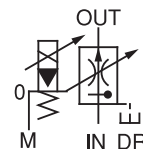


### Electro-Hydraulic Proportional Flow Control Valve

.5 to 132 gpm  
3045 psi



### Features

This valve controls actuator speed in response to the size of **input current**. Pressure and control fluid temperature fluctuation has little effect on setting

pressure which enables high-precision speed control. This valve is the perfect choice for actuator acceleration and deceleration control, and remote control.

### Specifications

| Item                                              | Model No. | ES-G03-60 (F)-12 125 | (C)ES-G06-250-11 | ES-G10-500 (F)-11 |
|---------------------------------------------------|-----------|----------------------|------------------|-------------------|
| Maximum Operating Pressure psi                    |           | 3045                 | 3045             | 3045              |
| Flow Rate Control Range gpm                       |           | .5 to 15.8           | 1.3 to 66        | 3.9 to 132        |
| Minimum Allowable Valve Pressure Differential psi |           | 145 (Note1)          | 217 (Note1)      | (Note1)           |
| Reverse Flow Rate gpm (With check valve only)     |           | 33 (Note3)           | 52               | -                 |
| Hysteresis %                                      |           | 3 max. (Note 2)      | 3 max. (Note 2)  | 3 max. (Note 2)   |
| Rated Current mA                                  |           | 800                  | 800              | 800               |
| Coil Resistance Ω                                 |           | 20 (68°F)            | 20 (68°F)        | 20 (68°F)         |
| Weight lbs                                        |           | 28.6                 | 55               | 121               |

Note: 1. Control valve inlet and outlet pressure differential required to obtain favorable pressure compensation.  
2. Value when a Nachi-Fujikoshi special amplifier is used (with dithering).  
3. ES-G03 does not have a built-in check valve, but a sub plate with check valve (Model No. MCF-03-D-22) is available for it.

### Understanding Model Numbers

(C)ES - G 03 - 30 - (F) \* 12

Design number  
E: Unified thread

Auxiliary symbol F: With pressure compensation piston opening adjustment screw  
Note: Nominal diameters 02, 03, 10 only available

Rated flow rate

Nominal diameter: 03, 06, 10

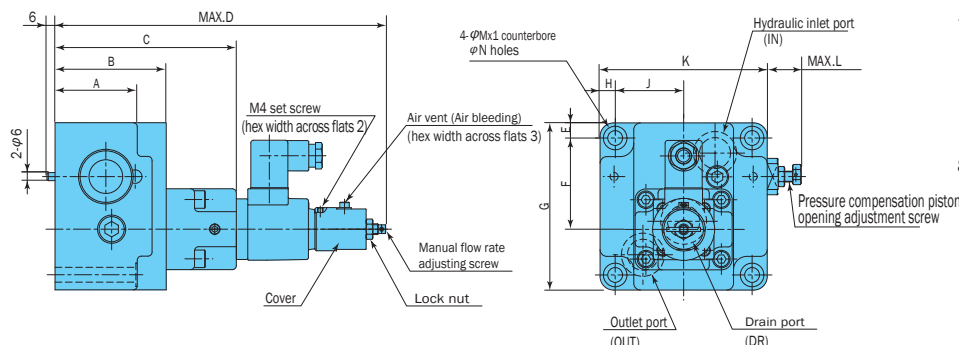
Mounting method G: Gasket type

Pump type CES: Electro-hydraulic proportional flow control valve with check valve 02, 06 only  
ES: Electro-hydraulic proportional flow control valve

| Model No. | Bolt Size       | Q'ty | Tightening Torque ft lbs |
|-----------|-----------------|------|--------------------------|
| ES-G03    | 3/8-16 x 3"     | 4    | 33 to 40                 |
| (C)ES-G06 | 5/8-11 x 5 1/2" | 4    | 140 to 170               |
| ES-G10    | 3/4-10 x 6 1/4" | 4    | 270 to 339               |

- Handling
- 1 Air Bleeding  
To enable proper pressure control, loosen the air vent when starting up the pump in order to bleed any air from the pump, and fill the inside of the solenoid with hydraulic operating fluid. The position of the air vent can change by loosening the M4 screw and rotating the cover.
- 2 Manual Flow Rate Adjusting Screw  
For the initial adjustment or when there is no **input current** to the valve due to an electrical problem or some other reason, the flow rate can be increased by rotating the manual adjustment screw clockwise (rightward). Normally, this adjusting screw should be returned completely to its original position and secured with the lock nut.
- 3 Drain Port  
Make sure that back pressure is no greater than 29 psi, and that his port is connected directly to the fluid tank at a point that is below the oil surface.
- 4 Bundled Accessories (Valve Mounting Bolts)

