Eaton Fluid Power Ltd.

Head office & Tokyo sales office
Utsumi kowa Building 11-37, 8-chome, Akasaka, Minato-ku, Tokyo 107-0002
TEL: 03-5746-2560, FAX: 03-5746-2561

Osaka sales office
Pacific Marks Hypoashi Bldg. 10-8, 1-chome, Edobori, Nippon Osaka 550-0002
TEL: 06-6448-4411, FAX: 06-6459-4029

Fukuoka sales office
Daiei Green Bldg. 12-19, 2-chome, Hakata-ku, Fukuoka 812-0011
TEL: 092-476-5364, FAX: 092-412-2002

Kyoto plant
Otsu-cho, Kamikawa-ku, Kyoto 621-0017
TEL: 0771-22-3800, FAX: 0771-29-2021

* Specifications and dimensions on this catalog are subject to change without notice.
Precautions for Selecting DOWMAX Motors

**WARNING**

- Attention should be paid to the following matters when selecting Dowmax motors. Carefully read and thoroughly understand these precautions before selecting motors.
- Check that the hydraulic system is planned in a manner to satisfy the matters described in the catalogue, instruction manual, drawing, manufacturing specifications, etc. Pay special attention to the following:
  1. The performance curves shown in this catalogue show the summary (average values) of data on motors that have already been run. Provide sufficient margin of safety when selecting motors in accordance with specific applications. When motors are run before consulting, they may fail to achieve the performance shown in the catalogue. Contact us if that will cause any problem.
  2. In cases where high back pressure is applied to the outlet line of the motor in special application, the performance described in the catalogue may not be exhibited. Contact us if the back pressure applied to the outlet line of the motor exceeds 0.8MPa (8kg/cm²).
  3. In cases where the motor is turned by a load, it is necessary to apply boost pressure to the suction line of the motor to prevent cavitation. The boost pressure is subject to the motor speed and the viscosity of hydraulic fluid. In general, apply pressure that exceeds the minimum, boost pressure shown for each model.
  4. In cases where external load torque is applied to the motor shaft while the motor is at rest, the motor will turn (slip) due to the leakage inside the motor. If there is no supply circuit, cavitation occurs and the motor goes out of control. (For example, a trolley will drop suddenly.) Use a mechanical brake, as necessary in these cases.
  5. In cases where the inertial force of a driving body is large, abnormal pressure will be produced. Measure the pressure of the actual motor, and use a back valve if the peak pressure exceeds the allowable pressure shown on the catalogue. Other parts may be damaged. Plan pipe installation in a manner to satisfy matters described in the related instruction manual.

**Precautions for mechanical brake**

1. Mechanical brake of Dowmax motor is reverse-operation type, the brake is released when brake pilot line is pressurized.
   - a. Pay attention, when planning hydraulic circuit, to the brake pilot line not being pressurized at any time the brake is necessary, even if it’s an instant time.
   - b. When residual pressure remains at the brake pilot line, brake torque decreases proportionally to the residual pressure.
   - Brake torque shown in this catalogue is for the brake pilot line pressure of 0kg/cm².
2. Mechanical brake of Dowmax motor is originally for a static brake use (parking brake). When dynamic brake is used unstably, pay attention to the following:
   - a. Mechanical brake and hydraulic brake shall not be used together.
   - b. When mechanical and hydraulic brake are planned to be used together, consult us for the applicability.
   - c. When the brake is used as a dynamic brake, the brake friction plate will be worn. Check the brake torque periodically, and replace the brake friction plates with new ones, if necessary.
3. Brake torque shown in this catalogue is for the use of standard mineral oil as a hydraulic fluid. When other oils such as fire-resistant fluid or special oils contains additive are used, brake characteristics will differ from the value in the catalogue, consult us in the case.
4. Do not plan operation exceeding the usable condition described in this catalogue. (This does not apply to motors with special attention is shown in the drawing or product specifications.)
   - 1) Operation exceeding the viscosity range of 15-500 cSt.
   - 2) Operation exceeding the usable range [pressure and speed]. Refer to this catalogue for confirmation of limits for respective models.
   - 3) Operation exceeding the allowable external force (radial and thrust load). Refer to the shaft strength diagrams shown in this catalogue for confirmation.
   - 4) Operation exceeding the operating conditions [pressure and speed] corresponding to the desired life of motor. Check the bearing life diagrams shown in this catalogue for confirmation.
   - 5) Operation in cold places below [−25°C] (Contact us for special motors for operation at temperatures from [−25°C to −45°C].)
   - 6) Operation that causes the case temperature to exceed [80°C].
   - 7) Never remodel motors.

**CAUTION**

- Use the recommended hydraulic fluid shown in instruction manual. When fire-resistant fluid is used, strictly observe the caution and note described in the instruction manual. Standard motors cannot be used when phosphate-water is used as hydraulic fluid. In that case, select the seal code of V or XR (seal material: fluororubber). As in the case of water-glycol or hydraulic fluid, the motor life can substantially be shortened depending on the type of fire-resistant fluid. (Contact us for the expected life of motor under specific operating conditions.)
- When the direction of rotation of the motor is to be changed frequently, select models with a split shaft.
- Metal chips, sand, and other fine foreign substances contained in hydraulic fluid will be ground into the sliding surface of the motor, advancing the abrasion of component parts and causing malfunction and failure of the motor. Present entry of dust, and be sure to install a filter in the circuit. Refer to the related instruction manual for the filter specifications.
- Precautions regarding the drain port position and drain piping are described in the related instruction manual. Be sure to refer to them and reflect them in the piping plan.
- When installation of motor with its shaft facing upward is desired, select “Dowmax Motor with Installing the Shaft Upward” (mentioned beforehand) that permits air bleeding from the case.
- Keep the drain pressure inside the motor case below 0.3MPa (3kg/cm²). Take care the pressure as it varies depending on the tank position and the length and diameter of pipes. The pressure on the low-pressure side of the main port must be higher than the drain pressure.
- When the shaft is exposed to water or seawater, the standard seal will allow the shaft to rust, and the abraded oil seal may cause of leakage. In such a case, select or specify models made to the double oil seal specifications.

INDEX

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME100</td>
<td>4</td>
</tr>
<tr>
<td>ME150</td>
<td>51</td>
</tr>
<tr>
<td>ME175</td>
<td>60</td>
</tr>
<tr>
<td>ME300B</td>
<td>78</td>
</tr>
<tr>
<td>ME350B</td>
<td>81</td>
</tr>
<tr>
<td>ME400B</td>
<td>82</td>
</tr>
<tr>
<td>ME750B</td>
<td>83</td>
</tr>
<tr>
<td>ME850B</td>
<td>87</td>
</tr>
<tr>
<td>ME1300A</td>
<td>90–98</td>
</tr>
<tr>
<td>CN100</td>
<td>300 B</td>
</tr>
<tr>
<td>CW300A</td>
<td></td>
</tr>
</tbody>
</table>
ME Low Speed High Torque Motor is a double swash plate type axial piston motor and has highest performance at low speed range.

- Wide range of models-13 displacements from 99 to 4097 cm³/rev are available.
- High pressure—Continuous operating pressure 27.5MPa (280 kgf/cm²) & 24.5MPa (250 kgf/cm²).
- Smooth operation at low speed. Multiple pistons and double swash plate result in smooth rotation at speeds down to 1 rev/min.
- High starting torque and high overall efficiency.
- Compact and easy installation.
- Robust construction.
- Quiet operation.
- Unaffected by thermal shock (good for starting at cold temperature).
- Speed pickup system is available.
**Structure and Operation**

Fluid entering the supply port is directed via internal passages and timing plate to the center of the cylinder bores. Fluid pressure forces the pistons apart causing the slippers to slide on the angled faces of the swash plates and rotate the barrel and shaft assembly. After work, fluid is exhausted through the timing plate and internal passages to the return port.

**Performance Data**

<table>
<thead>
<tr>
<th>Model</th>
<th>Displacement cm³/tr</th>
<th>Rated Pressure MPa/kgf/cm²</th>
<th>Peak Pressure MPa/kgf/cm²</th>
<th>Rated Torque N·m/kgf/m</th>
<th>Rated rpm</th>
<th>Max. Speed rpm</th>
<th>Rated horse power kW/HP</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME100</td>
<td>99</td>
<td>27.5 (280)</td>
<td>31.9 (325)</td>
<td>432 (44)</td>
<td>1000</td>
<td>1000</td>
<td>45 (62)</td>
<td>22</td>
</tr>
<tr>
<td>ME150B</td>
<td>152</td>
<td>667 (68)</td>
<td>800</td>
<td>42 (57)</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME175B</td>
<td>175</td>
<td>795 (78)</td>
<td>800</td>
<td>48 (65)</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME300B</td>
<td>300</td>
<td>1320 (136)</td>
<td>800</td>
<td>90 (123)</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME350B</td>
<td>360</td>
<td>1530 (156)</td>
<td>800</td>
<td>106 (144)</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME600B</td>
<td>600</td>
<td>2620 (267)</td>
<td>600</td>
<td>137 (186)</td>
<td>96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME750B</td>
<td>750</td>
<td>3280 (334)</td>
<td>520</td>
<td>154 (210)</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME850B</td>
<td>848</td>
<td>3708 (379)</td>
<td>450</td>
<td>155 (211)</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME1300A</td>
<td>1345</td>
<td>5250 (536)</td>
<td>390</td>
<td>138 (188)</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME1900</td>
<td>1868</td>
<td>7290 (743)</td>
<td>260</td>
<td>128 (174)</td>
<td>270</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME2600</td>
<td>2578</td>
<td>10070 (1026)</td>
<td>230</td>
<td>159 (216)</td>
<td>350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME3100</td>
<td>3104</td>
<td>12120 (1235)</td>
<td>230</td>
<td>186 (253)</td>
<td>364</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME4100</td>
<td>4097</td>
<td>15990 (1630)</td>
<td>200</td>
<td>211 (287)</td>
<td>520</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Limit of hydraulic fluid temperature: -20℃ to 60℃
- Limit of hydraulic fluid viscosity: 15 to 500cSt (Advisable fluid viscosity range: 25 to 100cSt)
- ME150, ME175 is a special double swash plate motor.

