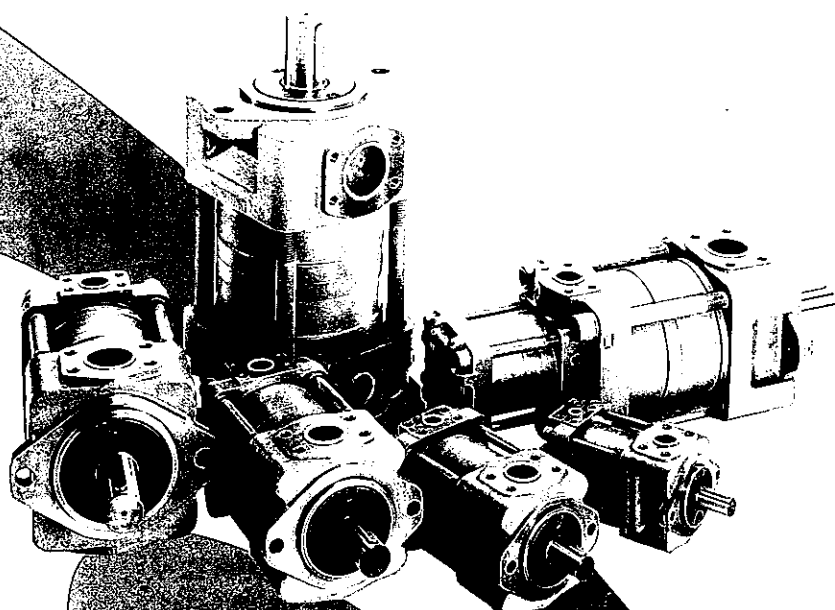


**SUMITOMO**  
**QT PUMP**



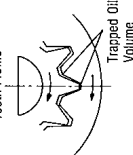
**Sumitomo Precision Products Co., Ltd.**

# QT PUMP SMOOTH AND SOOTHING TO YOUR EARS

## Ultra-low noise

QT Pumps feature internal gears that minimize operational noise level. The most outstanding characteristic is that because of their specially shaped tooth profile the noise level is almost constant even when the pressure becomes higher (see the following page).

Specially Shaped Tooth Profile



## Suitable for high pressure application

In addition to their simple mechanism, the friction surfaces of all parts are forced-lubricated with high pressure hydraulic fluid which eliminates the direct contact between parts and minimizes abrasion of functional parts (see the following page). The pumps can operate at a pressure as high as 250 kgf/cm<sup>2</sup> even with inferior lubrication fluids (water glycol, etc.) because of their extremely low abrasion.

## Free from pressure ripples

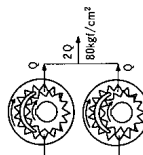
QT Pumps are almost free from pressure ripples, so they are ideal choice for systems which require accurate speed control such as machine tools.

## Wide application

With multi-stage construction, three pressure ratings. Low pressure : 70kgf/cm<sup>2</sup>, Medium pressure : 140kgf/cm<sup>2</sup>, High pressure : 210kgf/cm<sup>2</sup>, and double pumps (combination of single pumps) are available for wide applications. Plus newly developed "ultra QT pump", "mini QT" "QT pump with motor" and "standard power packs with QT pumps" are available.

### 80KGf/CM<sup>2</sup> SERIES

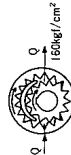
Low pressure pump  
Max. Pressure: 80kgf/cm<sup>2</sup>  
Capacity : 10~25cc/rev



- Two pairs of the same type of gears installed in one housing which doubles the flow amount while the maximum pressure is halved to 80kgf/cm<sup>2</sup>.

### 160KGf/CM<sup>2</sup> SERIES

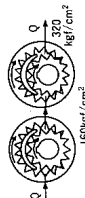
Medium pressure pump  
Max. Pressure: 160kgf/cm<sup>2</sup>  
Capacity : 5~12.5cc/rev



- A pair of gears for one stage with 160 kgf/cm<sup>2</sup> of maximum pressure.

### 320KGf/CM<sup>2</sup> SERIES

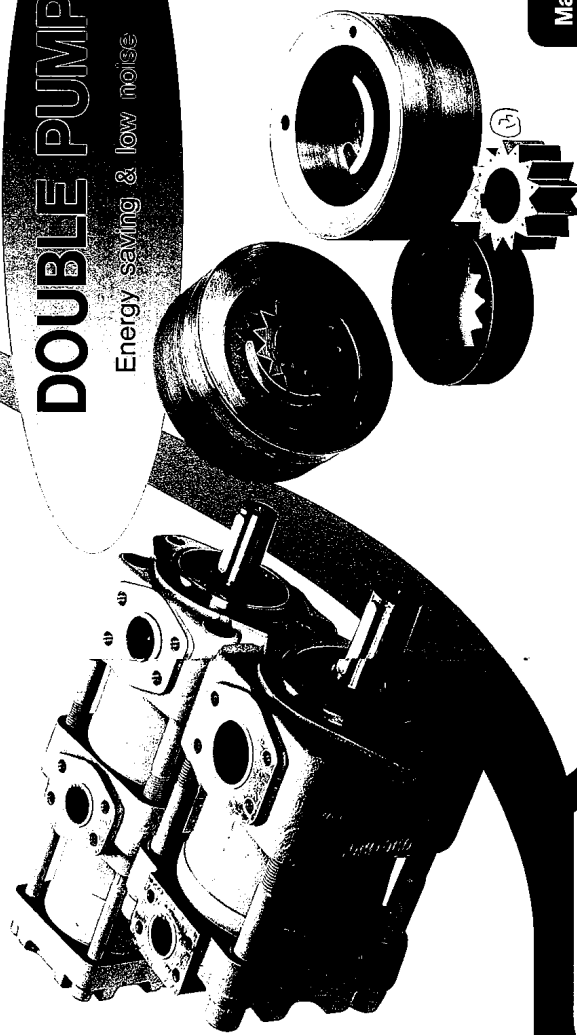
High pressure pump  
Max. Pressure: 320kgf/cm<sup>2</sup>  
Capacity : 5~12.5cc/rev



- Two pairs of gears arranged in series. The pressure discharged from the first pair of gears (160kgf/cm<sup>2</sup>) is delivered to the next pair to generate maximum pressure of 320kgf/cm<sup>2</sup>.

## DOUBLE PUMP

Energy saving & low noise



## QT PUMP WITH MOTOR

Handy, low-noise

## MINI-QT

Smaller delivery (4cc/rev.)

## ULTRA-QT

Quieter

## STANDARD POWER PACK WITH QT PUMP

Multi-function with low-noise

## Manufacture and Sales Network of QT Pumps

- Japan and South-East Asia — Sumitomo Precision Products Co., Ltd.
- U.S.A. and Canada — Delaval
- Germany and Europe — Blicher K. B.
- Switzerland and Europe — Truninger A. G.

# QT Single pump

## Model Number

**QT 4 3-25 F-※-A**

|                         |                                         |
|-------------------------|-----------------------------------------|
| Model Number            | Design Number                           |
| Size                    | Optional Specifications                 |
| Pressure Rating         | Direction of Rotation and Port Position |
| 1. low pressure pump    | See the figure on the right             |
| 2. medium pressure pump | Theoretical Displacement (cc/rev)       |
| 3. high pressure pump   |                                         |

## Graphical symbol



## Piping flanges (to be ordered separately)

See page 16 for details

## Mounting foot (to be ordered separately)

| Port position      | Direction of rotation | Right   | Left |
|--------------------|-----------------------|---------|------|
| Same direction     | in ↓ out ↑            | no code | L    |
| Opposite direction | in ↓ out ↓            | F       | E    |

## Optional Specifications

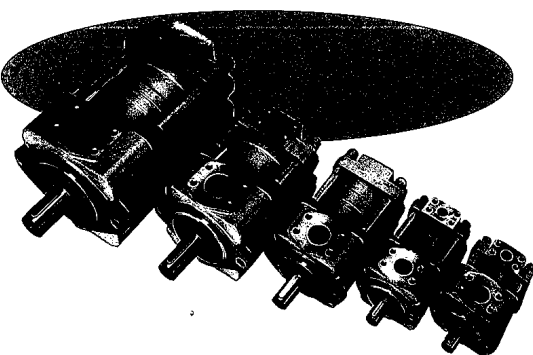
H : Shaft seal for high suction pressure (up to 2kgf/cm<sup>2</sup>)

V : Viton seal for phosphate ester fluid

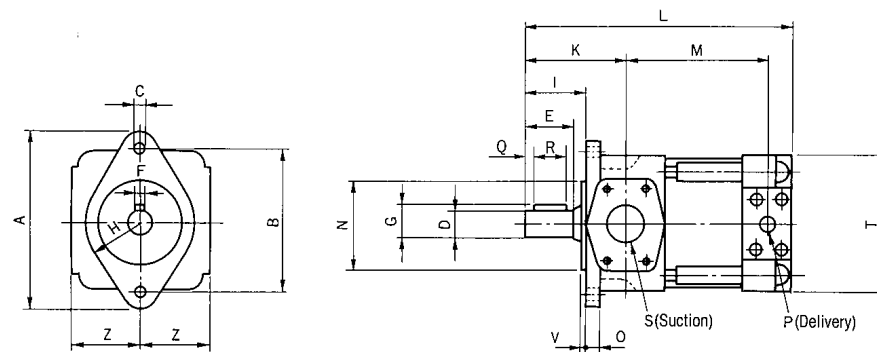
S※ : Other options

## Mini-QT Pump

QT22-4 and QT23-4 are Mini QT's.