### Installation Dimension Drawings

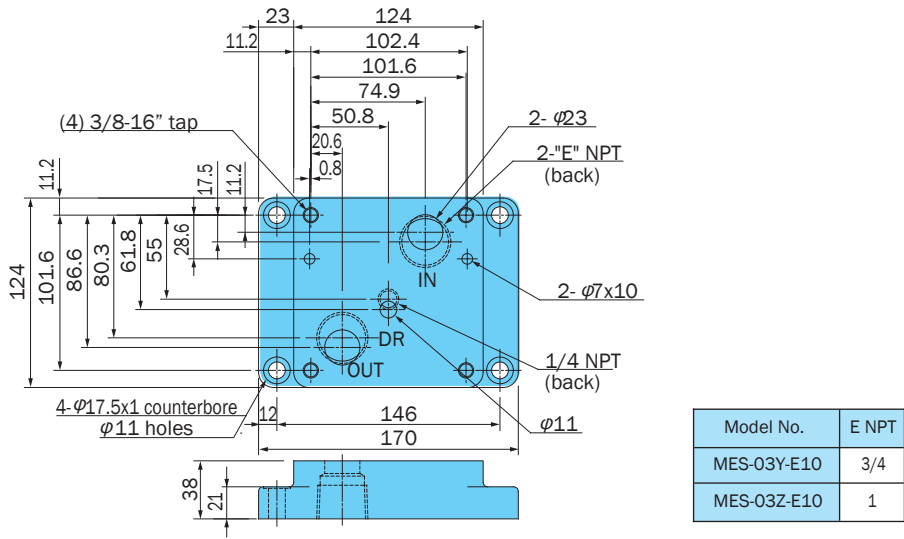


| Model No. | A   | B    | C     | D     | E    | F     | G   | H    | J    | K   | L  | M    | N  |
|-----------|-----|------|-------|-------|------|-------|-----|------|------|-----|----|------|----|
| ES-G03    | 61  | 82.5 | 134.5 | 245.3 | 11.2 | 67.8  | 124 | 11.2 | 50.8 | 124 | 26 | 17.5 | 11 |
| (C)ES-G06 | 115 | 130  | 182   | 292.8 | 16.8 | 104.8 | 167 | 17   | 73   | 180 | -  | 26   | 18 |
| ES-G10    | 137 | 160  | 215   | 326.3 | 25   | 148   | 228 | 23.5 | 98.5 | 244 | 18 | 32   | 22 |

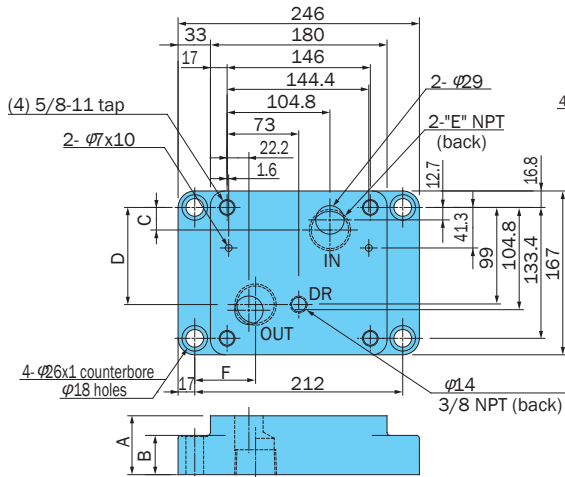
- 5 The loss coefficient and control valve can cause resonance when there is a great distance between the flow control valve and actuator (when the pipe internal volume is large). Be sure to keep the distance between the flow control valve and actuator as small as possible, and to avoid the use of flexible hose as much as possible.
- 6 Sub Plate  
See the next page for more information about sub plates.
- 7 Use an operating fluid that conforms to the both of the following.  
Oil temperature: 4 to 140 °F  
Viscosity: -12 to 400 centistokes.  
The recommended viscosity range is 15 to 60 centistokes.
- 8 Since this valve has a built-in pressure compensation valve, changing of the inertial load (using a high inertial oil motor, etc.) can create the risk of hunching under certain conditions. Contact your sales agent before changing the inertial load.  
Note: Use a hex wrench that has a width across flats of 8 to adjust the aperture adjustment screw of nominal diameter 10.

