

# Right angle gearbox with 1 or 2 outputs

## HLA19

## Torque up to 43 Nm

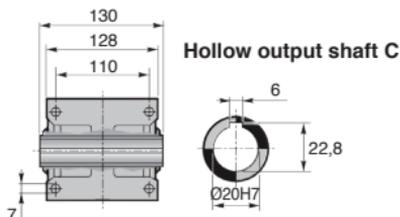
- Right angle bevel gearbox
- Max speed 1,400 rpm
- Output backlash: 12' to 20'
- Materials:
  - Components: steel
  - Housing: cast iron
- Thermal power: 4.5 kW (Heat dissipation capability)

Spiral bevel gear

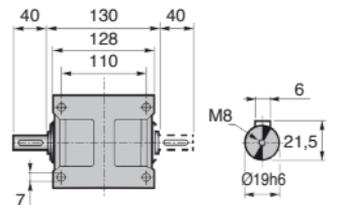


### Part number

- When ordering, specify the rotation direction and mounting position by replacing **E** and **B3** in the Part number (see presentation page) (tome 2 p.266)

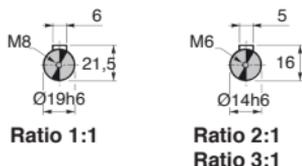


Hollow output shaft C



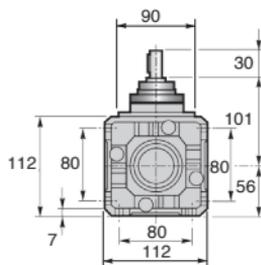
Single output shaft S or dual shafts B

With input shaft



Ratio 1:1

Ratio 2:1  
Ratio 3:1



### DISCOUNTS

|       |      |     |            |
|-------|------|-----|------------|
| Qty   | 1+   | 2+  | 4+         |
| Disc. | List | -5% | On request |

| Part number    | Ratio | Ø input shaft (h6) | Output shaft | Max output speed (rpm) | Mechanical output torque (Nm) | Weight (kg) | Price each |
|----------------|-------|--------------------|--------------|------------------------|-------------------------------|-------------|------------|
| HLA19-1-C-E-B3 | 1:1   | 19                 | hollow       | 1400                   | 35                            | 8,5         | On request |
| HLA19-2-C-E-B3 | 2:1   | 14                 | hollow       | 700                    | 40                            | 8,5         | On request |
| HLA19-3-C-E-B3 | 3:1   | 14                 | hollow       | 467                    | 43                            | 8,5         | On request |
| HLA19-1-S-E-B3 | 1:1   | 19                 | single       | 1400                   | 35                            | 8,5         | On request |
| HLA19-2-S-E-B3 | 2:1   | 14                 | single       | 700                    | 40                            | 8,5         | On request |
| HLA19-3-S-E-B3 | 3:1   | 14                 | single       | 467                    | 43                            | 8,5         | On request |
| HLA19-1-B-E-B3 | 1:1   | 19                 | dual         | 1400                   | 35                            | 8,5         | On request |
| HLA19-2-B-E-B3 | 2:1   | 14                 | dual         | 700                    | 40                            | 8,5         | On request |
| HLA19-3-B-E-B3 | 3:1   | 14                 | dual         | 467                    | 43                            | 8,5         | On request |

\*For maximum torque and a service factor applied, see presentation page - Dimensions en mm

# Right angle gearbox with 1 or 2 outputs

Torque up to 43 Nm

HLC19

## - Right angle bevel gearbox

- For 1,8 kW motor
- Max speed 1,400 rpm
- Output backlash: 12' to 20'
- Materials:
  - Components: steel
  - Housing: cast iron
- Thermal power: 4.5 kW (Heat dissipation capability)

Spiral bevel gear

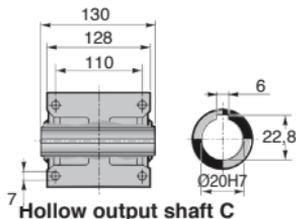
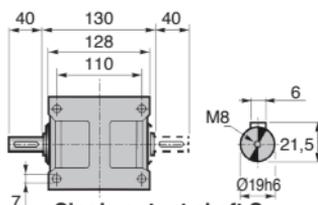
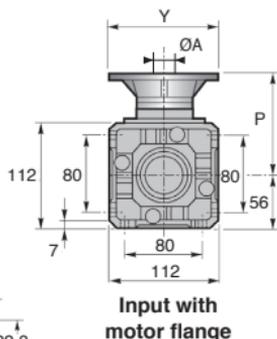


## Part number

- When ordering, specify the rotation direction and mounting position by replacing **E** and **B3** in the Part number (see presentation page (tome 2 p.267).