**Coding**

**ME 4100 — CWAS**

- Special Specification Number: No indication — Standard
- Special spec.: S-Special Specification
- Ports: No indication — Standard metric ports
- A & B-Special ports for counter Balance valves (see table below)
- E- SAE port
- Seal: No indication—Standard seal (Nitrile Rubber)
- V-Nitrile seal for phosphate ester fluid
- W-Double seal (Nitrile Rubber)
- X-Double seal (Viton)
- Motor Shaft: C-Metric parallel keyed shaft with screws for key retention plate (std.)
  - P-Metric spline shaft
  - G-Metric hollowed spline shaft
  - B-1/10 tapered shaft
  - K-Inch size parallel keyed shaft
  - H-Inch size spline shaft
  - S-Other special shaft
- Design No.: 1st design change “A”
- Motor Size: Metric Displacement
- Series: High pressure series Dowmax motor

**Selection Chart**

This chart indicates the relation of actual torque and shaft rotation at the rated pressure of 27.5MPa (280 kgf/cm²) and 24.5MPa (250kgf/cm²).

Given the required torque and shaft speed the appropriate model can be selected from the diagram. When the operating pressure differs from 27.5 or 24.5 MPa (280 or 250kgf/cm²), refer to the performance data for the respective model.
**Displacement**  
99 cm³/rev

**Rated Pressure**  
27.5 MPa (280 kgf/cm²)

**Peak Pressure**  
31.9 MPa (325 kgf/cm²)

**Rated Torque**  
432 N·m (44 kgf·m)

**Rated Speed**  
1000 rpm

**Max. Speed**  
1000 rpm

**Rated Horse Power**  
45 kW (62 PS)

**Mass**  
22 kg

---

**Performance Data**

**Fig. 1 Mechanical Efficiency**

Mechanical efficiency at various speeds is shown for 4 operating pressures.

**Fig. 2 Volumetric Efficiency**

Volumetric efficiency at various speeds is shown for 4 operating pressures.

**Fig. 3 Starting Torque**

Starting torque versus effective pressure is shown. Oil viscosity will not affect the starting torque efficiency.

**Fig. 4 External Leakage**

External leakage (from motor to pump) relation to motor speeds is shown for 4 operating pressures.

**Fig. 5 Minimum Boost Pressure**

It is important that sufficient start pressure is maintained, when the motor is stopped or a pump or when the load exceeds the motor, to prevent cavitation.

**Fig. 6 Pressure Drop**

Pressure necessary to run motor without load is shown for various speeds.

---

**Nominal Dimensions**

**Dimensions in mm**

1. **JIS B2301***  
   Shaft with screw for key retention  
   Shank code: C

2. **JIS D2001 Involute Spline**  
   35 X19/1.67 (Class b)

---

**Direction of Rotation**

- R: SUPPLIED HIGH PRESSURE OIL AT PORT R
- L: SUPPLIED HIGH PRESSURE OIL AT PORT L

---

**Tapered shaft (1/10 taper)**

- Shaft code: B (Single oil seal)
- Shaft code: BW (Double oil seal)

**Spline shaft**

- Shank code: C

---

**Notes:**

- It is important that sufficient start pressure is maintained, when the motor is stopped or a pump or when the load exceeds the motor, to prevent cavitation.
- Pressure necessary to run motor without load is shown for various speeds.
### ME150

#### Performance Data

**Displacement**
- 152cm³/rev

**Rated Pressure**
- 27.5MPa (2800kgf/cm²)

**Peak Pressure**
- 31.9MPa (3250kgf/cm²)

**Rated Torque**
- 667N·m (68kgf·m)

**Rated Speed**
- 600rpm

**Max. Speed**
- 800rpm

**Rated Horse Power**
- 42kW (57PS)

**Mass**
- 42kg

---

**Nominal Dimensions (Dimensions in mm)**

- **Drain port**
  - [Diagram showing drain port location]

- **JIS B3031**
  - Shaft with screw for key retention
  - Shaft code: C

- **M16x30T**
  - Tapered shaft (1/10 taper)
  - Shaft code: B (Single oil seal)

- **M16x30T**
  - Tapered shaft (1/10 taper)
  - Shaft code: BW (Double oil seal)

---

**JIS D2001 Involute Spline 45 X18/2.5 (Class b)**

#### Dimensions in mm

- **Yield point**
  - [Diagram showing spline dimensions]

---

**Performance Data Diagrams**

- **Fig. 1 Mechanical Efficiency**
- **Fig. 2 Volumetric Efficiency**
- **Fig. 3 Starting Torque**
- **Fig. 4 External Leakage**
- **Fig. 5 Minimum Boost Pressure**
- **Fig. 6 Pressure Drop**

---

**FLUID / SHELL TELLUS 56 (Viscosity 37/53 at 50°C)**

The graphs shown are mean values obtained for production units.
### Performance Data

**Fig. 1 Mechanical Efficiency**
- Mechanical efficiency at various speeds is shown for 4 operating pressures.

**Fig. 2 Volumetric Efficiency**
- Volumetric efficiency at various speeds is shown for 4 operating pressures.

**Fig. 3 Starting Torque**
- Starting torque versus effective pressure is shown. Compressibility will affect the starting torque efficiency.

**Fig. 4 External Leakage**
- External leakage from motor seal (or pump) is shown for 4 operating pressures.

**Fig. 5 Minimum Boost Pressure**
- It is important that sufficient start pressure is maintained, when the motor is started or a pump is started when the load exceeds the motor's capacity. To prevent cavitation.

**Fig. 6 Pressure Drop**
- Pressure necessary to run motor without load is shown for various speeds.
**ME300B**

**Displacement** 300cm³/rev

**Rated Pressure** 27.5MPa (280kgf/cm²)

**Peak Pressure** 31.9MPa (325kgf/cm²)

**Rated Torque** 1320N·m (134kgf·m)

**Rated Speed** 660rpm

**Max. Speed** 800rpm

**Rated Horse Power** 90kW (123PS)

**Mass** 60kg

---

**Nominal Dimensions**

**Dimensions in mm**

- **Main port G1/2**
- **Drain port G1/2**
- **Main port G3/4**
- **Drain port G3/4**
- **Tapered shaft (1/10 taper)**
- **Tapered shaft (1/10 taper)**
- **Spline shaft**

**Performance Data**

**Fig. 1 Mechanical Efficiency**

- Mechanical efficiency at various speeds is shown for 4 operating pressures.

**Fig. 2 Volumetric Efficiency**

- Volumetric efficiency at various speeds is shown for 4 operating pressures.

**Fig. 3 Starting Torque**

- Starting torque versus effective pressure is shown. (Do not use this value, as it is not the starting torque efficiency.)

**Fig. 4 External Leakage**

- External leakage from motor drain port is shown, relative to various speeds, for 4 operating pressures.

**Fig. 5 Minimum Boost Pressure**

- It is important that sufficient boost pressure is maintained, when the motor is operated to prevent cavitation.

**Fig. 6 Pressure Drop**

- Pressure necessary to sustain motor without leaks is shown for various speeds.

---

**FLUID / SEAL TELLS 56 (Viscosity 37/50°C)**

- The graphs shown are mean values obtained for production units.

---

**DOWMAX® ME MOTOR**

---

**ME300B**

---

13
### ME350B

**Displacement**: 350 cm³/rev  
**Rated Pressure**: 27.5 MPa (280 kgf/cm²)  
**Peak Pressure**: 31.9 MPa (325 kgf/cm²)  
**Rated Torque**: 1530 N·m (156 kgf·m)  
**Rated Speed**: 660 rpm  
**Max. Speed**: 800 rpm  
**Rated Horse Power**: 106 kW (144 PS)  
**Mass**: 60 kg

### Performance Data

#### Fig. 1 Mechanical Efficiency  
- Mechanical efficiency at various speeds is shown for 4 operating pressures.

#### Fig. 2 Volumetric Efficiency  
- Volumetric efficiency at various speeds is shown for 4 operating pressures.

#### Fig. 3 Starting Torque  
- Starting torque versus effective pressure is shown. Oil viscosity will affect the starting torque efficiency.

#### Fig. 4 External Leaks  
- External leakage from motor drain port, relative to various speeds is shown for 4 operating pressures.

#### Fig. 5 Minimum Boost Pressure  
- It is important that sufficient boost pressure is maintained, when the motor is operated at a speed or when the load exceeds the motor, is prevented starvation.

#### Fig. 6 Pressure Drop  
- Pressure necessary to run motor without load is shown for various speeds.

---

**Nominal Dimensions**

**Spineled shaft**  
- Shaft code: C  
- Key cutting: A  
- Key cutting: B  
- Sealed area of shaft is chrome plated

**Tapered shaft (1/10 taper)**  
- Shaft code: B (Single oil seal)  
- Sealed area of shaft is chrome plated

**Main part 1**  
- Shaft code: C  
- Key cutting: A  
- Key cutting: B  
- Sealed area of shaft is chrome plated

**Main part 2**  
- Shaft code: C  
- Key cutting: A  
- Key cutting: B  
- Sealed area of shaft is chrome plated

---

**JIS D2001 Involute Spline 45 X18 x2.5 (Class B)**

**Key size**  
- 2.5  
- 20

**Pressure angle**  
- 30°  
- 40°

**Number of teeth**  
- 16

**Grade**  
- 3.0

**Recess**

**Recess**

**Recess**

---

**Performance Data**

**Rated Speed**

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Mechanical Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>660</td>
<td>90</td>
</tr>
<tr>
<td>800</td>
<td>85</td>
</tr>
</tbody>
</table>

**Volumetric Efficiency**

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Volumetric Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>660</td>
<td>80</td>
</tr>
<tr>
<td>800</td>
<td>75</td>
</tr>
</tbody>
</table>
**ME600B**

**Performance Data**

<table>
<thead>
<tr>
<th>Performance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>600cm³/rev</td>
</tr>
<tr>
<td>Rated Pressure</td>
<td>27.5MPa (280kgf/cm²)</td>
</tr>
<tr>
<td>Peak Pressure</td>
<td>31.9MPa (325kgf/cm²)</td>
</tr>
<tr>
<td>Rated Torque</td>
<td>2620N·m (267kgf·m)</td>
</tr>
<tr>
<td>Rated Speed</td>
<td>500rpm</td>
</tr>
<tr>
<td>Max. Speed</td>
<td>600rpm</td>
</tr>
<tr>
<td>Rated Horse Power</td>
<td>137kW (186PS)</td>
</tr>
<tr>
<td>Mass</td>
<td>90kg</td>
</tr>
</tbody>
</table>

