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Distributed by:



# TSUBAKI HELICAL SHAFT-MOUNTED REDUCER SMR SERIES

NEW SERIES!!

DRAWING DATA



ELECTRONIC  
CATALOG



Note: In accordance with the policy of TSUBAKIMOTO CHAIN CO. to constantly improve its products, the specifications in this catalog are subject to change without notice.  
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## SMR SERIES

## SPACE SAVING

- Compact size allows installation when space is limited
- No mounting base required
- Installation direction and position on the drive shaft is freely selectable

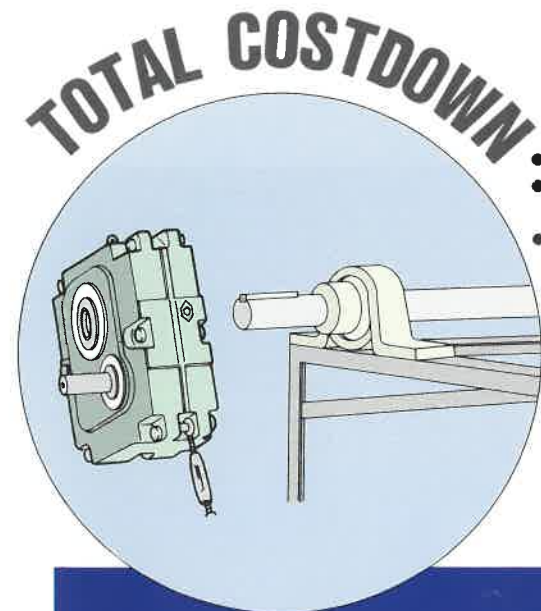
## ENERGY SAVING

- High-capacity helical gears allow highly-efficient power transmission
- Intermediate couplings and chain drives are not required for connection with the shaft
- Reduced material costs for the drive section parts and significant machining cost savings

## TIME SAVING

- Direct mount to the driven shaft means no alignment problems and significantly lower assembly costs.
- If a belt drive is used on the input side, adjustment of the total tension is simple.
- Installation requires just fastening of the tie rod

HELICAL SHAFT-MOUNTED REDUCER:  
OUR **SMR SERIES** WILL SAVE YOU  
MONEY!



- A new image for your machinery!!
- Make your machinery lighter and more compact!!
- Unitize your drive system parts!!



**A New Philosophy Gives Cost Reductions!**

## SMR SERIES

## New Models with Superior Handling

### WIDE SELECTION

You can select the best reducer from a variety of standard models.

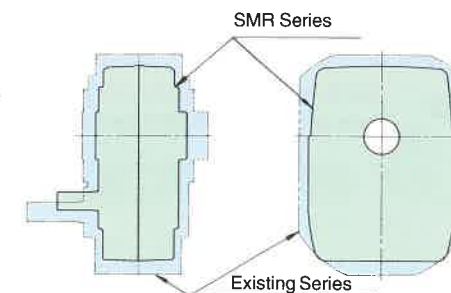
- **SIZE**  
13 sizes from SM100 to SM608
- **REDUCTION RATIO**  
Five ratios: 1/5, 1/12, 1/15, 1/20, and 1/25 (1/15 and 1/25 for SM407 to SM608)
- **TYPES**  
[S] Standard, [B] With Backstop Cam Clutch, [F] Face-Mount Type ([S] and [F] for SM100 and SM103)
- **OUTPUT SHAFT**  
[S] Straight Shaft, [T] Tapered Bush Type ([S] only for SM100 and SM103, and [T] only for SM407 to SM608)

● : Standard Models

| Type | Output Shaft | Size | 100 | 103 | 107 | 115 | 203 | 207 | 215 | 307 | 315 | 407 | 415 | 507 | 608 |
|------|--------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| S    | S            |      | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|      | T            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| B    | S            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | T            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| F    | S            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | T            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |

### COMPACT

The case-hardened helical gear assemblies with high power transmission capacities are 30% lighter and more compact than those of the existing series.



### Tapered BUSH

Up to three different standard bore diameters are available for each size. Removal from the driven shaft is now much easier (only straight shaft types are available for SM100 and SM103)

● : Straight Shaft, ■ : Tapered Bush

| Size | 100 | 103 | 107 | 115 | 203 | 207 | 215 | 307 | 315 | 407 | 415 | 507 | 608 |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 25   | ●   |     |     |     |     |     |     |     |     |     |     |     |     |
| 30   | ●   |     |     |     |     |     |     |     |     |     |     |     |     |
| 35   | ●   |     |     |     |     |     |     |     |     |     |     |     |     |
| 40   | ●   |     |     |     |     |     |     |     |     |     |     |     |     |
| 45   | ●   |     |     |     |     |     |     |     |     |     |     |     |     |
| 50   | ●   |     |     |     |     |     |     |     |     |     |     |     |     |
| 55   |     | ●   |     |     |     |     |     |     |     |     |     |     |     |
| 60   |     | ●   |     |     |     |     |     |     |     |     |     |     |     |
| 65   |     | ●   |     |     |     |     |     |     |     |     |     |     |     |
| 70   |     | ●   |     |     |     |     |     |     |     |     |     |     |     |
| 75   |     | ●   |     |     |     |     |     |     |     |     |     |     |     |
| 80   |     | ●   |     |     |     |     |     |     |     |     |     |     |     |

### UPGRADED

Numerous standardized maintenance functions.

- Simple tie rod connection (SM100 to SM315)
- Filled with oil before shipment (grease for SM100 and SM103)
- Oil gauge window is standard (SM107 to SM608)
- Tapped at input shaft end (SM107 to SM608)
- ISO key (ISO R773, JIS B 1301-1976)

### QUICK DELIVERY

Quick delivery for standard models.

| Type | Output Shaft | Size | 100 | 103 | 107 | 115 | 203 | 207 | 215 | 307 | 315 | 407 | 415 | 507 | 608 |
|------|--------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| S    | S            |      | ○   | ○   | ○   | ○   | ○   | ○   | ○   | ○   | ○   | ○   | ○   | ○   | ○   |
|      | T            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| B    | S            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | T            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| F    | S            |      | △   | △   | △   | △   | △   | △   | △   | △   | △   | △   | △   | △   | △   |
|      | T            |      |     |     |     |     |     |     |     |     |     |     |     |     |     |

○ : Immediate delivery item  
△ : Short lead time item

## Contents

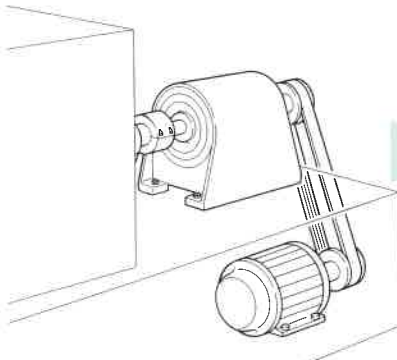
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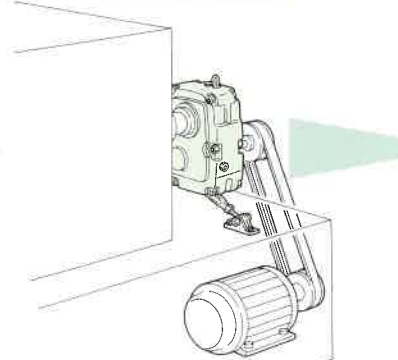


# APPLICATIONS

## S TYPE

Standard specifications with tie rod mounting!  
The basic type of the SMR series

Conventional Mounting


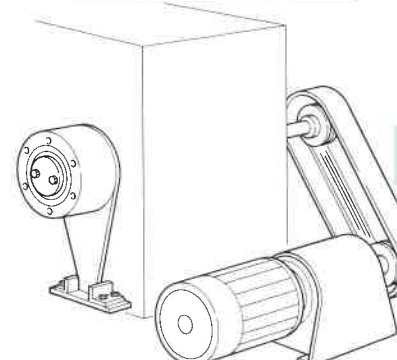
Shaft Mounting


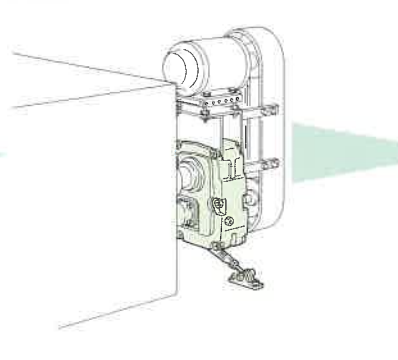
Benefits

- A new image for your machinery
- Lower machine manufacturing costs
  - Less framework required
  - Fewer parts required
  - Faster assembly
- Machine downsizing
- Easy V-belt adjustment

## B TYPE

Built-in backstop cam clutch specification with tie rod mounting;  
one of Tsubaki's unique combinations!

Conventional Mounting


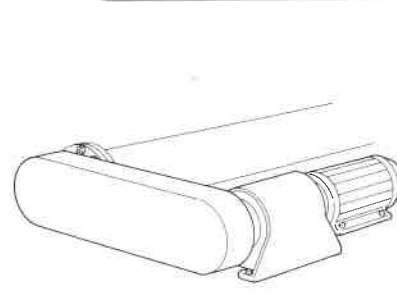
Shaft Mounting


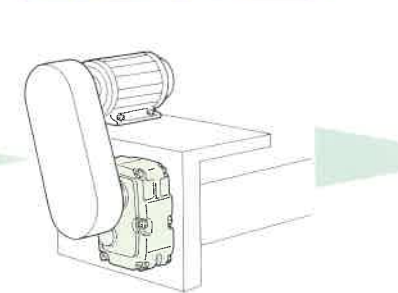
Benefits

- Built-in backstop cam clutch
- Reduced motor drive system and material costs
- Driving system unified with motor mount base
- Reduction in space required for drive unit

## F TYPE

Face-mount for greatest space savings

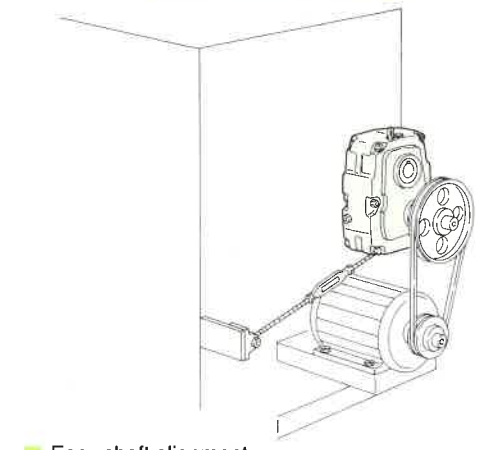
Existing Mounting


Shaft Mounting


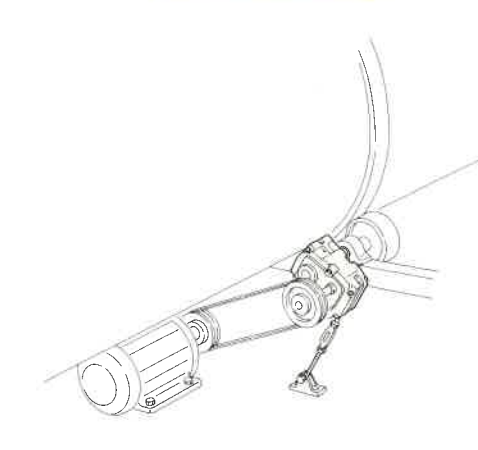
Benefits

- No driven shaft bearing
- Reduction in space required for drive unit
- Reduced machining costs
- Lower machine weight

# SMR SERIES

Horizontal shaft mixer


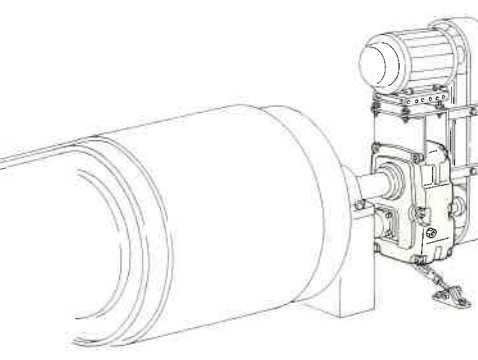
- Easy shaft alignment and assembly
- Compact driving system
- Space saving
- Common base not required

Drier


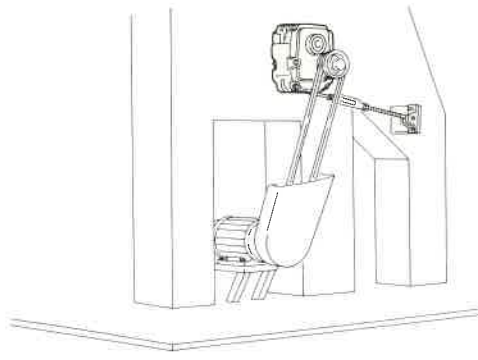
- Dual drive possible
- lower noise drive
- Dustproof
- Easy repair and maintenance

Others

- Flow conveyors
- Food processing machines
- Horizontal conveyors
- Packaging machines
- Wood working machines

Belt conveyor


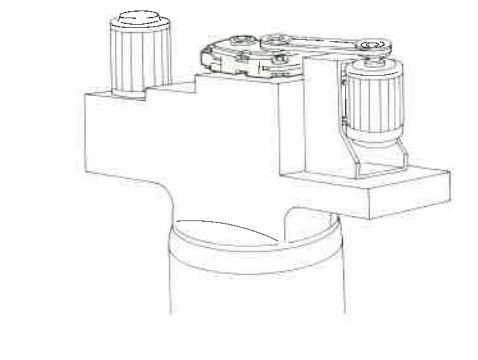
- Easy V-belt adjustment
- Simple repair and maintenance
- Built-in backstop
- Driving system unified with motor mount base

Bucket elevator


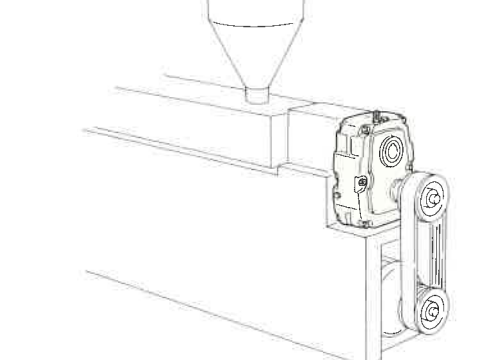
- Lower driving noise
- Built-in backstop
- Easy V-belt adjustment
- More platform room

Other

- Lifter
- Drum drive
- Amusement park rides
- Bucket conveyor
- Vertical conveyor

Agitator


- Reduced driving system height
- No coupling devices, and no shaft alignment problems
- Possible dual drive
- Easy adjustment of propeller shaft height

Extruder


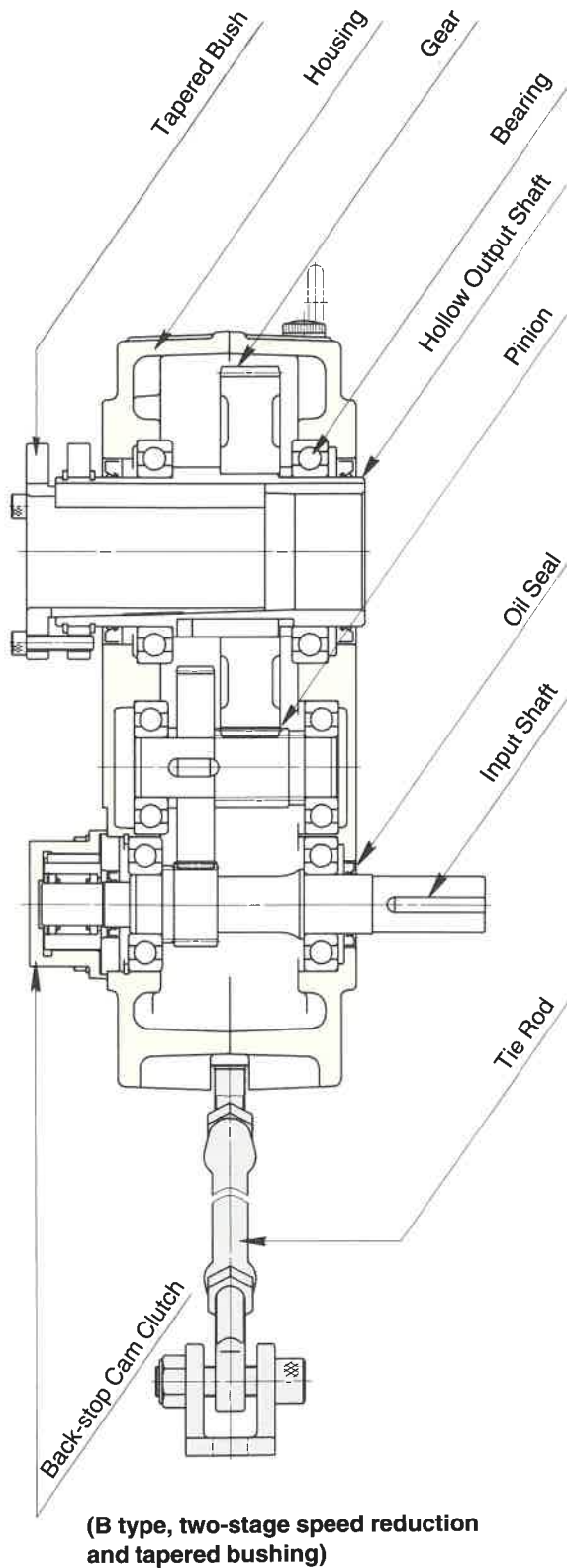
- Easier screw replacement
- Simple supply of water coolant
- Reduced driving system length
- Face mount to the thrust box

Other

- Cart drives
- Screw conveyors
- Overhead conveyor
- Special vehicles
- Winches

CONSTRUCTION

- Pinion & Gear**  
SMR Helical gears to AGMA Standard guarantee high power transmission capacity and improve wear resistance. All alloy steel pinions and gears are case-hardened, and all of the first stage pinions of models SM107 to SM315, and all of the pinions and gears of models SM407 to SM608 have a ground finish.
- Housings**  
Housings are made of high-grade cast iron (cast aluminum for SM100 and SM103) and are sturdy enough to withstand severe driving conditions.
- Input Shaft**  
The input shaft and pinion are one piece, and very strong. Sections that slide with oil seals have a ground finish.
- Hollow Output Shaft**  
The hollow output shaft is made of carbon steel and has thick walls for toughness. For the straight-shaft type, a stopper ring groove is provided to facilitate easy fastening and dismounting of the reducer.
- Tapered Bushing (SM107 to SM608)**  
A tapered bushing made of high-grade ductile cast iron maintains good contact between the output hollow shaft and the drive shaft. Tapped holes for dismounting are provided to facilitate removal of the reducer.
- Bearings**  
Long-life ball bearings and tapered roller bearings are used for their strength in withstanding radial loads.
- Oil Seals**  
Double-lip oil seals are used to keep out dust and prevent oil leakage.
- Tie Rod (S and B type)**  
One-piece tie-rod plates and housing directly connects with the tie rod to facilitate mounting the reducer (Pat. P) (SM100 to SM315). The tie rod bolt facilitates adjustment of belt tension during belt driving.
- Back-stop Cam Clutch (B type)**  
Tsubaki Backstop Cam Clutches built into the opposite end of the input shaft or at the intermediate shaft are the product of our extensive engineering knowledge and experience. The B-type has also been designed for easy handling and maintenance



MODEL IDENTIFICATION

SMR SERIES

Model Identification

SM 307 S 25 S 85  
SM 307 B 20 T 80 - L  
SM 307 F 12 T 75

SMR Series

Size

Type

S : Standard specifications (with tie rod)  
B : Backstop Cam Clutch Type (with tie rod)  
F : Face-mount Type (without tie rod)

Direction of Cam Clutch Overrunning

Output shaft bore diameter

Output shaft specifications

Reduction ratio

\*Indicated only on B types

L : Output shaft anti-clockwise  
R : Output shaft clockwise

S : Straight shaft  
T : Tapered Bush

Models and delivery

| Output shaft diameter |   | Size  |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                       |   | SM100 | SM103 | SM107 | SM115 | SM203 | SM207 | SM215 | SM307 | SM315 | SM407 | SM415 | SM507 | SM608 |
| Type                  |   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| S                     | S | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | —     | —     | —     | —     |
|                       | T | —     | —     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | △     | △     | △     | △     |
| B                     | S | —     | —     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | —     | —     | —     | —     |
|                       | T | —     | —     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | △     | △     | △     | △     |
| F                     | S | △     | △     | △     | △     | △     | △     | △     | △     | △     | —     | —     | —     | —     |
|                       | T | —     | —     | △     | △     | △     | △     | △     | △     | △     | △     | △     | △     | △     |

○ : Immediate delivery item △ : Short lead time item

Reduction ratio

| Size                    | SM100~315         | SM407~608 |
|-------------------------|-------------------|-----------|
| Nominal reduction ratio | 5, 12, 15, 20, 25 | 15, 25    |

Note : Only reduction ratios 1/12, 1/15, 1/20 and 1/25 are available for the SM107 to SM315 B types. For the actual reduction ratio, refer to page 23.

