Imperial's gearless machine consists of a slow speed DC motor, brake, sheave, and pedestal bearings mounted on a fabricated base.

The motor is designed for 230% of rated current at 70% rated speed, frequently repeated. The motor field can be forced for acceleration or deceleration. Class "B" insulation and 50 ºC rise is standard. Standard lead locations are bottom.

The brake is spring-set, electrically released, and may be adjusted to a stopping or holding torque of up to 150% of the rated motor torque.

The traction sheave can be supplied with up to twelve "U" or six "V" grooves. Standard sheave diameters are 26, 30, and 33 inches.

The base is ready for penthouse installation. Most rope layouts can be accommodated with the standard base. The customer must supply reeving details to insure rope clearance.

Imperial manufactures a complete line of motor generator sets for use with our gearless machine. All machines are CSA listed and built Imperial tough.

Options:

- Breakdown Crating
- Class F Insulation
- Split Frame
- Basement Mount
- Side Mount
- Stub Shaft
- Encoder Mounting Kit

Imperial Electric
1503 Exeter Road
Akron, OH  44306
Phone:  (330) 734-3600
Fax:  (330) 734-3601

Contact: Dennis Rhodes
Elevator Sales Engineer
Rhodesd@ImperialElectric.com
Ext. 206
The application of a DC Gearless elevator hoisting motor to an elevator system involves some nine variable specifications. With this many variables, almost every application is unique. These variable specifications are:

1. Rated elevator **live load** in lbs.
2. Rated elevator **full load speed** Ft./Min.
3. Percent of over **counter balance**.
4. Location of hoisting machine greatly effects the efficiency of the system. Typical locations are overhead, beside the elevator hatch, and basement.
5. 1:1 or 2:1 **roping** effects the speed and torque of the motor and the efficiency of the system.
6. Single or double **wrap** effects the mechanical load on the shaft by a factor of 2:1.
7. A smaller diameter sheave will result in a lower torque requirement decreasing the motor size. Smaller **sheave diameter** usually increases cable and sheave wear. Minimum sheave diameter is 40 x cable diameter per American Elevator Standards and 52 x cable diameter for installations with General Services Administration (GSA) specifications.
8. The average **rate of acceleration** effects the performance of the elevator system. Average rate of acceleration may be as low as 3 Ft/s² while 6 Ft/s² is considered the maximum for comfort level. The most common level of acceleration is in order of 4 to 5 Ft/s². The higher rate of acceleration may require a larger frame size motor with more torque.
9. Larger **total suspended weight** is a larger mass that must be accelerated or decelerated requiring a larger motor. Normally, the total suspended weight for a given live load rating will be larger for a tall building than for a lower building. Also, the suspended weight has a direct effect on the mechanical stress in the sheave and motor shaft combination.

To best expedite gearless requests, provide a completed copy of the attached survey form and a reeving diagram to an Imperial Electric representative.
<table>
<thead>
<tr>
<th>Job:</th>
<th>Customer:</th>
</tr>
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<tbody>
<tr>
<td>Date:</td>
<td>Surveyor:</td>
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<tr>
<td>Quantity:</td>
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<td>Cable Type:</td>
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<td>Rated Live Load (Lbs):</td>
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<td>Full Load Speed (F.P.M.):</td>
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<td>Counter Weight (%):</td>
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<tr>
<td>Motor Sheave Wrap:</td>
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<td>Motor Sheave Groove:</td>
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<tr>
<td>Motor Sheave Pitch Diameter (In.):</td>
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<td>Total Suspended Weight (Lbs):</td>
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<td>Deflector Sheave Position** (In.):</td>
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<td>Deflector Sheave Diameter (In.):</td>
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<td>Power Source:</td>
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<td>Customer Remarks:</td>
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** Reference Drawing 3-0090-0003
NOTES:
1. ON FIG. 1, BASE TOP FLANGE ON (T') SIDE MAY BE BURNT OUT (DIM. VA OR WA) FOR CLEARANCE. SEE CERTIFIED DIM. DWG.
ON FIG. 2, BASE IS FABRICATED TO PRODUCE VA & WA INDENTS.

CONDITIONS: (VIEW FROM SHEAVE END)
1. SWUNG LEFT
2. SWUNG RIGHT
3. SWUNG AS SHOWN
4. AS SHOWN R. OR L.

CERTIFIED ONLY FOR

CUSTOMER ____________________________________________
CUSTOMER ORDER NO. ____________________________________________________________________________
FRAME ________ BY __________ DATE __________

SCALE N.T.S. TITLE DIMENSION DWG.

SHEET NO. 3-0090-0003

IMPERIAL ELECTRIC CO.
AKRON-MIDDLEPORT, OHIO

PG. 11
### TABLE

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<th>WT.</th>
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<th>B/K</th>
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### NOTES:

- **a.** The base static loads shown are based on the weight of a complete gearless motor and a maximum sheave. The dynamic load due to acceleration and deceleration of the car etc., is included in the 40,000 lb. maximum sheave load and is accounted for in the static load column.

- **b.** The dynamic load column gives the additional dynamic loads due to stator and brake.

- **c.** Dimensions same as on dim. print 5-2090-0007.

- **d.** Weights shown are for 30" brake drum, 26" P.D. sheave. For 33" P.D. sheave, add 115 lbs. For 33" P.D. sheave, add 245 lbs.

---

**CERTIFIED ONLY FOR**

**CUSTOMER**

**IMPERIAL ORDER NO.**

**BY**

**DATE**

---

**SCALE** 3/32" = 1", FOR 593

**TITLE** WEIGHT DISTRIBUTION

**FRAME NO.** 3-0090-0004

**IMP. ELECTRIC CO.**

**PAGE NO.** 9
* REF. ONLY:
SEE CERTIFIED DIM. DWG.
FOR ACTUAL CONTRACT DETAILS.

CERTIFIED ONLY FOR
CUSTOMER _____________________________
CUSTOMER ORDER NO. _______________ ORDER NO. __________
FRAME _____________________________

BY _____________________________ DATE _____________________________

SCALE N.T.S.
3-0090-0005

TITLE
GEARLESS MOTOR SHEAVE GROOVING V-GROOVES FOR SINGLE WRAP DRIVE

IMP記事 ELECTRIC CO. 
AKRON, MIDDLEPORT, OHIO

3-0090-0006

PG. 10