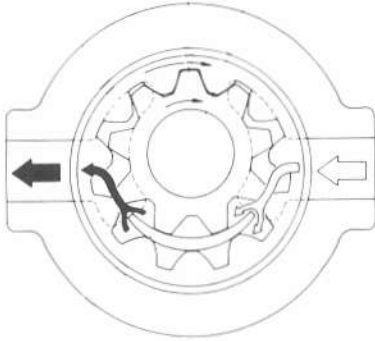


# Internal gear pumps



With its two gears eccentric with each other fitted in the casing, this pump serves for the fixed displacement.

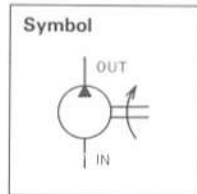
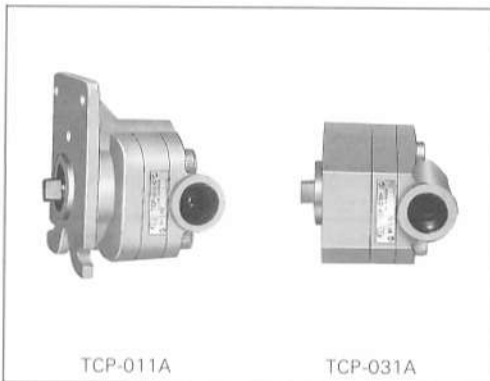
## • Features

1. Small pulsation and low frequency sound means low operating noise.
2. Built with a small number of parts in special aluminum alloy casing, this pump is compact and light-weighted.
3. Simple construction. Slide bearing (plain metal) is provided for long service life.
4. For high pressure, and high efficiency.

## Series TCP-※※

This pump has been developed as the power steering pump used for battery-operated forklift trucks. It features low noise in operation.

Noise level is 56dB (A) or less when measured at 1 m behind the pump running at 3,600 min<sup>-1</sup>.



## • Model coding

TCP - 011 A

Internal gear pump  
Mounting dimension  
Displacement

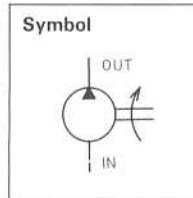
A: 3.15 cm<sup>3</sup>/rev 0.19 in<sup>3</sup>/rev  
B: 3.5 cm<sup>3</sup>/rev 0.21 in<sup>3</sup>/rev  
C: 4.0 cm<sup>3</sup>/rev 0.24 in<sup>3</sup>/rev

## • Specifications

| Model    | Displacement         |                      | Pressure |       |      |       | Speed |      |
|----------|----------------------|----------------------|----------|-------|------|-------|-------|------|
|          | cm <sup>3</sup> /rev | in <sup>3</sup> /rev | Rated    |       | Max. |       | Max.  | Min. |
|          |                      |                      | MPa      | psi   | MPa  | psi   |       |      |
| TCP-011A | 3.15                 | 0.19                 | 8        | 1,143 | 10.5 | 1,500 | 4,000 | 900  |
| TCP-011B | 3.5                  | 0.21                 |          |       |      |       |       |      |
| TCP-011C | 4.0                  | 0.24                 |          |       |      |       |       |      |
| TCP-031A | 3.15                 | 0.19                 |          |       |      |       |       |      |
| TCP-031B | 3.5                  | 0.21                 |          |       |      |       |       |      |
| TCP-031C | 4.0                  | 0.24                 |          |       |      |       |       |      |

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# Series TCP※

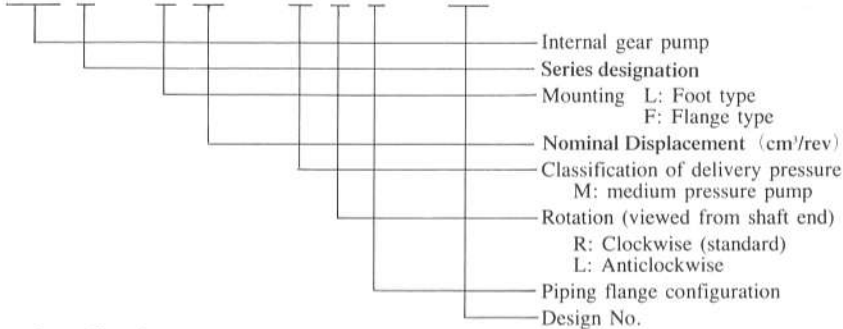


## ● Features

1. Small pulsation and low-frequency sound means low operating noise.
2. Built with a small number of parts in special aluminum alloy casing, this pump is compact and light-weighted.
3. Simple structure and plain metal slide bearing for long life.
4. For high pressure resistant and high efficiency.