Output shaft bore diameter

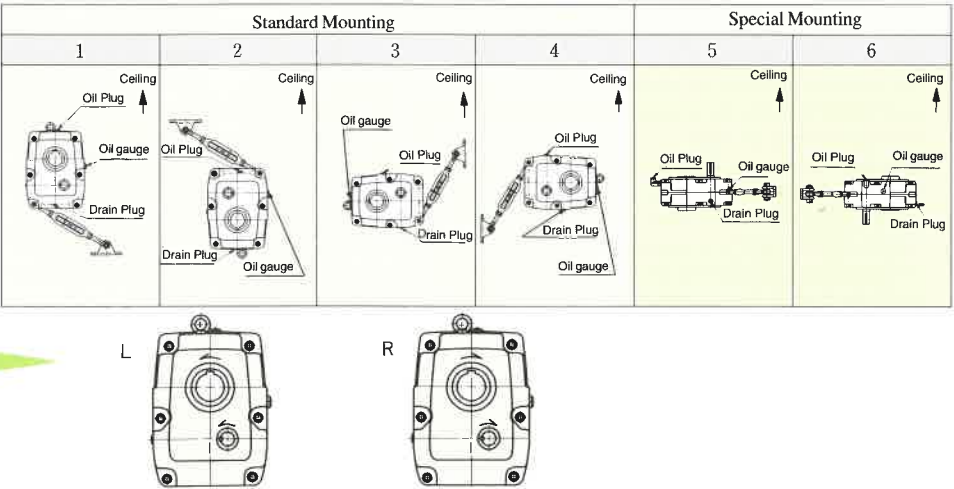
| Output shaft bore diameter | Size | SM100 | SM103 | SM107 | SM115 | SM203 | SM207 | SM215 | SM307 | SM315 | SM407 | SM415 | SM507 | SM608 |
|----------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 25                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 30                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 35                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 40                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 45                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 50                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 55                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 60                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 65                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 70                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 75                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 80                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 85                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 90                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 95                         | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 110                        | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 120                        | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 135                        | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 165                        | ●    |       |       |       |       |       |       |       |       |       |       |       |       |       |

● : Straight Shaft Type ◀ : Tapered Bush Type

- Note :
- Only straight shaft types are available for SM100 and SM103.
  - Only tapered bush types are available for SM407 to SM608.

Mounting Examples

Various mountings are available. Specify the required mounting when ordering. If you do not specify, the specifications, the mounting shown in Example 1 will be shipped. For special mountings including those with inclinations of more than  $\pm 10^\circ$  in each example, contact Tsubaki regarding the position of the oil gauges and plugs.



R and L denote clockwise and anti-clockwise rotation of the output shaft viewed from input shaft side.



SELECTION

Procedure

1. Decide the SF (service factor)

- The power transmission capacities shown in this catalog are based on an SF of 1.0. It is necessary to select an SF to adjust the power transmission capacity depending on the nature of the load, the driving hours and the number of on and off cycles. Determine the SF using the table below. Refer to the table on page 8 to determine the type of load. If your application is not listed, select a similar machine or consult Tsubaki.

| Load Classification   | Electric Motor            |            |            |
|-----------------------|---------------------------|------------|------------|
|                       | Operating Hours (per day) |            |            |
|                       | 2                         | 10         | 24         |
| U : Uniform Load      | 1.00(1.25)                | 1.00(1.25) | 1.25(1.50) |
| M : Medium Shock Load | 1.00(1.25)                | 1.25(1.50) | 1.50(1.75) |
| H : Heavy Shock Load  | 1.25(1.50)                | 1.50(1.75) | 1.75(2.00) |

Note : For 10 or more on and off cycles per day, apply the figures in parentheses.

2. Determine the compensation kW and compensation torque from formula 1.

Compensation kW = Load kW × SF ..... Formula 1  
Compensation torque = Load Torque × SF ..... Formula 1

3. Determine the reduction ratio

Determine the reduction ratio from the input and output rpm to be used. Select the reduction ratio for the range of output rpm shown below. For output rpm exceeding the range in the table, consult Tsubaki.

| Reduction Ratio | Output rpm   |
|-----------------|--------------|
| 1/5             | 360 rpm max. |
| 1/12            | 150 rpm max. |
| 1/15            | 120 rpm max. |
| 1/20            | 90 rpm max.  |
| 1/25            | 70 rpm max.  |

Note : For the actual reduction ratio, refer to page 23.  
Reduction ratio 1/5 is not available for the B type.

4. Determine the Size

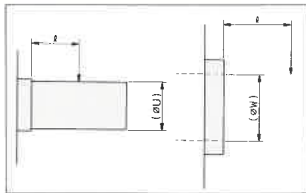
- Choose a size that satisfies the power transmission capacity, thermal rating, and input and output shaft radial load at the specified output rpm and reduction ratio.  
(Confirm power transmission capacity)
- Temporarily select a size that satisfies the compensation kW and torque at the specified output rpm and reduction ratio. For an output rpm of 100 or lower with a reduction ratio 1/5, or an output rpm of 10 or lower with reduction ratio 1/12 to 1/25, select the output shaft torque at 100 rpm and 10 rpm respectively.  
(Check thermal rating)
- For continuous driving for more than 2 hours, check that the actual load kW for the size temporarily selected above is below the thermal rating (refer to page 11). If it is not satisfied, select the next larger size or consult Tsubaki. Consult Tsubaki regarding intermittent drive at high ambient temperature.  
(Check input and output shaft radial load)
- Check that the input and output shaft radial load of the temporarily selected size is below the allowable radial load (refer to page 8) using formula 2. For ordinary use of Types B and S, radial load due to the weight of the SMR and tie rod tension can be neglected in formula 2.

Allowable radial load  $\geq \frac{T \times f \times Lf}{R}$  ..... Formula 2

T : Compensation input and output shaft torque N·m (Kgf·m)  
f : OHL factor (overhung load factor) refer to the table below.  
Lf : Working position factor (refer to the table below).  
R : Pitch circle diameter of sprocket, pulley etc.

OHL factor (f)

|                               |      |
|-------------------------------|------|
| Chain                         | 1.0  |
| Gear, Tooth-Belt              | 1.25 |
| V-Belt, Reinforced Tooth-Belt | 1.5  |



Note: When the driven shaft faces the input shaft side or goes through the output hollow shaft, make sure that each diameter of input shaft pulley or sprocket does not interfere with the driven shaft. Decide the diameter of pulley and sprocket referring to GK and the driven shaft diameter listed in the dimensions table.

Note: When output shaft radial load of SM107 to SM315 does not satisfy allowable radial load or when thrust load is separately applied, output shaft tapered roller bearings can be made to order. Refer to page 29 for details (output shaft tapered roller bearings are standard for SM407 to SM608).

5. Determine the Type

- From the operating conditions, decide :  
(S) ... Standard  
(B) ... With back stop cam clutch  
(F) ... Face Mount type

Note: (Type B is not available for SM100 and SM103)

6. Determine the Specifications of the Output Shaft and Hollow Bore

- From the operating conditions, decide :  
(S) ... Straight shaft type  
(T) ... Tapered bush type and hollow shaft bore diameter (refer to page 6).

Note: For SM100 and SM103 only the straight shaft type is available and for SM407 to SM608 only the tapered bush type is available.

7. Mounting

- Determine the mounting from the mounting examples (refer to page 6). If the inclination of SM100 and SM103 exceeds ±10° from the angle specified in each example, consult Tsubaki for the specifications (SM100 and SM103 can be mounted in any direction). Refer to the section on handling on pages 25 and 26 for details of mounting.

8. Cam Clutch Overrunning

- Determine the direction of cam clutch overrun (refer to page 6).

SMR SERIES

Load Classification by Machine

| Application             |                                                                                                              | Load Classification | Application        |                                                                                         | Load Classification | Application             |                                                                                                            | Load Classification | Application      |                                                                         | Load Classification |
|-------------------------|--------------------------------------------------------------------------------------------------------------|---------------------|--------------------|-----------------------------------------------------------------------------------------|---------------------|-------------------------|------------------------------------------------------------------------------------------------------------|---------------------|------------------|-------------------------------------------------------------------------|---------------------|
|                         |                                                                                                              |                     |                    |                                                                                         |                     |                         |                                                                                                            |                     |                  |                                                                         |                     |
| Conveyor (uniform load) | Assembly, Belt, Bucket, Chain, Flight, Flow, Screw, Assembly                                                 | U                   | Plastic Extruder   | Coating, Film, Mixer (low viscosity), Sheet                                             | U                   | Steel, Iron Non-Ferrous | Roll, Slitter, Wire Drawing, Wire Winding                                                                  | M                   | Sugar Industry   | Cane Knife, Crystal Mixer                                               | M                   |
|                         |                                                                                                              |                     |                    | Mixer (high viscosity)                                                                  | M                   |                         | Draw Bench (cart drive), Forming Machine                                                                   | H                   |                  | Sugar Mill                                                              | H                   |
| Conveyor (heavy load)   | Belt, Bucket, Chain, Flight, Flow, Screw                                                                     | M                   | Rubber Extruder    | Sheet                                                                                   | M                   | *                       | Drier, Pinch Roll, Roller Table, Scrubber Roll                                                             | *                   | Separator        | Screen (air, horizontal type), Classifier                               | U                   |
|                         |                                                                                                              |                     |                    | Mixer                                                                                   | H                   |                         |                                                                                                            |                     |                  | Screen (rotary type for sand and stone)                                 | M                   |
| Escalator Elevator      | Escalators                                                                                                   | U                   | Crushing Machinery | Ball Mill, Cement Mill, Crusher (sugar mill), Kiln, Rod Mill, Sand Muller, Scum Breaker | M                   | Pulp and Paper          | Bleaching Machine, Condensing Screw Conveyor, Press, Suction Roll                                          | U                   | Pumps            | Centrifugal and Rotary Types (gear)                                     | U                   |
|                         | Centrifugal Discharge Type, Belt Bucket (uniform load)                                                       | U                   |                    |                                                                                         |                     |                         | Agitator, Barker (mechanical and hydraulic), Beater/Pulper, Calendar, Drier, Reel (pulp), Washer Thickener | M                   |                  | Reciprocal Type, Variable Vane                                          | M                   |
| Feeder                  | Gravity Discharge, Flight Chain Bucket (uniform load), Belt Bucket (uniform load), Chain Bucket (heavy load) | H                   | Sanitary Equipment | Crusher (ore, plastic, rubber, stone, used paper) Hammer Mill, Tumbler Mill             | H                   | Textiles                | Conveyor (log), Cutter, Drum Barker, Plater, Super Calendar                                                | H                   | Ceramic Industry | Pug Mill, Ceramic Machines, Kneader                                     | M                   |
|                         | Disk, Stoker                                                                                                 | U                   |                    | Bar Screens, Clarifier, Grit Collector, Sludge Scraper, Dirt Conveyor                   | U                   |                         |                                                                                                            |                     |                  | Brick Press, Briquette Machine                                          | H                   |
| Agitator                | Apron, Belt, Cold, Dust, Screw                                                                               | M                   | Machine Tools      | Belt Press, Clarifier, Flash Mixer, Flocculator, Thickener, Vacuum Filter               | M                   | Food                    | Carding Machine, Drier, Dyeing Machinery, Spinners, Tender Frames, Washer                                  | M                   | Other            | Centrifugal Blower, Centrifugal Fan, Line Shaft (light duty)            | U                   |
|                         | Reciprocator                                                                                                 | H                   |                    | Aerator                                                                                 | *                   |                         | Can Filling Machine, Rice Mill                                                                             | U                   |                  | Blower, Cable Reel, Fan, Laundry Washer, Line Shaft (heavy duty), Winch | M                   |
| Mixer                   | Pure liquids                                                                                                 | U                   |                    | Lapping Machine                                                                         | U                   | Brewing and Distilling  | Bottle Washer, Mincer, Noodle Machine                                                                      | M                   |                  | Printing Machine, Wood Working Machine                                  | *                   |
|                         | Grain (uniform)                                                                                              | U                   |                    | Bending Roll                                                                            | M                   |                         | Botiller, Cooker (uniform load), Distiller (uniform load), Scale Hopper                                    | U                   |                  |                                                                         |                     |
|                         | Variable Density, Concrete Mixer (uniform load), Kneader, Mortar Mixer, Ribbon Mixer                         | M                   |                    | Mixer, Planer, Punching Press (gear type), Tapping machine                              | H                   |                         |                                                                                                            |                     |                  |                                                                         |                     |

Note: Above load classification should be applied when the prime mover is a normal electric motor. If another type of motor or an engine is used, consult Tsubaki.  
Note: Load classifications marked with an asterisk differ with operating conditions; consult Tsubaki for details.

Allowable Radial Load for Input Shaft

Unit: N {kgf}

| Size<br>Input rpm | SM100    |          |          | SM103    |          |          | SM107      |            |            | SM115      |            |            | SM203      |            |            | SM207      |            |            | SM215      |            |            |
|-------------------|----------|----------|----------|----------|----------|----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                   | 5        | 12,15    | 20,25    | 5        | 12,15    | 20,25    | 5          | 12,15      | 20,25      | 5          | 12,15      | 20,25      | 5          | 12,15      | 20,25      | 5          | 12,15      | 20,25      | 5          | 12,15      | 20,25      |
| 1750 rpm          | 333 {34} | 392 {40} | 392 {40} | 392 {40} | 539 {55} | 510 {52} | 980 {100}  | 931 {95}   | 960 {98}   | 1323 {135} | 1137 {116} | 1235 {126} | 1891 {193} | 1519 {155} | 1019 {104} | 2528 {258} | 1833 {187} | 1225 {125} | 3126 {319} | 2695 {275} | 3283 {335} |
| 1450 rpm          | 353 {36} | 392 {40} | 392 {40} | 412 {42} | 598 {61} | 617 {63} | 1000 {102} | 990 {101}  | 1137 {116} | 1382 {141} | 1294 {132} | 1460 {149} | 1931 {197} | 1597 {163} | 1058 {108} | 2587 {264} | 1950 {199} | 1303 {133} | 3224 {329} | 3067 {313} | 3606 {368} |
| 1150 rpm          | 392 {40} | 392 {40} | 392 {40} | 451 {46} | 715 {73} | 706 {72} | 1029 {105} | 1225 {125} | 1294 {132} | 1529 {156} | 1519 {155} | 1725 {176} | 2058 {210} | 1676 {171} | 1842 {188} | 2666 {272} | 2019 {206} | 1421 {145} | 3312 {338} | 3822 {390} | 3998 {408} |
| 950 rpm           | 412 {42} | 392 {40} | 392 {40} | 470 {48} | 715 {73} | 715 {73} | 1078 {110} | 1303 {133} | 1303 {133} | 1627 {166} | 1764 {180} | 1862 {190} | 2293 {234} | 1793 {183} | 2264 {231} | 3087 {315} | 2362 {241} | 2029 {207} | 3489 {356} | 4155 {424} | 4341 {443} |
| 500 rpm           | 510 {52} | 392 {40} | 392 {40} | 588 {60} | 715 {73} | 715 {73} | 1098 {112} | 1303 {133} | 1303 {133} | 1735 {177} | 1862 {190} | 1862 {190} | 2352 {238} | 2891 {295} | 3018 {308} | 3469 {354} | 3763 {384} | 3881 {396} | 4253 {434} | 5478 {559} | 5655 {577} |

| Size<br>Input rpm | SM307      |            |            | SM315      |            |            | SM407 |              |              | SM415 |              |              | SM507 |              |              | SM608 |              |              |
|-------------------|------------|------------|------------|------------|------------|------------|-------|--------------|--------------|-------|--------------|--------------|-------|--------------|--------------|-------|--------------|--------------|
|                   | 5          | 12,15      | 20,25      | 5          | 12,15      | 20,25      | 5     | 15           | 25           | 5     | 15           | 25           | 5     | 15           | 25           | 5     | 15           | 25           |
| 1750 rpm          | 3959 {404} | 5900 {602} | 5606 {572} | 5390 {550} | 4773 {487} | 4155 {424} | —     | 6174 {630}   | 7115 {726}   | —     | 9026 {921}   | 6801 {694}   | —     | 10045 {1025} | 9428 {962}   | —     | 12544 {1280} | 14347 {1464} |
| 1450 rpm          | 4126 {421} | 6262 {639} | 6007 {613} | 5557 {567} | 5037 {514} | 4547 {464} | —     | 6595 {673}   | 8114 {828}   | —     | 9673 {987}   | 8085 {825}   | —     | 10702 {1092} | 10045 {1025} | —     | 13416 {1369} | 15141 {1545} |
| 1150 rpm          | 4292 {438} | 6723 {686} | 6448 {658} | 5704 {582} | 5410 {552} | 5743 {586} | —     | 7281 {743}   | 9408 {960}   | —     | 10466 {1068} | 10025 {1023} | —     | 11486 {1172} | 11035 {1126} | —     | 14357 {1465} | 16229 {1656} |
| 950 rpm           | 4488 {458} | 7242 {739} | 7056 {720} | 5919 {604} | 5782 {590} | 6840 {698} | —     | 8330 {850}   | 10212 {1042} | —     | 11299 {1153} | 11721 {1196} | —     | 12074 {1232} | 12505 {1276} | —     | 15357 {1567} | 17895 {1826} |
| 500 rpm           | 5057 {516} | 7830 {799} | 7830 {799} | 6595 {673} | 6595 {673} | 8624 {880} | —     | 10212 {1042} | 10212 {1042} | —     | 16033 {1636} | 16033 {1636} | —     | 16131 {1646} | 17934 {1830} | —     | 18130 {1850} | 18130 {1850} |

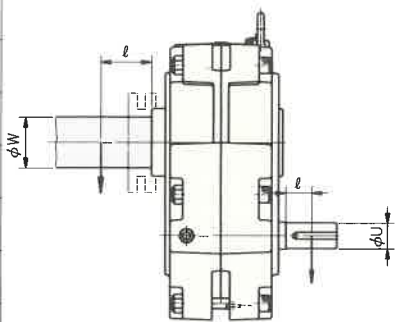
Note : For intermediate input rpm, take the lower radial load of the upper and lower rows.

Allowable Radial Load for Output Shaft

Unit: N {kgf}

| Output rpm | Size |  | SM100      | SM103      | SM107      | SM115      | SM203      | SM207      | SM215        | SM307        | SM315        | SM407        | SM415        | SM507        | SM608        |
|------------|------|--|------------|------------|------------|------------|------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|            |      |  |            |            |            |            |            |            |              |              |              |              |              |              |              |
| 10 rpm     |      |  | 5566 {568} | 5488 {560} | 6752 {689} | 6703 {684} | 8183 {835} | 9614 {981} | 12201 {1245} | 18169 {1854} | 30351 {3097} | 39455 {4026} | 55919 {5706} | 67620 {6900} | 77489 {7907} |
| 30 rpm     |      |  | 3675 {375} | 3528 {360} | 3998 {408} | 4008 {409} | 5331 {544} | 7174 {732} | 8810 {899}   | 12946 {1321} | 18747 {1913} | 27763 {2833} | 42042 {4290} | 53684 {5478} | 77489 {7907} |
| 60 rpm     |      |  | 2803 {286} | 3205 {327} | 3038 {310} | 3646 {372} | 4263 {435} | 5027 {513} | 6282 {641}   | 8957 {914}   | 16150 {1648} | 17846 {1821} | 27489 {2805} | 41944 {4280} | 73088 {7458} |
| 100 rpm    |      |  | 2342 {239} | 2411 {246} | 2607 {266} | 2764 {282} | 3293 {336} | 4096 {418} | 4665 {476}   | 7311 {746}   | 13054 {1332} | 12818 {1308} | 22295 {2275} | 35966 {3670} | —            |
| 150 rpm    |      |  | 2038 {208} | 2107 {215} | 2293 {234} | 2293 {234} | 2764 {282} | 3479 {355} | 3528 {360}   | 6380 {651}   | 11270 {1150} | —            | —            | —            | —            |
| 240 rpm    |      |  | 1823 {186} | 1803 {184} | 1911 {195} | 1882 {192} | 2264 {231} | 2548 {260} | 2401 {245}   | 5380 {549}   | 10123 {1035} | —            | —            | —            | —            |
| 360 rpm    |      |  | 1597 {163} | 1578 {161} | 1833 {187} | 1617 {165} | 1421 {145} | 1166 {119} | 774 {79}     | 2842 {290}   | 8359 {853}   | —            | —            | —            | —            |

Note : For intermediate output rpm between the upper and lower rows, take the lower radial load of the two.



