

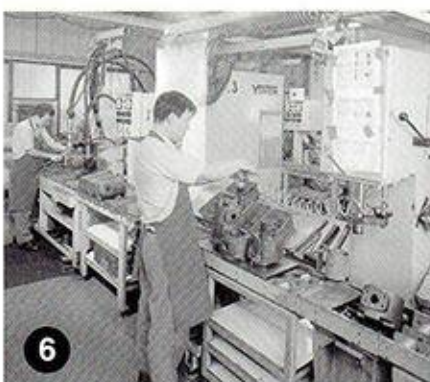


HYDRAULIC EQUIPMENT

G

MODULAR BASE PLATES





1. Front View of the Main Factory

2. Front View of 2nd Factory

3. Power Unit Assembly Line

4. Horizontal Machining Centers

5. Processing Production Line (2nd Factory)

6. Vane Pumps Test Bench

7. Proportional Electro-Hydraulic Controls Test Bench

8. Solenoid Valves Assembly Line

Brief Introduction

The main factory of Yuken Hydraulics (T.W.) Co., Ltd., is located at No. 12 7th Rd., Taichung Industrial Park, Taichung, Taiwan. the area is 9,543 m². 2nd factory is located at No. 6, 7th Rd, the area is 5,623 m².

"To improve Technology, to improve Quality, to strengthen Service, and to satisfy Customers" are our consistent quality promises. In order to keep our promises, we have a strong focus on the promotion of automation and computerization covering sales, design, operations, production management and even quality control, to ensure quality of our products and services. All our employees pursue the organization's Goal - "To work hard, to ameliorate, and to grow perpetually."

As the domestic market was getting saturated gradually, we started exploring overseas market since July, 1996. The achievement has been remarkable. Our market is not only in Asia but also North America, Europe, Middle East and Africa.

- March, 1997, Yuken Hydraulics (T.W.) Co., Ltd., was awarded ISO-9002 certificate and built up international-level quality system.
- January, 1998, We open our second factory located at No.6 7th Rd., Taichung Industrial Park, Taichung, Taiwan, area is 5,623 m².
- February, 2002, Yuken Hydraulics (T.W.) Co., Ltd., was awarded CSA-C/US certificate, to strengthen our competition in North American market.
- May, 2002, Yuken Hydraulics (T.W.) Co., Ltd., was awarded ISO-9001 certificate and scaled new heights of quality system.
- October, 2002, Organization simplified, management institutionalized.
- June, 2003, Production line readjusted, equipment reinforced, production rationalized, striding into a new milestone.
- April, 2005, Proportional Valve was awarded CE certificate.
- November, 2005, Solenoid Valve was awarded CE certificate.
- November, 2008, Solenoid Valves with monitoring switches were patented in Taiwan.
- March, 2009, Solenoid Valves with monitoring switches were patented in China.
- June, 2010, Solenoid Valves with monitoring switches were awarded CE certificate.
- December, 2011, 2nd factory's expansion is finished.

Yuken Hydraulics (T.W.) Co., Ltd. has been leading the Industry here in Taiwan. We will increase technical cooperation with our parent company, Yuken Kogyo Co., Ltd. in the future. We will build an efficient and comprehensive sales network both in domestic and overseas market. Concurrently, we will train our talented people extensively to upgrade quality continuously. All our efforts are to achieve our goal - to grow perpetually!

- Name : **Yuken Hydraulics (T.W.) Co., Ltd.**
- Main Factory : No. 12, 7th Road, Taichung Industrial Park, Taichung, Taiwan.
Tel: 886-4-2359-3077 (Rep.)
Fax: 886-4-2359-2500
Website: <http://www.yuken.com.tw>
- Taichung Office: No. 12, 7th Road, Taichung Industrial Park, Taichung, Taiwan.
(Sales Dept) Tel: 886-4-2359-3077 (Rep.)
Fax: 886-4-2359-8813
- Taipei Office : No. 18-1, Wun Hua 5th Road, Guei Shan Township, Taoyuan County, Taiwan.
(Sales Dept) Tel: 886-3-328-3628 (Rep.)
Fax: 886-3-328-3242
- Established : 1, May, 1969
- Paid in Capital : NTS 90,000,000 (as of January, 2004)
- Line of Business : • Manufacture & sales of Hydraulic Pumps, Pressure Control Valves, Flow Control Valves, Directional Control Valves, Modular Valves, Proportional Electro-Hydraulic Control Valves, Electro-Hydraulic Servo Valves, Power Unit, Hydraulic Cylinders, Hydraulic Motors & Associated Products.
• Design, manufacture & installation of Hydraulic systems.
- Licensor : **YUKEN KOGYO CO., LTD.**