• The gasket surface dimensions comply with the ISO standard shown below.  
(C) ES-G03 ...ISO 6263-07-09-97  
(C) ES-G06 ...ISO 6263-08-13-97

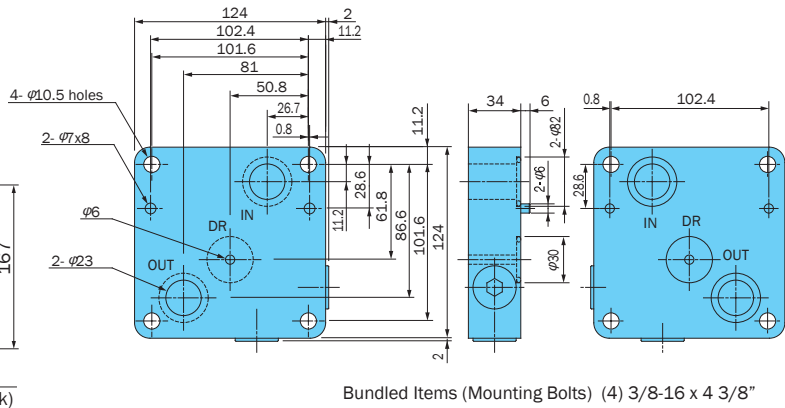
Sub Plate  
MES-03\*-E10



MES-06\*-E10

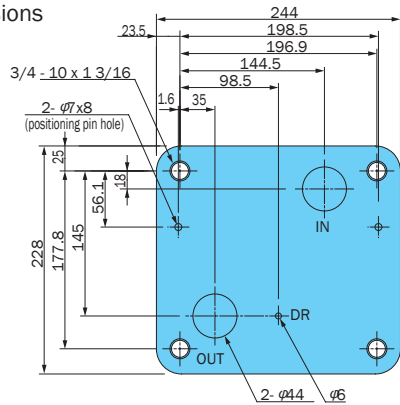


Auxiliary Plate with Check Valve  
MCF-03-D-22



| Model No.   | A  | B  | C  | D     | E     | F    |
|-------------|----|----|----|-------|-------|------|
| MES-06X-E10 | 45 | 25 | 16 | 104.8 | 1     | 55.2 |
| MES-06Y-E10 | 60 | 40 | 23 | 99    | 1 1/4 | 62   |

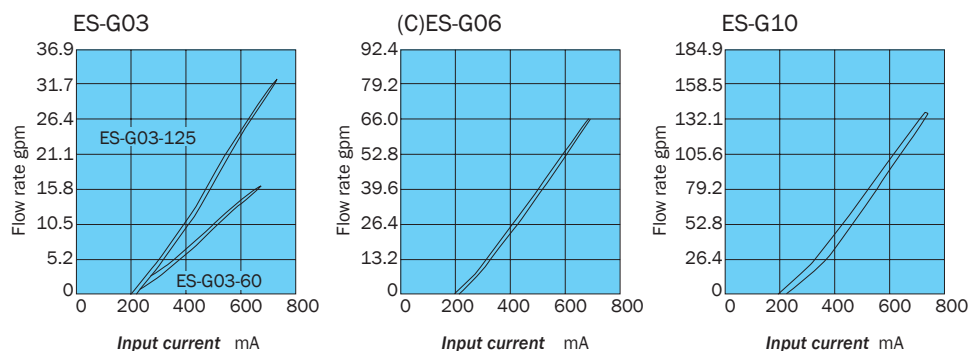
ES-G10\*-E10 Mounting Gasket Surface Dimensions



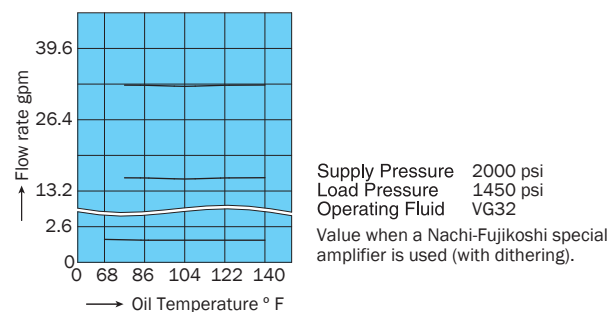
## Performance Curves

Hydraulic Operating Fluid Viscosity Centistokes

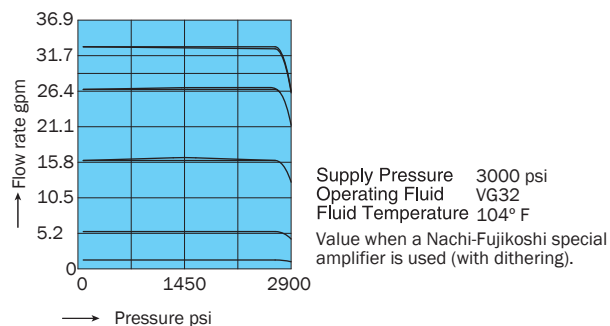
### Input Current – Flow Rate Characteristics



