# FUJI N.H. FUSE (Low tension-high power)

## Preface

Recent enlargement of electric power equipment has required the use of fuses of higher interrupting capacity, as short circuit current in low tension circuits has been growing up to several times 10,000 amperes. In order to avoid terrible electrical accidents which might be caused by insufficient interrupting capacity of breaking apparatus, as well as for making high grade machinery safe in operation, it is very neces sary to install fuses of high interrupting capacity and unquestionable dependability.

FUJI has satisfied these requirements by developing a fuse which assures an interrupting capacity of 35 to 100 ka, called the Low tension-high power Fuji N.H. Fuse.

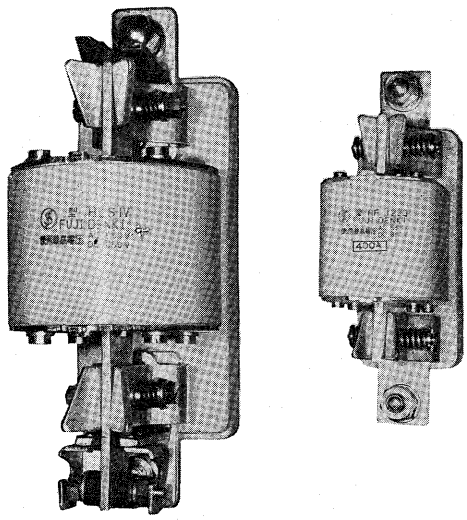
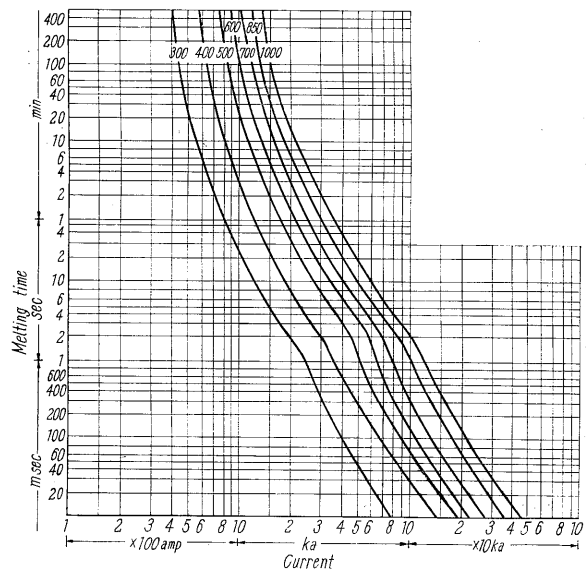


*Fig. 1* Outer view




RF 1233-300, 400, 500, 600
RF 1234-500, 600, 700, 850, 1000

Time: Melting time (average)
Current: Ac effective value
Dc mean value

Melting characteristics:
Maximum continuous current 130% In
Minimum melting current 160% In

*Fig. 2* Time—Current characteristics

## Construction

The refill unit of Fuji N.H. Fuse is of soiid tube construction, totally enclosed. The fusible element is provided at its center with a bridge of heterogeneous metal: the shape of this element assures a long clearing time for small overcurrent, low temperature rise for load current, quick interruption for large overcurrent, and high current-limiting effect.

As in the cartridge fuse, quartz sand of high purity is applied as the arc-extinguishing medium for quick action. The fuse tube is high quality porcelain of great mechanical strength.

The N.H. Fuse is provided with an indicating device by which interruption is easily observed. Removal and refill are performed easily with a refill tool. The fuse holder is a clip type, provided with a locking device so that the fuse cannot drop out because of electro-magnetic force of the short-circuit current.

## Specifications

| Rated current (amp) | Rated voltage (v) | Interrupting capacity (kv) | Element | Holder | Refill tool |
|---|---|---|---|---|---|
| 300 | a-c 550 | 50 | RF1233-300 | RF1217-400 | RF1229 |
| 400 | | | // -400 | | |
| 500 | | 35 | RF1233-500 | RF1217-600 | |
| 600 | | | // -600 | | |
| 500 | d-c 660 | 100 | RF1234-500 | RF1217-1000 | RF 1229-4 |
| 600 | | | // -600 | | |
| 700 | | | // -700 | | |
| 850 | | | // -850 | | |
| 1000 | | | // -1000 | | |

Melting characteristics:
Maximum continuous current 130% In
Minimum melting current 160% In

### Special features

1. High short-circuit protection and high interrupting capability.
2. No danger of explosion or fire: element totally enclosed and leak-proof.
3. By observing fusible element, interruption of circuit is indicated and can be easily recognized.
4. Safe and easy removal; refill with the refill tool.

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# PORTABLE POINTER-TYPE FREQUENCY METER

The unique Portable Pointer-type Frequency Meter has recently been added to the growing line of Fuji products as the newest type of portable electric meters.

### Measuring Principle and Construction

Measuring frequency is indicated by a moving coil type measuring element, after conversion to d-c voltage by means of solid state circuit. This principle has already been employed by our pointer type frequency meter for switchboards which has provided research for the development of this smaller, lighter pointer-type frequency meter. Principle diagram is shown in *Fig. 2.*

Transistor switching circuit operated at measuring frequency $f$ alternating the output voltage polarity of transistor-zener constant voltage circuit, generates the square wave at the same frequency. This square wave is applied to a saturated transformer type frequency-direct current transducer to obtain a d-c voltage $Va$ which is proportional to the frequency $f$. From this $Va$, the output voltage $Vb$ of the Zener constant voltage circuit is subtracted as base component and the difference $(Va-Vb)$ is applied to the moving coil type measuring element. The saturable transformer type frequency to d-c converter has been employed as a receiving unit of pulsative frequency


*Fig. 1* Outer view

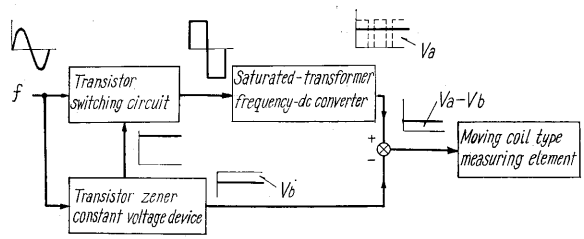


*Fig. 2* Diagram of principle

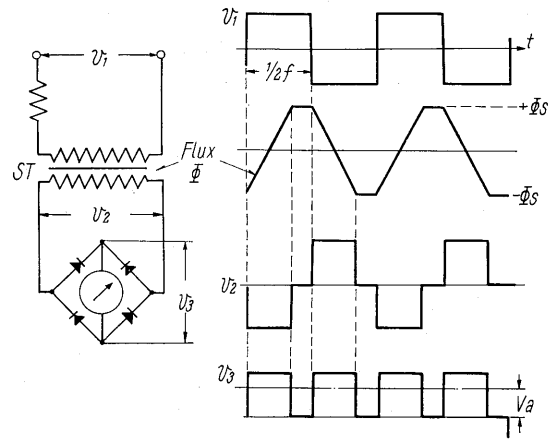


*Fig. 3* Saturated-transformer frequency d-c converter

type telemeter since 1958. When the square wave $v_1$ with frequency $f$ is applied to the primary winding of saturable transformer $ST$, consisting of rectangular hysteresis core, the flux $\Phi$ of the core and the voltage $Va=N_2\ d\Phi/dt$ of the secondary winding follow the course shown in *Fig. 3.*