Group of Components



Hydraulic Pumps

Pressure Control Valves

Flow Control Valves

Directional Control Valves

Check Valves

Proportional Electro-Hydraulic Control

A Hydraulic Pump

1 MPa = 10.2 kgf/cm²

Pump Type	Max. Pressure MPa	Nominal Displacement cm ³ /rev										Page
		1	2	5	10	20	50	100	200	500		
ARL1 Series Variable Piston Pumps	7				ARL1						9	
AML1 Series Motor-Pumps	7				AML1						12	
ML1 Series Electric Motors	-	ML1 (0.75 / 1.5 / 2.2 kw)										15
AR Series Variable Piston Pumps	16				AR16	AR22					16	
50T 150T Single Pumps	7					50T	150T				20	
PV2R S-PV2R Series Single Pumps	21 (17.5/16/14)				PV2R1	PV2R2 S-PV2R2	PV2R3 S-PV2R3	PV2R4 S-PV2R4			24	
PV2R S-PV2R Series Double Pumps	21 (17.5/16/14)				PV2R1	PV2R2 S-PV2R2	PV2R3 S-PV2R3	Small Volume Pumps			38	
						PV2R2 S-PV2R2	PV2R3 S-PV2R3	PV2R4 S-PV2R4	Large Volume Pumps			
A ₂₂ ¹⁶ SR3, A ₂₂ ¹⁶ SR4 Series Piston & Vane Pumps	21 (17.5/16/14)				A16	A22	Piston Pump				48	
								PV2R3 S-PV2R3	PV2R4 S-PV2R4	Vane Pump		
SVPF Series Variable Vane Pump	7	SVPF-12 20 30 40										51
SVPDF Series Double Variable Vane Pump	7	SVPDF-30 30 40										52
		SVPDF-30 40 SVPDF-40 40										

B Pressure Control Valves

Valve Type	Max. Pressure MPa	Max. Flow L/min										Page
		1	2	5	10	20	50	100	200	500	1000	
Remote Control Relief Valves	25	DT-01										53
Direct Type Relief Valves	21			DT-DG-02								53
Pilot Operated Relief Valves	25					BT-BG-03		06	10			53
Low Noise Type Pilot Operated Relief Valves	25					S-BG-03		06				53
Solenoid Controlled Relief Valves	25					BST-03		06	10			57
Low Noise Type Solenoid Controlled Relief Valves	25					S-BSG-03		06				57
H & HC Type Pressure Control Valves	21					HT/HCT-HG/HCG-03		06	10			61
Pressure Reducing (and Check) Valves	21					RT/RCT-RG/RCG-03		06	10			67
Unloading Relief Valves	21					BUCG-06						72
Balancing Valves	14					RBG-03						73

C Flow Control Valves

Valve Type	Max. Pressure MPa	Max. Flow L/min										Page
		1	2	5	10	20	50	100	200	500	1000	
Flow Control (and Check) Valves	21					FG	FCG-02	03	06 *	10 *	*Yuken Kogyo Models	74
(One Way) Restrictors	21					SRCT	SRG/SCG-03	SRCT	SRG/SCG-06	SRCT-10	SRG/SCG	77
Throttle (and Check) Modules	25					TC1G	TC2G-01					80
Needle Valves	35					GCT	GTCR-02					81

D Directional Control Valves 1 MPa = 10.2 kgf/cm²

Valve Type	Max. Pressure MPa	Max. Flow L/min															Page
		1	2	5	10	20	50	100	200	500	1000	2000	8000				
Solenoid Operated Directional Valves	7	DSGL-01															84
Solenoid Operated Directional Valves	31.5	DSG-01 03															86
Solenoid Valves with Monitoring Switch-DSGS	31.5	DSGS-01 03															92
Solenoid Controlled Pilot Operated Directional Valves	31.5	DSHG-04 06 10															94
Solenoid Valves with Monitoring Switch-DSHGN	25	DSHGN-03 04 06															99
Pilot Operated Directional Valves	31.5	DHG-04 06 10															104
Manually Operated Directional Valves	25 (21)	DMT-03 DMG-03															107
Mechanically Operated Directional Valves	21 (25)	DCT-01 03 DCG															109
Mechanically Operated Directional Valves with Monitoring Switch-DCGS	21 (25)	DCTS-01 03 DCGS															112
Logic Valves with Monitoring Switch-LDLS	30	LDLS-16 25 32 40 50															115
Check Valves	21	CIT-03 06 10															119
		CRT-03 06 10 CRG															
Pilot Controlled Check Valves	25	CPT/CPG 06 10 CPDT/CPDG															121
Poppet Type Directional Valves	21	LVT-03 LVG															123
Prefill Valves	25	PF-80 90 100 125 150 PF-200 (PF-300)															124

E Proportional Electro-Hydraulic Controls

Valve Type	Max. Pressure MPa	Max. Flow L/min										Page
		1	2	5	10	20	50	100	200	500	1000	
Proportional Electro-Hydraulic Pilot Relief Valves	25	EDG-01										131
Proportional Relief Valves	25			EBG-03					06	10 *	* Yuken Kogyo Models	133
Power Saving Valves	25	EFBG-03							06	10		135
Power Saving Valves 10Ω~10Ω	25	EFBG-03										141
Power Saving Valves High Performance	25	ELFBG ELFBCG-03							06			143
Proportional Electro-Hydraulic Directional and Flow Control Valves	25	EDFG-01				EDFHG-03		04	06			149
Power Amplifiers	-	AME-D2-H1 (Yuken Kogyo Models)		AMN-D-20T		AMN-D-L-20T		SK1115-※-30T		AMN-W-10T		156