## Input flange

- The following flanges are available: 63B5, 71B5, 80B5, 90B5 and 80B14 and the reference should be added to the Part number



## Input flange

| IEC | 63B5 | 71B5 | 80B5 | 90B5 | 80B14 |
|-----|------|------|------|------|-------|
| Y   | 140  | 160  | 200  | 200  | 120   |
| P   | 104  | 111  | 131  | 131  | 131   |
| ØA  | 11   | 14   | 19   | 24   | 19    |

## DISCOUNTS

| Qty   | 1+   | 2+  | 4+         |
|-------|------|-----|------------|
| Disc. | List | -5% | On request |

| Part number         | Ratio | Output shaft | Max output speed (rpm) | Mechanical output torque* (Nm) | Weight (kg) | Price each |
|---------------------|-------|--------------|------------------------|--------------------------------|-------------|------------|
| HLC19-1-C-63B5-E-B3 | 1:1   | hollow       | 1400                   | 35                             | 11,5        | On request |
| HLC19-2-C-63B5-E-B3 | 2:1   | hollow       | 700                    | 40                             | 11,5        | On request |
| HLC19-3-C-63B5-E-B3 | 3:1   | hollow       | 467                    | 43                             | 11,5        | On request |
| HLC19-1-S-63B5-E-B3 | 1:1   | single       | 1400                   | 35                             | 11,5        | On request |
| HLC19-2-S-63B5-E-B3 | 2:1   | single       | 700                    | 40                             | 11,5        | On request |
| HLC19-3-S-63B5-E-B3 | 3:1   | single       | 467                    | 43                             | 11,5        | On request |
| HLC19-1-B-63B5-E-B3 | 1:1   | dual         | 1400                   | 35                             | 11,5        | On request |
| HLC19-2-B-63B5-E-B3 | 2:1   | dual         | 700                    | 40                             | 11,5        | On request |
| HLC19-3-B-63B5-E-B3 | 3:1   | dual         | 467                    | 43                             | 11,5        | On request |

\*For maximum torque and a service factor applied, see presentation page - Dimensions in mm

# Right angle gearbox with 1 or 2 outputs

## HLA24

## Torque up to 78 Nm

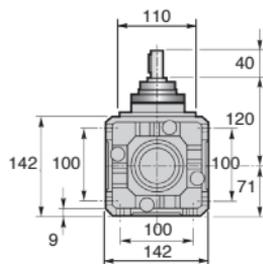
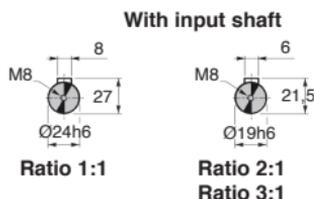
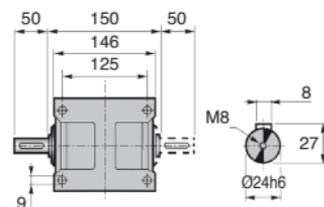
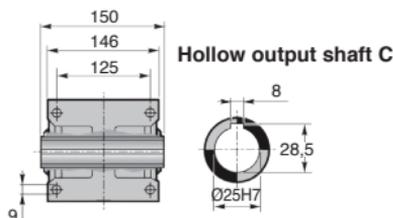
- **Right angle bevel gearbox**
- Max speed 1,400 rpm
- Output backlash: 12' to 20'
- Materials:
  - Components: steel
  - Housing: cast iron
- Thermal power: 6.7 kW (Heat dissipation capability)

Spiral bevel gear



### Part number

- When ordering, specify the rotation direction and mounting position by replacing **E** and **B3** in the Part number (**tome 2 p.256**).



