Circuit Breaker Time/Current Curves (Ground Current)

Magnum, Magnum DS and Magnum SB Circuit Breakers
Response: Ground (Earth) Trip (FLAT & I^2T)
This curve is for 50Hz or 60Hz applications.

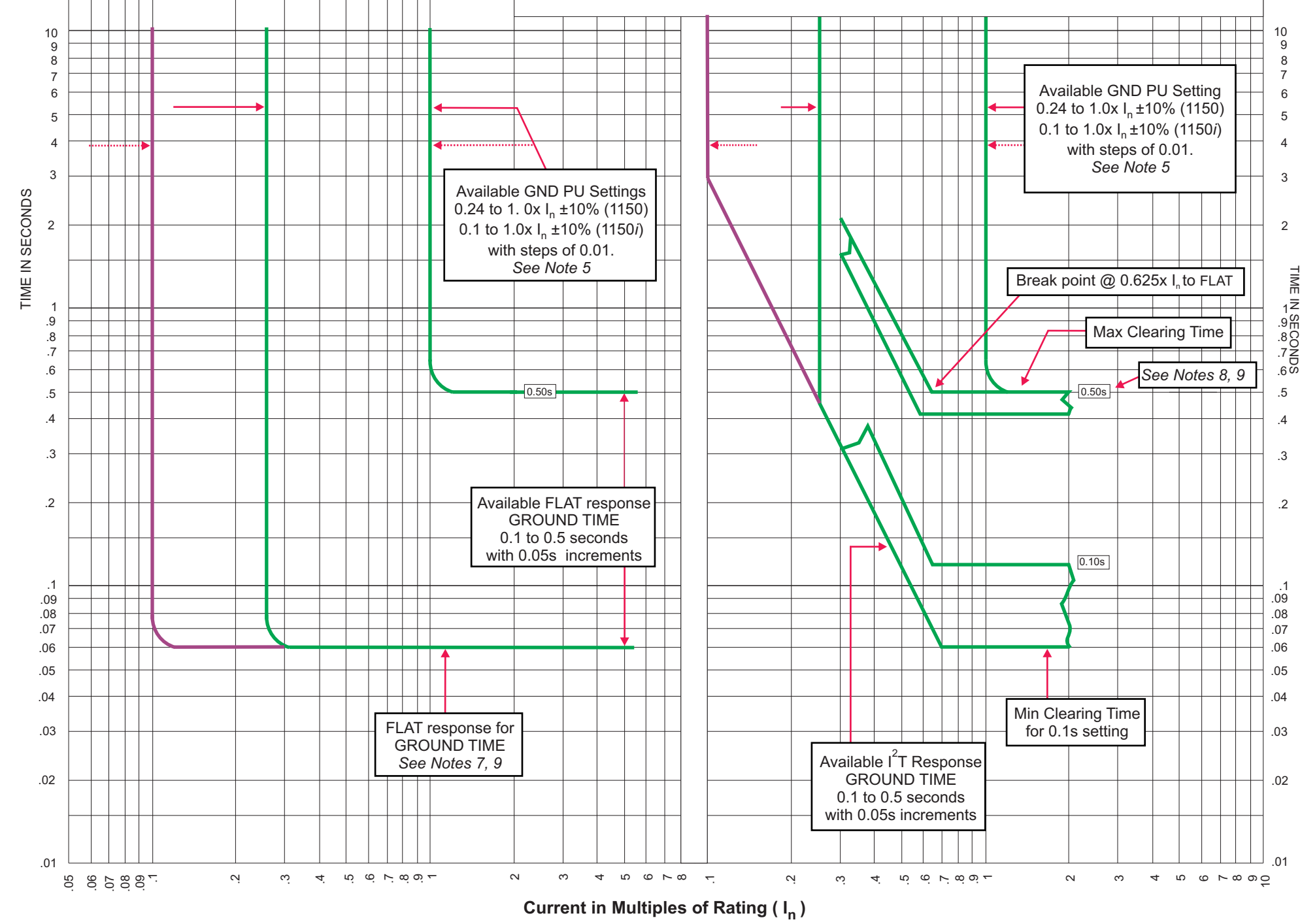
Notes:

1. The end of the curve is determined by the interrupting rating of the circuit breaker.
2. The curve is shown as a multiple of the Rating Plug (I_n).
3. The Ground Fault settings have conventional 100% ± 10% as their pick up points.
4. Except as noted, tolerances on current levels are ±10% of values shown in chart.
5. The Ground Fault Pickup is limited to 1200A setting for the Digitrip 1150 unit. The minimum Earth Pickup setting for the Digitrip 1150*i* is 0.1 x I_n.
6. With Zone Selective Interlocking enabled, max trip times w/o aux power are as follows:

	3 Phase fault
60 Hz	75ms
50 Hz	85ms

When only one pole is carrying current and a fault occurs, trip times increase to 90ms at 60Hz and 95ms at 50 Hz, however with Aux power these times would be reduced by 10%

7. Ground Slope: FLAT
   Tolerance is +0 / -80 ms except
   0.10s setting band is 0.06 to 0.13
   0.15s setting band is 0.10 to 0.17
   0.20s setting band is 0.15 to 0.22
8. Ground Slope: I^2T
   I^2T slope flattens out at 0.625x I_n for top of band with FLAT time minimum value prevailing for bottom of band.
   Curve Trip Equation: Trip = (GROUND TIME) x 0.39 / I_n^2 (top band)
   Curve Trip Equation: Trip = ((GROUND TIME) x 0.39 / I_n^2) * 0.70 (bottom band)
   The above equations indicate tolerance is +0 / -30% for all settings except
   0.10s is +30% -25%
   0.15s is +20% -25%
   0.20s is +10% -25%
9. These curves are comprehensive for the complete family of Magnum breakers, including all frame sizes, ratings, and constructions. The total clearing times shown are conservative and consider the maximum response times of the trip unit, the circuit breaker opening, and the interruption of the current under factors that contribute to worst case conditions, like: maximum rated voltages, single phase interruption, and minimum power factor. Faster clearing times are possible depending on the specific system conditions, the type of Magnum Circuit Breaker applied, and if any arc reduction settings are employed. Contact Eaton for additional information.



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