## ● Model coding

TCP 3 - F 20 - M R 1 - (A)



## ● Specification

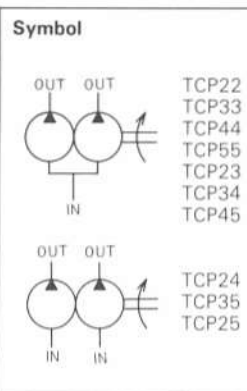
1,800min<sup>-1</sup>, 37mm<sup>3</sup>/s

| Model            | Nominal Displacement<br>cm <sup>3</sup> /rev in <sup>3</sup> /rev | Pressure     |       |             |       | Delivery         |              |                |                 |                 |                 |                   |                 |
|------------------|-------------------------------------------------------------------|--------------|-------|-------------|-------|------------------|--------------|----------------|-----------------|-----------------|-----------------|-------------------|-----------------|
|                  |                                                                   | Rated<br>MPa | psi   | Max.<br>MPa | psi   | 0.5MPa<br>ℓ /min | 71psi<br>gpm | 7MPa<br>ℓ /min | 1,000psi<br>gpm | 14MPa<br>ℓ /min | 2,000psi<br>gpm | 17.5MPa<br>ℓ /min | 2,500psi<br>gpm |
| TCP2- ※5-MR1-A   | 5 0.30                                                            | 17.5         | 2,500 | 21          | 3,000 | 10.1             | 2.67         | 9.9            | 2.62            | 9.3             | 2.46            | 8.5               | 2.25            |
| TCP2- ※6.3-MR1-A | 6.3 0.38                                                          |              |       |             |       | 12.5             | 3.31         | 12.2           | 3.32            | 11.4            | 3.01            | 10.6              | 2.80            |
| TCP2- ※8-MR1-A   | 8 0.49                                                            |              |       |             |       | 15.9             | 4.21         | 15.7           | 4.15            | 14.8            | 3.91            | 13.6              | 3.60            |
| TCP2- ※10-MR1-A  | 10 0.61                                                           |              |       |             |       | 19.9             | 5.62         | 19.4           | 5.13            | 18.4            | 4.87            | 17.0              | 4.50            |
| TCP3- ※12.5-MR1  | 12.5 0.76                                                         | 17.5         | 2,500 | 21          | 3,000 | 24.4             | 6.45         | 23.5           | 6.22            | 22.0            | 5.82            | 20.5              | 5.42            |
| TCP3- ※16-MR1    | 16 0.98                                                           |              |       |             |       | 31.0             | 8.20         | 30.0           | 7.94            | 28.3            | 7.49            | 26.7              | 7.06            |
| TCP3- ※20-MR1    | 20 1.22                                                           |              |       |             |       | 39.4             | 10.4         | 38.0           | 10.0            | 36.0            | 9.52            | 34.0              | 8.99            |
| TCP3- ※25-MR1    | 25 1.52                                                           |              |       |             |       | 48.6             | 12.8         | 47.5           | 12.6            | 44.7            | 11.8            | 41.4              | 10.9            |
| TCP4- ※31.5-MR1  | 31.5 1.92                                                         | 17.5         | 2,500 | 21          | 3,000 | 61.5             | 16.3         | 59.3           | 15.7            | 55.5            | 14.7            | 51.5              | 13.6            |
| TCP4- ※40-MR1    | 50 2.44                                                           |              |       |             |       | 78.3             | 20.7         | 75.5           | 20.0            | 71.8            | 19.0            | 66.5              | 17.6            |
| TCP4- ※50-MR1    | 50 3.05                                                           |              |       |             |       | 95.7             | 25.3         | 91.9           | 24.3            | 86.2            | 22.8            | 80.9              | 21.4            |
| TCP5- ※63-MR1-A  | 63 3.84                                                           |              |       |             |       | 112.3            | 29.7         | 106.6          | 28.2            | 98.8            | 26.1            | 92.1              | 24.4            |
| TCP5- ※80-MR1-A  | 80 4.88                                                           | 17.5         | 2,500 | 21          | 3,000 | 142.9            | 37.8         | 135.9          | 35.9            | 126.3           | 33.4            | 117.9             | 31.2            |
| TCP5- ※100-MR1-A | 100 6.10                                                          |              |       |             |       | 178.6            | 47.2         | 169.9          | 44.9            | 157.9           | 41.8            | 148.3             | 39.2            |
| TCP5- ※125-MR1-A | 125 7.62                                                          |              |       |             |       | 229.7            | 79.3         | 218.2          | 57.7            | 203.3           | 53.8            | 191.8             | 50.7            |

