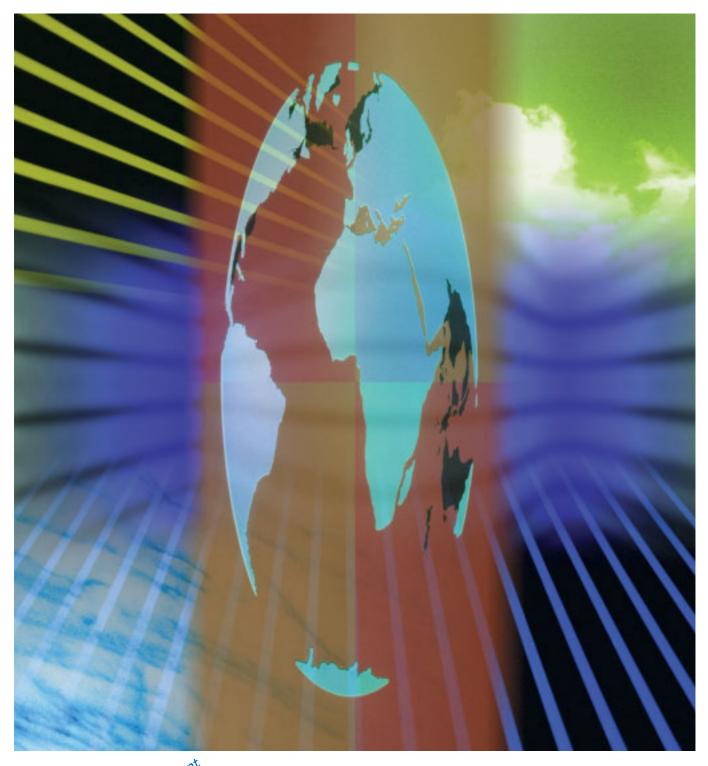


# Hydraulic Equipment





### YUKEN PRODUCTS FOR EVERY NEED

As a specialized manufacturer of hydraulic equipment, we Yuken are trying hard to meet our customers' various requirements with a continuous effort to develop new products and improve the existing products.

This catalogue is compiled just to introduce the line up of our products. Therefore, the guide does not present the detailed technical information such as dimensions, specifications and characteristics of each and every product. If you require such information, please request us or our sales representatives for the Engineering Information Catalogue or Product Catalogue prepared separately.



Head Office & Fujisawa Factory



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Fukuroda Factory



Sagami Factory

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### **DIRECTIONAL CONTROLS**

### **MODULARS**

### PROPORTIONAL ELECTRO— HYDRAULIC CONTROLS

### **ASSOCIATED PRODUCTS**

### [Affiliated Companies]

### **UNITED KINGDOM**

### YUKEN (U.K.) LTD.

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### **CHINA**

### YUCI YUKEN HYDRAULICS CO., LTD.

256 Jinwei Road, Yuci, Shanxi Province Tel. 86–354–2426464 Fax. 86–354–2426143

### **HONG KONG**

### YUKEN KOGYO (H.K) CO., LTD.

Flat 20, 7F., Block B, Focal Industrial Centre, 21 Man Lok Street, Hung Hom, Kowloon Tel. 852–2362–2355 Fax. 852–2765–7612 Cable YUKENKOGYO HONGKONG

### INDIA

### YUKEN INDIA LTD.

Whitefield Road, Whitefield, Bangalore–560 066 Tel. 91–80–8452262 Telex 845–8177 UKEN IN Fax. 91–80–8451560, 8452261 Cable YUKEN INDIA

# Variable Displacement Piston Pumps

## **Series Variable Displacement Piston Pumps**

These AR series pumps have been developed on the basis of the same design concept as A series pumps which are renowned for high efficiency and low noise level.

Using an alminum body, the size of the pump is more compact and the mass is considerably reduced. The noise level has also been reduced.





### Series Variable Displacement Piston Pumps

With the well-known low noise level and a new addition of A70, A90 and A145 pump versions having the maximum pressure upto 28MPa, A series pumps have much more extensive coverage in their line up and specifications.

Ten control types are available ranging from pressure compensator control to proportional electro-hydraulic pressure/flow control.



