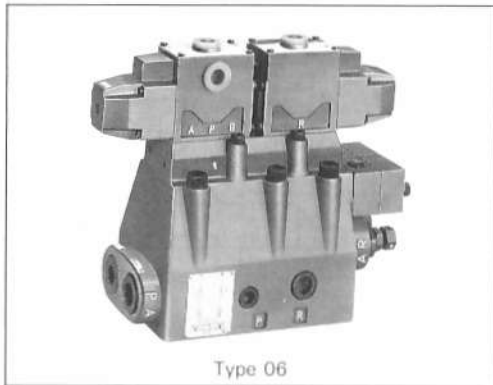


# Multi-function valves Series MF3

## Series MF3

The MF valve, a poppet type 4-port valve with some or all of the functions of pilot check, counterbalancing and choking combined to directional control function, enables you to select and combine any of the three functions in a unit at your desire.



### • Features

1. Valve body is composed of standardized parts and various kinds of functions can be combined.
2. Simple system structure results in compactness and light weight.
3. Poppet type main valve remarkably reduces oil leakage in each port and pressure loss of the valve compared with spool type.
4. Poppet type main valve quickly switches its position with little shock.
5. The circuit can be changed easily only by replacing a small number of parts.
6. Mounting dimensions are the same as those for the existing solenoid controlled pilot operated valves so that the stack valves (Hy-tegra system) can be used together with this series.

### • Control functions

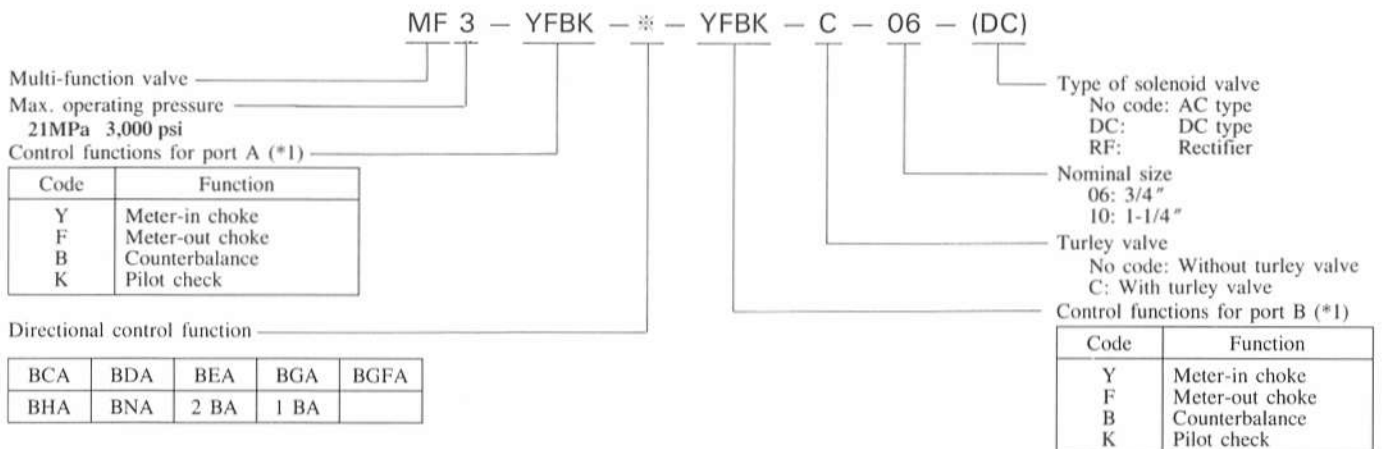
#### Directional control

Nine types are standardized as shown below.

#### Other functions

Pilot check, counterbalancing and choking (meter-in, meter-out) functions can be added. Control of either one of A or B port or both ports can be selected.

### • Model coding



Note (\*1): Please specify the functions of ports A and B by model code.

- The suitable tightening torque is as follows:  
 06 type: 45~55N·m  
 10 type: 70~100N·m
- Please indicate the operating voltage along with the valve model.
- Sub-plate should be separately ordered.  
 Sub-plate for 06 type, Hytegra manifold HMC-1-06-08-T ※ is provided and for 10 type, standard SHD10-※ ※ T1(A) is provided.
- For the solenoid characteristics, please refer to the relevant 025 type solenoid-operated valves.

● Codes

Hydraulic codes for the MF valve are made by combining the JIS codes of functions. Functions, model and hydraulic codes are indicated as shown in the table of examples below.

	Example 1	Example 2	Example 3
Functions	Directional control function only	Directional control function with meter-out choke function (A, B ports)	Directional control function with meter-in choke (port A), meter-out choke (port A), counterbalance (port B) and pilot check (port B) functions.
Model code	MF3-BCA-06	MF3-F-BCA-F-06	MF3-YF-BCA-BK-06
Symbol			

● Functions

Example below shows when all possible functions are combined to the directional control function.