| Model            | Input        |             |            |                |             |                |               |                | Speed min <sup>-1</sup> |       |      |
|------------------|--------------|-------------|------------|----------------|-------------|----------------|---------------|----------------|-------------------------|-------|------|
|                  | 0.5MPa<br>kW | 71psi<br>HP | 7MPa<br>kW | 1,000psi<br>HP | 14MPa<br>kW | 2,000psi<br>HP | 17.5MPa<br>kW | 2,500psi<br>HP | Rated                   | Max.  | Min. |
| TCP2- ※5-MR1-A   | 0.2          | 0.3         | 1.3        | 1.7            | 2.4         | 3.2            | 3.0           | 4.0            | 1,800                   | 4,000 | 800  |
| TCP2- ※6.3-MR1-A | 0.2          | 0.3         | 1.6        | 2.1            | 3.1         | 4.1            | 3.8           | 5.1            |                         |       |      |
| TCP2- ※8-MR1-A   | 0.3          | 0.4         | 2.0        | 2.7            | 3.9         | 5.2            | 4.8           | 6.4            |                         |       |      |
| TCP2- ※10-MR1-A  | 0.4          | 0.5         | 2.5        | 3.3            | 4.8         | 6.4            | 6.0           | 8.0            |                         |       |      |
| TCP3- ※12.5-MR1  | 0.5          | 0.7         | 3.2        | 4.3            | 6.1         | 8.1            | 7.5           | 10.0           | 1,800                   | 3,000 | 800  |
| TCP3- ※16-MR1    | 0.7          | 0.9         | 4.0        | 5.3            | 7.6         | 10.1           | 9.4           | 12.5           |                         |       |      |
| TCP3- ※20-MR1    | 0.9          | 1.2         | 5.2        | 6.9            | 9.7         | 12.9           | 12.0          | 16.0           |                         |       |      |
| TCP3- ※25-MR1    | 1.1          | 1.5         | 6.2        | 8.3            | 12.0        | 16.0           | 14.8          | 19.7           |                         |       |      |
| TCP4- ※31.5-MR1  | 1.2          | 1.6         | 8.0        | 10.7           | 15.4        | 20.5           | 19.0          | 25.3           | 1,800                   | 3,000 | 800  |
| TCP4- ※40-MR1    | 1.5          | 2.0         | 10.1       | 13.5           | 19.7        | 26.3           | 24.2          | 32.3           |                         | 2,800 |      |
| TCP4- ※50-MR1    | 1.8          | 2.4         | 12.2       | 16.3           | 23.8        | 31.7           | 29.4          | 39.2           |                         | 2,500 |      |
| TCP5- ※63-MR1-A  | 2.1          | 2.8         | 14.0       | 18.7           | 27.0        | 36.0           | 33.5          | 44.7           | 1,800                   | 2,400 | 600  |
| TCP5- ※80-MR1-A  | 2.5          | 3.3         | 17.9       | 23.9           | 34.8        | 46.4           | 43.2          | 57.6           |                         |       |      |
| TCP5- ※100-MR1-A | 3.0          | 4.0         | 22.4       | 29.9           | 43.8        | 58.4           | 54.5          | 72.7           |                         |       |      |
| TCP5- ※125-MR1-A | 3.4          | 4.5         | 28.8       | 38.4           | 56.7        | 75.6           | 70.7          | 94.3           |                         |       |      |

(Note) Piping flange should be separately ordered.