F Other Valves

Valve Type	Max. Pressure MPa	Max. Flow L/min															Page
		1	2	5	10	20	50	100	200	500							
Lift Valves	21	LVST-03															165
Air Bleed Valves	21	AVT-03-05 AVT-03-20															166
Automatic Shut Off Valves	21	DAS-03-20															166

G Modular Base Plates

Series Number	Max. Pressure MPa	Max. Flow L/min				Page
		0	20	40	60	
Base Plates	31.5	MMC-01				167

* As for the products other than those listed in this catalogue, please consult with our engineers for your requirement.

General Information

Design Standard

The distinctive features of Yuken Standard products is as shown below.

Feature	Domestic Standard	Remarks
Port Tapping	Rc(=PT)	Taper Pipe Thread (ISO 7/1)
Port Tapping (Partial)	G(=PF)	Straight Pipe Thread (ISO 228/1)
Pressure Gauge Tapping	Rc(=PT)	Taper Pipe Thread (ISO 7/1)
Mounting Bolts	Metric	General Purpose Thread (ISO 261)
Mounting Dimensions	Metric	
Conduit Entry	G(=PF)	Straight Pipe Thread (ISO 228/1)
Solenoid Voltages AC/DC	Domestic voltage	Voltage and frequency change according to country
Frequency	50/60 Hz	
Electronic Amplifier Input Supply	Domestic voltage 50/60 Hz	
Graphic Symbol	ISO Standard	ISO 1219
Valve Port Size	Inch	

Design Number

Yuken products have factory applied Design numbers, the key to which is as follows.

Example: 4222T68

42 22 T68

Major Design No. _____ Design No. for modified products in Taiwan
Minor Design No. _____ Omitted: Domestic standard

Design numbers are subject to change. But installation dimensions and specifications remain unchanged for variation in second digit of design numbers (Minor Design No.).

Hydraulic Fluids

Type of hydraulic fluids

- Petroleum base oil-Please use anti-wear type hydraulic oil or R & O (Rust and Oxidation inhibitor) type hydraulic oil equivalent to ISO VG 32 or 46. Do not use VG 68 hydraulic oils in winter; it will cause suction failure or cavitation.
- Fire resistant or other special fluids-Please consult with our sales engineers for your requirement.

Fluid viscosity and temperature range

Please use hydraulic fluids in a range which satisfies the conditions of both viscosity and temperature (specified in table.)

Type of Components	Viscosity Range	Temperature Range
Hydraulic Pumps	20 ~ 400 mm ² /s ★ 1	0 ~ 70°
Pressure Control Valves	15 ~ 400 mm ² /s ★ 2	-15 ~ +70°
Flow Control Valves	FG, FCG : 20 ~ 200 mm ² /s Other : 15 ~ 400 mm ² /s	
Directional Control Valves	15 ~ 400 mm ² /s	
Proportional Electro-Hydraulic Control Valves	EBG : 15 ~ 400 mm ² /s EFBG : 20 ~ 200 mm ² /s	

- ★ 1. When starting the pumps at low speed, maximum viscosity is restricted. (see table above right).
★ 2. If the valve is provided with a vent restrictor (ex.: A-BSG-03), the viscosity range should be 15-200 mm²/s.

Control of contamination

Contamination of the hydraulic fluids may cause any damage to the products or shorten the life of the products, therefore, please maintain the degree of contamination level lower than NAS Class Numbers as shown on the table 1 below

① The suction port line must have a reservoir type filter of 100 μm (150 mesh) and the filter should be installed minimum 50 mm higher than the bottom of the reservoir.

② The return line must have a line filter.

Line type filter ratings

Type of Components	Line Type Filter
Pump's Suction Port	100μm
Circuit System	Piston Pumps: below 10μm E series components: below 20μm Other components: below 25μm

Limit of contamination

Type of Components	NAS Class No.
Piston Pumps	10 or less
E series components	11 or less
Other components	12 or less

General Information

■ Limitation of general properties of fluids

● Limit of fluid purity

Characteristics ¹	Value changed
Specific gravity (15/4°C)	0.05
Colour	2
Flash point (°C) COC	60
Total acid number (mg KOH/g)	0.2
Viscosity (cSt)	10 ~ 15

■ High-pressure specialized hydraulic fluid

Manufacture	Brand
Mobil	Mobil DTE 25
Shell	Shell Tellus Oil 46
China Oil	Aw46, LPS 46