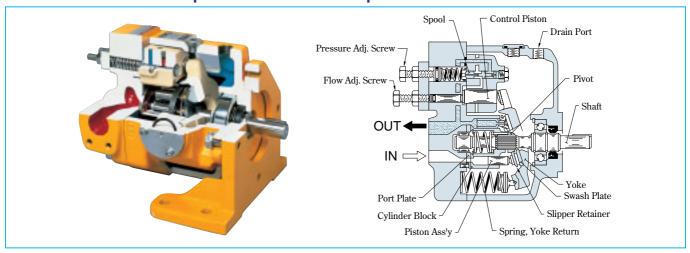
# Series Variable Displacement Piston Pumps

AH series are variable displacement piston pumps of high pressure, high efficiency, high speed and low noise developed by Yuken's unique design concept and cumulative technologies. They are suitable for use with construction machinery and various industrial machinery ranging from presses to injection moulding machines.



	Pump Type	Maximum Operating Pressure MPa	1 2	2	5	Geometr 1		cement	cm <sup>3</sup> /r		00	200 3	000
V	"AR" Series ariable Displacement Piston Pumps	16				AI	R16 AR22						
		21		F	A10	A16							
sc		16					A22						
ston Pum	Single Pumps	21					A	37 A56					
"A" Series Variable Displacement Piston Pumps		28							A70	A90	145		
riable Dis	Double Pumps	28	Outboar	d Pump		A16 A16			A56 A56	A70 A90	In A145 (I	board P Priven I	rump End)
Va	Variable / Fixed Double Pumps	28	Out	board Pun	np	A16	RV2R1		RV2R2	A70 A90 A	In A145 (I	ooard P Priven I	Pump End)
V	"AH" Series ariable Displacement Piston Pumps	31				1	AH16	AH37	] AH56	6			

### "A" Series Variable Displacement Piston Pumps

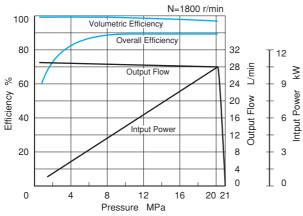


### Features

### High efficiency

At 16MPa loaded pressure and 1800 r/min rotating speed, volumetric efficiency is over 98% and overall efficiency is more than 90%.

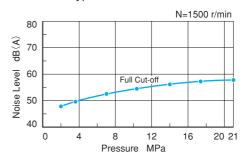
### "A16" type performance characteristics



### Low noise level

In A16 pump, the noise level is as low as 57.3 dB(A) [at 21 MPa full cut-off pressure and 1500 r/min] measured one metre horizontally away from the pump head cover.

### "A16" type noise level characteristics



### **Control Type**

Control Type	Graphic Symbols	Performance Characteristics	Control Type	Graphic Symbols	Performance Characteristics
"01" Pressure Compensator Type	M > = 0   1	↑ Mo Ly Indin O	"05" Two-Pressure Two-Flow Control Type by System Pres.		OH PL PH PH PH PH
"02" Solenoid-two Pressure Control Type		OFF SOL SOL ONF ON PH PH Pressure →	"06" Two-Pressure Two-Flow Control Type with Solenoid Valve		OH SOL'OFF  SOL'ON'  PL  PL  Pressure → PH
"03" Pressure Compensator with Unloading Type		SOL SOL ONF	"07" Pilot Pressure Control Type Pressure Compensator		↑  Model Hinding  Pressure → (Pilot Pres.→)
"04" Proportional Electro- Hydraulic Load Sensing Type		(S-Input Current i:-L)	"09"  Constant  Power  Control Type		Output Flow Input Power  Input Power  Input Power  Pressure →
"04E" Proportional Electro- Hydraulic Pressure & Flow Control Type		(SInput VoltageL)	Simple Two-Pressure Two-Flow Control Type		OH PH Pressure -

# Vane Pumps

Various models, ranging from low-noise low-pulsation small capacity models to low-noise high pressure models, are available in Yuken vane pumps for customers' best selection.



### **PV2R Series Vane Pumps**

These pumps have been developed especially for low noise operation. To comply with a wide range of applications including the injection moulding machines, PV2R series pumps provide the output flow of such a wide range as from 5.8 to 237cm<sup>3</sup>/rev.

• Model · · · · · · PV2R1, PV2R2, PV2R3, PV2R4 and Double Pumps.

●Max.Operating Pressure ·····21MPa

Geometric Displacement ······PV2R1 : 5.8~31/PV2R2 : 41.3~64.7

PV2R3: 76.4~115.6/PV2R4: 136~237cm<sup>3</sup>/rev



### Noise Level

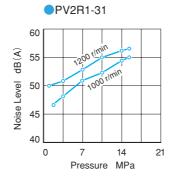
### Measuring condition

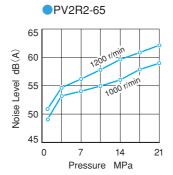
Fluid viscosity : 20mm<sup>2</sup>/s

Measurement position: One metre horizontally away from

pump head cover

Background noise : 40dB(A)





### **PV11R Series Vane Pumps**

These pumps are durable against such a high pressure as 40MPa. The excessive wear to the vanes and camring which usually occurs in such high pressure vane pumps has been solved by means of adopting the special methods in both mechanical construction aspects and lubrication systems.

