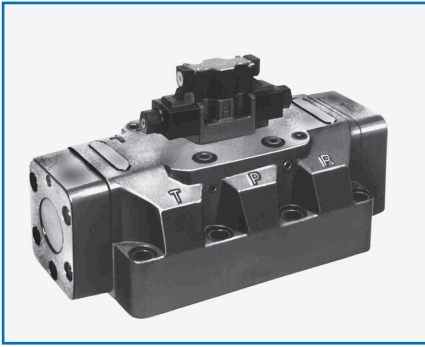
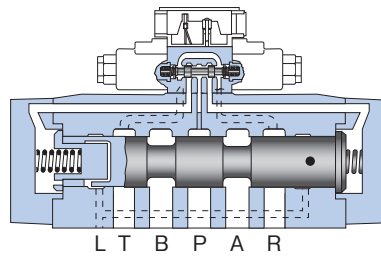


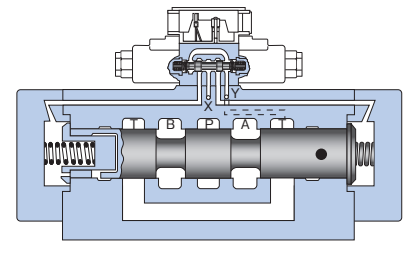
# Solenoid controlled pilot operated directional valve (2) DEH52



3 position valve gasket connection type



3 position valve flange connection type




## Overview

This solenoid controlled pilot operated directional valve is used for operating the solenoid operated directional valve and for controlling start and stop, and movement direction of the hydraulic system with hydraulic pilot signals.

## Features

1. The improvement of internal coring shape and spool shape of the casing has substantially reduced the flow resistance.
2. For return to neutral of the main valve, the spring center type and pressure-centred type are prepared as standard items.
3. A stroke limiter for adjusting spool stroke of the main valve can be installed.
4. The maximum working pressure is 34.3 MPa (350 kgf/cm<sup>2</sup>).


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# Type indication

**DEH 52 F - 21 - 3 05 - 2 W D 12 AL P08 - S1 R -**

Solenoid controlled pilot operated directional valve

Nominal dimension  
52

Connection method  
P = Gasket connection type  
F = Flange connection type

Series number  
Without choke valve = 20  
With choke valve = 21

Position holding method (main valve)

Symbol	Explanation	Nominal dimension
		52
2	2 position, spring offset type	○
	3 position, spring center type	○
3	2 position, hydraulic offset type	○
	3 position, hydraulic center type	○

Spool type  
Position holding method (olenoid valve)

Position holding method (main valve)  
1 = 2 position, no spring type (with detent)  
2 = 2 position, spring offset type  
or  
3 position, spring center type

Solenoid type  
W = Wet type (with standard emergency manual operation)  
(For the explosion proof type, please contact us.)

Input power supply  
A = Alternating current  
D = Direct current  
R = AC/DC conversion

Input voltage

Direct current D	Alternating current A	AC/DC conversion R
12 : 12V 24 : 24V 48 : 48V	100 : 100V-50/60Hz 110V-60Hz	100 : 100V-50/60Hz 200 : 200V-50/60Hz
	120 : 110V-50Hz 120V-50/60Hz	
	200 : 200V-50/60Hz 220V-60Hz	
	240 : 220V-50Hz 240V-50/60Hz	

\* For other power supply voltage, please contact us.

Type of hydraulic oil

No symbol = Mineral based hydraulic oil  
V = Phosphate ester based hydraulic oil  
W = Fatty ester based hydraulic oil  
Water-glycol based hydraulic oil

Accessory parts of cover part provided or not

No symbol = No accessory parts  
10 = with stroke limiter  
11 = with stroke limiter on port A side  
12 = with stroke limiter on port B side

Pilot pressure reducing valve provided or not  
No symbol = without pressure reducing valve  
R = with pressure reducing valve

Choke valve provided or not

No symbol = without choke valve  
S1 = with meter-in choke valve  
S2 = with meter-out choke valve

Pilot, Drain system

No symbol = external pilot, external drain  
E = internal pilot, external drain  
ET = internal pilot, internal drain  
T = external pilot, internal drain