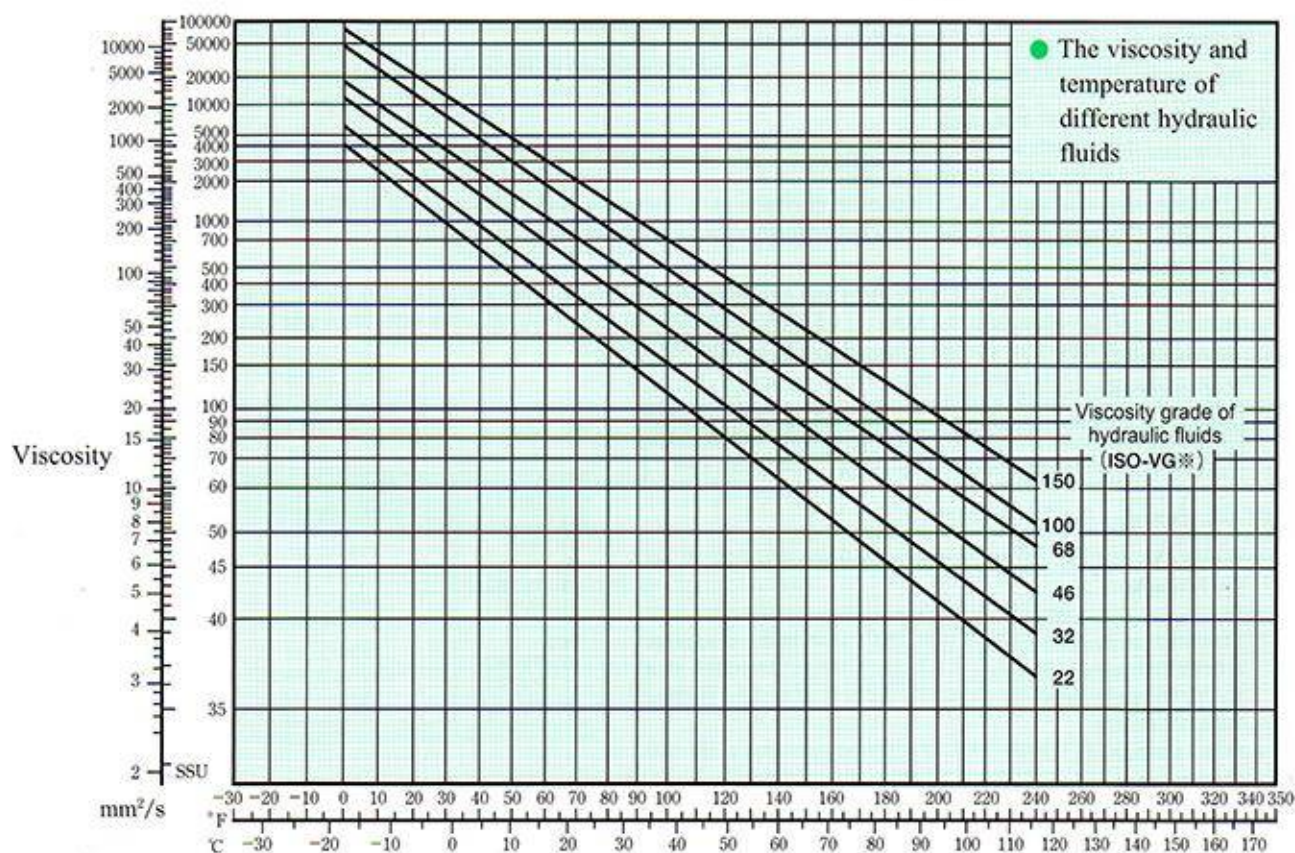
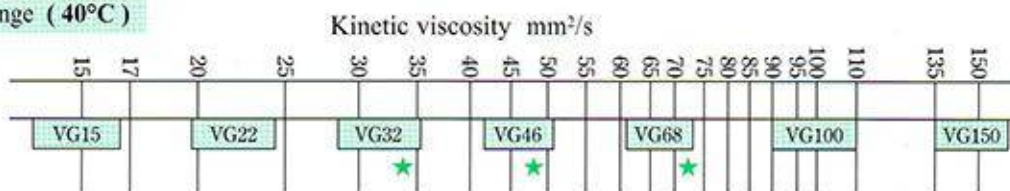
● Limit of water content

Applicable conditions	Limit
Fluid becomes milky with water contained.	To be replaced immediately.
Systems in which operating fluid circulates and returns to reservoir and which are not to be stopped for a long period of time.	1000ppm
System with long piping lines in which operating fluid in circuits does not completely circulate.	500ppm
Systems to be stopped for a long period of time (Safety systems) or systems in which operating fluid in circuits moves little, and precision control systems.	300ppm

■ Viscosity of hydraulic fluids

Viscosity range (40°C)

● ISO
Viscosity
grade
(ISO VG)



General Information

Instructions for hydraulic pump

1. Mounting

When installing piston pumps the filling port should be positioned upwards. When (S)-PV2R Single and Double Vane Pumps are operated below 1200 r/min; we recommend the suction port upwards to suck oil easily.