●Model · · · · · · PV11R10, PV11R20

●Max.Operating Pressure ······40MPa (Anti-Wear Type Oils)

25MPa (R&O Type Oils)

●Geometric Displacement ······PV11R10 : 2.2~12.1cm³/rev

PV11R20: 15.2~22.1cm<sup>3</sup>/rev



Pump Type	Maximum Operating Pressure MPa	Output Flow L/min at 1200 r/min at No-Load  1 2 5 10 20 50 100 200 500 8	800
"PVL" Series Single Pumps	5	PVL1	
Single Pumps	7	50T 150T 250F 500F	
Double Pumps	7	Small Volume (50) (150) (250) Large Volume (50) (150) (250)	
Combination Pumps	7	Small Volume (50)  Large Volume (50) (150)	
"PV2R" Series Single Pumps	21	PV2R1 PV2R2 PV2R3 PV2R4	
"PV2R" Series Double Pumps	21	Small Volume	
"PV11R" Series Single Pumps	40	PV11R10 PV11R20	

### **Pressure Control Valves**

Various type of pressure control valves are available, from relief valves to pressure switches, to control the pressure at suitable level in the hydraulic system.



### **Low Noise Type Pilot Operated Relief Valves**

Pilot operated relief valves here have been particularly developed as low noise type. To protect the pumps and control valves from an excessive pressure, the valves are used to control the pressure in the hydraulic system to constant level. The remote control and unloading can be done by using the vent circuit.



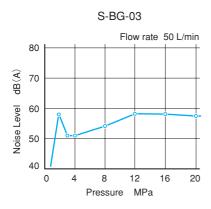
### Noise Level

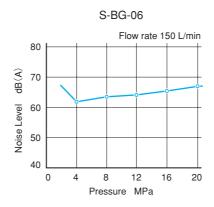
### Measuring condition

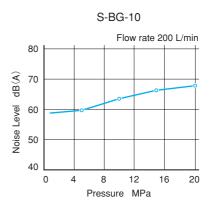
Fluid viscosity : 35mm<sup>2</sup>/s

Measuring position : At one metre back from the valve front.

Tank line back pressure : 0.1 MPa







Valve Type	Maximum Operating Pressure MPa		1 2	2 3	3 ;	5	10		Max.		L/min 0 10	0 2	200 3	300 50	00	1000	2000
Remote Control Relief Valves	25		DT -01														
Direct Type Relief Valves	21	Ī		DT/	DG-(	02											
Pilot Operated Relief Valves	25							В	T/B0	ì	03	06		10	16	24	
Low Noise Type Relief Valves	25							S-	BG		03	06		10			
Solenoid Controlled Relief Valves	25							BS	T/BS	6G	03	06		10	16		
Low Noise Type Sol. Cont. Relief Valves	25							S-I	BSG		03	06		10			
Brake Valves	25				UI	3GR				03	06	10					
H/HC Type Pres. Control Valves	21			Н	Т•Н	G/H	ст.	HCG			03 06	6	10	16			
Pres. Reducing & Check Valves	21	Ī		F	YT · R	G/R0	ст٠	RCG			03 00	3	10	16			
Pres. Reducing & Relieving Valves	25					RB	G				03 00	5					
Unloading Relief Valves	21					BUC	CG				03 06	3	10				
Pressure Switches	35								_								

# **Flow Control Valves**

These valves control the reciprocating and rotating speed of hydraulic actuators, A variety of flow control valves including pressure and/or temperature-compensated flow control valves is available.

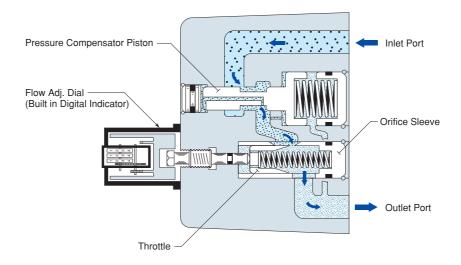


### Flow Control Valves/Flow Control and Check Valves

These valves are pressure and temperature compensating type valves and maintain a constant flow rate independent of change in system pressure (load) and temperature (viscosity of the fluid). They control the speed of the actuator precisely. The valves with an integral check valve allow a controlled flow and reverse free flow. Repeated resetting can be made easily with a digital readout.