## Dimensions



## Single Pumps

| Delivery ℓ/min. (at the rated pressure) |         |          |         | Pump Model                           |      |                                       |      |                                       |      |       |  | Maximum speed<br>rpm |
|-----------------------------------------|---------|----------|---------|--------------------------------------|------|---------------------------------------|------|---------------------------------------|------|-------|--|----------------------|
| 6P Motor                                |         | 4P Motor |         | Low pressure pump                    |      | Medium pressure pump                  |      | High pressure pump                    |      |       |  |                      |
| 50Hz                                    | 60Hz    | 50Hz     | 60Hz    | Rated pressure 63kgf/cm <sup>2</sup> | N    | Rated pressure 140kgf/cm <sup>2</sup> | N    | Rated pressure 250kgf/cm <sup>2</sup> | N    |       |  |                      |
| 1000rpm                                 | 1200rpm | 1500rpm  | 1800rpm | Max. pressure 80kgf/cm <sup>2</sup>  | (KW) | Max. pressure 160kgf/cm <sup>2</sup>  | (KW) | Max. pressure 320kgf/cm <sup>2</sup>  | (KW) |       |  |                      |
| —                                       | —       | 3.6      | 5.1     |                                      |      | QT22-4 ※                              | 2.0  | QT23-4 ※                              | 3.1  | 1,800 |  |                      |
| 1.7                                     | 2.9     | 4.7      | 6.4     |                                      |      | QT22-5 ※                              | 2.4  | QT23-5 ※                              | 4.3  |       |  |                      |
| 2.9                                     | 4.4     | 6.5      | 8.5     |                                      |      | QT22-6.3 ※                            | 2.9  | QT23-6.3 ※                            | 5.2  |       |  |                      |
| 4.5                                     | 6.3     | 8.9      | 11.4    |                                      |      | QT22-8 ※                              | 3.7  | QT23-8 ※                              | 6.5  |       |  |                      |
| 4.7                                     | 6.9     | 10.3     | 13.6    |                                      |      | QT32-10 ※                             | 4.6  | QT33-10                               | 8.3  | 1,800 |  |                      |
| 7.3                                     | 10.0    | 14.2     | 18.3    |                                      |      | QT32-12.5 ※                           | 5.8  | QT33-12.5                             | 10.4 |       |  |                      |
| 10.3                                    | 13.6    | 18.7     | 23.7    |                                      |      | QT32-16 ※                             | 7.1  | QT33-16                               | 12.8 |       |  |                      |
| 13.2                                    | 17.6    | 24.2     | 30.6    | QT31-20 ※                            | 4.5  | QT42-20                               | 9.2  | QT43-20                               | 16.5 |       |  |                      |
| 18.0                                    | 23.3    | 31.4     | 39.3    | QT31-25 ※                            | 5.6  | QT42-25                               | 11.4 | QT43-25                               | 20.4 | 1,800 |  |                      |
| 25.2                                    | 32.0    | 42.2     | 52.2    | QT31-31.5 ※                          | 6.9  | QT42-31.5                             | 14.6 | QT43-31.5                             | 26.1 |       |  |                      |
| 30.2                                    | 38.4    | 50.8     | 63.1    | QT41-40                              | 8.9  | QT52-40                               | 17.7 | QT53-40                               | 31.6 |       |  |                      |
| 41.5                                    | 52.0    | 67.8     | 83.4    | QT41-50                              | 11.0 | QT52-50                               | 22.6 | QT53-50                               | 40.5 |       |  |                      |
| 54.5                                    | 67.6    | 87.3     | 106.8   | QT41-63                              | 14.1 | QT52-63                               | 28.3 | QT53-63                               | 50.7 | 1,800 |  |                      |
| 65.3                                    | 82.0    | 107.1    | 131.9   | QT51-80                              | 17.0 | QT62-80                               | 35.6 | QT63-80                               | 63.7 |       |  |                      |
| 86.1                                    | 107.0   | 138.3    | 169.3   | QT51-100                             | 21.7 | QT62-100                              | 44.6 | QT63-100                              | 80.0 |       |  |                      |
| 109.8                                   | 135.4   | 173.8    | 212.0   | QT51-125                             | 27.1 | QT62-125                              | 54.9 | QT63-125                              | 98.4 |       |  |                      |
| 148.2                                   | 180.2   | 228.3    | 276.4   | QT61-160                             | 34.0 |                                       |      |                                       |      | 1,800 |  |                      |
| 189.8                                   | 230.2   | 290.7    | 351.2   | QT61-200                             | 42.5 |                                       |      |                                       |      |       |  |                      |
| 237.2                                   | 287.0   | 361.8    | 436.6   | QT61-250                             | 52.1 |                                       |      |                                       |      |       |  |                      |
|                                         |         |          |         |                                      |      |                                       |      |                                       |      |       |  |                      |

## Note:

The power consumption N is at rated pressure of 1,800r.p.m. and fluid viscosity of 30-80 cSt. See the following pages about power consumption and delivery at the rated pressure.

CCW rotation of high pressure pumps are optional.

Mini QT's must be used at the speed between 1,500~1,800r.p.m.

QT23-4

Rated pressure: 210kgf/cm<sup>2</sup>  
Maximum pressure: 250kgf/cm<sup>2</sup>

| Size            |               | QT2※-                |      | QT3※-                |      |      | QT4※-                |      |      | QT5※-                |      |      | QT6※-                |       |       |
|-----------------|---------------|----------------------|------|----------------------|------|------|----------------------|------|------|----------------------|------|------|----------------------|-------|-------|
| Type            |               | 22-                  | 23-  | 31-                  | 32-  | 33-  | 41-                  | 42-  | 43-  | 51-                  | 52-  | 53-  | 61-                  | 62-   | 63-   |
| Foot type       |               | QF-2                 |      | QF-3                 |      |      | QF-4                 |      |      | QF-5                 |      |      | QF-6                 |       |       |
| Port Connection | Threaded type | Suction(S)           |      | OGT-08 (1")          |      |      | OGT-10 (1 1/4")      |      |      | OGT-12 (1 1/2")      |      |      | OGT-16 (2")          |       |       |
|                 | Delivery(D)   | OGT-04 (1/2")        |      | OGT-06 (3/4")        |      |      | OGT-08 (1")          |      |      | OGT-10 (1 1/4")      |      |      | OGT-12 (1 1/2")      |       |       |
|                 | Welding type  | Suction(S)           |      | OGW-08 (1")          |      |      | OGW-10 (1 1/4")      |      |      | OGW-12 (1 1/2")      |      |      | OGW-16 (2")          |       |       |
|                 | Delivery(D)   | OGW-04 (1/2")        |      | OGW-06 (3/4")        |      |      | OGW-08 (1")          |      |      | OGW-10 (1 1/4")      |      |      | OGW-12 (1 1/2")      |       |       |
| Pump body       | A             | 120                  |      | 134                  |      |      | 172                  |      |      | 214                  |      |      | 266                  |       |       |
|                 | B             | 100                  |      | 106                  |      |      | 146                  |      |      | 181                  |      |      | 229                  |       |       |
|                 | C             | 9.0                  |      | 11.5                 |      |      | 14.5                 |      |      | 18.5                 |      |      | 23.0                 |       |       |
|                 | H             | 40                   |      | 50                   |      |      | 62.5                 |      |      | 75                   |      |      | 95                   |       |       |
|                 | I             | 42                   |      | 48                   |      |      | 68                   |      |      | 92                   |      |      | 92                   |       |       |
|                 | K             | 77                   |      | 90                   |      |      | 115                  |      |      | 145                  |      |      | 154                  |       |       |
|                 | L             | 187                  | 170  | 205                  | 226  | 205  | 250                  | 283  | 256  | 312                  | 347  | 313  | 383                  | 415   | 463   |
|                 | M             | 90.5                 | 73.5 | 108.5                | 115  | 94   | 139                  | 141  | 114  | 170                  | 170  | 136  | 206                  | 216.5 | 264.5 |
|                 | N             | 63.0 ± 0.05          |      | 82.55 ± 0.05         |      |      | 101.6 ± 0.05         |      |      | 127.0 ± 0.05         |      |      | 152.4 ± 0.05         |       |       |
|                 | O             | 12                   |      | 12                   |      |      | 16                   |      |      | 20                   |      |      | 24                   |       |       |
|                 | T             | 95                   |      | 115                  |      |      | 139                  |      |      | 170                  |      |      | 216                  |       |       |
|                 | V             | 4                    |      | 4                    |      |      | 7                    |      |      | 7                    |      |      | 7                    |       |       |
|                 | Z             | 50                   |      | 60                   |      |      | 75                   |      |      | 93                   |      |      | 118                  |       |       |
| Shaft           | D             | 20 + 0.009 / - 0.004 |      | 25 + 0.009 / - 0.004 |      |      | 32 + 0.011 / - 0.005 |      |      | 40 + 0.011 / - 0.005 |      |      | 50 + 0.011 / - 0.005 |       |       |
|                 | E             | 36                   |      | 42                   |      |      | 58                   |      |      | 82                   |      |      | 82                   |       |       |
|                 | F             | 6 ± 0.03             |      | 8 ± 0.036            |      |      | 10 ± 0.036           |      |      | 12 ± 0.043           |      |      | 14 ± 0.043           |       |       |
|                 | G             | 22.4                 |      | 28.1                 |      |      | 35.0                 |      |      | 43.0                 |      |      | 53.5                 |       |       |
|                 | Q             | 4                    |      | 3                    |      |      | 4                    |      |      | 6                    |      |      | 6                    |       |       |
|                 | R             | 28                   |      | 36                   |      |      | 50                   |      |      | 70                   |      |      | 70                   |       |       |
| Weight (kg)     |               | —                    | 6.8  | 8.0                  | 13.1 | 11.7 | 14.2                 | 22.9 | 20.5 | 23.3                 | 43.0 | 38.3 | 48.4                 | 88.0  | 99.0  |