**Nominal Dimensions**

- **Displacement**: 600cm³/rev
- **Rated Pressure**: 27.5MPa (280kgf/cm²)
- **Peak Pressure**: 31.9MPa (325kgf/cm²)
- **Rated Torque**: 2620N·m (267kgf·m)
- **Rated Speed**: 500rpm
- **Max. Speed**: 600rpm
- **Rated Horse Power**: 137kW (186PS)
- **Mass**: 90kg

**Fig. 1 Mechanical Efficiency**

**Fig. 2 Volumetric Efficiency**

**Fig. 3 Starting Torque**

**Fig. 4 External Leakage**

**Fig. 5 Minimum Boost Pressure**

**Fig. 6 Pressure Drop**

**Fluid - Shell Tellus 56 (Viscosity 37cSt at 50°C)**

The graphs shown are mean values obtained for production units.
### ME750B

**Displacement** 750cm³/rev
**Rated Pressure** 27.5MPa (280kgf/cm²)
**Peak Pressure** 31.9MPa (325kgf/cm²)
**Rated Torque** 3280N·m (334kgf·m)
**Rated Speed** 450rpm
**Max. Speed** 520rpm
**Rated Horse Power** 154kW (210PS)
**Mass** 123kg

---

**Nominal Dimensions**

- **Displacement** 750cm³/rev
- **Rated Pressure** 27.5MPa (280kgf/cm²)
- **Peak Pressure** 31.9MPa (325kgf/cm²)
- **Rated Torque** 3280N·m (334kgf·m)
- **Rated Speed** 450rpm
- **Max. Speed** 520rpm
- **Rated Horse Power** 154kW (210PS)
- **Mass** 123kg

---

**Performance Data**

- **Fig. 1 Mechanical Efficiency**
- **Fig. 2 Volumetric Efficiency**
  - Mechanical efficiency at various speeds is shown for 4 operating pressures.
  - Volumetric efficiency at various speeds is shown for 4 operating pressures.

- **Fig. 3 Starting Torque**
- **Fig. 4 External Leakage**
  - Starting torque versus effective pressure is shown.
  - External leakage (from motor side port) versus motor speed is shown for 4 operating pressures.

- **Fig. 5 Minimum Boost Pressure**
- **Fig. 6 Pressure Drop**
  - Pressure necessary to run motor without load is shown for various speeds.

---

**JIS D2001 Involute Spline 60 X 22 X 2.5 (Class b)**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer dia.</td>
<td>65.5</td>
</tr>
<tr>
<td>Inner dia.</td>
<td>54</td>
</tr>
</tbody>
</table>

---

**Limitations**

- Important: if sufficient load pressure is maintained, when the motor is operated as a pump or when the load overcomes the motor, to prevent cavitation.
**ME850B**

**Nominal Dimensions**

**Displacement** 848cm³/rev
**Rated Pressure** 27.5MPa (280kgf/cm²)
**Peak Pressure** 31.9MPa (325kgf/cm²)
**Rated Torque** 3708Nm (378kgf·m)
**Rated Speed** 400rpm
**Max. Speed** 450rpm
**Rated Horse Power** 155kW (211PS)
**Mass** 123kg

**Performance Data**

**Fig. 1 Mechanical Efficiency**

- Mechanical efficiency at various speeds is shown for 4 operating pressures.

**Fig. 2 Volumetric Efficiency**

- Volumetric efficiency at various speeds is shown for 4 operating pressures.

**Fig. 3 Starting Torque**

- Starting torque versus effective pressure is shown. Oil viscosity will not affect the starting torque efficiency.

**Fig. 4 External Leakage**

- External leakage from motor shaft packing relation to various speeds is shown for 4 operating pressures.

**Fig. 5 Minimum Boost Pressure**

- It is important that sufficient inlet pressure is maintained, when the motor is operated as a pump or when the load overruns the motor, to prevent cavitation.

**Fig. 6 Pressure Drop**

- Pressure necessary to run motor without load is shown for various speeds.

---

**FLUID : SHELL TELLUS 56 (Viscosity 37/50 at 50°C)**

The graphs shown are mean values obtained for production units.
**ME1300A**

### Performance Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>1345cm³/rev</td>
</tr>
<tr>
<td>Rated Pressure</td>
<td>24.5MPa (250kgf/cm²)</td>
</tr>
<tr>
<td>Peak Pressure</td>
<td>31.9MPa (325kgf/cm²)</td>
</tr>
<tr>
<td>Rated Torque</td>
<td>5250N·m (535kgf·m)</td>
</tr>
<tr>
<td>Rated Speed</td>
<td>200rpm</td>
</tr>
<tr>
<td>Max. Speed</td>
<td>390rpm</td>
</tr>
<tr>
<td>Rated Horse Power</td>
<td>138kW (188PS)</td>
</tr>
<tr>
<td>Mass</td>
<td>170kg</td>
</tr>
</tbody>
</table>

### Nominal Dimensions

#### Dimensions in mm

- **JIS D2001 Involute Spline 80 X14/5 (Class b)**
- **Spined shaft**
  - Shaft code: P
- **Tapered shaft (1/10 taper)**
  - Shaft code: B [Single oil seal]
  - Seal land area of shaft is chrome-plated
  - 2-Rx1.0 (As ventield supply port)
  - Seal land area of shaft is chrome-plated
  - 3-M12 depth: 1.8
  - 2-M12 depth: 1.8
  - 1/16 depth: 12
- **Eye bolt M12**
  - Drain port Dh X1.0
  - Drain port Dh X1.0
  - Drain port Dh X1.0
- **Dimensions**
  - 3-M12 depth: 1.8
  - 2-M12 depth: 1.8
  - 1/16 depth: 12

### Notes

- **Dimensions**
  - Please refer to the diagram for detailed dimensions.
  - **Performance Data**
  - The graphs shown are mean values obtained for production units.
  - **External Leakage**
  - External leakage (from motor oil seal) relative to various speeds is shown for 4 operating pressures.
  - **Minimum Boost Pressure**
  - It is important that sufficient start pressure is maintained, when the motor is operated or at a high load when the load overruns the motor, to prevent cavitation.

---

**FLUID : SHELL TELLUS 56 (Viscosity 37.5/1 at 50°C)**

The graphs shown are mean values obtained for production units.
**ME2600**

**Performance Data**

- **Displacement**: 2578 cm³/rev
- **Rated Pressure**: 24.5 MPa (250 kgf/cm²)
- **Peak Pressure**: 31.6 MPa (325 kgf/cm²)
- **Rated Torque**: 10060 N·m (1026 kgf·m)
- **Rated Speed**: 110 rpm
- **Max. Speed**: 230 rpm
- **Rated Horse Power**: 159 kW (216 PS)
- **Mass**: 350 kg

**Nominal Dimensions**

**JIS D2001 Involute Spline**

<table>
<thead>
<tr>
<th>Teeth form</th>
<th>10 × 1.50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module</td>
<td>10.0</td>
</tr>
<tr>
<td>Pressure angle</td>
<td>20°</td>
</tr>
<tr>
<td>Number of teeth</td>
<td>18</td>
</tr>
<tr>
<td>Grade</td>
<td>2B</td>
</tr>
<tr>
<td>Outer dia.</td>
<td>120 ± 0.15</td>
</tr>
<tr>
<td>Inner dia.</td>
<td>80 ± 0.15</td>
</tr>
</tbody>
</table>

**Dimensions in mm**

- **Main part**: 2G1-1.5
- **Tapered shaft**: M8 × 1.5
- **Seal/end area of shaft is chrome-plated**
- **Eye bolt M14**: 367
- **Drain part (D) G3/4**
- **Spline shaft**: M16 × 30
- **Seal/end area of shaft is chrome-plated**

**FLUID**: SHELL TELLUS 56 (Viscosity 37/51 at 50°C)

The graphs shown are mean values obtained for production units.

**Fig. 1 Mechanical Efficiency**

- Mechanical efficiency at various speeds is shown for 4 operating pressures.

**Fig. 2 Volumetric Efficiency**

- Volumetric efficiency at various speeds is shown for 4 operating pressures.

**Fig. 3 Starting Torque**

- Starting torque versus effective pressure is shown.

**Fig. 4 External Leakage**

- External leakage (from motor drain port) relative to various speeds is shown for 4 operating pressures.

**Fig. 5 Minimum Boost Pressure**

**Fig. 6 Pressure Drop**

- Pressure necessary to run motor without load is shown for various speeds.
### Displacement
3104 cm³/rev

### Rated Pressure
24.5 MPa (250 kgf/cm²)

### Peak Pressure
31.0 MPa (325 kgf/cm²)

### Rated Torque
12110 N·m (1235 kgf·m)

### Rated Speed
110 rpm

### Max. Speed
230 rpm

### Rated Horse Power
186 kW (253 PS)

### Mass
364 kg

#### Performance Data

**Fig. 1 Mechanical Efficiency**
- Mechanical efficiency at various speeds is shown for 4 operating pressures.

**Fig. 2 Volumetric Efficiency**
- Volumetric efficiency at various speeds is shown for 4 operating pressures.

**Fig. 3 Starting Torque**
- Starting torque versus effective pressure is shown. All speeds will not affect the starting torque efficiency.

**Fig. 4 External Leakage**
- External leakage from motor drain ports, relative to various speeds is shown for 4 operating pressures.

**Fig. 5 Minimum Boost Pressure**
- It is important that sufficient boost pressure is maintained, when the motor is operated as a pump or when the load exceeds the motor, to prevent cavitation.

**Fig. 6 Pressure Drop**
- Pressure necessary to run motor without load is shown for various speeds.

---

**Nominal Dimensions**

(Dimensions in mm)

- JIS B1021 - Shaft with screw for key rejection
  - Shaft code: C

- Spined shaft
  - Shaft code: D
  - JIS D2001 Involute Spline
    - 95 X17X5 (Class b)

- Details of main port
  - RS R1.0, R1.2

- Details of G
  - 3.5T, 3

- Tapered shaft (1/10 taper)
  - (Single oil seal)

- Tapered shaft (1/10 taper)
  - (Double oil seal)

- Seal land area of shaft is chrome plated

- Main port 2-G1-1/2 depth 26
  - 4-8H depth 25

- Drain port D/R1/2
  - JIS B1021 - Mounting bolt size M86

- Main port 2-G1-1/2 depth 26
  - 4-8H depth 25

- Drain port D/R1/2
  - JIS B1021 - Mounting bolt size M86
**ME4100**

**Nominal Dimensions**

<table>
<thead>
<tr>
<th>Displacement</th>
<th>4097 cm³/rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Pressure</td>
<td>24.5 MPa (250 kgf/cm²)</td>
</tr>
<tr>
<td>Peak Pressure</td>
<td>31 MPa (325 kgf/cm²)</td>
</tr>
<tr>
<td>Rated Torque</td>
<td>15990 N·m (1630 kgf·m)</td>
</tr>
<tr>
<td>Rated Speed</td>
<td>75 rpm</td>
</tr>
<tr>
<td>Max. Speed</td>
<td>200 rpm</td>
</tr>
<tr>
<td>Rated Horse Power</td>
<td>211 kW (287 PS)</td>
</tr>
<tr>
<td>Mass</td>
<td>520 kg</td>
</tr>
</tbody>
</table>

**Performance Data**

**Fig. 1 Mechanical Efficiency**

Mechanical efficiency at various speeds is shown for 4 operating pressures.