### Flow Control Valves



Valve Type	Maximum Operating Pressure MPa	Max. Flow L/min  1 2 3 5 10 20 30 50 100 200 300 500 1000 2000 3000 5000
Flow Control (& Check) Valves	21	FG/FCG 01 02 03 06 10
Flow Control & Relief Valves	25	FBG 03 06 10
Pilot Operated Flow Control Valves	21	FHG 02 03 06 10
Pilot Operated Flow Cont. & Check Valves	21	FHCG 02 03 06 10
Restrictors	25	SRT/SRG 03 06 10 16 (Rated Frow)
One Way Restrictors	25	SRCT/SRCG 03 06 10 16 (Rated Frow)
Throttle (& Check) Modules	25	TC1G/TC2G 01 03
Deceleration (& Check) Valves	21	ZT·ZG/ZCT·ZCG 03 06 10
Feed Control Valves	14	UCF1G/UCF2G 01 03 04
Needle Valves	35	GCT -02 GCTR

# **Directional Control Valves**

These valves control the flow direction in the hydraulic circuit. The various directional valves ranging from the solenoid operated directional valves to the check valves conforming to JOHS Standard—The Japan Oil Hydraulics Standard—are available to meet the variety in customers' needs.



	Maximum	Max. Flow L/min
Valve Type	Operating Pressure MPa	1 2 5 10 20 50 100 200 500 1000 2000 5000
	25	DSG-005
Solenoid Operated Directional Valves	31.5	DSG-01
	31.3	DSG-03
	21	DSHG-01
	25	DSHG-03
Solenoid Controlled Pilot Operated Directional Valves	31.5	DSHG 04 06 10
	21	DSHF 10 16 24 32 (Rated Flow
Shockless Type Proportional Directional and Flow Control Valves	25	EDFG-01
"0" 0 : 01 11 Th D: 4: 1111	25	G-DSG 01 03
"G" Series Shockless Type Directional Valves	25	G-DSHG 04 06
Poppet Type Solenoid Operated Directional Valves	31.5	DSLG-01
Multi Purpose Control Valves	25	DSLHG 04 06 10
Solenoid Operated Poppet Type Two-Way Valves	14	CDS**-03
Shut-off Type Solenoid Operated Directional Valves	25	DSPC/DSPG 01 03
Pilot Operated Directional Valves	31.5	DHG 04 06 10
Manually Operated Directional Valves	21	Threaded connection (DMT) 03 06 10
Manually Operated Directional valves	31.5	Sub-plate mounting (DMG) 01 03 04 06 10
Mechanically Operated Directional Valves	7	Rotary type (DR $_{\mathbf{G}}^{\mathbf{T}}$ -02) 02
Wechanicany Operated Directional valves	25	Cam operated (DC $^{\mathrm{T}}_{\mathrm{G}}$ ) 01 03
		In-line (CIT) 02 03 06 10 (Rated Flow)
Check Valves	25	Right angle (CRT/CRG)   03   06   10   (Rated Flow)
		Right angle, Flanged connection (CRF) 10 16 24 (Rated Flow)
Bilat Operated Cheek Valves	05	Threaded connection (CP%T) 03 06 10 (Rated Flow)
Pilot Operated Check Valves	25	Flanged connection (CP%F)  10  16  (Rated Flow)

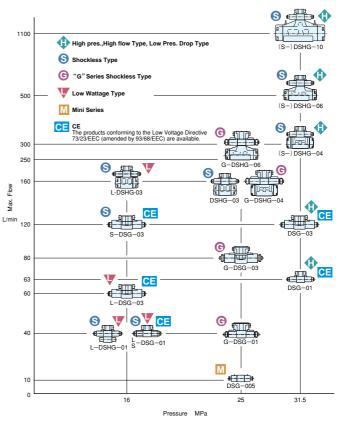
### Solenoid Operated Directional Valves / Solenoid Controlled Pilot Operated Directional Valves

The following are our full range of solenoid operated directional valves and solenoid controlled pilot operated directional valves.

### **WIDE RANGE OF MODELS**

Choose the optimum valve from a large selection to meet your needs.





### **Shockless Type Proportional Directional and Flow Control Valves / Amplifiers**

The shockless type proportional and flow control valves have been developed by employing the basic design concept of "G" series solenoid operated directional valves. One of the distinctive features of these valves is that the valves can make the speed setting at any high speed operation.