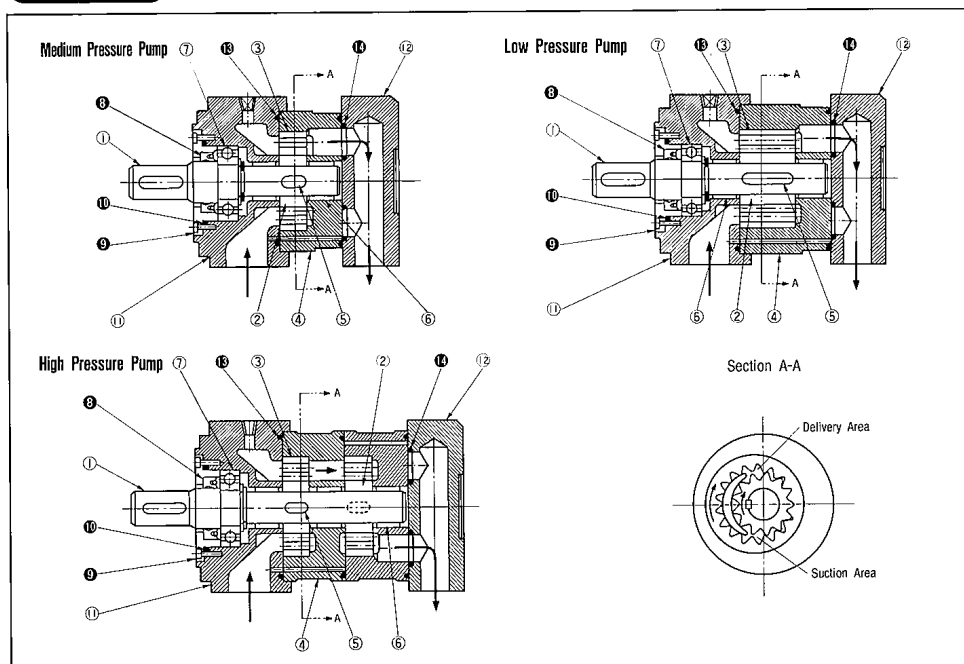
## Note:

A flange kit consists of flanges for the inlet and outlet, "O" rings and bolts. "F" dimension of welding type flanges are smaller by one size than those of threaded ones.

※ indicates "Pump with Motor" is available

# QT Single Pump

## Construction



## Parts

| No. | Part Name    | Quantity |        |      | No. | Part Name    | Quantity |        |      |
|-----|--------------|----------|--------|------|-----|--------------|----------|--------|------|
|     |              | Low      | Medium | High |     |              | Low      | Medium | High |
| 1   | Shaft        | 1        | 1      | 1    | 8   | Shaft Seal   | 1        | 1      | 1    |
| 2   | Pinion Gear  | 1        | 1      | 2    | 9   | Seal Housing | 1        | 1      | 1    |
| 3   | Ring Gear    | 2        | 1      | 2    | 10  | "O" Ring     | 1        | 1      | 1    |
| 4   | Gear Housing | 1        | 1      | 2    | 11  | Front Cover  | 1        | 1      | 1    |
| 5   | Key          | 1        | 1      | 2    | 12  | End Cover    | 1        | 1      | 1    |
| 6   | Bearing      | 2        | 2      | 3    | 13  | "O" Ring     | 1        | 2      | 2    |
| 7   | Ball Bearing | 1        | 1      | 1    | 14  | "O" Ring     | 2        | 2      | 2    |

Note: Same parts are used in the same size pump.

## Seals

| No. | Part Name        | Quantity   |      | Model 2       | Model 3    | Model 4    | Model 5         | Model 6       |
|-----|------------------|------------|------|---------------|------------|------------|-----------------|---------------|
|     |                  | Low/Medium | High |               |            |            |                 |               |
| 8-9 | Seal Housing Set | Standard   | 1    | 09-0554-2     | 09-0554-3  | 09-0554-4  | 09-0554-5       | 09-0554-6     |
|     |                  | Model H    | 1    | 09-0554-2H    | 09-0554-3H | 09-0554-4H | 09-0554-5H      | 09-0554-6H    |
| 10  | "O" Ring         | 1          | 1    | ARP568-128    | ARP568-133 | ARP568-145 | JIS W1516-G14   | JIS W1516-G17 |
| 13  | "O" Ring         | 2          | 3    | S-75          | S-95       | S-120      | S-150           | S-188         |
| 14  | "O" Ring         | 2          | 2    | JIS W1516-P12 | ARP568-118 | ARP568-121 | JIS B2401-1BP34 | ARP568-223    |

## Standard Spares

Standard spares consist of a shaft seal and seal housing. For convenience and reliability shaft seal and seal housing set (8,9) must be replaced when changing shaft seals.

## Performance

### Low Pressure Pump

Refer to "guide for performance table" on page 17. Data are based on fluid viscosity of 40cSt.