P port restriction of solenoid valve

No symbol = No restriction  
P08 = Restriction contraction diameter  $\phi$ 0.8mm  
P10 = Restriction contraction diameter  $\phi$ 1.0mm  
P12 = Restriction contraction diameter  $\phi$ 1.2mm  
P15 = Restriction contraction diameter  $\phi$ 1.5mm  
P20 = Restriction contraction diameter  $\phi$ 2.0mm  
P25 = Restriction contraction diameter  $\phi$ 2.5mm  
P30 = Restriction contraction diameter  $\phi$ 3.0mm  
P40 = Restriction contraction diameter  $\phi$ 4.0mm

Electric connection symbol

(For details, refer to the section of "Solenoid operated directional valve".)

Symbol	Pilot valve type
	DE10
AL	Integrated terminal box with lamp

# Spool type symbol

Valve type	Flange connection type		Gasket connection type		Detailed hydraulic symbols (example: External pilot and external drain)	Simplified hydraulic symbols (example: External pilot and external drain)	
	Spool type	Hydraulic symbols	Transient state	Hydraulic symbols			Transient state
2 position valve							
	03						
	04						
	11						
	26						
3 position valve							
	05						
	06						
	07						
	08						
	10						
	12						
	13						
	17						
	18						
	19						
	20						
	21						
	22						
23							

# Specifications

Nominal dimension				52			
Maximum working pressure MPa (kgf/cm <sup>2</sup> )	Port P, A, B, T, R (Note 1)			34.3 (350)			
	Port T (R)	(Note 2) Internal drain type	2 position valve 3 position valve Spring center type	Oil immersion type pilot valve			
		Port Y	External drain type		Oil immersion type pilot valve		
Highest pilot pressure MPa (kgf/cm <sup>2</sup> ) (Note 3)				24.5 (250)			
Lowest pilot pressure MPa (kgf/cm <sup>2</sup> ) (Note 4)	Spring center type			1.2 (12)			
	Hydraulic center type			1.5 (15)			
	Spring center type			1.2 (12)			
	Hydraulic center type			0.6 (6)			
Stroke volume of pilot part cm <sup>3</sup>	Hydraulic center type			33			
	Other than hydraulic center type			66.5			
	Pilot pressure MPa (kgf/cm <sup>2</sup> )			4.9 (50)	14.7 (150)	24.5 (250)	
Switching time ms (AC solenoid) (Note 5)	Neutral → Switching position	2 position valve		110	90	70	
		3 position valve	Spring center type		110	90	70
			Hydraulic center type		80	70	60
	Switching position → Neutral	2 position valve		110	90	80	
		3 position valve	Spring center type		110	110	110
			Hydraulic center type		90	80	70
Pilot flow rate L/min				30			
Mass kg	Gasket connection type	Single solenoid type			82		
		Double solenoid type			83.5		
	Flange connection type	Single solenoid type			72		
		Double solenoid type			73.5		

(Note 1) If the valve is used with the internal pilot, the maximum working pressure of port P is 24.5 MPa (250 kgf/cm<sup>2</sup>).

(Note 2) If you wish to use the 3 position valve hydraulic center type with the internal drain, please contact us.

(Note 3) In the case of 3 position valve hydraulic center type with meter-out choke valve, the highest pilot pressure is 12.3 MPa (125 kgf/cm<sup>2</sup>).

(Note 4) When using the spool type 03, 07, 08, 06, 19, 20, 22 and 26 with the internal pilot, make sure that the difference between pilot pressure and drain pressure is always equal to or greater than the above pilot pressure.

(Note 5) Switching time from neutral to switching position of the DC solenoid is a value obtained by adding 60 ms to the numerical value in the above table.