As the valves have maximum flow rate adjustment functions, which are not available for "G" series solenoid operated directional valves, the top speed (the maximum speed) of actuators can be controlled optionally by adjusting the maximum flow rate.

The power amplifiers for use with the above valves have digital setting systems, therefore, the excellent maneuverability and repeatability in operation can be obtained. They offer two types of slop mode; "SLOPE CONSTANT" and "TIME CONSTANT", and 9 different types of shockless curve (one straight line slope and eight waveforms) so that you can select the optimum one from them for any load condition.

### Shockless Type Proportional Directional and Flow Control Valves

- ●Model · · · · · · · EDFG − 01 ● Rated Flow ……30L / min
- ●Max. Operating Pres. ······25MPa



### **Amplifier**

- ●Power Supply · · · · · · · · · · DC 24V (20~30V)
- ●Max. Input Power ······35W



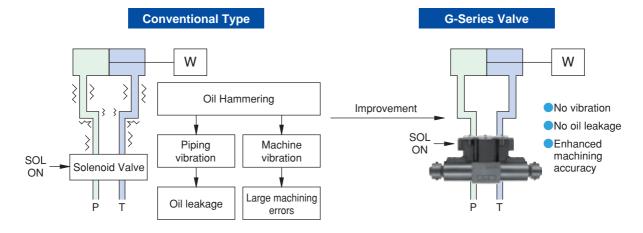
### "G" Series Shockless Type Solenoid Operated Directional Valves

The G series solenoid operated directional valve reduces any shocks that may arise when starting machinery or shifting the spool.

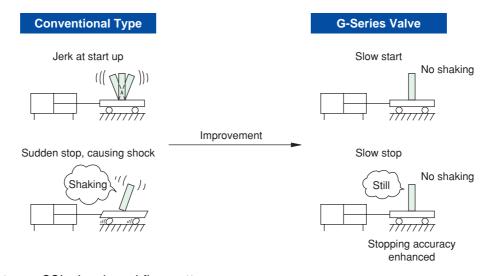
These valves with better accurate control improve the reliability of the machinery and there is less pipe leakage.

- Your valuable machines are protected from vibration and shocks
- Shocks caused by acceleration and deceleration are reduced.

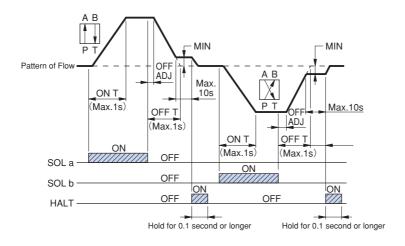




Oil hammering during spool shifting is reduced.



Relationships between SOL signals and flow patterns



### **Modular Valves**

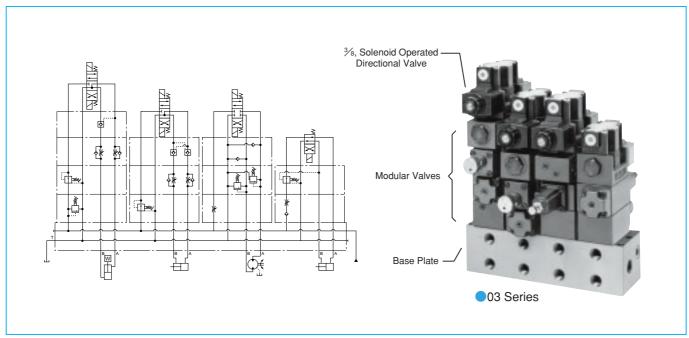
YUKEN MODULAR VALVES are designed to simplify hydraulic systems, to eliminate the use of pipe connections and thus to save space, time and costs. The modular valves have standardized interfaces (ISO 4401, CETOP, NFPA) and thickness in accordance with each valve size. Any hydraulic circuit can be composed by stacking the modular valves in the correct sequence one upon another and bolting the various stacks to a common manifold base.

- Modular valves remarkably minimize the installing area and space.
- No expert skill is required to assemble, and furthermore, a supplement and a change to the circuit can easily and quickly be carried out.
- Problems such as oil leaks, vibration and noise which may arise from pipes and tubes are minimized because pipes and tubes are not necessary.
- Checks and maintenance of these valves can be performed with ease because of the method of installation.