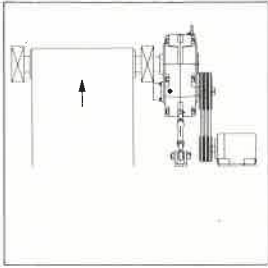


SELECTION

Selection Example 1 (ordinary use)

1. Specifications

- Machine : Belt conveyor (heavy duty)
- Motor : 22 kW, 4P, 60 Hz, 1750 rpm
- Required power : 18 kW
- Operating hours : 10 hrs/day
- Pulley : φ250 × φ300
- Output rpm : 60 rpm
- Driven shaft : φ80



- Input shaft OHL : Radial load 1473 N (150.3 kgf)
- Other : With backstop cam clutch (clockwise overrunning direction)

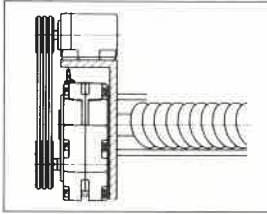
2. Selection

- (1) SF (service factor) : SF=1.25 (refer to the service factor table on page 7)
- (2) Compensation power : 18kW × 1.25 = 22.5kW
- (3) Reduction ratio :  $i = \frac{1750\text{rpm} \times \phi 250}{60\text{rpm} \times \phi 300} = 24.3 \approx 25$
- (4) Size :  
(Power transmission capacity)  
From the power transmission capacity (refer to page 12), select SM307 □ 25 □ □ to satisfy the compensated power transmission capacity of 22.5 kW with the output shaft at 60 rpm and reduction ratio at 1/25.  
(Thermal Rating)  
SM □ 25 □ □, which transmits the required power of 18kW also satisfies the thermal rating (refer to page 11).  
(Input Shaft Radial Load)  
Radial load 1473 N (150.3 kgf) satisfies the allowable radial load (refer to page 8).
- (5) Type : Type B with backstop cam clutch is selected SM307B25 □ □ □ □
- (6) Output shaft: SM307B with φ80 driven shaft is selected : SM307B25T80 □ □ (Tapered Bush type)
- (7) Mounting : Example 1 of the mounting examples is chosen.
- (8) Direction of cam clutch overrunning : clockwise SM307B25T80—R
3. Selected Model :  
SM307B25T80-R

Selection Example 2 (thrust load applied)

1. Specifications

- Machine : Screw conveyor (uniform load)
- Motor : 7.5 kW, 4 P, 50 Hz, 1450 rpm
- Required power : 6 kW
- Operating hours : 10 hrs/day
- Pulley : φ90 × φ160
- Output rpm : 68 rpm
- Driven shaft : φ55 (straight shaft)
- Input shaft OHL : Radial load 1316 N (135 kgf)
- Others : Output shaft thrust load 9800 N (1000 kgf)



2. Selection

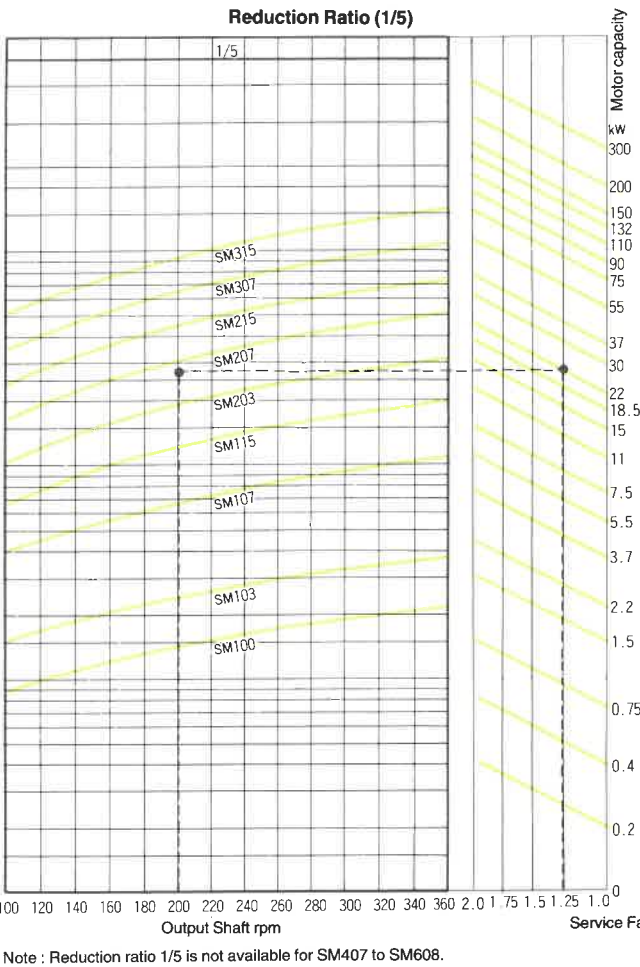
- (1) SF (Service Factor) : SF=1.0 (See Service Factor Table on page 7)
- (2) Designed power : 6 kW × 1.0 = 6 kW
- (3) Reduction ratio :  $i = \frac{1450\text{rpm} \times \phi 90}{68\text{rpm} \times \phi 160} = 11.99 \approx 12$
- (4) Size :  
(Power Rating)  
Select SM203 □ 12 □ □, which satisfies power transmission capacity requirement with the output shaft at 60 rpm and a reduction ratio of 1/12 (refer to page 12) :  
(Thermal Rating)  
SM203 □ 12 □ □ with the required power 6 kW satisfies the thermal rating (refer to page 11).  
(Input Shaft Radial Load)  
Radial load 1316 N (135 kgf) satisfies the allowable radial load (refer to page 8). The output shaft thrust load satisfies the allowable thrust load for the output shaft with tapered roller bearings made to special specifications (refer to page 29).

- (5) Type : SM203F12 □ □ (face mount type)
- (6) Output shaft : Straight shaft type SM203F12S55
- (7) Mounting : Mounting example 1

3. Selected Model :  
SM203F12S55-Special (output shaft with tapered roller bearings)

QUICK SELECTION CHART

- Use the tables below for simplified selection based on the motor power.
- Procedure
1. Place the SF (service factor) determined on page 7 on the SF line and find where it crosses the motor kW line.



Selection Example 1

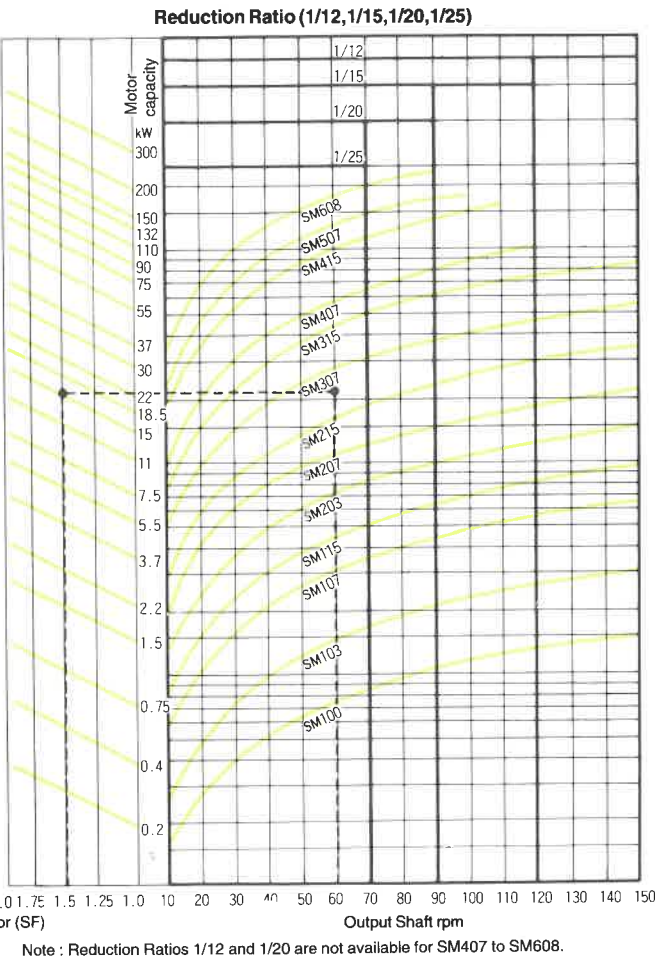
1. Conditions

- Motor kW : 22 kW
- Output shaft rpm : 200 rpm
- SF : 1.25

2. Selection

Extend a horizontal line from the point of intersection of SF 1.25 line and the motor 22 kW line to the left, and find the point of intersection with the output shaft at 200 rpm, and select SM207. SM207 satisfies the thermal rating (refer to page 11).

2. Extend a horizontal line from the point of intersection to either to the left or right and find the point of intersection with output shaft rpm line.
3. Select the size above the point where the two lines intersect.
4. Check that the motor kW of the selected size satisfies the thermal rating on page 11.



Selection Example 2

1. Conditions

- Motor kW : 15 kW
- Output shaft rpm : 60 rpm
- SF : 1.5

2. Selection

Extend a horizontal line from the point of intersection of SF 1.5 line and the motor 15 kW line to the right and find the point of intersection with the output shaft at 60 rpm and select SM307. SM307 satisfies the thermal rating (refer to page 11).

POWER RATING

| Size  | Reduction Ratio                 | 1/5        |            |            |            |            |            |            |            |            |            |            |            |            |            |
|-------|---------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|       | Output Shaft rpm                | 100        | 120        | 140        | 160        | 180        | 200        | 220        | 240        | 260        | 280        | 300        | 320        | 340        | 360        |
| SM100 | Input kW                        | 0.94       | 1.05       | 1.17       | 1.29       | 1.39       | 1.48       | 1.58       | 1.63       | 1.79       | 1.87       | 1.94       | 2.03       | 2.12       | 2.21       |
|       | Output Shaft Torque N·m {kgf·m} | 87 {8.9}   | 81 {8.3}   | 77 {7.9}   | 74 {7.6}   | 72 {7.3}   | 69 {7.0}   | 67 {6.8}   | 65 {6.6}   | 64 {6.5}   | 62 {6.3}   | 60 {6.1}   | 59 {6.0}   | 58 {5.9}   | 57 {5.8}   |
|       | Input kW                        | 1.61       | 1.82       | 2.02       | 2.20       | 2.38       | 2.56       | 2.72       | 2.90       | 3.05       | 3.20       | 3.37       | 3.52       | 3.63       | 3.77       |
| SM103 | Output Shaft Torque N·m {kgf·m} | 149 {15.2} | 140 {14.3} | 133 {13.6} | 127 {13.0} | 123 {12.5} | 119 {12.1} | 115 {11.7} | 112 {11.4} | 109 {11.1} | 106 {10.8} | 104 {10.6} | 102 {10.4} | 99 {10.1}  | 97 {9.9}   |
|       | Input kW                        | 4.33       | 4.88       | 5.38       | 5.86       | 6.34       | 6.84       | 7.31       | 7.95       | 8.53       | 9.07       | 9.65       | 10.3       | 10.8       | 11.4       |
|       | Output Shaft Torque N·m {kgf·m} | 401 {40.9} | 376 {38.4} | 356 {36.3} | 339 {34.6} | 326 {33.3} | 317 {32.3} | 308 {31.4} | 307 {31.3} | 304 {31.0} | 300 {30.6} | 298 {30.4} | 298 {30.4} | 294 {30.0} | 293 {29.9} |
| SM107 | Input kW                        | 7.07       | 8.33       | 9.57       | 10.6       | 11.6       | 12.5       | 13.4       | 14.3       | 15.1       | 15.9       | 16.7       | 17.4       | 18.2       | 19.0       |
|       | Output Shaft Torque N·m {kgf·m} | 655 {66.8} | 643 {65.6} | 633 {64.6} | 613 {62.6} | 597 {60.9} | 578 {59.0} | 564 {57.5} | 552 {56.3} | 538 {54.9} | 526 {53.7} | 515 {52.6} | 504 {51.4} | 496 {50.6} | 489 {49.9} |
|       | Input kW                        | 11.4       | 13.5       | 15.4       | 16.8       | 18.2       | 19.8       | 21.2       | 22.5       | 23.9       | 25.5       | 26.9       | 28.6       | 30.1       | 31.7       |
| SM203 | Output Shaft Torque N·m {kgf·m} | 1058 {108} | 1039 {106} | 1019 {104} | 972 {99.2} | 936 {95.5} | 916 {93.5} | 892 {91.0} | 868 {88.6} | 851 {86.8} | 843 {86.0} | 830 {84.7} | 827 {84.4} | 819 {83.6} | 815 {83.2} |
|       | Input kW                        | 18.1       | 20.3       | 22.4       | 24.7       | 27.4       | 30.1       | 32.8       | 35.3       | 38.0       | 40.3       | 42.9       | 45.4       | 47.9       | 50.3       |
|       | Output Shaft Torque N·m {kgf·m} | 1676 {171} | 1568 {160} | 1480 {151} | 1431 {146} | 1411 {144} | 1392 {142} | 1382 {141} | 1362 {139} | 1352 {138} | 1333 {136} | 1323 {135} | 1313 {134} | 1303 {133} | 1204 {132} |
| SM207 | Input kW                        | 25.5       | 29.3       | 33.5       | 36.9       | 40.0       | 43.8       | 47.5       | 51.3       | 55.3       | 59.0       | 62.6       | 65.7       | 69.5       | 72.8       |
|       | Output Shaft Torque N·m {kgf·m} | 2362 {241} | 2264 {231} | 2215 {226} | 2136 {218} | 2058 {210} | 2029 {207} | 1999 {204} | 1980 {202} | 1970 {201} | 1950 {199} | 1931 {197} | 1901 {194} | 1891 {193} | 1872 {191} |
|       | Input kW                        | 38.0       | 43.1       | 48.8       | 54.5       | 59.8       | 64.8       | 69.6       | 75.2       | 80.6       | 85.9       | 89.5       | 94.8       | 99.3       | 105        |
| SM307 | Output Shaft Torque N·m {kgf·m} | 3518 {359} | 3322 {339} | 3224 {329} | 3156 {322} | 3077 {314} | 2999 {306} | 2930 {299} | 2901 {296} | 2871 {293} | 2842 {290} | 2764 {282} | 2744 {280} | 2705 {276} | 2695 {275} |
|       | Input kW                        | 55.0       | 63.9       | 71.9       | 79.9       | 87.6       | 95.5       | 103        | 112        | 120        | 128        | 135        | 143        | 151        | 157        |
|       | Output Shaft Torque N·m {kgf·m} | 5096 {520} | 4929 {503} | 4753 {485} | 4626 {472} | 4508 {460} | 4420 {451} | 4332 {442} | 4322 {441} | 4273 {436} | 4234 {432} | 4165 {425} | 4136 {422} | 4116 {420} | 4038 {412} |

Note 1 : Use the torque at 100 rpm, if reducer runs below 100 rpm.  
Note 2 : For intermediate output shaft rpm, obtain the power rating using straight-line interpolation.  
Note 3 : Run the output shaft of the reducer at below 360 rpm. For 360 rpm or higher, consult Tsubaki.

Thermal Rating

| Reduction Ratio<br>Size | 1/5 | 1/12 | 1/15 | 1/20 | 1/25 | Unit : kW                                                                                                       |     |      |      |      |      |
|-------------------------|-----|------|------|------|------|-----------------------------------------------------------------------------------------------------------------|-----|------|------|------|------|
| Reduction Ratio<br>Size | 1/5 | 1/12 | 1/15 | 1/20 | 1/25 | Size                                                                                                            | 1/5 | 1/12 | 1/15 | 1/20 | 1/25 |
| SM100                   | 4   | 3    | 3    | 2    | 2    | SM307                                                                                                           | 58  | 38   | 36   | 32   | 29   |
| SM103                   | 6   | 4    | 4    | 3    | 3    | SM315                                                                                                           | 73  | 48   | 46   | 41   | 37   |
| SM107                   | 14  | 9    | 9    | 8    | 7    | SM407                                                                                                           | —   | —    | 65   | —    | 52   |
| SM115                   | 16  | 10   | 10   | 9    | 8    | SM415                                                                                                           | —   | —    | 88   | —    | 70   |
| SM203                   | 25  | 16   | 15   | 14   | 12   | SM507                                                                                                           | —   | —    | 110  | —    | 88   |
| SM207                   | 34  | 23   | 21   | 19   | 17   | SM608                                                                                                           | —   | —    | 145  | —    | 116  |
| SM215                   | 41  | 27   | 25   | 23   | 20   | Note : The thermal ratings apply to normal operating temperatures.<br>For higher temperatures, consult Tsubaki. |     |      |      |      |      |