**Fig. 2 Volumetric Efficiency**

Volumetric efficiency at various speeds is shown for 4 operating pressures.

**Fig. 3 Starting Torque**

Starting torque versus effective pressure is shown. Oil viscosity will not affect the starting torque efficiency.

**Fig. 4 External Leakage**

External leakage (from motor outlet port) relative to various speeds is shown for 4 operating pressures.

**Fig. 5 Minimum Boost Pressure**

Pressure necessary to run motor without leakage is shown for various speeds.
Nominal Dimensions of inch size shaft and SAE ports

ME100-KE (HE)

ME175-KE (HE)

ME150-KE (HE)

ME300KE (HE)

DOWMAX® ME MOTOR
Nominal Dimensions of inch size shaft and SAE ports

**ME350BKE (HE)**

- Dimensions diagram for ME350BKE (HE) motor showing shaft and port details.

**ME600BKE (HE)**

- Dimensions diagram for ME600BKE (HE) motor showing shaft and port details.

**ME750BKE (HE)**

- Dimensions diagram for ME750BKE (HE) motor showing shaft and port details.

**ME850BKE (HE)**

- Dimensions diagram for ME850BKE (HE) motor showing shaft and port details.
Nominal Dimensions of inch size shaft and SAE ports

ME1300-AKE (HE)

ME2600-KE (HE)

ME1900-KE (HE)

ME3100-KE (HE)
Nominal Dimensions of inch size shaft and SAE ports
ME4100-KE (HE)
### Specification of Spline

#### ME100
**Type Of Spline:** Involute: Flat Root Side Fit
**Pressure Angle 30°:** Pitch 16/32
Class 1 Fit: To B S. 3550 Or A. S. A. -B5-15

<table>
<thead>
<tr>
<th>No. of Tooth</th>
<th>Pitch Dia.</th>
<th>Major Dia.</th>
<th>Minor Dia.</th>
<th>Root Dia.</th>
<th>Filet Radius</th>
<th>Space Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>33.38</td>
<td>43.52</td>
<td>31.50</td>
<td>39.69</td>
<td>3.266</td>
<td>2.535</td>
</tr>
</tbody>
</table>

#### ME150 & ME175
**Type Of Spline:** Involute: Flat Root Side Fit
**Pressure Angle 30°:** Pitch 12/24
Class 1 Fit: To B S. 3550 Or A. S. A. -B5-15

<table>
<thead>
<tr>
<th>No. of Tooth</th>
<th>Pitch Dia.</th>
<th>Major Dia.</th>
<th>Minor Dia.</th>
<th>Root Dia.</th>
<th>Filet Radius</th>
<th>Space Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>42.34</td>
<td>52.63</td>
<td>40.11</td>
<td>39.69</td>
<td>3.596</td>
<td>2.246</td>
</tr>
</tbody>
</table>

#### ME300B & ME350B
**Type Of Spline:** Involute: Flat Root Side Fit
**Pressure Angle 30°:** Pitch 12/24
Class 1 Fit: To B S. 3550 Or A. S. A. -B5-15

<table>
<thead>
<tr>
<th>No. of Tooth</th>
<th>Pitch Dia.</th>
<th>Major Dia.</th>
<th>Minor Dia.</th>
<th>Root Dia.</th>
<th>Filet Radius</th>
<th>Space Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>42.34</td>
<td>52.63</td>
<td>40.11</td>
<td>39.69</td>
<td>3.596</td>
<td>2.246</td>
</tr>
</tbody>
</table>

#### ME600B
**Type Of Spline:** Involute: Flat Root Side Fit
**Pressure Angle 30°:** Pitch 8/16
Class 1 Fit: To B S. 3550 Or A. S. A. -B5-15

<table>
<thead>
<tr>
<th>No. of Tooth</th>
<th>Pitch Dia.</th>
<th>Major Dia.</th>
<th>Minor Dia.</th>
<th>Root Dia.</th>
<th>Filet Radius</th>
<th>Space Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>60.32</td>
<td>70.62</td>
<td>58.03</td>
<td>56.41</td>
<td>5.991</td>
<td>3.168</td>
</tr>
</tbody>
</table>

#### ME3100
**Type Of Spline:** Involute: Flat Root Side Fit
**Pressure Angle 30°:** Pitch 5/10
Class 1 Fit: To B S. 3550 Or A. S. A. -B5-15

<table>
<thead>
<tr>
<th>No. of Tooth</th>
<th>Pitch Dia.</th>
<th>Major Dia.</th>
<th>Minor Dia.</th>
<th>Root Dia.</th>
<th>Filet Radius</th>
<th>Space Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>91.44</td>
<td>101.61</td>
<td>89.86</td>
<td>88.24</td>
<td>6.315</td>
<td>3.834</td>
</tr>
</tbody>
</table>

#### ME1100
**Type Of Spline:** Involute: Flat Root Side Fit
**Pressure Angle 30°:** Pitch 5/10
Class 1 Fit: To B S. 3550 Or A. S. A. -B5-15

<table>
<thead>
<tr>
<th>No. of Tooth</th>
<th>Pitch Dia.</th>
<th>Major Dia.</th>
<th>Minor Dia.</th>
<th>Root Dia.</th>
<th>Filet Radius</th>
<th>Space Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>76.2</td>
<td>86.59</td>
<td>74.86</td>
<td>73.24</td>
<td>5.889</td>
<td>3.558</td>
</tr>
</tbody>
</table>

#### ME1300A
**Type Of Spline:** Involute: Flat Root Side Fit
**Pressure Angle 30°:** Pitch 5/10
Class 1 Fit: To B S. 3550 Or A. S. A. -B5-15

<table>
<thead>
<tr>
<th>No. of Tooth</th>
<th>Pitch Dia.</th>
<th>Major Dia.</th>
<th>Minor Dia.</th>
<th>Root Dia.</th>
<th>Filet Radius</th>
<th>Space Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>76.2</td>
<td>86.59</td>
<td>74.86</td>
<td>73.24</td>
<td>5.889</td>
<td>3.558</td>
</tr>
</tbody>
</table>
# Bearing Life and Allowable Radial Load for Shaft

### ME100

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

Fig. 1

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
</tr>
</tbody>
</table>

Fig. 2

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>10</td>
<td>26</td>
</tr>
</tbody>
</table>

Fig. 3

### ME150

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

Fig. 1

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>10</td>
<td>21</td>
</tr>
</tbody>
</table>

Fig. 2

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>10</td>
<td>31</td>
</tr>
</tbody>
</table>

Fig. 3

### ME175

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>13</td>
</tr>
</tbody>
</table>

Fig. 1

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>23</td>
</tr>
</tbody>
</table>

Fig. 2

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>10</td>
<td>33</td>
</tr>
</tbody>
</table>

Fig. 3

### ME300B

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
</tr>
</tbody>
</table>

Fig. 1

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>10</td>
<td>26</td>
</tr>
</tbody>
</table>

Fig. 2

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>38</td>
</tr>
<tr>
<td>10</td>
<td>36</td>
</tr>
</tbody>
</table>

Fig. 3

### ME350B

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

Fig. 1

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>10</td>
<td>21</td>
</tr>
</tbody>
</table>

Fig. 2

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>10</td>
<td>31</td>
</tr>
</tbody>
</table>

Fig. 3

### ME600B

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

Fig. 1

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
</tr>
</tbody>
</table>

Fig. 2

<table>
<thead>
<tr>
<th>Distance from Mounting Surface (mm)</th>
<th>Allowable Radial Load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>10</td>
<td>26</td>
</tr>
</tbody>
</table>

Fig. 3

### Notes:
1. The graphs shown are the bearing life (10^7 h) at 110 rpm, shaft speed of 200 rpm, and load (N) is applied to the output shaft of the motor.
2. For a bi-directional application, vane should be installed so that side load acts on opposite side.
3. In a bi-directional application, a radial load for each output shaft direction being applied, the motor should be installed so that side load acts as shown in Fig. 3.
4. All vane designs are based on the vane design shown in Fig. 1.
5. When used in a Motor Driven application, pressure in Fig. 2 is for a standard 300 rpm shaft speed of 200 rpm, and load (N) is applied to the output shaft of the motor.
6. Bearing life is based on a bearing life of 10^7 h at 100 rpm, shaft speed of 200 rpm, and load (N) is applied to the output shaft of the motor.
7. The motor should be installed so that side load acts on opposite side.
8. All vane designs are based on the vane design shown in Fig. 1.
9. When used in a Motor Driven application, pressure in Fig. 2 is for a standard 300 rpm shaft speed of 200 rpm, and load (N) is applied to the output shaft of the motor.
10. The motor should be installed so that side load acts on opposite side.
11. All vane designs are based on the vane design shown in Fig. 1.
Dowmax® ME Motor

Dowmax® Motor Standardized for Special Functions

1. Dowmax Motors with Rotation Detecting Shaft
   - These motors are for speed control use on injection molding machines, steel rolling mills, washing, etc. In these applications, they sense rotation motions and detect rotational speed for control.
   - Each Dowmax motor in the ME Series can be supplied with a rotation detecting shaft.
   - Refer to drawing: DJ5445B.

2. Dowmax Motors for Water-Mist or Hydraulic Fluid Use (with flushing circuit)
   - Water-mist fluid, commonly employed as fire-resistant hydraulic oil, shortens bearing life because of its low lubricating property. This Dowmax motor is equipped with internal flushing circuit in order to extend the bearing life.
   - Refer to drawing: DJ6315 and DJ6345 (with flow control valve).

