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TOKIMEC is one of Japan's leading manufacturers of hydraulic equipment. We provide a full range of hydraulic components such as pumps, valves, actuators, and related electronics and sensors, as well as standard and custom power units to customers worldwide. Many of our products are tailored for specific applications, such as plastics injection molding, diecast machinery, and machine tools and we have gained a reputation for products which provide superior value in terms of performance and quality.

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CLASSIC ENGINEERING SERVICES

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AIR HYDRO POWER CO.
3405 Robards Court, PO Box 34170, Louisville, KY 40233
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Fax : 502-456-2837

U.S.A.

HYDRADYNE, INC.

1000 Muirfield Dr., Hanover Park, IL 60103

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SENTINEL FLUID CONTROLS

5702 Opportunity Dr., Toledo, OH 43612

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Fax : 419-478-4839

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5750 Hillside Ave., Cincinnati, OH 45233

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Fax : 513-941-6452

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Please click desired model code for further infomation.

2520VQ	DC-AE	ETP	TCG50-80
25M	DC-AT1/2	F11-SQP*	TCGE
25VQ	DC-AX4	F11-SQP**	TFGT
3520VQ	DC-B*B/C	F11-SQP***	TFN(C)G
3525VQ	DE-X	F11-SQPS*	TGMHR
35M	DEFFG	F11-SQPS**	TGMHX
35VQ	DEFRG	FCG/FG	TGMSH
4520VQ	DF1OP1	FCGT-02	THPCG
4525VQ	DG15S2	FN(1)-4	TU(TU-PAC)
4535VQ	DG17V	FN1G	U-D35
45M	DG20S	FNG	U-D37
45VQ	DG2M	GR(2)H	URG1
4CG	DG2S4	GR-M	URG2
4CT	DG3S-10	LFCG	URMC
4SL-3	DG3V	MHT(multi)	V-104/105
50M	DG4L	MHT	V-108/109
BLG	DG4M4	P-X/Z	V-124/125
BR	DG4S-4	P100V	V-128/129
C-175	DG4SM	P130V	V-134/135
C-552	DG4V-3	P16V	V-138/139
C-572	DG4V-5	P21V	V-144/145
C2	DG4VC-3	P31V	V-148/149
C2G	DG4VC-5	P40V	V20
C2PG	DG4VS-3	P70V	V30
C5G	DG4VS-5	PB-X/Z	VVJ
C5PG	DG5S-10	PCG	XCG
CB	DG5V	PH80/100/130	XCT
CF	DGMCR	PVB(Q)	XF
CG	DGMSL	Q****(Q-PAC)	XG
CGL	DT8P1	RF	XG1
CGR	EC-4S	RG-3F	XGL
COM	EC-X	RG	XT(L)
CR	EPA	RG2-3F	
CT	EPAD	RT	
CVC	EPCG2-01	SQP*	
CVI	EPCG2-03/06/10	SQP**	
CVSH	EPDG1	SQP***	
D-CG	EPFG-03/06/10	SQPS*	
D-DF(R)G	EPFG-O1	SQPS**	
D-F(R)G	EPFRG	ST3	
DC-A1/4	ESM	STC-Y	
	ESP	TCG20	

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MODEL CODE

(F3-)	3525VQ	38	A	17	(F)	-	86	C	C	20	(L)	-	JA
1	2	3	4	5	6		7	8	9	10	11		

1. Fluid

Omit for mineral oil
F3: phosphate ester

2. Double vane pump

2520VQ Series
3520, 3525VQ Series
4520, 4525, 4535VQ Series

3. Pump displacement code

Series	Displacement
25**VQ	12, 14, 17, 21
35**VQ	25, 30, 35, 38
45**VQ	42, 50, 60

4. Port connection

A: SAE4 bolt flange connection

5. Pump displacement code

Series	Displacement
**20VQ	5, 8, 11, 12, 14
**25VQ	12, 14, 17, 21
**35VQ	25, 30, 35, 38

6. Pump mounting

Omit for flange mounting
F: foot mounting

7. Shaft

1: parallel sq. key (2520VQ only)
86: parallel sq. key
11: spline

8. Outlet position (viewed from cover end)

A: opposite inlet
B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

9. Outlet position (viewed from cover end)

2520, 3520, 3525, 4520, 4525VQ

A: 135° CCW from inlet

B: 45° CCW from inlet

C: 45° CW from inlet

D: 135° CW from inlet

4535VQ

A: opposite inlet

B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

10. Design no.

11. Rotation (viewed from shaft end)

Omit for CW

L: CCW

SPECIFICATIONS

Model	Shaft end pump						Cover end pump				Min. Speed (min ⁻¹)	Mass (kg)
	Displ. Code	Del. at 1000min ⁻¹ 0.7 MPa (L/min)	Mineral Oil		Phosphate Ester		Displ. Code	Del. at 1000min ⁻¹ 0.7 MPa (L/min)	Max. Press.(MPa)			
			Max. Press. (MPa)	Max. Speed (min ⁻¹)	Max. Press. (MPa)	Max. Speed (min ⁻¹)			Mineral Oil	Phosphate Ester		
2520VQ	12	38.3	21	2700	14	1800	5	16.7	21	14	600	20.4
	14	43.3		2500		1600	8	26.2				
	17	52.5										
	21	65.0										
3520VQ	25	79.2	21	2500	14	1600	11	35.0	16	14	600	34.0
	30	95.0		2400								
	35	109										
	38	118										
4520VQ	42	134	17.5	2200	14	1500	14	44.2	14		600	42.6
	50	156										
	60	189										
3525VQ	25	79.2	21	2500	14	1600	12	38.3	21	14	600	34.5
	30	95.0		2400								
	35	109										
	38	118										
4525VQ	42	134	17.5	2200	14	1500	17	52.5			600	45.8
	50	156										
	60	189										
							21	65.0				

4535VQ	42	134	17.5	2200	14	1500		25	79.0	21	14		600	53.5
	50	156						30	95.0					
	60	189						35	109					
								38	118					

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MODEL CODE

(F3)	-	V-104	-	Y	-	10	-	(LH)	-	(S)	-	JA	-	(S36)	-	J
1		2		3		4		5		6				7		

(F3)	-	V-134	U	-	20	-	(LH)	-	(S)	-	JA	-	(S36)	-	J
1		2	3		4		5		6				7		

1. Fluid

Omit for mineral oil, water glycol (S36)

F3: phosphate ester

2. Fixed displacement vane pump

V-104 Series, V-124 Series

V-134 Series, V-144 Series

Series	Pump mounting	
	foot mounting	flange mounting
V-104	V-104	V-105
V-124	V-124	V-125
V-134	V-134	V-135
V-144	V-144	V-145

3. Pump displacement code

Series	Displacement
V-104	Y,E,G,A,C,D
V-124	Omit
V-134	Omit,U,X
V-144	Omit

4. Design no.

10: V-104 Series

20: V-124, 134, 144 Series

5. Rotation (viewed from shaft end)

Omit for CW

LH: CCW

6. Connect port position (foot mounting, viewed from shaft end)

Omit: inlet is left side, outlet is right side(standard)

S: inlet is right side, outlet is left side

7. Special feature

S36: water glycol

SPECIFICATIONS

Model	Displ. Code	Del. at 1000min ⁻¹ 0.7 MPa (L/min)	Mineral Oil		Phosphate Ester		Water Glycol		Min. Speed (min ⁻¹)	Mass foot mounting (kg)
			Max. Speed (min ⁻¹)	Max. Working (MPa)	Max. Speed (min ⁻¹)	Max. Working (MPa)	Max. Speed (min ⁻¹)	Max. Working (MPa)		
V-104	Y	5.7	1800	7.0	1200	7.0	1200	7.0	600	9.5
	E	8.5								
	G	11.7								
	A	16.8	1500		1200*	5.5				
	C	25.8								
	D	36.3					1200	-		
V-124	-	48.6	1500	7.0	1200	7.0	1200	5.5	600	23.6
V-134	-	61.5								
	U	72.6								
	X	94.2			1200	-	-	-		
V-144	-	119								

* It varies in the specific gravity of the operation oil. Specific gravity should use of 1.2 and under.

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MODEL CODE

(F3)	-	V-108	-	Y	E	-	10	-	(LH)	-	JA	-	(S36)	-	J
1		2		4	3		5		6				7		

(F3)	-	V-138	U	-	E	-	20	-	(LH)	-	JA	-	(S36)	-	J
1		2	3		4		5		6				7		

1. Fluid

Omit for mineral oil, water-glycol (S36)

F3: phosphate ester

2. Double vane pump

V-108 Series, V-128 Series

V-138 Series, V-148 Series

Series	Pump mounting	
	foot mounting	flange mounting
V-108	V-108	V-109
V-128	V-128	V-129
V-138	V-138	V-139
V-148	V-148	V-149

3. Shaft end pump displacement code

Series	Displacement
V-108	Y,E,G,A,C,D
V-128	Omit
V-138	Omit,U,X
V-148	Omit

4. Cover end pump displacement code

Series	Displacement
V-108	Y,E,G,A,C,D
V-128	
V-138	
V-148	

5. Design no.

10: V-108 Series

20: V-128, 138, 148 Series

6. Rotation (viewed from shaft end)

Omit for CW

LH: CCW

7. Special feature

S36: Water glycol

SPECIFICATIONS

Model	Shaft side pump	Cover side pump	Weight. foot mounting (kg)
V-108-Y*	same as V-104-Y pump	same as V-104-Y pump same as V-104-E pump same as V-104-G pump same as V-104-A pump same as V-104-C pump same as V-104-D pump	17.3
V-108-E*	same as V-104-E pump		
V-108-G*	same as V-104-G pump		
V-108-A*	same as V-104-A pump		
V-108-C*	same as V-104-C pump		
V-108-D*	same as V-104-D pump		
V-128-*	same as V-124 pump		31.7
V-138-*	same as V-134 pump		
V-138U-*	same as V-134U pump		
V-138X-*	same as V-134X pump		
V-148-*	same as V-144 pump		

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MODEL CODE

(F3)	-	V20	-	1	P	6	S	-	1	C	11	(L)	-	JA	-	(J)
1		2		3	4	5	6		7	8	9	10				11

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Fixed displacement vane pump

V20 series

V30 series

3. Pump mounting

1: flange mounting

2*: foot mounting

Inlet position to foot surface

Foot mount. code	Inlet position to foot surface (viewed from shaft end)
2	up(12 o'clock)
23	right(3 o'clock)
26	down(6 o'clock)
29	left(9 o'clock)

4. Inlet port connection

F: flange connection

P: taper pipe thread

S: SAE straight thread (O-ring seal)

5. Pump displacement code

Series	Displacement
V20	6,7,8,9,11,12,13
V30	15,17,21,24,28

6. Outlet port connection

- F: flange connection
P: taper pipe thread
S: SAE straight thread (O-ring seal)

7. Shaft

- 1: parallel sq. key
3: woodruff key
11: involute spline

8. Outlet position(viewed from cover end)

- A: opposite inlet
B: 90° CCW from inlet
C: inline with inlet
D: 90° CW from inlet

9. Design no.

10. Rotation (viewed from shaft end)

- Omit for CW
L: CCW

11. J:JIS taper thread for P type port connection

SPECIFICATIONS

Model	Displ. Code	Del. at 1000 min ⁻¹ 0.7 MPa (L/min)	Mineral Oil		Phosphate Ester		Water Glycol		Min. Speed (min ⁻¹)	Mass(kg)	
			Max. Speed (min ⁻¹)	Max. Press. (MPa)	Max. Speed (min ⁻¹)	Max. Press. (MPa)	Max. Speed (min ⁻¹)	Max. Press. (MPa)		flange mounting	foot mounting
V20	6	18.9	3400	17.5	1800	14.0	1800	12.5	600	7.3	9.6
	7	22.1	3000								
	8	25.8	2800								
	9	29.0									
	11	36.3	2500		1500			11.0			
	12	37.8	2400	15.4							
	13	42.6									
V30	15	47.0	2700	17.5	1200	12.5	1200	11.0	600	13.6	16.3
	17	53.9	2600	15.4		11.5		10.0			
	21	65.9	2500								
	24	77.2	2400								
	28	90.0	2200								

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MODEL CODE

(F3)	-	TCG20	-	06	-	C	(V)	(Y)	(D4)	(L)	-	(R)	-	11
1		2		3		4	5	6	7	8		9		10

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Relief valve

3. Size

4. Max. adjust. Pressure

5. Vent pressure

Omit for low vent pressure(st'd)

V: high vent pressure

6. Drain

Omit for internal drain(st'd)

Y: external drain

7. Adjustment

Omit for knob(st'd)

E: acorn nut, sq. head adj. screw

D4: knob with digital counter

8. Digital counter attitude

Omit for up(st'd)

L: left

R: right

U: down

9. Adjustment section direction

(as viewed from cover side with gasket surface down)

Omit for up(st'd)

L: right

R: left

10. Design no.

TCG20-03: 11

TCG20-06: 11

TCG20-10: 11

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Max. Flow (L/min)	Max. adjust. Pressure (MPa)	Mass (kg)
TCG20-03	03	21	80	A(V) : 3.5 B(V) : 7.0 C(V) : 14 F(V) : 21	4.8
TCG20-06	06		200		6.9
TCG20-10	10		400		10.5

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MODEL CODE

(F3)	-	TCG	80	-	06	-	F	(E)	(V)	(Y)	-	A	(E)	B	(E)	C	(E)	-	P	2	-	T	-	(R)	-	13	-	(LH)	-	(SH)
1		2	3		4		5	6	7	8		9	10	11	12	13	14		15	16		17		18		19		20		21

1. Fluid
 - Omit for mineral oil, water-glycol
 - F3: phosphate ester
2. Solenoid control multi-press. relief valve
3. Pressure control
 - 50: 1 pressure + unload
 - 60: 2 pressures
 - 61: 2 pressures
 - 62: 2 pressures + unload
 - 70: 3 pressures
 - 80: 3 pressures
4. Size
5. Main valve max. adjust. pressure
6. Main valve press. adjuster configuration
 - Omit for knob
 - E: acorn nut, sq. head adj. screw
7. Vent pressure
 - Omit for low vent pressure (st'd)
 - V: high vent pressure
8. Drain
 - Omit for internal drain (st'd)
 - Y: external drain
9. R side remote control max. adjust. pressure
10. R side remote control press. adjuster config.
 - Omit for knob
 - E: acorn nut, sq. head adj. screw

11. C side remote control max. adjust. pressure
12. C side remote control press. adjuster config.
Omit for knob
E: acorn nut, sq. head adj. screw (st'd)
13. L side remote control max. adjust. pressure
14. L side remote control press. adjuster config.
Omit for knob
E: acorn nut, sq. head adj. screw (st'd)
15. Electrical wiring (see DG4V-3)
16. Solenoid valve accessories (see DG4V-3)
17. Solenoid valve power supply (see DG4V-3)
18. Pressure adj. section attitude
(as viewed from sol. valve with gasket surface down)
Omit for up
L: right
R: left
19. Design no.
20. Solenoid attitude (TCG50,60,61)
Omit for right side(st'd)as viewed from adj. knob side
LH: left side as viewed from adj. knob side
21. Shockless function
Omit for no shockless function
SH: vent unload shockless valve (DGMSL-3)
(for TCG50,62,80)

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Max. Flow (L/min)	Max. Adj. Press. (MPa)
TCG(50-80)-03	03	21	80	A(V): 3.5 B(V): 7.0 C(V): 14 F(V): 21
TCG(50-80)-06	06		200	
TCG(50-80)-10	10		400	

Model	Size	Mass (kg)
TCG50	03	6.4
TCG60/61		8.4
TCG62		8.8
TCG70		9.6
TCG80		9.8
TCG50	06	8.5
TCG60/61		10.5
TCG62		10.9
TCG70		11.7
TCG80		11.9
TCG50	10	12.1
TCG60/61		14.1
TCG62		14.5
TCG70		15.3
TCG80		15.5



MODEL CODE

(F3)	-	CG	-	03	-	B	(V)	(Y)	-	15	-	(S81)	-	JA	-	J
1		2		3		4	5	6		7		8				

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Relief valve

CG: gasket mount

CT: thread connection

CF: flange connection

3. Size

4. Max. adjust. pressure

5. Vent pressure

Omit for low vent pressure (st'd)

V: high vent pressure

6. Drain

Omit for internal drain (st'd)

Y: external drain

7. Design no.

10: CT-03, CF-16, CF-24

15: CG-03

20: CT-10

40: CT-06

8. Adjuster section configuration (CG/CT-03 only)

Omit for sq. head adj. screw

S81: knob

SPECIFICATIONS

Model			Size	Max. Working Press. (MPa)	Max. Flow (L/min)	Max. Adj. Pressure (MPa)	Mass (kg)
Gasket Mount.	Thread Connect.	Flange Connect.					
CG-03	CT-03	-	03	21	40	B(V): 7 C(V): 14 F(V): 21	CG : 3.0 CT : 2.5
-	CT-06	-	06		200		2.7
-	CT-10	-	10		400		4.6
-	-	CF-16	16		500		17
-	-	CF-24	24		1200		46

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MODEL CODE

(F3)	-	C-175	-	B	-	11	-	JA	-	(S1)	-	J
1		2		3		4				5		

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Direct relief valve (thread connection)

3. Pressure adj. range

4. Design no.

5. Special feature

S1: remote relief (rated flow 1.7 L/min)

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Rated Flow (L/min)	Press. Adj. Range		Mass (kg)
				Symbol	(MPa)	
C-175	02	21	*11	B	0.5 - 7	2
				C	3.5 - 14	
				F	10.5 - 21	

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MODEL CODE

(F3)	-	CGR	-	02	-	A	(K)	-	20	-	JA	-	J
1		2		3		4	5		6				

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Remote control relief (gasket mounting)

3. Size

4. Max. adj. pressure

5. Adjuster section configuration

Omit for hex head screw (st'd)

K: knob

6. Design no.

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Rated Flow (L/min)	Max.Adj.Press.		Mass (kg)
				Symbol	(MPa)	
CGR-02	02	21	1.7	A	3.5	1.4
				B	7	
				C	14	
				F	21	

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MODEL CODE

(F3)	-	DGMCR	30	-	3	-	C	(E)	B	(E)	F	(E)	-	11
1		2	3		4		5	6	7	8	9	10		11

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Remote relief module

3. Control function

10: B line, 2 press. (and unload)

11: A line, 2 press. (and unload)

20: A,B line, 3 press.

21: A,B line, 2 press and unload

30: P,A,B line, 3 press.

4. Mounting

3: ISO 4401-03

5. R side max. adj. press.

6. R side adjuster section config.

Omit for knob

E: acorn nut, sq. head screw (st'd)

7. C side max. adj. press.

8. C side adjuster section config.

Omit for knob

E: acorn nut, sq. head screw (st'd)

9. L side max. adj. press.

10. L side adjuster section config.

Omit for knob

E: acorn nut, sq. head adj. screw (st'd)

11. Design no.

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Rated Flow (L/min)	Max.Adj.Press.		Mass (kg)
				Symbol	(MPa)	
DGMCR**-3 (10/11/20/21/30)	02	21	1.7	A	3.5	10/11: 2.0 20/21: 2.8 30: 3.0
				B	7	
				C	14	
				F	21	

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MODEL CODE

(F3)	-	URG	1	-	10	-	B	(V)	-	12	-	(S9)	-	JA	-	(S1)	-	J/M
1		2	3		4		5	6		7		8				9		10

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Unload relief valve

3. Drain

1: external drain

2: internal drain

4. Size

5. Press. adj. range

6. Vent pressure

Omit for low vent pressure(st'd)

V: high vent pressure

7. Design no.

12: URG*-10

13: URG*-06

8. Pilot

Omit for internal pilot(st'd)

S9: external pilot

9. Cut-in pressure

Omit for 85% of setting press.(st'd)

S1: 90% of setting press.