### Stacking Example



Valve Type	Maximum Operating Pressure MPa	Max. Flow L/min  1 2 5 10 20 50 100 200 500 10
005 Series Modular Valves	25	
01 Series Modular Valves	31.5	*
03 Series Modular Valves	25	*
06 Series Modular Valves	25	
10 Series Modular Valves	25	

<sup>★</sup>Max Flow for Throttle and Check Modular Valves.

### List of 005/01/03 Series Modular Valves (Pressure Controls)

### Pressure Controls

Name	Graphic Symbols	Model Numbers	Graphic Symbols	Model Numbers
Name	Grupine Symbols	"005/01" Series		"03" Series
Solenoid Operated Directional Valves	P T B A	DSG-005 DSG-01	P T B A	DSG-03
	# The state of the	MBP-005 MBP-01		MBP-03
Relief Modular Valves		MBA-01		MBA-03
Tioner in Country		MBB-01	<b>*</b>	MBB-03
		_		MBW-03
		MRP-005 MRP-01		MRP-03
Reducing Modular Valves		MRA-01		MRA-03
		MRB-01		MRB-03
				MRLP-03
Reducing Modular Valves for Low Pressure Setting		_		MRLA-03
Ü				MRLB-03
Brake Modular Valves		MBR-01	_	_
Sequence Modular Valves		MHP-01		MHP-03
Counterbalance		MHA-01		MHA-03
Modular Valves		_		МНВ-03
		MJP-01-M		
Pressure Switch Modular Valves		MJA-01-M	_	_
		MJB-01-M		

### List of 005/01/03 Series Modular Valves (Flow Controls, Directional Controls, Others)

Flow Controls

Directional Controls

Name	Graphic Symbols	Model Numbers	Name	Graphic Symbols	Model Numbers
Flow Control Modular Valves	*	MFP-01 MFP-03			MCP-005 MCP-01 MCP-03
		MFA-01-X MFA-03-X			MCA-03
		MFA-01-Y MFA-03-Y	Check Modular Valves		MCB-03
Flow Control and Check Modular		MFB-01-X MFB-03-X			MCT-01 MCT-03
Valves		MFB-01-Y MFB-03-Y			МСРТ—03
		MFW-01-X MFW-03-X	Anti–Cavitation Modular Valves	-0-	MAC-01 MAC-03
		MFW-01-Y MFW-03-Y		•	MPA-01 MPA-03
Townsantuns	**	MSTA-01-X MSTA-03-X	Pilot Operated Check Modular		MPB-005 MPB-01 MPB-03
Temperature Compensated Throttle and Check Modular Valves		MSTB-01-X MSTB-03-X	Valves	•	MPW-005 MPW-01 MPW-03
Wodular valves	<b>○</b>   • ★ ★ •	MSTW-01-X MSTW-03-X	Modular Plates and	Mounting Bolts	
Throttle Modular Valves	*	MSP-01 MSP-03	Name	Graphic Symbols P T B A	Model Numbers
	*	MSCP-01 MSCP-03	D 101	TITI	MDC-01-A MDC-03-A
	**	MSA-01-X MSA-03-X	End Plates	T T T	MDC-01-B MDC-03-B
	**	MSA-01-Y MSA-03-Y			MDS-01-PA
		MSB-01-X MSB-03-X	Connecting Plates		MDS-01-PB
Throttle and Check Modular Valves	<b>□</b>	MSB-01-Y MSB-03-Y	Connecting Flates		MDC-01-AT
	<b>○</b>   <b>○</b>   <b>*</b>   <b>*</b>   <b>○</b>   <b>*</b>   <b>O</b>   <b>O</b>	MSW-005-X MSW-01-X MSW-03-X			MDS-03
	<b>○ ★ ★</b>	MSW-005-Y MSW-01-Y MSW-03-Y	Base Plates		MMC-005 MMC-01 MMC-03
	<b>€</b> ₩ ₩�	MSW-01-XY	Bolt Kits		MBK-005 MBK-01 MBK-03
	<b>○ ★ ★</b>	MSW-01-YX			

### List of 06/10 Series Modular Valves (Pressure Controls, Flow Controls, Directional Controls)

### Pressure Controls

Name	Graphic Symbols	Model Numbers
Solenoid Controlled Pilot Operated Directional Valves	P T Y X B A	DSHG-06 DSHG-10
		MRP-06 MRP-10
Reducing Modular Valves		MRA-06 MRA-10
		MRB-06 MRB-10



005 Series

### Flow Controls

Name	Graphic Symbols	Model Numbers
		MSA-06-X
		MSA-10-X
		MSA-06-Y
		MSA-10-Y
		MSB-06-X
Throttle and Check		MSB-10-X
Modular Valves		MSB-06-Y
		MSB-10-Y
		MSW-06-X
		MSW-10-X
		MSW-06-Y
		MSW-10-Y