3. Dowmax for Installing the shaft upward
   1) With oil bleeding hole (plug is provided in the end cover in order to facilitate oil filling in the motor casing before operation).
   - Refer to drawing: DJ5442B.
   2) With special drain port (the highest portion of this motor when its shaft is mounted upward is provided with a special drain port to completely fill the motor casing with oil).
   - Refer to drawing: DJ5442B.

4. Coating and rustproofing
   - In addition to the standard coating, 8 types of coating system are standardized for Dowmax motors.
   - Refer to drawing: DJ6313B.
   - The coated surfaces (excluding the noncoat of all Dowmax motors are rustproofed. This standard rustproofing is valid for approx. three months.

5. Others
   1) Contact us for motors with special capacities, such as 250, 450, and 550 series.
   2) Contact us for the oil-resistant specification for operation at temperatures from -20°C to +70°C.
   3) A socket welding type flanges is shown in this catalogue for main port piping.
   - Refer to drawing: DJ6351B (straight flange, screw connection) and DJ6341B (ellbow flange, screw connection).

Array of Dowmax Base Products

- (with Planetary-Gear Reducer)
- (with Mechanical Brake)
- (Dowmax)
- (with Rotation Detector with Counter Balance Valve)

- Single-stage planetary-gear reducer
- Mechanical brake B171
- Mechanical brake B172
- Mechanical brake B173
- Counter Balance Valve C100 C100Y C100Z C100W C3000 C3000B C3000H C2000H

- Double-stage planetary-gear reducer

- Dowmax® 2-Speed Motor

The structure of this 2-speed motor is simple because of a construction where the front and rear piston travel independently, making use of the advantages of the opposed piston and double swash plate motor.

- HIGH STARTING EFFICIENCY Because of the same working structure as standard Dowmax motor.
- GOOD LOW-SPEED PERFORMANCE Because of multiple-piston construction.
- SLIM CONFIGURATION Motor diameter is same as standard Dowmax motor.
- CHANGE-OVER BETWEEN LARGE AND SMALL DISPLACEMENT CAN BE DONE WHILE RUNNING WITH A LOAD.
- NO SEPARATE PILOT PRESSURE IS REQUIRED FOR CHANGE-OVER BECAUSE OF THE SELF PRESSURE UTILIZED AS A PILOT PRESSURE.
In the Fig. 1 the high pressure fluid flowing in from the main port enters through the passage in the thrust retainer plate. It then flows into the left port which splays at the shaft end surface which slopes against the timing plate, and branches into both right and left cylinders. One flow reaches the piston bore at the right side of the cylinder block, after passing through port holes of the shaft and cylinder block. The other flow goes into the piston bore at the left side through the groove in the main spool and port holes in the shaft and cylinder block. Thus the drive shaft starts to rotate in the rotation of cylinder block which is caused by the tangential force on the asset plates exerted by the axial movement of piston (the plates are located in the cylinder block which is integral with a drive shaft). The low-pressure fluid, after working on the pistons, is pushed back to the cylinder bore, flows out from the low-pressure main port, through the passage in the reverse way as it came in.

Fig. 2 shows a case of large displacement. When high pressure fluid is led to the pilot pressure port B, it enters at the pilot piston chamber 3 through the passage 1 and 2, and pushes the pilot piston 6 to the right. With the pilot piston 6 pressed to the right side, the main spool 8 also moves to the right by the pilot piston 6.

The groove 8 on the main spool comes to the position shown as in Fig. 3. With this movement of the main spool, the high pressure fluid coming from the main port flows into both passages of 10 and 11 and acts on the right and left pistons, thus working as a large displacement motor.

Fig. 3 shows a case of small displacement. When high pressure fluid is led to the pilot pressure port A, it flows to the pilot piston chamber 5 through the passage 4, and pushes the pilot piston 6 to the left. With the movement of the pilot piston 6 to the left side, the main spool 8 also moves to the left by the pilot piston 6.

The groove 8 on the main spool connects with the position shown as in Fig. 3. With this movement of the main spool, the high pressure fluid coming from the main port flows into the passage 15, exerting force only on the right side piston thus working as a small displacement motor.

In this case, although high pressure fluid does not flow to the left side pistons, it reciprocates in the cylinders repeating suction and discharge stroke along with the shaft rotation. This is made possible because the groove 8 around the main spool is positioned as shown by which each left side cylinder is chambered through the passage 10. Further, as the passage 15 is connected with the hole 16, fluid is supplied and cooled through the flow to the drain.

### Performance Data

<table>
<thead>
<tr>
<th>Model</th>
<th>Displacement cm³/Rev</th>
<th>Rated Pressure MPa (kgf/cm²)</th>
<th>Peak Pressure MPa (kgf/cm²)</th>
<th>Rated Torque N·m</th>
<th>Max. Speed rpm</th>
<th>Spring Friction Min/Max MPa (kgf/cm²)</th>
<th>Net Torque MPa (kgf/cm²)</th>
<th>Pilot Piston Stroke Volume cm³</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK300</td>
<td>304/152</td>
<td>24.5 (250)</td>
<td>31.9 (325)</td>
<td>1190/594 (121/61)</td>
<td>600/800</td>
<td>0.001/0.008</td>
<td>31.9 (325)</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>MK600</td>
<td>602/301</td>
<td>24.5 (250)</td>
<td>31.9 (325)</td>
<td>2350/1180 (245/120)</td>
<td>300/600</td>
<td>0.001/0.008</td>
<td>31.9 (325)</td>
<td></td>
<td>110</td>
</tr>
</tbody>
</table>

### Construction & Working Principle

- Limit of hydraulic fluid temperature: -20°C ~ 80°C
- Limit of hydraulic fluid viscosity: 15~500cSt (Advisable fluid viscosity range: 25~100cSt)
- In case motors are used, as it's output shaft to be positioned upward, special specification should be applied. In this case, please contact us.

### Change-Over Circuit in 2-Speed Operation

**Example of 2-speed change-over circuit**

1. Where a F2 flange with solenoid valve is used.
2. Where a F2 flange with manual valve is used.
3. Where a F2 flange is used.
4. Where a F1 flange (without shuttle valve) is used.
BEARING LIFE AND ALLOWABLE RADIAL LOAD FOR SHAFT

NOTE 1: If more than one bearing is used, the following life is determined by the Bearing Life.

2. The life of each bearing is determined on the basis that the speed and loads are equally divided as illustrated in Fig. 1 or Fig. 2.

3. Under higher speed, lower load or other combinations, error should be equalized to the side load axis as indicated in Fig. 1 or Fig. 2.

4. For a differential application, a radial load for each shaft should be applied as illustrated in Fig. 1 or Fig. 2.

5. The bearing life determined in the Bearing Life graph should be multiplied by the following factors:

   1. In case where the side load axis is in horizontal position, multiply by 1,000.
   2. In case where the side load axis is in vertical position, multiply by 7,000.
   3. In case where the side load axis is in diagonal position, multiply by 1,000.

   Bearing Life table: For shafts parallel to each other, multiply by 1,000.

   Bearing Life table: For shafts in a perpendicular position, multiply by 7,000.

   Bearing Life table: For shafts in a diagonal position, multiply by 1,000.

   Bearing Life table: For shafts in a U-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a T-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Y-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a V-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a K-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a N-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Z-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a S-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a W-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a M-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a H-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a T-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Y-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a U-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a V-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a K-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a N-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Z-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a S-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a W-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a M-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a H-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a T-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Y-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a U-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a V-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a K-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a N-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Z-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a S-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a W-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a M-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a H-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a T-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Y-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a U-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a V-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a K-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a N-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Z-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a S-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a W-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a M-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a H-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a T-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Y-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a U-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a V-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a K-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a N-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Z-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a S-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a W-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a M-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a H-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a T-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Y-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a U-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a V-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a K-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a N-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Z-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a S-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a W-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a M-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a H-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a T-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a Y-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a U-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a V-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a K-shaped position, multiply by 1,000.

   Bearing Life table: For shafts in a N-shaped position, multiply by 1,000.
**Structure & Operating Principle**

Structure of integral shaft type mechanical brake (MB type: Above drawing shows MB300B.)

Structure of cartridge type mechanical brake (BB, BC, BP, BR types)

The internal structure of the mechanical brake is shown above. The friction plates and steel plates are located side by side, and the braking torque is generated by the friction force applied when the spring presses these plates. The friction plates are placed on the splined drive shaft for cartridge type and on the brake spline for integral shaft type, which are connected to the motor shaft with a key. The steel plates are placed on the brake cylinder for cartridge type and brake plunger for integral shaft type by splines. The braking torque is generated by the force of the spring, and when a pressure higher than a spring force is applied in the brake releasing port, the friction plates and steel plates are separated and the brake is released. When the pressure at the brake releasing port is lowered, the brake plunger is pressed against the friction plate by the spring force, and the brake torque is generated by the friction force between the plates.

**Performance Data**

<table>
<thead>
<tr>
<th>Model</th>
<th>Displacement</th>
<th>Rated pressure</th>
<th>Peak pressure</th>
<th>Rated torque</th>
<th>Rated speed</th>
<th>Max. speed</th>
<th>Static brake torque</th>
<th>Brake releasing pressure</th>
<th>Max. pressure for cylinder</th>
<th>Brake cylinder volume</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB100-C40</td>
<td>99</td>
<td>345 (10)</td>
<td>432 (44)</td>
<td>1000</td>
<td>1000</td>
<td>392 (40)</td>
<td>1.23 (12.5)</td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>MB150AP100</td>
<td>152</td>
<td>667 (68)</td>
<td>600</td>
<td>800</td>
<td>800</td>
<td>980 (100)</td>
<td>1.0 (10)</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>MB175AP100</td>
<td>175</td>
<td>765 (78)</td>
<td>600</td>
<td>800</td>
<td>800</td>
<td>1470 (150)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>MB300BP150</td>
<td>300</td>
<td>1320 (134)</td>
<td>660</td>
<td>800</td>
<td>800</td>
<td>2450 (250)</td>
<td>1.2 (12)</td>
<td></td>
<td></td>
<td>31.9</td>
<td></td>
</tr>
<tr>
<td>MB350BP150</td>
<td>350</td>
<td>1530 (156)</td>
<td>660</td>
<td>800</td>
<td>800</td>
<td>2940 (300)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>190</td>
</tr>
<tr>
<td>MB600C2S50+600C</td>
<td>600</td>
<td>2620 (267)</td>
<td>500</td>
<td>600</td>
<td>600</td>
<td>2450 (250)</td>
<td>1.2 (12)</td>
<td></td>
<td></td>
<td>31.9</td>
<td></td>
</tr>
<tr>
<td>MB700C2S50+600C</td>
<td>750</td>
<td>3290 (334)</td>
<td>400</td>
<td>520</td>
<td>520</td>
<td>2940 (300)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>MB800C2S570+600C</td>
<td>848</td>
<td>3700 (377)</td>
<td>350</td>
<td>450</td>
<td>450</td>
<td>2940 (300)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>217</td>
</tr>
<tr>
<td>MB850-F601+6P21-C</td>
<td>954</td>
<td>4440 (450)</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1190 (112)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>MB903-N3B2+6P25-C</td>
<td>1002</td>
<td>5650 (570)</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>2450 (250)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>58</td>
</tr>
</tbody>
</table>

**Examples of Application**

**Winch Circuit.**
A case where the mechanical brake is applied to hold the load, when a change-over lever at neutral.

**Truck (carrier) Drive Circuit.**
A case where the mechanical brake is used in combination with counter balance valve with brake valves, for traction drive use.