10. Mounting bolt type(URG*-10)

J: 3/4-10UNC

M: M20

SPECIFICATIONS

Model	Size	Max. Working (MPa)	Rated Flow (L/min)	Press. Adj. Range (MPa)	Mass (kg)
URG(1/2)-06	06	21	100	B: 2.5 - 7 C: 3.5 - 14 F: 10.5 - 21	11.5
URG(1/2)-10	10	21	250		22

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MODEL CODE

(F3)	-	CGL	-	03	-	A	-	10	-	(E2)	-	Y	-	12
1		2		3		4		5		6		7		10

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Low pressure adjustment

3. Size

4. Max. adjustable pressure

A: 4.0 MPa

5. Pilot pressure

6. Pilot port type

Omit for E1, E2 port (common)

E2: E1, E2 port (different)

7. Drain

Omit for internal drain

Y: external drain (st'd)

8. Design no.

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Rated Flow (L/min)	Max. Adj. Press.		Pilot Press. (MPa)	Minimum Pilot Flow (L/min)	Mass (kg)
				Symbol	(MPa)			
CGL-03	03	21	90	A	4.0	10: +1.2 above control press. 20: +2.4 above control press.	2	8.2
CGL-06	06		170				2.5	15

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MODEL CODE

DGMSL	-	3	-	(L)	-	20
1		2		3		4

1. Vent-unloading shockless module
2. Mounting
 - 3: ISO 4401-03
3. Adjustment position
 - Omit for B port side
 - L: A port side
4. Design no.

SPECIFICATIONS

Model	Max. Working Press. (MPa)	Rated Flow (L/min)	Mass (kg)
DGMSL-3	31.5	1.7	1.1

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MODEL CODE

(F3)	-	RG	(2)	-	3	F	(K)	1	-	30	-	JA
1		2	3			4	5	6		7		

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Pressure control valve (gasket mount)

3. Secondary line vent

Omit for no vent

2: secondary line vent when below setting pressure

4. Pressure adjustment range

F: 0.35 - 14 MPa

5. Adjuster section config.

Omit for slotted adj. screw

K: knob

6. Valve function

1: internal pilot, internal drain

2: internal pilot, external drain

3: external pilot, external drain

4: external pilot, internal drain

7. Design no.

SPECIFICATIONS

Model	Max. Working Press. (MPa)	Rated Flow (L/min)	Press. Adj. Range (MPa)	Mass (kg)
RG (2)	17.5	11.3	0.35 - 14	0.7

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MODEL CODE

(F3)	-	R(C)G	-	03	-	B	(P)	1	-	22	-	JA	-	(S100)	-	J
1		2		3		4	5	6		7				8		

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Pressure control valve

RG: gasket mount

RT: thread connection

RF: flange connection

Press. control valve with check valve

RCG: gasket mount

RCT: thread connection

3. Size

4. Pressure adjustment range

5. Auxiliary pilot port

Omit for no aux. pilot port(st'd)

P: aux. pilot port

6. Valve function

1: internal pilot, internal drain

2: internal pilot, external drain

3: external pilot, external drain

4: external pilot, internal drain

7. Design no.

10: RF-16

22: all series, except RF-16

8. Mgmt. code(size 03,06 only)

SPECIFICATIONS

Model			Size	Max. Wkg. Pressure (MPa)	Max. Flow (L/min)	Press. Adj. Range (MPa)	Mass (kg)			
Gasket Mount	Thread Connec.	Flange Connec.					RG	RCG	RT	RCT
R(C)G-03	R(C)T-03	-	03	21	45	X: 0.07 - 0.21 Y: 0.14 - 0.42 Z: 0.25 - 0.88 A: 0.53 - 1.75 B: 0.88 - 3.5 D: 1.75 - 7 F: 3.5 - 14	3.5	4	2.5	3
R(C)G-06	R(C)T-06	-	06		115		6.5	7	6	6.5
R(C)G-10	R(C)T-10	-	10		285		12	13	12	13
-	R(C)T-12	-	12							
-	-	RF-16	16		500		32			

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MODEL CODE

(F3)	-	XG1	-	3	F (K)	2	-	30	-	JA	-	(S1)
1		2		3	4	5		6				7

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Direct type reducing valves (gasket mounting)

3. Pressure adjustment range

4. Adjuster section config.

Omit for slotted adj. screw (st'd)

K: knob

5. Pilot

2: internal pilot

3: external pilot

6. Design no.

7. Special feature

S1: Pressure adj. range 0.1 - 10 MPa
(max. flow 3L/min)

SPECIFICATIONS

Model	Max. Wkg. Pressure (MPa)	Max. Flow (L/min)	Press. Adj. Range (MPa)	Mass (kg)
XG 1	17.5	11.3	0.35 - 14	0.7

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MODEL CODE

(F3)	-	X(C)G	-	03	-	F	-	20	-	JA	-	J
1		2		3		4		5				

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Pressure reducing valve

XG: gasket mounting

XGL: gasket mount.(for low press.)

XTL: thread connection(for low press.)

XT: thread connection

XF: flange connection

Pressure reducing valve with check valve

XCG: gasket mount.

XCT: thread connection

3. Size

4. Pressure adj. range

5. Design no.

10: XGL-03, XTL-03, XF-16

20: XG/XT-03, 06, 10, XCG/XCT-03, 06, 10

SPECIFICATIONS

Model		Size	Max. Working. (MPa)	Max. Flow (L/min)	Press. Adj. Range		Mass (kg)			
Gasket Mounting	Thread or Flange Connection				Symbol	(MPa)	XG	XCG	XT	XCT
X(C)G-03	X(C)T-03	03	21	23	B	0.56 - 20	4.0	4.2	3.0	3.5
				50	F	1.05 - 20				
X(C)G-06	X(C)T-06	06		57	B	0.56 - 20	6.0	6.5	5.5	6.0
				110	F	1.4 - 20				
X(C)G-10	X(C)T-10	10		95	B	0.7 - 20	12	13	11.5	12
				190	D	1.16 - 20				
				280	F	1.58 - 20				
-	XF-16	16		500	F	0.7 - 20	36.5			
XGL-03	XTL-03	03	14	30	B	0.18 - 7	4.0			

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MODEL CODE

(F3)	-	BLG-02	-	B	-	12	(-S20)
1		2		3		4	5

1. Fluid

Omit for mineral oil, water-glycol

F3: phosphate ester

2. Balancer valve(gasket mounting)

3. Press. adj. range

B: 1 - 7 MPa

4. Design no.

10: BLG-3

12: BLG-02

5. Pressure gauge port

Omit for gauge port

S20: no gauge port(BLG-03 only)

SPECIFICATIONS

Model	Max. Working Press. (MPa)	Max. Flow (L/min)	Press. Adj. Range (MPa)	Mass (kg)
BLG-3	10.5	20	1 - 7	1.8
BLG-02	10.5	30		2.9

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MODEL CODE

(F3)	-	FN(1)G	-	3	(K)	-	JA	-	30	-	(S8)
1		2			3				4		5

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. One way restrictor (gasket mount)

FNG: tapered needle (st'd)

FN1G: notched needle (fine adj.)

3. Adjuster section configuration

Omit for slotted adj. screw

K: micrometer knob

4. Design no.

5. Special feature

S8: two way restrictor

SPECIFICATIONS

Model	Max. Working Press. (MPa)	Rated Flow (L/min)	Cracking Press. in Free Flow Direction (MPa)	Mass (kg)
FN(1)G	14	9	0.07	0.35

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MODEL CODE

(F3)	-	FN(1)	-	4	(K)	-	20	-	JA	-	J
1		2		3		4					

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. One way restrictor (thread connection)

FN: tapered needle (st'd)

FN1: notched needle (fine adj.)

3. Adjuster section configuration

Omit for slotted adj. screw

K: micrometer knob

4. Design no.

SPECIFICATIONS

Model	Max. Working Press. (MPa)	Rated Flow (L/min)	Cracking Press. in Free Flow Direction (MPa)	Mass (kg)
FN(1)	14	9	0.07	0.25

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MODEL CODE

(F3)	-	TFN(C)G	-	04	-	315	-	20
1		2		3				4

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Restrictor (gasket mount)

TFNG: restrictor

TFNCG: one way restrictor

3. Size

4. Design no.

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Rated Flow (L/min)	Cracking Press. in Free Flow Direction (MPa)	Mass (kg)
TFNG-02 TFNCG-02	02	31.5	20	0.035 (TFNCG)	0.8
TFNG-04 TFNCG-04	04		55		1.5
TFNG-06 TFNCG-06	06		110		2.8

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MODEL CODE

LFCG	-	02	-	10	-	11
1		2		3		4

1. Press.-Temp. compensated flow control valve (w/check valve)
2. Size
3. Flow control range
4. Design no.

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Flow Control Rge.		Cracking Press. in Free Flow Direction (MPa)	Mass (kg)
			Symbol	(L/min)		
LFCG-02	02	21	3	0.015 - 3.5	0.11	3.9
			10	0.02 - 14		

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MODEL CODE

(F3)	-	F(C)G	-	02	-	1500	-	50	-	JA	-	S20
1		2		3		4		5				6

1. Fluid

Omit for mineral oil

F3: phosphate ester

2. Press.-Temp. compensated flow control valve

FCG: w/check valve

FG: no check valve (size 03 only)

3. Size

4. Code

1500: FCG-02

28: FG-03,FCG-03

5. Design no.

50: FCG-02

22: FG-03,FCG-03

6. Code

S20: st'd

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Max. Control Flow		Mass (kg)
			Code	(L/min)	
FCG-02	02	25	S57	9	3.9
			S40	16	
			S20	24.6	
			S44	35	
F(C)G-03	03	21	S20	105	8
			S38	130	



MODEL CODE

(F3)	-	DG15S2	-	06	0	-	K	-	10	-	JA	-	(J)
1		2		3	4		5		6				

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Deceleration valve

DG15S2: gasket mount

DT15S2: thread connection ('J' suffix)

3. Size

4. Spool

0: normal open

5. Check valve

Omit for no check valve

K: w/check valve

6. Design no.

SPECIFICATIONS

Model	Size	Max. Working Pressure (MPa)	Max. Flow (L/min)	Mass (kg)
DG15S2-06 DT15S2-06	06	21	225	9.8

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MODEL CODE

(F3)	-	DG4M4	-	3	0	C	-	100AC50	-	20	-	(LH)	-	(M12)	-	JA	-	(S7)
1		2		3	4			5		6		7		8				9

(F3)	-	DG4M4	-	3	0	C	-	20	-	(LH)	-	24DC	-	JA	-	S46/S47
1		2		3	4			6		7		5				10

1. Fluid
 - Omit for mineral oil, water glycol
 - F3: phosphate ester
2. Wet armature solenoid directional valve
3. Spool type
4. Spring set
 - A: spring offset A type (2 position, single sol.)
 - B: spring offset B type (2 position, single sol.)
 - C: spring centered (3 position, dual sol.)
 - Omit for no spring (2 position, dual sol.)
5. Rated voltage, frequency
6. Design no.
7. Solenoid assembly direction
 - Omit for st'd
 - (energized A type, P to B; B type, P to A)
 - LH: left hand assembly
 - (energized A type, P to A; B type, P to B)
8. Indicator lamp (option)
 - Omit for no indicator lamp (st'd)
 - M12: w/indicator lamp (for AC sol.)
 - DIN43650 connector
 - M14: indicator lamp and surge suppressor (for DC sol.)
 - DIN43650 connector
9. Special feature (option)
 - S7: 1mm orifice in P port
10. Special feature
 - S46: lead wire
 - S47: lead wire (surge suppressor)

SPECIFICATIONS

Model	Max. Press. (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Max. Shift. Freq. (times/min)		Mass(kg)	
				AC Sol.	DC Sol.	Sgl. Sol.	Dbl. Sol.
DG4M4	21	detail specs	7	500	400	0.9	1.2

SOLENOID SPECIFICATIONS

Power	Volt. Code	Volt. (V)	Freq. (Hz)	Start. Current (A)	Holding Current (A)	Power Consump. (W)	Allow. Volt. Fluct. (%)	Insul. Class (max. temp)
AC	Z	100	50	0.42	0.30	18.0	±10	F type (155)
			60	0.36	0.25	15.3		
	V	200	50	0.21	0.14	18.8		
			60	0.18	0.12	16.5		
DC	P	12	-	-	1.23	14.8	±10	F type (155)
	N	24			0.56	13.4		
DC (lead wire)	-	12	-	-	1.20	14.5	±10	F type (155)
		24			0.60	14.5		

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MODEL CODE

(F3)	-	DG4V	-	3	-	2	A	(L)	-	M	-	P	2	-	T	-	7	-	(P08)	-	52	-	(JA16)
1		2		3		4	5	6				7	8		9		10		11		12		13

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Wet armature directional valve

3. Mounting, ISO4401-03

4. Spool type

5. Spring set

A: spring offset A type (2 position, single sol.)

B: spring offset B type (2 position, single sol.)

C: spring centered (3 position, dual sol.)

N: no spring detent (2 position, dual sol.)

6. Solenoid assembly direction

Omit for st'd (energized, P to B, A to T)

L: left hand assembly (energized, P to A, B to T)

7. Wiring connection

P: plug-in conduit box G1/2 (PF1/2)

U: DIN43650 connector

KU: lead wire

8. Elec. accessories

Omit for no accessories (P, W, J)

1: no accessories (U)

2: indicator lamp (AC st'd)

4: surge supressor

7: indicator lamp and surge suppressor (DC st'd)

9: ADC rectifier (quick deenergize) and indicator lamp

12: ADC rectifier (slow deenergize) and indicator lamp

9. Solenoid voltage

T: 100 V 50/60 Hz, 110 V 60 Hz

V: 200 V 50/60 Hz, 220 V 60 Hz

G: DC12 V

H: DC24 V

TR: 100 V 50/60 Hz (ADC rectifier)

VR: 200 V 50/60 Hz (ADC rectifier)

10. T port allowable back pressure

7: 20.6 MPa

11. Port orifice

Omit for no port orifice (st'd)

12. Design no.

13. Special feature

JA16: man. operated knob

SPECIFICATIONS

Model	Max. Press. (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Max. Shift. Freq. (times / min.)			Mass (kg)			
				AC	DC	ADC	Single Sol.		Double Sol.	
DG4V-3	35	consult mfr.	20.6	300	300	120	AC 1.6	DC 1.7	AC 2.0	DC 2.1

SOLENOID SPECIFICATIONS

Power	Volt. Code	Volt. (V)	Freq. (Hz)	Start. Current (A)	Holding Current (A)	Power Consump. (W)	Allow. Volt. Fluct. (%)	Insul. Class
(AC)	T	100	50	1.8	0.52	23	+10, -15	H type (180)
			60	1.4	0.40	20	+20, -10	
		110	60	1.6	0.46	24	+10, -15	
	B	110	50	1.6	0.47	23	+10, -15	
		115	60	1.3	0.36	22	+15, -10	
		120	60	1.5	0.42	24	+10, -15	
	V	200	50	0.9	0.26	23	+10, -15	
			60	0.7	0.20	20	+20, -10	
		220	60	0.8	0.23	24	+10, -15	
	D	220	50	0.8	0.24	23	+10, -15	
		230	60	0.65	0.18	22	+15, -10	
		240	60	0.75	0.21	24	+10, -15	
(DC)	G	12	-	-	2.40	29	±10	F type (155)
	H	24			1.16	28		
	J	48			0.6	29		
	R	100			0.34	34		
AC->DC (rectified)	TR	AC100 V50/60Hz ->DC90 V (coil)		-	0.37	34	±10	F type

(ADC)	VR	AC200 V50/60Hz ->DC180 V (coil)		0.20	36		(155)
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DG4V-3- *** -10-JA-S310 Series solenoid valves
(this model has functional and product level interchangeability with and is superceded by model DG4V-3-***-52)

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Design and specifications are subject to change without prior notice, and without any obligation on the part of the manufacturer.



MODEL CODE

(F3)	-	DG4VC	-	3	-	2	A	(L)	-	M	-	P	S1	-	H	-	7	-	(P08)	-	52
1		2		3		4	5	6				7	8		9		10		11		12

1. Fluid
 - Omit for mineral oil, water glycol
 - F3: phosphate ester
2. Fine current signal wet armature directional valve
3. Interface
 - 3: ISO 4401-03
4. Spool type
5. Spring set
 - A: spring offset A type (2 position, single sol.)
 - B: spring offset B type (2 position, single sol.)
 - C: spring centered (3 position, dual sol.)
 - N: no spring detent
6. Solenoid assembly direction
 - Omit for st'd (energized, P to B, A to T)
 - L: left hand assembly (energized, P to A, B to T)
7. Wiring connection
 - P: plug-in conduit box G1/2 (PF1/2)
8. Elec. accessory
 - S1: with internal power semiconductor switch
 - S2: with internal power semiconductor switch
(and reverse connection protection diode)
 - N2: with internal power semiconductor switch
(and reverse connection protection diode)
positive logic input type
9. Solenoid coil voltage
 - H: DC24 V
10. T port allowable back pressure
 - 7: 20.6 MPa
11. Port orifice
 - Omit for no port orifice (st'd)
12. Design no.

SPECIFICATIONS

Model	Interface	Max. working Press. (MPa)	Max. Flow (L/min)	Pressure Drop	Max. Tank Line Press. (MPa)	Max. Response Freq. (times/min)	Mass (kg)	
							single sol.	double sol.
DG4VC-3	ISO 4401-03	35.0	80	consult mfr.	20.6	300	1.7	2.1

Filtration Req. (µm)		Ambient Temp. Rge. (°C)	Fluid Temp. Rge. (°C)		Fluid Viscosity (mm ² /s)	
25.0 MPa	35.0 MPa		Mineral Oil	Water Cont	Recom.Rge.	Extreme Rge.
25	25 absolute	-20 to +70	-20 to +60	+10 to +54	13 to 54	13 to 400

SOLENOID SPECIFICATIONS

Power	Volt. Code	Volt. (V)	Holding Current (A)	Power Consump. (W)	Allow. Volt. Fluct. (%)	Insul. Class
DC	H	24	1.16	28	±10	F type (155)

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MODEL CODE

(F3)	-	DG4VS	-	3	-	2	A	(L)	-	M	-	P	7	-	H	-	7	-	(P08)	-	52
1		2		3		4	5	6				7	8		9		10		11		12

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Wet armature directional valve

3. Interface

3: ISO 4401-03

4. Spool type

5. Spring set

A: spring offset A type (2 position, single sol.)

B: spring offset B type (2 position, single sol.)

C: spring centered (3 position, dual sol.)

6. Solenoid assembly direction

Omit for st'd (energized, P to B, A to T)

L: left hand assembly (energized, P to A, B to T)

7. Wiring connection

P: plug-in conduit box G1/2 (PF1/2)

U: DIN43650 connector

KU: lead wire

8. Elec. accessory

Omit for no accessories (P, KU)

1: no accessories (U)

4: surge suppressor(KU)

7: indicator lamp and surge suppressor (DC st'd)

9: ADC rectifier (quick deenergize) and indicator lamp (ADC st'd)

12: ADC rectifier (slow deenergize) and indicator lamp

9. Solenoid coil voltage

G: DC12 V

H: DC24 V

TR: 100 V 50/60 Hz (ADC rectifier)

VR: 200 V 50/60 Hz (ADC rectifier)

10. T port allowable back pressure

7: 20.6 MPa

11. Port orifice

Omit for no port orifice (st'd)

12. Design no.

SPECIFICATIONS

Model	Interface	Max. working Press. (MPa)	Max. Flow (L/min)	Pressure Drop	Max. Tank Line Press. (MPa)	Max. Response Freq. (times/min)		Mass (kg)	
						DC	ADC	single sol.	double sol.
DG4VS-3	ISO 4401-03	35	60	consult mfr.	20.6	200	120	1.7	2.1

Filtration Req. (μm)		Ambient Temp. Range(°C)	Fluid Temp. Range(°C)		Fluid Viscosity(mm ² /s)	
25 MPa	35 MPa		mineral oil	water cont	recom. range	extreme range
25	25 absolute	-20 to +70	-20 to +60	+10 to +54	13 to 54	13 to 400

SOLENOID SPECIFICATIONS

Power	Volt. Code	Volt. (V)	Freq. (Hz)	Holding Current (A)	Power Consump. (W)	Allow. Volt. Fluct. (%)	Insul. Class
DC	G	12	-	2.40	29	±10	F type (155)
	H	24		1.16	28		
AC->DC (rectified) (ADC)	TR	AC100 V 50/60 Hz ->DC90 V (coil)		0.37	34	±10	F type (155)
	VR	AC200 V 50/60 Hz ->DC180 V (coil)		0.20	36		

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MODEL CODE

(F3)	-	DG4SM	-	3	-	2	A	(L)	-	M	-	P	7	-	H	-	(P08)	-	52
1		2		3		4	5	6				7	8		9		10		11

1. Fluid
 - Omit for mineral oil, water glycol
 - F3: phosphate ester
2. Wet armature directional valve
3. Interface
 - 3: ISO 4401-03
4. Spool type
5. spring set
 - A: spring offset A type (2 position, single sol.)
 - B: spring offset B type (2 position, single sol.)
 - C: spring centered (3 position, dual sol.)
 - N: no spring detent
6. Solenoid assembly direction
 - Omit for st'd (energized, P to B, A to T)
 - L: left hand assembly (energized, P to A, B to T)
7. Wiring connection
 - P: plug-in conduit box G1/2 (PF1/2)
 - KU: lead wire
8. Elec. accessory
 - Omit for no accessories (KU)
 - 7: indicator lamp and surge suppressor (P)
9. Solenoid coil voltage
 - G: DC12 V
 - H: DC24 V
10. Port orifice
 - Omit for no port orifice (st'd)
11. Design no.