01 Series MSW-01



03 Series MPW-03

### Directional Controls

Name	Graphic Symbols	Model Numbers		
Pilot Operated Check Modular Valves		MPA-06 MPA-10 MPA-06*-*-X MPA-10*-*-X MPA-06*-*-Y MPA-10*-*-Y MPB-06 MPB-10 MPB-06*-*-X MPB-10*-*-X MPB-06*Y MPB-10*Y MPB-10*Y		
Mounting Bolt Kits		MPW-10 MBK-06		
		MBK-10		



06 Series MPW-06



10 Series MSW-10

# **Proportional Electro** — Hydraulic Controls

### Series Proportional Electro-Hydraulic Control Valves

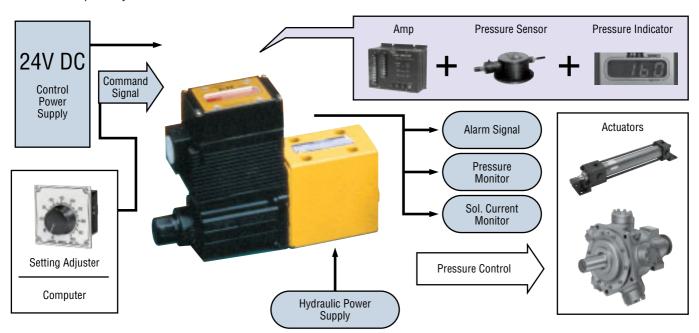
These EH Series are compound products of hydraulic equipment using the latest electronic and sensor technology based on the reputable E Series proportional electro hydraulic controls. We have realized epochmaking easily usable hydraulic equipment with high precision and reliability by unifying amplifier, sensor, digital data indicator which are required for proportional or servo control system into valves, and making them compact.

 Just preparing the power source (DC) for controls and command signals in addition to hydraulic source, you can easily structure proportional control system or servo system.

Amplifiers exclusively used for the system or electric control panels separately installed are unnecessary.

- By using built-in sensors;
  - (1) Pressure, orifice openness which can be converted to flow rate can be detected and controlled remotely.
  - (2) As well as a compound amplifier, closed loop system can be structured.
  - (3) Sensor output signals or deviation signals at structuring closed loop system can be monitored.
- Such disadvantages as seen in ordinary hydraulic systems in which hydraulic components, sensors and amplifiers are interconnected with each other but installed separately are eliminated.





Valve Type	Maximum Operating Pressure MPa	Max. Flow L/min  1 2 3 5 10 20 30 50 100 200 300 500 1000
Pilot Relief Valves	24.5	EHDG-01
Relief Valves	24.5	EHBG 03 06 10
Reducing & Relieving Valves	24.5	EHRBG 06 10
Flow Control ( & Check) Valves	24.5	EHFG/EHFCG 03 06
Flow Control & Relief Valves	24.5	EHFBG 03 06 10
Directional & Flow Cont. Valves	24.5	EHDFG 01 03
High Response Type Directional & Flow Cont.Valves	15.7	EHDFG 04 06

Note) Setting adjusters are also available.



### Series Proportional Electro — Hydraulic Control Valves

The proportional valves are able to control the system pressure or flow proportionally through a controlled input current from the amplifier.



Valve Type	Maximum Operating Pressure MPa	Max. Flow L/min  1 2 3 5 10 20 30 50 100 200 300 500 1000
Pilot Relief Valves	24.5	EDG-01
Relief Valves	24.5	EBG 03 06 10
Reducing & Relieving Valves	24.5	ERBG 06 10
Flow Control (& Check) Valves	20.6	EFG/EFCG (40 Ω Series) 02 03 06 10
	24.5	EFG/EFCG (10 Ω Series) 03 06
Flow Control & Relief Valves	24.5	EFBG $(40\Omega - 10\Omega \text{ Series})$ 03 06 10
		EFBG $(10\Omega - 10\Omega \text{ Series})$ 03 06 10
		EFBG (High Flow Series) 03 06
Directional & Flow Cont. Valves	24.5	EDFHG 03 04 06
High Response Type Proportional Directional and Flow Control Valves	31.5	ELDFG-01

Note) Power amplifiers and setting adjusters are also available.