2. Alignment of Shaft

Employ a flexible coupling whenever possible, and avoid any stress from bending or thrust. Maximum permissible misalignment is less than 0.1 mm. TIR (Total Indicator Reading) and maximum permissible misangular is less than 0.2°.

3. Suction Pressure

★ 1 kPa = 0.01 kgf/cm² = 7.5 mmHg

Model		Suction Pressure Range		
		Min		Max.
		Petroleum base oils	Water containing phosphate esters	
Piston Pumps	ARL1 AR※	-16.7 kPa	—	+50 kPa
Single Pumps	50T 150T	-20 kPa	-16 kPa	+140 kPa
PV2R Single Vane Pumps	(S)-PV2R1 (S)-PV2R2 (S)-PV2R3 (S)-PV2R4	-20 kPa	-16 kPa	+30 kPa
PV2R Double Vane Pumps	(S)-PV2R12 (S)-PV2R13 (S)-PV2R23 (S)-PV2R24 (S)-PV2R34	-20 kPa		
		-20 kPa		
		-20 kPa ★		

- Make sure that the height of the pump suction port is within 1m from the oil level in the reservoir.
- Please follow the instructions of catalogue to choose suitable caliber of suction port pipes; otherwise, it might lead to dangerous cavitation. We suggest the suction port flow rate under 1 m/s.

★ For some displacement of pumps, the Min. suction pressure is restricted by the rotation speed. Please refer to Table 1.

● Table 1: The limitation of Min. suction pressure for specific displacement of hydraulic pumps.

The following hydraulic pumps with rotation speed 1700 r/min are restricted by the Min. suction pressure. (Min. suction pressure of other hydraulic pumps is -150 mmHg)

Model No.	Min. Suction Pressure kPa	
	1700 r/min Below	1700-1800 r/min
(S)-PV2R3-116	-20	0
(S)-PV2R4-237	-20	-13.3
(S)-PV2R※3-※-76	-20	-6.7
(S)-PV2R※3-※-94	-20	-6.7
(S)-PV2R※3-※-116	-20	0
(S)-PV2R※4-※-237	-20	-13.3
(S)-PV2R34-76-※	-20	-6.7
(S)-PV2R34-94-※	-20	-6.7
(S)-PV2R34-116-※	-20	0
(S)-PV2R34-116-237	-20	0

4. Instructions of Piping

- ① In case the pump is installed above the oil level, the suction piping and suction line filter should be located lower than the pump position to prevent air in the suction line.
- ② When using steel pipes for the suction or discharge ports, excessive load from the piping to the pump generates excessive noise. Whenever there is fear of excessive load, please use rubber hoses.

5. Drain Piping

Install drain piping according to the chart and ensure that pressure within the pump housing should be maintained at a normal pressure of less than 0.1 MPa (14.5 PSI) and surge pressure of less than 0.5 MPa (72.5 PSI). Length of piping should be less than 1 m, and the pipe end should be submerged in oil.

Recommended Drain Piping Size:

Model	Piping Fitting Size	Internal Dia. of Pipe
ARL1, AR※	3/8 (Internal Dia. more than Ø8.5)	more than Ø10

6. Hydraulic Pumps Starting

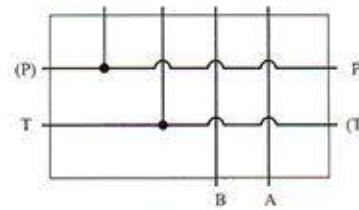
- Before first starting, fill pump case with clean operating oil via the filling port.
- In order to avoid air blockage when starting pumps after long time shut down, to set up air bleeding valve on the discharge sides in advance or to loose discharge piping connection area for bleeding the air in the pipes. To the best of pumps' starting with no loading.
- When temperature is under 15°C in winter or viscosity is 200~400 mm²/s (1000SSU~1800SSU), please refer to the following instructions to start pumps in order to make better internal lubrication, and it will help the suction of the pump and extend the pump's life.
- Starting instructions: to start running pumps for 5 seconds, and then stop it for 10 seconds. To repeat this process 10 times, and then keep it running.

● Table 2: Max. viscosity list of starting at low rotation speed

Model	Rotation speed of starting r/min	Max. viscosity mm ² /s
PV2R1 (S)-PV2R12 (S)-PV2R13 (S)-PV2R14	750	100
	950	200
50T (S)-PV2R2 (S)-PV2R23 (S)-PV2R24	600	100
	950	200