**CAUTION:** In case motors are used as it’s output shaft to be positioned upward, some modification would be necessary. In this case, please contact us.
**MB100–C40**

<table>
<thead>
<tr>
<th>Hydraulic Motor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>99cm³/1Min</td>
</tr>
<tr>
<td>Rated pressure</td>
<td>27.5MPa (280kgf/cm²)</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>31.9MPa (325kgf/cm²)</td>
</tr>
<tr>
<td>Rated torque (theoretical)</td>
<td>432N·m (446kgf·m)</td>
</tr>
<tr>
<td>Rated speed</td>
<td>1000rpm</td>
</tr>
<tr>
<td>Max. speed</td>
<td>1000rpm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical Brake</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Static brake torque</td>
<td>392N·m (400kgf·m)</td>
</tr>
<tr>
<td>Brake releasing pressure</td>
<td>1.2MPa (12.5kgf/cm²)</td>
</tr>
<tr>
<td>Endurable press. of brake cylinder</td>
<td>31.9MPa (325kgf/cm²)</td>
</tr>
<tr>
<td>Brake cylinder stroke volume</td>
<td>15cm³</td>
</tr>
<tr>
<td>Casing capacity</td>
<td>0.7L</td>
</tr>
<tr>
<td>Mass</td>
<td>34kg</td>
</tr>
</tbody>
</table>

**OUTLINE DIMENSIONS**

- Port for brake releasing Br Rc1/8
- Port for brake releasing Br Rc1/8 parallel layout (right) Shaft code: C
- Double part Dr Rc1/4
- Main part 2-G1/2
- JIS D2001 Involute Spline 35 × 19 × 1.667 (Class B)
- Spine shaft Shaft code: IP

**BRAKE CHARACTERISTICS**

The brake torque is generated in proportion to the force exerted between the friction plates and steel plates. Therefore, the brake torque varies with the pressure at the brake releasing port and the drain pressure in the motor case. The chart, right, shows the relationship between the brake torque vs. the pressure at the brake releasing port and the drain pressure in the motor case. Brake torque varies due to unevenness of friction coefficient between friction plates and steel plates. The curve shows the lower limit of these values.

**ALLOWABLE RADIAL LOAD**

- Direction of Radial Load
- Pressure (MPa)

**BEARING LIFE**

- Pressure (MPa)
- Pressure (MPa)

**NOTE:**
1. If motors are operated within the proper ranges and conditions, the operational life is determined by the Bearing Life.
2. Bearing life value due to the direction of radial load is shown.
3. The graph shown are the bearing life (S<sub>15L10h</sub>) at 500rpm shaft speed for various pressures and radial loads.
4. When the shaft speed differs from 500rpm the bearing life can be obtained by the formula below:
   \[ S_{15L10h} = \frac{500}{N} S_{15L10h} \]
   Where \( S_{15L10h} \) is the bearing life at 500rpm, \( N \) is the shaft speed.
5. In case where the side load acts at a different location to the midpoint of the shaft projection please refer to us.
6. Applications with axial thrust loads should be referred to us.
7. When motor is used in Motor-Off circuit, pressure in the figure shall be a sum of motor inlet and outlet pressure.
8. When water-glycol fluid is used, bearing life comes remarkably short. In this case please refer to us.

**CODING**

- MB 100 — C 40
- Special specification number
  - No indication: Standard specification
  - S : Special specification

- Port
  - E : Unfitted threaded port

- Brake torque
  - No indication: Standard metric port
  - # : Counter balance valve fits with standard metric port (No. code)

- Output shaft
  - C : Standard shaft (New JIS key straight shaft)
  - P : Metric Spline shaft
  - S : Special shaft
**MB300BP150**

**MB350BP150**

### Hydraulic Motor
- **Displacement**: 300, 350 (cm³/Rev)
- **Rated pressure**: 17.5 MPa (kg/cm²)
- **Peak pressure**: 31.9 MPa (kg/cm²)
- **Rated torque (theoretical)**: 1530 (150), 1530 (150) (N·m)
- **Rated speed**: 680 (rpm)
- **Max. speed**: 800 (rpm)

### Mechanical Brake
- **Static brake torque**: 1470 (150) (N·m)
- **Endurable press. of brake cylinder**: 31.9 (325) (kg/cm²)
- **Brake cylinder stroke volume**: 20 (cm³)
- **GDP**: 0.28 (kg·m⁻²)
- **Casing capacity**: 1.5 (l)
- **Mass**: 89 (kg)

### Special specification number
- No indication: Standard specification
- **S**: Special specification

### Port
- **A**: EMB300P counter balance valve mounting port
- **B**: C300, B-8, CW30A counter balance valve mounting port

### Brake torque
- **Indication sign**: 150, 125, 100, 75, 50, 25

### Design No. (1st design change ‘A’)

#### BRAKE CHARACTERISTICS

The brake torque is generated in proportion to the force worked by the friction plates and steel plates. Therefore, the brake torque varies with the pressure at the brake releasing port and the brake pressure in the motor chamber. The brake torque varies with the friction plate and steel plate contact force. The curve shows the lower limit of these values.

#### ALLOWABLE RADIAL LOAD

#### BEARING LIFE

**NOTE**
1. If motors are operated within the proper ratings and conditions, the operational life is determined by the Bearing Life.
2. Bearing life varies due to the deviation of radial load to shaft.
3. The graph shown is the bearing life (S=15000) at 100 rpm shaft speed for various pressures and radial loads.
4. When the shaft speed differs from 100 rpm the bearing life can be obtained by the formula below:
   
   $$ S = \frac{15000 \times \text{rpm}}{100} $$

5. In case where the side load acts at a different location to the midpoint of the shaft projection please refer to us.
6. Applications with axial thrust loads should be referred to us.
## ME600BCS2550 + BB250BC

### Hydraulic Motor
- **Displacement**: 600cm³/rev
- **Rated pressure**: 27.5MPa (280kgf/cm²)
- **Peak pressure**: 31.9MPa (325kgf/cm²)
- **Rated torque (theoretical)**: 2620N·m (267kgf·m)
- **Rated speed**: 500rpm
- **Max. speed**: 600rpm
- **Casing capacity**: 2.7ℓ
- **Mass**: 190kg

### Mechanical Brake
- **Static brake torque**: 2460N·m (250kgf·m)
- **Brake releasing pressure**: 1.2MPa (12kgf/cm²)
- **Endurable press. of brake cylinder**: 31.9MPa (325kgf/cm²)
- **Brake cylinder stroke volume**: 58cm³
- **G3**: 0.01kg·m²

## OUTLINE DIMENSIONS

### Port for brake releasing Br Rc1/4
- Port for brake releasing Br Rc1/4
- K = 15 (Mounting Bolt size M16)

### Spline shaft
- **Shank code**: P
- **JIS B1011**: Parallel keyway shaft (Std.)

### Drain port (Or G1/2)
- **Drain port**
- **Clearance**: 34.3
- **G1/2**: 27

### Eye bolt M12
- **Eye bolt**
- **Clearance**: 34.3
- **M12**: 27

### JIS B1011 depth 20
- **JIS B1011**
- **Parallel keyway shaft (Std.)**

### Shaft code: C

### BRAKE CHARACTERISTICS

- The brake torque is generated in proportion to the force exerted between the friction plates and steel plates.
- Therefore, the brake torque varies with the pressure at the brake releasing port and the static pressure in the motor case. The chart, right, shows the relationship between the brake torque at the pressure at the brake releasing port and the static pressure in the motor case.
- Brake torque varies due to unevenness of friction coefficient between friction plates and steel plates. The curve shows the lower limit of these values.

### ALLOWABLE RADIAL LOAD

- **Direction of Radial Load**
- **ME600B**

### BEARING LIFE

- **NOTE**: If motors are operated within the proper ratings and conditions, the operational life is determined by the Bearing Life.
- **1. Bearing Life**
- **2. Bearing Life depends on the direction of radial load to shaft**
- **3. The graph shown are the bearing life (B-15Life) at 100 rpm shaft speed for various pressures and radial loads. When the shaft speed differs from 100 rpm the bearing life can be obtained by the formula below:**

### CODING

- **ME600BC**
- **S2550 + BB250BC**
- **Special specifications**
  - **No indication**: Standard specification
  - **S**: Special specification
  - **C**: Standard shaft (New JIS straight shaft)
  - **P**: Metric Splined shaft
  - **B**: Special shaft

### Motor shaft

- **Indication sign**
- **Type**
  - 250
  - 200
  - 150
  - 100
  - 50

- **No indication**: Standard metric ports
  - **A**: C100...
  - **B**: C300...
  - **C**: B & CW300A counter balance valve mounting port

- **Port**
  - **No indication**: Standard metric ports
  - **A**: C100...
  - **B**: C300...
  - **C**: B & CW300A counter balance valve mounting port


### ME750BCS2560 + BC300-C
### ME850BCS2570 + BC300-C

#### Hydraulic Motor

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>750</td>
</tr>
<tr>
<td>Rated pressure</td>
<td>27.5 MPa</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>31.0 MPa</td>
</tr>
<tr>
<td>Rated torque (theoretical)</td>
<td>3280 Nm</td>
</tr>
<tr>
<td>Rated speed</td>
<td>450 rpm</td>
</tr>
<tr>
<td>Max. speed</td>
<td>520 rpm</td>
</tr>
</tbody>
</table>

#### Mechanical Brake

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static brake torque</td>
<td>2840 Nm</td>
</tr>
<tr>
<td>Endurable press. of brake cylinder</td>
<td>31.0 MPa</td>
</tr>
<tr>
<td>Brake cylinder stroke volume</td>
<td>58 cm³</td>
</tr>
<tr>
<td>Mass</td>
<td>217 kg</td>
</tr>
</tbody>
</table>

#### Braking Characteristics

- The brake torque is generated in proportion to the forces exerted between the friction plates and steel plates. Therefore, the brake torque varies with the pressure at the brake releasing port and the oil pressure in the motor case. The chart, right, shows the relationship between the brake torque, i.e., the pressure at the brake releasing port and the oil pressure in the motor case. Brake torque varies due to unevenness of friction coefficient between friction plate and steel plate. The curve shows the lower limit of these curves.