SPECIFICATIONS

Model	Max. working pressure (MPa)	Max. flow (L/min)	Tank back pressure (MPa)	Ambient temperature (°C)	Mass (kg)	
					Single Solenoid	Double Solenoid
DG4SM-3	16	30	15.7	-20 to +70	1.7	2.1

SOLENOID SPECIFICATIONS

Power Supply	Voltage (V)	Hold Current (A)	Power Consump. (W)	Allowable. Volt.Fluct. (%)	Insul. Class
G	12	0.45	5.4	±10	B (130)
H	24	0.23	5.5		

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MODEL CODE

DG31SM	-	3	-	*C	-	KU	-	G	-	6	-	50	-	S*
1		2		3		4		5		6		7		8

1. Mini-watt solenoid pilot operated valve
2. Mounting
ISO 4401-03 (CETOP 3)
3. Spool type (spring set A, B, C)
C(B): 0,1,2,3,6,7,8,
A: 0,2
4. Wiring method
KU: lead wire w/connector
P7: solenoid plug-in conduit box
w/indicator lamp and surge suppressor
5. Solenoid
G: DC12 V 5 W
GA: DC12 V 2.5 W
H: DC24 V 5 W
HA: DC24 V 2.5 W
6. T port back pressure
6: 16.0 MPa
7. Design no.
50: P7 type
51: KU type
8. Special feature

SPECIFICATIONS

Max. working pressure (MPa)		Max. flow (L/min)	Tank port back pressure (MPa)	Min. pilot pressure (MPa)	Ambient temperature (°C)	Vibration resistance	Water resistance	Filtration (µm)		Mass (kg)	
5W solenoids G, H	2.5W solenoids GA, HA							5 W	2.5 W	single solenoid	double solenoid
25	16	80	16	0.4	-20 to +90	JIS D 1601 3, B	JIS D 0203 S2 (KU type)	25	10	approx. 1.6	approx. 2.1

SOLENOID SPECIFICATIONS

Power Supply	Voltage (V)	Hold Current (A)	Power Consump. (W)	Allowable. Volt. Fluct. (%)	Insul. Class
G	12	0.42	5	±25	B (130)
GA	12	0.21	2.5	+25 -10	
H	24	0.21	5	±25	
HA	24	0.11	2.5	+25 -10	

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MODEL CODE

COM	-	3	-	2	C	-	30	-	CH	-	10
1		2		3	4		5		6		7

1. Comnica valve
2. Interface
 - 3: ISO 4401-03
 - 5: ISO 4401-AC-05-4-A
3. Spool type
4. Spring set
 - C: spring centered (3 position)
5. Max. controllable flow
6. Control type
 - SH: shockless type
 - CH: 3 channel setting type
 - AN: analog input type
 - CO: command input type
7. Design no.

MODEL CODE

COM	-	7	-	2	C	-	130	-	CH	-	(E)	-	(T)	-	10
1		2		3	4		5		6		7		8		9

1. Comnica valve
2. Interface
 - 7: ISO 4401-AD-07-4-A
 - 8: ISO 4401-AE-08-4-A
3. Spool type
4. Spring set
 - C: spring centered (3 position)
5. Max. controllable flow
6. Control type
 - SH: shockless type
 - CH: 3 ON/OFF input signals type
 - AN: analog input signal type
 - CO: command input type
7. Pilot
 - Omit for internal pilot

E: external pilot

8. Drain

Omit for external drain

T: internal drain

9. Design no.

SPECIFICATIONS

Model		COM-3	COM-5	COM-7	COM-8
Max. Operating Press.	MPa	24.5	20.6	24.5	
Tank Port Backpress.	MPa	13.7		Internal Drain: 13.7 MPa External Drain: 24.5 MPa	
Max. controllable flow	L/min	*130	*170	*2130	*2250
Min. controllable flow	L/min	*10.5	*11.5	*23	*25
Repeatability		1 % or less of Max. flow			
Flow rate setting		100 divisions for A, B solenoid each			
Response		*350	*3100	*370	
Acceleration and deceleration time setting		0 - 9.9 sec (0.1sec step) / 0 - 0.99 sec (0.01sec step), Selecting			
Ambient temperature	°C	0 - 60			
Operating oil temperature	°C	7 - 60			
Hydraulic oil viscosity range	mm ² /s	20 - 300			
Vibration resistance	m/s ²	45 (JIS D 1601)			
Shock resistance	m/s ²	300 (JIS C 0041)			
Water proof, dust proof		IP 54			
Power supply voltage		DC 21.6 - 28 V			
Max. power consumption		40 W(DC24 V 1.67 A)			
Wiring specification		Lead wires One meter long are attached			
Input output signal		contact mfr.			
Mass	kg	2.5	6.5	12	20

*1 Supplied Press. 6.9 MPa

*2 Diff. Press. 1 MPa

*3 0 - 100 % action

Input output signal

Type	Input	Output
SH	START Signal a,b Solenoid HALT Input (photocoupler insulation, sink type)	-
CH	Signal a,b Solenoid STOP Input (2-way photocoupler insulation for both source, sink types)	READY Output (Open)
AN	DC+/-10V Analog Input STOP Input (photocoupler insulation, sink type)	-
CO	Command Signal(RS-422) STOP Input (2-way photocoupler insulation for both source, sink types)	Command Response Signal (RS-422)



MODEL CODE

(F3)	-	DG4V	-	5	-	2	A	(L)	-	M	-	P	L	-	T	-	6	-	40	-	(P10)
1		2		3		4	5	6				7	8		9		10		11		12

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Wet armature directional valve

3. Mounting, ISO4401-05

4. Spool type

5. Spring set

A: spring offset A type (2 position, single sol.)

B: spring offset B type (2 position, single sol.)

C: spring centered (3 position, dual sol.)

N: no spring detent

6. Solenoid assembly direction

Omit for st'd (energized, P to B, A to T)

L: left hand assembly (energized, P to A, B to T)

7. Wiring connection

P: plug-in conduit box G1/2 (PF1/2)

U: DIN43650 connector

KU: lead wire (350mm, DC only)

8. Elec.accessories

Omit for no accessories (P)

1: no accessories (U)

L: indicator lamp (AC st'd)

4: surge suppressor

7L: indicator lamp and surge suppressor (DC st'd)

9L: ADC rectifier (quick deenergize) and indicator lamp

12L: ADC rectifier (slow deenergize)and indicator lamp

9. Solenoid voltage

T: 100 V 50/60 Hz, 110 V 60 Hz

OV: 200 V 50/60 Hz, 220 V 60 Hz

G: DC12 V

H: DC24 V

TR: 100 V 50/60 Hz (ADC rectifier)

VR: 200 V 50/60 Hz (ADC rectifier)

10. T port allowable back pressure

6: 15.7 MPa (AC sol.)

7: 20.6 MPa (DC sol.)

11. Design no.

12. Port orifice (option)

Omit for no port orifice (st'd)

SPECIFICATIONS

Model	Max. Working Press. (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Max. Shift. Freq. (times/min.)			Mass (kg)			
				AC	DC	ADC	Single Sol.		Double Sol.	
DG4V-5	31.5	consult mfr.	15.7 (AC)	240	180	120	AC	DC	AC	DC
			20.6 (DC)				3.6	4.4	4.6	6.1

SOLENOID SPECIFICATIONS

Power	Volt. Code	Volt. (V)	Freq. (Hz)	Start. Current (A)	Holding Current (A)	Power Consump. (W)	Power Volt. Fluct. (%)	Insul. Class
(AC)	T	100	50	6.8	0.69	-	+10, -15	H type (180 °C)
			60	5.9	0.49	-	+20, -10	
		110	60	6.5	0.59	-	+10, -15	
	B	110	50	6.2	0.63	-	+10, -15	
		115	60	5.8	0.52	-	+15, -10	
		120	60	6.0	0.54	-	+10, -15	
	OV	200	50	3.4	0.35	-	+10, -15	
			60	3.0	0.25	-	+20, -10	
		220	60	3.3	0.30	-	+10, -15	
	D	220	50	3.1	0.32	-	+10, -15	
		230	60	2.9	0.26	-	+15, -10	
		240	60	3.0	0.27	-	+10, -15	
(DC)	G	12	-	-	3.17	38	±10	H type (180 °C)
	H	24			1.58			
	OJ	48			0.79			
	R	100			0.38			

AC ->DC (rectified) (ADC)	TR	AC100V 50/60Hz ->DC90V(coil)	-	0.42	38	±10	H type (180 °C)
	VR	AC200V 50/60Hz ->DC180V(coil)		0.21	38		

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MODEL CODE

(F3)	-	DG4VC	-	5	-	2	A	(L)	-	M	-	P	S1	-	H	-	7	-	40	-	(P10)
1		2		3		4	5	6				7	8		9		10		11		12

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Fine current signal wet armature directional valve

3. Interface

5: ISO 4401-AC-05

4. Spool type

5. Spring set

A: spring offset A type (2 position, single sol.)

B: spring offset B type (2 position, single sol.)

C: spring centered (3 position, dual sol.)

N: no spring detent

6. Solenoid assembly direction

Omit for st'd (energized, P to B, A to T)

L: left hand assembly (energized, P to A, B to T)

7. Wiring connection

P: plug-in conduit box G1/2 (PF1/2)

8. Elec. accessory

S1: with internal power semiconductor switch(st'd)

S2: with internal power semiconductor switch
(and reverse connection protection diode)

N2: with internal power semiconductor switch
(and reverse connection protection diode)
positive logic input type

9. Solenoid coil voltage

H: DC24 V

10. T port allowable back pressure

7: 20.6 MPa

11. Design no.
12. Port orifice
- Omit for no port orifice (st'd)

SPECIFICATIONS

Model	Interface	Max. Working Press. (MPa)	Max. Flow (L/min)	Pressure Drop	Max. Tank Line Press. (MPa)	Max. Response Freq. (times/min)	Mass (kg)	
							single sol.	double sol.
DG4VC-5	ISO 4401-05	31.5	160	consult mfr.	20.6	180	4.4	6.1

Filtration Req. (µm)		Ambient Temp. Rge. (°C)	Fluid Temp. Rge. (°C)		Fluid Viscosity (mm²/s)	
25 MPa	31.5 MPa		Mineral Oil	Water Cont	Recom.Rge.	Extreme Rge.
25	25 absolute	-20 to +70	-20 to +60	+10 to +54	13 to 54	13 to 400

SOLENOID SPECIFICATIONS

Power	Volt. Code	Volt. (V)	Holding Current (A)	Power Consump. (W)	Allow. Volt. Fluct. (%)	Insul. Class
DC	H	24	1.58	38	±10	H type (180 °C)

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MODEL CODE

(F3)	-	DG4VS	-	5	-	2	A	(L)	-	M	-	P	7L	-	H	-	7	-	40	-	(P10)
1		2		3		4	5	6				7	8		9		10		11		12

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Wet armature directional valve

3. Interface

5: ISO 4401-05

4. Spool type

5. Spring set

A: spring offset A type (2 position, single sol.)

B: spring offset B type (2 position, single sol.)

C: spring centered (3 position, dual sol.)

N: no spring detent

6. Solenoid assembly direction

Omit for st'd (energized, P to B, A to T)

L: left hand assembly (energized, P to A, B to T)

7. Wiring connection

P: plug-in conduit box G1/2 (PF1/2)

U: DIN43650 connector

KU: lead wire

8. Elec. accessory

Omit for no accessories (P, KU)

1: no accessories (U)

4: surge suppressor(KU)

7L: indicator lamp and surge suppressor (DC st'd)

9L: ADC rectifier (quick deenergize) and indicator lamp (ADC st'd)

12L: ADC rectifier (slow deenergize) and indicator lamp

9. Solenoid coil voltage

G: DC12 V

H: DC24 V

TR: 100 V 50/60 Hz (ADC rectifier)

VR: 200 V 50/60 Hz (ADC rectifier)

10. T port allowable back pressure

7: 20.6 MPa

11. Port orifice

Omit for no port orifice (st'd)

12. Design no.

SPECIFICATIONS

Model	Interface	Max. Working Press. (MPa)	Max. Flow (L/min)	Pressure Drop	Max. Tank Line Press. (MPa)	Max. Response Freq. (times/min)		Mass (kg)	
						DC	ADC	single sol.	double sol.
DG4VS-5	ISO 4401-05	31.5	120	consult mfr.	20.6	140	100	4.4	6.1

Filtration Req. μm		Ambient Temp. Range (°C)	Fluid Temp. Range (°C)		Fluid Viscosity(mm ² /s)	
25 MPa	31.5 MPa		mineral oil	water cont	recom. range	extreme range
25	25 absolute	-20 to +70	-20 to +60	+10 to +54	13 to 54	13 to 400

SOLENOID SPECIFICATIONS

Power	Volt. Code	Volt. (V)	Freq. (Hz)	Holding Current (A)	Power Consump. (W)	Allow. Volt. Fluct. (%)	Insul. Class
DC	G	12	-	3.17	38	±10	H type (180 °C)
	H	24		1.58			
AC->DC (rectified) (ADC)	TR	AC100 V 50/60 Hz ->DC90 V (coil)		0.42	38	±10	H type (180 °C)
	VR	AC200 V 50/60 Hz ->DC180 V (coil)		0.21	38		

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MODEL CODE

(F3)	-	DG5V	-	7	-	2	A	L	-	(1)	-	(E)	-	(T)	-	P	7	-	T	-	82	-	JA
1		2		3		4	5	6		7		8		9		10	11		12		13		

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Solenoid pilot operated valve

3. Mounting

7: ISO4401-07

H8: ISO4401-08

4. Spool type

5. Spring set

A: spring offset A type (2 position, single solenoid)

B: spring offset B type (2 position, single solenoid)

C: spring centered (3 position, double solenoid)

D: pressure centered (3 position, double solenoid)

N: no spring detent (2 position, double solenoid)

6. Solenoid assembly (for spring offset type A, B)

Omit for st'd (energize P to B, A to T)

L: left hand assembly (energize P to A, B to T)

7. Spool stroke control (option)

Omit for no option (st'd)

1: stroke adj. (both ends, A, B port)

2: pilot choke (meter out control)

3: pilot choke + stroke adj. on both ends

7: stroke adj. (A port end)

8: stroke adj. (B port end)

- 27: pilot choke + stroke adj. (A port end)
- 28: pilot choke + stroke adj. (B port end)
8. Pilot
- Omit for internal pilot
- E: external pilot
9. Drain
- Omit for external drain
- T: internal drain
10. Elec. wiring
- P: plug-in conduit box G1/2 (PF1/2)
- U: DIN43650 connector
11. Elec. accessories
- Omit for no accessories (for types P)
- 1: no accessories (for type U)
- 2: indicator lamp (AC st'd)
- 7: indicator lamp and surge suppressor (DC st'd)
- 9: ADC solenoid rectifier (quick deenergize) and indicator lamp
- 12: ADC solenoid rectifier (slow deenergize) and indicator lamp
12. Solenoids
- T: 100 V 50/60Hz, 110 V 60 Hz
- V: 200 V 50/60Hz, 220 V 60 Hz
- G: DC12 V
- H: DC24 V
- TR: 100 V 50/60Hz (ADC rectifier)
- VR: 200 V 50/60Hz (ADC rectifier)
13. Design no.

SPECIFICATIONS

Model	Size	Max. Work. Pressure (MPa)	Max. Flow (L/min)	Tank Port Min. Backpress. (MPa)	Min. Pilot Press. (MPa)	Max. Pilot Press. (MPa)	Mass (kg)	
							Single Sol.	Double Sol.
DG5V-7	04	31.5	contact mfr.	20.6	contact mfr.	31.5	8.6	9.1
DG5V-H8	06	31.5	contact mfr.	20.6	contact mfr.	31.5	16.7	17.2

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MODEL CODE

(F3)	-	DG5S	-	10	-	2	A	(L)	-	(2)	(E)	-	(T)	-	P	7	-	T	-	82	-	JA	-	M
1		2		3		4	5	6		7	8		9		10	11		12		13				

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Solenoid pilot operated valve

3. Mounting

10: ISO 4401-10

4. Spool type

5. Spring set

A: spring offset A type (2 position, single solenoid)

B: spring offset B type (2 position, single solenoid)

C: spring centered (3 position, double solenoid)

D: pressure centered (3 position, double solenoid)

N: no spring detent (2 position, double solenoid)

6. Solenoid assembly (for spring offset type A, B)

Omit for st'd (energize P to B, A to T)

L: left hand assembly (energize P to A, B to T)

7. Pilot choke (option)

Omit for no pilot choke (st'd)

2: pilot choke

8. Pilot

Omit for internal pilot

E: external pilot

9. Drain

Omit for external drain

T: internal drain

10. Elec. wiring

P: plug-in conduit box G1/2 (PF1/2)

U: DIN43650 connector

11. Elec. accessories

Omit for no accessories (type P)

1: no accessories (type U)

2: indicator lamp (AC st'd)

7: indicator lamp and surge suppressor (DC st'd)

9: ADC solenoid rectifier (quick deenergize) and indicator lamp

12: ADC solenoid rectifier (slow deenergize) and indicator lamp

12. Solenoids

T: 100 V 50/60 Hz 110 V 60 Hz

V: 200 V 50/60 Hz 220 V 60 Hz

G: DC12 V

H: DC24 V

TR: 100 V 50/60 Hz (ADC)

VR: 200 V 50/60 Hz (ADC)

13. Design no.

SPECIFICATIONS

Model	Size	Max. Working Press. (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Max. Pilot Press. (MPa)	Min. pilot Press. (MPa)	Mass (kg)	
							single sol.	double sol.
DG5S-10	10	21	contact mfr.	20.6	21	contact mfr.	42	43

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MODEL CODE

(F3)	-	DG3V	-	7	-	2	A	-	(1)	-	10	-	(LH)	-	JA
1		2		3		4	5		6		7		8		

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Pilot operated directional valve

3. Mounting

7: ISO 4401-07

H8: ISO 4401-08

4. Spool type

5. Spring set

A: spring offset

C: spring centered

D: pressure centered

Omit for no spring

6. Stroke adjustment (option)

Omit for no options (st'd)

1: stroke adj. on both ends

7: stroke adj. on end (A port)

8: stroke adj. on end (B port)

7. Design no.

8. Cover assembly direction (for spring offset type only)

Omit for st'd (offset, P to A, B to T)

LH: left hand assembly (offset, P to B, A to T)

SPECIFICATIONS

Model	Size	Max. Work. Pressure (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Min. Pilot Press. (MPa)	Max. Pilot Press. (MPa)	Mass (kg)
DG3V-7	04	31.5	contact mfr.	31.5	contact mfr.	31.5	7.5
DG3V-H8	06						15.5

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MODEL CODE

(F3)	-	DG3S	-	10	-	2	A	-	JA	-	10	(-LH)	-	M
1		2		3		4	5				6	7		

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Pilot operated directional valve

3. Mounting

10: ISO 4401-10

4. Spool type

5. Spring set

A: spring offset type

C: spring centered

D: pressure centered

Omit for no spring

6. Design no.

7. cover assembly direction (for spring offset type only)

Omit for st'd (offset P to A, B to T)

LH: left hand assembly (offset P to B, A to T)

SPECIFICATIONS

Model	Size	Max. Work. Pressure (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Min. Pilot Press. (MPa)	Max. Pilot Press. (MPa)	Mass (kg)
DG3S-10	10	21	contact mfr.	21	contact mfr.	21	40

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MODEL CODE

(F3)	-	C-552	-	K	-	(NS)	-	JA	-	J
1		2		3		4				

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Mechanically or manually operated directional valve

(th'd connec.)