| Speed<br>(r.p.m.) | Pump<br>Model No. | Theoretical<br>Displacement<br>(cc/rev) | Delivery (l/min)    |                      |                      |                      |                      |                      | Power Consumption(KW) |                      |                      |                      |                      |                      |
|-------------------|-------------------|-----------------------------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                   |                   |                                         | 5kg/cm <sup>2</sup> | 20kg/cm <sup>2</sup> | 35kg/cm <sup>2</sup> | 50kg/cm <sup>2</sup> | 70kg/cm <sup>2</sup> | 80kg/cm <sup>2</sup> | 5kg/cm <sup>2</sup>   | 20kg/cm <sup>2</sup> | 35kg/cm <sup>2</sup> | 50kg/cm <sup>2</sup> | 70kg/cm <sup>2</sup> | 80kg/cm <sup>2</sup> |
| 1000              | QT31              | 20                                      | 19.8                | 19.1                 | 18.4                 | 17.7                 | 16.8                 | 16.3                 | 0.33                  | 0.86                 | 1.40                 | 1.93                 | 2.64                 | 3.00                 |
|                   |                   | 25                                      | 25.2                | 24.9                 | 24.2                 | 23.4                 | 22.7                 | 21.7                 | 0.42                  | 1.08                 | 1.75                 | 2.42                 | 3.31                 | 3.76                 |
|                   |                   | 31.5                                    | 31.2                | 30.9                 | 30.1                 | 29.3                 | 28.4                 | 27.3                 | 0.51                  | 1.33                 | 2.16                 | 2.99                 | 4.07                 | 4.62                 |
|                   | QT41              | 40                                      | 40.6                | 40.1                 | 38.5                 | 36.9                 | 35.3                 | 33.2                 | 0.66                  | 1.72                 | 2.78                 | 3.84                 | 5.26                 | 5.97                 |
|                   |                   | 50                                      | 50.2                | 49.7                 | 48.1                 | 46.5                 | 44.9                 | 42.8                 | 0.82                  | 2.12                 | 3.42                 | 4.72                 | 6.46                 | 7.33                 |
|                   |                   | 63                                      | 64.6                | 64.1                 | 62.5                 | 60.9                 | 59.3                 | 57.2                 | 1.05                  | 2.71                 | 4.37                 | 6.03                 | 8.25                 | 9.36                 |
|                   | QT51              | 80                                      | 78.4                | 77.7                 | 75.5                 | 73.4                 | 71.3                 | 68.4                 | 1.27                  | 3.27                 | 5.28                 | 7.28                 | 9.96                 | 11.29                |
|                   |                   | 100                                     | 101.0               | 100.3                | 98.1                 | 96.0                 | 93.9                 | 91.0                 | 1.63                  | 4.19                 | 6.75                 | 9.31                 | 12.73                | 14.43                |
|                   |                   | 125                                     | 127.0               | 126.3                | 124.1                | 122.0                | 119.9                | 117.0                | 2.04                  | 5.23                 | 8.43                 | 11.63                | 15.89                | 18.02                |
|                   | QT61              | 160                                     | 160.2               | 159.3                | 156.4                | 153.6                | 150.7                | 146.9                | 2.56                  | 6.56                 | 10.56                | 14.57                | 19.90                | 22.57                |
|                   |                   | 200                                     | 201.8               | 200.9                | 198.0                | 195.2                | 192.3                | 188.5                | 3.21                  | 8.21                 | 13.22                | 18.22                | 24.89                | 28.23                |
|                   |                   | 250                                     | 249.2               | 248.3                | 245.4                | 242.6                | 239.7                | 235.9                | 3.95                  | 10.09                | 16.22                | 22.35                | 30.53                | 34.62                |
| 1200              | QT31              | 20                                      | 20.0                | 23.8                 | 23.1                 | 22.4                 | 21.7                 | 20.8                 | 0.43                  | 1.07                 | 1.71                 | 2.35                 | 3.21                 | 3.63                 |
|                   |                   | 25                                      | 25.2                | 30.0                 | 29.2                 | 28.5                 | 27.7                 | 26.7                 | 0.54                  | 1.34                 | 2.14                 | 2.94                 | 4.01                 | 4.55                 |
|                   |                   | 31.5                                    | 31.2                | 37.2                 | 36.3                 | 35.5                 | 34.7                 | 33.5                 | 0.66                  | 1.65                 | 2.64                 | 3.62                 | 4.94                 | 5.59                 |
|                   | QT41              | 40                                      | 40.6                | 48.2                 | 46.3                 | 45.0                 | 43.4                 | 41.3                 | 0.86                  | 2.13                 | 3.41                 | 4.68                 | 6.37                 | 7.22                 |
|                   |                   | 50                                      | 50.2                | 59.7                 | 58.1                 | 56.5                 | 55.0                 | 52.8                 | 1.06                  | 2.62                 | 4.19                 | 5.75                 | 7.83                 | 8.87                 |
|                   |                   | 63                                      | 64.6                | 77.0                 | 75.4                 | 73.8                 | 72.2                 | 70.1                 | 1.36                  | 3.35                 | 5.35                 | 7.34                 | 10.00                | 11.33                |
|                   | QT51              | 80                                      | 78.4                | 93.4                 | 91.2                 | 89.1                 | 86.9                 | 84.1                 | 1.64                  | 4.05                 | 6.46                 | 8.86                 | 12.07                | 13.67                |
|                   |                   | 100                                     | 101.0               | 120.5                | 118.3                | 116.2                | 114.1                | 111.2                | 2.11                  | 5.18                 | 8.26                 | 11.33                | 15.43                | 17.48                |
|                   |                   | 125                                     | 127.0               | 151.7                | 149.5                | 147.4                | 145.3                | 142.4                | 2.64                  | 6.48                 | 10.32                | 14.15                | 19.27                | 21.83                |
|                   | QT61              | 160                                     | 160.2               | 191.3                | 188.4                | 185.6                | 182.7                | 178.9                | 3.32                  | 8.13                 | 12.93                | 17.73                | 24.13                | 27.34                |
|                   |                   | 200                                     | 201.8               | 241.2                | 238.4                | 235.5                | 232.7                | 228.9                | 4.17                  | 10.17                | 16.18                | 22.18                | 30.19                | 34.19                |
|                   |                   | 250                                     | 249.2               | 298.1                | 295.2                | 292.4                | 289.5                | 285.7                | 5.13                  | 12.50                | 19.96                | 27.22                | 37.03                | 41.94                |
| 1500              | QT31              | 20                                      | 20.0                | 29.8                 | 29.1                 | 28.4                 | 27.7                 | 26.8                 | 0.59                  | 1.40                 | 2.20                 | 3.00                 | 4.07                 | 4.60                 |
|                   |                   | 25                                      | 25.2                | 37.5                 | 36.8                 | 36.0                 | 35.3                 | 34.3                 | 0.75                  | 1.75                 | 2.75                 | 3.75                 | 5.09                 | 5.76                 |
|                   |                   | 31.5                                    | 31.2                | 46.5                 | 45.7                 | 44.9                 | 44.0                 | 42.9                 | 0.92                  | 2.15                 | 3.39                 | 4.62                 | 6.26                 | 7.08                 |
|                   | QT41              | 40                                      | 40.6                | 60.4                 | 58.8                 | 57.2                 | 55.6                 | 53.5                 | 1.20                  | 2.79                 | 4.38                 | 5.97                 | 8.09                 | 9.15                 |
|                   |                   | 50                                      | 50.2                | 74.8                 | 73.2                 | 71.6                 | 70.0                 | 67.9                 | 1.47                  | 3.43                 | 5.38                 | 7.33                 | 9.94                 | 11.24                |
|                   |                   | 63                                      | 64.6                | 96.4                 | 94.8                 | 93.2                 | 91.6                 | 89.5                 | 1.89                  | 4.38                 | 6.68                 | 9.37                 | 12.69                | 14.36                |
|                   | QT51              | 80                                      | 78.4                | 116.9                | 114.7                | 112.6                | 110.5                | 107.6                | 2.29                  | 5.30                 | 8.30                 | 11.31                | 15.32                | 17.32                |
|                   |                   | 100                                     | 101.0               | 150.8                | 148.6                | 146.5                | 144.4                | 141.5                | 2.94                  | 6.78                 | 10.62                | 14.46                | 19.59                | 22.15                |
|                   |                   | 125                                     | 127.0               | 189.8                | 187.6                | 185.5                | 183.4                | 180.5                | 3.68                  | 8.46                 | 13.27                | 18.07                | 24.46                | 27.66                |
|                   | QT61              | 160                                     | 160.2               | 239.4                | 236.5                | 233.7                | 230.8                | 227.0                | 4.63                  | 10.63                | 16.63                | 22.64                | 30.64                | 34.64                |
|                   |                   | 200                                     | 201.8               | 301.8                | 298.9                | 296.1                | 293.2                | 289.4                | 5.81                  | 13.31                | 20.82                | 28.32                | 38.33                | 43.33                |
|                   |                   | 250                                     | 249.2               | 372.9                | 370.0                | 367.2                | 364.3                | 360.5                | 7.15                  | 16.36                | 25.56                | 34.76                | 47.03                | 53.16                |
| 1800              | QT31              | 20                                      | 20.0                | 35.8                 | 35.1                 | 34.4                 | 33.7                 | 32.8                 | 0.78                  | 1.75                 | 2.71                 | 3.67                 | 4.95                 | 5.59                 |
|                   |                   | 25                                      | 25.2                | 45.1                 | 44.4                 | 43.6                 | 42.9                 | 41.9                 | 0.99                  | 2.19                 | 3.39                 | 4.59                 | 6.20                 | 7.00                 |
|                   |                   | 31.5                                    | 31.2                | 55.9                 | 55.0                 | 54.2                 | 53.4                 | 52.3                 | 1.22                  | 2.70                 | 4.18                 | 5.65                 | 7.63                 | 8.61                 |
|                   | QT41              | 40                                      | 40.6                | 72.8                 | 71.0                 | 69.4                 | 67.8                 | 65.7                 | 1.58                  | 3.49                 | 5.40                 | 7.30                 | 9.85                 | 11.12                |
|                   |                   | 50                                      | 50.2                | 89.8                 | 88.2                 | 86.7                 | 85.1                 | 83.0                 | 1.95                  | 4.29                 | 6.63                 | 8.98                 | 12.10                | 13.67                |
|                   |                   | 63                                      | 64.6                | 115.8                | 114.2                | 112.6                | 111.0                | 108.9                | 2.50                  | 5.49                 | 8.48                 | 11.47                | 15.46                | 17.45                |
|                   | QT51              | 80                                      | 78.4                | 140.4                | 138.3                | 136.1                | 134.0                | 131.1                | 3.02                  | 6.63                 | 10.24                | 13.85                | 18.66                | 21.07                |
|                   |                   | 100                                     | 101.0               | 181.1                | 178.9                | 176.8                | 174.7                | 171.8                | 3.89                  | 8.49                 | 13.10                | 17.72                | 23.86                | 26.94                |
|                   |                   | 125                                     | 127.0               | 225.7                | 223.6                | 221.5                | 219.4                | 216.5                | 4.87                  | 10.62                | 16.38                | 22.13                | 29.80                | 33.64                |
|                   | QT61              | 160                                     | 160.2               | 287.4                | 284.6                | 281.7                | 278.9                | 275.1                | 6.12                  | 13.33                | 20.53                | 27.73                | 37.34                | 42.14                |
|                   |                   | 200                                     | 201.8               | 362.3                | 359.4                | 356.6                | 353.7                | 349.9                | 7.69                  | 16.89                | 25.70                | 34.70                | 46.71                | 52.72                |
|                   |                   | 250                                     | 249.2               | 447.6                | 444.8                | 441.9                | 439.1                | 435.3                | 9.47                  | 20.51                | 31.55                | 42.60                | 57.32                | 64.69                |

※"QT pump with motor" is also available.

# QT Single Pump

## Performance

### ● Medium pressure pump

Refer to "guide for performance table" on page 17. Data are based on fluid viscosity of 40cSt.