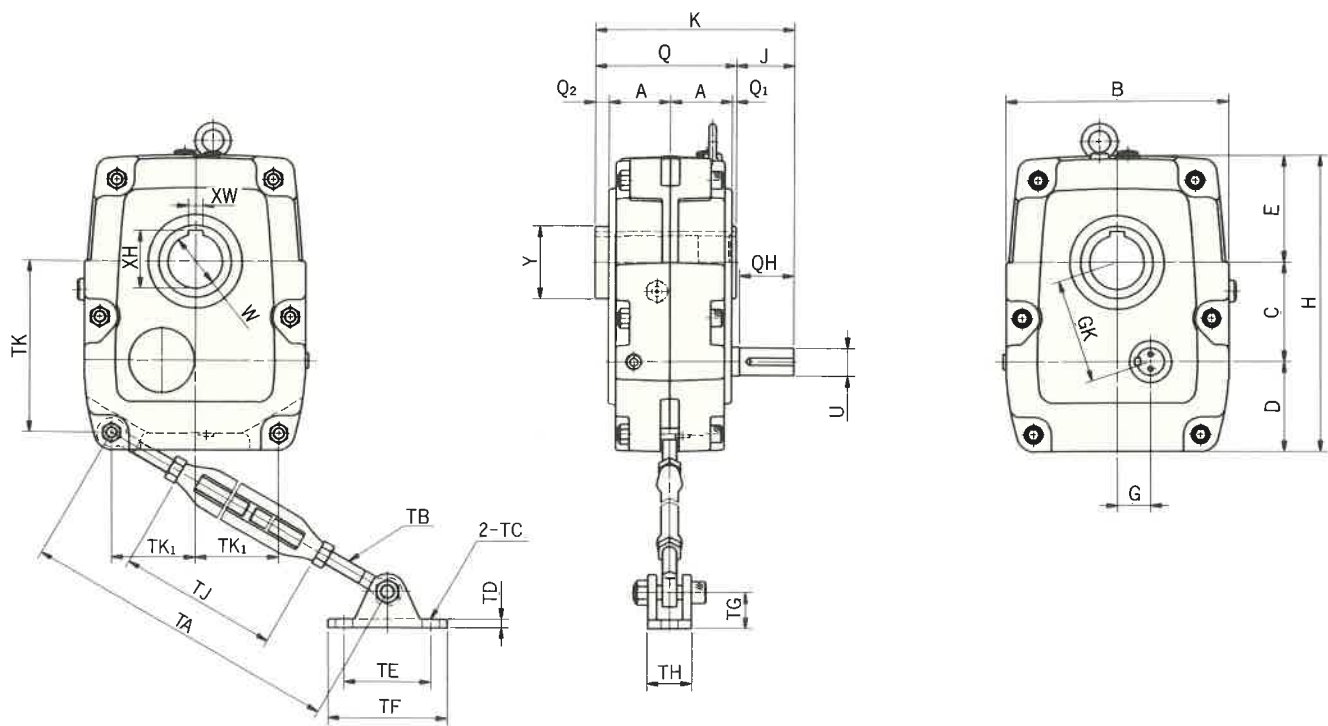
SMR SERIES

| Size  | Reduction Ratio                 | 1/12         |              |              |              |              |              |              |              |              |              |              |            |            |            |            |
|-------|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|------------|------------|------------|
|       | Output Shaft rpm                | 10           | 20           | 30           | 40           | 50           | 60           | 70           | 80           | 90           | 100          | 110          | 120        | 130        | 140        | 150        |
| SM100 | Input kW                        | 0.15         | 0.29         | 0.42         | 0.55         | 0.67         | 0.79         | 0.90         | 0.99         | 1.07         | 1.15         | 1.22         | 1.30       | 1.39       | 1.47       | 1.52       |
|       | Output Shaft Torque N·m {kgf·m} | 134 {13.7}   | 129 {13.2}   | 125 {12.8}   | 123 {12.5}   | 120 {12.2}   | 118 {12.0}   | 116 {11.8}   | 111 {11.3}   | 107 {10.9}   | 103 {10.5}   | 100 {10.2}   | 97 {9.9}   | 96 {9.8}   | 94 {9.6}   | 91 {9.3}   |
|       | Input kW                        | 0.28         | 0.54         | 0.79         | 1.03         | 1.26         | 1.50         | 1.72         | 1.95         | 2.17         | 2.35         | 2.50         | 2.65       | 2.84       | 2.96       | 3.11       |
| SM103 | Output Shaft Torque N·m {kgf·m} | 253 {25.8}   | 242 {24.7}   | 236 {24.1}   | 231 {23.6}   | 226 {23.1}   | 224 {22.9}   | 221 {22.5}   | 219 {22.3}   | 217 {22.1}   | 211 {21.5}   | 204 {20.8}   | 198 {20.2} | 196 {20.0} | 190 {19.4} | 186 {19.0} |
|       | Input kW                        | 0.60         | 1.18         | 1.72         | 2.24         | 2.75         | 3.25         | 3.75         | 4.23         | 4.71         | 5.19         | 5.64         | 5.94       | 6.26       | 6.55       | 6.86       |
|       | Output Shaft Torque N·m {kgf·m} | 539 {55.0}   | 530 {54.1}   | 515 {52.5}   | 503 {51.3}   | 494 {50.4}   | 486 {49.6}   | 481 {49.1}   | 475 {48.5}   | 470 {48.0}   | 466 {47.6}   | 461 {47.0}   | 445 {45.4} | 432 {44.1} | 420 {42.9} | 411 {41.9} |
| SM107 | Input kW                        | 0.86         | 1.65         | 2.41         | 3.15         | 3.87         | 4.57         | 5.26         | 5.94         | 6.62         | 7.28         | 7.95         | 8.45       | 8.95       | 9.43       | 9.85       |
|       | Output Shaft Torque N·m {kgf·m} | 772 {78.8}   | 741 {75.6}   | 721 {73.6}   | 708 {72.2}   | 695 {70.9}   | 684 {69.8}   | 675 {68.9}   | 666 {68.0}   | 661 {67.4}   | 654 {66.7}   | 649 {66.2}   | 632 {64.5} | 618 {63.1} | 605 {61.7} | 590 {60.2} |
|       | Input kW                        | 1.37         | 2.66         | 3.93         | 5.11         | 6.27         | 7.40         | 8.55         | 9.60         | 10.5         | 11.3         | 12.4         | 13.4       | 14.1       | 14.8       | 15.5       |
| SM203 | Output Shaft Torque N·m {kgf·m} | 1235 {126}   | 1196 {122}   | 1176 {120}   | 1147 {117}   | 1127 {115}   | 1107 {113}   | 1098 {112}   | 1078 {110}   | 1049 {107}   | 1019 {104}   | 1009 {103}   | 1000 {102} | 974 {99.4} | 950 {96.9} | 928 {94.7} |
|       | Input kW                        | 2.23         | 4.30         | 6.29         | 8.16         | 10.0         | 11.4         | 12.6         | 13.8         | 14.9         | 16.4         | 17.8         | 19.2       | 20.1       | 21.2       | 22.3       |
|       | Output Shaft Torque N·m {kgf·m} | 1999 {204}   | 1931 {197}   | 1882 {192}   | 1833 {187}   | 1793 {183}   | 1705 {174}   | 1617 {165}   | 1548 {158}   | 1490 {152}   | 1470 {150}   | 1450 {148}   | 1441 {147} | 1392 {142} | 1362 {139} | 1333 {136} |
| SM207 | Input kW                        | 3.06         | 6.07         | 8.84         | 11.4         | 14.0         | 16.6         | 19.1         | 21.5         | 23.9         | 26.3         | 28.7         | 31.0       | 32.8       | 34.4       | 36.0       |
|       | Output Shaft Torque N·m {kgf·m} | 2744 {280}   | 2724 {278}   | 2646 {270}   | 2558 {261}   | 2519 {257}   | 2489 {254}   | 2450 {250}   | 2411 {246}   | 2381 {243}   | 2362 {241}   | 2342 {239}   | 2323 {237} | 2264 {231} | 2205 {225} | 2156 {220} |
|       | Input kW                        | 5.30         | 10.6         | 15.9         | 20.8         | 25.5         | 29.0         | 32.3         | 35.5         | 38.9         | 41.9         | 44.8         | 47.7       | 50.4       | 53.2       | 55.7       |
| SM307 | Output Shaft Torque N·m {kgf·m} | 4763 {486}   | 4763 {486}   | 4763 {486}   | 4675 {477}   | 4577 {467}   | 4341 {443}   | 4145 {423}   | 3989 {407}   | 3881 {396}   | 3763 {384}   | 3655 {373}   | 3567 {364} | 3479 {355} | 3410 {348} | 3332 {340} |
|       | Input kW                        | 8.10         | 16.2         | 23.8         | 30.9         | 37.9         | 44.7         | 51.3         | 56.6         | 61.5         | 66.2         | 70.8         | 75.2       | 79.4       | 83.7       | 87.9       |
| SM315 | Output Shaft Torque N·m {kgf·m} | 7272 {742}   | 7272 {742}   | 7125 {727}   | 6938 {708}   | 6811 {695}   | 6693 {683}   | 6586 {672}   | 6350 {648}   | 6135 {626}   | 5949 {607}   | 5782 {590}   | 5625 {574} | 5488 {560} | 5370 {548} | 5263 {537} |
|       | Input kW                        | 10.4         | 20.8         | 31.1         | 40.7         | 50.0         | 59.2         | 68.2         | 77.2         | 85.7         | 92.3         | 98.5         | 104        | —          | —          | —          |
|       | Output Shaft Torque N·m {kgf·m} | 9359 {955}   | 9359 {955}   | 9310 {950}   | 9134 {932}   | 8977 {916}   | 8859 {904}   | 8751 {893}   | 8663 {884}   | 8555 {873}   | 8291 {846}   | 8046 {821}   | 7781 {794} | —          | —          | —          |
| SM407 | Input kW                        | 19.8         | 37.9         | 55.3         | 72.2         | 88.7         | 105          | 120          | 132          | 144          | 155          | 166          | —          | —          | —          | —          |
|       | Output Shaft Torque N·m {kgf·m} | 17787 {1815} | 17023 {1737} | 16552 {1689} | 16209 {1654} | 15935 {1626} | 15719 {1604} | 15396 {1571} | 14818 {1512} | 14367 {1466} | 13916 {1420} | 13553 {1383} | —          | —          | —          | —          |
|       | Input kW                        | 24.0         | 48.1         | 72.1         | 96.2         | 114          | 130          | 145          | 159          | 172          | 186          | —            | —          | —          | —          | —          |
| SM507 | Output Shaft Torque N·m {kgf·m} | 21589 {2203} | 21589 {2203} | 21589 {2203} | 21589 {2203} | 20472 {2089} | 19463 {1986} | 18600 {1898} | 17846 {1821} | 17160 {1751} | 16709 {1705} | —            | —          | —          | —          | —          |
|       | Input kW                        | 37.1         | 71.6         | 104          | 134          | 157          | 178          | 198          | 218          | 237          | —            | —            | —          | —          | —          | —          |
|       | Output Shaft Torque N·m {kgf·m} | 33320 {3400} | 32154 {3281} | 31135 {3177} | 30086 {3070} | 28204 {2878} | 26646 {2719} | 25402 {2592} | 24471 {2497} | 23647 {2413} | —            | —            | —          | —          | —          | —          |

Note 1 : Use the torque at 10 rpm, if SMR runs at lower than 10 rpm.  
Note 2 : For intermediate output rpm, obtain the output shaft torque with straight-line interpolation method.  
Note 3 : Drive the reducer below the maximum output shaft rpm. Consult Tsubaki regarding driving at higher than the maximum rpm.



DIMENSIONS S TYPE (straight shaft)



Dimensions

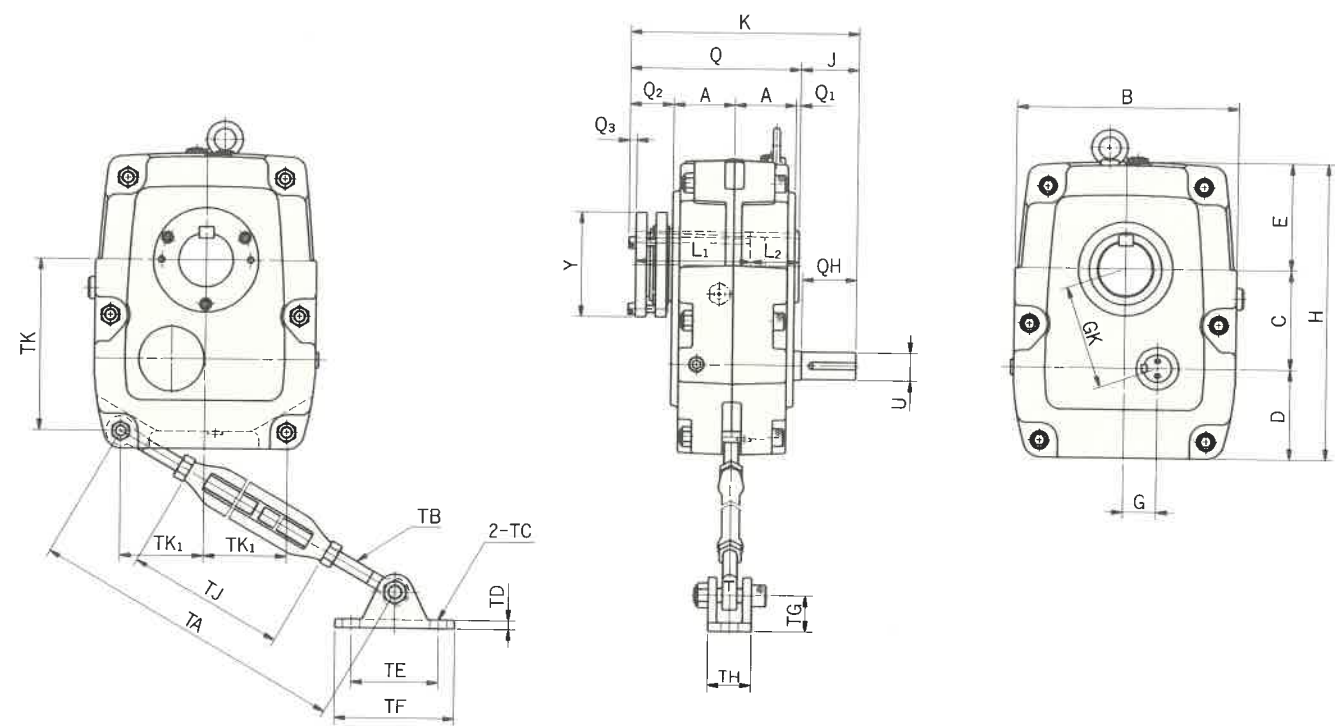
| Size  | A   | B   | C     | D     | E   | G    | GK  | H   | J   | K   | Unit: mm     |    |         |              |              |       |          |    |
|-------|-----|-----|-------|-------|-----|------|-----|-----|-----|-----|--------------|----|---------|--------------|--------------|-------|----------|----|
|       |     |     |       |       |     |      |     |     |     |     | Input Shaft  |    |         |              | Output Shaft |       |          |    |
|       |     |     |       |       |     |      |     |     |     |     | $\phi U(h7)$ | QH | Key     | $\phi W(H8)$ | XW           | XH    | $\phi Y$ |    |
| SM100 | 40  | 124 | 53.9  | 55.1  | 59  | 18.5 | 57  | 168 | 24  | 112 | 11           | 24 | 4×4×20  | 25 30        | 8            | 28.3  | 33.3     | 45 |
| SM103 | 44  | 154 | 64.7  | 65.3  | 71  | 24   | 69  | 201 | 38  | 135 | 16           | 35 | 5×5×30  | 35           | 10           | 38.3  | 50       |    |
| SM107 | 56  | 188 | 79.5  | 83.5  | 87  | 30   | 85  | 250 | 45  | 171 | 19           | 40 | 6×6×35  | 40           | 12           | 43.3  | 55       |    |
| SM115 | 62  | 206 | 86.1  | 91.9  | 95  | 32.5 | 92  | 273 | 55  | 194 | 24           | 50 | 8×7×40  | 45           | 14           | 48.8  | 65       |    |
| SM203 | 70  | 238 | 100.4 | 101.6 | 110 | 37   | 107 | 312 | 60  | 219 | 28           | 55 | 8×7×45  | 55           | 16           | 59.3  | 75       |    |
| SM207 | 79  | 282 | 118.6 | 124.4 | 129 | 42.5 | 126 | 372 | 70  | 248 | 32           | 65 | 10×8×50 | 65           | 18           | 69.4  | 85       |    |
| SM215 | 85  | 306 | 137.5 | 124.5 | 148 | 46   | 145 | 410 | 80  | 273 | 38           | 75 | 10×8×60 | 75           | 20           | 79.9  | 100      |    |
| SM307 | 106 | 358 | 155.0 | 151.0 | 176 | 53.5 | 164 | 482 | 91  | 326 | 42           | 85 | 12×8×70 | 85           | 22           | 90.4  | 120      |    |
| SM315 | 120 | 406 | 181.4 | 169.6 | 195 | 63   | 192 | 546 | 101 | 367 | 48           | 95 | 14×9×80 | 95           | 25           | 100.4 | 150      |    |

| Size  | Output Shaft |                |                | TK  | TK <sub>1</sub> | Tie Rod |     |    |    |     |     |    |    |     | Weight kg |
|-------|--------------|----------------|----------------|-----|-----------------|---------|-----|----|----|-----|-----|----|----|-----|-----------|
|       | Q            | Q <sub>1</sub> | Q <sub>2</sub> |     |                 | TA      | TB  | TC | TD | TE  | TF  | TG | TH | TJ  |           |
| SM100 | 88           | 3              | 5              | 100 | 45              | 285~400 | M10 | 12 | 6  | 65  | 90  | 30 | 37 | 150 | 6         |
| SM103 | 97           | 3              | 6              | 118 | 60              | 285~400 | M10 | 12 | 6  | 65  | 90  | 30 | 37 | 150 | 9         |
| SM107 | 126          | 4              | 10             | 151 | 60              | 285~400 | M10 | 12 | 6  | 65  | 90  | 30 | 37 | 150 | 21        |
| SM115 | 139          | 4              | 11             | 163 | 75              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 30        |
| SM203 | 159          | 5              | 14             | 184 | 85              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 43        |
| SM207 | 178          | 5              | 15             | 219 | 95              | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 67        |
| SM215 | 193          | 6              | 17             | 238 | 115             | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 90        |
| SM307 | 235          | 6              | 17             | 276 | 130             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 150       |
| SM315 | 266          | 6              | 20             | 321 | 145             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 215       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)  
• Weight is approximate, and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.  
• Refer to page 23 for details of the input shaft end tap and eyebolt.

S TYPE (tapered bush)

SMR SERIES



Dimensions

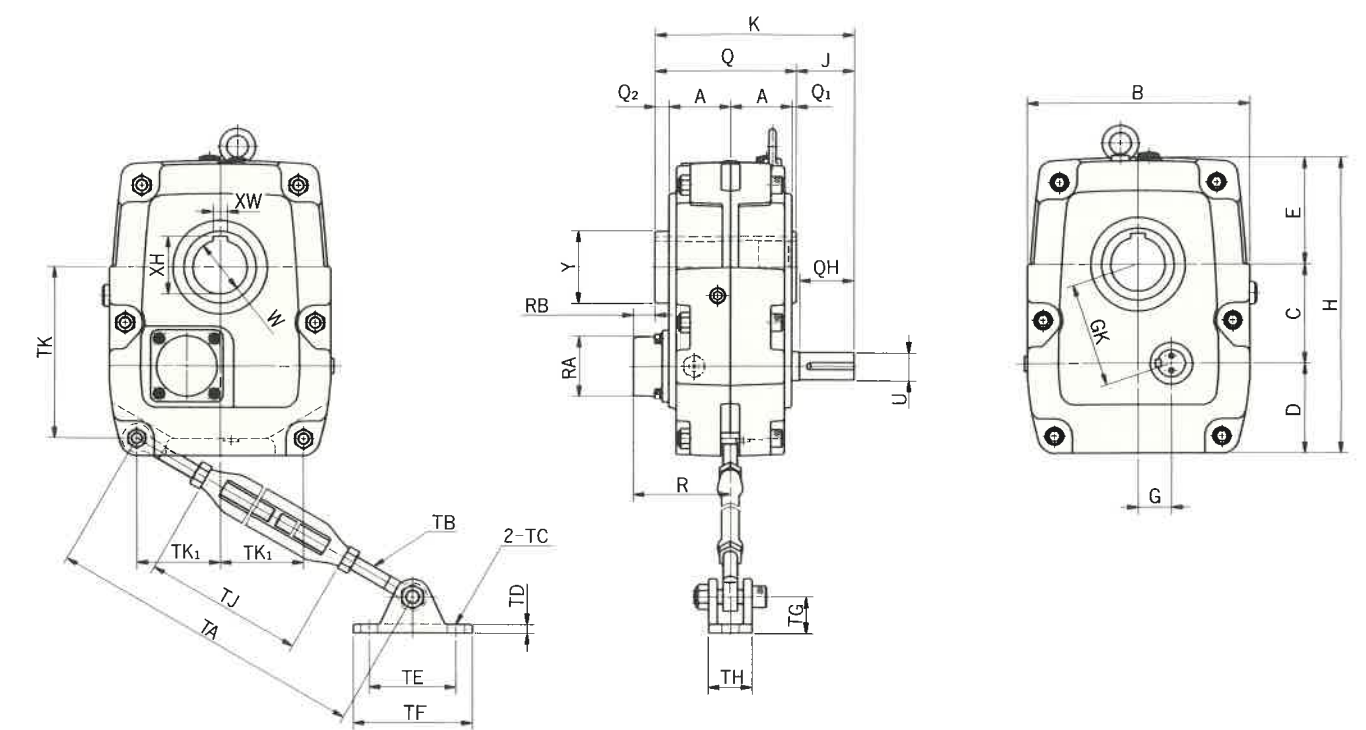
| Size  | A   | B   | C     | D     | E   | G    | GK  | H   | J   | K   | Unit: mm     |    |         |          |                            |                |                |  |
|-------|-----|-----|-------|-------|-----|------|-----|-----|-----|-----|--------------|----|---------|----------|----------------------------|----------------|----------------|--|
|       |     |     |       |       |     |      |     |     |     |     | Input Shaft  |    |         |          | Output Shaft, Tapered Bush |                |                |  |
|       |     |     |       |       |     |      |     |     |     |     | $\phi U(h7)$ | QH | Key     | $\phi Y$ | Q                          | Q <sub>1</sub> | Q <sub>2</sub> |  |
| SM107 | 56  | 188 | 79.5  | 83.5  | 87  | 30   | 85  | 250 | 45  | 201 | 19           | 40 | 6×6×35  | 82       | 156                        | 4              | 40             |  |
| SM115 | 62  | 206 | 86.1  | 91.9  | 95  | 32.5 | 92  | 273 | 55  | 224 | 24           | 50 | 8×7×40  | 95       | 169                        | 4              | 41             |  |
| SM203 | 70  | 238 | 100.4 | 101.6 | 110 | 37   | 107 | 312 | 60  | 254 | 28           | 55 | 8×7×45  | 112      | 194                        | 5              | 49             |  |
| SM207 | 79  | 282 | 118.6 | 124.4 | 129 | 42.5 | 126 | 372 | 70  | 283 | 32           | 65 | 10×8×50 | 120      | 213                        | 5              | 50             |  |
| SM215 | 85  | 306 | 137.5 | 124.5 | 148 | 46   | 145 | 410 | 80  | 317 | 38           | 75 | 10×8×60 | 145      | 237                        | 6              | 61             |  |
| SM307 | 106 | 358 | 155.0 | 151.0 | 176 | 53.5 | 164 | 482 | 91  | 371 | 42           | 85 | 12×8×70 | 162      | 280                        | 6              | 62             |  |
| SM315 | 120 | 406 | 181.4 | 169.6 | 195 | 63   | 192 | 546 | 101 | 410 | 48           | 95 | 14×9×80 | 200      | 309                        | 6              | 63             |  |

| Size  | Output Shaft   |                |                | TK  | TK <sub>1</sub> | Tie Rod |     |    |    |     |     |    |    |     | Weight kg |
|-------|----------------|----------------|----------------|-----|-----------------|---------|-----|----|----|-----|-----|----|----|-----|-----------|
|       | Q <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> |     |                 | TA      | TB  | TC | TD | TE  | TF  | TG | TH | TJ  |           |
| SM107 | 6              | 97             | 53             | 151 | 60              | 285~400 | M10 | 12 | 6  | 65  | 90  | 30 | 37 | 150 | 22        |
| SM115 | 6              | 113            | 50             | 163 | 75              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 31        |
| SM203 | 8              | 130            | 56             | 184 | 85              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 44        |
| SM207 | 8              | 144            | 61             | 219 | 95              | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 68        |
| SM215 | 10             | 160            | 67             | 238 | 115             | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 93        |
| SM307 | 10             | 187            | 83             | 276 | 130             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 155       |
| SM315 | 10             | 212            | 87             | 321 | 145             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 220       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
- Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
- Refer to page 23 for details of the input shaft end tap and eyebolt.