# Series TCP ※※

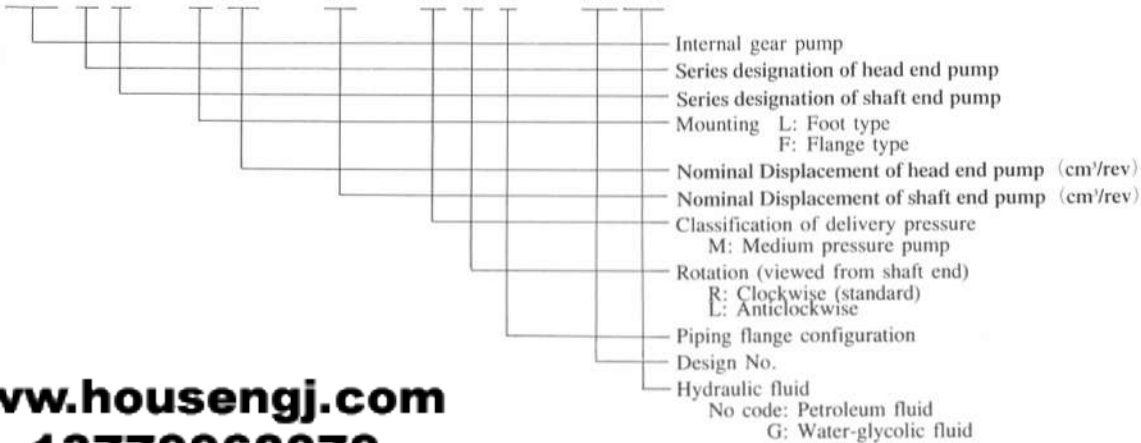


This pump, consisting of two single pumps assembled in tandem in a single unit driven by a single shaft, serves to send its discharges separately to two independent circuits or combined for larger displacement.

- Direction of rotation cannot be varied.
- Mounting configuration can be changed from flange type to foot type with the addition of a foot.
- Maximum available speed is 1,200 min<sup>-1</sup> when water-glycolic fluid is used. Please consult us for types of water glycolic fluid available
- Anti-clockwise rotation is available only for the TCP24, TCP25, and TCP35 two-way pumps.

## • Model coding

TCP 3 3 - F 20 - 25 - M R 1 - (A)(※)



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- Note: 1. Water-glycolic fluid is applicable to the standard pumps.  
Max speed is limited to 1,200 rpm.  
Piping flanges should be separately ordered.  
2. Double pumps of anticlockwise rotation can be manufactured only for models TCP24, TCP25, and TCP35.