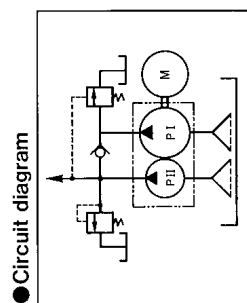
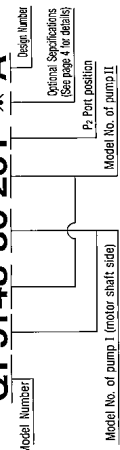
| Speed<br>(r.p.m) | Pump<br>Model No. | Theoretical<br>Displacement<br>(c.c./rev) | Delivery (ℓ /min)   |                      |                      |                       |                       |                       | Power Consumption(KW) |                      |                      |                       |                       |                       |       |
|------------------|-------------------|-------------------------------------------|---------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-------|
|                  |                   |                                           | 5kg/cm <sup>2</sup> | 35kg/cm <sup>2</sup> | 70kg/cm <sup>2</sup> | 105kg/cm <sup>2</sup> | 140kg/cm <sup>2</sup> | 160kg/cm <sup>2</sup> | 5kg/cm <sup>2</sup>   | 35kg/cm <sup>2</sup> | 70kg/cm <sup>2</sup> | 105kg/cm <sup>2</sup> | 140kg/cm <sup>2</sup> | 160kg/cm <sup>2</sup> |       |
| 1000             | QT22              | — 5                                       | 5.5                 | 5.4                  | 4.9                  | 4.2                   | 3.6                   | 3.0                   | 2.6                   | 0.08                 | 0.35                 | 0.67                  | 0.98                  | 1.29                  | 1.47  |
|                  |                   | — 6.3                                     | 6.7                 | 6.5                  | 5.9                  | 5.2                   | 4.5                   | 3.8                   | 3.4                   | 0.10                 | 0.43                 | 0.82                  | 1.20                  | 1.59                  | 1.81  |
|                  |                   | — 8                                       | 8.3                 | 8.2                  | 7.5                  | 6.7                   | 5.8                   | 5.0                   | 4.5                   | 0.13                 | 0.54                 | 1.02                  | 1.50                  | 1.99                  | 2.26  |
|                  | QT32              | — 10                                      | 10.0                | 9.9                  | 9.3                  | 8.6                   | 8.0                   | 7.3                   | 6.9                   | 0.16                 | 0.68                 | 1.29                  | 1.90                  | 2.50                  | 2.85  |
|                  |                   | — 12.5                                    | 12.6                | 12.5                 | 11.8                 | 11.0                  | 10.3                  | 9.5                   | 9.1                   | 0.21                 | 0.86                 | 1.62                  | 2.38                  | 3.14                  | 3.58  |
|                  |                   | — 16                                      | 15.6                | 15.5                 | 14.7                 | 13.8                  | 12.9                  | 11.9                  | 11.4                  | 0.25                 | 1.06                 | 2.00                  | 2.94                  | 3.88                  | 4.41  |
|                  | QT42              | — 20                                      | 20.3                | 20.0                 | 18.5                 | 16.8                  | 15.0                  | 13.2                  | 12.2                  | 0.33                 | 1.37                 | 2.59                  | 3.81                  | 5.02                  | 5.72  |
|                  |                   | — 25                                      | 25.1                | 24.8                 | 23.3                 | 21.6                  | 19.8                  | 18.0                  | 17.0                  | 0.41                 | 1.69                 | 3.19                  | 4.69                  | 6.19                  | 7.04  |
|                  |                   | — 31.5                                    | 32.3                | 32.0                 | 30.5                 | 28.8                  | 27.0                  | 25.2                  | 24.2                  | 0.52                 | 2.17                 | 4.09                  | 6.01                  | 7.93                  | 9.02  |
|                  | QT52              | — 40                                      | 39.2                | 38.9                 | 37.0                 | 34.7                  | 32.5                  | 30.2                  | 28.9                  | 0.63                 | 2.62                 | 4.94                  | 7.27                  | 9.59                  | 10.91 |
|                  |                   | — 50                                      | 50.5                | 50.2                 | 48.3                 | 46.0                  | 43.8                  | 41.5                  | 40.2                  | 0.81                 | 3.36                 | 6.34                  | 9.32                  | 12.30                 | 14.00 |
|                  |                   | — 63                                      | 63.5                | 63.2                 | 61.3                 | 59.0                  | 56.8                  | 54.5                  | 53.2                  | 1.02                 | 4.21                 | 7.94                  | 11.67                 | 15.40                 | 17.53 |
| 1200             | QT22              | — 80                                      | 80.1                | 79.6                 | 76.4                 | 72.7                  | 69.0                  | 65.3                  | 63.2                  | 1.28                 | 5.30                 | 9.98                  | 14.66                 | 19.34                 | 22.02 |
|                  |                   | — 100                                     | 100.9               | 100.4                | 97.2                 | 93.5                  | 89.8                  | 86.1                  | 84.0                  | 1.61                 | 6.65                 | 12.52                 | 18.39                 | 24.27                 | 27.62 |
|                  |                   | — 125                                     | 124.6               | 124.1                | 120.9                | 117.2                 | 113.5                 | 109.8                 | 107.7                 | 1.98                 | 8.18                 | 15.40                 | 22.63                 | 29.85                 | 33.98 |
|                  | QT32              | — 5                                       | 5.5                 | 6.5                  | 6.0                  | 5.4                   | 4.8                   | 4.2                   | 3.8                   | 0.11                 | 0.43                 | 0.81                  | 1.18                  | 1.56                  | 1.77  |
|                  |                   | — 6.3                                     | 6.7                 | 7.9                  | 7.3                  | 6.6                   | 5.9                   | 5.3                   | 4.9                   | 0.13                 | 0.53                 | 0.99                  | 1.46                  | 1.92                  | 2.18  |
|                  |                   | — 8                                       | 8.3                 | 9.8                  | 9.2                  | 8.4                   | 7.6                   | 6.8                   | 6.4                   | 0.17                 | 0.66                 | 1.24                  | 1.82                  | 2.40                  | 2.73  |
|                  | QT42              | — 10                                      | 10.0                | 11.9                 | 11.3                 | 10.7                  | 10.0                  | 9.4                   | 9.0                   | 0.21                 | 0.84                 | 1.56                  | 2.29                  | 3.02                  | 3.44  |
|                  |                   | — 12.5                                    | 12.6                | 15.0                 | 14.4                 | 13.6                  | 12.9                  | 12.2                  | 11.7                  | 0.27                 | 1.05                 | 1.96                  | 2.88                  | 3.79                  | 4.31  |
|                  |                   | — 16                                      | 15.6                | 18.6                 | 17.8                 | 17.0                  | 16.1                  | 15.2                  | 14.7                  | 0.33                 | 1.30                 | 2.42                  | 3.55                  | 4.68                  | 5.32  |
|                  | QT52              | — 20                                      | 20.3                | 24.1                 | 22.7                 | 21.0                  | 19.3                  | 17.6                  | 16.6                  | 0.43                 | 1.68                 | 3.14                  | 4.60                  | 6.06                  | 6.89  |
|                  |                   | — 25                                      | 25.1                | 29.9                 | 28.4                 | 26.7                  | 25.0                  | 23.3                  | 22.3                  | 0.53                 | 2.07                 | 3.87                  | 5.67                  | 7.46                  | 8.49  |
|                  |                   | — 31.5                                    | 32.3                | 38.5                 | 37.1                 | 35.4                  | 33.7                  | 32.0                  | 31.0                  | 0.68                 | 2.65                 | 4.95                  | 7.26                  | 9.56                  | 10.88 |
| 1500             | QT22              | — 40                                      | 39.2                | 46.7                 | 44.9                 | 42.7                  | 40.6                  | 38.4                  | 37.2                  | 0.82                 | 3.21                 | 5.99                  | 8.78                  | 11.57                 | 13.16 |
|                  |                   | — 50                                      | 50.5                | 60.3                 | 58.5                 | 55.3                  | 54.2                  | 52.0                  | 50.8                  | 1.05                 | 4.12                 | 7.69                  | 11.26                 | 14.83                 | 16.88 |
|                  |                   | — 63                                      | 63.5                | 75.9                 | 74.1                 | 71.9                  | 69.8                  | 67.6                  | 66.4                  | 1.32                 | 5.16                 | 9.63                  | 14.10                 | 18.58                 | 21.13 |
|                  | QT32              | — 80                                      | 80.1                | 95.6                 | 92.6                 | 89.1                  | 85.5                  | 82.0                  | 80.0                  | 1.66                 | 6.48                 | 12.10                 | 17.72                 | 23.34                 | 26.55 |
|                  |                   | — 100                                     | 100.9               | 120.6                | 117.6                | 114.0                 | 110.5                 | 107.0                 | 105.0                 | 2.09                 | 8.13                 | 15.18                 | 22.23                 | 29.28                 | 33.31 |
|                  |                   | — 125                                     | 124.6               | 149.0                | 146.0                | 142.5                 | 138.9                 | 135.4                 | 133.4                 | 2.58                 | 10.01                | 18.68                 | 27.35                 | 36.02                 | 40.97 |
|                  | QT42              | — 4                                       | 4.3                 | 6.4                  | 5.8                  | 5.2                   | 4.7                   | 4.1                   | 3.8                   | 0.13                 | 0.47                 | 0.87                  | 1.26                  | 1.66                  | 1.89  |
|                  |                   | — 5                                       | 5.5                 | 8.2                  | 7.7                  | 7.1                   | 6.6                   | 6.0                   | 5.7                   | 0.15                 | 0.55                 | 1.02                  | 1.49                  | 1.96                  | 2.23  |
|                  |                   | — 6.3                                     | 6.7                 | 9.9                  | 9.3                  | 8.7                   | 8.1                   | 7.4                   | 7.1                   | 0.19                 | 0.68                 | 1.26                  | 1.84                  | 2.42                  | 2.75  |
|                  | QT52              | — 8                                       | 8.3                 | 12.3                 | 11.7                 | 11.0                  | 10.2                  | 9.5                   | 9.1                   | 0.23                 | 0.85                 | 1.57                  | 2.30                  | 3.02                  | 3.43  |
|                  |                   | — 10                                      | 10.0                | 14.9                 | 14.4                 | 13.8                  | 13.2                  | 12.6                  | 12.2                  | 0.29                 | 1.07                 | 1.98                  | 2.90                  | 3.81                  | 4.33  |
|                  |                   | — 12.5                                    | 12.6                | 18.8                 | 18.2                 | 17.5                  | 16.8                  | 16.1                  | 15.7                  | 0.37                 | 1.35                 | 2.49                  | 3.63                  | 4.78                  | 5.43  |
| 1800             | QT22              | — 16                                      | 15.6                | 23.3                 | 22.6                 | 21.8                  | 21.0                  | 20.1                  | 19.7                  | 0.46                 | 1.66                 | 3.07                  | 4.48                  | 5.89                  | 6.70  |
|                  |                   | — 20                                      | 20.3                | 30.2                 | 28.9                 | 27.3                  | 25.7                  | 24.2                  | 23.2                  | 0.59                 | 2.16                 | 3.98                  | 5.81                  | 7.63                  | 8.68  |