### DISCOUNTS

|       |      |     |            |
|-------|------|-----|------------|
| Qty   | 1+   | 2+  | 4+         |
| Disc. | List | -5% | On request |

| Part number    | Ratio | Øinput shaft (h6) | Input shaft | Max output speed (rpm) | Mechanical output torque* (Nm) | Weight (kg) | Price each |
|----------------|-------|-------------------|-------------|------------------------|--------------------------------|-------------|------------|
| HLA24-1-C-E-B3 | 1:1   | 24                | hollow      | 1400                   | 73                             | 14          | On request |
| HLA24-2-C-E-B3 | 2:1   | 19                | hollow      | 700                    | 72                             | 14          | On request |
| HLA24-3-C-E-B3 | 3:1   | 19                | hollow      | 467                    | 78                             | 14          | On request |
| HLA24-1-S-E-B3 | 1:1   | 24                | single      | 1400                   | 73                             | 14          | On request |
| HLA24-2-S-E-B3 | 2:1   | 19                | single      | 700                    | 72                             | 14          | On request |
| HLA24-3-S-E-B3 | 3:1   | 19                | single      | 467                    | 78                             | 14          | On request |
| HLA24-1-B-E-B3 | 1:1   | 24                | dual        | 1400                   | 73                             | 14          | On request |
| HLA24-2-B-E-B3 | 2:1   | 19                | dual        | 700                    | 72                             | 14          | On request |
| HLA24-3-B-E-B3 | 3:1   | 19                | dual        | 467                    | 78                             | 14          | On request |

\*For maximum torque and a service factor applied, see presentation page - Dimensions in mm

# Right angle gearbox with 1 or 2 outputs

Torque up to 78 Nm

HLC24

## - Right angle bevel gearbox

- For 4 kW motor
- Max speed 1,400 rpm
- Output backlash: 12' to 20'
- Materials:
  - Components: steel
  - Housing: cast iron
- Thermal power: 6.7 kW (Heat dissipation capability)

Spiral bevel gear

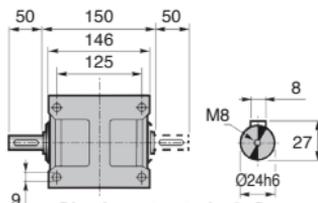
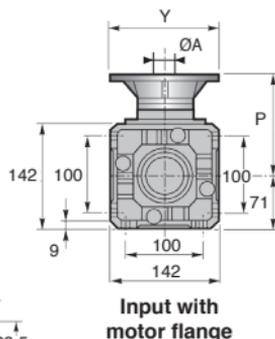


## Part number

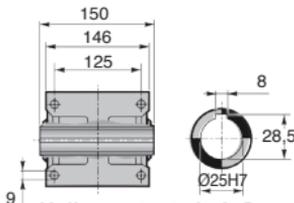
- When ordering, specify the rotation direction and mounting position by replacing **E** and **B3** in the Part number (see presentation page (tome 2 p.267).

## Input flange

- The following flanges are available: 63B5, 71B5, 80B5, 90B5 and 80B14 and the reference should be added to the Part number



Single output shaft S  
or dual shafts B



Hollow output shaft C

## Input flange

| IEC | 71B5 | 80B5 | 90B5 | 100/112B5 |
|-----|------|------|------|-----------|
| Y   | 160  | 200  | 200  | 250       |
| P   | 128  | 148  | 148  | 158       |
| ØA  | 14   | 19   | 24   | 28        |

## DISCOUNTS

| Qty   | 1+   | 2+  | 4+         |
|-------|------|-----|------------|
| Disc. | List | -5% | On request |

| Part number         | Ratio | Output shaft | Max output speed (rpm) | Mechanical output torque* (Nm) | Weight (kg) | Price each |
|---------------------|-------|--------------|------------------------|--------------------------------|-------------|------------|
| HLC24-1-C-71B5-E-B3 | 1:1   | hollow       | 1400                   | 73                             | 19          | On request |
| HLC24-2-C-71B5-E-B3 | 2:1   | hollow       | 700                    | 72                             | 19          | On request |
| HLC24-3-C-71B5-E-B3 | 3:1   | hollow       | 467                    | 78                             | 19          | On request |
| HLC24-1-S-71B5-E-B3 | 1:1   | single       | 1400                   | 73                             | 19          | On request |
| HLC24-2-S-71B5-E-B3 | 2:1   | single       | 700                    | 72                             | 19          | On request |
| HLC24-3-S-71B5-E-B3 | 3:1   | single       | 467                    | 78                             | 19          | On request |
| HLC24-1-B-71B5-E-B3 | 1:1   | dual         | 1400                   | 73                             | 19          | On request |
| HLC24-2-B-71B5-E-B3 | 2:1   | dual         | 700                    | 72                             | 19          | On request |
| HLC24-3-B-71B5-E-B3 | 3:1   | dual         | 467                    | 78                             | 19          | On request |