## Maximum flow rate

Maximum flow rate L/min		Working pressure MPa (kgf/cm <sup>2</sup> )				
Nominal dimension	Spool type	6.9 (70)	13.7 (140)	20.6 (210)	27.5 (280)	34.3 (350)
		52 (A) ( 2 position valve spring offset type 3 position valve spring center type )	05, 10, 12, 13, 17, 18, 21 22, 23, 03, 04, 11, 26	2000	1400	1150
	06, 07, 08, 19, 20	1750	1230	1000	880	780

(Note)

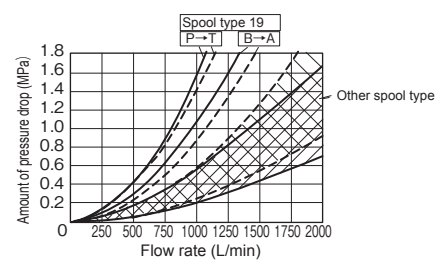
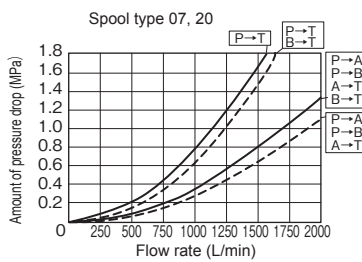
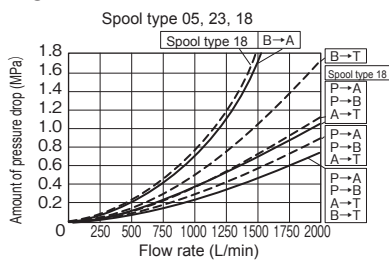
- The following table shows numerical values in the case of the lowest pilot pressure.
- The maximum flow rate in the case of the 2 position valve hydraulic offset type and 3 position valve hydraulic center type is the flow rate of stage (A) regardless of the spool type.
- In the case of the hydraulic center type, when the pilot pressure is increased, the maximum flow rate is as follows regardless of the spool type and working pressure.

Nominal dimension	Pilot pressure MPa (kgf/cm <sup>2</sup> )	Maximum flow rate L/min
52	2.5(25)	2000

## Pressure drop characteristics (viscosity 36 mm<sup>2</sup>/s (cSt))

— Gasket connection type  
 - - - Flange connection type

### DEH52



## Pilot valve

### Pilot valve type

The pilot valve uses the following solenoid operated directional valve.

Main valve		Pilot valve		
Nominal dimension	Spool neutral holding method	Type	Spool type	Hydraulic symbols
52	2 position valve spring offset type	DE10	04	Spool type 04 
	2 position valve hydraulic offset type			Spool type 10 
	3 position valve spring center type		10	Spool type 13 
	3 position valve hydraulic center type		13	

\* For the pilot valve specifications, refer to the section of the type number index "DE10".

## Precautions in use

- If this valve is used with internal pilot, excessive flow rate may flow through the pilot valve, causing operation failure. Use a solenoid operated directional valve with P port restriction for the pilot valve.

## Flange

Valve type	Flange type	Connection diameter	Mass
DEH52	TFAA-40	2B	2.6kg
	TFXA-40	2B	2.7kg

When you use a flange, please place an order for the above flange type.  
For the dimension drawing, refer to page 16 of the appendix.

## Accessories

### Mounting bolt

Type	Hexagon socket head cap thread	Quantity	Tightening torque N·m (kgf·cm)
DEH52 Gasket connection type	M20×100L	7 pcs.	431.2±64.6 (4400±660)

## Option

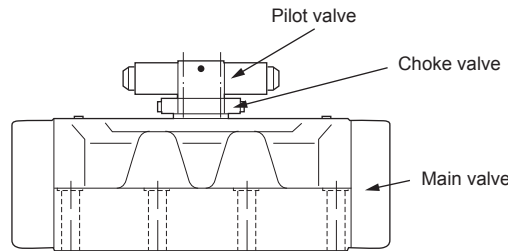
### Accessory parts symbol of cover part

Schematic drawing	Valve type	2 position valve spring offset type	3 position valve spring center type	2 position valve hydraulic offset type	3 position valve hydraulic center type	
	Symbol					
List of installability	Nominal dimension	52	52	52	52	
	Symbol	○	○	○	○	
	10	○	○	○	○	
Explanation (example)	Symbol 12		with stroke limiter on port B side			

### Choke valve for adjusting stroke speed

#### Handling method

When the adjust thread is turned clockwise, switching time of the spool becomes slow and when it is turned counterclockwise, switching time becomes fast.  
When meter-in is changed to meter-out, the choke valve needs to be replaced.