C-552: 2 way

C-572: 4 way

3. Switching type

E: mechanically operated

K: manually operated (push button)

4. Spring (only for K type)

Omit for spring offset

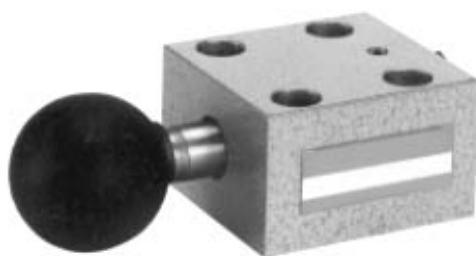
NS: no spring

SPECIFICATIONS

Model	Size	Max. Wkg. Press. (MPa)	Max. Flow (L/min)	Operating Force (MPa)	Mass (kg)
C-552 C-572	02	14	11.5	consult mfr.	2.3

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MODEL CODE

(F3)	-	DG2M	2	-	4	0	A	-	(T)	-	10	-	JA	-	(J)
1		2	3		4	5		6		7					8

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Mechanically or manually operated directional valve

DG1M: manually operated (push button) directional valve (gasket mounting)

DT1M: manually operated (push button) directional valve (thread connection)

DG2M: mechanically operated directional valve (gasket mounting)

DT2M: mechanically operated directional valve (thread connection)

3. Flow direction

2: 2 way

4. Spool type

5. Spring set

A: spring offset

6. Drain

Omit for external drain

T: internal drain

7. Design no.

10: DT*M2

30: DG*M2

8. JIS Taper pipe threads

DT*M2 only

SPECIFICATIONS

Model	Max. Wkg. Press. (MPa)	Rated. Flow (L/min)	Y Port Backpress. (MPa)	Operating Force (N)	Mass (kg)
DG1M2	14	13.5	0.35	consult mfr.	0.7
DT1M2					
DG2M2					
DT2M2					



MODEL CODE

(F3)	-	DG20S	-	3	-	2	A	(L)	-	(P)	-	20
1		2		3		4	5	6		7		8

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Mechanically operated (roller lever) directional valve

3. Mounting

3: ISO 4401-03

4. Spool type

2: all ports closed in transient neutral position

5. Spring set

A: spring offset

6. Lever assembly position

Omit for offset P to A, B to T

L: offset, P to B, A to T

7. Roller, lever position

P: roller on P port side

T: roller on T port side

S: roller on side opposite gasket surface

8. Design no.

SPECIFICATIONS

Model	Max. Wkg Press. (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Mass (kg)
DG20S-3	21	40	7	1.7

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MODEL CODE

(F3)	-	DG20S	-	5	-	2	A	(L)	-	(P)	-	10
1		2		3		4	5	6		7		8

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Mechanically operated (roller lever) directional valve

3. Mounting

5: ISO 4401-05

4. Spool type

2: all ports closed in transient neutral position

5. Spring set

A: spring offset

6. Lever assembly position

Omit for offset P to A, B to T

L: offset, P to B, A to T

7. Roller, lever position

P: roller on P port side

T: roller on T port side

S: roller on side opposite gasket surface

8. Design no.

SPECIFICATIONS

Model	Max. Wkg Press. (MPa)	Max. Flow (L/min)	Tank Port Backpress. (MPa)	Mass (kg)
DG20S-5	21	100	7	2.8

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MODEL CODE

(F3)	-	DG2S	4	-	0	1	2	A	-	51	-	(LH)	-	JA	-	(S15)
1		2	3			4	5			6		7				8

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Mechanically operated directional valve

Mounting, ISO 4401-05

3. Flow direction

2: 2 way

4: 4 way

4. Spool type

5. Spring offset

6. Design no.

51: st'd

50: S15 type, S16 type

7. Roller, lever position

Omit for st'd (offset, P to A, B to T)

LH: left hand assembly (offset, P to B, A to T)

8. Special feature

Omit for roller direct

S15: roller lever (roller position on P port side)

S16: roller lever (roller position on T port side)

SPECIFICATIONS

Model	Size	Max. Wkg. Press. (MPa)	Max. Flow (L/min)		Tank Port Backpress. (MPa)	Mass (kg)
			7 MPa	21 MPa		
DG2S2-012A	03	21	45	30	0.035	3.5
DG2S4-010A			45	30	7	
DG2S4-012A			76	76		



MODEL CODE

(F3)	-	DG17V	-	7	-	6	C	-	(1)	-	10	-	JA	-	S90
1		2		3		4	5		6		7				

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Manually operated (lever)

3. Mounting, ISO 4401-07

4. Spool type

5. Spring set

C: spring centered

6. Spool stroke adjustment

Omit for no spool stroke adj. (st'd)

1: both A, B line control

7: A line control

8: B line control

7. Design no.

SPECIFICATIONS

Model	Size	Max. Wkg Press. (MPa)	Tank Port Backpress. (MPa)	Mass (kg)
DG17V-7	04	31.5	21	9.5

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MODEL CODE

DT8P1	-	06	-	5	-	11	-	JA	-	(S22)	-	J
2		3		4		5				6		

(F3)	-	DT8P1	-	06	-	5	-	JA	-	20	-	(S22)	-	J
1		2		3		4				5		6		

1. Fluid

10/11 design

use for mineral oil, phosphate ester

20 design

Omit for mineral oil, water glycol

F3: phosphate ester

2. Inline check valve (thread connection)

3. Size

4. Cracking pressure

5. Design no.

6. Special feature

S22: no spring

SPECIFICATIONS

10/11 design

Model	Size	Max. Wkg. Press. (MPa)	Rated. Flow (L/min)	Mass (kg)	Design no.
DT8P1-02	02	21	20	0.2	10
DT8P1-03	03		40	0.2	10
DT8P1-06	06		80	0.7	11
DT8P1-10/12	10/12		200	2.3	11

20 design

Model	Size	Max. Wkg. Press. (MPa)	Rated. Flow (L/min)	Mass (kg)

DT8P1-03	02	21	40	0.5
DT8P1-04/06	04/06		80	1.6
DT8P1-08/10	08/10		200	4.0

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MODEL CODE

(F3)	-	C2	-	805	-	(S3)	-	JA	-	(S26)	-	J
1		2		3		4				5		

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Angle type check valve (thread connection)

3. Size

4. Cracking pressure

5. Special feature

S26: pilot operation

S12: bypass orifice

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated. Flow (L/min)	Mass (kg)
C2-800	02	21	20	1.5
C2-805	03		40	1.5
C2-815	06		80	2.5
C2-820	08		125	3.5
C2-825	10		250	4.5
C2-830	12		315	4.5

Symbol	Crack. press. (MPa)
Omitted, S12	0.035
S20	0.004
S19	0.14
S2	0.25
S3	0.35
S8	0.53

S17	0.88
S34	1.05
S22	no spring

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MODEL CODE

(F3)	-	C5G	-	825	-	(S3)	-	JA	-	(11)	-	(S160)	-	(M)
1		2		3		4				5		6		7

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Angle type check valve (gasket mount)

3. Size

4. Cracking pressure

5. Design no.

Use only for C2G-805

6. Special feature

S51: adj. opening (for C2G-805)

S160: adj. opening (for C2G-815, C5G-825)

7. Mounting bolt type (Only for C5G-825, others omit)

Omit for 3/4-10UNC

M: metric bolts (M20)

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated Flow (L/min)	Mass (kg)
C2G-805	03	21	40	1.5
C5G-815	06		80	3.0
C5G-825	10		380	6.0

SPECIFICATIONS

Symbol	Crack. press. (MPa)
Omitted, S12	0.035
S20	0.004
S19	0.14
S2	0.25
S3	0.35

S8	0.53
S17	0.88
S34	1.05
S22	no spring

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MODEL CODE

(F3)	-	DF10P1	-	16	-	5	-	20	-	JA	-	(S22)
1		2		3		4		5				6

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Angle type check valve (flange connection)

3. Size

4. Cracking pressure

5. Design no.

6. Special feature

S12: bypass orifice(ø 1.2)

S22: no spring

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated Flow (L/min)	Mass (kg)
DF10P1-16	16	21	500	13
DF10P1-24	24		1200	65.5

Symbol	Crack. press. (MPa)
5 (st'd)	0.035
7	0.05
10	0.07
20	0.14
25	0.18
30	0.21
50	0.35
65	0.46
80	0.56

100	0.70
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MODEL CODE

(F3)	-	4CG	-	03	-	(D)	A	-	20	-	(GE5)	-	JA	-	(S100)	-	J
1		2		3		4	5		6		7				8		

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Pilot operated check valve (normal closed)

4CG: gasket mount

4CT: thread connection

3. Size

4. Decompression function

Omit for st'd

D: decompression

5. Cracking pressure

6. Design no.

7. Drain

Omit for internal drain

GE5: external drain

8. Code

Model	Code
4CG/4CT-03	S100
4CG/4CT-03-D	S100
4CG/4CT-03-GE5	S2
4CG/4CT-03-D-GE5	S2
4CG/4CT-06	S100
4CG/4CT-06-D	S100
4CG/4CT-06-GE5	Omit
4CG/4CT-06-D-GE5	S2
4CG/4CT-10	Omit
4CG/4CT-10-D	Omit
4CG-10-GE5	Omit
4CT-10-GE5	S2
4CG/4CT-10-D-GE5	S2

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated Flow (L/min)	Mass (kg)
4CG-03	03	21	50	3.5
4CT-03				2.5
4CG-06	06		125	7.0
4CT-06				5.5
4CG-10	10		315	12
4CT-10				12

Symbol	Crack. press. (MPa)
A	0.21
C	0.53
F	1.05

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MODEL CODE

(F3)	-	THPCG	-	06	-	C	-	(E)	-	10
1		2		3		4		5		6

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Pilot operated check valve (normal closed)

3. Size

4. Cracking pressure

5. Drain

Omit for internal drain

E: external drain

6. Design no.

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated Flow (L/min)	Mass (kg)
THPCG-03	03	35.0	50	1.6
THPCG-06	06		140	3.6

Symbol	Crack. press. (MPa)
A	0.21
C	0.52
F	1.02

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MODEL CODE

(F3)	-	C5PG	-	815	-	(S3)	-	10	-	(S1)
1		2		3		4		5		6

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Pilot operated check valve (normal open)

3. Size

4. Cracking pressure

5. Design no.

6. Special feature

S1: O-ring seal against pilot pressure

internal leakage (excl. C2PG-805)

S5: notched poppet to reduce shock

(cracking pressure 0.035 MPa, 0.35 MPa)

(excl. C2PG-805)

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated Flow (L/min)	Mass (kg)	Design No.
C2PG-805	03	21	40	1.5	11
C5PG-815	06		80	4.5	10
C5PG-825	10		380	8.6	10

Symbol	Crack. press. (MPa)
Omitted (st'd)	0.035
S19	0.14
S2	0.25
S3	0.35
S8	0.53
S17	0.88

S34	1.05
S22	no spring

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MODEL CODE

CVSH	-	3	-	10
1		2		3

1. Shuttle valve

2. Size

3: 1/4

01: 3/8

MD: 1/4 (sol. module)

3. Design no.

SPECIFICATIONS

Model	Max. Wkg. Pressure (MPa)	Mass (kg)
CVSH-3-10	21	0.8
CVSH-01-11	21	2.1
CVSH-MD-11	21	1.5

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MODEL CODE

(F3)	-	URMC	-	03	-	10	-	S1
1		2		3		4		5

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Modular check valve (for relief valve)

3. Size

4. Design no.

5. Cracking pressure

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated Flow (L/min)	Mass (kg)	Design No.
URMC-03	03	21	40	4.0	10
URMC-06	06		100	5.9	11
URMC-10	10		250	11	10

Symbol		Crack. press. (MPa)
S1	URMC-03/06	0.035
	URMC-10	0.05
S2		0.35
S3		0.53
S4		0.88

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MODEL CODE

F3	-	CVI	-	25	-	D20	-	3	-	L	-	10	-	JA
1		2		3		4				5		6		

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Cartridge valve insert

3. Size

16, 25, 32, 40, 50, 63, 80

4. Function and Area Ratio

Symbol	Function	Area Ratio(A:AP)
D10	normal closed	1:1
D11	normal closed	1:1.1
D15	normal closed	1:1.5
D20	normal closed	1:2
F	normal closed(w/notch)	1:2
F15	normal closed(w/notch)	1:1.5
OD17	normal open	1:1.7

5. Cracking pressure (MPa)

Symbol	D10		D11		D15		D20		F		F15	
	A->B	B->A	A->B	B->A	A->B	B->A	A->B	B->A	A->B	B->A	A->B	B->A
L	0.03	-	0.03	0.27	0.04	0.08	0.05	0.05	0.05	0.05	0.04	0.08
M	0.13	-	0.14	0.14	0.19	0.37	0.25	0.25	0.25	0.25	0.19	0.37
H	0.25	-	0.27	0.27	0.37	0.75	0.5	0.5	0.5	0.5	0.37	0.75

6. Design no.

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Rated Flow (ΔP, 0.5 MPa) (L/min)	Mass (kg)
CVI	16	35	200	0.15
	25		450	0.35
	32		650	0.75
	40		1100	1.4
	50		1700	2.2
	63		2800	5.4
	80		4200	9.8

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MODEL CODE

F3	-	CVC	-	25	-	A	-	T39	-	(W)	-	10	-	JA	-	(X10)
1		2		3		4		5		6		7				8

1. Fluid

Omit for mineral oil, water glycol

F3: phosphate ester

2. Cartridge valve cover

3. Size

16, 25, 32, 40, 50, 63, 80

4. Functions

Symbol	Function	Orifice	
		St'd	Option
N	basic type	X	-
A	adj. opening	X	-
PC	w/pilot-opr. check	AP	-
D3	w/mounting for direc. valve	AP	X,Z1,Z2
D5	w/mounting for direc. valve	AP	X,Z1,Z2
W	w/shuttle	AP	Z2
W13	w/shuttle or mounting for direc. valve(type 1)	AP	Z2
W23	same as above(type 2)	AP	Z2
W33	same as above(type 3)	AP	X,Y,Z2
W43	same as above(type 4)	AP	X,Y,Z1

5. Code

T39: for 16, 25, 32, 40

JT39: for 50, 63, 80

6. Adj. opening (for 'A' sym. types)

W: Adj. screw (st'd)

M: Micrometer knob (option for sizes 16, 25)

K: Micrometer knob w/key (option for sizes 16, 25)

7. Design no.

8. Orifice

For orifices other than st'd, port symbol and
orifice diameter (2 digit)

SPECIFICATIONS

Model	Size	Max. Wkg. Pressure (MPa)	Mass (kg)
CVC	16	21	0.8
	25		1.8
	32		3.8
	40		6.0
	50		9.7
	63		20
	80		24

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MODEL CODE

EPCG2	-	01	-	210	-(D	A)-	11
1		2		3		4	5		6

1. Prop. relief valve

2. Valve size

3. Press. adjustment range

4. Controller

Omit for no controller

D: DIN connector type valve mounted controller

5. Controller type

A: analog input

T: integrated setting w/timer (3 settings, 2 timer type)

6. Design no.

SPECIFICATIONS

Model	EPCG2				
Valve size	01				
Max. wkg. press (MPa)	21				
Wkg. flow range (L/min)	0.3 - 1.5				
Press. adj. range code	35	70	140	175	210
Press. adj. range (MPa)	0.7 - 3.5	1 - 7	1 - 14	1 - 17.5	1 - 21
Rated current (A)	1				
Coil resistance (Ω)	14				
Hysteresis	below 3 %				
Repeatability	below 1 %				
Mass (kg)	2.5				

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MODEL CODE

EPCG2	-	06	-	210	-(D	A)-	Y	-	L	-	11
1		2		3		4	5		6		7		8

1. Prop. relief valve

2. Valve Size

3. Press. adjustment range

4. Controller

Omit for no controller

D: DIN connector type valve mounted controller

5. Controller type

A: analog input

T: integrated setting w/timer
(3 settings, 2 timer type)

6. Drain

7. Manual adj. knob direction

Omit for Front

L: Left

8. Design no.

SPECIFICATIONS

Model			EPCG2		
Valve size			03	06	10
Max. wkg. press. (MPa)			21		
Max. flow (L/min)			80	200	400
Max. adj. press.	Press. adj.	35	3.5		
		70	7		
		140	14		

(MPa)	range symbol	175	17.5		
		210	21		
Rated current (A)		1			
Coil resistance (Ω)		14			
Hysteresis		below 3 %			
Repeatability		below 1 %			
Mass (kg)		7	10	15	

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MODEL CODE

EPFG	-	01	-	5-15	-	10
1		2		3		4

1. Electro-hydraulic proportional
flow control valve w/reducing type
pressure compensator
2. Valve size
3. Max. flow
4. Design no.

SPECIFICATIONS

Model	EPFG			
Valve size	01			
Max. wkg. press. (MPa)	21			
Max. flow code	2.5	10	5-15	15
Min. flow (L/min)	0.03			
Max. flow (L/min)	2.5	10	15	15
Rated current (A)	1			
Coil resistance (Ω)	14			
Hysteresis	below 4 %			
Repeatability	below 1 %			
Pressure compensator	Series type			
Mass (kg)	5			

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MODEL CODE

EPF(R)G	-	03	-	130	-(D	A)-	EX	-	10	-	(S1)
1		2		3		4	5		6		7		8

1. Prop. flow control valve

EPFG: w/series type compensator

EPFRG: w/bypass type compensator

2. Size

3. Max. flow

4. Controller, position sensor

Omit for no controller or position sensor

F: w/position sensor, no controller

D: w/DIN connector type controller

5. Controller type

A: analog input

T: integrated setting w/timer(3 settings, 2 timers)

6. Pilot

Omit for internal pilot w/reducing valve

EX: external pilot w/reducing valve

7. Design no.

11: EPFRG-06 only

10: Other

8. Suffix

Omit for EPFG

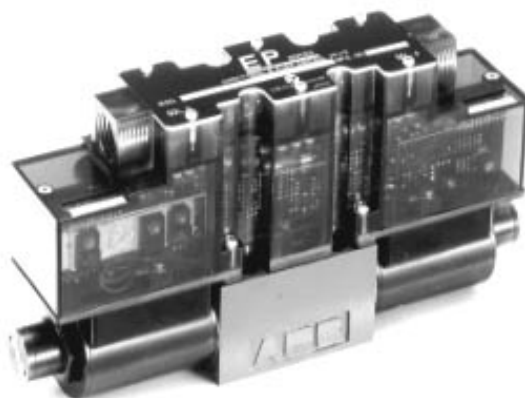
S1: for EPFRG

SPECIFICATIONS

Model		EPFG							EPFRG								
Size		03		06		10		02		03		06		10			
Max. wkg. press. (MPa)		21						17.5		21							
Max. contr. flow code		30	65	130	170	250	375	500	30	65	130	150	250	290	375	500	1000
Min. contr. flow (L/min)		0.3	0.7	1.3	1.7	2.5	4	5	1	1.5	2	2	3	4	5	6	10
Max. contr. Flow (L/min)		30	65	130	170	250	375	500	30	65	130	150	250	290	375	500	1000
Pilot press (MPa)		1.5 - 21															
Pilot flow (L/min)		1.5		1.5		2.5		1.5		2.0		2.5		3			
Rated current (A)		1															
Coil resistance		14															15
Dither freq. (Hz)		100 - 110															
Dither Current (mA rms)		42															90
Current contr. sol.	hysteresis	below 3 %															
	repeatability	below 1 %															
Position contr. sol.	hysteresis	below 0.2 %															-
	repeatability	below 0.1 %															-
Press. compensator		series type compensator							bypass type compensator								
Mass (kg)		10		24		50		10		18		33		68			

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MODEL CODE

EPDG1	-	3	-	33	C	-	20	-(D	A)-	21
1		2		3	4		5		6	7		8

1. Direct acting proportional directional flow control
2. Mounting
 - 3: ISO 4401-03
3. Spool type
 - 2: 2 type
 - 33: 33type
4. C:spring center (3 position)
5. Max. control flow (when P->A/B $\Delta P=0.7$ MPa)
 - 10: 10 L/min
 - 20: 20 L/min
6. Controller
 - Omit for no controller
 - A1: onboard controller(w/setting device)
 - D: onboard DIN connector
7. DIN connector type controllers
 - A: analog input
 - T: integrated setting device with timer (3 setting, 2 timer)
8. Design no.