Base Plates

Max. Pressure 31.5 MPa



MMC-01-1

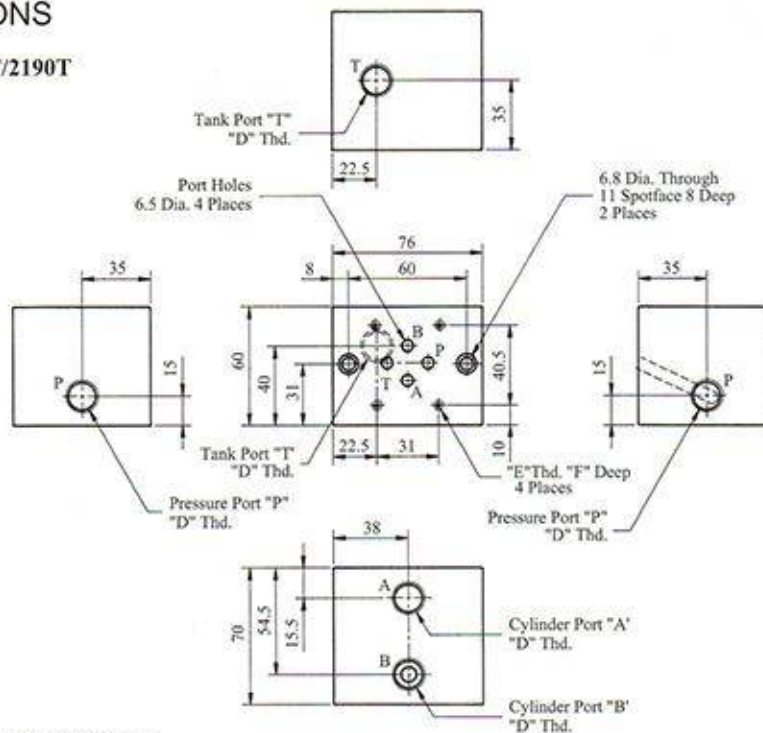
MODEL NUMBER DESIGNATION

MMC	-01	-1	-21T
Series Number	Plate Size	Number of Station	Design Number
MMC: Base Plates	01	1:1 Station	21T*

* Design Standards 21T...YUKEN Taiwan Standard (A port is upwards)
2190T...N. American Design Standard

DIMENSIONS

● MMC-01-1-21T/2190T



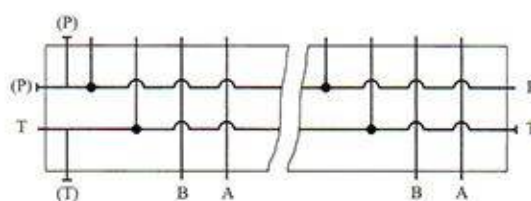
* Pressure Port "P" - 2 positions
* Tank Port "T" - 2 positions

Model Numbers	Piping Size	"E"	Dimension mm	Mass kg
	"D"		F	
MMC-01-1-21T	Re 3/8	M5	10	2.25
MMC-01-1-2190T	3/8 NPT	No.10-24 UNC	12	

G

Base Plates

Max. Pressure 31.5 MPa



MMC-01-2 ~ 10

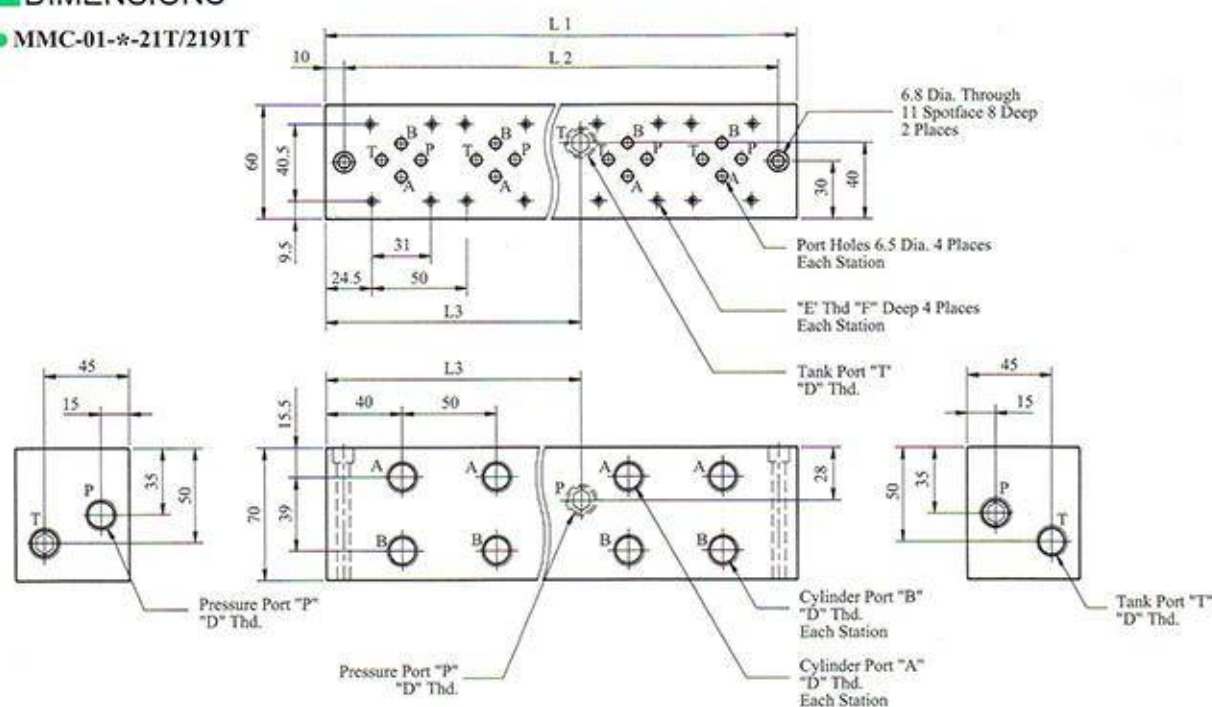
MODEL NUMBER DESIGNATION

MMC	-01	-6		-21T
Series Number	Plate Size	Number of Stations		Design Number
MMC: Base Plates	01	2:2 Stations	7:7 Stations	21T *
		3:3 Stations	8:8 Stations	
		4:4 Stations	9:9 Stations	
		5:5 Stations	10:10 Stations	
		6:6 Stations		