•In the case of meter-in (Choke valve: S-2TC10-20-E1)



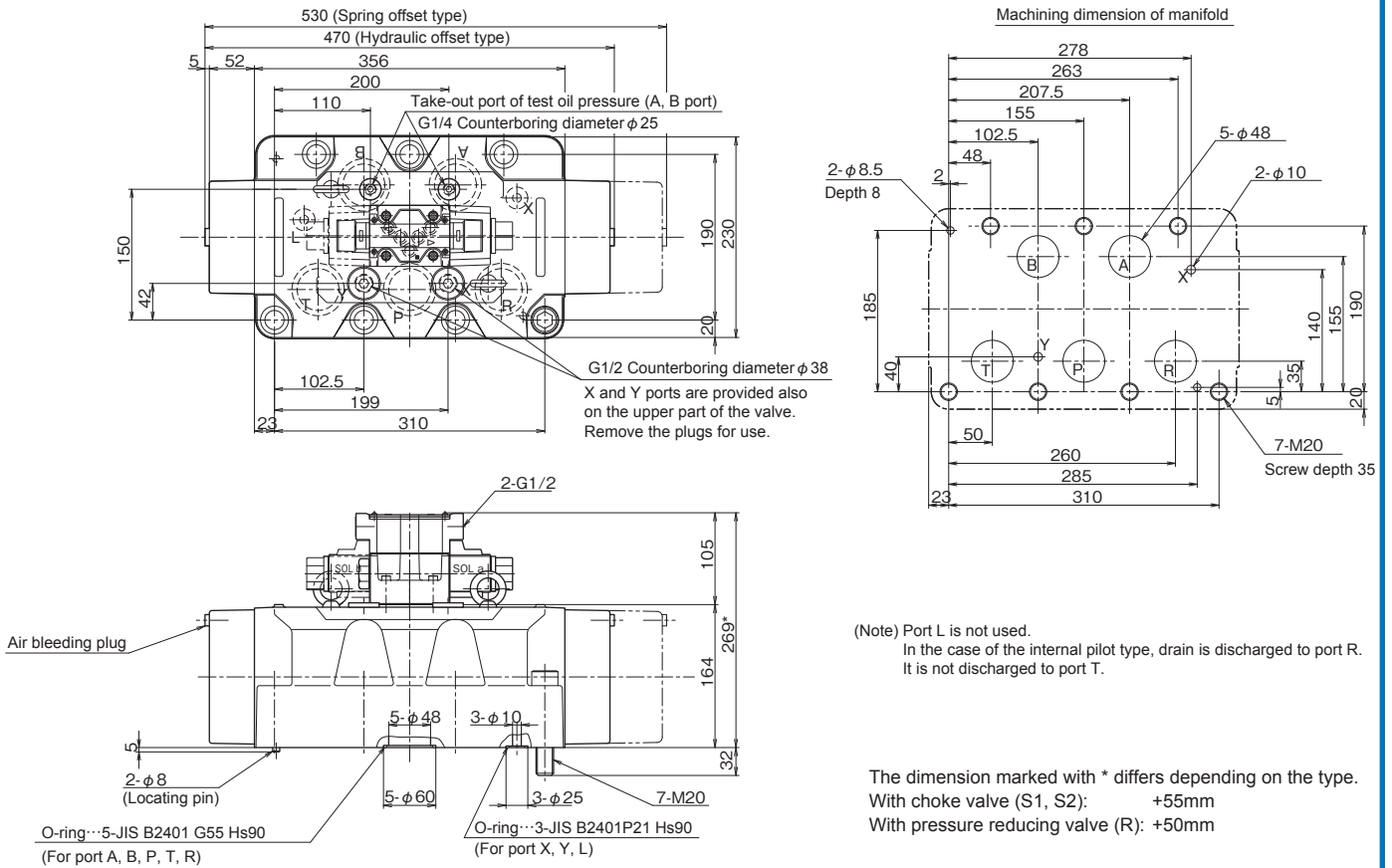
•In the case of meter-out (Choke valve: S-2TC10-20-F1)



