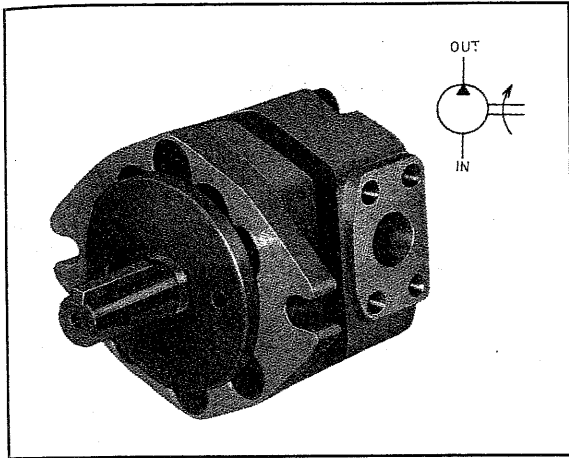


INTERNAL GEAR PUMP (TCP* SERIES)



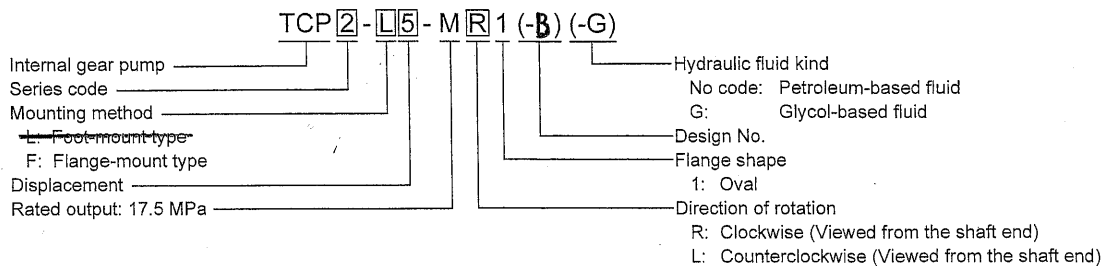
The high-pressure application TC series pump has a variety of features including low noise, high output, high efficiency, compact construction and light weight. It is most suitable for hydraulic units used for marine applications, construction machinery, and general industrial machinery.

FEATURES

1. The pump features minimal pulsation and low noise thanks to low-frequency sound.
2. The pump is compact and consists of few moving parts. It is lightweight since the pump body is made of special aluminum alloys.
3. Simple construction along with the use of plain metal ensure long life
4. High pressure and high efficiency.

- When water-glycol fluid is used, specify "G" at the end of model designation. In this case, the maximum speed is 1,200 min⁻¹. Please consult us about the applicable brand of water-glycol fluid.
- The standard direction of rotation is clockwise, viewed from the shaft end. If counterclockwise rotation is required, specify ML1 instead of MR1. The pump that rotates in the counterclockwise direction has the inlet and outlet ports at the opposite positions when compared with the pump that rotates in the clockwise direction.
- In operation at the maximum pressure, the permissible duration for holding the maximum pressure is less than 3 seconds per operation and the total time operating at the maximum pressure must be less than 1/10th of the total pump operating time.
- When the pump is used at a discharge pressure of 10 MPa or higher, hydraulic fluid with a viscosity of ISO VG46 is recommended. In winter time, however, if the ambient temperature is always 6°C or lower, change the hydraulic fluid to the one that has a viscosity of ISO VG32.
- The viscosity of the hydraulic fluid to be used should be 100 to 20 mm²/sec.
- Use the hydraulic oil in the temperature range specified below.
ISO VG32: 0 to 60°C (350 to 15 mm²/sec)
ISO VG46: 6 to 60°C (350 to 18 mm²/sec)
- The permissible operating ambient temperature range is from 0 to 60°C.
- The pump can be used for R&O type and abrasion-resistant type hydraulic fluid applications.
- Install a suction filter (strainer) of 100 to 150 mesh (100 to 150 μm) at the suction side.
- The suction pressure must be in the range -0.03 MPa to +0.03 MPa.
- Drive the pump with the motor directly. Please consult us before using any other drive source.
- When connecting a shaft, use a flexible coupling and connection must be made so that radial and thrust load are not exerted to the pump shaft. Do not apply shock to the pump shaft by tapping the shaft end when mounting/removing a coupling or a pump. Inadequate shock will cause seizure of pump and short pump life. The permissible pump/motor coupling error is as below:
Eccentricity: 0.05 mm max.
Angular error: 0.5 deg. max.
- To avoid pump failure due to contamination of hydraulic fluid, it is advisable to install a line filter of 10 to 20 μm in the return line to the reservoir
- The mount type can be changed from the flange-mount type to the foot-mount type by attaching the foot.