#### Allowable Radial Load

#### Bearing Life

1. If motors are operated within the proper ratings and conditions, the operational life is determined by the Bearing Life.
2. Bearing life values due to the direction of radial load to shaft.
3. The graph shown are the bearing life (at 15°C) of 100 rpm of shaft speed for various pressures and radial loads. When the shaft speed differs from 100 rpm, the bearing life can be obtained by the formula below:
   \[ L = \frac{150}{N} \times L_{100} \]

### Diagrams

- **OUTLINE DIMENSIONS**
- **CODING**
- **BRAKE CHARACTERISTICS**
- **ALLOWABLE RADIAL LOAD**
- **BEARING LIFE**

---

**NOTE:**
1. Motors are operated within the proper ratings and conditions, the operational life is determined by the Bearing Life.
2. Bearing life values due to the direction of radial load to shaft.
3. The graph shown are the bearing life (at 15°C) of 100 rpm of shaft speed for various pressures and radial loads. When the shaft speed differs from 100 rpm, the bearing life can be obtained by the formula below:
   \[ L = \frac{150}{N} \times L_{100} \]
4. Applications with axial thrust loads should be referred to use of thrust bearing.
5. When motor is used in Motor-Outlet circuit, pressure in the figure shall be a sum of motor inlet and outlet pressure.
6. When water-glycol fluid is used, bearing life can be remarkably short. In this case please refer to user manuals.
**MK600-NS002+BR250-C**

### Hydraulic Motor
- **Displacement**: 602 cm³/r
- **Rated pressure**: 24.5 (250) MPa (kgf/cm²)
- **Peak pressure**: 31.9 (325) MPa (kgf/cm²)
- **Rated torque (theoretical)**: 2450 (240) N·m, 1180 (120) N·m
- **Rated speed**: 300 rpm
- **Max. speed**: 600 rpm

### Mechanical Brake
- **Static brake torque**: 2460 (250) N·m
- **Brake releasing pressure**: 1.2 (12) MPa (kgf/cm²)
- **Endurable press. of brake cylinder**: 31.9 (325) MPa (kgf/cm²)
- **Brake cylinder stroke volume**: 58 cm³
- **Casing capacity**: 2.9 l

### Mass
- 204 kg

---

**C O D I N G**

**MK600-NF2AS002+BR250-C**

- **Special specification number**
  - No indication: Standard specification
  - S: Special specification
- **Special Spec.**
  - C: Standard shaft (New JIS key straight shaft)
  - P: Metric Spline shaft
  - S: Special shaft
- **Output shaft**
  - Brake torque:
    - **Brake torque (Nm @ rpm)**
      - 250: 2450, 1950, 1470, 981, 491, 345
    - 200: 2000, 1500, 1050, 682, 345
    - 150: 1500, 1125, 750, 450
    - 120: 1200, 840, 560, 330
    - 90: 900, 630, 420, 270
- **Directional valve sign**
  - Refer to Page 52
- **Flange sign**

---

**BRAKE CHARACTERISTICS**

The brake torque is generated in proportion to the force exerted between the friction plates and clamping plates. Therefore, the brake torque varies with the pressure at the brake releasing port and the brake pressure in the motor case. The chart, right, shows the relationship between the brake torque vs. the pressure at the brake releasing port and the brake pressure in the motor case. Brake torque varies due to unevenness of friction coefficient from friction plate to friction plate. The curve shows the lower limit of these values.

**ALLOWABLE RADIAL LOAD**

![Graph](image-url)

**BEARING LIFE**

![Graph](image-url)

**NOTE:** If motors are operated within the proper ratings and conditions, the operational life is determined by the Bearing Life.

1. If motors are operated within the proper ratings and conditions, the operational life is determined by the Bearing Life.
2. Bearing life varies due to the direction of radial load to shaft.
3. The graphs shown are the bearing life (B·10⁶/h) at 100 rpm shaft speed for various pressures and radial loads.
4. When the shaft speed differs from 100 rpm the bearing life can be obtained by the formula below:
   
   B·10⁶ [h] = B·10⁶ [h] at 100 rpm × [rpm] / 100

   * In case where the nil load acts at a different location to the midpoint of the shaft projection please refer to it.
5. Applications with axial thrust loads should be referred to us.
6. When water glycol fluid is used, bearing life is remarkably short. In this case please refer to us.
With a recent trend that a larger capacity is required for machinery like those for construction, ship/marine equipment and steel mill, a compact hydraulic motor with a larger torque capacity is much more required. Geared motor Dowmax (using Sumitomo planetary reduction gear) is developed to answer this requirement and they are already proving its merits in many fields including the shield tunneling machines, steel mill equipment.

Hydraulic Motor: Dowmax motor - a reputable low speed high torque motor for its superior performance and reliability owing to the structure of the double swash plate and opposed multiple piston.

Reduction Gear: Sumitomo planetary gears boast impact resistance, superior anti-wear features, reliability for long time use and compact size, as they are manufactured with high quality material through heat treatment and high-precision gear cutting, based on the principle of an effective load distribution.

This catalogue is useful for frequent use.

Single-Stage Reduction Gear with Dowmax Motor (Reduction ratio: 5.053)
Double-Stage Reduction Gear with Dowmax Motor (Reduction ratio: 25.53)
Dowmax motor is developed with planetary gear suitable for the application of Shield Tunneling. All kind of Dowmax motor (2-speed, with Mechanical Brake, with Counter Balance Valve etc.) and special motor and planetary gear reduction motor combined together are compatible. Moreover motors can be made compatible for high torque, high reduction ratio other than specified in this catalogue. We appreciate your enquiry in this regard.
Shield Tunneling Application

ME2600-G+CPHFL-132D-R-5-P

Gear Parts No. : DY0089B

Equivalent Displacement 13,026 cm³/rev
Gear Ratio 1/5.053
Output Torque 40,581 N·m
Max. Output Torque 48,290 N·m
Rated Speed 20 r/min

SPECIFICATION

<table>
<thead>
<tr>
<th>Model</th>
<th>Gear Ratio</th>
<th>Equivalent displacement cm³/rev</th>
<th>Rated Pressure MPa (kg/cm²)</th>
<th>Max. Pressure MPa (kg/cm²)</th>
<th>Rated Torque N·m (kgf·cm)</th>
<th>Max. Torque N·m (kgf·cm)</th>
<th>Rated Speed (rpm)</th>
<th>Allowable Shear Load (kN)</th>
<th>Right Side Fitting (max value)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME2600-G+CPHFL-132D-R-5-P</td>
<td>1.5/0.53</td>
<td>13026</td>
<td>20.6 (210)</td>
<td>24.5 (250)</td>
<td>3015 (250)</td>
<td>2014 (200)</td>
<td>3033</td>
<td>155 (150)</td>
<td>1100 (1000)</td>
<td></td>
</tr>
<tr>
<td>ME1300AG+CPHFL-165A-25-P</td>
<td>1.2/0.97</td>
<td>3094</td>
<td>20.6 (210)</td>
<td>24.5 (250)</td>
<td>3900 (200)</td>
<td>2900 (200)</td>
<td>10</td>
<td>64 (60)</td>
<td>1400 (1400)</td>
<td></td>
</tr>
<tr>
<td>ME155-G+MRP170S2-25-P</td>
<td>1/1.03</td>
<td>4717</td>
<td>20.6 (210)</td>
<td>24.5 (250)</td>
<td>5410 (250)</td>
<td>4400 (200)</td>
<td>160</td>
<td>128 (125)</td>
<td>252 (250)</td>
<td></td>
</tr>
<tr>
<td>ME1300AG+MRP180N-112-HD</td>
<td>1/1.2</td>
<td>8070</td>
<td>20.6 (210)</td>
<td>24.5 (250)</td>
<td>7215 (250)</td>
<td>5250 (200)</td>
<td>250</td>
<td>142.5 (140)</td>
<td>500 (500)</td>
<td></td>
</tr>
</tbody>
</table>

- Rated output torque and peak output torque is 95% of efficiency.
- For the service-life refer other catalogue in conjunction with this catalogue as life varies with different models.
- Rated speed is suitable for the rated pressure. In case of low pressure used continuously, there are other models also suitable for application according to use.
- Please enquire for any further requirement.
- This catalogue is exclusively for Shield Cutter Drive. Therefore useful for Horizontal use only.
- In case of requirement of shift in Upward or Downward direction please enquire as it becomes special specification.
- In case of DOWMAX motors this is required to be used for the operation other than cutter and that of Shield Tunneling please discuss with us.
- DOWMAX motor with Planetary Gear can also be built with other reduction ratio as well as torque specification than those mentioned in the catalogue.
- We appreciate your enquiry for these models.

SELECTION CHART

This chart indicates the relation of actual torque and shaft rotation at the rated pressure of 20.6MPa. Given the required torque and shaft speed the appropriate model can be selected from the diagram.

When the operating pressure differs from 20.6MPa, refer to the performance date for the respective model.

1. Radial Load
   - The load applied radially on the midpoint of the shaft extension should be less than the value indicated below.
     - Pressure MPa: 25.6
     - Radial Load MN: 320

2. Bearing Life
   - The gear box bearing life will vary as shown on the chart depending on the radial load imposed on the output shaft. The chart indicates the bearing life (5-10 Life) when the output speed is 20 rpm with the varied pressures and the radial load magnitudes. When the output speed is other than 20 rpm, it is obtained by the following formula.
     - Life: 10 Life
     - (Bearing life obtained on the chart) x 20 = Life of other speed

3. Lubrication
   - Quantity of lubricating oil: for horizontal use
   - Lubricating oil: N32 or gear oil equivalent to ISO Viscosity 150 (ambient temp.)