* Design Standards 21T ... YUKEN Taiwan Standard (A port is upwards)
2190T ... N. American Design Standard

DIMENSIONS

MMC-01-**-21T/2191T



Model Numbers	Piping Size	"E"	Dimension mm
	"D"		F
MMC-01-**-21T	Rc 3/8	M5	10
MMC-01-**-2190T	3/8 NPT	No.10-24 UNC	12

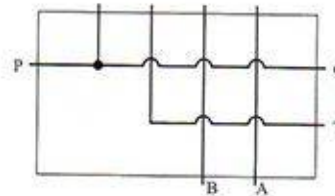
※ Pressure Port "P"-3 positions
※ Tank Port "T"-3 positions

Model Numbers	Dimensions mm			Mass Kg
	L1	L2	L3	
MMC-01-2	130	110	65	3.55
MMC-01-3	180	160	65	4.95
MMC-01-4	230	210	115	6.35
MMC-01-5	280	260	115	7.75
MMC-01-6	330	310	165	9.25

Model Number	Dimension mm			Mass Kg
	L1	L2	L3	
MMC-01-7	380	360	165	10.65
MMC-01-8	430	410	215	12.05
MMC-01-9	480	460	215	13.45
MMC-01-10	530	510	265	14.85

Base Plates

Max. Pressure 31.5 MPa



MMC-03-1

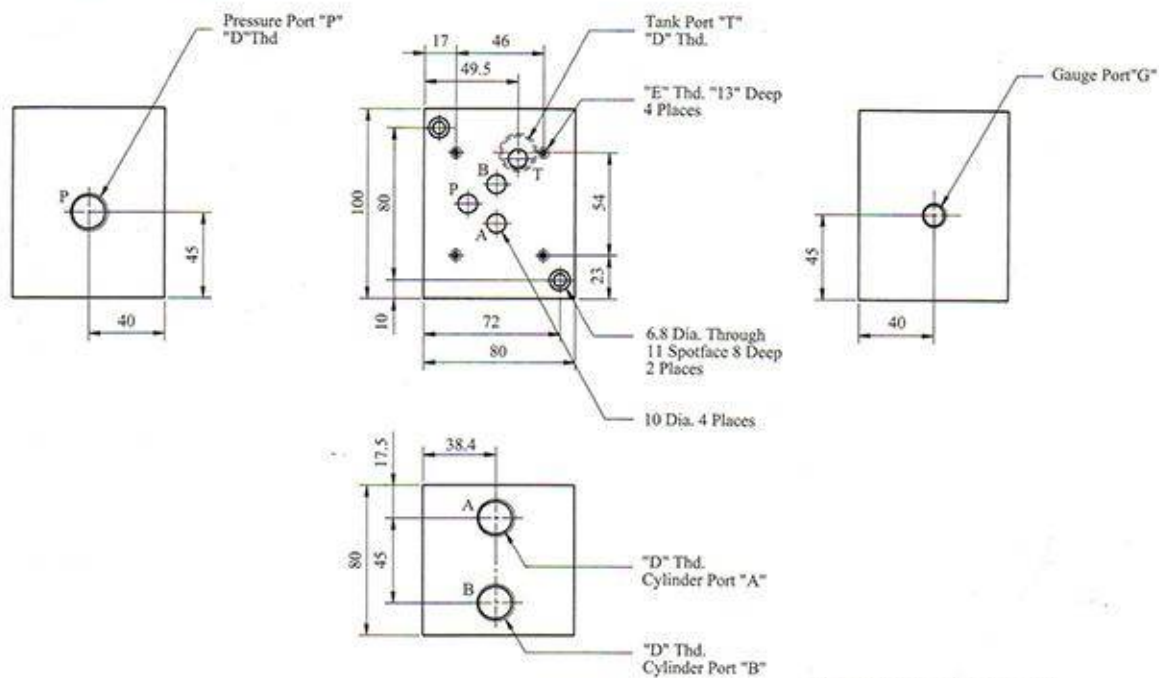
MODEL NUMBER DESIGNATION

MMC	-03	-1	-21T
Series Number	Plate Size	Number of Stations	Design Number
MMC: Base Plates	03	1:1 Station	21T*

* Design Standard : 21T ... YUKEN Taiwan Standard (A port is upwards)
2190T ... N. American Design Standard