Function		Port	A	B	Notes
Control function	Meter-in throttle				(1)  control function and  directional control function can be combined as desired.  (2)  directional control functions are standardized into 9 kinds of functions. See the table on the right for further details.
	Meter-out throttle				
	Counterbalance				
	Pilot check				
Directional control function					

● Directional control functions

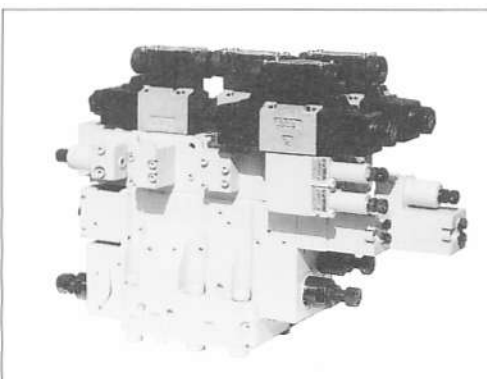
BCA	BHA
BDA	BNA
BEA	2 BA
BGA	1 BA
BGFA	

● Specifications

Pipe size	Max. flow		Max. operating pressure		Cracking pressure of main valve poppet		Pressure adjusting range of counterbalancing valve		Min. pilot pressure of pilot check valve (%)	Voltage range (%)
	l/min	gpm	MPa	psi	MPa	psi	MPa	psi		
3/4	190	50.3	21	3,000	0.25	36	0.7 ~ 21	100 ~ 3,000	25% of main pressure	± 10%
1-1/4	500	132.3								

## Series MF3N

These MF valves, which can expand the control functions up to 16, have improved the performance of pressure and flow to meet a wide range of needs.



● Features

1. Max. operating pressure up to 250 kgf/cm<sup>2</sup> (3,570 psi), with max. flow up to 800 l/min (10 type).
2. Simplified system for light weight and compact size.
3. A poppet type main valve is used, greatly reducing oil leakage in each port and pressure loss compared with the spool type valves.
4. The poppet type main valve ensures very quick switching speed as well as reduced shock.
5. The circuit can be changed easily only by changing a small number of parts.
6. Mounting dimensions are the same as those of the existing solenoid operated directional controlled valves so that the stack valves (Hytegra system) can be used together with this series.

● Model coding

MF3N—①②③④⑤⑥⑦—BCFA—①②③④⑤⑥⑦—C-(06A)—WA1

<A port control functions>      <B port control functions>

Multi-function valve  
 Max. operating pressure  
 3: 25 MPa 3,570 psi  
 New series  
 Directional control function

BCFA	BGFA	BMFA	BNFA
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Turley valve  
 No code: Without turley valve  
 C: With manual turley valve  
 J: With automatic turley valve

Nominal size  
 Voltage

	AC	DC	Rectifier
WA1	AC100V	WD1 : DC12V	RF(AC100V)
WA2	AC200V	WD2 : DC24V	RF(AC200V)
WA3	AC110V	—	RF(AC110V)
WA4	AC220V	—	RF(AC220V)

please specify the operating voltage for rectifier.

Directional control function		BCFA	BGFA	BMFA	BNFA
Symbol	Without turley valve				
	With turley valve				

● Control functions for A and B ports

Nos. corresponding to model code	Symbol	Function	Nos. corresponding to model code	Code	Function
①	Y	Meter-in throttle	⑦	A	Pressure control
	W	Meter-in 2-speed		T	Solenoid operated single-pressure control (normally open)
	Z	Differential counterbalance		H	Solenoid operated dual-pressure control (normally open)
②	F	Meter-out throttle		P	Solenoid operated single-pressure control (normally closed)
③	B	Counterbalance		S	Solenoid operated dual-pressure control (normally closed)
④	K	Pilot check		M	Solenoid operated vent (normally open) (*1)
⑤	R	Safety		L	Solenoid operated vent (normally closed) (*1)
⑥	E	Vent	Standard functions		Differential circuit
	Q	Unload			R port check
					Vent operated pressure control

Note (\*1) please select M or L along with E if either of M or L is required.

- The suitable tightening torque is as follows:  
 06 type: 45~55N·m  
 10 type: 70~100N·m
- Please indicate the operating voltage along with the valve model.
- Sub-plate should be separately ordered.
- Sub-plate for 06 type, Hytegra manifold HMC-1-06-08-T\* is provided and for 10 type, standard SHD10-\*\* T1(A) is provided.
- For the solenoid characteristics, please refer to the relevant 025 type solenoid-operated valves.
- Made to order

● Specifications

Nominal size	Max. flow		Max. operating pressure		Permissible back pressure		Cracking pressure		Counter balancing pressure adjustment range	Differential counter balancing pressure adjustment range	Pressure control adjustment range	Unload valve Pressure adjustment range	Pilot check valve minimum PLT pressure	Vent valve adjustment PLT pressure			
	l/min	gpm	MPa	psi	MPa	psi	P port	R port									
06	320		25	3,570	25	3,570	0.35	50	0.2	29	0.7~14	100~2,000	0.7~14	290~3,570	100~2,000	10% of main pressure	10% of main pressure
10	800																