### Fluid Temperature – Control Flow Rate Characteristics

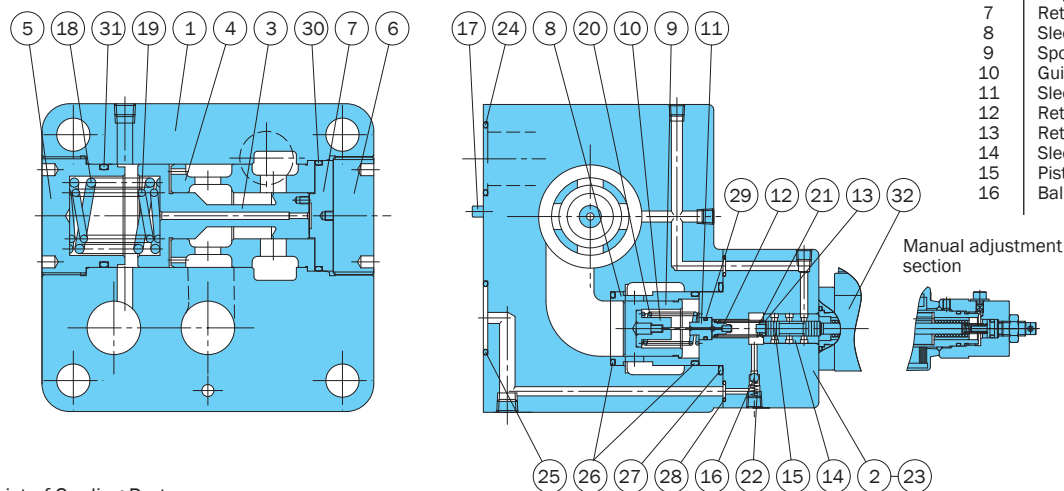


### Pressure – Control Flow Rate Characteristics



## Cross-sectional Drawing

ES-G\*\*-11(12)



| Part No. | Part Name | Part No. | Part Name             |
|----------|-----------|----------|-----------------------|
| 1        | Body      | 17       | Pin                   |
| 2        | Cover     | 18       | Spring                |
| 3        | Piston    | 19       | Spring                |
| 4        | Sleeve    | 20       | Spring                |
| 5        | Plug      | 21       | Spring                |
| 6        | Plug      | 22       | Spring                |
| 7        | Retainer  | 23       | Spring                |
| 8        | Sleeve    | 24       | O-ring                |
| 9        | Spool     | 25       | O-ring                |
| 10       | Guide     | 26       | O-ring                |
| 11       | Sleeve    | 27       | O-ring                |
| 12       | Retainer  | 28       | O-ring                |
| 13       | Retainer  | 29       | O-ring                |
| 14       | Sleeve    | 30       | O-ring                |
| 15       | Piston    | 31       | O-ring                |
| 16       | Ball      | 32       | Proportional solenoid |

### List of Sealing Parts

| Part No.        | Part Name | ES-G03      |      | (C)ES-G06   |      | ES-G10      |      |
|-----------------|-----------|-------------|------|-------------|------|-------------|------|
|                 |           | Part Number | Q'ty | Part Number | Q'ty | Part Number | Q'ty |
| 24              | O-ring    | 1B-P26      | 2    | 1B-G35      | 2    | 1B-P48      | 2    |
| 25              | O-ring    | 1B-P28      | 1    | 1B-G35      | 1    | 1B-P48      | 1    |
| 26              | O-ring    | -           | -    | 1B-G35      | 2    | 1B-G50      | 2    |
| 27              | O-ring    | 1B-P29      | 1    | 1B-G45      | 1    | 1B-G60      | 1    |
| 28              | O-ring    | 1B-P5       | 4    | 1B-P8       | 3    | 1B-P9       | 3    |
| 29              | O-ring    | 1B-P9       | 1    | 1B-P9       | 1    | 1B-P9       | 1    |
| 30              | O-ring    | 1B-P20      | 1    | 1B-G55      | 1    | 1B-G75      | 2    |
| 31              | O-ring    | 1B-P38      | 1    | 1B-P50      | 1    | 1B-G75      | 1    |
| Seal Kit Number |           | JFS-G03     |      | JFS-G06     |      | JFS-G10     |      |

Note: O-ring 1B-\*\* refers to JIS B2401-1B-\*\*.