DIMENSIONS B TYPE (straight shaft)



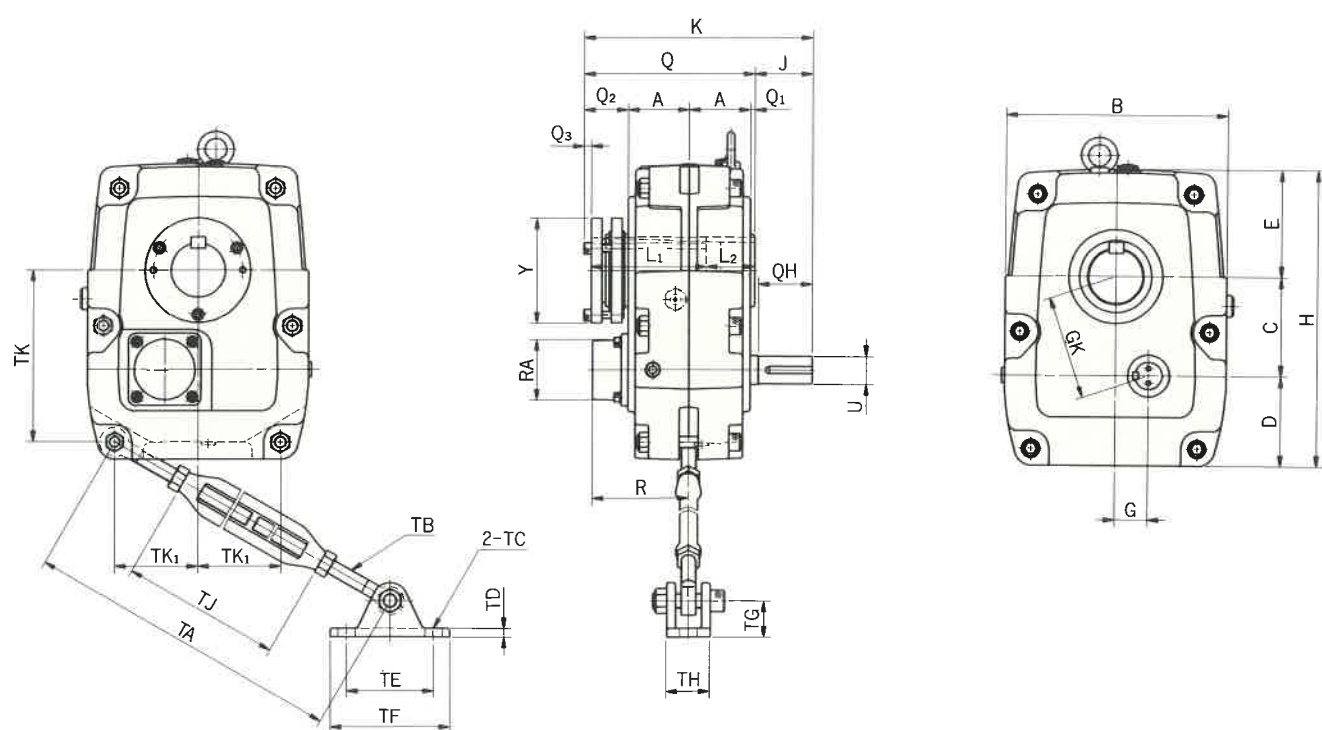
Dimensions

| Size  | A   | B   | C     | D     | E   | G    | GK  | H   | J   | K   | Input Shaft |    |         | Output Shaft |    |       |     |     |
|-------|-----|-----|-------|-------|-----|------|-----|-----|-----|-----|-------------|----|---------|--------------|----|-------|-----|-----|
|       |     |     |       |       |     |      |     |     |     |     | φU (h7)     | QH | Key     | φW(H8)       | XW | XH    | φY  | Q   |
| SM107 | 56  | 188 | 79.5  | 83.5  | 87  | 30   | 85  | 250 | 45  | 171 | 19          | 40 | 6×6×35  | 40           | 12 | 43.3  | 55  | 126 |
| SM115 | 62  | 206 | 86.1  | 91.9  | 95  | 32.5 | 92  | 273 | 55  | 194 | 24          | 50 | 8×7×40  | 45           | 14 | 48.8  | 65  | 139 |
| SM203 | 70  | 238 | 100.4 | 101.6 | 110 | 37   | 107 | 312 | 60  | 219 | 28          | 55 | 8×7×45  | 55           | 16 | 59.3  | 75  | 159 |
| SM207 | 79  | 282 | 118.6 | 124.4 | 129 | 42.5 | 126 | 372 | 70  | 248 | 32          | 65 | 10×8×50 | 65           | 18 | 69.4  | 85  | 178 |
| SM215 | 85  | 306 | 137.5 | 124.5 | 148 | 46   | 145 | 410 | 80  | 273 | 38          | 75 | 10×8×60 | 75           | 20 | 79.9  | 100 | 193 |
| SM307 | 106 | 358 | 155.0 | 151.0 | 176 | 53.5 | 164 | 482 | 91  | 326 | 42          | 85 | 12×8×70 | 85           | 22 | 90.4  | 120 | 235 |
| SM315 | 120 | 406 | 181.4 | 169.6 | 195 | 63   | 192 | 546 | 101 | 367 | 48          | 95 | 14×9×80 | 95           | 25 | 100.4 | 150 | 266 |

| Size  | Output Shaft   |                | TK  | TK <sub>1</sub> | Tie Rod |     |    |    |     |     |    |    |     | Cam Clutch |     |    | Weight kg |
|-------|----------------|----------------|-----|-----------------|---------|-----|----|----|-----|-----|----|----|-----|------------|-----|----|-----------|
|       | Q <sub>1</sub> | Q <sub>2</sub> |     |                 | TA      | TB  | TC | TD | TE  | TF  | TG | TH | TJ  | R          | RA  | RA |           |
| SM107 | 4              | 10             | 151 | 60              | 285~400 | M10 | 12 | 6  | 65  | 90  | 30 | 37 | 150 | 102        | 56  | 36 | 22        |
| SM115 | 4              | 11             | 163 | 75              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 108        | 56  | 35 | 32        |
| SM203 | 5              | 14             | 184 | 85              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 116        | 65  | 32 | 45        |
| SM207 | 5              | 15             | 219 | 95              | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 125        | 70  | 31 | 69        |
| SM215 | 6              | 17             | 238 | 115             | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 134        | 84  | 32 | 93        |
| SM307 | 6              | 17             | 276 | 130             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 156        | 95  | 33 | 155       |
| SM315 | 6              | 20             | 321 | 145             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 172        | 110 | 32 | 220       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
- Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
- Refer to page 23 for details of the input shaft end tap and eyebolt.

B TYPE (tapered bush)



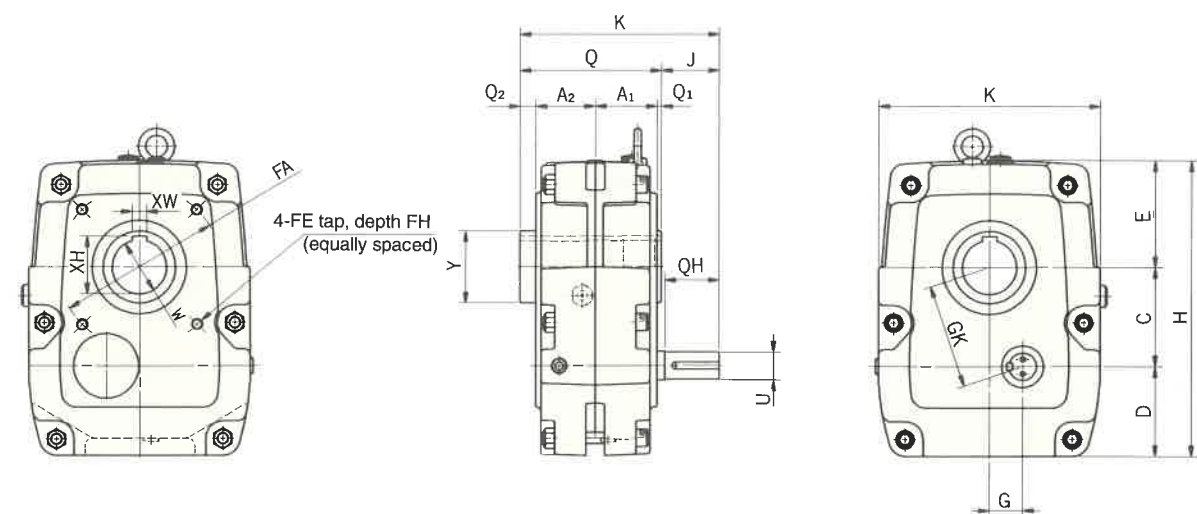
Dimensions

| Size  | A   | B   | C     | D     | E   | G    | GK  | H   | J   | K   | Input Shaft |    |         | Output Shaft, Tapered Bush |     |                |                |                |
|-------|-----|-----|-------|-------|-----|------|-----|-----|-----|-----|-------------|----|---------|----------------------------|-----|----------------|----------------|----------------|
|       |     |     |       |       |     |      |     |     |     |     | φU (h7)     | QH | Key     | φY                         | Q   | Q <sub>1</sub> | Q <sub>2</sub> | Q <sub>3</sub> |
| SM107 | 56  | 188 | 79.5  | 83.5  | 87  | 30   | 85  | 250 | 45  | 201 | 19          | 40 | 6×6×35  | 82                         | 156 | 4              | 40             | 6              |
| SM115 | 62  | 206 | 86.1  | 91.9  | 95  | 32.5 | 92  | 273 | 55  | 224 | 24          | 50 | 8×7×40  | 95                         | 169 | 4              | 41             | 6              |
| SM203 | 70  | 238 | 100.4 | 101.6 | 110 | 37   | 107 | 312 | 60  | 254 | 28          | 55 | 8×7×45  | 112                        | 194 | 5              | 49             | 8              |
| SM207 | 79  | 282 | 118.6 | 124.4 | 129 | 42.5 | 126 | 372 | 70  | 283 | 32          | 65 | 10×8×50 | 120                        | 213 | 5              | 50             | 8              |
| SM215 | 85  | 306 | 137.5 | 124.5 | 148 | 46   | 145 | 410 | 80  | 317 | 38          | 75 | 10×8×60 | 145                        | 237 | 6              | 61             | 10             |
| SM307 | 106 | 358 | 155.0 | 151.0 | 176 | 53.5 | 164 | 482 | 91  | 371 | 42          | 85 | 12×8×70 | 162                        | 280 | 6              | 62             | 10             |
| SM315 | 120 | 406 | 181.4 | 169.6 | 195 | 63   | 192 | 546 | 101 | 410 | 48          | 95 | 14×9×80 | 200                        | 309 | 6              | 63             | 10             |

| Size  | Output Shaft   |                | TK  | TK <sub>1</sub> | Tie Rod |     |    |    |     |     |    |    |     | Cam Clutch |     | Weight kg |
|-------|----------------|----------------|-----|-----------------|---------|-----|----|----|-----|-----|----|----|-----|------------|-----|-----------|
|       | L <sub>1</sub> | L <sub>2</sub> |     |                 | TA      | TB  | TC | TD | TE  | TF  | TG | TH | TJ  | R          | RA  |           |
| SM107 | 97             | 53             | 151 | 60              | 285~400 | M10 | 12 | 6  | 65  | 90  | 30 | 37 | 150 | 102        | 56  | 23        |
| SM115 | 113            | 50             | 163 | 75              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 108        | 56  | 33        |
| SM203 | 130            | 56             | 184 | 85              | 495~695 | M16 | 17 | 10 | 90  | 120 | 40 | 48 | 250 | 116        | 65  | 46        |
| SM207 | 144            | 61             | 219 | 95              | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 125        | 70  | 70        |
| SM215 | 160            | 67             | 238 | 115             | 550~790 | M20 | 24 | 12 | 120 | 165 | 50 | 60 | 300 | 134        | 84  | 96        |
| SM307 | 187            | 83             | 276 | 130             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 156        | 95  | 160       |
| SM315 | 212            | 87             | 321 | 145             | 615~895 | M24 | 28 | 18 | 150 | 210 | 50 | 66 | 350 | 172        | 110 | 225       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
- Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
- Refer to page 23 for details of the input shaft end tap and eyebolt.

DIMENSIONS F TYPE (straight shaft)



Dimensions

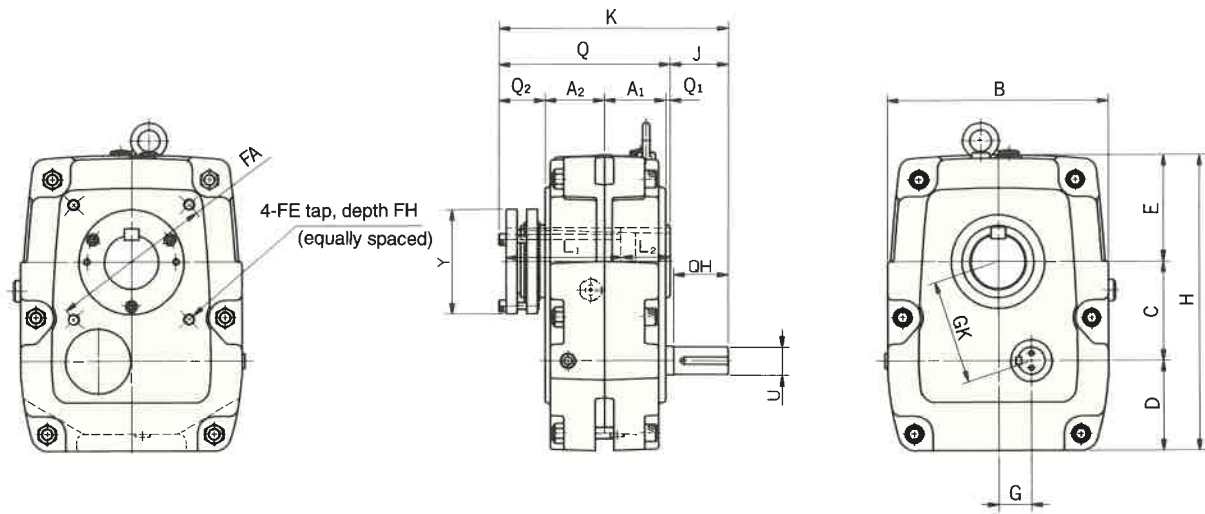
| Size  | A <sub>1</sub> | A <sub>2</sub> | B   | C     | D     | E   | G    | GK  | H   | J   | K   | Input Shaft |    |         |
|-------|----------------|----------------|-----|-------|-------|-----|------|-----|-----|-----|-----|-------------|----|---------|
|       |                |                |     |       |       |     |      |     |     |     |     | φU (h7)     | QH | Key     |
| SM100 | 40             | 38             | 124 | 53.9  | 55.1  | 59  | 18.5 | 57  | 168 | 24  | 112 | 11          | 24 | 4×4×20  |
| SM103 | 44             | 42             | 154 | 64.7  | 65.3  | 71  | 24   | 69  | 201 | 38  | 135 | 16          | 35 | 5×5×30  |
| SM107 | 56             | 54             | 188 | 79.5  | 83.5  | 87  | 30   | 85  | 250 | 45  | 171 | 19          | 40 | 6×6×35  |
| SM115 | 62             | 60             | 206 | 86.1  | 91.9  | 95  | 32.5 | 92  | 273 | 55  | 194 | 24          | 50 | 8×7×40  |
| SM203 | 70             | 68             | 238 | 100.4 | 101.6 | 110 | 37   | 107 | 312 | 60  | 219 | 28          | 55 | 8×7×45  |
| SM207 | 79             | 77             | 282 | 118.6 | 124.4 | 129 | 42.5 | 126 | 372 | 70  | 248 | 32          | 65 | 10×8×50 |
| SM215 | 85             | 82             | 306 | 137.5 | 124.5 | 148 | 46   | 145 | 410 | 80  | 273 | 38          | 75 | 10×8×60 |
| SM307 | 106            | 103            | 358 | 155.0 | 151.0 | 176 | 53.5 | 164 | 482 | 91  | 326 | 42          | 85 | 12×8×70 |
| SM315 | 120            | 117            | 406 | 181.4 | 169.6 | 195 | 63   | 192 | 546 | 101 | 367 | 48          | 95 | 14×9×80 |

| Size  | Output Shaft |    |    |       |      |     |     |                | Flange         |     |     | Weight kg |     |
|-------|--------------|----|----|-------|------|-----|-----|----------------|----------------|-----|-----|-----------|-----|
|       | ϕW (H8)      |    | XW | XH    |      | ϕY  | Q   | Q <sub>1</sub> | Q <sub>2</sub> | FA  | FE  |           | FH  |
| SM100 | 25           | 30 | 8  | 28.3  | 33.3 | 45  | 88  | 3              | 7              | 90  | M 6 | 12        | 5   |
| SM103 | 35           |    | 10 | 38.3  |      | 50  | 97  | 3              | 8              | 112 | M 8 | 12        | 7   |
| SM107 | 40           |    | 12 | 43.3  |      | 55  | 126 | 4              | 12             | 130 | M 8 | 12        | 19  |
| SM115 | 45           |    | 14 | 48.8  |      | 65  | 139 | 4              | 13             | 145 | M10 | 15        | 26  |
| SM203 | 55           |    | 16 | 59.3  |      | 75  | 159 | 5              | 16             | 170 | M12 | 18        | 39  |
| SM207 | 65           |    | 18 | 69.4  |      | 85  | 178 | 5              | 17             | 195 | M16 | 22        | 60  |
| SM215 | 75           |    | 20 | 79.9  |      | 100 | 193 | 6              | 20             | 225 | M16 | 22        | 82  |
| SM307 | 85           |    | 22 | 90.4  |      | 120 | 235 | 6              | 20             | 265 | M20 | 27        | 140 |
| SM315 | 95           |    | 25 | 100.4 |      | 150 | 266 | 6              | 23             | 310 | M20 | 30        | 200 |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
  - Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
  - Refer to page 23 for details of the input shaft end tap and eyebolt.

F TYPE Tapered Bush

SMR SERIES



Dimensions

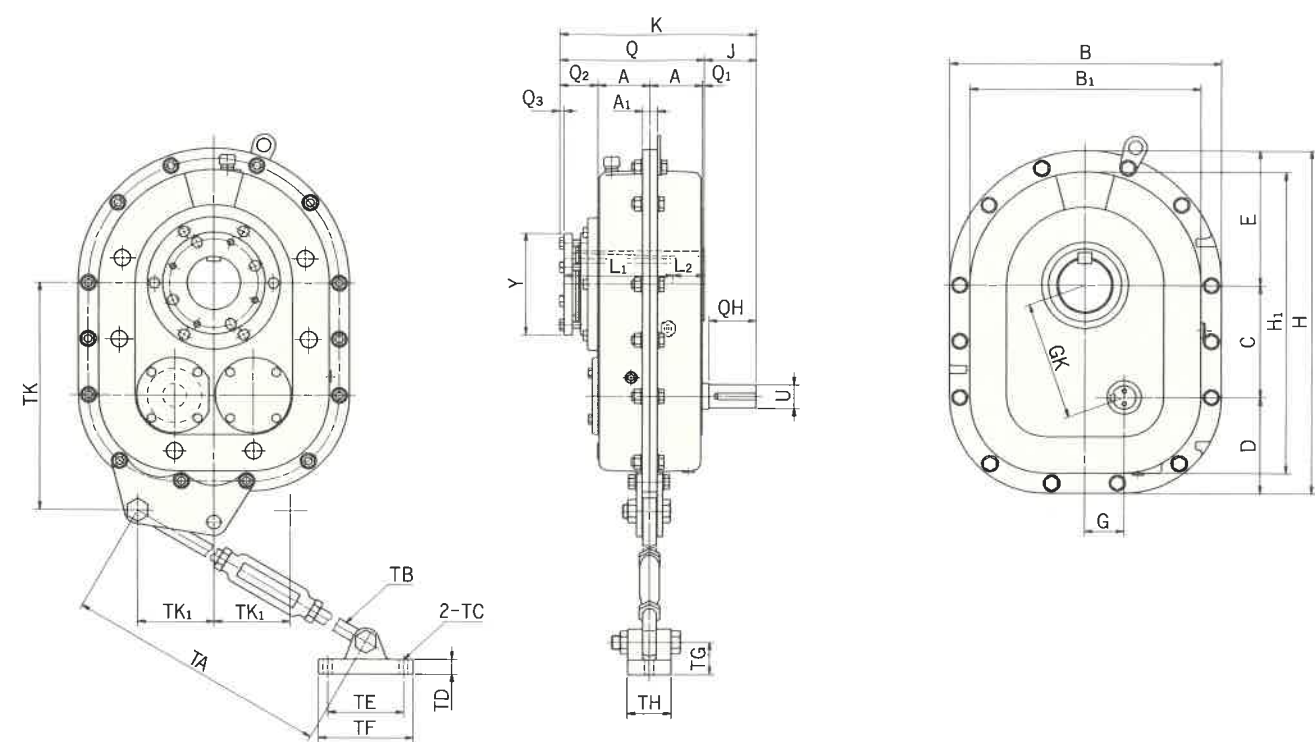
| Size  | A <sub>1</sub> | A <sub>2</sub> | B   | C     | D     | E   | G    | GK  | H   | J   | K   | Input Shaft |    |         |
|-------|----------------|----------------|-----|-------|-------|-----|------|-----|-----|-----|-----|-------------|----|---------|
|       |                |                |     |       |       |     |      |     |     |     |     | φU (h7)     | QH | Key     |
| SM107 | 56             | 54             | 188 | 79.5  | 83.5  | 87  | 30   | 85  | 250 | 45  | 201 | 19          | 40 | 6×6×35  |
| SM115 | 62             | 60             | 206 | 86.1  | 91.9  | 95  | 32.5 | 92  | 273 | 55  | 224 | 24          | 50 | 8×7×40  |
| SM203 | 70             | 68             | 238 | 100.4 | 101.6 | 110 | 37   | 107 | 312 | 60  | 254 | 28          | 55 | 8×7×45  |
| SM207 | 79             | 77             | 282 | 118.6 | 124.4 | 129 | 42.5 | 126 | 372 | 70  | 283 | 32          | 65 | 10×8×50 |
| SM215 | 85             | 82             | 306 | 137.5 | 124.5 | 148 | 46   | 145 | 410 | 80  | 317 | 38          | 75 | 10×8×60 |
| SM307 | 106            | 103            | 358 | 155.0 | 151.0 | 176 | 53.5 | 164 | 482 | 91  | 371 | 42          | 85 | 12×8×70 |
| SM315 | 120            | 117            | 406 | 181.4 | 169.6 | 195 | 63   | 192 | 546 | 101 | 410 | 48          | 95 | 14×9×80 |

| Size  | Output Shaft, Tapered Bush |     |                |                |                |                |                | Flange |     |    | Weight kg |
|-------|----------------------------|-----|----------------|----------------|----------------|----------------|----------------|--------|-----|----|-----------|
|       | φY                         | Q   | Q <sub>1</sub> | Q <sub>2</sub> | Q <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | FA     | FE  | FH |           |
| SM107 | 82                         | 156 | 4              | 42             | 6              | 97             | 53             | 130    | M 8 | 12 | 20        |
| SM115 | 95                         | 169 | 4              | 43             | 6              | 113            | 50             | 145    | M10 | 15 | 27        |
| SM203 | 112                        | 194 | 5              | 51             | 8              | 130            | 56             | 170    | M12 | 18 | 40        |
| SM207 | 120                        | 213 | 5              | 52             | 8              | 144            | 61             | 195    | M16 | 22 | 61        |
| SM215 | 145                        | 237 | 6              | 64             | 10             | 160            | 67             | 225    | M16 | 22 | 85        |
| SM307 | 162                        | 280 | 6              | 65             | 10             | 187            | 83             | 265    | M20 | 27 | 145       |
| SM315 | 200                        | 309 | 6              | 66             | 10             | 212            | 87             | 310    | M20 | 30 | 205       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
- Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
- Refer to page 23 for details of the input shaft end tap and eyebolt.