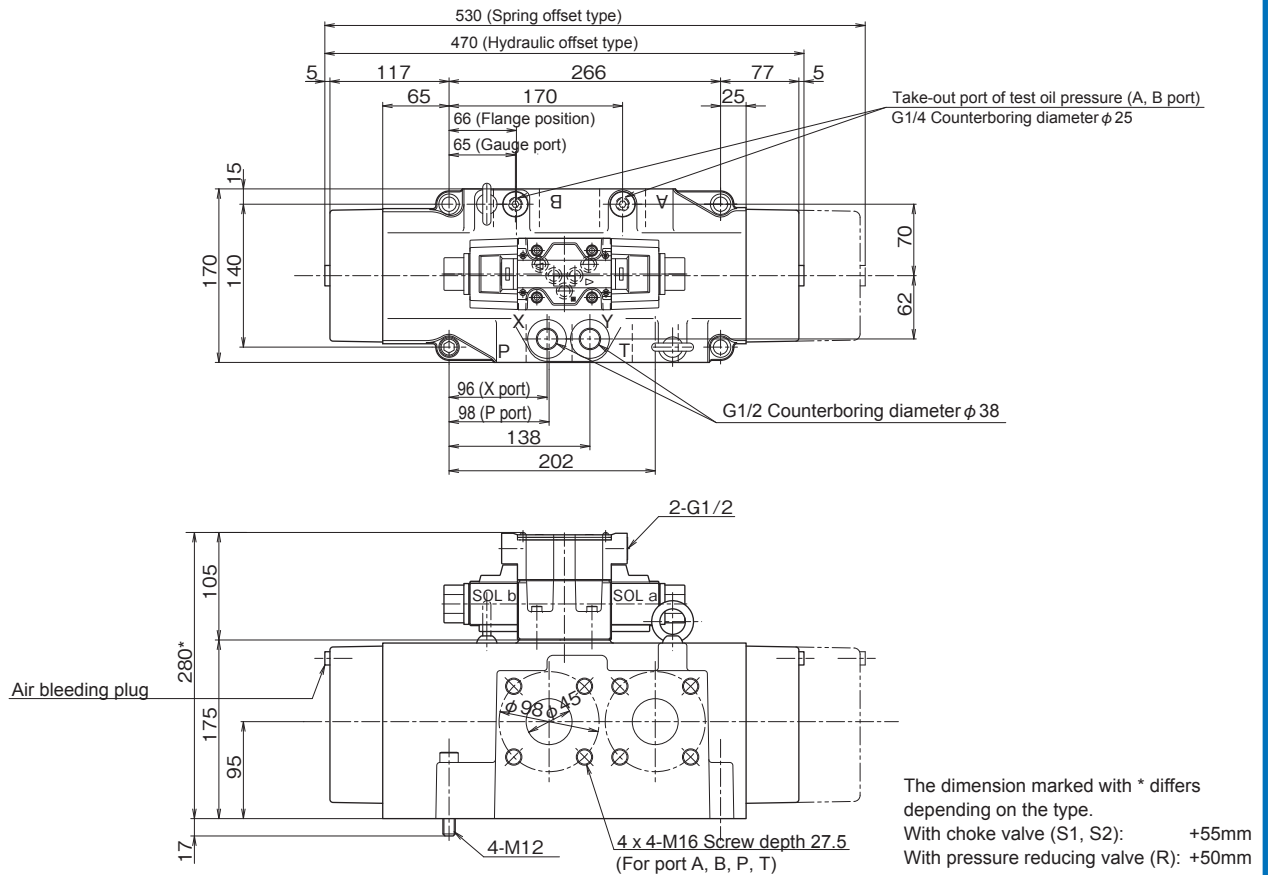
Nominal dimension	Choke valve type
52	S-2TC10-20- $\frac{E}{F}$ 1