\*For maximum torque and a service factor applied, see presentation page - Dimensions in mm

# Right angle gearbox with 1 or 2 outputs

## HLA28

## Torque up to 182 Nm

### - Right angle bevel gearbox

- Max speed 1,400 rpm
- Output backlash: 12' to 20'
- Materials:
  - Components: steel
  - Housing: cast iron
- Thermal power: 10.3 kW (Heat dissipation capability)

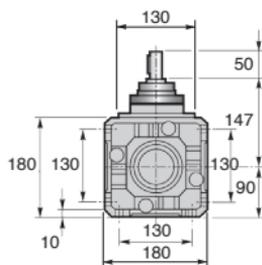
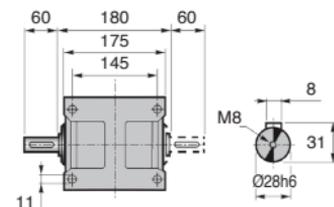
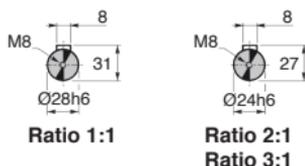
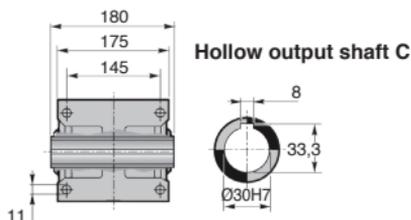
Spiral bevel gear



### Part number

- When ordering, specify the rotation direction and mounting position by replacing **E** and **B3** in the Part number (see presentation page (tome 2 p.256).

### With input shaft



### DISCOUNTS

|       |      |     |            |
|-------|------|-----|------------|
| Qty   | 1+   | 2+  | 4+         |
| Disc. | List | -5% | On request |

| Part number    | Ratio | ØInput shaft (h6) | output shaft | Max output speed (rpm) | Mechanical output torque* (Nm) | Weight (kg) | Price each |
|----------------|-------|-------------------|--------------|------------------------|--------------------------------|-------------|------------|
| HLA28-1-C-E-B3 | 1:1   | 28                | hollow       | 1400                   | 146                            | 23          | On request |
| HLA28-2-C-E-B3 | 2:1   | 24                | hollow       | 700                    | 145                            | 23          | On request |
| HLA28-3-C-E-B3 | 3:1   | 24                | hollow       | 467                    | 182                            | 23          | On request |
| HLA28-1-S-E-B3 | 1:1   | 28                | single       | 1400                   | 146                            | 23          | On request |
| HLA28-2-S-E-B3 | 2:1   | 24                | single       | 700                    | 145                            | 23          | On request |
| HLA28-3-S-E-B3 | 3:1   | 24                | single       | 467                    | 182                            | 23          | On request |
| HLA28-1-B-E-B3 | 1:1   | 28                | dual         | 1400                   | 146                            | 23          | On request |
| HLA28-2-B-E-B3 | 2:1   | 24                | dual         | 700                    | 145                            | 23          | On request |
| HLA28-3-B-E-B3 | 3:1   | 24                | dual         | 467                    | 182                            | 23          | On request |

\*For maximum torque and a service factor applied, see presentation page - Dimensions en mm

# Right angle gearbox with 1 or 2 outputs

Torque up to 182 Nm

HLC28

## - Right angle bevel gearbox

- For 9,2 kW motor
- Max speed 1,400 rpm
- Output backlash: 12' to 20'
- Materials:
  - Components: steel
  - Housing: cast iron
- Thermal power: 10.3 kW (Heat dissipation capability)

Spiral bevel gear

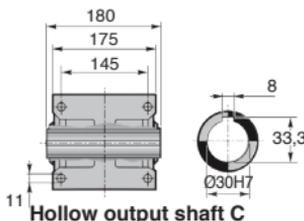
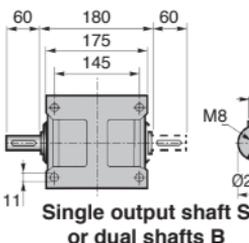
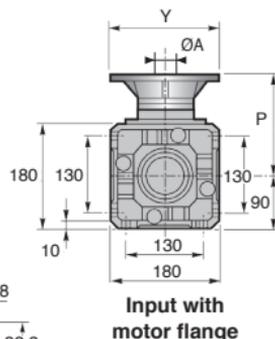


## Part number

- When ordering, specify the rotation direction and mounting position by replacing **E** and **B3** in the Part number (see presentation page (tome 2 p.267).