DIMENSIONS S TYPE Tapered Bush



Dimensions

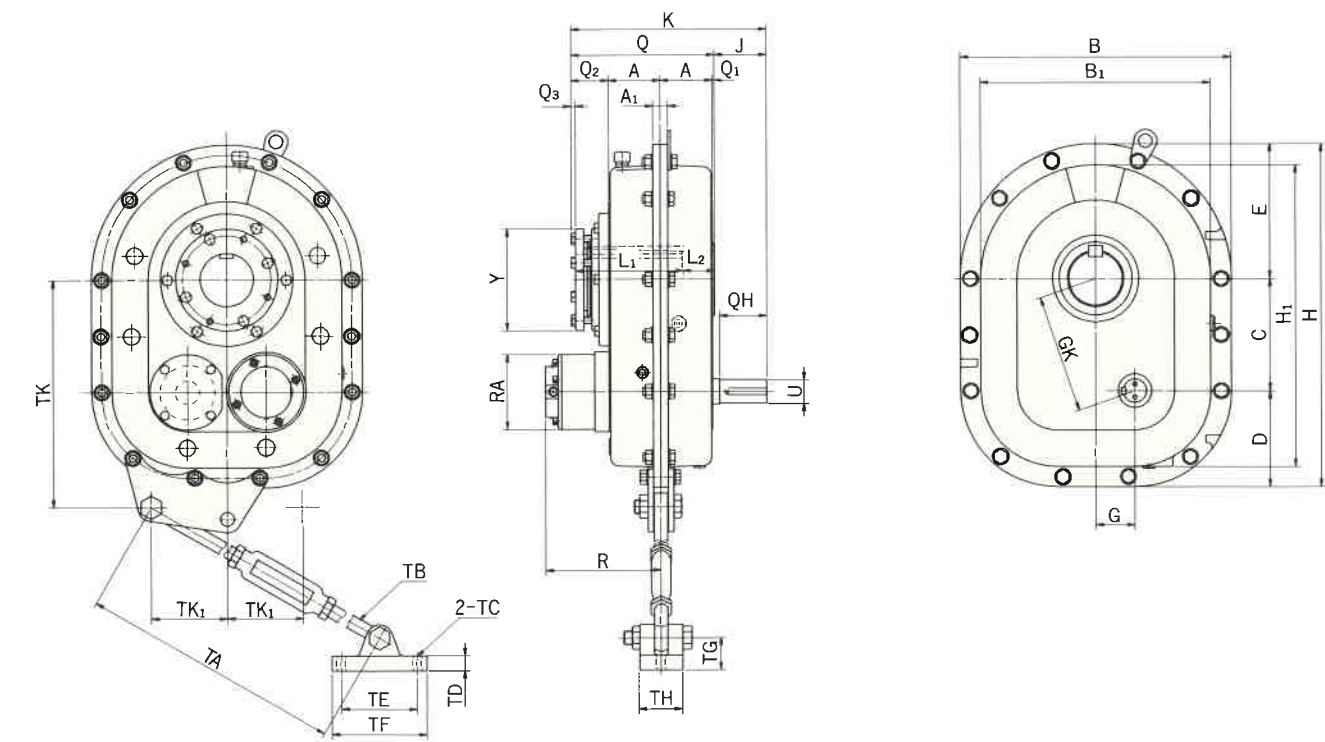
| Size  | A   | A <sub>1</sub> | B   | B <sub>1</sub> | C   | D   | E   | G   | GK  | H    | H <sub>1</sub> | J   | K   | Input Shaft |     |           | Output Shaft |     |
|-------|-----|----------------|-----|----------------|-----|-----|-----|-----|-----|------|----------------|-----|-----|-------------|-----|-----------|--------------|-----|
|       |     |                |     |                |     |     |     |     |     |      |                |     |     | φU(h7)      | QH  | Key       | φY           | Q   |
| SM407 | 100 | 29             | 549 | 467            | 235 | 195 | 275 | 79  | 248 | 705  | 622            | 103 | 389 | 48          | 95  | 14× 9× 80 | 195          | 286 |
| SM415 | 122 | 35             | 635 | 540            | 264 | 225 | 318 | 92  | 279 | 807  | 709            | 122 | 460 | 55          | 110 | 16×10× 90 | 240          | 338 |
| SM507 | 134 | 35             | 714 | 619            | 299 | 251 | 357 | 106 | 318 | 907  | 812            | 136 | 513 | 60          | 125 | 18×11×110 | 251          | 377 |
| SM608 | 173 | 35             | 767 | 672            | 345 | 275 | 384 | 108 | 362 | 1004 | 909            | 153 | 609 | 65          | 140 | 18×11×120 | 294          | 456 |

| Size  | Output Shaft, Tapered Bush |                |                |                |                | TK  | TK <sub>1</sub> | Tie Rod |        |      |    |     |     |    |     | Weight kg |
|-------|----------------------------|----------------|----------------|----------------|----------------|-----|-----------------|---------|--------|------|----|-----|-----|----|-----|-----------|
|       | Q <sub>1</sub>             | Q <sub>2</sub> | Q <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> |     |                 | TA      | TB     | TC   | TD | TE  | TF  | TG | TH  |           |
| SM407 | 5                          | 81             | 9              | 206            | 71             | 501 | 91              | 750~901 | 1"     | 17.5 | 19 | 121 | 159 | 51 | 68  | 280       |
| SM415 | 5                          | 89             | 11             | 254            | 73             | 535 | 179             | 711~863 | 1 1/4" | 20.6 | 35 | 178 | 222 | 76 | 102 | 420       |
| SM507 | 5                          | 104            | 13             | 286            | 78             | 580 | 257             | 711~863 | 1 1/4" | 20.6 | 35 | 178 | 222 | 76 | 102 | 620       |
| SM608 | 5                          | 105            | 13             | 305            | 138            | 631 | 288             | 711~863 | 1 1/4" | 20.6 | 35 | 178 | 222 | 76 | 102 | 940       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
- Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
- Refer to page 23 for details of input shaft end tap and hook.

DIMENSIONS B TYPE Tapered Bush

SMR SERIES



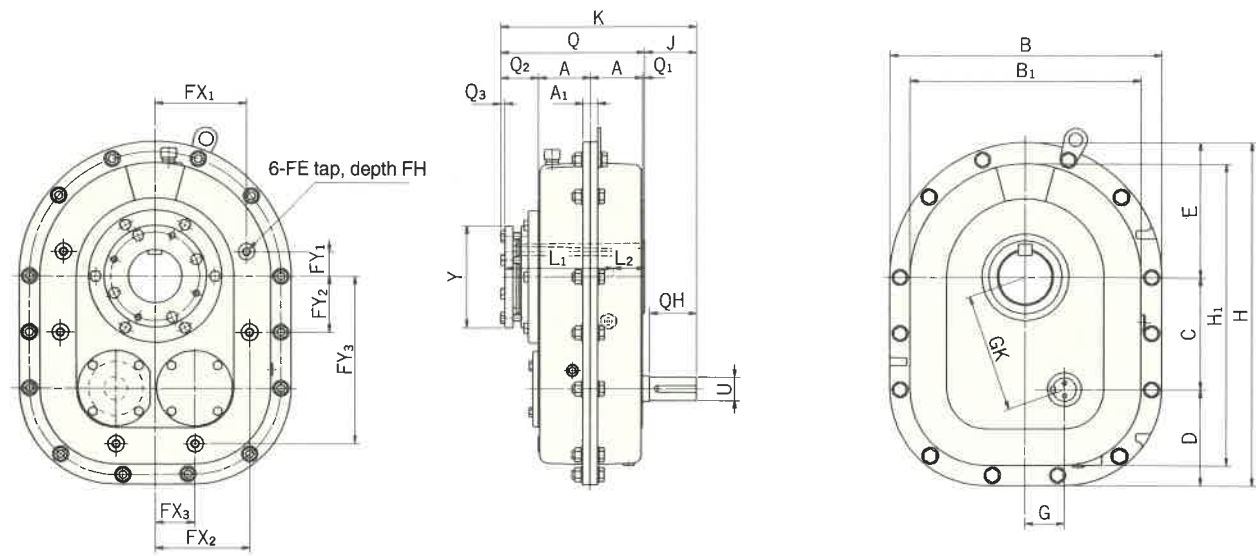
Dimensions

| Size  | A   | A <sub>1</sub> | B   | B <sub>1</sub> | C   | D   | E   | G   | GK  | H    | H <sub>1</sub> | J   | K   | Input Shaft |     |           | Output Shaft |     |
|-------|-----|----------------|-----|----------------|-----|-----|-----|-----|-----|------|----------------|-----|-----|-------------|-----|-----------|--------------|-----|
|       |     |                |     |                |     |     |     |     |     |      |                |     |     | φU(h7)      | QH  | Key       | φY           | Q   |
| SM407 | 100 | 29             | 549 | 467            | 235 | 195 | 275 | 79  | 248 | 705  | 622            | 103 | 389 | 48          | 95  | 14× 9× 80 | 195          | 286 |
| SM415 | 122 | 35             | 635 | 540            | 264 | 225 | 318 | 92  | 279 | 807  | 709            | 122 | 460 | 55          | 110 | 16×10× 90 | 240          | 338 |
| SM507 | 134 | 35             | 714 | 619            | 299 | 251 | 357 | 106 | 318 | 907  | 812            | 136 | 513 | 60          | 125 | 18×11×110 | 251          | 377 |
| SM608 | 173 | 35             | 767 | 672            | 345 | 275 | 384 | 108 | 362 | 1004 | 909            | 153 | 609 | 65          | 140 | 18×11×120 | 294          | 456 |

| Size  | Output Shaft, Tapered Bush |                |                |                |                | TK  | TK <sub>1</sub> | Tie Rod |        |      |    |     |     |    |     | Cam Clutch |     | Weight kg |
|-------|----------------------------|----------------|----------------|----------------|----------------|-----|-----------------|---------|--------|------|----|-----|-----|----|-----|------------|-----|-----------|
|       | Q <sub>1</sub>             | Q <sub>2</sub> | Q <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> |     |                 | TA      | TB     | TC   | TD | TE  | TF  | TG | TH  | R          | RA  |           |
| SM407 | 5                          | 81             | 9              | 206            | 71             | 501 | 91              | 750~901 | 1"     | 17.5 | 19 | 121 | 159 | 51 | 68  | 250        | 176 | 300       |
| SM415 | 5                          | 89             | 11             | 254            | 73             | 535 | 179             | 711~863 | 1 1/4" | 20.6 | 35 | 178 | 222 | 76 | 102 | 272        | 176 | 440       |
| SM507 | 5                          | 104            | 13             | 286            | 78             | 580 | 257             | 711~863 | 1 1/4" | 20.6 | 35 | 178 | 222 | 76 | 102 | 328        | 224 | 650       |
| SM608 | 5                          | 105            | 13             | 305            | 138            | 631 | 288             | 711~863 | 1 1/4" | 20.6 | 35 | 178 | 222 | 76 | 102 | 367        | 224 | 970       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
- Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
- Refer to page 23 for details of input shaft end tap and hook.

DIMENSIONS F TYPE Tapered Bush



Dimensions

| Size  | A   | A <sub>1</sub> | B   | B <sub>1</sub> | C   | D   | E   | G   | GK  | H    | H <sub>1</sub> | J   | K   | Input Shaft |     |           | Output Shaft |     |
|-------|-----|----------------|-----|----------------|-----|-----|-----|-----|-----|------|----------------|-----|-----|-------------|-----|-----------|--------------|-----|
|       |     |                |     |                |     |     |     |     |     |      |                |     |     | φU (h7)     | QH  | Key       | φY           | Q   |
|       |     |                |     |                |     |     |     |     |     |      |                |     |     |             |     |           |              |     |
| SM407 | 100 | 29             | 549 | 467            | 235 | 195 | 275 | 79  | 248 | 705  | 622            | 103 | 389 | 48          | 95  | 14× 9× 80 | 195          | 286 |
| SM415 | 122 | 35             | 635 | 540            | 264 | 225 | 318 | 92  | 279 | 807  | 709            | 122 | 460 | 55          | 110 | 16×10× 90 | 240          | 338 |
| SM507 | 134 | 35             | 714 | 619            | 299 | 251 | 357 | 106 | 318 | 907  | 812            | 136 | 513 | 60          | 125 | 18×11×110 | 251          | 377 |
| SM608 | 173 | 35             | 767 | 672            | 345 | 275 | 384 | 108 | 362 | 1004 | 909            | 153 | 609 | 65          | 140 | 18×11×120 | 294          | 456 |

| Size  | Output Shaft, Tapered Bush |                |                |                |                | Flange |    |                 |                 |                 |                 |                 |                 | Weight kg |
|-------|----------------------------|----------------|----------------|----------------|----------------|--------|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------|
|       | Q <sub>1</sub>             | Q <sub>2</sub> | Q <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | FE     | FH | FX <sub>1</sub> | FX <sub>2</sub> | FX <sub>3</sub> | FY <sub>1</sub> | FY <sub>2</sub> | FY <sub>3</sub> |           |
| SM407 | 5                          | 81             | 9              | 206            | 71             | M20    | 25 | 190             | 197             | 79              | 51              | 117             | 352             | 270       |
| SM415 | 5                          | 89             | 11             | 254            | 73             | M20    | 25 | 214             | 221             | 92              | 57              | 132             | 393             | 400       |
| SM507 | 5                          | 104            | 13             | 286            | 78             | M20    | 25 | 126             | 252             | 106             | 219             | 150             | 445             | 600       |
| SM608 | 5                          | 105            | 13             | 305            | 138            | M20    | 25 | 190             | 269             | 108             | 190             | 173             | 508             | 920       |

- Keys and keyways to ISO key (ISO R774, JIS B1301 1976)
- Weight is approximate and includes the reducer, tie rod, and lubricant.
- Refer to page 22 for details of the output shaft dimensions.
- Refer to page 23 for details of input shaft end tap and hook.

OUTPUT SHAFT DETAILS

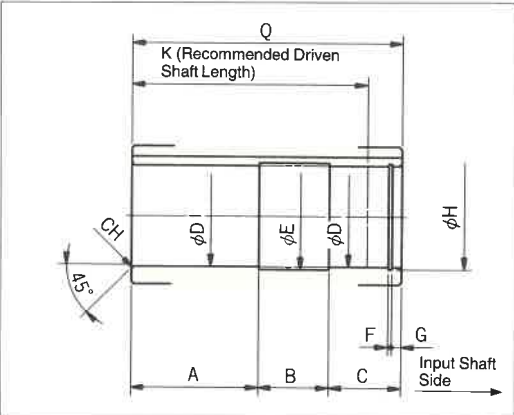
SMR SERIES

Straight Shaft

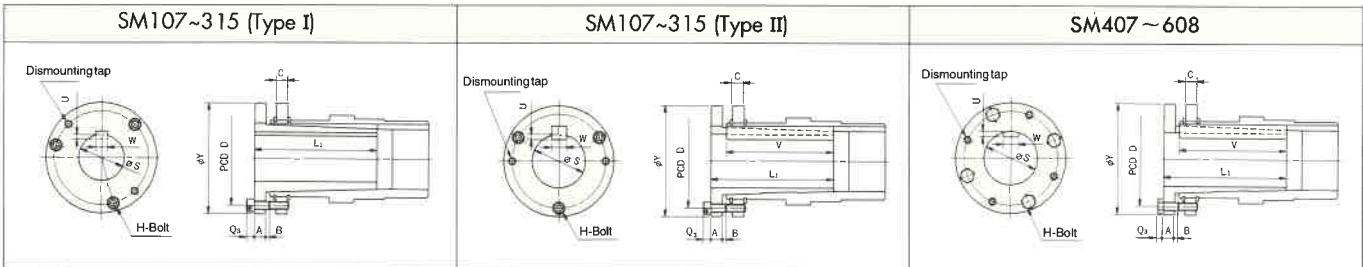
Straight Shaft

Unit: mm

| Size  | A   | B  | C  | D (H8) | E  | F    | G | H    | CH | K   |
|-------|-----|----|----|--------|----|------|---|------|----|-----|
| SM100 | 41  | 22 | 25 | 25     | 26 | 1.35 | 6 | 26.2 | C2 | 68  |
|       |     |    |    | 30     | 31 |      |   | 31.4 |    |     |
| SM103 | 45  | 26 | 26 | 35     | 36 | 1.65 | 6 | 37   | C2 | 76  |
| SM107 | 58  | 31 | 37 | 40     | 41 | 1.9  | 6 | 42.5 | C2 | 103 |
| SM115 | 63  | 36 | 40 | 45     | 46 | 1.9  | 6 | 47.5 | C2 | 116 |
| SM203 | 73  | 43 | 43 | 55     | 56 | 2.2  | 6 | 58   | C2 | 133 |
| SM207 | 81  | 49 | 48 | 65     | 66 | 2.7  | 7 | 68   | C2 | 150 |
| SM215 | 90  | 51 | 52 | 75     | 76 | 2.7  | 7 | 78   | C2 | 165 |
| SM307 | 102 | 75 | 58 | 85     | 86 | 3.2  | 9 | 88.5 | C3 | 201 |
| SM315 | 118 | 79 | 69 | 95     | 96 | 3.2  | 9 | 98.5 | C3 | 232 |



Tapered Bush

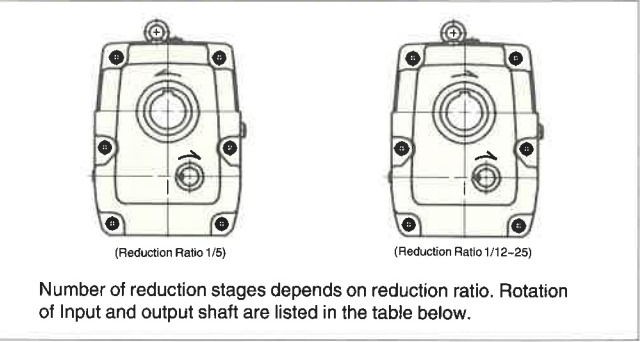


| Size  | S (H7) | W  | U   | V   | Type | Driven shaft key | A  | B | C  | D   | H             | Y   | L <sub>1</sub> | Q <sub>3</sub> |
|-------|--------|----|-----|-----|------|------------------|----|---|----|-----|---------------|-----|----------------|----------------|
|       |        |    |     |     |      |                  |    |   |    |     |               |     |                |                |
| SM107 | 30     | 8  | 4   | —   | I    | —                | 9  | 3 | 9  | 68  | 3-M6×30       | 82  | 97             | 6              |
|       | 35     | 10 | 5   | 85  | II   | Included         |    |   |    |     |               |     |                |                |
|       | 40     | 12 | 5   | 85  | II   | Included         |    |   |    |     |               |     |                |                |
| SM115 | 35     | 10 | 5   | —   | I    | —                | 9  | 4 | 9  | 80  | 3-M6×30       | 95  | 113            | 6              |
|       | 40     | 12 | 5   | 100 | II   | Included         |    |   |    |     |               |     |                |                |
|       | 45     | 14 | 5.5 | 100 | II   | Included         |    |   |    |     |               |     |                |                |
| SM203 | 45     | 14 | 5.5 | 114 | II   | Included         | 11 | 5 | 12 | 94  | 3-M8×35       | 112 | 130            | 8              |
|       | 50     | 14 | 5.5 | 114 | II   | Included         |    |   |    |     |               |     |                |                |
|       | 55     | 16 | 6   | 114 | II   | Included         |    |   |    |     |               |     |                |                |
| SM207 | 55     | 16 | 6   | 128 | II   | Included         | 11 | 5 | 12 | 103 | 3-M8×35       | 120 | 144            | 8              |
|       | 60     | 18 | 7   | 128 | II   | Included         |    |   |    |     |               |     |                |                |
|       | 65     | 18 | 7   | 128 | II   | Included         |    |   |    |     |               |     |                |                |
| SM215 | 65     | 18 | 7   | 140 | II   | Included         | 15 | 5 | 15 | 123 | 3-M10×45      | 145 | 160            | 10             |
|       | 70     | 20 | 7.5 | 140 | II   | Included         |    |   |    |     |               |     |                |                |
|       | 75     | 20 | 7.5 | 140 | II   | Included         |    |   |    |     |               |     |                |                |
| SM307 | 75     | 20 | 7.5 | 167 | II   | Included         | 15 | 5 | 15 | 140 | 3-M10×45      | 162 | 187            | 10             |
|       | 80     | 22 | 9   | 167 | II   | Included         |    |   |    |     |               |     |                |                |
|       | 85     | 22 | 9   | 167 | II   | Included         |    |   |    |     |               |     |                |                |
| SM315 | 85     | 22 | 9   | —   | I    | —                | 15 | 5 | 15 | 178 | 3-M10×95      | 200 | 212            | 10             |
|       | 90     | 25 | 9   | —   | I    | —                |    |   |    |     |               |     |                |                |
|       | 95     | 25 | 9   | —   | I    | —                |    |   |    |     |               |     |                |                |
| SM407 | 110    | 28 | 10  | 180 | II   | Included         | 16 | 8 | 17 | 170 | 4-1/2"×1 3/4" | 195 | 206            | 9              |
| SM415 | 120    | 32 | 11  | 225 | II   | Included         | 19 | 8 | 19 | 208 | 4-5/8"×2"     | 240 | 254            | 11             |
| SM507 | 135    | 36 | 12  | 260 | II   | Included         | 22 | 8 | 22 | 213 | 4-3/4"×2 1/4" | 251 | 286            | 13             |
| SM608 | 165    | 40 | 13  | 270 | II   | Included         | 25 | 8 | 25 | 256 | 6-3/4"×2 3/4" | 294 | 305            | 13             |



PRODUCT SPECIFICATIONS

1. Rotation of Input and Output Shafts



2. Paint

Munsell 2.5G 6/3

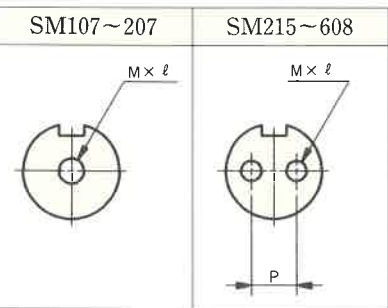
3. Key

All of the keys for input shaft are included.

