

## SOURCES OF SUPPLY

German manufacturers, through their branch houses and agents who carry large stock, obtain the largest share of the trade in motors in the Netherland East Indies. Over one-half (2,545) of the total of 4,884 motors imported in 1928 were supplied by German firms. Dutch manufacturers supplied the next largest number (1,514). Imports of American motors during that year amounted to about 3 per cent of the total number, or 133. Government purchases of motors were largely from Dutch firms.

Although the United States has, in the past, supplied some of the largest motors in use in the Netherland East Indies, imports at present are confined chiefly to sizes under 25 horsepower, and fractional horsepower motors. The United States obtains most of the trade in fractional-horsepower motors, since they are used largely as replacements in the American electric household appliances that have been imported into the territory.

## MOTOR-CONTROL EQUIPMENT

The present regulations in force in the Netherland East Indies provide that motors of over 1-kilowatt axle capacity (1.34 horsepower) and not more than 2-kilowatt axle capacity (2.68 horsepower), used for intermittent operation and having a short-circuit rotor, must be started with a starting resistance in the stator or a star-delta switch which meets the approval of the electricity service. Motors with a larger axle capacity than 3 kilowatts must either be provided with a slip-ring armature and be started by means of a starting resistance in the rotor circuit or if with a short-circuit rotor be started with a starting transformer in the stator. An ampere meter is required in one of the phase circuits of motors of more than 10-kilowatt axle capacity. The Government factory safety-inspection service favors iron-clad starters, but they are not absolutely essential.

The use of the star-delta switch with six leads practically eliminates the use of American squirrel-cage motors unless they are equipped with the proper starting equipment.

Automatic no-voltage releases are not at present insisted upon, but it is likely that the new "factory safety ordinance" that is now being drawn up will provide for their use.

## MOTOR-INSTALLATION REGULATIONS

The following regulations governing the installation of motors were published in 1923. They are still in force although under revision by a committee appointed to draw up new rules.

1. Motors must comply with the "Standardization Rules of the American Institute of Electrical Engineers" or "Die Normalen für Bewertung und Prüfung von Elektrischen Maschinen und Transformatoren des Verbandes Deutscher Electrotechniker," but the motor must, except in special cases, be built for an atmospheric temperature of 40° C. and be provided with protective insulation against moisture, and the name plate must indicate the power factor under highest tension.

2. Except for deviations in special cases, as for inclosed motors or crane motors, to be decided by the electricity service, the power factor for polyphase-current