### High Response Type Proportional Directional and Flow Control Valves / Amplifiers

These valves have high response characteristics equivalent to servo valves by employing a closed loop system for feed back control. Especially, the valves of zero-lap type (spool type : 3C2P) are suitable for position control or pressure control.

- High response, high accuracy, high reliability by closed loop systems In combination with a small type intensified solenoid and a differential transducer for detecting spool position, high response, high accuracy and high reliability are realized.
- ullet Response characteristics of 52Hz /-3dB ( $\pm$ 25% amplitude) equivalent to those for servo valves The valves can be used in place of servo valves of 50Hz response class for position control or pressure control.
- Excellent anti-contamination Troubles caused by contamination can be reduced as the valves are superior in anti-contamination to servo valves.

High Response Type Proportional Directional and Flow Control Valves

- ●Model · · · · · · · ELDFG = 01 Rated Flow ......10, 20, 30 L / min
- •Max. Operating Pres. ······31.5MPa



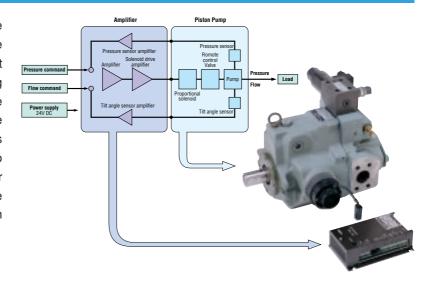
#### **Amplifier**

- ● Power Supply · · · · · · · · · · DC 24V (20~30V)
- Max. Output Current .....2.5A



# "A" Series Variable Displacement Piston Pumps Electro—Hydraulic Proportional Pressure & Flow Control Type (04E Type)

The pumps with 04E control type have been enjoying a high reputation in the industrial machinery and equipment sectors including the injection moulding machines. They are direct control type piston pumps developed on the same basic concept as that of EH series variable displacement pumps and to meet the customers requirements for digital control. They provide such a wide range of displacement capacities as from 15.8 to 145 cm<sup>3</sup>/rev.



### Specifications

Model Numbers Displace	Geometric Displacement	Operating Pres. MPa		Max.Shaft Speed	Max.Flow at 1800r/min	Hysteresis	Repeatability	Input Signal	Supply Electric
	cm³/rev	Rated	Intermittent	r/min	L/min				Power
A16— **R04E	15.8	16	21	600~1800	28.4	Less than 1%	Less than 1%	Max.Flow/ 5V DC Specified Control Pressure/ 5V DC	
A22 — **R04E	22.2	16	16		40.0				24V DC (21~28V Included Ripple)
A37— **R04E	36.9	16	21		66.4				
A56— **R04E	56.2	16	21		101				
A70— **R04E	70.0	25	28		126				
A90— **R04E	91.0	25	28		163				
A145 — * R04E	145	25	28		261				

### YF Pack - Compact & Low Noise - Hydraulic Power Unit

Power consumption is reduced by 10 % (compared to YP pack of our manufacture), moreover, the oil temperature rise is retained at a low level.

In comparison with conventional hydraulic power units, the power consumption is reduced by 10 % (in our own comparison). Furthermore, with an increase of cooling capacity, the power unit affects less heat distortion to machines and restrains their surface temperature at a low level, resulting in the overall temperature rise less than the ambient temperature plus 12 degrees centigrade.

Installation space is reduced to 1/2 (compared to YP pack)

Volumetric ratio: 50% reduction
Mass: 30% reduction

Low Noise & Low Vibration

The hydraulic power units of cubic design, which have been developed to restrain the vibration, can offer the operation in low noise and low vibration.

●Model · · · · · · · YF10, YF16

●Max. Operating Pres. ······16MPa

lacktriangle Geometric Displacement  $\cdots$  YF10 : 10.0 cm<sup>3</sup> / rev

YF16: 15.8 cm<sup>3</sup> / rev



### **Associated Products**

### **Training System for Oil Hydraulics**

hydraulic pumps and control valves.

- Functions and performance
   You will learn the functions and performance of basic hydraulic systems and / or components such as
- Electro-hydraulic equipment
   You will learn how hydraulic equipment are controlled by computers, sequence controllers, etc.
- You can experience the dynamic power and control of hydraulics.

Most of the training kits on the market use low pressure and low pressure scale models for trainees to learn the characteristics and / or control of hydraulic equipment. However, you will note with these training kits you can not feel or obtain any reality of hydraulic power and control.

Only with our HTU-300 series training kits, you can learn and feel the real hydraulic power and control by using weights of 150 kg, to create a load.



HTU-300 series

### **Hydraulic Equipment**

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