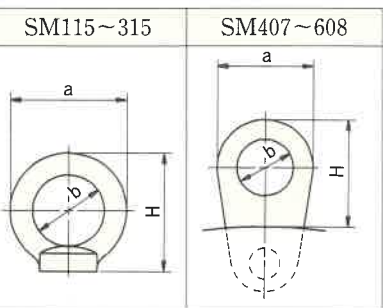
4. Actual Reduction Ratio

| Size | SM100  | SM103  | SM107  | SM115  | SM203  | SM207  | SM215  | SM307  | SM315  | SM407  | SM415  | SM507  | SM608  |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5    | 5.538  | 5.692  | 5.550  | 5.615  | 5.357  | 5.615  | 5.500  | 5.692  | 5.500  | —      | —      | —      | —      |
| 12   | 11.625 | 11.648 | 12.919 | 11.474 | 11.581 | 12.214 | 12.277 | 12.436 | 12.500 | —      | —      | —      | —      |
| 15   | 14.930 | 14.942 | 15.543 | 14.549 | 14.541 | 15.242 | 14.405 | 14.748 | 14.667 | 13.684 | 13.979 | 13.684 | 13.912 |
| 20   | 20.125 | 19.691 | 20.571 | 20.561 | 19.505 | 20.571 | 20.759 | 20.480 | 21.094 | —      | —      | —      | —      |
| 25   | 25.846 | 25.260 | 24.750 | 26.071 | 24.490 | 25.670 | 24.357 | 24.287 | 24.750 | 25.000 | 25.840 | 25.385 | 25.655 |

5. Input Shaft End Tap



6. Eyebolt and Hook



| Size                | Eyebolt | a    | b    | H    |
|---------------------|---------|------|------|------|
| SM115               | M8      | 32.6 | 20   | 33.3 |
| SM203               | M10     | 41   | 25   | 41.5 |
| SM207, SM215        | M12     | 50   | 30   | 51   |
| SM307               | M16     | 60   | 35   | 60   |
| SM315               | M20     | 72   | 40   | 71   |
| SM407               | —       | 54   | 31.8 | 60.3 |
| SM415, SM507, SM608 | —       | 54   | 31.8 | 54   |

| Size  | SM107   | SM115   | SM203    | SM207    | SM215   | SM307    | SM315    | SM407    | SM415    | SM507    | SM608    |
|-------|---------|---------|----------|----------|---------|----------|----------|----------|----------|----------|----------|
| P     | —       | —       | —        | —        | 20      | 22       | 26       | 26       | 30       | 36       | 36       |
| M x l | M6 x 15 | M8 x 16 | M10 x 20 | M10 x 20 | M8 x 16 | M10 x 20 | M10 x 20 | M10 x 20 | M10 x 20 | M10 x 20 | M12 x 20 |

Note : Input shaft end tap is not provided for SM100 and SM103.

7. Moment of Inertia Converted at Input Shaft

| Size | SM100    | SM103    | SM107   | SM115   | SM203   | SM207   | SM215  | SM307  | SM315  | SM407  | SM415  | SM507  | SM608  |
|------|----------|----------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| 1/5  | 0.000049 | 0.000117 | 0.00032 | 0.00059 | 0.00134 | 0.00268 | 0.0048 | 0.0113 | 0.0247 | —      | —      | —      | —      |
| 1/12 | 0.000028 | 0.000087 | 0.00018 | 0.00038 | 0.00079 | 0.00153 | 0.0026 | 0.0059 | 0.0111 | —      | —      | —      | —      |
| 1/15 | 0.000025 | 0.000082 | 0.00018 | 0.00037 | 0.00078 | 0.00151 | 0.0028 | 0.0059 | 0.0117 | 0.0174 | 0.0422 | 0.0819 | 0.1499 |
| 1/20 | 0.000016 | 0.000053 | 0.00011 | 0.00023 | 0.00050 | 0.00096 | 0.0017 | 0.0036 | 0.0064 | —      | —      | —      | —      |
| 1/25 | 0.000015 | 0.000051 | 0.00011 | 0.00022 | 0.00048 | 0.00092 | 0.0016 | 0.0034 | 0.0061 | 0.0078 | 0.0197 | 0.0362 | 0.0676 |

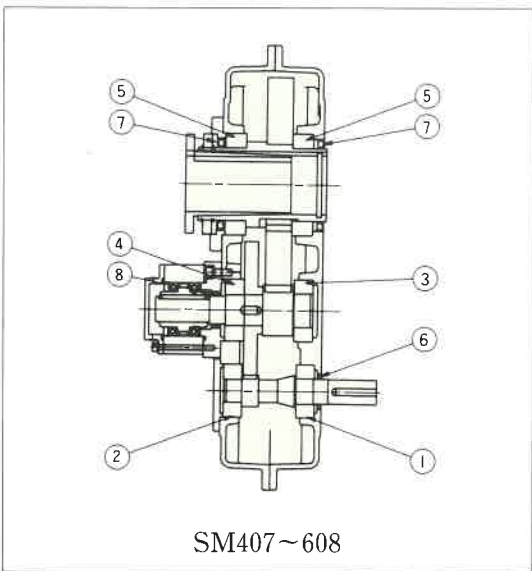
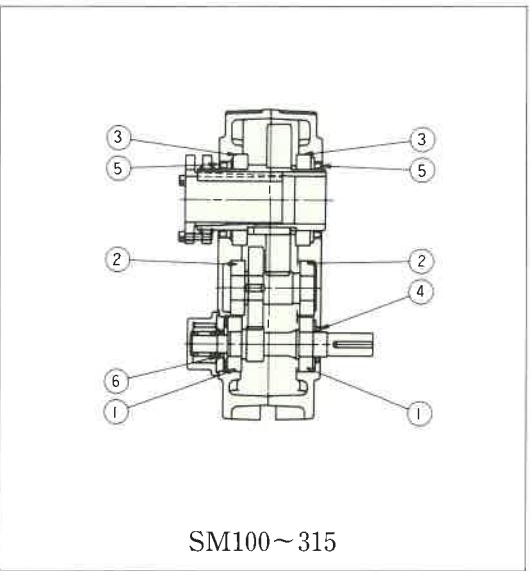
Note : Use the above table for SI unit calculation.

8. GD<sup>2</sup> Converted at Input Shaft

| Size | SM100   | SM103   | SM107   | SM115   | SM203  | SM207  | SM215  | SM307  | SM315  | SM407 | SM415 | SM507 | SM608 |
|------|---------|---------|---------|---------|--------|--------|--------|--------|--------|-------|-------|-------|-------|
| 1/5  | 0.00020 | 0.00047 | 0.00130 | 0.00237 | 0.0054 | 0.0107 | 0.0192 | 0.0453 | 0.0987 | —     | —     | —     | —     |
| 1/12 | 0.00011 | 0.00035 | 0.00073 | 0.00153 | 0.0031 | 0.0061 | 0.0106 | 0.0235 | 0.0446 | —     | —     | —     | —     |
| 1/15 | 0.00010 | 0.00033 | 0.00071 | 0.00148 | 0.0031 | 0.0060 | 0.0111 | 0.0236 | 0.0469 | 0.070 | 0.169 | 0.327 | 0.579 |
| 1/20 | 0.00006 | 0.00021 | 0.00045 | 0.00092 | 0.0020 | 0.0038 | 0.0067 | 0.0145 | 0.0257 | —     | —     | —     | —     |
| 1/25 | 0.00006 | 0.00020 | 0.00044 | 0.00089 | 0.0019 | 0.0037 | 0.0065 | 0.0136 | 0.0246 | 0.031 | 0.079 | 0.145 | 0.270 |

SMR SERIES

9. Parts List



● SM100~315

| Part | Size                                | SM100    | SM103    | SM107    | SM115    | SM203     | SM207       | SM215      | SM307       | SM315        |
|------|-------------------------------------|----------|----------|----------|----------|-----------|-------------|------------|-------------|--------------|
| No.  | Reduction Ratio                     | Quantity | 5        | 12~25    | 5        | 12~25     | 5           | 12~25      | 5           | 12~25        |
| 1    | Input Shaft Bearing                 | 2        | 6301     | 6303     | 30304    | TMB304    | 32305       | TMB305     | 32306       | TMB306       |
| 2    | Intermediate Shaft Bearing          | 2        | —        | 6202     | —        | 6303      | —           | TMB304     | —           | TMB305       |
| 3    | Output Shaft Bearing                | 2        | 6009     | 6010     | 6011     | 6013      | 6015        | 6017       | 6020        | 6024         |
| 4    | Input Shaft Oilseal                 | 1        | D12.25.7 | D17.35.8 | D20.35.8 | D25.40.8  | D30.45.8    | D35.52.7   | D40.58.8    | D45.60.9     |
| 5    | Output Shaft Oilseal                | 2        | D45.62.9 | D50.72.9 | D55.72.9 | D65.88.12 | DM75.100.13 | D85.110.13 | D100.125.13 | DM120.150.14 |
| 6    | Type B Opposite Input Shaft Oilseal | 1        | —        | —        | D15.30.7 | —         | D18.35.8    | —          | D20.36.7    | —            |
|      | Plug Size                           | —        | 1/8"     | 1/8"     | 1/4"     | 3/8"      | 3/8"        | 1/2"       | 1/2"        | 3/4"         |
|      | Oil Gauge Window                    | —        | —        | —        | PF1/4    | PF3/8     | PF3/8       | PF1/2      | PF1/2       | PF3/4        |

Note : TMB is NTN's long life bearing.  
Note : An intermediate shaft bearing is not provided for ratio 1/5.  
Note : An oil gauge window is not provided for SM100 and SM103.  
Note : Reduction ratio 1/5 is not provided for type B of SM107 to SM315.

● SM407~608

| Part |                                     | Size     | SM407                 |                      | SM415                 |                | SM507                 |                    | SM608                  |              |
|------|-------------------------------------|----------|-----------------------|----------------------|-----------------------|----------------|-----------------------|--------------------|------------------------|--------------|
| No.  | Reduction Ratio                     | Quantity | 15                    | 25                   | 15                    | 25             | 15                    | 25                 | 15                     | 25           |
| 1    | Input Shaft Bearing A               | 1        | HM807010<br>JHM807045 |                      | 65500<br>65237        |                | H715311<br>H715343    |                    | 6420<br>6461           |              |
| 2    | Input Shaft Bearing B               | 1        | HM807010<br>HM807040  | HM807010<br>HM807040 | 65500<br>65237        | 65500<br>65225 | H715311<br>H715343    | H715311<br>H715332 | 6420<br>6461           | 6420<br>6455 |
| 3    | Intermediate Shaft Bearing C        | 1        | HM212011<br>HM212049  |                      | 65500<br>65237        |                | 653<br>663            |                    | JHM318410<br>JHM318448 |              |
| 4    | Intermediate Shaft Bearing D        | 1        | HM212011<br>HM212044  |                      | 65500<br>65237        |                | 653<br>663            |                    | JHM318410<br>JHM318448 |              |
| 5    | Output Shaft Bearing                | 2        | 48620<br>48685        |                      | 67720<br>67786        |                | 67720<br>67790        |                    | LM545810<br>LM545849   |              |
| 6    | Input Shaft Oilseal                 | 1        | 1.938''×2.69''×5/16'' |                      | 2.375''×3.13''×7/16'' |                | 2.625''×3.355''×3/8'' |                    | 2.75''×3.505''×3/8''   |              |
| 7    | Output Shaft Oilseal                | 2        | 5.625''×7.131''×1/2'' |                      | 6.750''×8.007''×1/2'' |                | 7.000''×8.507''×1/2'' |                    | 9.250''×11.258''×5/8'' |              |
| 8    | Type B Opposite Input Shaft Oilseal | 1        | D55.72.9              |                      | D55.72.9              |                | DM75.100.13           |                    | DM75.100.13            |              |
|      | Plug Size                           | —        | 3/4''                 |                      | 3/4''                 |                | 3/4''                 |                    | 3/4''                  |              |
|      | Oil Gauge Window                    | —        | PF3/4                 |                      | PF3/4                 |                | PF3/4                 |                    | PF3/4                  |              |

Note : Bearings and oilseals are genuine Tsubaki parts. When required, consult Tsubaki.  
Note : Upper and lower bearings are supplied in pairs.



1. Before using the Reducer  
(1) Check the Mounting Position

- Check the name plate to confirm that the mounting position is as per your order, and check the position of input and output shafts, oil gauge and plugs (no gauge is provided for SM100 and SM103 which can be mounted in any direction).
  - For Type B, check the direction of backstop cam clutch overrunning.
- Note: If a reducer is to be used with a mounting position other than that for which it was ordered, care must be taken regarding the quantity of lubricant required and the new position of the oil gauge and plugs. Refer to page 27 for mounting examples.

(2) Check lubricant

- Reducers are shipped filled with grease and are ready for immediate use. SM100 and SM103 are shipped with (Nigtight LYS#000), and SM107 and SM608 are shipped with Mobil Gear 629. When mounting is completed, make sure to check the oil level through the oil gauge. If you cannot see the oil level, gradually supply more lubricant and check as you do so.
- When SM107 to SM608 are continuously driven with over input shaft speeds of over 1000 rpm, the temperature of the reducer will rise. Adjusting the oil level in the following manner is recommended:  
With the reducer mounted as in mounting example 1, drain the lubricant out from plug A (see example 1 on page 27) until the lubricant comes to the plug A level. Remove the oil gauge and put it in the plug A hole, and put plug A into the oil gauge hole.
- For the backstop cam clutch, grease (Esso Beacon 325) is used for SM107 to SM315 and lubricant (Mobil ATF#220) for SM407 to SM608 so the reducers are ready for immediate use.
- For SM107 to SM608, make sure to attach the supplied pressure vent.

(3) Transportation

- When transporting a reducer, make sure to use either the eyebolt or hook of the housing top. Never transport it using wire on the input and output shafts. This will shorten the life of the reducer and cause shaft misalignment.
- Note: A eyebolt is not provided for SM100 to SM107.

2. Mounting

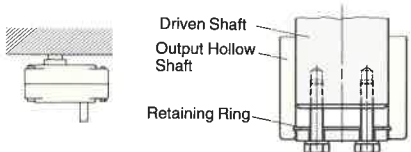
(1) Mounting to driven shaft

- A [g7] shaft is recommended for mounting the reducer. The hollow shafts are finished with H7 or H8. For the length of driven shaft, refer to K in page 22.

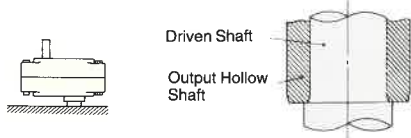
(Straight Shaft Series)

- Mount SM100 to SM107 directly and SM115 to SM608 by lifting them using the eyebolt or hook and mounting then onto the driven shaft. After mounting, lightly hammer in the output hollow shaft if the fitting is tight (coat the shaft with grease or molybdenum disulfide.)

- When mounting the reducer, take care not to damage the oil seals.
- Use parallel keys. Never use tapered keys or those with head. This will shorten the life of the reducer. An end plate is recommended for fixing a reducer longitudinally to the driven shaft. An end plate fixes the reducer to the shaft with a retaining ring in a groove, or fixes the reducer at the end of shaft.
  - If the reducer is mounted with the driven shaft facing downward, take extreme care to prevent it from falling by fixing it to the driven shaft with stop rings and bolts as shown in the example below.



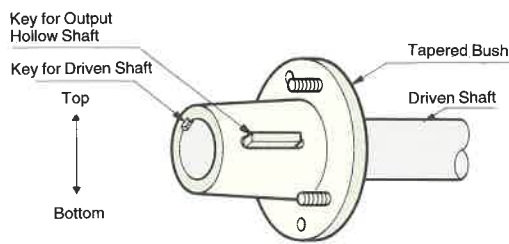
- If the reducer is mounted with the driven shaft facing upward, make a shoulder on the driven shaft as shown below to stop movement in the direction of thrust.



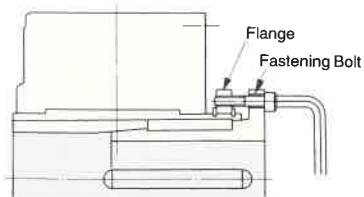
(Tapered Bush Series)

① Tapered Bush Type I

- **Mount the reducer in the following manner:**
  - Mop oil and dust off driven shaft, tapered bush and output hollow shaft.
  - Set the key into the driven shaft.
  - Insert the tapered bush into the driven shaft.
  - Set the key for output hollow shaft in the tapered bush.



- Insert the tapered bush into the output hollow shaft while suspending the reducer using the eyebolt or hook on the housing. Adjust the phase of the key before insertion.
- Align and insert the bolts of the tapered bush into the taps of the flange.
- Check that the reducer is correctly mounted with reference to the driven shaft and fasten the bolts evenly.



- Refer to the table below as a guide for the torque for the fastening bolts.

| Size                         | SM107           | SM115           | SM203           | SM207           | SM215           | SM307           | SM315           | SM407           | SM415         | SM507         | SM608         |
|------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|---------------|---------------|
| Bolt Size                    | M6              | M6              | M8              | M8              | M10             | M10             | M10             | 1/2"            | 5/8"          | 3/4"          | 3/4"          |
| Fastening Torque N·m (kgf·m) | 13.7<br>{ 1.4 } | 13.7<br>{ 1.4 } | 34.3<br>{ 3.5 } | 34.3<br>{ 3.5 } | 67.6<br>{ 6.9 } | 67.6<br>{ 6.9 } | 67.6<br>{ 6.9 } | 95.1<br>{ 9.7 } | 196<br>{ 20 } | 343<br>{ 35 } | 343<br>{ 35 } |

Note : Fastening torque is per bolt.

- After fastening, make sure that tapered bush and the end of output hollow shaft do not interfere with each other (if they do, the diameter of driven shaft that may be too small, or the bolts may not be fastened evenly).

② Tapered Bush Type II

- The key for driven shaft is the same as one for output hollow shaft. The other details are the same as for the tapered bush type I.

(2) Tie-Rod installation procedure

- Please refer to the following procedure when installing the Tie-Rod.

SM100~315

| Step | Installation                                                                                                                                                  | Diagram |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1    | Remove the setting bolt ① from the housing.                                                                                                                   |         |
| 2    | Put the tie rod collar ③ into the tie rod ④.                                                                                                                  |         |
| 3    | Insert the setting bolt through the bolt hole of the housing, the tie rod collar and the other bolt hole, and connect the tie rod to the housing using U nut. |         |
| 4    | Screw the lock nut ⑤ into the tie rod ④ and screw in the turn buckle ⑥.                                                                                       |         |

SM407~608

| Step | Installation                                                                                                                                                                                        | Diagram |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1    | Remove the setting bolt ① from the housing.                                                                                                                                                         |         |
| 2    | Insert the tie rod bolt A ③ through the washer A ⑦, tie rod plate ①, the bolt hole of the housing, the other tie rod plate ①, washer A and fasten with U nut to connect the tie rod to the housing. |         |
| 3    | Insert the tie rod bolt B ④ through washer B ⑧, tie rod plate ①, tie rod ②, the other tie rod plate ①, washer B ⑧ and fasten with the nut ⑥ to connect the tie rod to the housing.                  |         |

- For fastening torque for the setting bolt and tie rod A, refer to the table below.