|                  |                   | — 25                                      | 25.1                | 37.4                 | 36.1                 | 34.5                  | 32.9                  | 31.4                  | 30.5                  | 0.73                 | 2.66                 | 4.91                  | 7.16                  | 9.40                  | 10.69 |
|                  | QT32              | — 31.5                                    | 32.3                | 48.2                 | 46.9                 | 45.3                  | 43.7                  | 42.2                  | 41.3                  | 0.94                 | 3.41                 | 6.29                  | 9.17                  | 12.05                 | 13.69 |
|                  |                   | — 40                                      | 39.2                | 58.5                 | 56.8                 | 54.8                  | 52.8                  | 50.8                  | 49.7                  | 1.14                 | 4.13                 | 7.61                  | 11.09                 | 14.57                 | 16.56 |
|                  |                   | — 50                                      | 50.5                | 75.5                 | 73.8                 | 71.8                  | 69.8                  | 67.8                  | 66.6                  | 1.47                 | 5.29                 | 9.76                  | 14.23                 | 18.69                 | 21.24 |
|                  | QT42              | — 63                                      | 63.5                | 95.0                 | 93.3                 | 91.3                  | 89.3                  | 87.3                  | 86.1                  | 1.84                 | 6.63                 | 12.23                 | 17.82                 | 23.41                 | 26.61 |
|                  |                   | — 80                                      | 80.1                | 119.7                | 116.9                | 113.6                 | 110.3                 | 107.1                 | 105.2                 | 2.32                 | 8.34                 | 15.36                 | 22.39                 | 29.41                 | 33.42 |
|                  |                   | — 100                                     | 100.9               | 150.9                | 148.1                | 144.8                 | 141.5                 | 138.3                 | 136.4                 | 2.91                 | 10.47                | 19.28                 | 28.09                 | 36.90                 | 41.93 |
|                  | QT52              | — 125                                     | 124.6               | 186.4                | 183.6                | 180.4                 | 177.1                 | 173.8                 | 171.9                 | 3.59                 | 12.88                | 23.72                 | 34.56                 | 45.39                 | 51.59 |
|                  |                   | — 4                                       | 4.3                 | 7.5                  | 7.1                  | 6.5                   | 6.0                   | 5.5                   | 5.2                   | 0.17                 | 0.58                 | 1.05                  | 1.53                  | 2.01                  | 2.28  |
|                  |                   | — 5                                       | 5.5                 | 9.8                  | 9.4                  | 8.8                   | 8.3                   | 7.8                   | 7.5                   | 0.20                 | 0.68                 | 1.25                  | 1.81                  | 2.37                  | 2.70  |
| 2000             | QT22              | — 6.3                                     | 6.7                 | 11.9                 | 11.4                 | 10.8                  | 10.2                  | 9.6                   | 9.3                   | 0.25                 | 0.84                 | 1.53                  | 2.23                  | 2.92                  | 3.32  |
|                  |                   | — 8                                       | 8.3                 | 14.8                 | 14.3                 | 13.6                  | 12.9                  | 12.2                  | 11.8                  | 0.31                 | 1.05                 | 1.92                  | 2.78                  | 3.65                  | 4.15  |
|                  |                   | — 10                                      | 10.0                | 17.9                 | 17.4                 | 16.9                  | 16.3                  | 15.7                  | 15.4                  | 0.39                 | 1.32                 | 2.42                  | 3.51                  | 4.60                  | 5.23  |
|                  | QT32              | — 12.5                                    | 12.6                | 22.6                 | 22.0                 | 21.4                  | 20.7                  | 20.1                  | 19.7                  | 0.49                 | 1.66                 | 3.03                  | 4.41                  | 5.78                  | 6.56  |
|                  |                   | — 16                                      | 15.6                | 28.0                 | 27.3                 | 26.6                  | 25.8                  | 25.0                  | 24.6                  | 0.60                 | 2.05                 | 3.74                  | 5.44                  | 7.13                  | 8.09  |
|                  |                   | — 20                                      | 20.3                | 36.3                 | 35.1                 | 33.6                  | 32.1                  | 30.6                  | 29.8                  | 0.78                 | 2.66                 | 4.85                  | 7.04                  | 9.23                  | 10.48 |
|                  | QT42              | — 25                                      | 25.1                | 45.0                 | 43.7                 | 42.2                  | 40.6                  | 39.3                  | 39.4                  | 0.97                 | 3.28                 | 5.98                  | 8.68                  | 11.37                 | 12.92 |
|                  |                   | — 31.5                                    | 32.3                | 57.9                 | 56.7                 | 55.2                  | 53.7                  | 52.2                  | 51.4                  | 1.24                 | 4.21                 | 7.66                  | 11.12                 | 14.57                 | 16.55 |
|                  |                   | — 40                                      | 39.2                | 70.3                 | 68.7                 | 66.8                  | 64.9                  | 63.1                  | 62.0                  | 1.51                 | 5.09                 | 9.27                  | 13.45                 | 17.63                 | 20.02 |
|                  | QT52              | — 50                                      | 50.5                | 90.6                 | 89.0                 | 87.2                  | 85.3                  | 83.4                  | 82.3                  | 1.94                 | 6.53                 | 11.89                 | 17.25                 | 22.61                 | 25.67 |
|                  |                   | — 63                                      | 63.5                | 114.0                | 112.4                | 110.6                 | 108.7                 | 106.8                 | 105.7                 | 2.43                 | 8.19                 | 14.90                 | 21.61                 | 28.32                 | 32.15 |
|                  |                   | — 80                                      | 80.1                | 143.7                | 141.1                | 138.0                 | 135.0                 | 131.9                 | 130.1                 | 3.06                 | 10.29                | 18.72                 | 27.15                 | 35.68                 | 40.39 |
| 2200             | QT22              | — 100                                     | 100.9               | 181.2                | 178.5                | 175.5                 | 172.4                 | 169.3                 | 167.6                 | 3.85                 | 12.92                | 23.49                 | 34.06                 | 44.63                 | 50.68 |
|                  |                   | — 125                                     | 124.6               | 223.8                | 221.2                | 218.1                 | 215.1                 | 212.0                 | 210.2                 | 4.75                 | 15.90                | 28.90                 | 41.91                 | 54.91                 | 62.35 |
|                  |                   | — 4                                       | 4.3                 | 7.5                  | 7.1                  | 6.5                   | 6.0                   | 5.5                   | 5.2                   | 0.17                 | 0.58                 | 1.05                  | 1.53                  | 2.01                  | 2.28  |
|                  | QT32              | — 5                                       | 5.5                 | 9.8                  | 9.4                  | 8.8                   | 8.3                   | 7.8                   | 7.5                   | 0.20                 | 0.68                 | 1.25                  | 1.81                  | 2.37                  | 2.70  |
|                  |                   | — 6.3                                     | 6.7                 | 11.9                 | 11.4                 | 10.8                  | 10.2                  | 9.6                   | 9.3                   | 0.25                 | 0.84                 | 1.53                  | 2.23                  | 2.92                  | 3.32  |
|                  |                   | — 8                                       | 8.3                 | 14.8                 | 14.3                 | 13.6                  | 12.9                  | 12.2                  | 11.8                  | 0.31                 | 1.05                 | 1.92                  | 2.78                  | 3.65                  | 4.15  |
|                  | QT42              | — 10                                      | 10.0                | 17.9                 | 17.4                 | 16.9                  | 16.3                  | 15.7                  | 15.4                  | 0.39                 | 1.32                 | 2.42                  | 3.51                  | 4.60                  | 5.23  |
|                  |                   | — 12.5                                    | 12.6                | 22.6                 | 22.0                 | 21.4                  | 20.7                  | 20.1                  | 19.7                  | 0.49                 | 1.66                 | 3.03                  | 4.41                  | 5.78                  | 6.56  |
|                  |                   | — 16                                      | 15.6                | 28.0                 | 27.3                 | 26.6                  | 25.8                  | 25.0                  | 24.6                  | 0.60                 | 2.05                 | 3.74                  | 5.44                  | 7.13                  | 8.09  |
|                  | QT52              | — 20                                      | 20.3                | 36.3                 | 35.1                 | 33.6                  | 32.1                  | 30.6                  | 29.8                  | 0.78                 | 2.66                 | 4.85                  | 7.04                  | 9.23                  | 10.48 |
|                  |                   | — 25                                      | 25.1                | 45.0                 | 43.7                 | 42.2                  | 40.6                  | 39.3                  | 39.4                  | 0.97                 | 3.28                 | 5.98                  | 8.68                  | 11.37                 | 12.92 |
|                  |                   | — 31.5                                    | 32.3                | 57.9                 | 56.7                 | 55.2                  | 53.7                  | 52.2                  | 51.4                  | 1.24                 | 4.21                 | 7.66                  | 11.12                 | 14.57                 | 16.55 |
| 2500             | QT22              | — 40                                      | 39.2                | 70.3                 | 68.7                 | 66.8                  | 64.9                  | 63.1                  | 62.0                  | 1.51                 | 5.09                 | 9.27                  | 13.45                 | 17.63                 | 20.02 |
|                  |                   | — 50                                      | 50.5                | 90.6                 | 89.0                 | 87.2                  | 85.3                  | 83.4                  | 82.3                  | 1.94                 | 6.53                 | 11.89                 | 17.25                 | 22.61                 | 25.67 |
|                  |                   | — 63                                      | 63.5                | 114.0                | 112.4                | 110.6                 | 108.7                 | 106.8                 | 105.7                 | 2.43                 | 8.19                 | 14.90                 | 21.61                 | 28.32                 | 32.15 |
| 3000             | QT32              | — 80                                      | 80.1                | 143.7                | 141.1                | 138.0                 | 135.0                 | 131.9                 | 130.1                 | 3.06                 | 10.29                | 18.72                 | 27.15                 | 35.68                 | 40.39 |
|                  |                   | — 100                                     | 100.9               | 181.2                | 178.5                | 175.5                 | 172.4                 | 169.3                 | 167.6                 | 3.85                 | 12.92                | 23.49                 | 34.06                 | 44.63                 | 50.68 |
|                  |                   | — 125                                     | 124.6               | 223.8                | 221.2                | 218.1                 | 215.1                 | 212.0                 | 210.2                 | 4.75                 | 15.90                | 28.90                 | 41.91                 | 54.91                 | 62.35 |