MODEL DESIGNATION



SPECIFICATIONS

1,800 min⁻¹ 37 mm²/s

Type	Nominal Displacement	Displacement (cm ³ /rev)	Pressure (MPa)		Discharge Rate (L/min)						Input (kW)						Speed (min ⁻¹)		
			Rating	Max.	0.5 MPa	3.5 MPa	7 MPa	10.5 MPa	14 MPa	17.5 MPa	0.5 MPa	3.5 MPa	7 MPa	10.5 MPa	14 MPa	17.5 MPa	Rating	Max.	Min.
					10.1	10.0	9.9	9.6	9.3	8.5	0.2	0.7	1.3	1.9	2.4	3.0			
TCP2-*5-MR1- B	5	5.5	17.5	21	10.1	10.0	9.9	9.6	9.3	8.5	0.2	0.7	1.3	1.9	2.4	3.0	1,800	4,000	800
TCP2-*6.3-MR1- B	6.3	6.9			12.5	12.4	12.2	11.9	11.4	10.6	0.2	0.9	1.6	2.4	3.1	3.8			
TCP2-*8-MR1- B	8	8.8			15.9	15.8	15.7	15.4	14.8	13.6	0.3	1.1	2.0	3.0	3.9	4.8			
TCP2-*10-MR1- B	10	11.0			19.9	19.7	19.4	19.0	18.4	17.0	0.4	1.4	2.5	3.7	4.8	6.0			
TCP3-*12.5-MR1- B	12.5	13.7	17.5	21	24.4	24.0	23.5	22.9	22.0	20.5	0.5	1.8	3.2	4.7	6.1	7.5	1,800	3,000	800
TCP3-*16-MR1- B	16	17.3			31.0	30.6	30.0	29.3	28.3	26.7	0.7	2.3	4.0	5.8	7.6	9.4			
TCP3-*20-MR1- B	20	22.1			39.4	38.7	38.0	37.2	36.0	34.0	0.9	2.9	5.2	7.4	9.7	12.0			
TCP3-*25-MR1- B	25	27.4			48.6	48.0	47.5	46.4	44.7	41.4	1.1	3.4	6.2	9.1	12.0	14.8			
TCP4-*31.5-MR1	31.5	35.2	17.5	21	61.5	60.5	59.3	57.8	55.5	51.5	1.2	4.3	8.0	11.7	15.4	19.0	1,800	3,000	800
TCP4-*40-MR1	40	44.9			78.3	77.0	75.5	73.5	71.8	66.5	1.5	5.5	10.1	14.9	19.7	24.2		2,800	
TCP4-*50-MR1	50	54.6			95.7	93.9	91.9	89.5	86.2	80.9	1.8	6.6	12.2	18.1	23.8	29.4		2,500	
TCP5-*63-MR1-A	63	62.2	17.5	21	112.3	109.1	106.6	103.1	98.8	92.1	2.1	7.7	14.0	20.6	27.0	33.5	1,800	2,400	600
TCP5-*80-MR1-A	80	79.3			142.9	139.7	135.9	131.8	126.3	117.9	2.5	9.7	17.9	26.3	34.8	43.2		2,100	
TCP5-*100-MR1-A	100	99.1			178.6	174.9	169.9	164.6	157.9	148.3	3.0	12.0	22.4	33.1	43.8	54.5		1,800	
TCP5-*125-MR1-A	125	127.5			229.7	224.6	218.2	211.6	203.3	191.8	3.4	15.3	28.8	42.8	56.7	70.7		1,800	

NOTE: The symbol "*" in the Model column indicates the mounting method - L for foot-mount and F for flange-mount.

PIPING FLANGE

Specify the flange separately by selecting one from the following table.

