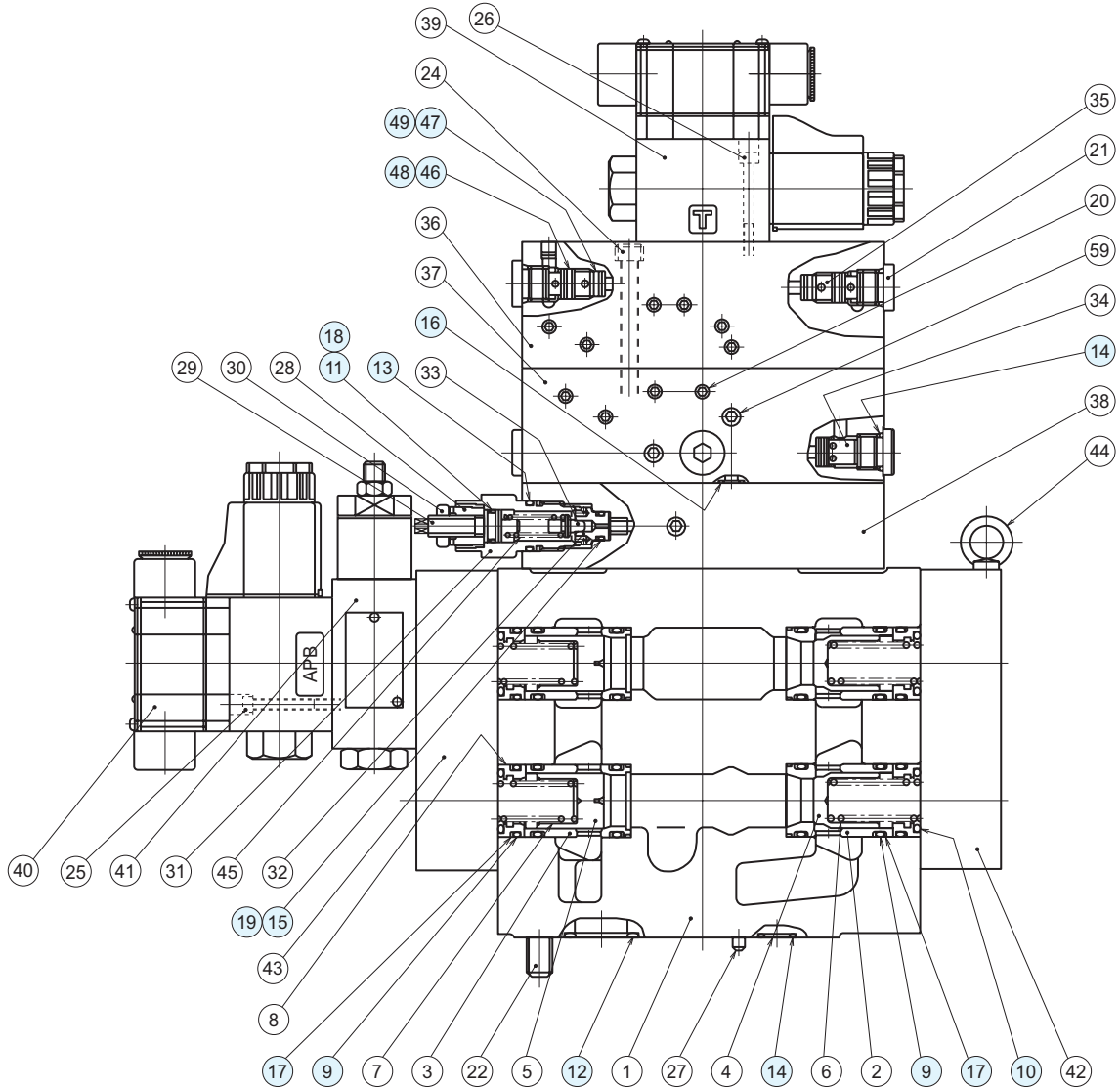
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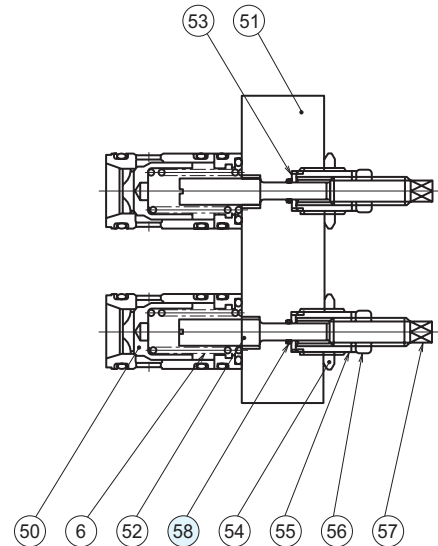
## Sectional structural diagram

### ● C4S-G06-7QD



Sealing part table

| Part No. | Name        | Quantity | Part specifications     |
|----------|-------------|----------|-------------------------|
| 9        | O-ring      | 12       | AS568-122 (NBR, Hs90)   |
| 10       | O-ring      | 4        | JIS B 2401 1B P24       |
| 11       | O-ring      | 1        | AS568-014 (NBR, Hs90)   |
| 12       | O-ring      | 4        | JIS B 2401 1B G30       |
| 13       | O-ring      | 1        | JIS B 2401 1B P20       |
| 14       | O-ring      | 9        | JIS B 2401 1B P14       |
| 15       | O-ring      | 1        | JIS B 2401 1B P10       |
| 16       | O-ring      | 32       | JIS B 2401 1B P9        |
| 17       | Backup ring | 20       | Bias cut for AS568-122  |
| 18       | Backup ring | 1        | Bias cut for AS568-014  |
| 19       | Backup ring | 1        | JIS B 2407 bias cut P10 |
| 46       | O-ring      | 2        | AS568-012 (NBR, Hs90)   |
| 47       | O-ring      | 2        | AS568-013 (NBR, Hs90)   |
| 48       | Backup ring | 2        | Bias cut for AS568-012  |
| 49       | Backup ring | 2        | Bias cut for AS568-013  |
| 58       | O-ring      | 2        | AS568-011 (NBR, Hs90)   |



With C4ST-G06-7QD