# QT Double Pump

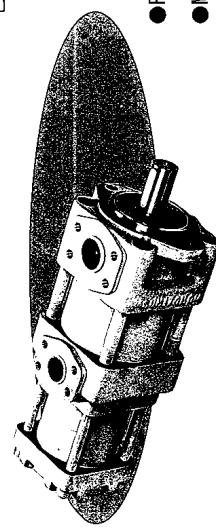
A double pump consists of two independent pumps each with an independent inlet.  
The unit houses a single driving shaft which drives both pumps.

Model Number

QT 5143-80-20 F-※-A



● Graphical symbol ● Circuit diagram



● Piping flanges (to be ordered separately)  
● Mounting foot (to be ordered separately) — See page 16 for details

## Standard Double Pumps

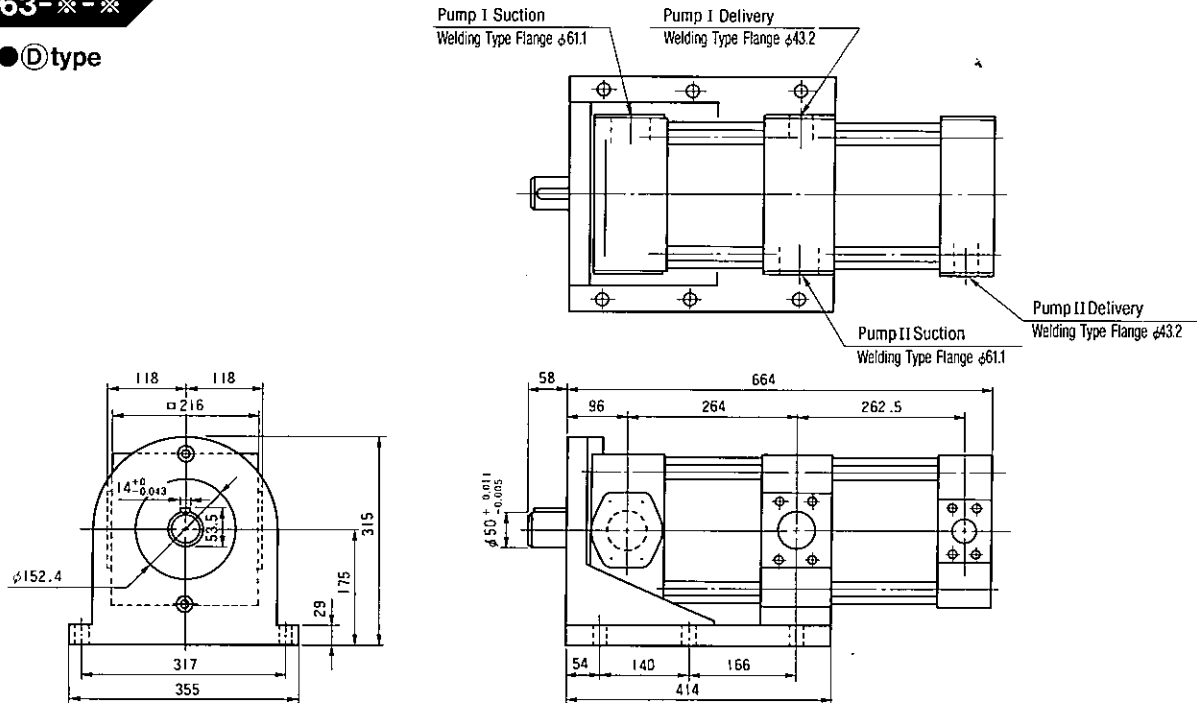
| Standard Double Pumps |     | Pump II   |    |            |    |            |    |          |    |            |    |             |    |
|-----------------------|-----|-----------|----|------------|----|------------|----|----------|----|------------|----|-------------|----|
| Pressure MPa/cm²      |     | 4/5/6.3/8 |    | 10/12.5/16 |    | 20/25/31.5 |    | 40/50/63 |    | 80/100/125 |    | 160/200/250 |    |
| 160                   | 200 | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
| 160                   | 200 | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
| 200                   | 250 | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
| 250                   |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 | 32         | 33 | 42         | 43 | 52       | 53 | 62         | 63 | 72          | 73 |
|                       |     | 22        | 23 |            |    |            |    |          |    |            |    |             |    |

# QT Double Pump

## Dimensions

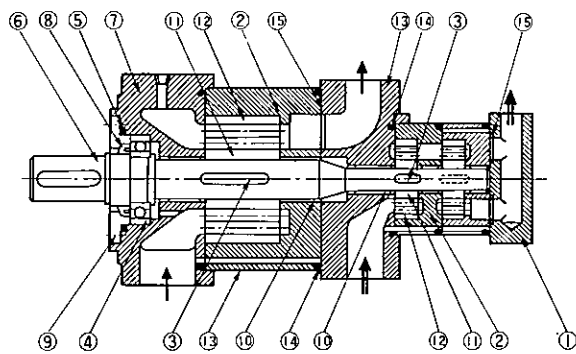
QT6363-※-※

●D type

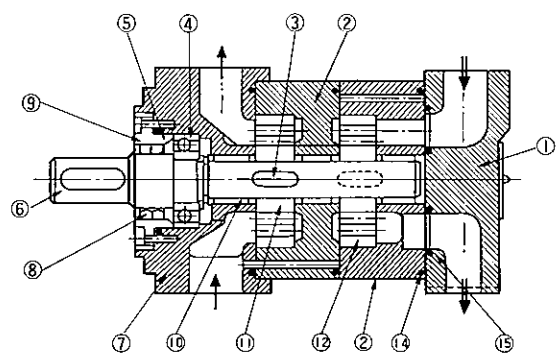


## Construction

●A、B、D type



●C type



## Parts

| No. | Parts Name   | No. | Parts Name    |
|-----|--------------|-----|---------------|
| 1   | End Cover    | 9   | Seal Housing  |
| 2   | Gear Housing | 10  | Bearing       |
| 3   | Key          | 11  | Pinion Gear   |
| 4   | Ball Bearing | 12  | Ring Gear     |
| 5   | "O" Ring     | 13  | Middle Flange |
| 6   | Shaft        | 14  | "O" Ring      |
| 7   | Front Cover  | 15  | "O" Ring      |
| 8   | Shaft Seal   |     |               |

## Standard Spares

Standard spares consist of a shaft seal and seal housing. For convenience and reliability shaft seal and seal housing set (8,9) must be replaced when changing shaft seals.

# How to use "performance table"

S: Kinematic viscosity (cSt.)

$W_1$ : Power consumption at pressure  $P_1$   
 $Q_1$ : Delivery at pressure  $P_1$   
 $N_2$ : Power consumption at pressure  $P_2$   
 $Q_2$ : Delivery at pressure  $P_2$   
 $P_X$  must be  $P_2 > P_X > P_1$

S: Kinematic viscosity (cSt.)

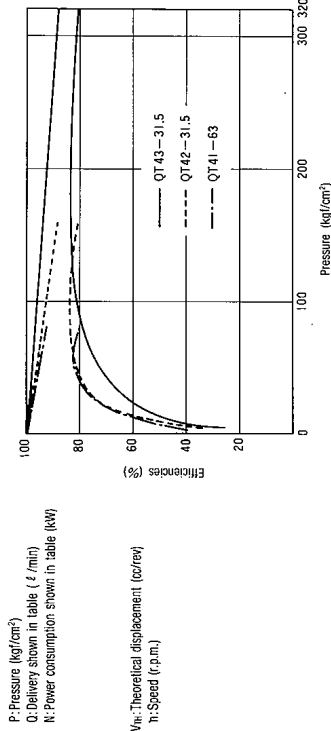
# How to obtain efficiency

$$\eta_0 = \frac{P \times Q}{612} \times \frac{1}{N}$$

$$n = \frac{Q}{V_{TL} \times n \times 10^{-3}}$$

$$\eta_m = \frac{\eta_0}{n_m}$$

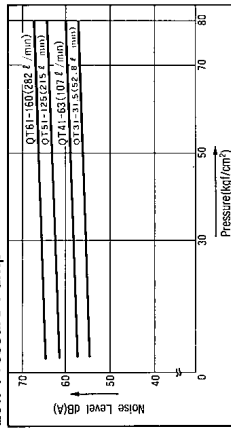
## Example of Efficiencies



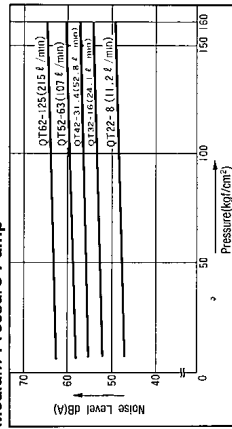


## ● Noise Level — Noise level does not rise in accordance with pressure.

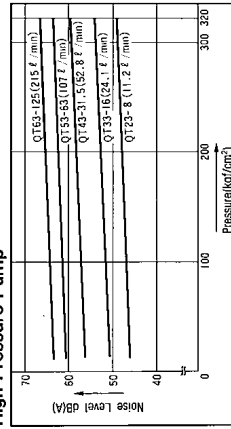
### Low Pressure Pump



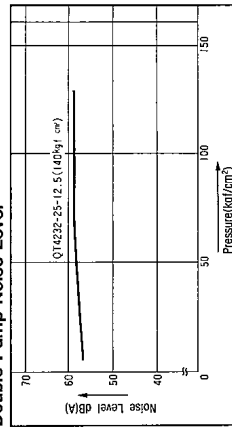
### Medium Pressure Pump



### High Pressure Pump



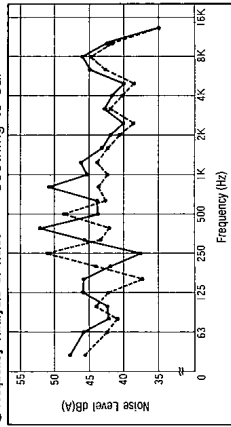
### Double Pump Noise Level



#### Measuring Conditions

Measured in: Anechoic chamber  
Distance: 1m  
Rpm: 1800r.p.m.  
Viscosity: 30—40cSt  
Fluid Temp.: 45—50°C  
Suction Press.: —0.1—0.2kg/cm²

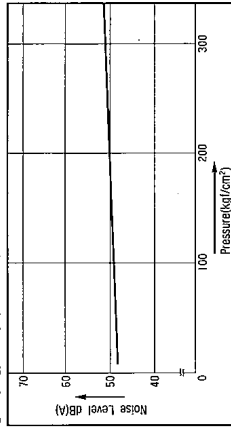
## ● Frequency Analysis of Noise — Soothing to ear —



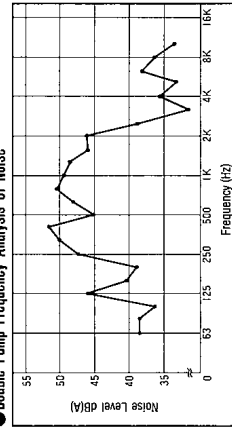
#### Measuring Conditions

Type: QT43-31.5  
Rpm: 1800r.p.m.  
Pressure: 250kg/cm²  
Viscosity: 40cSt (Fluid temperature 50°C)  
Distance: 1m

## Ultra QT Noise Level



## ● Double Pump Frequency Analysis of Noise



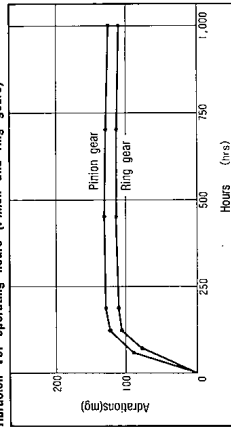
#### Measuring Conditions

Type: QT4232-25-12.5  
Rpm: 1800r.p.m.  
Pressure: 140kg/cm²  
Viscosity: 40cSt (Fluid temperature 50°C)  
Distance: 1m

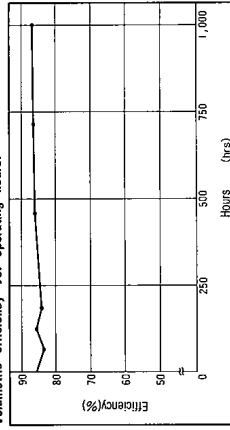
## ● Abrasion Resistance (With water glycol fluid)

Almost no abrasion is observed with water glycol fluid, which is less lubricative than ordinary mineral-based fluid.