SPECIFICATIONS

Model	EPDG1-3	
Valve size	3	
Max. wkg. press. (MPa)	21	
T port allow. backpress. (MPa)	14	
Max. control flow code	10	20
Min. control flow (L/min)	0.5	1
Max. control flow (L/min)	10	20
Rated current (A)	1	
Coil resistance (Ω)	13 (20 °C)	
Dither frequency (Hz)	100 - 110	
Dither current (mA)(p-p)	200	
Hysteresis (%)	7	
Repeatability (%)	2	
Mass (kg)	valve: 2.4 amp: 0.5	

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MODEL CODE

EPAD	-	A	-	1A	-	12
1		2		3		4

1. DIN connector type controller

2. Functions

Analog input

A: LAG function control possible

AL: LAG function operation

Internal setting device (3 setting)

SC: LAG function operation

Setting device w/timer (3 settings, 2 timers)

T: LAG function except when signal OFF

TL: LAG function operation

3. Output signal

1A: 0-1 A

1A6: 0-1.6 A

4. Design no.

SPECIFICATIONS

Model	EPAD-* *-1A-12	EPAD-* *-1A6-12
Power	DC 21 - 28 V	DC 19 - 28 V
Rated output current	1 A	1.6 A
Input impedance	20 k	20 k
DITHER adj. range	90 - 300 Hz	90 - 300 Hz
Max. adj. range	36 - 105 mA/V	60 - 176 mA/V
JUMP adj. range	0 - 0.47 A	0 - 0.83 A
LAG adj. range	5 - 1100 ms	5 - 1100 ms
ST1 - 3 adj. range	0 - 0.99 A	0 - 1.65 A

NULL adj. range	0 - 0.47 A	0 - 0.78 A
TM1,2 adj. range	0 - 4 sec	0 - 4 sec
Wkg. temp.	-20 - +70 °C	-20 - +70 °C
Environment	IP65	IP65
Mass	120 g	120 g

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MODEL CODE

P	-	Z	-	J	-	W	-	14
1		2		3		4		5

1. Controller for EP Series
2. Control method
 - X: open loop
 - Z: position sensor (LVDT) closed loop
3. Deadband adjustment
 - Omit for external setting
 - J: internal setting switch
4. Mounting
 - Omit for panel mount
 - W: wall mount
5. Design no.

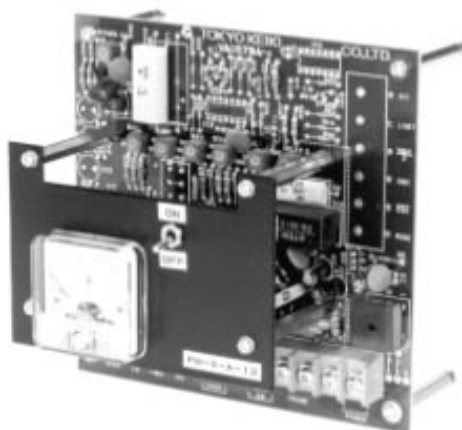
SPECIFICATIONS

Power	AC100/110 V 50/60 Hz
Max. power consump.	45 VA
Input signal volt.	0 - 10 V
Input impedance	24 k Ω (input 10V, output 1A)
Output current	0 - 1 A
Load resistance	14 - 19 Ω
Dither freq.	100 - 120 Hz
Dither current	0 - 400 mA (Peak-Peak)
Linearity	below 1 %

Wkg. temp. range	0 - 50 °C
Storage temp. range	-10 - +75 °C
Relative humidity	30 - 90 %

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MODEL CODE

PB	-	X	-	J	-	A	-	20
1		2		3		4		5

- 1 Controller board for EP Series
- 2 Control method
 - X: open loop
 - Z: position sensor (LVDT) closed loop
- 3 Deadband adjustment
 - Omit for external setting
 - J: Automatic jumpcircuit
- 4 Ammeter
 - Omit for no meter
 - A: with meter
- 5 Design no.

SPECIFICATIONS

Power	DC24 V \pm 5 % 1.1A
Input sig. volt.	DC0 - 10 V
Input impedance	24 k Ω (input 10V, output 1A)
Output current	0 - 1 A
Load resistance	14 - 19 Ω
Dither current	0 - 400 mA (Peak-Peak)
Dither freq.	100 - 120 Hz
Wkg. temp. range	0 - 50 $^{\circ}$ C



MODEL CODE

EPA	-	6	X	3	-	A	-	10
1		2	3	4		5		6

1. EP Series multi-channel controller for EP Series

2. Input no.

6: 2 input/output 3 channel

3. Control

Symbol	Open Loop	Position Sensor(LVDT) Closed Loop
X	all channel	-
S	channel 2,3	channel 1
D	channel 3	channel 1,2

4. Output

3: 3 output

5. Output wave symbol

Transient Response	Ramp			First Order Lag		
Channel No.	1	2	3	1	2	3
Omitted	O	O	O	-	-	-
A	-	-	-	O	O	O
B	O	-	-	-	O	O
C	-	O	-	O	-	O
D	-	-	O	O	O	-

6. Design no.

SPECIFICATIONS

Power	AC100/110 V 50/60 Hz
Max. power consump.	80 VA
Input signal volt.	DC 0 - 10 V
Input impedance	22 kΩ
Output current	0 - 1 A/1ch
Load resistance	14 Ω(at20 °C)
Dither freq.	110 - 140 Hz
Dither current	0 - 100 mAp-p (triangle wave)
Linearity	below 1 % (command volt. vs. current)
Wkg. temp. range	0 - 50 °C
Storage temp.	-10 - +75 °C
Rel. Humidity	30 - 90 %
Mass	4 kg

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MODEL CODE

ST3	-	7	-	B	-	300	-	20	-	12
1		2		3		4		5		6

1. 3 Way servo valve
2. Mounting
 - 7: ISO 4401-07
 - H7: ISO 4401-07 w/port
3. Spool
4. Rated current
5. Current during press. control
6. Design no.
 - 12: ST3-7
 - 11: ST3-H7

SPECIFICATIONS

Model	ST3-7	ST3-H7
Max. wkg. press.	20 MPa (Y port, 0.1 MPa)	
Rated flow	(diff. press. 3.5 MPa) 100: 100 L/min (type A) 200: 200 L/min (type B) 350: 350 L/min (type B)	(diff. press. 1 MPa) 700: 700 L/min
Press. control range	0 - 20 MPa	
Current during press. control	10: 10 L/min(type A) 20: 20 L/min(type B)	20: 20 L/min 40: 40 L/min
Pilot pressure	5 - 7 MPa	7 MPa
Pilot flow (at normal 7.0 MPa)	3 L/min	5 L/min
Hysteresis	below 2 %	
Freq. response	approx. 36 Hz (-3 dB)	approx. 25 Hz (-3 dB)
Wkg. temp. range	0 - 60 °C(fluid temp.)	
Fluid viscosity	32 - 68 cSt(40 °C)	
Operating method	current control method force feedback hyd. pilot	
Elec. mag. actuator	torque motor 40Ω (at 20 °C) coil X 2	
Input current	-400 - +400 mA (parallel connection)	

Dither input	approx. 50 - 70mA rms/coil, approx. 350 Hz	
Power consumption	3.2 W (1.6W/coil) at 20 °C	
Filtration	P,A,B,T port: 25 µm X(pilot port): 10 µm	
Mass	approx. 12.5 kg	approx. 21 kg

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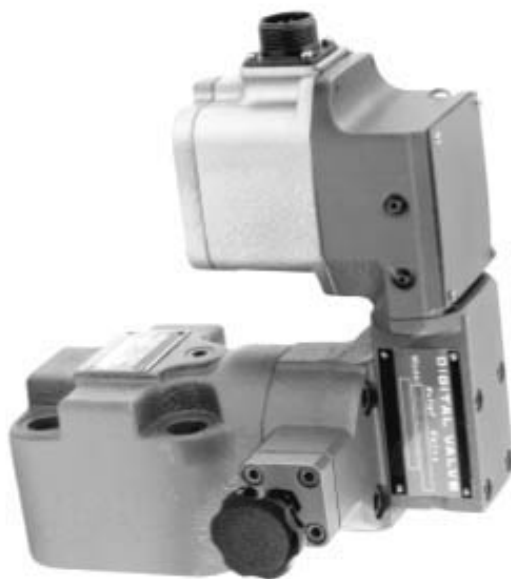
MODEL CODE

STC	-	Y	-	3	V3	-	12
1		2		3	4		5

- ST3 series servo controller
- Control method
Y: closed loop
- Compensator circuit
3: 3 channel
(2 pressure channel, 1 velocity channel)
- Velocity channel compensator circuit no.
3: 3
- Design no.

SPECIFICATIONS

Power	AC100 V $\pm 10\%$, 50/60 Hz
Standard Input	DC 0 - +10 V
Abv. input impedance	20 k Ω
Feedback input 1	DC 0 - +1.7V DC 0 - +14.9V
Abv. input impedance	10 k Ω
Feedback input 2	DC 0 - +4.8V DC 0 - +11.2V
Abv. input impedance	20 k Ω
Switching input	SWA,B,C,E,H,I,J switch ON with DC15 24 V between COM, below 1 V for OFF
Load resistance	18 - 26 Ω (DC resistance)
Power	20 VA
Wkg. temp. range	0 - 55 $^{\circ}\text{C}$
Storage temp.	-10 - +80 $^{\circ}\text{C}$
Humidity	30 - 90%
Mass	2.5 kg



MODEL CODE

D-CG	-	02	-	C	-	250	-	20
1		2		3		4		5

- Digital relief valve
- Nominal size
- Pressure adjustment range
- Maximum step number
 - 100: 100 or 200 steps (4 phase motor)
 - 250: 250 steps (5 phase motor)
- Design no.

SPECIFICATIONS

Nominal size			02	03	06	10
Max. operating pressure (MPa)			21			
Rated flow (L/min)			1	40	100	200
Max. flow (L/min)			2	80	200	400
Pressure adjustment range (MPa)	Pressure code	B	0.4 - 7	0.6 - 7	0.6 - 7	0.6 - 7
		C	0.6 - 14	0.8 - 14	0.8 - 14	0.9 - 14
		F	0.8 - 21	0.9 - 21	1 - 21	1.1 - 21
	Minimum control pressure	Values in the table above represent the minimum control pressures at rated flow. The minmum control pressure depends on flow. Refer to performance characteristics.				
Hysteresis			0.1% or less of the maximum control pressure (less than 0.5% for 5 phase motor)			

Repeatability			0.1% or less of the maximum control pressure (less than 0.5% for 5 phase motor)			
Temperature drift Note: With fluid corresponding to ISO VG32, 30-60 °C variation Percentage of max. control pressure	Pressure code	B	less than 4 %	less than 6 %	less than 6 %	less than 6 %
		C	less than 3 %	less than 3 %	less than 4 %	less than 4 %
		F	less than 4 %	less than 1 %	less than 1.5 %	less than 2 %
Resolution (Max. step number)	2 phase excitation		100 (4 phase motor)			
	1-2 phase excitation		200 (4 phase motor)			
	4 phase excitation		250 (5 phase motor)			
Response			Valve response depends on driver performance. When exclusive driver for 2 phase excitation (DC-B2B) is used, the maximum input pulse rate is 900 pps and valve response time is 1.1 ms/step (110 ms/full step)			
Valve-to-valve tolerance			±3% or less of the maximum controllable pressure			
Tank port allowable pressure (MPa)			less than 1			
Filter (µm)			25 or finer			
Mass (kg)			3.1	7.9	10	13.6

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MODEL CODE

D-F(R)G	-	03	-	EX	-	130	-	250	-	20
1		2		3		4		5		6

1. Digital flow control valve

D-FG: Series type pressure compensator integrated

(D-FG-01 is directly operated temperature compensating type.)

D-FRG: Bypass type pressure compensator integrated

2. Nominal size

Refer to "Specifications."

3. Pilot

Omitted: Directly operated type (apply to D-FG-01 only)

EX: External pilot operated type (pressure reducing valve integrated)

4. Maximum controllable flow (Refer to "Specifications.")

5. Maximum Step number

100: 100 or 200 steps (4 phase motor)

250: 250 steps (5 phase motor)

6. Design no.

10: D-FG-01 only

20: other size valves

SPECIFICATIONS

Nominal size		01	02		03		06		10		
		D-FG	D-FG	D-FRG	D-FG	D-FRG	D-FG	D-FRG	D-FG	D-FRG	
Max. operating pressure (MPa)		21	21		21		21		21		
Pilot pressure (MPa)		-	2 - 21 (the reducing valve integrated in the valve is set at 3 MPa)								
Pilot flow (L/min) (at Pilot pressure of 3.0 MPa)		-	1.2		1.8		2.5		3.5		
Hysteresis, repeatability		0.5% or less of max. controllable flow	0.1% or less of max. controllable flow								
Temperature drift (with fluid corresponding to ISO VG 32, 30 - 60 °C variation)		Refer to performance curve	2 % or less of max. controllable flow								
Resolution (max. step number)	2 phase excitation	100 (4 phase motor)									
	1-2 phase excitation	200 (4 phase motor)									
	4 phase excitation	250 (5 phase motor)									
Response		Valve response depends on driver performance. When exclusive driver for 2 phase excitation (DC-B2B) is used, maximum input pulse rate is 900 pps and valve response time is 1.1 ms/step (110 ms/full step)									
Valve-to-valve tolerance		±3% or less of maximum controllable flow									
Drain line allowable back pressure (MPa)		less than 0.1	less than 0.35								
Filter (µm)		10 absolute	25 or finer								
Mass (kg)		6	10.5		18.5		34		68		

FLOW SPECIFICATIONS

Nominal size	01							02											
	D-FG							D-FG					D-FRG						
Max. controllable flow (L/min)	0.3	1	2.5	3.5	6	8	10	6	15	25	40	65	6	15	25	40	65	90	130
Min. controllable flow (L/min)	0.03 (*1 0.02)							0.2	0.2	0.2	0.4	0.6	0.7	0.7	0.7	0.9	1.1	1.4	1.8

Nominal size	03					06				10	
	D-FG		D-FRG			D-FG		D-FRG		D-FG	D-FRG
Max. controllable flow (L/min)	90	130	130	170	250	170	250	375	500	500	1000
Min. controllable flow (L/min)	0.9	1.2	2	2.5	3	1.7	2.5	5	6	6	8

*1. The minimum controllable flow of D-FG-01 is 0.02 L/min at a valve differential pressure of 10 MPa or less.

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MODEL CODE

D-DFG	-	01	-	2	C	-	30	-	100	-	20
1		2		3	4		5		6		7

1. Digital directional & flow control valve

2. Nominal size

3. Spool type (center position)

2: All ports closed

4. Spring arrangement

C: Spring centered type

5. Maximum controllable flow

Refer to "specifications."

6. Maximum step number

100: 100 steps (5 phase motor)

7. Design no.

MODEL CODE

D-DFG	-	3	1	-	06	-	2	C	-	EX	-	130	-	157	-	(*)	-	20
1		2	3		4		5	6		7		8		9		10		11

1. Digital directional & flow control valve

D-DFG: Without pressure compensator

D-DFRG: With bypass type pressure compensator (for size 03, 04 only)

2. Directional control position number

2: Neutral and one other position

3: Neutral and two other positions

3. Load sensing port

0: No port

1: With a load sensing

5: For lift circuit (for size 04, 06 only)

7: For meter-out circuit (for size 04, 06 only)

4. Nominal size

Refer to "specifications."

5. Spool type (center position)

2: All ports closed

6. Spring arrangement

C: Spring centered

7. EX: External pilot operated type

(pressure reducing valve integrated)

8. Maximum controllable flow

Refer to "specifications."

9. Maximum step number

63: ± 63 or ± 127 steps (4 phase motor)

157: ± 157 steps (5 phase motor)

10. Spool

Omitted: Normal spool

1 -: Option spool

11. Design no.

20: D-DF(R)G-03,D-DFG-10

21: D-DF(R)G-04,D-DFG-06

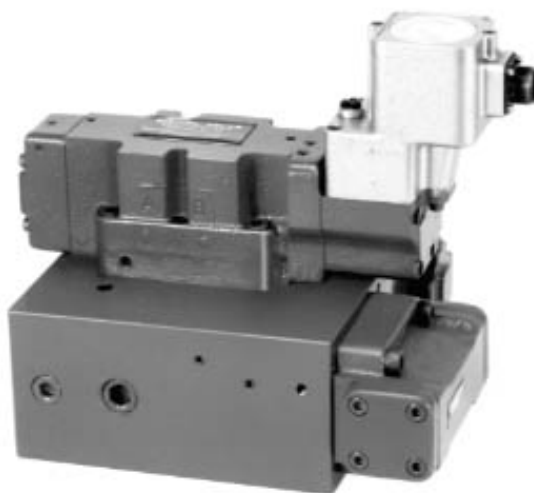
SPECIFICATIONS

Nominal size		01			03			04		06		10	
Max. operating pressure (MPa)		21											
Max. controllable flow (L/min)		10	20	30	20	40	70	100	130	190	250	350	500
Min. controllable flow (L/min)	D-DFG	0.35			0.8	1.0	1.2	1.6	1.9	2.6	3.5	7	9
	D-DFRG	-			1.8	2.0	2.2	2.6	2.9	-		-	
Pilot pressure (MPa)		-			2 - 21 (the reducing valve integrated in the valve is set at 3 MPa)								
Pilot flow (L/min) (at Pilot pressure of 3.0 MPa)		-			1.0				1.5		2.0		
Repeatability, hysteresis		0.5 % or less of max. controllable flow			0.1 % or less of max. controllable flow								

Temperature drift (with fluid corresponding to ISO VG32, 30 - 60 °C variation)		2 % or less of max. controllable flow				
Resolution (max. step number)	2 phase excitation	-	both direction ±63 (P -> A and P -> B) (4 phase motor)			
	1-2 phase excitation	-	both direction ±127 (P -> A and P -> B) (4 phase motor)			
	4 phase excitation	both direction ±100 (P -> A and P -> B)	both direction ±157 (P -> A and P -> B) (5 phase motor)			
Response		2000 PPS	Valve response depends on driver performance. When exclusive driver for 2 phase excitation (DC-B2B) is used, maximum input pulse rate is 900 pps and valve response time is 1.1 ms/step. (70 ms/ 63 full step)			
Valve-to-valve tolerance		±3% or less of maximum controllable flow				
Y port (Drain line) allowable back pressure (MPa)		less than 1.0	less than 0.35			
Filter (µm)		10 absolute	25 or finer			
Mass (kg)	D-DFG	2.5	10.7	10.8	18.2	45
	D-DFRG	-	12.7	12.8	-	-

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MODEL CODE

U	-	D	35	-	04	-	2	C	-	130	-	001
1		2	3		4		5	6		7		8

1. Unit
2. Digital valve
3. Control type
 - 35: Lift control
4. Normal size
5. Spool type
6. Spring arrangement
 - C: Spring centered
7. Maximum controllable flow
 - 130: 130 L/min
 - 250: 250 L/min
8. Unit serial number

SPECIFICATIONS

Valve size	Max. operating Pressure (MPa)	Max. flow (L/min)	Mass (kg)
04	21	130	58
06	21	250	90

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MODEL CODE

U	-	D	37	-	04	-	2	C	-	130	-	001
1		2	3		4		5	6		7		8

1. Unit
2. Digital valve
3. Control type
 - 37: Meter-out control
4. Normal size
5. Spool type
6. Spring arrangement
 - C: Spring centered
7. Maximum controllable flow
 - 130: 130 L/min
 - 250: 250 L/min
8. Unit serial number

SPECIFICATIONS

Valve size	Max. operating Pressure (MPa)	Max. flow (L/min)	Mass (kg)
04	21	130	23
06	21	250	40

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MODEL CODE

DC-A	X	4	-	B	-	10
1	2	3		4		5

1. Digital valve controllers
2. Exclusive type
3. Excitation type
 - 4: 4 phase excitation type for 5 phase stepping motor
4. Mounting type
 - B: front panel mounting type
5. Design no.

EXCLUSIVE HARNESS

DC-H	-	DV	-	300	-	10
1		2		3		4

1. Exclusive Harness
2. Joint for valve
3. Length
 - 200: 2 m
 - 300: 3 m
 - 600: 6 m
 - 1000: 10 m
 - 1500: 15 m
 - 2000: 20 m
4. Design no.