## • Specifications

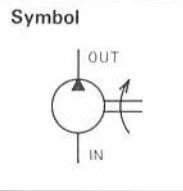
| Model             |                   | Nominal Displacement (*1) |                      |                      |                      | Pressure |       |      |       | Speed min <sup>-1</sup> |       |      |
|-------------------|-------------------|---------------------------|----------------------|----------------------|----------------------|----------|-------|------|-------|-------------------------|-------|------|
| Foot type         | Flange type       | Min.                      |                      | Max.                 |                      | Rsted    |       | Max. |       | Rated                   | Max.  | Min. |
|                   |                   | cm <sup>3</sup> /rev      | in <sup>3</sup> /rev | cm <sup>3</sup> /rev | in <sup>3</sup> /rev | MPa      | psi   | MPa  | psi   |                         |       |      |
| TCP22-L ※ ※-MR1-A | TCP22-F ※ ※-MR1-A | 5                         | 0.30                 | 10                   | 0.61                 | 17.5     | 2,500 | 21   | 3,000 | 1,800                   | 3,000 | 800  |
| TCP33-L ※ ※-MR1   | TCP33-F ※ ※-MR1   | 12.5                      | 0.76                 | 25                   | 1.52                 |          |       |      |       |                         |       |      |
| TCP44-L ※ ※-MR1   | TCP44-F ※ ※-MR1   | 31.5                      | 1.92                 | 50                   | 3.05                 |          |       |      |       |                         |       |      |
| TCP55-L ※ ※-MR1-A | TCP55-F ※ ※-MR1-A | 63                        | 3.84                 | 125                  | 7.62                 |          |       |      |       |                         |       |      |
| TCP23-L ※ ※-MR1   | TCP23-F ※ ※-MR1   | 5                         | 0.30                 | 10                   | 0.61                 |          |       |      |       |                         |       |      |
| TCP34-L ※ ※-MR1   | TCP34-F ※ ※-MR1   | 12.5                      | 0.76                 | 25                   | 1.52                 |          |       |      |       |                         |       |      |
| TCP45-L ※ ※-MR1-A | TCP45-F ※ ※-MR1-A | 31.5                      | 1.92                 | 50                   | 3.05                 |          |       |      |       |                         | 2,400 | 800  |
| TCP24-L ※ ※-MR1-A | TCP24-F ※ ※-MR1-A | 5                         | 0.30                 | 10                   | 0.61                 |          |       |      |       |                         |       |      |
| TCP35-L ※ ※-MR1-A | TCP35-F ※ ※-MR1-A | 12.5                      | 0.76                 | 25                   | 1.52                 |          |       |      |       |                         |       |      |
| TCP25-L ※ ※-MR1-A | TCP25-F ※ ※-MR1-A | 5                         | 0.30                 | 10                   | 0.61                 |          |       |      |       |                         |       |      |
|                   |                   | 63                        | 3.84                 | 125                  | 7.62                 |          |       |      |       |                         |       |      |
|                   |                   | 5                         | 0.30                 | 10                   | 0.61                 |          |       |      |       |                         |       |      |

(\*1) The value in the upper side is the Nominal Displacement of head end pump.  
The value in the lower side is the Nominal Displacement of shaft end pump.

# Series TCP※T



TCP3T-L20-HR1



This two-stage TC pump is composed of direct in-line single pump, with a maximum discharge pressure of 30MPa (4,300 psi).

- Direction of rotation cannot be varied.
- Mounting configuration can be changed from flange type to foot type with the addition of a foot.
- Maximum available speed for Water-glycolic fluid is limited to 1,200 rpm. Please consult us for types of water-glycolic fluid available.

## • Model coding

TCP 3 T - L 20 - H R 1 - (A) (※)

- Internal gear pump
- Series designation
- 2-stage type
- Mounting L: Foot type  
F: Flange type
- Nominal Displacement of head end pump (cm<sup>3</sup>/rev)
- Classification of delivery pressure  
H: High pressure pump
- Rotation (viewed from shaft end)  
R: Clockwise  
L: Anticlockwise
- Piping flange configuration
- Design No.
- Hydraulic fluid  
No code: Petroleum fluid  
G: Water-glycolic fluid