## Input flange

- The following flanges are available: 63B5, 71B5, 80B5, 90B5 and 80B14 and the reference should be added to the Part number



## Input flange

| IEC | 80B5 | 90B5 | 100/112B5 | 132B5 |
|-----|------|------|-----------|-------|
| Y   | 200  | 200  | 250       | 300   |
| P   | 171  | 171  | 181       | 203   |
| ØA  | 19   | 24   | 28        | 38    |

## DISCOUNTS

| Qty        | 1+  | 2+  | 4+         |
|------------|-----|-----|------------|
| Disc. List | -5% | -5% | On request |

| Part number         | Ratio | Output shaft | Max output speed (rpm) | Mechanical output torque* (Nm) | Weight (kg) | Price each |
|---------------------|-------|--------------|------------------------|--------------------------------|-------------|------------|
| HLC28-1-C-80B5-E-B3 | 1:1   | hollow       | 1400                   | 146                            | 33          | On request |
| HLC28-2-C-80B5-E-B3 | 2:1   | hollow       | 700                    | 145                            | 33          | On request |
| HLC28-3-C-80B5-E-B3 | 3:1   | hollow       | 467                    | 182                            | 33          | On request |
| HLC28-1-S-80B5-E-B3 | 1:1   | single       | 1400                   | 146                            | 33          | On request |
| HLC28-2-S-80B5-E-B3 | 2:1   | single       | 700                    | 145                            | 33          | On request |
| HLC28-3-S-80B5-E-B3 | 3:1   | single       | 467                    | 182                            | 33          | On request |
| HLC28-1-B-80B5-E-B3 | 1:1   | dual         | 1400                   | 146                            | 33          | On request |
| HLC28-2-B-80B5-E-B3 | 2:1   | dual         | 700                    | 145                            | 33          | On request |
| HLC28-3-B-80B5-E-B3 | 3:1   | dual         | 467                    | 182                            | 33          | On request |

\*For maximum torque and a service factor applied, see presentation page - Dimensions in mm

# Right angled gearbox

## HLA HLC

## With spiral bevel gears

- Gearbox available with 3 different final ratios and 3 types of output shaft, hollow, single or dual. It is also possible to have an additional optional output shaft on the opposite side to the input.
- Three input types are available; a projecting shaft (**HLA**), a coupling for a motor (bell and joint are options) or a coupling for a compact motor with an IEC flange (**HLC**).
- The cast iron body (EN GJL 200 UNI EN 1561) has internal and external ribs to ensure rigidity and is machined on all surfaces for easy positioning. A single lubrication chamber guarantees improved heat dissipation and better lubrication of all internal components.
- The internal mechanism of these gearboxes consists of a train of steel (16CrNi4 or 18NiCrM05 ) GLEASON spiral bevel gears with precision lapped profiles.
- The use of high quality bearings on all axes ensures a long life even under conditions of very high radial and axial stresses.
- The body of the gearbox, flanges, bells and covers have a RAL5010 blue painted finish.



HLA With input shaft



HLC With motor flange

The different types of input, rotation direction (see table below) and mounting positions (see table opposite) offer a wide variety of possible configurations and make up the final Part N°.

The following modifications should be made to the basic reference:

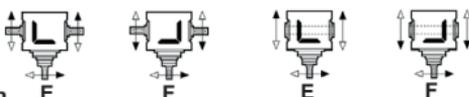
**Basic Part number - Input type-Direction of rotation-Mounting position**

**Example: HLC19-1-C-71B5-F-VA**

$i = 1$   $i > 1$



$i = 1$   $i > 1$



Direction of rotation

# Right angled gearbox

## With spiral bevel gears

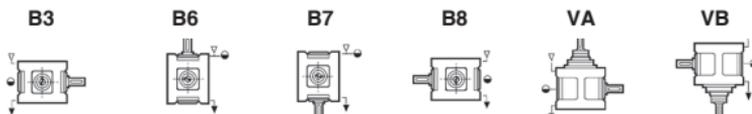
HLA  
HLC

### Lubrication

Right angle gearboxes require oil lubrication and are fitted with filling points, drain plugs and level gauges. The mounting position should always be specified in the Part N° when ordering. The HLA19 gearbox is lubricated for life.