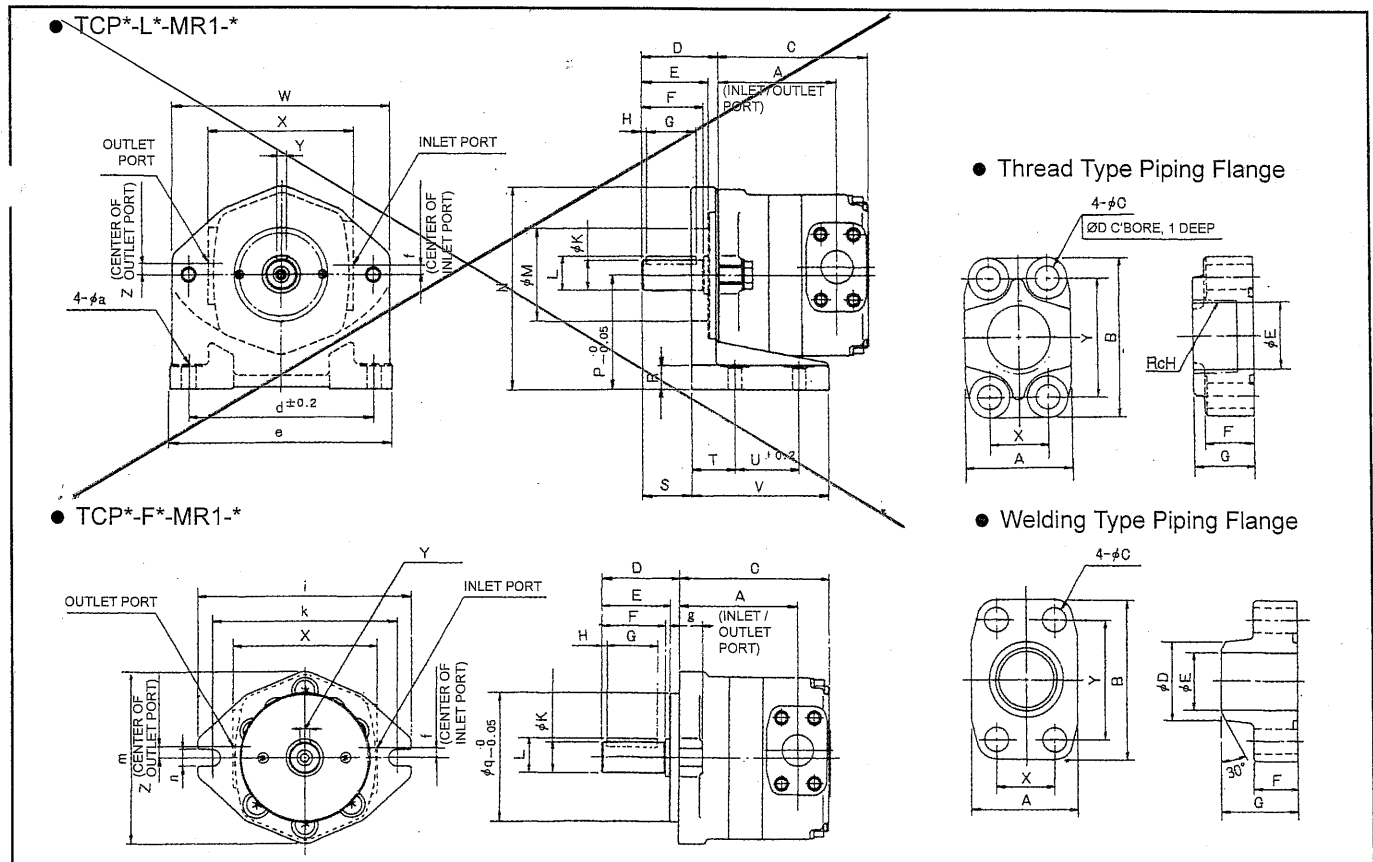
Type	Name		For TCP2	For TCP3	For TCP4	For TCP5
	For Thread Type	OUT side	FTCP-04PT	FTCP-06PT	FTCP-08PT	FTCP-12PT
		IN side	FTCP-06PT	FTCP-08PT	FTCP-12PT	FTCP-16PT
	For Welding Type	OUT side	FTCP-04WE	FTCP-06WE	FTCP-08WE	FTCP-12WE
IN side		FTCP-06WE	FTCP-08WE	FTCP-12WE	FTCP-16WE	

NOTE 1: The flange comes with bolts and an O-ring.

NOTE 2: Bolts of strength category 12.9 according to JIS B1176 are used.

NOTE 3: The applicable standard for the O-ring is JIS B2401.