## Dimension drawing

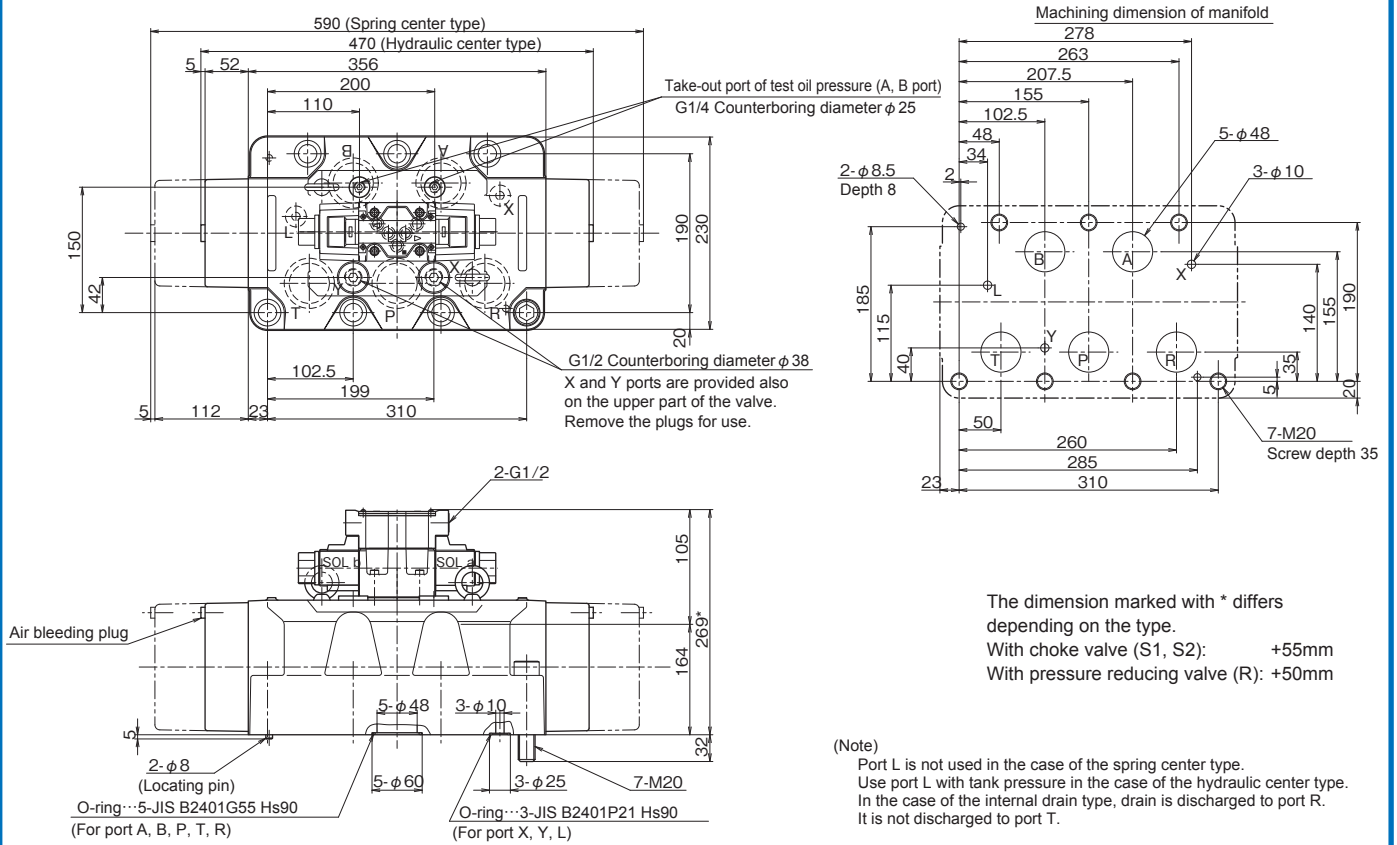
### ●DEH52 (2 position valve - gasket connection type)



### ●DEH52 (2 position valve - flange connection type)



**DEH52 (3 position valve - gasket connection type)**



**DEH52 (3 position valve - flange connection type)**