### Mounting position and oil volume (litres)

The quantities of oil shown in the following table are given as a guide only and apply for the mounting position shown. They have been calculated for correct operation in normal ambient temperature and an input speed of 1,400 rpm.



| L  | B3  | B6  | B7  | B8  | VA  | VB  |
|----|-----|-----|-----|-----|-----|-----|
| 19 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| 24 | 0,4 | 0,8 | 0,8 | 0,4 | 0,6 | 0,5 |
| 28 | 0,9 | 0,8 | 0,8 | 0,8 | 0,9 | 0,8 |

### The thermal power

The table opposite gives the thermal power ratings (P<sub>t</sub>) (kW) for all gearbox sizes.

| n <sub>1</sub> (rpm) | Thermal power (kW) |     |      |
|----------------------|--------------------|-----|------|
|                      | L19                | L24 | L28  |
| 1400                 | 4,5                | 6,7 | 10,3 |

FS: service factor with motor

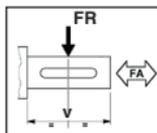
T<sub>2</sub>: Torque with service factor

T<sub>2M</sub>: Torque with service factor of 1  
**Values highlighted in grey** should be modified using the appropriate service factor and thermal power.

| L  | n <sub>1</sub> = 1400 |                    | LC                |                   |     | LA                 |      |
|----|-----------------------|--------------------|-------------------|-------------------|-----|--------------------|------|
|    | ir ratio              | n <sub>2</sub> rpm | T <sub>2</sub> Nm | P <sub>1</sub> kW | FS' | T <sub>2M</sub> Nm | P kW |
| 19 | 1                     | 1400               | 12                | 1,8               | 3   | 35                 | 5,5  |
|    | 2                     | 700                | 24                | 1,8               | 1,7 | 40                 | 3    |
|    | 3                     | 467                | 36                | 1,8               | 1,2 | 43                 | 2,2  |
| 24 | 1                     | 1400               | 26                | 4                 | 2,7 | 73                 | 11   |
|    | 2                     | 700                | 53                | 4                 | 1,4 | 72                 | 5,5  |
|    | 3                     | 467                | 78                | 4                 | 1   | 78                 | 4    |
| 28 | 1                     | 1400               | 61                | 9,2               | 2,4 | 146                | 22   |
|    | 2                     | 700                | 122               | 9,2               | 1,2 | 145                | 11   |
|    | 3                     | 467                | 182               | 9,2               | 1   | 182                | 9,2  |

### Axial and radial loads (N)

The radial loads shown in the table are given for loads applied to the mid-point of the shaft and are given for gears operating with a service factor of 1.



| i <sub>n</sub>            | L               |                 |                 |                 |                 |                 |
|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                           | 19              |                 | 24              |                 | 28              |                 |
| Input shaft (at 1400 rpm) |                 |                 |                 |                 |                 |                 |
|                           | Fr <sub>1</sub> | Fa <sub>1</sub> | Fr <sub>1</sub> | Fa <sub>1</sub> | Fr <sub>1</sub> | Fa <sub>1</sub> |
| 1-2-3                     | 400             | 80              | 630             | 125             | 1000            | 200             |
| Input shaft (at 1400 rpm) |                 |                 |                 |                 |                 |                 |
|                           | Fr <sub>2</sub> | Fa <sub>2</sub> | Fr <sub>2</sub> | Fa <sub>2</sub> | Fr <sub>2</sub> | Fa <sub>2</sub> |
| 1                         | 800             | 160             | 1250            | 250             | 2000            | 400             |
| 2-3                       | 1000            | 160             | 1600            | 320             | 2500            | 500             |

For In the case of dual projecting shafts, the load applied to each shaft is limited to 2/3 of the value given subject to the condition that the loads are identical, are applied in the same direction and have the same direction of rotation.