EXTERNAL DIMENSIONS



DIMENSION TABLE

Type	TCP2				TCP3				TCP4			TCP5			
	5	6.3	8	10	12.5	16	20	25	31.5	40	50	63	80	100	125
A	64	66.5	70	74	81	84.5	89	94	109	114.5	120	123	129	136	146
C	85	87.5	91	95	106	109.5	114	119	146	151.5	157	162	168	175	185
D	44.5				61.5				86			94			
E	37				53.5				76			82			
F	35.5				49.5				73			80			
G	30				40				61			61			
H	2				3.5				5			8			
K	19.05 ⁰ _{-0.021}				24 ^{+0.009} _{-0.004}				32 ^{+0.011} _{-0.005}			38 ^{+0.011} _{-0.005}			
L	21.25				27				35			41			
M	65				75				90			115			
N	125				162				204.5			258.2			
P	69.8				92.1				109.5			139.7			
R	15				20				20			26			
S	29.5				39.5				64			68			
T	28.5				35				40			45			
U	50.8				50.8				76.2			139.7			
V	96				110				150			210			
W	129				172				209			272			
X	87				115				155			200			
Y	4.76 ^{+0.024} _{+0.012}				8 ⁰ _{-0.036}				10 ⁰ _{-0.036}			10 ⁰ _{-0.036}			
Z	10				8				8			0			
a	11				11				18			20			
d	127				146				235			295.3			
e	155				176				276			338			
f	6				6				0			0			
g	14.5				18.5				20			34			
i	125				168				205			268			
k	106				146				181			229			
m	106				136				186			233			
n	11				14				18			22			
q	82.55				101.6				126.95			152.35			

MASS TABLE

Model	Mass (kg)	
	F-type	L-type
TCP2-*5-MR1- B	2.4	4.5
TCP2-*6.3-MR1- B	2.5	4.6
TCP2-*8-MR1- B	2.6	4.7
TCP2-*10-MR1- B	2.8	4.9
TCP3-*12.5-MR1- B	4.9	9.4
TCP3-*16-MR1- B	5.2	9.7
TCP3-*20-MR1- B	5.5	10.0
TCP3-*25-MR1- B	5.9	10.4
TCP4-*31.5-MR1	12.3	19.7
TCP4-*40-MR1	13.1	20.5
TCP4-*50-MR1	13.9	21.3
TCP5-*63-MR1-A	22.2	39.2
TCP5-*80-MR1-A	23.9	40.9
TCP5-*100MR1-A	25.6	42.6
TCP5-*125-MR1-A	27.8	44.8

THREAD-TYPE PIPING FLANGE DIMENSION TABLE

	FTCP-04PT	FTCP-06PT	FTCP-08PT	FTCP-12PT	FTCP-16PT
A	38	46	46	64	76
B	54	65	70	95	110.8
C	9	11	11	13	13
D	14	17.5	17.5	20	20
E	18	23.5	29.5	43.5	55.5
F	21	22	22	24	27
G	25	27	27	30	33
H	1/2	3/4	1	1 1/2	2
X	17.5	22.2	26.2	35.7	42.9
Y	38.1	47.6	52.4	69.8	77.8
Bolt	M8 × 35	M10 × 40	M10 × 40	M12 × 45	M12 × 50
O-ring	1AG25	1AG30	1AG35	1AG50	1AG63

NOTE 1: Bolts of strength category 12.9 according to JIS B1176 are used.

NOTE 2: The applicable standard for the O-ring is JIS B2401.

WELDING-TYPE PIPING FLANGE DIMENSION TABLE

	FTCP-04WE	FTCP-06WE	FTCP-08WE	FTCP-12WE	FTCP-16WE
A	38	46	46	64	76
B	54	65	70	95	110.8
C	9	11	11	13	13
D	21.7	27.2	34	48.6	60.5
E	12.7	19	25	38	51
F	20	21	21	23	25
G	33	36	36	40	42
X	17.5	22.2	26.2	35.7	42.9
Y	38.1	47.6	52.4	69.8	77.8
Bolt	M8 × 35	M10 × 40	M10 × 40	M12 × 45	M12 × 50
O-ring	1AG25	1AG25	1AG35	1AG45	1AG58



TOYOOKI KOGYO CO., LTD.