SPECIFICATIONS

Model code		DC-AX4-B-10	
Power supply		AC85V - 132V 47Hz - 440Hz	
Power consumption		30VA or less	
Control INPUT/OUTPUT		DC12V - 24V contact or contactless current capacity 10mA/point or less	
		Input signal :channel signal input CH1 - CH8, RST :file signal input FL1 - FL4, FILE	
		output signal:valve ready, file ready, alarm, mode(CNT/SET)	
External digital switch INPUT/OUTPUT		Input port: SD0 - SD11 Output port: Channel selection CHS1 - CHS8	
Setting	Channel number	80 CH: 8CH X 10 file controller incorporated 8 CH: External BCD real code digital switch(with diode)	
	Step range	Relief valve 0 - 250	Flow control valve 0 - 250
		Directional flow control valve(01 size) -100 - +100	Directional flow control valve(03 size or greater) -157 - +157
	Time range	0.01 - 9.99s 0.01s step setting possible.	
Output		Pentagon drive 4 phase excitation type for 5 phase stepping motor current capacity 0.75A/phase(for stationary exciting)	
Communication		Corresponds to RS-232C transducer function incorporated (1 set of transmission and receiving) D sub 9 pin standard connector	
Mass		1.5kg	

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MODEL CODE

DC-A	1	-	20	-	(S2)
1	2		3		4

1. Digital valve controllers
2. Excitation type
 - 1: 2 phase excitation type for 4 phase stepping motor
 - 4: 4 phase excitation type for 5 phase stepping motor
3. Design no.
4. Special no.

Omitted: Standard

S2: with setter (digital switch)

SPECIFICATIONS

Model code		DC-A1-20	DC-A4-20
Power supply		AC100V±15%, 50/60Hz	
Power consumption		80VA or less	70VA or less
Control INPUT		DC24V±10% contact or contactless current capacity 20mA/point or less	
Setting	Channel number	5	
	Setting step range	Relief valve,Flow control valve 0 - 99	Relief valve,Flow control valve 0 - 250
		Directional,Flow control valve -63 - +63	Directional,Flow control valve -157 - +157 or -100 - +100
	Setting pulse rate number	2	
	Setting pulse rate range	1.2 - 100ms/pulse 0.1ms step	0.6 - 100ms/pulse 0.1ms step

Output		2 phase excitation type for 4 phase stepping motor 1.1A/phase		4 phase excitation type for 5 phase stepping motor 0.75A/phase
External Setting	Setter number	External digital switch 5	External step input 1	External digital switch 5
	Setter type	Real code BCD 2-digit digital switch	Binary 8 bits or BCD 2-digit input signal(DC24V)	Real code BCD 3-digit digital switch
	Connector	BERG 66900-250(50P)	SATO PARTS ML-100AP-12 P	BERG 66900-260(60P)
	Exclusive harness	DC-H-P5*-300-10	-	DC-H-P5*-60-300-10
Mass		3.8kg		

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MODEL CODE

DC-A	E	-	10	-	(S2)
1	2		3		4

1. Digital valve controllers

2. Extension unit

E: for DC-A1-20

3. Design no.

4. Special no.

Omitted: Standard

S2: with setter (digital switch)

SPECIFICATIONS

Model code		DC-AE-10
Power supply		AC100V \pm 15%, 50/60Hz
Power consumption		20VA or less
Control INPUT		DC24V \pm 10% contact or contactless current capacity 20mA/point or less
Setting	Channel number	5
	Step range	Relief valve,Flow control valve 0 - 99
		Directional,Flow control valve -63 - +63
	Pulse rate number	2
	Pulse rate range	1.2 - 100ms/pulse 0.1ms step

Output		2 phase excitation type for 4 phase stepping motor 1.1A/phase
External Setting	Setter number	External digital switch 5
	Setter type	Real code BCD 2-digit digital switch
	Connector	BERG 66900-250(50P)
	Exclusive harness	DC-H-P5*-300-10
Mass		2.1kg

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MODEL CODE

DC-A	T	1	-	20
1	2	3		4

1. Digital valve controllers
2. Transient shape
3. Excitation type
 - 1: 1-2 phase excitation type for 4 phase stepping motor
 - 2: 2 phase excitation type for 4 phase stepping motor
4. Design no.

SPECIFICATIONS

Model code			DC-AT1-20	DC-AT2-20
Power supply			AC85 - 132V, 50/60Hz	
Power consumption			80VA or less	
Control INPUT			DC24V±10% contact or contactless current capacity 20mA/point or less	
Setting	Channel number		8CH + RESET	
	Transient shape		32	
	Step range	Relief valve Flow control valve	0 - 199	0 - 99
		Directional Flow control valve	-216 - +126	-63 - +63
	Data		Use the setter (DC-PT) for setting.	
Output			1-2 phase excitation type for 4 phase stepping motor 1.1A/phase	2 phase excitation type for 4 phase stepping motor 1.1A/phase



MODEL CODE

DC-B	2	B	-	10
1	2	3		4

1. Digital valve drivers
2. Excitation type
 - 1: 1-2 phase excitation type for 4 phase stepping motor
 - 2: 2 phase excitation type for 4 phase stepping motor
 - 4: 4 phase excitation type for 5 phase stepping motor
3. Power supply
 - B: AC100V
 - C: DC24V
4. Design no.

SPECIFICATIONS

Power supply	B:AC100V \pm 15%, 50/60Hz
	C:DC24V \pm 10%
Power consumption	B:60VA or less
	C:30VA or less
Control input	Current pulse (20mA current loop) TRUE 20mA \pm 20% FALSE below 0.5mA PULSE Width above 70 μ s CW: Clockwise pulse CCW: Counter clockwise pulse RESET: Excitation reset pulse
Output current	B1B/C,B2B/C: 1.1A/phase B4B/C: 0.75A/phase
Excitation type	B1B/C: 1-2 phase excitation type for 4 phase stepping motor B2B/C: 2 phase excitation type for 4 phase stepping motor B4B/C: 4 phase excitation type for 5 phase stepping motor

Adaptable pulse rate	B1B/C: 1800 pps B2B/C: 900 pps B4B/C: 2200 pps
Mass	DC-B*C: 0.8 kg DC-B*B: 3.2 kg

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MODEL CODE

PCG	-	04	-	XB	-	130	-	12
1		2				3		4

1. Pressure compensators (gasket mount)
2. Size
3. Max. flow
4. Design no.

12: Size 04

10: PCG-10

SPECIFICATIONS

Model	Max. operating pressure (MPa)	Max. flow (L/min)	Mass (kg)
PCG-04-130	21	130	4.5
PCG-10-250	21	250	15

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MODEL CODE

TGMHR	-	3	-	P	-	04	-	10
1		2		3		4		5

1. Modular pressure compensator (bypass type)
2. Mounting
 - 3: ISO 4401-03
3. Control line
 - P: P port
4. Differential pressure
 - 04: 0.4 MPa
5. Design no.

SPECIFICATIONS

Model	Max. Operating Press. (MPa)	Max. Flow (L/min)	Diff. Press. (MPa)	Mass (kg)
TGMHR-3	21	30	0.4	1.1

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MODEL CODE

TGMHX	-	3	-	P	-	04	-	10
1		2		3		4		5

- Modular pressure compensator (series type)
- Mounting
 - 3: ISO 4401-03
 - 7: ISO 4401-07
 - 8: ISO 4401-08
- Control line
 - P: P port (TGMHX-3)
 - T: T port (TGMHX-7/8)
- Differential pressure (TGMHX-3 Only)
 - 04: 0.4 MPa
- Design no.

SPECIFICATIONS

Model	Max. Operating Press. (MPa)	Max. Flow (L/min)	Min Control Flow (L/min)	Mass (kg)
TGMHX-3	21	25	Refer to below table	1.1
TGMHX-7		130	0.5	12
TGMHX-8		250	0.5	21

Diff. Press. (MPa)	Flow (L/min)
3.5	0.1
7	0.15
10.5	0.2
14	0.25
17.5	0.3
21	0.35



MODEL CODE

TGMSH	-	3	-	AB	-	10
1		2		3		4

1. Modular shuttle valve
2. Mounting
 - 3: ISO 4401-3
3. Control line
 - AB: A, B port pressure selection
4. Design no.

SPECIFICATIONS

Model	Max. Operating Pressure (MPa)	Max. Flow (L/min)	Mass (kg)
TGMSH-3	21	1	0.85

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MODEL CODE

25M	65	A	(2)	-	1	C	20	-	JA	-	J
1	2	3	4		5	6	7				

1. Vane motor

25M series

35M series

45M series

50M series

2. Displacement code

25M: 42, 55, 65

35M: 80, 95, 115

45M: 130, 155, 185

50M: 220, 255, 300

3. Piping

A: SAE 4 bolt flange

4. Mounting

Omit for flange

2: foot

5. Shaft type

1: parallel shaft with sq. key

11: involute splined shaft

6. Cover position (as viewed from cover end)

A: opposite of body port (shaft side)

B: 90° CCW of body port (shaft side)

C: inline with body port (shaft side)

D: 90° CW of body port (shaft side)

7. Design no.

SPECIFICATIONS

Model		Displ. (cm ³ /rev)	Rt'd Max. Pressure (MPa)	Rated Torque (Nm)	Max. Speed (min ⁻¹)	Min. Speed (min ⁻¹)	Mass (kg)		
							w/Flange	w/Foot	
25M	42	44.0	15.7	103	2600	100	18	24	
	55	57.7		135					
	65	68.7		162					
35M	80	83.6		196			29	35	
	95	100		236					
	115	122		287					
45M	130	138		317	2200		38.5	44.5	
	155	163		395					
	185	193		453					
50M	220	231		550			72	104	
	255	268		639					
	300	317		751					

MAX. SPEED and MAX. WORKING PRESSURE

Model	Running		Intermit.	
	Max. Speed (min ⁻¹)	Max. Wkg. press. (MPa)	Max. Speed (min ⁻¹)	Max. Wkg. press. (MPa)
25M 35M 45M	3600	3.5	4000	3.5
	3300	7	3800	7
	2800	14	3200	14
	2600	15.7	3000	17.5
50M	2800	3.5	3200	3.5
	2650	7	3000	7
	2250	14	2600	14
	2200	15.7	2400	17.5

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MODEL CODE

MHT	24	-	R1	-	12	-	JA
1	2		3		4		

- HTLS vane motor
- Torque code
- Shaft type
R1: sq. key parallel shaft
N1: shaft less
- Design no.
12: MHT24, 32, 70, 90
30: MHT50, 150, 190, 250, 380, 500, 750, 1000

SPECIFICATIONS

Model	Displacement code (cm ³ /rev)	Max. Wkg. Press. (MPa)	Torque (ΔP 0.7 MPa) (N·m)	Speed (min ⁻¹)		Mass (kg)	
				Min.	Max.	w/Shaft	Shaftless
MHT24	298	14	33	10	400	55	50
MHT32	398		44		400	55	50
MHT50	620		69		350	95	85
MHT70	868		97		300	110	95
MHT90	1116		124		300	110	95
MHT150	1860		207		250	165	145
MHT190	2360		263		200	240	205
MHT250	3100		346		200	240	205
MHT380	4720		526		200	335	290
MHT500	6200		691		200	335	290
MHT750	9300		1036		100	420	360
MHT1000	12400		1381		75	505	435



MODEL CODE

MHT	500	/	250/250	-	R1	-	35-JA	-	S12	(9)
1	2		3		4		5		6	7

1. HTLS vane motor
2. Torque code (at full torque mode)
24, 32,50,70,90,150,190,250,380,500,750,1000
3. Torque code (at partial torque mode)
4. Shaft type
R1: parallel shaft with sq. key (st'd)
N1: shaftless
5. Design no.
JA-12: MHT24,32
15-JA: MHT70,90
JA-30: MHT50
35-JA: MHT150,190,250,380,500,750(2speed),1000(2speed)
JA-35: MHT750(4speed),1000(3speed)
6. Rotation (MHT50/25/25 dual rotation)
S12: CW(right) rotation (st'd)
S13: CCW(left) rotation
7. DMHT valve
Omit for no valve
8: w/valve (MHT70/45/25 only)
9: w/valves (all models except MHT70/45/25)

DMHT	500	-	2	-	JA-10
1	2		3		4

1. MHT motor directional valve
2. Torque code of MHT motor
3. Type

2: for 2 speed motor
 3: for 3 or 4 speed motor
4. Design no.

SPECIFICATIONS

Model		Displ. (cm ³ /rev)			Torque (ΔP 0.7 MPa)			Max. Wkg. Press. (MPa)	Speed (min ⁻¹)		Mass (kg)			
	Dsgn. no.	Full Torq.	Part. Torq.		Full Torq.	Part. Torq.			Min.	Max.	w/ Shaft	w/ DMHT		
TWO SPEED														
MHT74/12/12	JA-12	298	149		33	16.5		14	10	400	55	13		
MHT32/16/16	JA-12	398	199		44	22				400	55	13		
MHT50/25/25	JA-30	620	310		69	34.5				350	95	24		
MHT70/35/35	15-JA	868	434		97	48.5				300	95	26.5		
MHT90/45/45	15-JA	1116	558		124	62				300	95	26.5		
MHT150/75/75	35-JA	1860	930		207	104				250	145	30		
MHT190/95/95	35-JA	2360	1180		263	131				200	205	38		
MHT250/125/125	35-JA	3100	1550		346	173				200	205	38		
MHT380/190/190	35-JA	4720	2360		526	263				200	290	39		
MHT500/250/250	35-JA	6200	3100		691	345				200	290	39		
MHT750/375/375	35-JA	9300	4650		1040	520				100	360	40		
MHT1000/500/500	35-JA	12400	6200		1380	690				75	435	41		
THREE SPEED														
MHT70/45/25	15-JA	868	558	310	97	62	34.5	14	10	300	95	26.5		
MHT1000/750/500	JA-35	12400	9300	6200	1380	1040	690			150	480	79		
FOUR SPEED														
MHT750/625/500/375	JA-35	9300	7750	6200	4650	104	860	690	520	14	10	150	400	81

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MODEL CODE

(F3)	-	CR	-	04	-	2	S	(T)	4	(L)	-	30	-	(S)	(D)	-	JA	-	(S2)	-	(J)
1		2		3		4	5	6	7	8		9		10	11				12		13

1. Fluid

Omit for mineral oil

F3: phosphate ester

2. HTLS internal gear motor

3. Displacement code

4. Mounting

2: 2 bolt flange

3: foot bracket

4: 4 bolt flange

5: sq. bolt flange

8: 4 bolt thick flange

5. Port location and connection type

S: 7/8-14UNF on housing

P: 1/2 NPT (Rc1/2) on housing

G: gasket mount pad on housing

J: 7/8-14 UNF on cover

SJ: 7/8-14 UNF on body, end cover

6. Tachometer

Omit for no tachometer pickup (st'd)

T: w/tachometer pickup link

7. Shaft type

0: 1" dia. 1/4" sq. key

3: 1-1/4" dia. 14 teeth involute spline

4: 1-1/4" dia. 5/16" sq. key

5: 1-1/4" dia. taper

6: 1" dia. 15 teeth involute spline

7: 1-1/4" dia. 5/16" sq. key

8: 1-1/4" dia. 14 teeth involute spline

10: straight-sided spline (SAE6B)

12: 25 mm dia. sq. key

13: 32 mm dia. sq. key

8. Rotation direction (viewed from shaft end)

Omit for CW when inlet is port "B"

(CCW when inlet is port "A")

L: CW when inlet is port "A"

(CCW when inlet is port "B")

9. Design no.

10. Distributor valve

Omitted: standard spools

S: low pulsation type spools

11. Drain port

Omit for no drain port (st'd)

D: external drain port

12. Special feature

S2: RC 1/4 (PT1/4) drain port

located 180 deg. of main ports

13. Thread connection

Omit for NPT

J: PT (JIS thread)

SPECIFICATIONS

Model	Displ. (cm ³ /rev)	Wkg. Press. (MPa)		Flow (L/min)		Torque (N·m)		Speed (at rt'd) (min ⁻¹)	Back Press. (MPa)	Mass (kg)
		Rt'd	Max.	Rt'd	Max.	Rt'd	Max.			
CR-04	62	21	28	60	80	185	245	790	7	10.3
CR-06	95	18	24			245	325	545		10.3
CR-07	106	21	28			310	415	465		11.0
CR-08	123					360	480	395		11.3
CR-09	153					460	610	315		11.8
CR-10	167	16	21.5			380	505	300		11.0
CR-11	184	18	24			480	640	265		12.3
CR-12	192	15	20			400	535	265		11.3
CR-14	239	12.5	16.5			420	560	215		11.8
CR-15	246	14	18.5			500	665	195		13.3
CR-18	288	10.5	14			420	560	180		12.3
CR-19	306	13	15.5			550	655	170		13.3
CR-23	383	8	10.5			420	560	135		13.3

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MODEL CODE

(F3)	-	GR-M	(E)	1	-	09	-	4	S	(T)	5	(L)	-	30	-	(S)	(D)	-	JA	-	(S2)	-	(J)
1		2	3	4		5		6	7	8	9	10		11		12	13				14		15

1. Fluid

Omit for mineral oil

F3: phosphate ester

2. Mech. brake integrated HTLS motor, GRM Series

3. Mech. brake control method

Omit for internal pilot

E: external pilot

C: internal pilot connection with CB-03

4. Brake torque

1: 100 N.m

2: 200 N.m

5. Displacement code

6. Mounting

2: 2 bolt flange

3: foot bracket

4: 4 bolt flange

5: sq. 4 bolt flange

8: 4 bolt thick flange

7. Port location and connection type

G: gasket mount pad on housing

P: 1/2 NPT (Rc1/2) on housing

S: 7/8-14 UNF on housing

J: 7/8-14 UNF on cover

SJ: 7/8-14 UNF on both cover & housing

C: gasket stacking w/CB-03 (GR-MC only)

8. Tachometer

Omit for no tachometer pickup (st'd)

T: w/tachometer pickup link

9. Shaft type

- 0: 1" dia. 1/4" sq. key
- 3: 1-1/4" dia. 14 teeth involute spline
- 4: 1-1/4" dia. 5/16" sq. key
- 5: 1-1/4" dia. taper
- 6: 1" dia. 15 teeth involute spline
- 7: 1-1/4" dia. 5/16" sq. key
- 8: 1-1/4" dia. 14 teeth involute spline
- 12: 25 mm dia. sq. key
- 13: 32 mm dia. sq. key

10. Rotation direction (viewed from shaft end)

- Omit for CW when inlet is port 'B'
- (CCW when inlet is port 'A')
- L: CCW when inlet is port 'B'
- (CW when inlet is port 'A')

11. Design no.

12. Distribution valve

- Omitted: standard spools
- S: low pulsation type spools

13. Drain port

- Omit for no drain port (st'd)
- D: external drain

14. Special feature

- S2: RC1/4 (PT1/4) drain port located
- 180 deg. of main ports

15. Thread connection

- Omit for NPT
- J: PT (JIS thread)

SPECIFICATIONS

Model	Displ. (cm ³ /rev)	Wkg. Press. (MPa)		Flow (L/min)		Torque (N·m)		Speed (at rt'd) (min ⁻¹)	Back Press. (MPa)	Mass (kg)
		Rt'd	Max.	Rt'd	Max.	Rt'd	Max.			
GR-M**-04	62	21	28	60	80	185	245	790	7	16.8
GR-M**-06	95	18	24			245	325	545		16.8
GR-M**-07	106	21	28			310	415	465		17.5
GR-M**-08	123					360	480	395		17.8
GR-M**-09	153					460	610	315		18.4
GR-M**-10	167	16	21.5			380	505	300		17.5
GR-M**-11	184	18	24			480	640	265		18.8
GR-M**-12	192	15	20			400	535	265		17.8
GR-M**-14	239	12.5	16.5			420	560	215		18.4

GR-M**-15	246	14	18.5			500	665	195		19.8
GR-M**-18	288	10.5	14			420	560	180		18.8
GR-M**-19	306	13	15.5			550	655	170		19.8
GR-M**-23	383	8	10.5			420	560	135		19.8

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MODEL CODE

(F3)	-	GR2H	-	450	-	5	G	(T)	7	(L)	-	D	(P	7	H)	-	10	-	(S)	(D)	-	JA	-	(J)
1		2		3		4	5	6	7	8		9	10	11	12		13		14	15				16

1. Fluid

Omit for mineral oil

F3: phosphate ester

2. HTLS internal gear motor

GRH: 1 speed

GR2H: 2 speed

3. Displacement code

4. Mounting

5: 4 bolt sq. flange

5. Connection type

G: flange mounting

6. Tachometer

Omit for no tachometer pickup (st'd)