## • Specifications

1,800min<sup>-1</sup>, 37mm<sup>3</sup>/s

| Model             | Nominal Displacement<br>cm <sup>3</sup> /rev in <sup>3</sup> /rev |      | Pressure |       |      |       | Delivery     |      |                |      |                  |      |                  |      |                |      |
|-------------------|-------------------------------------------------------------------|------|----------|-------|------|-------|--------------|------|----------------|------|------------------|------|------------------|------|----------------|------|
|                   |                                                                   |      | Rstcd    |       | Max. |       | 0.5MPa 71psi |      | 3.5MPa 500 psi |      | 10.5MPa 1,500psi |      | 17.5MPa 2,500psi |      | 25MPa 3,571psi |      |
|                   |                                                                   |      | MPa      | psi   | MPa  | psi   | ℓ /min       | gpm  | ℓ /min         | gpm  | ℓ /min           | gpm  | ℓ /min           | gpm  | ℓ /min         | gpm  |
| TCP2T-※5 -HR1-A   | 5                                                                 | 0.30 | 25       | 3,571 | 30   | 4,285 | 10.2         | 2.70 | 10             | 2.64 | 9.6              | 2.54 | 9.1              | 2.41 | 7.6            | 2.01 |
| TCP2T-※6.3-HR1-A  | 6.3                                                               | 0.38 |          |       |      |       | 12.7         | 3.36 | 12.5           | 3.31 | 12               | 3.17 | 11.4             | 3.01 | 9.8            | 2.59 |
| TCP2T-※8 -HR1-A   | 8                                                                 | 0.49 |          |       |      |       | 16           | 4.23 | 15.8           | 4.18 | 15.4             | 4.07 | 14.6             | 3.86 | 12.6           | 3.33 |
| TCP2T-※10 -HR1-A  | 10                                                                | 0.61 |          |       |      |       | 19.8         | 5.24 | 19.7           | 5.21 | 19               | 5.03 | 18.5             | 4.89 | 16.5           | 4.65 |
| TCP3T-※12.5-HR1   | 12.5                                                              | 0.76 | 25       | 3,571 | 30   | 4,285 | 24.3         | 6.43 | 24             | 6.35 | 23               | 6.08 | 21.9             | 5.79 | 19.6           | 5.18 |
| TCP3T-※16 -HR1    | 16                                                                | 0.98 |          |       |      |       | 31           | 8.20 | 30.8           | 8.15 | 29.8             | 7.88 | 28.5             | 7.54 | 25             | 6.61 |
| TCP3T-※20 -HR1    | 20                                                                | 1.22 |          |       |      |       | 39.5         | 10.4 | 39.2           | 10.4 | 38.2             | 10.1 | 36.9             | 9.76 | 33.4           | 8.83 |
| TCP3T-※25 -HR1    | 25                                                                | 1.52 |          |       |      |       | 48.5         | 12.8 | 48.3           | 12.8 | 47               | 12.4 | 45.7             | 12.1 | 41.5           | 11.0 |
| TCP4T-※31.5-HR1   | 31.5                                                              | 1.92 | 25       | 3,571 | 30   | 4,285 | 61.5         | 16.3 | 61             | 16.1 | 58.2             | 15.4 | 55.6             | 14.7 | 49             | 13.0 |
| TCP4T-※40 -HR1    | 40                                                                | 2.44 |          |       |      |       | 78           | 20.6 | 77             | 20.4 | 74.5             | 19.7 | 71.8             | 19.0 | 63             | 16.7 |
| TCP4T-※50 -HR1    | 50                                                                | 3.05 |          |       |      |       | 96           | 25.4 | 95             | 25.1 | 92.5             | 24.7 | 89               | 23.5 | 81             | 21.4 |
| TCP3T-※63 -HR1-A  | 63                                                                | 3.84 |          |       |      |       | 112.3        | 29.7 | 110.3          | 29.1 | 106.1            | 28.1 | 101.4            | 26.8 | 92.1           | 24.3 |
| TCP5T-※80 -HR1-A  | 80                                                                | 4.88 | 25       | 3,571 | 30   | 4,285 | 143.0        | 37.8 | 140.8          | 37.2 | 135.9            | 35.9 | 130.1            | 34.4 | 117.9          | 31.2 |
| TCP5T-※100 -HR1-A | 100                                                               | 6.10 |          |       |      |       | 178.6        | 47.2 | 176.8          | 46.8 | 170.2            | 45.0 | 163.0            | 43.1 | 148.3          | 39.2 |
| TCP5T-※125 -HR1-A | 125                                                               | 7.62 |          |       |      |       | 229.7        | 60.8 | 226.8          | 60.0 | 218.9            | 57.9 | 209.8            | 55.5 | 191.8          | 50.7 |