4. For detailed information for motor, please refer to other page.
### ME1300AG+MRP1801N-112-HD

**Gear Parts No.**: DY0455A

<table>
<thead>
<tr>
<th>Equivalent Displacement</th>
<th>8,070 cm³/rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear Ratio</td>
<td>1/6</td>
</tr>
<tr>
<td>Output Torque</td>
<td>25,125 N·m</td>
</tr>
<tr>
<td>Max. Output Torque</td>
<td>29,910 N·m</td>
</tr>
<tr>
<td>Rated Speed</td>
<td>15 rpm</td>
</tr>
</tbody>
</table>

**JIS D2001 INVOLUTE SPLINE**

140×26×5 (CLASS B)

- **Module**: 5
- **Pressure Angle**: 20°
- **Number of Teeth**: 30
- **Spacing**: 15°

**Bearing Life**

1. **Radial Load**
   - The load applied radially on the midpoint of the shaft extension should be less than the value indicated below.
   - **Pressure MPA**: 35.6
   - **Radial Load**: 250 N

2. **Bearing Life**
   - The gear box bearing life will vary as shown on the chart depending on the radial load imposed on the output shaft. The chart indicates the bearing life (B·10 Life) when the output speed is 15 rpm with the varied pressures and the radial load magnitudes.
   - When the output speed is other than 15 rpm, it is obtained by the following formula:
     \[ B \times \frac{15}{n} \]
   - **B·10 Life**
   - The bearing life, when the load point is not at the middle of shaft extension, is different from the chart. Refer to factory in such a case.

3. **Lubrication**
   - **Quantity of lubricating oil**
     - For horizontal use
     - Lubricating oil: 135 cc
   - **Lubricating oil**
     - 135 cc for gear oil equivalent to ISO VUZI (ambient temp. 0~60°C)

4. For detailed information for motor, please refer to other page.
Counter Balance Valve with Brake Valves

This counter balance valve generates the braking pressure in the hydraulic motor, proportional to the load in lowering loads at slewing, running and winching operations and thus prevent overrunning of motor forced by loads.

In addition, the counter balance valve contains housed brake valves to protect the hydraulic motor from overloads as well as smooth acceleration and deceleration of load.

(INDEX) SPECIFICATION, MODEL CODE ........................................ 90
OPERATION PRINCIPLE ......................................................... 92
C100 .......................................................... 93
C200 .......................................................... 95
CW300A ......................................................... 97
**MODEL CODE**

**CW 300 Y X - A ※ S**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S : Special Specification</td>
<td>V : Vitron Seal (Fluoro-rubber)</td>
<td>X : With mechanical brake release port</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Y : With stroke adjusting mechanism for main spool</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Z : With Y function + Z function</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W : Y function + Z function</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cracking pressure</th>
<th>Special Function Code</th>
<th>Rated Flow ( l /min)</th>
<th>Series Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>No sign : Standard cracking pressure</td>
<td>No sign : Standard Product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X : Higher cracking pressure model</td>
<td>Y : With mechanical brake release port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z : With stroke adjusting mechanism for main spool</td>
<td>W : Y function + Z function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated Flow ( l /min)</td>
<td>Series Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C : Counter Balance valve with two-directional brake valve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CW : Counter Balance valve with one-directional brake valve</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Flow ( l /min)</th>
<th>Automatic Device of Counter Balance Valve (For spool Valve &amp; Pilot Valve)</th>
<th>MASS kg</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>C100</td>
<td>100</td>
<td></td>
<td>7</td>
<td>Allows smooth acceleration/deceleration at slewing, running and winching operations.</td>
</tr>
<tr>
<td>C100Y</td>
<td></td>
<td></td>
<td></td>
<td>To be used for hydraulic motors with mechanical brake, an automatic brake release ports is provided.</td>
</tr>
<tr>
<td>C100Z</td>
<td></td>
<td></td>
<td></td>
<td>To be used for devices at low flow rate and greater load changes, and matching with machines to be easily adjusted from outside.</td>
</tr>
<tr>
<td>C100W</td>
<td></td>
<td></td>
<td></td>
<td>Both Y and Z functions above are combined.</td>
</tr>
<tr>
<td>C300B</td>
<td>300</td>
<td></td>
<td>19</td>
<td>Allows smooth acceleration/deceleration at slewing, running and winching operations.</td>
</tr>
<tr>
<td>C300YB</td>
<td></td>
<td></td>
<td></td>
<td>To be used for hydraulic motors with mechanical brake, an automatic brake release ports is provided.</td>
</tr>
<tr>
<td>C300ZB</td>
<td></td>
<td></td>
<td></td>
<td>To be used for devices at low flow rate and greater load changes, and matching with machines to be easily adjusted from outside.</td>
</tr>
<tr>
<td>C300WB</td>
<td></td>
<td></td>
<td></td>
<td>Both Y and Z functions above are combined.</td>
</tr>
<tr>
<td>CW300A</td>
<td>200</td>
<td></td>
<td>24</td>
<td>This one-directional counter balance valve is used for winches allowing smooth rolling down operation.</td>
</tr>
</tbody>
</table>

- Operating oil temperature range : 20 to +80 degrees C.
- Operating oil viscosity range : 15 to 500cSt (optimum viscosity range : 25 to 100cSt)

**OPERATION PRINCIPLE**

1. **Two-directional counter balance valves, C100, C300B**

   **(During acceleration)**

   When the directional valve is switched to either direction to accelerate the hydraulic motor, assuming that the valve is switched to the [a] side, the fluid will be introduced to the Av port. Then, the fluid is directed to the spring chamber. As at the edge surface of the main spool through the pilot passage Ap of the counter balance valve and thus, the main spool will move to the right direction. Then, the fluid flown into the Av port is introduced to the hydraulic motor from the Av port through the check valve in the main spool. As the hydraulic motor cannot absorb all the fluid flown into the Av port until acceleration has been completed, the fluid pressure will rise upto the relief valve set pressure and the excessive fluid is discharged to the return line from the relief valve Ra.

2. **One-directional Counter balance Valve CW300A**

   **(During Rolling up)**

   When the directional valve is switched to the [a] side and the fluid is introduced from the Av port, the fluid will be directed to the hydraulic motor inlet from Av port through the check valve in the counter balance valve, and the load will be raised. The fluid drained from the hydraulic motor outlet will be discharged to the Bv port through Bv port.

   **(During Rolling down)**

   When the directional valve is switched to the [b] side, the fluid will be flown into the Bv port. The fluid introduced to the Bv port is directed to the main spool end surface through the pilot passage Bp. If the pilot pressure becomes higher than the spool spring force, the main spool will move to the left and the return side passage will be opened. The fluid flown into the Bv port is introduced to the hydraulic motor inlet through the Bm port and the load is lowered. The fluid discharged from the hydraulic motor outlet is drained to the Av port through the Av port. When the load is going to overrun exceeding the pump discharge volume due to gravity, the pressure at the inflow side of the motor is reduced and the pilot pressure decreases. Thus, the main spool is returned to the right side by the spring force and the return line is closed, which generates the pressure at the outlet side of the hydraulic motor and overrun is prevented.
## C100

### Rated Flow
100 l/min

### Adjusting Range of Relief Valve Set Pressure
- 9.8～27.5MPa (100～280kgf/cm²)
- 0.57MPa (5.8kgf/cm²)
- 1.31MPa (13.4kgf/cm²)

### Main Spool Cracking Pressure
- 0.015MPa (0.15kgf/cm²)

### Check Valve Cracking Pressure
- 0.015MPa (0.15kgf/cm²)

### Mass
7kg

---

## Application Example

### Hydraulic Motor with Mechanical Brake

---

## Sub-Plate Dimension for DOWMAX Hydraulic Motor Direct Connection

<table>
<thead>
<tr>
<th>Motor Model</th>
<th>C100</th>
<th>C100Y</th>
<th>C100W</th>
<th>C100Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME1D</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>ME7D</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>ME13D</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>ME19D</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>ME25D</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

Numbers in ( ) for ME 100 show sub-plate dimensions in direct connection with C100Y & C100W. ME100 with mark can be directly connected without sub-plate.
Counter Balance Valve with Brake Valves

C300B

Rated Flow: 300 L/min

- Adjusting Range of Relief Valve Set Pressure: 9.8~27.5MPa (100~280kgf/cm²)
- Main Spool Cracking Pressure: 0.59MPa (6.0kgf/cm²)
- (Higher Cracking Pressure Model): 1.18MPa (12kgf/cm²)
- Check Valve Cracking Pressure: 0.015MPa (0.15kgf/cm²)
- Mass: 19kg

C300XB

C300YB

C300ZB

C300WB

STANDARD PERFORMANCE DATA

1. Pressure Override Performance

2. Pressure Drop

APPLICATION EXAMPLE

SUB-PLATE DIMENSION for DOWMAX HYDRAULIC MOTOR DIRECT CONNECTION

Motor Model | NE180 | NE150 | NE120 | NE100 | NE90 | NE80 | NE70 | NE60 | NE50
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
X | 30 | 30 | 30 | 35 | 55 | 50 | 40 | 30 | 30
Y | 150 | 150 | 150 | 160 | 175 | 155 | 180 | 180 | 180
Z | 80 | 80 | 80 | 110 | 84 | 84 | 120 | 110 | 110
**CW300A**

### Rated Flow
300 l/min

### Adjusting Range of Relief Valve Set Pressure
9.8～27.5MPa (100～280kgf/cm²)

### Main Spool Cracking Pressure
0.87MPa (8.9kgf/cm²)

### Check Valve Cracking Pressure
0.69MPa (7.0kgf/cm²)

### Mass
24kg

### STANDARD PERFORMANCE DATA

#### 1. Pressure Override Performance

- **Flow Rate** vs. **Pressure Drop** graph

#### 2. Pressure Drop

- **Pressure Drop** vs. **Flow Rate** graph

### OUTLINE DIMENSIONS and CIRCUIT DIAGRAM

- Diagram showing the dimensions and connections of the CW300A valve

### APPLICATION EXAMPLE

- Example application diagram

### SUB-PLATE DIMENSION for DOWMAX HYDRAULIC MOTOR DIRECT CONNECTION

- Table with dimensions for different motor models

- **Motor Model**: NE100, NE105, NE110, NE115, NE130, NE140, NE150, NE160
- **Dimensions**:
  - X: 30, 35, 36, 40, 45, 50
  - Y: 145, 150, 155, 160, 165, 170
  - Z: 83, 85, 90, 95, 100, 105, 110, 115