T: w/tachometer pickup link

7. Shaft type

7: 1-3/4" dia. sq. key

8: 2" involute spline

8. Rotation direction (viewed from shaft end)

Omit for CCW when inlet is port 'A'

(CW when inlet is port 'B')

L: CW when inlet is port 'A'

CCW when inlet is port 'B'

9. Two speed change method (GR2H only)

M: manual lever

E: external pilot

D: solenoid valve

10. Sol. valve wiring type

P: plug-in conduit box type sol. valve

U: DIN connection type sol. valve

11. Electric accessories

Omit for no accessories (P,W,J)

- 1: no options (U)
- 2: indicator lamp
- 4: surge suppressor
- 7: indicator lamp and surge suppressor
- 8: ADC rectifier

12. Solenoid coil

T: AC 100 V 50/60 Hz

V: AC 200 V 50/60 Hz

G: DC 12 V

H: DC 24 V

TR: ADC 100 V 50/60 Hz -> DC90 V

VR: ADC 200 V 50/60 Hz -> DC180 V

13. Design no.

10: all models except '13' below

13: for 'D' type GR2H dual speed control

14. Distribution valve

Omitted: standard spools

S: low pulsation type spools

15. Drain port

Omit for no drain

D: external drain

16. Thread connection

Omit for NPT

J: PT (JIS thread)

SPECIFICATIONS

Model		Displ. (cm ³ /rev)	Wkg. Press. (MPa)		Flow (L/min)		Torque (N·m)		Speed		Output(kW)	Back Press. (MPa)	Mass (kg)
			Rt'd	Max.	Rt'd	Max.	Rt'd	Max.	Rt'd	Max.	(at 100min ⁻¹ Rt'd press.)	Max.	
One speed	GRH-200	200	23	30	130	170	650	860	550	740	6.7	7	30
	GRH-250	250	22	28.5			780	1020	445	595	8.0		31
	GRH-350	350	19	25			950	1250	320	430	9.8		32
	GRH-450	450	17	22.5			1090	1410	255	340	11.2		33
	GRH-600	600	13	17			1110	1460	200	265	11.4		35
Two speed	GR2H-200	200	23	30	100	130	640	835	395	535	6.6	7	37.5
		133					410	535	600	815	4.2		
	GR2H-250	250	22	28.5			765	990	320	435	7.9		38.5
		167					495	640	485	655	5.1		
	GR2H-350	350	19	25			935	1230	230	310	9.6		39.5
	233			600	790	355	480	6.2					
	GR2H-450	450	17	22			1070	1390	190	255	11.0		40.5
		300					690	890	290	385	7.1		
	GR2H-600	600	13	17			1090	1430	150	200	11.2		42.5
		400					700	920	225	295	7.2		



MODEL CODE

(F3)	-	BR	-	03	-	150	-	10	-	(S1)
1		2		3		4		5		6

1. Fluid

Omit for mineral oil

F3: phosphate ester

2. Brake valve (cross-port relief valve)

3. Size

4. Cracking pressure symbol

5. Design no.

6. Special feature

S1: no mount. bolts, nuts, O-ring

S2: plugged connection ports

SPECIFICATIONS

Size	Max. Wkg. Press. (MPa)	Rated Flow (L/min)	Cracking Pressure (MPa)	Proof Pressure (MPa)	Mass (kg)
03	21	40	consult mfr.	28	3.3

Symbol	050	075	100	125	150	175	200	225	250
Cracking Pressure (MPa)	3.5	5.25	7	8.75	10.5	12.25	14	15.75	17.5

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MODEL CODE

(F3)	-	CB	-	03	-	(B)	(G)	-	10	-	(S1)
1		2		3		4	5		6		7

1. Fluid

Omit for mineral oil

F3: phosphate ester

2. Counterbalance valve

3. Size

4. Connection method

Omit for 3/4-16 UNF

B: SAE 3/4-16UNF x PF3/8

E: SAE 3/4-16UNF x PT3/8

H: SAE 3/4-16UNF x PF3/8 w/elbow hose nipple

5. Motor

Omit for CR, GR-M(E) Series

G: GR-MC Series

6. Design no.

7. Special feature

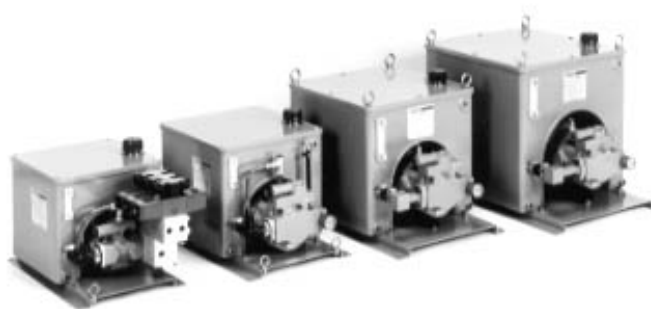
S1: no mounting bolts, nuts, O-rings

SPECIFICATIONS

Size	Max. Wkg. Press. (MPa)	Rated Flow (L/min)	Min. Switch. Pressure (MPa)	Proof Pressure (MPa)	Mass (kg)
03	21	40	0.5	28	3.5

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MODEL CODE

TU	3C	-	N	(T)	-	(T)	(M)	(L)	(S)	(3)	(C)	(R)	-	1234
1	2		3	4		5	6	7	8	9	10	11		12

- Small size power package TU-PAC Series
- Model
- Electric motor

	Symbol	Power supply
Standard	N	200/200/220V 50/60/60Hz
Special	A	400/440V 50/60Hz
	B	380V 50Hz
	C	415V 60Hz
	D	460V 60Hz

- Solenoid valve

Power supply	Symbol	Voltage (V)	Freq. (Hz)
AC	T	100	50/60
		110	60
	B	110	50
		115	60
		120	60
	V	200	50/60
		220	60
	D	220	50
		230	60
		240	60
DC	G	12	-
	H	24	

- Temp. gauge

omit for none

T: temp gauge

- Magnet

omit for none

M: magnet

7. Level switch

omit for none

L: level switch

8. Manifold block porting (as viewed from pump end)

omit for no manifold block

S: right side

F: front

A: special

9. Section manifold block

S type: 1 - 5

F type: 2 - 4

10. Special painting

Omit for st'd Munsel N5.5

C: special color

11. Drain cooler (radiator)

Omit for no drain cooler

R: with drain cooler

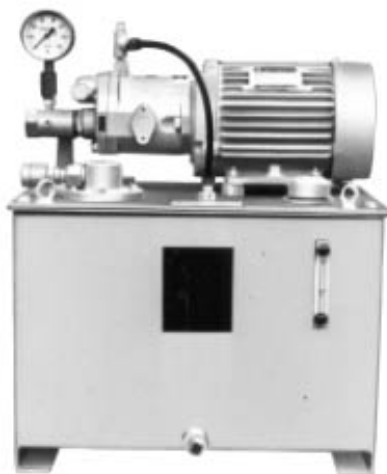
12. Assembly drawing no.

SPECIFICATIONS

Model		Elec. Motor Rating	Piston Pump Displ. (cm ³ /rev)	Rtd. Wkg. Pressure (no radiator) MPa	Max. Wkg. Pressure (w/radiator) MPa	Max. Delivery (L/min)		Tank Cap. L	Mass (kg)
						50 Hz	60 Hz		
C series	TU1A	0.75 kW, 4P	8	3.5	-	11	13.2	10	35
	TU2A	1.5 kW, 4P		7	-			15	45
	TU3A		16	3.5	-	22	26.4		53
	TU4B	2.2 kW, 4P	16	6	10	22	26.4	25	70
	TU5B		21	4	7	29	34.6		70
	TU6B	3.7 kW, 4P	16	9	14	22	26.4	40	90
	TU7B		21	7	10.5	29	34.6		90
	TU8B		31	5	7	42.6	51.0		98

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MODEL CODE

Q	16	14	-	20	-	A
1	2	3		4		5

1. Q-PAC Series
2. Pump
 - 16: P16V
 - 21: P21V
 - 31: P31V
3. Elec. Motor
 - 14: 1.5 kW 4 pole
 - 34: 3.7 kW 4 pole
4. Design no.
5. Option
 - A: temp gauge
 - B: mini-fan cooler
 - E: terminal box

SPECIFICATIONS

Model	Pump Model	Elec. Motor	Max. Del. (L/min)		Max. Wkg. Press. (MPa) (at max. delivery)		Tank Capacity (L)	Mass (kg)
			50 Hz	60 Hz	50 Hz	60 Hz		
Q1614	P16V	1.5 kW 4P	22	26.4	3.5	3	50	70
Q2134	P21V	3.7 kW 4P	29	34.6	7	5	100	150
Q3134	P31V	3.7 kW 4P	42.6	51	5	3.5	100	150

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MODEL CODE

ESP	P	-	H	(2)	-	H	(20)	-	10
1	2		3	4		5	6		7

1. Elec. pressure switch

2. Mounting

P: R 1/4 (PT 1/4)

F: G 1/4 (PF 1/4) O-ring seal

3. Pressure range

L1: 0.02 - 1 MPa

L: 0.2 - 10 MPa

H: 0.7 - 35 MPa (st'd)

H1: 1 - 50 MPa

4. Contact, disconnect adjustment

Omit for 1 contact, disconnect variable

2: 2 contact, disconnect fixed

3: 1 contact, disconnect fixed

5. Power, output rating

H: DC24 V

NPN open collector output DC30 V, 80mA max.

HN: DC24 V (10-28V)

PNP open collector output DC30 V, 80mA max.

6. Construction, accuracy

Omit for drip proof

20: waterproof

7. Design no.

SPECIFICATIONS

Sensing, Output

Allow. max. pressure:

Symbol	L1	L	H	H1
(MPa)	2	20	52.5	75

Sensing press. set. method:

multiple(3) rotation variable resistor

Contact method:

upper limit contact

(transistor on when press. rises to set.)

Disconnect diff.:

Variable 2 - 10 % F.S.

Fixed 1 % F.S.(typ.)

Indicator:

LED

Cable:

3 or 4 core cable 2000mm

Repeatability:

w/in ± 0.2 % F.S.

Temp. drift:

w/in ± 0.2 % F.S.

Response:

w/in 1m s

Effect of voltage fluct.:

w/in ± 0.1 % F.S.

Environment, construction

Wkg. temp:

-20°C to +70°C

Allow. humidity:

5 to 90%RH

Insul. resistance:

above 100M Ω (at DC500 mega)

Volt. resistance:

AC 350 V 1 min

(measured current, above 5mA)

Vibration resistance:

JIS D 1601 level 70 (70m/s²) X,Y,Z

Shock resistance :

JIS C 0912-1984 196 m/s² X,Y,Z axis

Cycle durability:

above 10⁷ times

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MODEL CODE

ETP	P	-	H1	-	H	L	C	-	W	-	(C)	-	11
1	2		3		4	5	6		7		8		9

1. Elec. pressure sensor

2. Mounting

P: R1/4 (PT1/4)

F: G1/4 (PF1/4) O-ring seal

3. Pressure sensing range

L1: 0 - 1.0 MPa

L: 0 - 10.0 MPa

M: 0 - 20.0 MPa

H: 0 - 35.0 MPa

H1: 0 - 50.0 MPa

4. Power

H: DC 24 V

G: DC ± 15 V

E: DC 15 V

5. Output rating

6. Accuracy

7. Cap

W: w/waterproof cap

8. Calibration switch

Omit for momentary switch

C: w/toggle switch

self holding type

9. Design no.

SPECIFICATIONS

Sensing,Output

Press. sens. rge.		Allow. Max. Press. (MPa)
Sym.	(MPa)	
L1	0 - 1	2
L	0 - 10	20
M	0 - 20	40
H	0 - 35	52.5
H1	0 - 50	75

Power		Power Consump. (at. load)
Sym.		
H	DC 24 V ±15 %	35 mA
G	DC ±15 V ±5 %	30 mA
E	DC 15 V ±5 %	35 mA

Output Rating		Calibration Signal output
Sym.		
H	0 - 10V. DC(min. load resistance 10 k Ω)	10 V
L	0 - 5V. DC(min. load resistance 10 k Ω)	5 V
A	4 - 20mA. DC(max. load resistance 350 Ω)	20 mA

Accuracy		Temp. Charac.
Sym.		
*1C	±0.25 % F.S.	±0.025 % F.S./°C
D	±0.5 % F.S.	±0.05 % F.S./°C

*1. Not available on pressure sensing range,L1,H,H1 models

Response: w/in 1ms

Affect of volt. fluct.: less than ±0.1%F.S. of rated volt.

Environment,Construction

Allow. temp. range:

-20 to +70°C (0 to +70°C to maint. accuracy)

Allow. humidity:

5-95% RH

Insul. resistance:

above 100M Ω (DC 500 V mega)

Volt. resistance:

AC 350 V 1 min.

Vibration resistance:

JISD 1601 level 70 (70m/s²) X,Y,Z axis 4H

Shock resistance:

JIS C 0921-1984 196m/s² X, Y, Z axis

Cycle durability:

more than 10⁷ times

Water resistance:

splash proof (JIS C 0920)

Contact mat'l:

SUS 630 or SUS 316

Mass

320 g

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MODEL CODE

ESM	F	-	350	-	100	-	H	-	11
1	2		3		4		5		6

1. Pressure switch
2. Mounting
P: R1/4 (PT 1/4)
F: G3/8 (PF 3/8)
3. Pressure range
350: 0 - 35.0 MPa
4. Setting pressure
100: 10.0 MPa
5. Power
H: DC 10 - 30V
6. Design no.

SPECIFICATIONS

Pressure range	0 - 35.0 MPa
Allow. Max. press.	52.5 MPa
Contact material	SUS 630 equiv. SUS 304
Setting	upper limit (set at factory) disconnect variance less than $\pm 3\%$ F.S. fixed set press. accuracy 10.0 MPa ± 0.4 MPa (at 25 °C)
Output	open collector, 1 point rated 30 V 150 mA DC max.
Repeatability	less than $\pm 0.2\%$ F.S.
Temp. drift	$\pm 0.1\%$ F.S./°C
Vibration resistance	70m/s ² JIS D 1601, level 70(33Hz and 67Hz)
Shock resistance	196m/s ² JIS G 0912-1984 test method 2
Wkg. temp. range	-20 to +70 °C
Storage temp.	-30 to +90 °C
Mass	100 g



MODEL CODE

PH100	-	M	S	(*)	(F)	Y	R	-	20	-	CH	-	(D)	-	10
1		2	3	4	5	6	7		8		9		10		11

1. PH Series
PH80, PH100, PH130
2. Port connection
M: standard
3. 4. Double pump code
S: Single pump
5. Mounting
Omit for frange mounting
F: With foot bracket
6. Shaft configuration
X: SAE key shaft
Y: SAE key long shaft
7. Rotation (viewed from shaft end)
R: CW
L: CCW
8. Pump design no.
9. Control option
CH: Pressure compensator
CGH: Remote pressure compensator
CVH: Load sensing
TL: Torque limiter (low torque)
TH: Torque limiter (high torque)
EDHS: Electric direct
10. Max. flow control adj.
Omitted: none
D: with adj.
11. Control design no.

SPECIFICATIONS

Model	Displ. (cm ³ /rev)	Max. Wkg Press. [*] (MPa)		Max. Speed (min ⁻¹)	Min. Speed (min ⁻¹)	Weight (kg)
		Rated	Intermittent			
PH80	80	28	30	1800	600	50
PH100	100					75
PH130	130					91

^{*}Maximum compensated pressure setting for EDHS control option is 21MPa



MODEL CODE

P16V	-	(F)	R	S	(G)	-	11	-	CCG	-	10	-	J
1		2	3	4	5		6		7		8		

1. P16V Series

2. Mounting

Omit for flange mounting

F: foot mounting

3. Rotation (viewed from shaft end)

R: CW

L: CCW

4. Displacement code

S: one side of center

5. Porting(drain port to JIS th'd)

Omit for SAE O-ring seal

G: SAE 4 bolt flange

6. Pump design no.

7. Control type

C: pressure compensator(1.5 - 21 MPa)

CM: pressure compensator(1.5 - 21 MPa)

CC: press. comp. w/max. displ. stop
(1.5 - 21 MPa)

CMC: press. comp. w/max. displ. stop
(1.5 - 21 MPa)

CG: remote press. comp.

CCG: remote press. comp. w/max. displ. stop

CV: load sensing control

CVC: load sensing w/max. displ. stop

8. Control design no.

(F11)	-	P70V	(3)	(F)	R	(60)	-	(2)	(C)	10	-	CV	-	10	-	J
1		2	3	4	5	6		7	8	9		10		11		

1. Fluid
 - Omit for mineral oil
 - F11: water glycol
2. P**V Series
 - P21V,P31V,P40V,P70V,P100V,P130V
3. Double pump code(P40V or larger)
 - Omit for single pump
 - 3: integrated fixed vane pump
(P40V,P70V,P100V,P130V)
 - 4: SQP1 series fixed vane pump w/thru shaft
(P70V,P100V)
 - 5: SQP2 series fixed vane pump w/thru shaft
(P70V,P100V,P130V)
 - 6: SQP3 series fixed vane pump w/thru shaft
(P100V,P130V)
 - 7: P16V variable piston pump w/thru shaft
(P40V,P70V,P100V,P130V)
4. Mounting
 - Omit for flange mounting
 - F: foot mounting
5. Rotation (viewed from shaft end)
 - R: CW
 - L: CCW
6. Max. displ. limitation
7. Integrated vane pump displ. code
8. Integrated vane pump, outlet position
(viewed from cover end)
 - A: bottom
 - B: left
 - C: top
 - D: right
9. Pump design no.
10. Controls
 - C: pressure compensator
 - CG: remote compensator
 - CV: load sensing
 - CGVF: load sensing w/remote compensator
 - ED: electrical direct
11. Control design no.