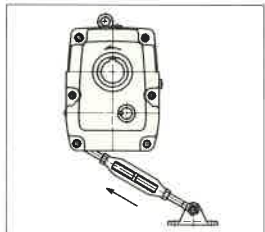
| Size                         | SM100          | SM103         | SM107         | SM115         | SM203         | SM207         | SM215         |
|------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Bolt Size                    | M6             | M8            | M8            | M10           | M12           | M16           | M16           |
| Fastening Torque N·m (kgf·m) | 4.9<br>{ 0.5 } | 12<br>{ 1.3 } | 12<br>{ 1.3 } | 25<br>{ 2.6 } | 44<br>{ 4.5 } | 108<br>{ 11 } | 108<br>{ 11 } |

| Size                         | SM307         | SM315         | SM407        | SM415         | SM507         | SM608         |
|------------------------------|---------------|---------------|--------------|---------------|---------------|---------------|
| Bolt Size                    | M20           | M20           | 5/8"         | 3/4"          | 3/4"          | 3/4"          |
| Fastening Torque N·m (kgf·m) | 196<br>{ 20 } | 196<br>{ 20 } | 98<br>{ 10 } | 167<br>{ 17 } | 167<br>{ 17 } | 167<br>{ 17 } |

• Size of Tie Rod Bolt B for SM407 to SM608

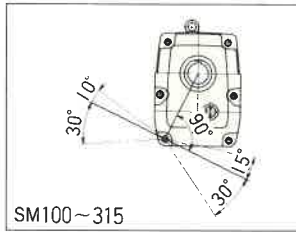
| Size      | SM407 | SM415  | SM507  | SM608  |
|-----------|-------|--------|--------|--------|
| Bolt Size | 1"    | 1 1/4" | 1 1/4" | 1 1/4" |

• Direction of Tie Rod Installation

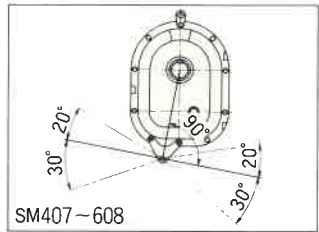


We recommend that you install the tie rod to receive tension in the direction of the arrow, as shown in the sketch on the left. The arrow indicates the direction of output shaft rotation and of the force applied to the tie rod.

• Recommended Range of Installation Angle of Tie Rod



SM100~315



SM407~608

(3) Caution Regarding Flange Mounting Type

- When radial load is applied to the output shaft, make sure that it is below the allowable radial load.
- When thrust load is applied to the output shaft, consult Tsubaki. Output shafts with tapered roller bearings can be made to order. This specification is standard for SM407 to SM608. Consult Tsubaki for the other sizes. Refer to page 29 for details.
- For the tapered bush type, make sure to fix the reducer to the driven shaft only after the tapered bush is fastened with the driven shaft free from thrust load. Otherwise, thrust load will be applied to the reducer or the driven shaft when fastening tapered bush.

(4) Mounting Examples

- SM100 and SM103 can be mounted in any direction.
- Unless otherwise specified in your order, Mounting Example 1 will be shipped. For the other mountings, consult Tsubaki.



HANDLING

For SM107 to SM608, the position of oil gauge and plugs can be within the range ±10° in the examples below. If the inclination is over ±10°, or mounting is to be altered, consult Tsubaki regarding the new position for the oil gauge and plugs.

Standard Mounting

Example 1

Example 2

Example 3

Example 4

Special Mounting

Example 5

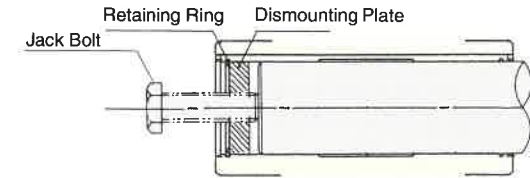
Example 6

3. Removal  
(Straight Shaft Series)

- Prepare a dismantling plate and a retaining ring referring to the table below. Pull the reducer from the driven shaft with them using jack bolts (the length of the driven shaft is K as specified in page 22).

Recommended Dimensions for the Dismounting Plate

|                   |                     | Unit: mm |        |        |        |        |        |        |        |        |     |
|-------------------|---------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Dismounting Plate | Size                | SM 100   | SM 103 | SM 107 | SM 115 | SM 203 | SM 207 | SM 215 | SM 307 | SM 315 |     |
|                   | D                   | 24.8     | 29.8   | 34.5   | 39.5   | 44.5   | 54     | 64     | 74     | 84     | 94  |
|                   | T                   | 10       | 10     | 12     | 12     | 14     | 14     | 14     | 17     | 17     |     |
| Z Tap             | Z                   | M16      | M16    | M20    | M20    | M24    | M24    | M24    | M30    | M30    |     |
|                   | Retaining Ring Size | C25      | C30    | C35    | C40    | C45    | C55    | C65    | C75    | C85    | C95 |



(Tapered Bush Series)

- Dismount in the following manner:
  - Remove the tapered bush fastening bolts and insert two of them into the two dismantling tap holes of tapered bush.
  - Suspend the reducer using the eyebolt or hook.
  - Fasten the bolts and push the flange of the output hollow shaft to push the reducer out. Dismount the reducer from the driven shaft with it suspended.

Note: When removing the reducer from the driven shaft, the fastening bolts need to be unscrewed and screwed into the taps. Refer to the bolt length and PCD (pitch circle diameter) in the detailed dimensions (page 22), and leave room for removal.

4. Trial Running

- Before starting routine running, make a trial run and make sure that there is no vibration, noise or abnormal heat. Gradually increase the load on the reducer after the test run.
- For the first couple of days, the reducer may run somewhat hot, but this is normal. However, if the temperature of the surface of the reducer exceeds more than 93°C, check quantity of lubricant and mounting.

5. Maintenance  
(1) Change of Lubricant

- Grease need not be changed for SM100 and SM103.
- Maintenance for SM107 to SM608 should be done in the following manner:
  - Change lubricant every 1000 to 2000 hours after starting the routine running.
  - Check the mounting position, supply lubricant referring to the table below, and check the oil level through oil gauge.
  - If the reducer is inclined at an angle greater than that in the example, the quantity of oil will be changed. Supply more oil than specified in the table below.

Recommended Lubricants

| Input rpm              | 500~1,750 rpm             |                           | 500 rpm or less           |                           |
|------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Ambient temperature    | 0~35°C                    | 35~60°C                   | 0~35°C                    | 35~60°C                   |
| Industrial Gear Oil #2 | ISO VG 150                | ISO VG 220                | ISO VG 220                | ISO VG 320                |
| Mobil Oil              | Mobil Gear 629            | Mobil Gear 630            | Mobil Gear 630            | Mobil Gear 632            |
| Esso Oil               | Spartan EP150             | Spartan EP220             | Spartan EP220             | Spartan EP320             |
| Showa Shell            | Omara Oil 150             | Omara Oil 220             | Omara Oil 220             | Omara Oil 320             |
| Nippon Oil             | Bon Knock SP150           | Bon Knock SP220           | Bon Knock SP220           | Bon Knock SP320           |
| Idemitsu               | Daphny Super Gear Oil 150 | Daphny Super Gear Oil 220 | Daphny Super Gear Oil 220 | Daphny Super Gear Oil 320 |
| Cosmo Oil              | Cosmo Gear SE150          | Cosmo Gear SE220          | Cosmo Gear SE220          | Cosmo Gear SE320          |

Quantity of Lubricant

|                  |          | Unit: ℓ    |          |          |          |          |
|------------------|----------|------------|----------|----------|----------|----------|
| Mounting Example | Size     | SM107      | SM115    | SM203    | SM207    | SM215    |
|                  | Standard | 1 1.0(0.7) | 1.3(0.9) | 1.9(1.3) | 3.0(2.0) | 3.7(2.4) |
| Special          | Standard | 2 1.1      | 1.5      | 2.1      | 3.7      | 4.8      |
|                  | Standard | 3 0.9      | 1.2      | 1.7      | 3.0      | 4.0      |
| Special          | Standard | 4 0.8      | 1.0      | 1.4      | 2.5      | 3.2      |
|                  | Standard | 5 1.1      | 1.5      | 2.1      | 3.7      | 4.8      |
| Special          | Standard | 6 1.0      | 1.4      | 2.0      | 3.5      | 4.4      |

|                  |          | Unit: ℓ    |          |         |        |        |        |
|------------------|----------|------------|----------|---------|--------|--------|--------|
| Mounting Example | Size     | SM307      | SM315    | SM407   | SM415  | SM507  | SM608  |
|                  | Standard | 1 6.3(4.1) | 8.7(5.7) | 10(6.5) | 15(10) | 20(13) | 30(24) |
| Special          | Standard | 2 8.5      | 12       | 10      | 15     | 20     | 30     |
|                  | Standard | 3 6.9      | 10       | 10      | 15     | 20     | 30     |
| Special          | Standard | 4 5.8      | 8.2      | 10      | 15     | 20     | 30     |
|                  | Standard | 5 8.5      | 12       | 21      | 27     | 36     | 49     |
| Special          | Standard | 6 8.0      | 12       | 21      | 27     | 36     | 49     |

Note: The figures in parentheses in example 1 apply only to mounting example 1 (page 27) with the oil gauge window in the plug A position for running continuously at an input rpm of more than 1000.

(2) Changing grease and lubricant for backstop cam clutch (Type B)

- Change grease and lubricant once every 1 to 2 years in the following manner.

SM107~315

| Step | How to Change                                                                                                             | Note                                                                                                                   |
|------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 1    | Remove the cam clutch cover from the housing.                                                                             | Use wooden head or soft head hammer.                                                                                   |
| 2    | Take out the cam clutch by lightly spinning it in the overrun direction.                                                  | Handle bush with the utmost care. Excessive force will cause damage.                                                   |
| 3    | Grease the sliding faces with the specified amount of grease.                                                             | Be sure to use the specified amount of recommended grease. Excessive greasing will cause overheating.                  |
| 4    | Insert the cam clutch back into the shaft by lightly spinning it in the overrun direction.                                | If the fit is too tight, do not try to force it. The cam clutch may have a problem.                                    |
| 5    | Fasten the cam clutch cover to the housing after matching the phase of the keyways of the cam clutch cover and the shaft. | Fix the cam clutch cover with bolts only after checking that the cam clutch is correctly inserted in the driven shaft. |

Cam Clutch Cover Bolt Sizes

| Size      | SM107 | SM115 | SM203 | SM207 | SM215 | SM307 | SM315 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| Bolt Size | M6    | M6    | M6    | M8    | M8    | M10   | M10   |

SM407~608

| Step | How to Change                                                                  | Note                                                                                  |
|------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1    | Remove the drain plug and drain the used lubricant out through the drain plug. | It is a good idea to clean out the inside with white kerosene after draining the oil. |
| 2    | Put the drain plug back in its place.                                          | Coat the drain plug with adhesive bond and put it back in place.                      |
| 3    | Supply the specified quantity of new lubricant through the oil plug.           | Use only the recommended lubricant.                                                   |
| 4    | Check the oil level with the oil gauge and put the oil plug back in place.     | Excessive lubricant may cause overheating.                                            |

Size of the Oil Plug and Drain Plug

| Size      | SM407~608 |
|-----------|-----------|
| Plug Size | PT 1/8    |

Recommended Grease and Lubricant

| Size  | SM107~315                | SM407~608                |
|-------|--------------------------|--------------------------|
| Brand | Esso Beacon 325 (grease) | Mobil ATF220 (lubricant) |

Note: The brand of grease and lubricant is an important factor affecting power transmission capacity and life of the cam clutch. Make sure to use the recommended grease and lubricant specified above. Avoid using other brands or those with extreme-pressure additives; both may cause malfunction of cam clutch.

Quantity of Grease and Lubricant

| Size                  | SM107 | SM115 | SM203 | SM207 | SM215 | SM307 | SM315 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|
| Grease Amount         | 11    | 11    | 14    | 17    | 27    | 31    | 40    |
| Unit: g               |       |       |       |       |       |       |       |
| Size                  | SM407 | SM415 | SM507 | SM608 |       |       |       |
| Quantity of lubricant | 0.2   | 0.2   | 0.5   | 0.5   |       |       |       |

Output Shaft with Tapered Roller Bearings

- Output shaft with tapered roller bearings is recommended for SM107 to SM315 in cases when there is large radial load or thrust load applied to output shaft from outside.

Allowable Output Shaft Radial Load for Output Shaft with Tapered Roller Bearings

| Output Shaft rpm | Size | SM107 | SM115 | SM203 | SM207 | SM215 | SM307 | SM315 |
|------------------|------|-------|-------|-------|-------|-------|-------|-------|
|                  |      |       |       |       |       |       |       |       |
| 10 rpm           |      | 11201 | 13093 | 22432 | 25529 | 36021 | 40719 | 61152 |
|                  |      | 1143  | 1336  | 2289  | 2605  | 3694  | 4155  | 6240  |
| 30 rpm           |      | 11201 | 12720 | 15308 | 21295 | 24745 | 40258 | 61152 |
|                  |      | 1143  | 1298  | 1562  | 2173  | 2525  | 4108  | 6240  |
| 60 rpm           |      | 10888 | 10016 | 11985 | 16366 | 19453 | 31781 | 50235 |
|                  |      | 1111  | 1022  | 1223  | 1670  | 1985  | 3243  | 5126  |
| 100 rpm          |      | 9134  | 8369  | 10074 | 14416 | 16248 | 27185 | 42885 |
|                  |      | 932   | 854   | 1028  | 1471  | 1658  | 2774  | 4376  |
| 150 rpm          |      | 8095  | 7340  | 8859  | 12691 | 14269 | 24069 | 37897 |
|                  |      | 826   | 749   | 904   | 1295  | 1456  | 2456  | 3867  |
| 240 rpm          |      | 7409  | 6331  | 7732  | 10996 | 12211 | 20992 | 33340 |
|                  |      | 756   | 646   | 789   | 1122  | 1246  | 2142  | 3402  |
| 360 rpm          |      | 6478  | 5606  | 6723  | 9535  | 10594 | 18346 | 29224 |
|                  |      | 661   | 572   | 686   | 973   | 1081  | 1872  | 2982  |

Allowable Output Shaft Thrust Load for Output Shaft with Tapered Roller Bearings

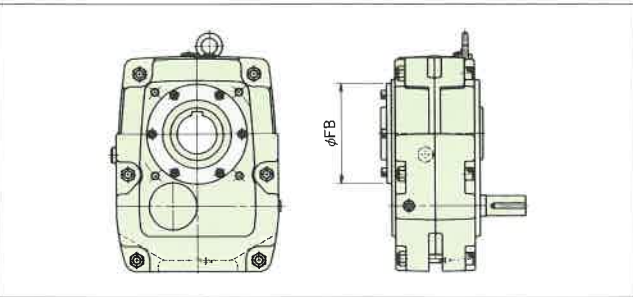
| Output<br>Shaft<br>rpm. | Size | SM107 | SM115 | SM203 | SM207 | SM215 | SM307 | SM315 |
|-------------------------|------|-------|-------|-------|-------|-------|-------|-------|
|                         |      |       |       |       |       |       |       |       |
| 10 rpm                  | 3450 | 5723  | 11495 | 9173  | 19541 | 14141 | 25970 |       |
|                         | 352  | 584   | 1173  | 936   | 1994  | 1443  | 2650  |       |
| 30 rpm                  | 3587 | 5958  | 11731 | 9192  | 19786 | 14141 | 26225 |       |
|                         | 366  | 608   | 1197  | 938   | 2019  | 1443  | 2676  |       |
| 60 rpm                  | 3744 | 6125  | 11995 | 10280 | 20178 | 15219 | 26970 |       |
|                         | 382  | 625   | 1124  | 1049  | 2059  | 1553  | 2752  |       |
| 100 rpm                 | 3861 | 6252  | 12358 | 11152 | 20492 | 16709 | 28244 |       |
|                         | 394  | 638   | 1261  | 1138  | 2091  | 1705  | 2882  |       |
| 150 rpm                 | 4175 | 6546  | 12799 | 11682 | 21001 | 17807 | 29224 |       |
|                         | 426  | 668   | 1306  | 1192  | 2143  | 1817  | 2982  |       |
| 240 rpm                 | 5106 | 6870  | 13524 | 12701 | 21570 | 19237 | 31223 |       |
|                         | 521  | 701   | 1380  | 1296  | 2201  | 1963  | 3186  |       |
| 360 rpm                 | 5165 | 7134  | 12113 | 12897 | 19169 | 19727 | 31693 |       |
|                         | 527  | 728   | 1236  | 1316  | 1956  | 2013  | 3234  |       |

| Output Shaft rpm | Size | N     |        |        |        |
|------------------|------|-------|--------|--------|--------|
|                  |      | SM407 | SM415  | SM507  | SM608  |
| 10 rpm           |      | 58761 | 103733 | 111720 | 111720 |
|                  |      | 5996  | 10585  | 11400  | 11400  |
| 30 rpm           |      | 28263 | 54145  | 79243  | 111720 |
|                  |      | 2884  | 5525   | 8086   | 11400  |
| 60 rpm           |      | 15935 | 31566  | 58516  | 92140  |
|                  |      | 1626  | 3221   | 5971   | 9402   |
| 100 rpm          |      | 9957  | 24686  | 50156  | —      |
|                  |      | 1016  | 2519   | 5118   | —      |

- Note 1 : Tapered Roller Bearing type is standard for SM407 to SM608.
- Note 2 : For output shaft rpm between the rows above, take the lower radial (thrust) load.
- Note 3 : When both radial and thrust load are applied at the same time, consult Tsubaki.
- Note 4 : Allowable radial loads shown above are based on the working position that is at one recommended shaft diameter away from the end of output shaft as shown in the diagram on page 8.

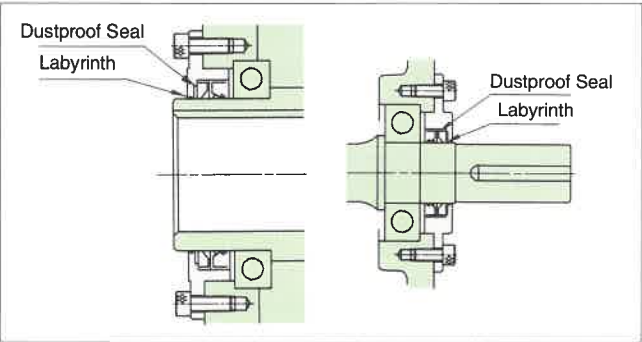
Flange Type with Centering Location (F Type)

- If precise alignment with the driven shaft is needed, use the F Type (flange mount type) with centering location (φFB).



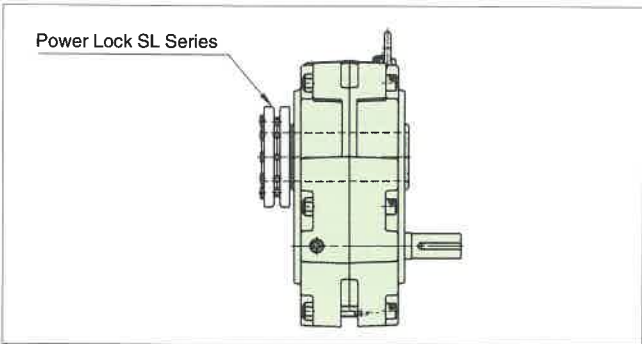
Dustproof Oil Seal

- In very dusty locations, we recommend that reducers with oil seals and dustproof oilseals with labyrinth.



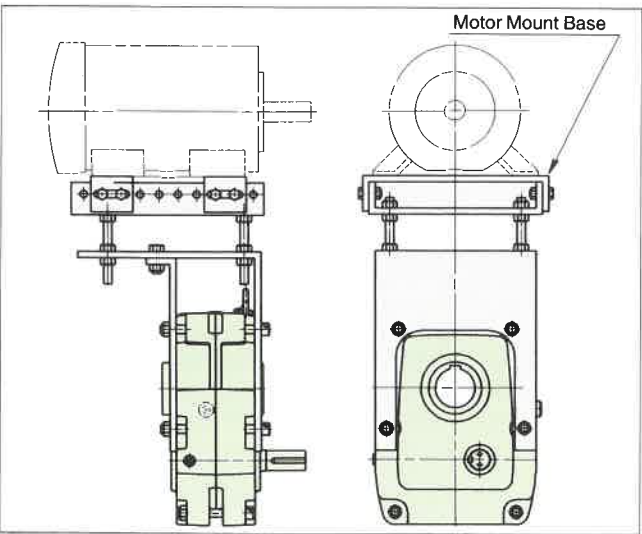
Output Shaft with Power Lock

- When fixed to a keyless shaft, we recommend a reducer with output shaft and Power Lock SL series.



Motor Mount Base

- When a motor is directly mounted to the reducer, we recommend that a motor mount base be used. With the motor mount base, the drive system will be more compact and can easily be connected and standardized.



CAUTION

1. Installation Manual

- Read the installation manual carefully before use. Installation manuals are supplied with Tsubaki assembly and control products.
- Be sure to deliver the installation manual to your final users and advise them to read it to ensure that they operate the equipment correctly.
- If you cannot find the installation manual, ask your supplier or Tsubaki sales office for a copy. Supply them with the name of the product, model, size and number.

2. For Safety

- If danger is expected from operation of your Tsubaki products, take the necessary steps to ensure that they are operated safely.
- If your Tsubaki product does not operate normally, take care to ensure that dangerous operating conditions do not occur.

3. Maintenance and Inspection

- Wear suitable clothing and protective equipment (safety glasses, gloves and safety shoes).
- Keep your work place tidy and safe to prevent secondary accidents.
- Make sure to cut the power source and check that the machine has stopped completely before maintenance and inspection. Take utmost care to prevent sudden starting of the machine.
- Safety equipment must be provided in accordance with provisions of ANSI/ASME B15.1-1984 "Safety Standards for Mechanical Power Transmission Apparatus", and ANSI/ASME B20.1-1990 "Safety Standards for Conveyors And Related Equipment", or other applicable safety standards. When revisions of these standards are published, the updated edition shall apply.





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