### Abrasion Vs. operating hours (Pinion and ring gears)



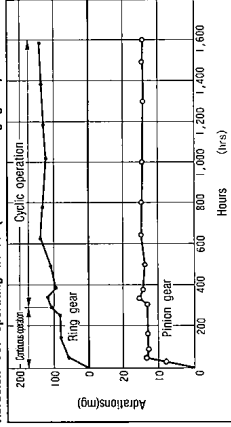
### Volumetric efficiency Vs. operating hours.



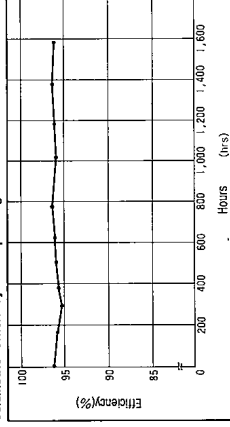
#### Conditions

Pump: QT43-25  
Hydraulic fluid: Water glycol (Hydro HAW) Matsumura  
Oil Research Corporation  
Pressure: 250kg/cm²  
Speed: 1200r.p.m.  
Oil temperature: 40°C—50°C

### Abrasion Vs. operating hours (Pinion and ring gears)



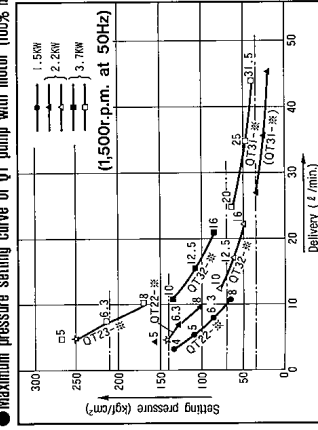
### Volumetric efficiency Vs. operating hours.



#### Conditions

Pump: QT52-63  
Hydraulic fluid: Hiland FRG-46  
Pressure: 125kg/cm²  
Speed: 1800r.p.m.  
Oil temperature: 40°C—50°C

## ● Maximum pressure setting curve of QT pump with motor (100% motor load)



☆ Indicates rated pressure.

Inertial Moment of Pump (GD<sup>2</sup>)

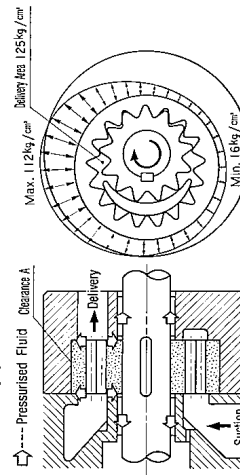
- Inertial moment of single pump.
- Add inertial moments of pump I and II to obtain that of double pump.

Unit : kg · m<sup>2</sup>

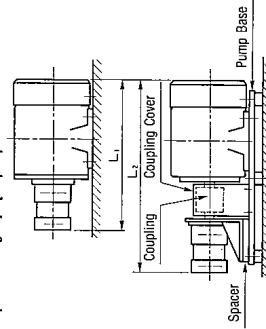
| Type      | GD <sup>2</sup>         | Type      | GD <sup>2</sup>         | Type      | GD <sup>2</sup>         |
|-----------|-------------------------|-----------|-------------------------|-----------|-------------------------|
|           |                         | QT22-5    | 1.93 × 10 <sup>-4</sup> | QT23-5    | 2.88 × 10 <sup>-4</sup> |
|           |                         | QT22-6.3  | 2.07 × 10 <sup>-4</sup> | QT23-6.3  | 3.15 × 10 <sup>-4</sup> |
|           |                         | QT22-8    | 2.47 × 10 <sup>-4</sup> | QT23-8    | 3.95 × 10 <sup>-4</sup> |
| QT31-20   | 8.29 × 10 <sup>-4</sup> | QT32-10   | 5.88 × 10 <sup>-4</sup> | QT33-10   | 8.88 × 10 <sup>-4</sup> |
| QT31-25   | 9.27 × 10 <sup>-4</sup> | QT32-12.5 | 6.37 × 10 <sup>-4</sup> | QT33-12.5 | 9.86 × 10 <sup>-4</sup> |
| QT31-31.5 | 1.04 × 10 <sup>-3</sup> | QT32-16   | 6.93 × 10 <sup>-4</sup> | QT33-16   | 1.10 × 10 <sup>-3</sup> |
| QT41-40   | 2.46 × 10 <sup>-3</sup> | QT42-20   | 1.68 × 10 <sup>-3</sup> | QT43-20   | 2.61 × 10 <sup>-3</sup> |
| QT41-50   | 2.76 × 10 <sup>-3</sup> | QT42-25   | 1.83 × 10 <sup>-3</sup> | QT43-25   | 2.91 × 10 <sup>-3</sup> |
| QT41-63   | 3.21 × 10 <sup>-3</sup> | QT42-31.5 | 2.06 × 10 <sup>-3</sup> | QT43-31.5 | 3.36 × 10 <sup>-3</sup> |
| QT51-80   | 8.47 × 10 <sup>-3</sup> | QT52-40   | 5.98 × 10 <sup>-2</sup> | QT53-40   | 9.05 × 10 <sup>-3</sup> |
| QT51-100  | 9.57 × 10 <sup>-3</sup> | QT52-50   | 6.53 × 10 <sup>-3</sup> | QT53-50   | 1.02 × 10 <sup>-2</sup> |
| QT51-125  | 1.09 × 10 <sup>-2</sup> | QT52-63   | 7.18 × 10 <sup>-3</sup> | QT53-63   | 1.14 × 10 <sup>-2</sup> |
| QT61-160  | 2.38 × 10 <sup>-2</sup> | QT62-80   | 1.61 × 10 <sup>-2</sup> | QT63-80   | 2.54 × 10 <sup>-2</sup> |
| QT61-200  | 2.70 × 10 <sup>-2</sup> | QT62-100  | 1.77 × 10 <sup>-2</sup> | QT63-100  | 2.87 × 10 <sup>-2</sup> |
| QT61-250  | 3.07 × 10 <sup>-2</sup> | QT62-125  | 1.95 × 10 <sup>-2</sup> | QT63-125  | 3.23 × 10 <sup>-2</sup> |

## Reference

## Lubrication by pressurised fluid



## Space saving by QT pump with motor



Unit : mm

|             | L <sub>1</sub> | L <sub>2</sub> |
|-------------|----------------|----------------|
| QTM22-※-1.5 | 406            | 490            |
| QTM22-※-2.2 | 436            | 541            |
| QTM32-※-2.2 | 465            | 576            |
| QTM23-※-3.7 | 507            | 591            |
| QTM32-※-3.7 | 486            | 591            |
| QTM31-※-3.7 | 507            | 612            |

## 1. Hydraulic Fluid

- Use hydraulic fluid with the viscosity of ISO VG46~68 (With viscosity index of more than 70kgf/cm<sup>2</sup> anti-wear hydraulic fluid of ISO VG46~68 is recommendable.)
- Consult the manufacturer in case nonflammable fluid (phosphate-ester, water-glycol, fatty ester, water in oil emulsion, etc) is used.
- Use clean fluid without foreign bodies or water. Whitened fluid indicates aeration and brown fluid deterioration.

## 2. Viscosity and Temperature of Fluid

- Viscosity : 20~500cSt.
- Temperature: 0°C~60°C

## 3. Suction Pressure

- Suction pressure must be within -0.3~+0.3kgf/cm<sup>2</sup>
- (Specify high suction pressure shaft seal if pump is used at suction pressure higher than +0.3kgf/cm<sup>2</sup>)

## 4. Filtration

- Fit a filter of 150 mesh or above in suction line. A 25μm in-line filter in delivery line or a magnet filter will extend pump life.

## 5. Installation and Alignment

- Mount pump on a base with sufficient rigidity.
- Pump must be so mounted that the suction port may be on either side or upper position.
- Eccentricity between shafts of pump and motor must be less than 0.05mm by using flexible coupling such as chain coupling. Avoid radial force on pump shaft.
- Coupling must go in and out on pump shaft smoothly.

## 6. Piping

- Use piping flanges.
- Piping size of suction line must be chosen to allow fluid flow of less than 1.5m/sec and suction pressure less than -0.3kgf/cm<sup>2</sup> piping must be as short as possible.
- Avoid push-or pull-force when using steel pipe.

## 7. Initial Start-Up

- For good lubrication between moving and stationary elements, pour fluid into the pump before use.
- To purge air in pump body, be sure to operate pump by an inching start (on and off) at unload.

## 8. Rotating Direction

- Clockwise (seen from shaft end) is standard. Counter clockwise optional.
- Check rotation direction by a moment start-up of motor.

## 9. Maximum Pressure

- Operation at maximum pressure must not exceed 1/3 of one cycle and 20 seconds.

## 10. Consult the manufacturer if disassembly is required.

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**Industrial Hydraulic Division**

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