DIMENSIONS

● MMC-03-1-21T/2190T

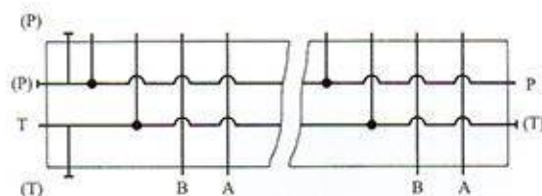


※ Pressure Port "P"-1 positions
※ Tank Port "T"-1 positions

Model Numbers	Piping Size "D"	"E"	Gauge Port "G"	Mass KG
MMC-03-1-21T	Re 1/2	M6	Re 1/4	3.3
MMC-03-1-2190T	1/2 NPT	1/4-20 UNC	1/4 NPT	

Base Plates

Max. Pressure 31.5 MPa



MMC-03-2~6

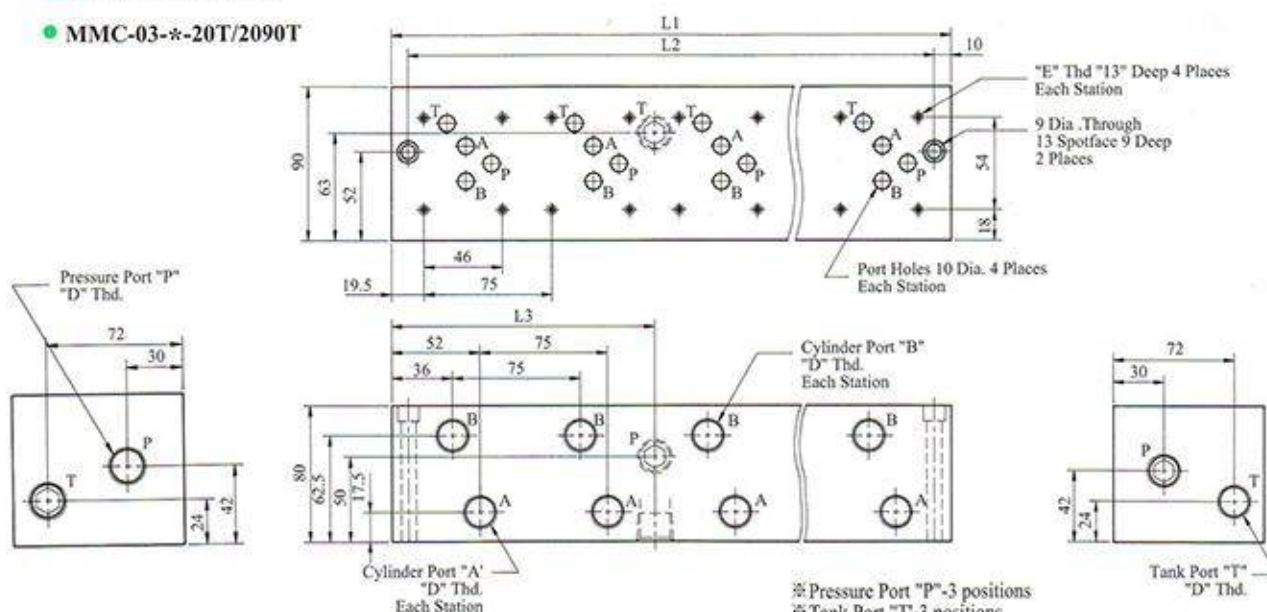
RATING

MMC	-03	-6	-20T
Series Number	Plate Size	Number of Station	Design Number
MMC: Base Plate	03	2:2 Stations 3:3 Stations 4:4 Stations 5:5 Stations 6:6 Stations	20T*

* Desing Standard : 20T ... YUKEN Taiwan Standard (A port is upwards)
2090T ... N.American Desing Standard

DIMENSIONS

MMC-03-* -20T/2090T



※ Pressure Port "P"-3 positions
※ Tank Port "T"-3 positions

Model Numbers	Piping Size "D"	"E"	Dimension mm			Mass Kg
			L1	L2	L3	
MMC-03-2-20T	Re 1/2	M6	160	140	80	7.7
MMC-03-2-2090T	1/2 NPT	1/4-20 UNC				
MMC-03-3-20T	Re 1/2	M6	235	215	80	11.4
MMC-03-3-2090T	1/2 NPT	1/4-20 UNC				
MMC-03-4-20T	Re 1/2	M6	310	290	155	15.15
MMC-03-4-2090T	1/2 NPT	1/4-20 UNC				
MMC-03-5-20T	Re 1/2	M6	385	365	155	19.05
MMC-03-5-2090T	1/2 NPT	1/4-20 UNC				
MMC-03-6-20T	Re 1/2	M6	460	440	230	22.65
MMC-03-6-2090T	1/2 NPT	1/4-20 UNC				
MMC-03-7-20T	Re 1/2	M6	535	515	230	26.4
MMC-03-7-2090T	1/2 NPT	1/4-20 UNC				

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