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● Specifications

1,800min<sup>-1</sup>, 37mm<sup>2</sup>/s

| Model             | Input            |              |                  |               |                   |                 |                   |                 |                 |                 | Speed min <sup>-1</sup> |       |      |
|-------------------|------------------|--------------|------------------|---------------|-------------------|-----------------|-------------------|-----------------|-----------------|-----------------|-------------------------|-------|------|
|                   | 0.5MPa<br>ℓ /min | 71psi<br>gpm | 3.5MPa<br>ℓ /min | 500psi<br>gpm | 10.5MPa<br>ℓ /min | 1,500psi<br>gpm | 17.5MPa<br>ℓ /min | 2,500psi<br>gpm | 25MPa<br>ℓ /min | 3,571psi<br>gpm | Rated                   | Max.  | Min. |
| TCP2T-φ5 -HR1-A   | 0.22             | 0.29         | 0.74             | 1.0           | 2                 | 2.7             | 3.23              | 4.3             | 4.57            | 6.1             | 1,800                   | 4,000 | 800  |
| TCP2T-φ6.3-HR1-A  | 0.31             | 0.41         | 1                | 1.3           | 2.55              | 3.4             | 4.11              | 5.5             | 5.8             | 7.7             |                         |       |      |
| TCP2T-φ8 -HR1-A   | 0.39             | 0.52         | 1.2              | 1.6           | 3.2               | 4.3             | 5.2               | 6.9             | 7.3             | 9.7             |                         |       |      |
| TCP2T-φ10 -HR1-A  | 0.5              | 0.67         | 1.6              | 2.1           | 4                 | 5.3             | 6.4               | 8.5             | 9               | 12.0            |                         |       |      |
| TCP3T-φ12.5-HR1   | 0.6              | 0.8          | 1.9              | 2.5           | 5                 | 6.7             | 8.1               | 10.8            | 11.4            | 15.2            | 1,800                   | 3,000 | 800  |
| TCP3T-φ16 -HR1    | 0.8              | 1.0          | 2.5              | 3.3           | 6.4               | 8.5             | 10.3              | 13.7            | 14.6            | 19.5            |                         |       |      |
| TCP3T-φ20 -HR1    | 1.1              | 1.5          | 3.1              | 4.1           | 8                 | 10.7            | 12.8              | 17.1            | 18.1            | 24.1            |                         |       |      |
| TCP3T-φ25 -HR1    | 1.3              | 1.7          | 3.7              | 4.9           | 9.8               | 13.1            | 15.8              | 21.1            | 22.4            | 29.9            |                         |       |      |
| TCP4T-φ31.5-HR1   | 1.5              | 2.0          | 4.7              | 6.3           | 12.5              | 16.7            | 20.3              | 27.1            | 28.6            | 38.1            | 1,800                   | 3,000 | 800  |
| TCP4T-φ40 -HR1    | 2.3              | 3.1          | 6.4              | 8.5           | 16.1              | 21.5            | 26                | 24.7            | 36.2            | 48.3            |                         | 2,800 |      |
| TCP4T-φ50 -HR1    | 2.6              | 3.5          | 7.5              | 10.0          | 19.5              | 26.0            | 31.2              | 41.6            | 44.1            | 58.8            |                         | 2,500 |      |
| TCP5T-φ63 -HR1-A  | 2.1              | 2.8          | 7.7              | 10.3          | 20.6              | 27.5            | 33.5              | 44.7            | 47.4            | 63.2            |                         | 1,800 |      |
| TCP5T-φ80 -HR1-A  | 2.5              | 3.3          | 9.7              | 12.9          | 26.3              | 35.1            | 43.2              | 57.6            | 61.3            | 81.7            | 2,100                   |       |      |
| TCP5T-φ100 -HR1-A | 3.0              | 4.0          | 12.0             | 16.0          | 33.1              | 44.1            | 54.5              | 72.7            | 77.5            | 103.3           | 1,800                   |       |      |
| TCP5T-φ125 -HR1-A | 3.4              | 4.5          | 15.3             | 20.4          | 42.8              | 57.1            | 70.7              | 94.3            | 100.7           | 134.3           | 1,800                   |       |      |

● Piping flanges

Please select from the table below and order separately.

| Model         |                  |     | For the TCP2<br>For the TCP2T | For the TCP3<br>For the TCP3T | For the TCP4<br>For the TCP4T | For the TCP3<br>For the TCP3T |
|---------------|------------------|-----|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Configuration | Threaded<br>type | OUT | FTCP-04PT                     | FTCP-06PT                     | FTCP-08PT                     | FTCP-12PT                     |
|               |                  | IN  | FTCP-06PT                     | FTCP-08PT                     | FTCP-12PT                     | FTCP-16PT                     |
|               | Welded<br>type   | OUT | FTCP-04WE                     | FTCP-06WE                     | FTCP-08WE                     | FTCP-12WE                     |
|               |                  | IN  | FTCP-06WE                     | FTCP-08WE                     | FTCP-12WE                     | FTCP-16WE                     |

(Note) These flanges include installation bolt and O-ring.

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