SPECIFICATIONS

Model	Displ. (cm ³ /rev)	Max. Wkg Press. (MPa)	Max. Speed (min ⁻¹)	Min. Speed (min ⁻¹)	Weight (kg)
P16V	16	21	1800	600	15
P21V	21				23
P31V	31				23
P40V	40				37
P70V	70				63
P100V	100				91
P130V	130				112

Integrated Fixed Vane Pump Specifications

Symbol	Displ. (cm ³ /rev)	Max. Wkg. Press. (MPa)
2	6.3	16
3	9.4	
4	12.5	
5	15.6	

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MODEL CODE

(F3)	-	SQP(S)3	-	35	-	86	C	(2)	-	(LH)	-	18
1		2		3		4	5	6		7		8

1. Fluid

Omit for mineral oil

F3: phosphate ester

F11: water glycol

2. Low noise fixed displ. vane pump

SQP(S)1 Series

SQP(S)2 Series

SQP(S)3 Series

SQP(S)4 Series

3. Pump displacement code

Series	Displacement
SQP(S)1:	2,3,4,5,6,7,8,11,12,14
SQP(S)2:	10,12,14,15,17,19,21
SQP(S)3:	17,21,25,30,32,38
SQP(S)4:	30,35,38,42,50,60

4. Shaft (parallel sq. key)

1: [SQP(S)1,SQP(S)2]

86: [SQP(S)3,SQP(S)4]

5. Outlet port position (viewed from cover end)

A: opposite inlet

B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

6. Mounting

Omit for flange mounting

2*: foot mounting

Outlet position relative to foot mount surface

MASS (kg)

Model	SQP		SQPS	
	Flange mounting	Foot mounting	Flange mounting	Foot mounting
SQP(S)1	16	19	18.5	21.5
SQP(S)2	25	34.5	29.5	39
SQP(S)3	35	44.5	43	52.5
SQP(S)4	59.5	84.5	71	96

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MODEL CODE

(F3)	-	SQP(S)32	-	35	-	17	-	86	C	D	(2)	-	(LH)	-	18
1		2		3		4		5	6	7	8		9		10

1. Fluid

Omit for mineral oil

F3: phosphate ester

F11: water glycol

2. Low noise fixed displ. double vane pump

SQP(S)21 Series

SQP(S)31,32 Series

SQP(S)41,42,43 Series

3. Shaft end pump displacement code

Series	Displacement
SQP(S)2*:	10,12,14,15,17,19,21
SQP(S)3*:	17,21,25,30,32,35,38
SQP(S)4*:	30,35,38,42,50,60

4. Cover end pump displacement code

Series	Displacement
SQP(S)*1:	2,3,4,5,6,7,8,11,12,14
SQP(S)*2:	10,12,14,15,17,19,21
SQP(S)*3:	17,21,25,30,32,35,38

5. Shaft

86: parallel sq. key

1: parallel sq. key(SQPS21 only)

6. Shaft end pump (viewed from cover end)

A: opposite inlet

B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

7. Cover end pump (viewed from cover end)

A: 135° CCW from inlet

B: 45° CCW from inlet

C: 45° CW from inlet

D: 135° CW from inlet

8. Pump mounting

Omit for flange mounting

2*: foot mounting

Shaft end pump outlet position to foot mounting surface

Foot mount code	Shaft end pump outlet position to foot surface
2	up(12 o'clock)
23	right(3 o'clock)
26	down(6 o'clock)
29	left(9 o'clock)

9. Rotation (viewed from shaft end)

Omit for CW

LH: CCW

10. Design no.

SPECIFICATIONS

Model	Shaft end pump			Cover end pump					
	Displ. Code	Del.at 1000min ⁻¹ 0.7MPa	Max. Working Press. (MPa)	Displ. Code	Del.at 1000min ⁻¹ 0.7MPa	Max. Working Press. (MPa)	Max. Speed (min ⁻¹)	Min. Speed (min ⁻¹)	
SQP(S)21	10	32.5	17.5 *(14)	2	7.5	14 *(14)	1800 #(1200) *(1200)	600	
	12	38.3							
	14	43.3		3	10.2				
	15	46.7							
	17	52.5		4	12.8				
	19	59.2							
	21	65.0		5	16.7				
SQP(S)31	17	53.3			6	19.2			17.5 *(14)
	21	66.7			7	22.9			
	25	79.2			8	26.2			
	30	95.0			11	35.0			
	32	100.0			12	37.9			16 *(14)
	35	109.0			14	44.2			14 *(14)
	38	118.0							
SQP(S)41	30	96.0							
	35	109.0							
	38	128.0							
	42	134.0							
	50	156.0							
	60	189.0							
SQP(S)32	17	53.3	17.5	10	32.5		1800		
	21	66.7							
	25	79.2		12	38.3				
	30	95.0							
	32	100.0		14	43.3				
	35	109.0							

	38	118.0	*(14)	15	46.7	17.5 *(14)	#(1200) *(1200)	600	
SQP(S)42	30	96.0							
	35	109.0		17	52.5				
	38	128.0							
	42	134.0		19	59.2				
	50	156.0							
	60	189.0		21	65.0				
SQP(S)43	30	96.0	17.5 *(14)	17	53.3	17.5 *(14)	1800 #(1200) *(1200)	600	
	35	109.0		21	66.7				
	38	128.0		25	79.2				
	42	134.0		30	95.0				
	50	156.0		32	100.0				
	60	189.0		35	109.0				
				38	118.0				

* : phosphate ester
: water glycol

MASS (kg)

Model	SQP		SQPS	
	Flange mounting	Foot mounting	Flange mounting	Foot mounting
SQP(S)21	31.5	41	41	50.5
SQP(S)31	46	55.5	56	65.5
SQP(S)32	48	57.5	62	71.5
SQP(S)41	74	99	83	108
SQP(S)42	80	105	88	113
SQP(S)43	88.5	113	89	123

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MODEL CODE

(F3)	-	SQP432	-	60	-	38	-	15	-	86	C	C	C	(2)	-	(LH)	-	18
1		2		3		4		5		6	7	8	9	10		11		12

1. Fluid

Omit for mineral oil

F3: phosphate ester

F11: water glycol

2. Low noise fixed displ. triple vane pump

SQP(S)211 Series

SQP(S)311,321 Series

SQP(S)421,431,432 Series

3. Shaft end pump displacement code

Series	Displacement
SQP(S)2**:	10,12,14,15,17,19,21
SQP(S)3**:	17,21,25,30,32,35,38
SQP(S)4**:	30,35,38,42,50,60

4. Middle pump displacement code

Series	Displacement
SQP(S)*1*:	2,3,4,5,6,7,8,11,12,14
SQP(S)*2*:	10,12,14,15,17,19,21
SQP(S)*3*:	17,21,25,30,32,35,38

5. Cover end pump displacement code

Series	Displacement
SQP(S)**1:	2,3,4,5,6,7,8,(11),(12),(14)
SQP(S)**2:	10,12,14,15,17,19

Displacement code in () has limitation on applicable pump series.
See table on page B31.

6. Shaft

86: parallel sq. key

7. Shaft end pump (viewed from cover end)

A: opposite inlet

B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

8. Cover end pump (viewed from cover end)

SQP211,311,321,421

A: 135° CCW from inlet

B: 45° CCW from inlet

C: 45° CW from inlet

D: 135° CW from inlet

SQP431,432

A: opposite inlet

B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

9. Cover end pump outlet position (viewed from cover end)

SQP211,311,431,432

A: 135° CCW from inlet

B: 45° CCW from inlet

C: 45° CW from inlet

D: 135° CW from inlet

SQP321,421

A: opposite inlet

B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

10. Pump mounting

Omit for flange mounting

2*: foot mounting

	32	100.0									1000	1000				
	35	109.0					8	26.2		1000						
	38	118.0														
SQP321	17	53.3	17.5	10	32.5	17.5	2	7.5	14	1800	1200	1200	600			
	21	66.7					3	10.2								
	25	79.2		12	38.3											
	30	95.0		14	43.3		4	12.8								
	32	100					5	16.7								
	35	109		15	46.7											
	38	118														
SQP421	30	96.0	17.5	17	52.5	17.5	6	19.1	17.5	1500	1000	1000	600			
	35	109														
	38	128		19	59.2		7	22.9								
	42	134					8	26.2						1200		
	50	156		21	65.0					1000						
	60	189														
							11	35.0								
SQP431	30	96.0	17.5	17	53.3	17.5	2	7.5	14	1800	1200	1200	600			
	35	109		21	66.7		3	10.2								
	38	128		25	79.2		4	12.8								
	42	134		30	95.0		5	16.7	17.5							
	50	156		32	100		6	19.1								
	60	189		35	109		7	22.9								
				38	118		8	26.2								
							11	35.0								
							12	37.9	16					1500		
							14	44.1	14							
	30	96.0	17.5	17	53.3		10	32.5	17.5	1800	1200	1200				
	35	109		21	66.7		12	38.3								
	38	128		25	79.2		14	43.3		1500						

SQP432	42	134		30	95.0	17.5	15	46.7					600
	50	156		32	100		17	52.5		1200	1000	1000	
	60	189		35	109		19	65.0		1000			
				38	118								

MASS (kg)

Model	Flange mounting	Foot mounting
SQP211	40	49.5
SQP311	60	69.5
SQP321	62	71.5
SQP421	88	113
SQP431	97	122
SQP432	104	129

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MODEL CODE

(F3-)	35VQ	25	A	(F)	-	86	C	20	(L)	-	JA
1	2	3	4	5		6	7	8	9		

1. Fluid

Omit for mineral oil

F3: phosphate ester

2. High performance vane pump for mobile application

25VQ Series

35VQ Series

45VQ Series

3. Pump displacement code

Series	Displacement
25VQ	12, 14, 17, 21
35VQ	25, 30, 35, 38
45VQ	42, 50, 60

4. Port connection

A: SAE4 bolt flange connection

5. Pump mounting

Omit for flange mounting

F: foot mounting

6. Shaft

1: parallel sq. key (25VQ)

86: parallel sq. key (35VQ, 45VQ)

11: spline

7. Outlet position (viewed from cover end)

A: opposite inlet

B: 90° CCW from inlet

C: inline with inlet

D: 90° CW from inlet

8. Design no.
9. Rotation (viewed from shaft end)

Omit for CW

L: CCW

SPECIFICATIONS

Model	Displ. Code	Del. at 1000min ⁻¹ 0.7 MPa (L/min)	Mineral Oil		Phosphate Ester		Min. Speed (min ⁻¹)	Mass (kg)
			Max. Press. (MPa)	Max. Speed (min ⁻¹)	Max. Press. (MPa)	Max. Speed (min ⁻¹)		
25VQ	12	38.3	21	2700	14	1800	600	14.5
	14	43.3		2500		1600		
	17	52.5						
	21	65.0						
35VQ	25	79.2	21	2500	14	1600	600	22.7
	30	95.0		2400				
	35	109						
	38	118						
45VQ	42	134	17.5	2200	14	1500	600	34.0
	50	156						
	60	189						

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The following models have been discontinued and are no longer in production. Most of these products are interchangeable with and/or have been superseded by models listed above. Please contact TOKIMEC regarding any questions you may have on these products.

- DG4V-3- *** -10-JA-S310 Series solenoid valves
(this model has functional and product level interchangeability with and is superseded by model DG4V-3-***-52)
- 4SL-3 Series solenoid valves
- DG4L Series solenoid valves
- DG4S-4 Series solenoid valves

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The following models have been discontinued and are no longer in production. Most of these products are interchangeable with and/or have been superceded by models listed above. Please contact TOKIMEC regarding any questions you may have on these products.

- DEF(R)G Series proportional valves
- TCGE Series proportional valves
- TFGT Series proportional valves
- FCGT-02 Series proportional valves
- DE-X Series controllers
- EC-X Series controllers
- EC-4S Series controllers

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Pumps -Discontinued models-

The following models have been discontinued and are no longer in production. Most of these products are interchangeable with and/or have been superceded by models listed above. Please contact TOKIMEC regarding any questions you may have on these products.

- VVJ50/80/125 Series variable vane pump
- PVB(Q) Series variable piston pump

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Piston Pumps[PH Series](#)[P**V Series](#)

Low noise, high performance, and high reliability are characteristics of TOKIMEC hydraulic pumps. TOKIMEC's PH Series and P**V Series piston pumps and SQP(S) vane pumps are designed to meet the stringent needs of industrial users.

Vane Pumps[SQP\(S\) Series \(Single\)](#)[SQP\(S\) Series \(Double\)](#)[SQP Series \(Triple\)](#)[VQ Series\(Single\)](#)[VQ Series\(Double\)](#)[V-104/V-134 Series](#)[V-108/V-138 Series](#)[V20/V30 Series](#)**PH Series Piston Pumps**

The new PH Series variable displacement piston pump provides major enhancements in sound reduction characteristics, higher pressures, and a wide range of control options. The Series offers 28MPa continuous pressure capability and a rigid pump design which lowers operational noise levels. The range of



control options include constant horsepower control, electric direct control in addition to other controls such as load sensing and pressure compensator controls.

SQP(S) Series Vane Pumps

A mainstay in industry, this low noise, high performance fixed vane pump series offers superior performance with high volumetric efficiency and very low noise characteristics. It is available in single, double, as well as triple pump configurations and in versions which operate on water glycol or phosphate ester fluids.

[-Discontinued models-](#)

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Relief Valves[TCG20 Series](#)[TCG50--80 Series](#)[CG/CT/CF Series](#)**Remote Control Relief Valves**[C-175](#)[CGR-02](#)[DGMCR-3 Series](#)**Unloading Relief Valves**[URG Series](#)**Low Pressure Control Valves**[CGL Series](#)**Shockless Valves**[DGMSL-3](#)**Pressure Control Valves**[RG\(2\)-3F](#)[R\(C\)G/R\(C\)T/RF Series](#)**Pressure Reducing Valves**[XG1-3F](#)[X\(C\)G/X\(C\)T Series](#)**Balancer Valves**[BLG Series](#)

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Restrictors[FN\(1\)G Series](#)[FN\(1\) Series](#)[TFN\(C\)G Series](#)**Pressure-Temperature Compensated Flow Control Valves**[LFCG Series](#)[F\(C\)G Series](#)**Deceleration Valves**[DG15S2/DT15S2 Series](#)[Sales & Service](#) [Hydraulic Equipment](#) [Model Code Index](#) [!\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\) Back](#) [!\[\]\(182077db5bac9ff62bf376fe37ffa951_img.jpg\) Next](#)

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Solenoid Operated Directional Valves
[DG4M4 Series](#)
[DG4V-3 Series](#)
[DG4VC-3 Series](#)
[DG4VS-3 shockless valve series](#)
[DG4SM-3 Series mini-watt valves](#)
[COM Series](#)
[DG4V-5 Series](#)
[DG4VC-5 Series](#)
[DG4VS-5 shockless valve series](#)
Solenoid Controlled Pilot Operated Directional Valves
[DG5V-7/DG5V-H8 Series](#)
[DG5S-10 Series](#)
Pilot Operated Directional Valves
[DG3V-7/DG3V-H8 Series](#)
[DG3S-10 Series](#)
Mechanically or Manually Operated Directional Valves
[C-552/C-572 Series](#)
[DG*M2/DT*M2 Series](#)
[DG20S-3 Series](#)
[DG20S-5 Series](#)
[DG2S4-01 Series](#)
[DG17V-7 Series](#)
[-Discontinued models-](#)

TOKIMEC provides a full range of solenoid and solenoid pilot-operated directional valves from 20 liters to 800 liters. Our standard CETOP 3 and CETOP 5 solenoid valves feature high flow and high pressures, low head loss, with high allowable back pressures. In addition, TOKIMEC also offers unique valve configurations and models to fit specific customer requirements.



Our fine current signal switching valves, DG4VC-3 Series, enable direct linkage to programmable controllers. Our DG4VS-3 shockless valve series allows the user to select the shockless function for the ON-OFF, ON only, or OFF only modes to match the application. We have developed the DG4SM-3 Series mini-watt valves which feature very low (5W) power consumption and direct programmable controller connection capability.

Commica, COM Series Proportional Valves

Our Commica line of valves offer shockless, proportional directional/flow control with the simplicity and ruggedness of solenoid valves. The COM Series' onboard microprocessor enables easy parameter settings and adjustments with a digital readout to facilitate the task. Solenoid valve utility is preserved with features such as manual overrides and reduced wiring for operational convenience. A handheld unit is available for remote setting and the valves may be connected to general purpose relays and sequencers. The CETOP 3 range has been recently augmented with the addition of the CETOP 5 through 8 sizes.



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Check Valves[DT8P1 Series](#)[C2-8** Series](#)[C2G/C5G Series](#)[DF10P1 Series](#)**Shuttle Valves**[CVSH Series](#)**Check Valve Modules**[URMC Series](#)**Pilot Operated Check Valves**[4CG/4CT Series](#)[THPCG Series](#)[C2PG/C5PG Series](#)

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Cartridge Insert
[CVI Series](#)

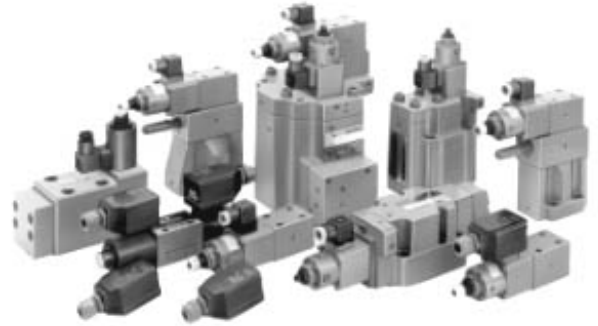
Cartridge Cover
[CVC Series](#)

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EP Series Proportional Valves[EPCG2-01](#)[EPCG2-**](#)[EPFG-01](#)[EPF\(R\)G-**](#)[EPDG1](#)**EP Series Controllers**[EPAD](#)[P-X/Z](#)[PB-X/Z](#)[EPA](#)**Servo Valves**[ST3 Series](#)**Servo Valves Controller**[STC-Y](#)[-Discontinued models-](#)**EP Series Proportional Valves**

Our EP Series of pressure, flow, and directional/flow proportional valves are available in a wide range of configurations to suit the application. The Series offers integrated pressure/flow PQ models, directional/flow control valves with on-board controllers and precision fine flow control valves, as well as special low (back) pressure control valves for injection molding machine applications.



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Digital Valves[D-CG Series](#)[D-F\(R\)G Series](#)[D-DFG Series](#)**Circuit Block**[U-D35](#)[U-D37](#)**Controller and Drivers**[DC-AX4](#)[DC-A1/4](#)[DC-AE](#)[DC-AT1/2](#)[DC-B*B/B*C](#)**Pressure Compensators**[PCG Series](#)[TGMHR Series](#)[TGMHX-3](#)**Shuttle Module**[TGMSH-3](#)

TOKIMEC's Digital Valve system greatly expands the range of hydraulic control. Its programmable capability, superior contamination resistance, and open loop simplicity enable great flexibility in applications. The system's digital format allows simple numerical input of settings which can be stored and reset. Precise control is possible with the valves' superior hysteresis and repeatability characteristics of less than 0.1%. A complete range of pressure, flow, and directional/flow control valves is available. Digital Valves are also available for special applications such as lift control and meter-out circuits. In addition, TOKIMEC supplies a complete range of matching drivers and controllers.



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Vane Motors[**M Series](#)[MHT Series](#)[MHT Series\(Multi\)](#)**Gear Motors**[CR Series](#)[GR-M Series](#)[GRH Series](#)**Exclusive Valve(GR/GR-M)**[BR-03](#)[CB-03](#)**Gear Motors**

Our CR, GR-M, and GRH Series of HTLS heavy duty gerotor motors are available in a broad range of displacements and mountings and are used extensively in mobile and industrial applications. They are offered in configurations which include integral brakes as well as two speed versions.

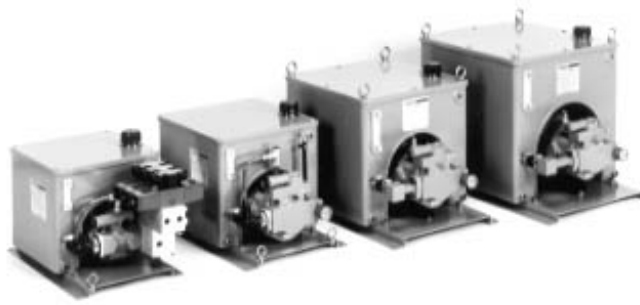
Vane Motors

Our high torque low speed MHT Series vane motors are optimized for low noise and are aimed at industrial applications such as injection molding. The Series is available in single as well as multi-torque, multi-speed versions in displacements as large as 12,400 cm³/rev.



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Standard Power Packages[TU-PAC Series](#)[Q-PAC Series](#)**Standard Power Packages**

circuits to meet specific customer requirements in a space-saving, piping-reduced design. The TU-PAC Series is offered in ten basic models with tank capacities of 10 to 60 liters. Our Q-PAC Series of power packages with direct-coupled piston pumps is offered in tank capacities up to 100 liters.

TOKIMEC's TU-PAC and Q-PAC Series of standard power units are designed to meet the needs of users in the stationary market. The unique design of the TU-PAC Series maximizes heat transference and aeration in a low profile, space-saving package. A direct pump-mount manifold block option enables configuration of hydraulic

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TMCD Series

TOKIMEC's TMCD Series high density manifold blocks address mobile applications and other industrial requirements for light weight, compactness, and reduced piping.

Utilizing a special manifold block design software tool developed by TOKIMEC, we are able to provide fast, error-free solutions which meet customer requirements, even those involving high complexity. TOKIMEC TMCD packages designed with our software enable great flexibility in design and allow freedom in modification while insuring that block integrity is maintained.

Please contact TOKIMEC for further information on this product.



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[ESP](#)
[ETP](#)
[ESMF](#)

Electronic Pressure Switches and Sensors



TOKIMEC's ETP electronic pressure sensor and ESP Series electronic pressure switches boast superior accuracy, repeatability, and temperature drift characteristics. Integrated electronic circuitry provides voltage or current signal output. The ETP is equipped with a switch which makes sensor calibration easy.

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This digest of TOKIMEC hydraulic components is intended to serve as a guide and a source of basic information. However; it does not include, for the most part, detailed information on product performance, dimensions, etc., which may be essential in particular applications. In addition there may exist changes which have occurred since the issuance of this webpage and or inadvertent errors or omissions which may be material. As such it is strongly recommended that TOKIMEC or our authorized representatives be consulted prior to application of the products and for further information on these or other TOKIMEC hydraulic components.

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- Resale /sales of goods to the countries against which UN has resolved economic sanctions and / or Countries listed in Attachment 4 to the Export Trade Control Order of Japanese Government (i.e. Iran, Iraq, Libya and North Korea).
- Resale / sale of goods to military forces (including terrorist groups) as the end user.
- Resale / sale of goods for mass destruction weapons (nuclear, biological, and chemical weapons as well as missiles) and for their development.

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