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 HOME PAGE: <http://www.toyooki.jp/>

2nd June, 2014 (Revised 23rd Oct., 2014)

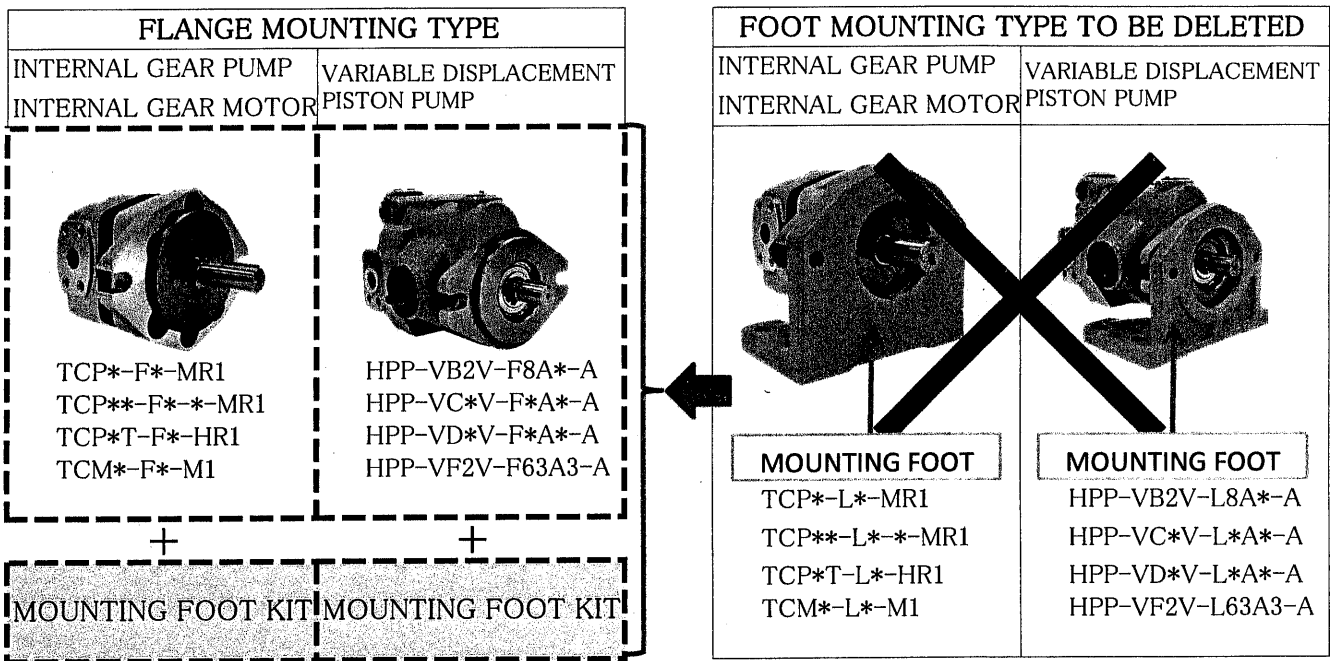
Dear our customers,

REF. DELETION OF MODEL CODING FOR FOOT MOUNTING TYPE

As you know well, we have been supplying piston pumps, internal gear pumps and internal gear motors in the form of "flange mounting type(F)" and "foot mounting type(L)" respectively. This time, we would like to inform you that, as of 1st June, 2014, we will supply "flange mounting type(F)" only, except for double piston pumps(HPP-VCC2V & HPP-VCF2V) in order to rationalize the number of model codings but in case of "foot mounting type(L)" needed, you will order "flange mounting type(F)" plus the additional item of foot kit so that you may assemble them into "foot mounting type(L)" at your side.

For further details, please kindly refer to the below-mentioned information or contact to us anytime.

- **SUBJECT ITEMS:** VARIABLE DISPLACEMENT PISTON PUMP (HPP)
 INTERNAL GEAR PUMP (TCP) AND MOTOR (TCM)



■ **MOUNTING FOOT KIT: (REVISED PART)**

MODEL CODE FOR FOOT KIT	SUBJECT MODEL OF PUMP & MOTOR	TIGHTENING TORQUE FOR FOOT BOLTS	CONTENTS
LP02-10	TCP2, TCP※2, TCP2T, TCM2 HPP-VB2V, HPP-VC2V, HPP-VC3V	30~35Nm	FOOT 1 PCS. BOLT 2 PCS. WASHER 2 PCS.
LP04-10	TCP3, TCP※3, TCP3T, TCM3	40~50Nm	
LP04-20	HPP-VD2V, HPP-VD3V-F25		
LP04-30	HPP-VD3V-F40	65~75Nm	
LP06-10	TCP4, TCP※4, TCP4T, TCM4		
LP06-20	HPP-VF2V	45~55Nm	
LP08-10	TCP5, TCP※5, TCP5T, TCM5	120~135Nm	

■ **VALIDITY:** 1ST JUNE, 2014